

MEASUREMENT OF NON-TARIFF BARRIERS: THE CASE OF UKRAINE

Veronika Movchan and Igor Eremenko¹

Prepared for the Fifth Annual Conference of the European Trade Study Group (ETSG)

September 11-13, 2003, Madrid, Spain

Keywords: non-tariff barriers, protectionism, trade policy

JEL Classification: F13, F14

Abstract:

In the process of the WTO accession Ukraine has to liberalize both its tariff and non-tariff trade regimes. However, while tariffs have been studied more or less deeply, the country's system of non-tariff barriers remains almost *terra incognita* both for scientists and policy makers. The situation is quite usual, since non-tariff barriers have drawn special attention only several decades ago, and the interest was closely associated with the success of the GATT trade rounds in reduction of tariff barriers and, as a result, expected growth in the non-tariff protectionism.

In this paper, it is proposed an augmented index of non-tariff protection. Its major distinction from the import coverage index lies in estimation of differentiated intensity of various types of non-tariff barriers, as well as in construction of additive index that incorporates a whole spectrum of non-tariff barriers. In the frame of the research, index of non-tariff barriers for Ukraine is calculated for the period between 1994 and 2001. It is shown that during the investigated period the structure of Ukraine's non-tariff protection has evolved from "core" barriers like quantity and price control to technical barriers, known by controversy in their protective nature. This study is the first attempt to quantify the entire system of non-tariff barriers in Ukraine, bringing new insights in the evolution of trade liberalization in the country and its correspondence to the world trends in light of the WTO accession process.

¹Research Associates
Institute for Economic Research and Policy Consulting
Reytarska str. 8/5-A, Kyiv 01034
Tel: (+38044) 228-6358, 228-6342
Fax: (+38044) 228-6336
Email: movchan@ier.kiev.ua
www.ier.kiev.ua

1 Introduction

Despite a long history of non-tariff barriers (NTB) in international trade, the special attention they have got only in the early 70th (Quinn & Slayton, 1980) when the discussion of the NTB was explicitly scheduled in the framework of Tokyo Round of the GATT negotiations. The understanding of importance of the NTB has appeared alongside with gradual reduction of tariff barriers and, consequently, expected growth in importance of the NTB. These barriers are less transparent, more flexible, and extremely variable. According to the United Nations Conference on Trade and Development (UNCTAD) classification, there are approximately one hundred different codes representing various non-tariff measures (OECD, 1997). These characteristics made the NTB important substitutes for country's tariff regime.

The magnitude of the NTB in Ukraine's foreign trade policy has remained almost *terra incognita* for majority of policy makers and scientists in the country. Majority of studies of the trade policy focused on initial elimination of state monopoly in foreign trade, as well as consequent evolution of tariff rates (Michaeli, 1998; German Advisory Group, 2001; World Bank, 1999). Studies of NTB were limited, to the large extent, to general description of legal regime (Tereschenko, 1998), while no comprehensive investigation of the NTB aimed to quantify the level of NTB was done. Still, it is important to know the intensity of the NTB taking into account the intension of Ukraine to become a member of the WTO in the recent future. Ukraine applied for the GATT/WTO membership in late 1993, and nowadays the negotiations are in pre-final phase. The estimation of the NTB structure is the important stage in the overall assessment of the impact of the WTO membership on trade flows and the economic development as a whole. Thus, the objective of this paper is to fill in the gap and to estimate the level of non-tariff protection in Ukraine.

The rest of the paper is organised as follows. Section 2 provides a brief overview of the NTB theory including definition of this phenomenon and methods of measurement. Next, Section 3 discusses methodological changes proposed to enhance the evaluation of the of the NTB. Section 4 presents results of estimation of the NTB' dynamics in Ukraine, and Section 5 concludes.

2 Theory of Non-Tariff Barriers Measurement

Before we consider particular measurement techniques, let's focus for a moment on the definition of non-tariff barriers. Such researchers as Baldwin (1970), Walter (1972), Mayer & Gevel (1973), and Deardorff & Stern (1997) provided their definitions of this phenomenon. Moreover, several international organisations like UNCTAD and GATT/WTO (2001) contributed to formulation of the term "non-tariff barriers". Careful review of these definitions as well as study of NTB per se allowed authors to propose the following definition:

NTB are measures, other than tariffs, that are tightly connected with state (administrative) activity and influence prices, quantity, structure and/or direction of international flows of goods and services as well as resources used to produce these goods and services.

In this definition, the emphasis is made on the role of the state in establishment of NTB, although some researchers propose to consider actions of private persons (entrepreneurs) as NTB source (Baldwin, 1970; Walter, 1972). This emphasis on the state is explained, in the first place, by necessity to differentiate between evolutionary processes and trade restrictions. The former also influences price and quantity of international goods flows although are based on

competition, technical innovations, and consumer preferences. The latter is administratively created and traditionally considered as trade restrictions.

This definition does not cover another important feature of the NTB, namely their influence on the general level of world welfare or on potential real world income (Baldwin, 1970; Mayer & Gevel, 1973). The absence of judgement criterion is dictated by twofold nature of the NTB. Although traditionally the NTB are considered as sources of dead weight losses that reduce level of social welfare, it could be the case that total effect of the NTB is positive. This situation arises when social and private marginal utility functions do not coincide due to information asymmetry. For instance, it could be shown that mandatory state certification is necessary for selected types of goods (Movchan, 1999)

The list of non-tariff barriers, according to the UNCTAD classification, includes such measures as custom charges and taxes, price control measures, financial measures, quantity control measures, technical measures, and monopolistic measures. Not all of them are equally hurtful for trade and designed specifically to restrict imports, thus a subcategory of the NTB, namely “core” NTB, was introduced for a study of the restrictive NTB (OECD, 1997). The “core” NTB include custom charges and taxes, price control measures, automatic licensing, and quantity controls.

One of the main questions in study of the NTB is a methodology of their measurement. The problems exist because of non-transparency of the NTB, their variety, and disparity in influences. There are several types of non-tariff barriers measurement: frequency measures, price-change measures, quantity measures, rates of assistance, and indices-deflators. Lets briefly discuss them.

A. Frequency measures

There are two common types of frequency measures: frequency ratio and import coverage ratio (Laird & Yeats, 1990). Both of them are based on calculation of ratio of commodity lines subject to at least one NTB in total number of lines for the respective group of trade nomenclature. The frequency ratio is calculated by formula:

$$F = \sum_j \left(\frac{\sum_{i=1}^T D_i \times N_i}{N_T} \right) \times 100, \quad (1)$$

where N_i is category i of commodity in trade nomenclature group; D_i is dummy variable, N_T is general number of categories in trade nomenclature group, i.e. $i = 1, \dots, T$. Dummy variable is used as indicator of NTB: $D_i = \begin{cases} 0 \\ 1 \end{cases}$,

where $D_i = 1$, in good in category i is subject to at least one NTB; otherwise $D_i = 0$.

For import coverage ratio, the value of imports of commodities subject to at least one NTB is used as a weight instead of number of categories. That allows introduce time factor in the measurement of NTB, as well as better evaluate importance of particular NTB for the trade as a whole.

Frequency method is intensively used by the UNCTAD as the most easily available, transparent, and universal measurement technique. Its major drawbacks include upward biased due to overstatement of existing measures, and difficulties in distinguishing the role of specific NTB.

B. Price-change measures

Measures based on evaluation of changes in price due to introduction of the NTB are the most useful. Alternative to other measures, they allow direct comparison between influence of tariff and non-tariff trade barriers. Moreover, these measures are deeply rooted in international trade theory that formulates an influence of trade restrictions in terms of price and quantity changes. The most known type of price-change measures is tariff equivalent that is calculated as growth in commodity price before and after use of the NTB (Deardorff & Stern, 1997).

Despite unambiguous positive characteristics of this measure like its direct comparability with tariffs and realistic representation of the effect of the NTB for a specific commodity, it is very difficult to use price-change indicator for a generic study of the NTB in the country. Here, main problems are collection of necessary prices and differentiation of the NTB' impact from any other changes.

C. Rates of assistance

It is distinguished two types of rates of assistance: nominal rate of assistance and effective rate of assistance. Nominal rate of assistance is based on calculation of an increase in the gross returns from production due to existence of protective measures, including the NTB. However, the most widespread is the effective rate of assistance, initially introduced for tariffs by Max Corden (1966). General formula for this measure is

$$ERA = \frac{VA^N - VA^B}{VA^B}, \quad (2)$$

where VA^N is value added in case when the NTB are applied, and VA^B is value added under free trade.

Although also theoretically correct, these measures require a lot of information that is not always readily available. Moreover, in the case of the effective rate of assistance (protection), it is very difficult to differentiate between different NTB.

D. Indices - deflators

This method of trade barriers estimation that could be applied both to tariff and non-tariffs was proposed by Anderson and Neary in 90th. The authors constructed two indices – mercantilist trade restrictiveness index and trade restrictiveness index – that are defined as deflators that if applied to undistorted prices produce the same trade volume (for mercantilist index) or same real income (for trade restrictiveness index) as the initial set of trade distortions (Anderson & Neary, 1996; Anderson & Neary, 1999). These indices are very sound in terms of their theoretical background. However, their application suffers from same problems as price-based methods.

To summarise, frequency measures appears to be the most applicable technique for the measurement of the general NTB level in the country with quite high disaggregation in terms of commodity categories. Nevertheless, it still lacks comprehensiveness in identifying the role of separate NTB as well as the severity of restrictions.

3 Methodology of Compound NTB Index

As it was shown, there is a room for improvement in frequency-type measures of the NTB. In this paper, it is proposed a methodology of calculation an augmented index of non-tariff barriers (INTB) that allows to differentiate intensity of various types of the NTB and include several NTB in one measure.

The INTB is a compound additive index that incorporates a spectrum of non-tariff barriers applied in the country weighted on the value of imports. For each commodity group, it is calculated by a following formula:

$$INTB_j = \frac{\sum_{i=1}^I NTB_{ij} \times IM_j}{\sum_{j=1}^J IM_j} \quad (3)$$

where $INTB_j$ is an index of NTB for commodity j , NTB_{ij} is a weight of NTB i to commodity j , IM_j is the value of import of commodity j ; $i = 1, \dots, I$, $j = 1, \dots, J$, where I is a number of non-tariff barriers incorporated in the study², and J is the total number of commodities (groups of commodities). The NTB_{ij} is calculated as follows:

$$NTB_{ij} = \begin{cases} 0 \\ 25 \\ 50 \\ 75 \\ 100 \end{cases} \quad (4)$$

where zero means absence of the non-tariff barrier i for commodity j , and 100 is a maximum value of severity of non-tariff barrier i for commodity j . Here NTB_{ij} is a discrete variable that provides some flexibility to the index without making it very discretionary. Thus, for the commodity group J , NTB_{ij} could be between zero and $100 \times I$.

The main question is how to set an adequate level of indicator. Other measures of the NTB like tariff equivalents, effective rate of protection, quota fulfilment, as well as subjective estimation of potential harm of the specific NTB could be used for development of equivalence between the value of NTB_{ij} and actual level of non-tariff protection. In

² in general, it should be defined as a "world" constant, i.e. a total list of non-tariff barriers that could exist. In this case, it would be possible to compare indices among countries. However, due to problem with defining of NTB, a minimal requirement is that this number remains constant throughout the study.

the case when information on severity of the NTB is non-available, its median level $NTB_{ij} = 50$ is taken. As such, the NTB_{ij} works like dummy variable in frequency measures.

The index of the general non-tariff protection is calculated as follows:

$$INTB = \sum_{j=1}^J INTB_j . \quad (5)$$

Moreover, due to compound nature of the INTB, it is possible to calculate sub-indices reflecting the severity of a specific NTB. The main characteristics of the index are:

- Minimal value of the index is zero, and maximum value is $100 \times I$.
- Increase (decrease) in NTB_{ij} leads to increase (decrease) in index, *ceteris paribus*. In other words, higher level of non-tariff protection is reflected by higher index.
- Increase in the value of trade for commodity j leads to increase in the value of index. In order to avoid possible misinterpretations, it is recommended to use base year for index calculations.
- High non-tariff restrictions for commodities that possess small share in total imports/exports have less impact on index than same restriction for commodities that possess large share in imports/exports.

As can be seen, the proposed index is frequency-type measure by its nature, although it has several changes. First, it defines compound index of non-tariff protection that include a spectrum of the NTB. Second, it applies the changeable indicator of the non-tariff protection for each type of the NTB. That allows preserving positive characteristics of frequency measures like transparency and universality, at the same time adding flexibility and better representation of reality. After formulation of methodology, we proceed with a study of the NTB in Ukraine.

4 Intensity of Non-Tariff Barriers in Ukraine

In this paper, we cover NTB applied between 1994 and 2001. The year 2001 is used as a base year for calculations. That allows avoiding distortions associated with changes in the shares of imports and concentrating on changes in intensity of the NTB per se.

The following list of import NTB was selected (legislative foundations of these NTB could be found in Annex 1):

- Quotas
- Licenses
- Minimum custom value
- Custom value certificate
- Mandatory certification
- State procurement policy
- Excises
- Tax exemptions (critical imports)
- Anti-dumping and countervailing measures

It is considered two major calculation scenarios:

- Baseline calculations: NTB_{ij} is equal to 50 for each registered type of the NTB;
- Differentiated calculations:

$$NTB_{ij} = \begin{cases} 0 \\ 25 \\ 50 \\ 100 \end{cases}, \quad (6)$$

where NTB_{ij} is equal to 25 for each technical barrier (mandatory certification, etc.), NTB_{ij} is equal to 50 for each price control measures (minimal custom value, anti-dumping measures, excises, etc.), and NTB_{ij} is equal to 100 for quotas and licenses. Moreover, for state procurement in 1996 and 2001 when clear ban on state purchase of selected imported goods existed we apply NTB_{ij} equal to 50, and 25 otherwise.

In the studied period the intensity of non-tariff barriers increased. If in 1994 the level of NTB aggregate index (baseline scenario) was near 65 points, in 2001 it reached 128 points showing 97% rise (Chart 1). The growth is explained by introduction of new NTB as well as increase in intensity of already applied NTB. The peak of the NTB was in 1999, when the baseline index reached 203 points, and afterwards its started to decrease. Differentiated calculations of aggregate INTB demonstrated same trend: the differentiated index increased by 81% between 1994 and 2001 with the same peak in 1999. However, the lower values of the index immediately show that technical and price control barriers play more important role in the system of the Ukrainian non-tariff protection, than quotas and licenses.

Separate sub-indices of core barriers (including quotas and licenses), technical barriers, as well as separate index for quota and licenses support the previous conclusion (Chart 2). Here, the “core” index incorporates the following measures: quotas, licenses, excise charges, anti-dumping measures, critical imports, and minimal custom value. The behaviour of INTB for core barriers follows inversed U-shape curve, namely increases in 1994 – 1998 and decreases afterwards. The major role in this dynamics plays the introduction of new price control measures like minimum custom value, excises, etc. At the same time quotas and licenses index decreased twice (from 24 points to 12 points) in the studied period. The lowest value of quota and licences index was in 1996 (2 points), and later practice of import licensing extended again. General reduction of core barriers is partially countervailed by the growth in technical protection. In years 1994-1998 the level of technical barrier index was quite stable, but has started to growth since 1999.

Among commodity groups that add the most to high non-tariff protection in Ukraine, the leaders are the group V (mineral products) and group XVI (machinery) (Chart 3). For mineral product, it is explained not so many by severity of non-tariff barriers applied to the group per se, but by very high share of this group in total imports (it occupied almost a half of total imports). Machinery got the second largest scores because of both high intensity of protection and

high share in imports. One of the leaders in NTB weights is group IV (food products), but due to lower share of imports it got lower points.

The evolution of non-tariff protection differ for various commodity groups. While for groups I-III protection has steadily decreased since 1996, for group IV (food industry products) the situation is quite unstable (Chart 4). Protection grew in 1994-1995, when decreased; the second peak was in 1999, when next downturn, and next growth. However, the nature of protection changed. First, the major protection was through core barriers, and later the role of technical barriers increased. Fore textile, index of NTB had a peak in 1996, and significantly reduced afterwards. However, some rise in protection was registered in 2001 (Chart 5). Rather close situation is in transport and equipment (groups XVII and XVIII). After growth in 1994-1998, they dropped and reached their minimum in 2000 (Chart 6). However, in 2001 the INTB for respective commodity groups increased again. Different situation is in machinery (Chart 7). The minimum level of protection was observed in 1995, and afterwards it has been steadily growing. The major reason is a more extensive application of price measures.

To summarise, it is shown that the intensity of non-tariff protection has increased over last eight years in Ukraine. The peak of protection was reached in 1999, and afterwards the gradual reduction of protectionism is observed. The “core” barriers considered as the most harmful for the trade flows, have gradually reduced starting 1998 for majority of commodity categories. Instead, it was established a widespread system of technical barriers.

5 Conclusions

Change in trade regime is a part of economic transformation occurred in Ukraine. The study of non-tariff barriers showed that Ukraine follows the path of other nations elaborating system of non-tariff barriers. The peak of studied non-tariff barriers was in 1999, and they reduced afterwards. As it was demonstrated, the structure of Ukraine’ s non-tariff protection shifted from “core” barriers like quantity and price control to technical barriers. The latter are more ambiguous in their nature, because their proclaimed objective is to protect health and safety of the population. Thus, their import-restricting nature is less obvious, and the study of difference between social and private utility curves is necessary to identify whether they are justified.

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Annex 1. Legislative Basis for the Selected NTB

A. Quota and Licences

Majority of quotas in the country are defined in the List of commodities subject to export and import quotas and licensing annually adopted by the Cabinet of Ministers. In addition, seasonal quotas are applied to selected categories of agriculture products in line with Law “On State Regulation of Agricultural Import” No. 468 adopted in 1997 with subsequent amendments.

B. Minimal Custom Value

Minimal custom value is regulated by a system of legislative acts including “On introduction of minimal custom value for selected types of goods” (Decree of the Cabinet of Ministers, No. 1215, November 3, 1997, with subsequent amendments), “On introduction of minimal custom value for selected types of imported goods” (Decree of the Cabinet of Ministers, No. 1164, July 27, 1998, with subsequent amendments), “On introduction of minimal custom value for selected types of goods subject to excise” (Decree of the Cabinet of Ministers, No. 502, May 26, 1997, with subsequent amendments), and “On introduction of minimal custom value for imported alcoholic beverages and beer” (Decree of the Cabinet of Ministers, No. 1433, December 2, 1996, with subsequent amendments)

C. Custom Value Certificate

There are goods for which a certificate with custom value calculation should be provided. The lists of these goods are adopted by State Custom Service’ Orders No. 485 (August 10, 1998) and No. 782 (December 2, 1999).

D. Technical Barriers

Technical barriers are the most widely used types of NTBs in Ukraine. Among the most known is a mandatory certification of selected categories of goods, the list of which is introduced in the State Custom Service’ Order “On List of Commodities Subject to Mandatory Certification in Ukraine” (No. 95, June 30, 1993, with subsequent amendments).

In addition, there are controls on flows of commodities that could be used for creation of nuclear weapon (Cabinet of Ministries’ Decree No. 196, 2001), sanitary, epidemiological, radiological and veterinary control over respective categories of agricultural and food industry products (Law “On State Regulation of Agricultural Import” No.468, 1997), drug control (Cabinet of Ministries’ Decree No. 146, 1997), energy-saving control (Cabinet of Ministries’ Decree No.1094, 1998), attestation of measuring equipment (Cabinet of Ministries’ Decree No. 1501, 2001), and ecological control (Cabinet of Ministries’ Decree No.1034, 1999).

E. Excise Charges

The level of excise charges is established by Cabinet of Ministries’ Decree “On Excise Charge” (No. 18-92, December 26, 1992), while the list of commodity’ categories subject to excises is introduced in Decree “On Order of Mandatory payments in Case of Imports on Selected Commodities” (No, 52, January 23, 1997 with subsequent amendments).

F. Tax Exemptions (Critical Imports)

We consider one type of taxation privileges, namely introduced in the President's Decree "On VAT Payments for Imported Goods" (No. 499/95, June 30, 1995, with subsequent amendments) and respective Cabinet of Ministries' Decree "On Adoption of the List of Commodities That Are Not Subject to Privileges Introduced by Clause 1 of the President's Decree No. 499, June 30, 1995" (No. 602, May 31, 1996, with subsequent amendments).

G. Anti-dumping and Countervailing Measures

There are several laws regulation introduction of anti-dumping and countervailing measures in Ukraine: Law "On Protection of National Producers Against Dumping Import" (No. 330, December 22, 1998) and Law "On Introduction of Special Measures Against Imports in Ukraine" (No. 332, December 22, 1998).

H. State Procurement Policy

In 1993 the Cabinet of Ministers issued Decree No. 871 that established a system of tenders for state purchases of import goods. However, in 1996 the state purchase of imported goods was banned (exclusion was the personal decision of the Prime-Minister) by Decree No. 611 issued by the Cabinet of Ministers. In 1997 a new system of state tenders for import goods was established. In 2000 a new law on state procurement policy was adopted by Parliament, and in 2001 the Cabinet of Ministers created a new procedure of state tenders and compound a list of goods that can be purchased only from national producers.

Annex 2. Trade Nomenclature

Group	Explanation
<i>I.</i>	Live animals
<i>II.</i>	Products from plants
<i>III.</i>	Fats and oils of animal and vegetal origin
<i>IV.</i>	Food products
<i>V.</i>	Mineral products
<i>VI.</i>	Chemicals
<i>VII.</i>	Plastic goods
<i>VIII.</i>	Skins, hides, etc.
<i>IX.</i>	Wood and wood products
<i>X.</i>	Paper, products from paper
<i>XI.</i>	Textiles
<i>XII.</i>	Shoes, hats, umbrellas
<i>XIII.</i>	Products from stone, cement, asbestos
<i>XV.</i>	Ferrous and other non-precious metals
<i>XVI.</i>	Machinery
<i>XVII.</i>	Transport
<i>XVIII.</i>	Equipment
<i>XIX.</i>	Other goods
<i>XX.</i>	Collectors' items, antiques

Annex 3. Charts

NOTE: FOR GROUP CHARTS USE ANNEX 2 AS A REFERENCE FOR LIST OF COMMODITY GROUPS.

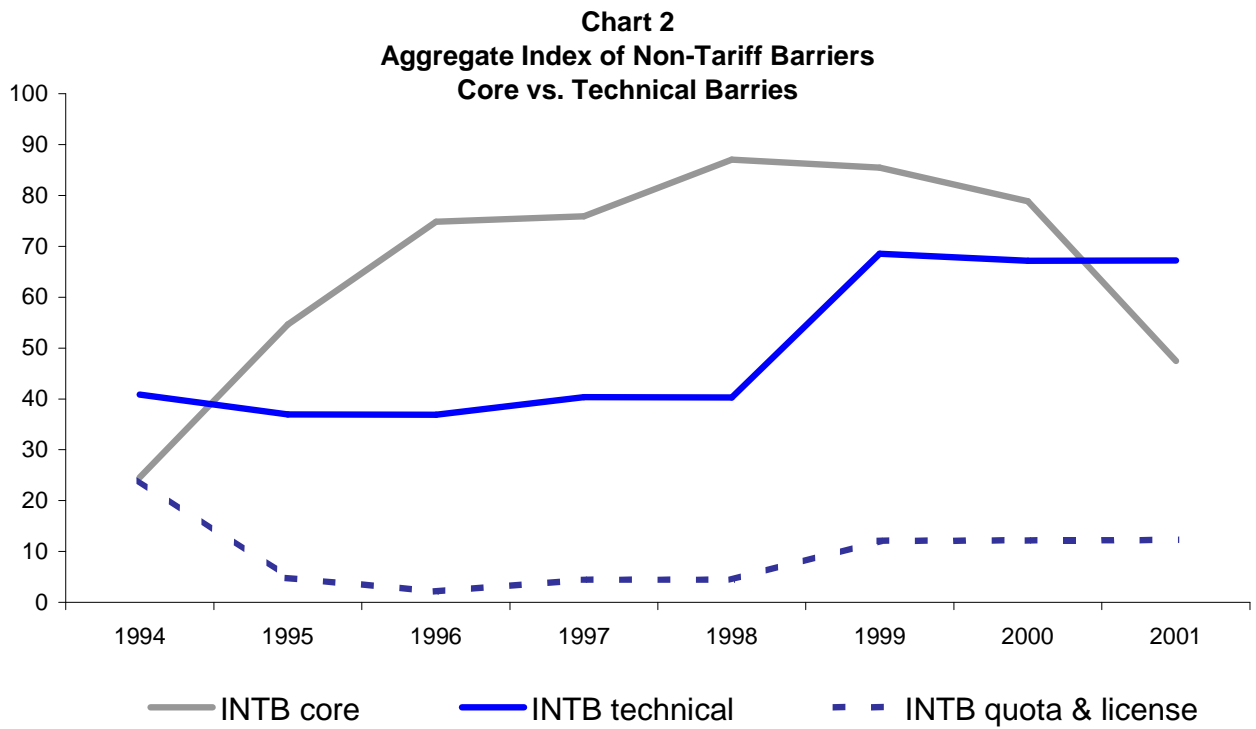
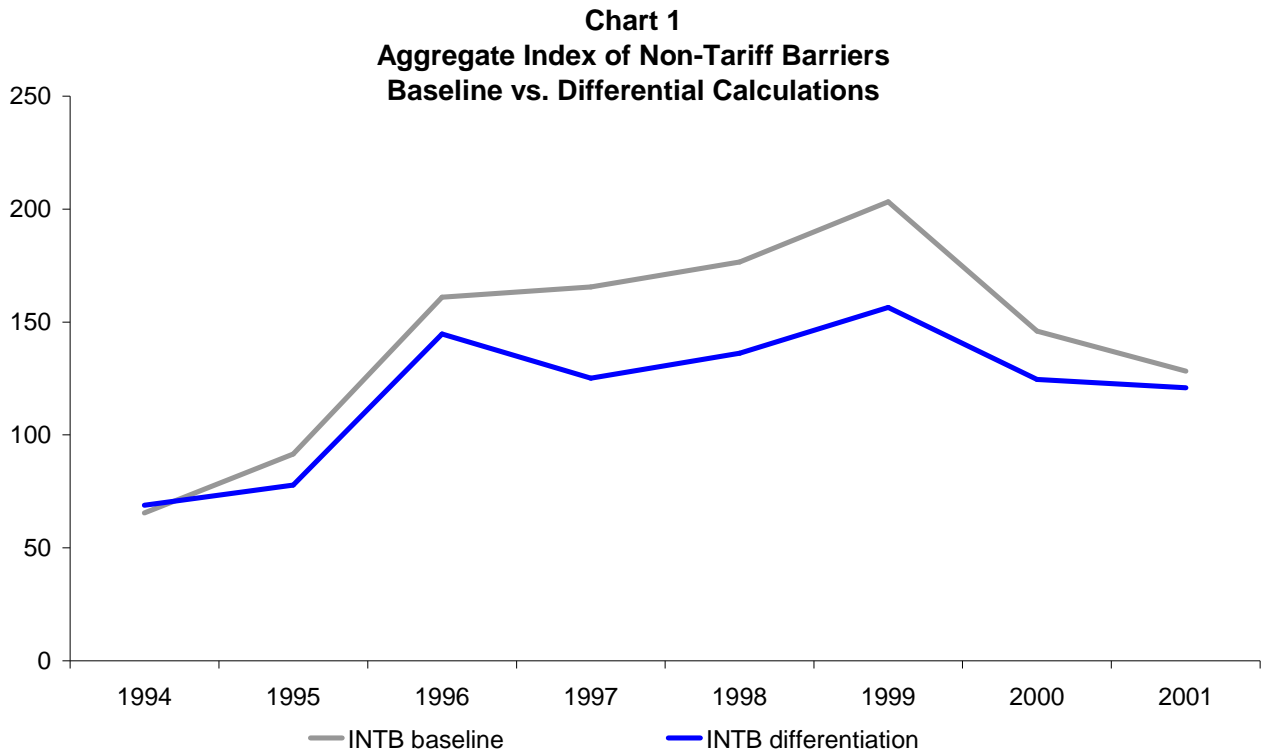


Chart 3
INTB by Groups -- Differentiated Calculation

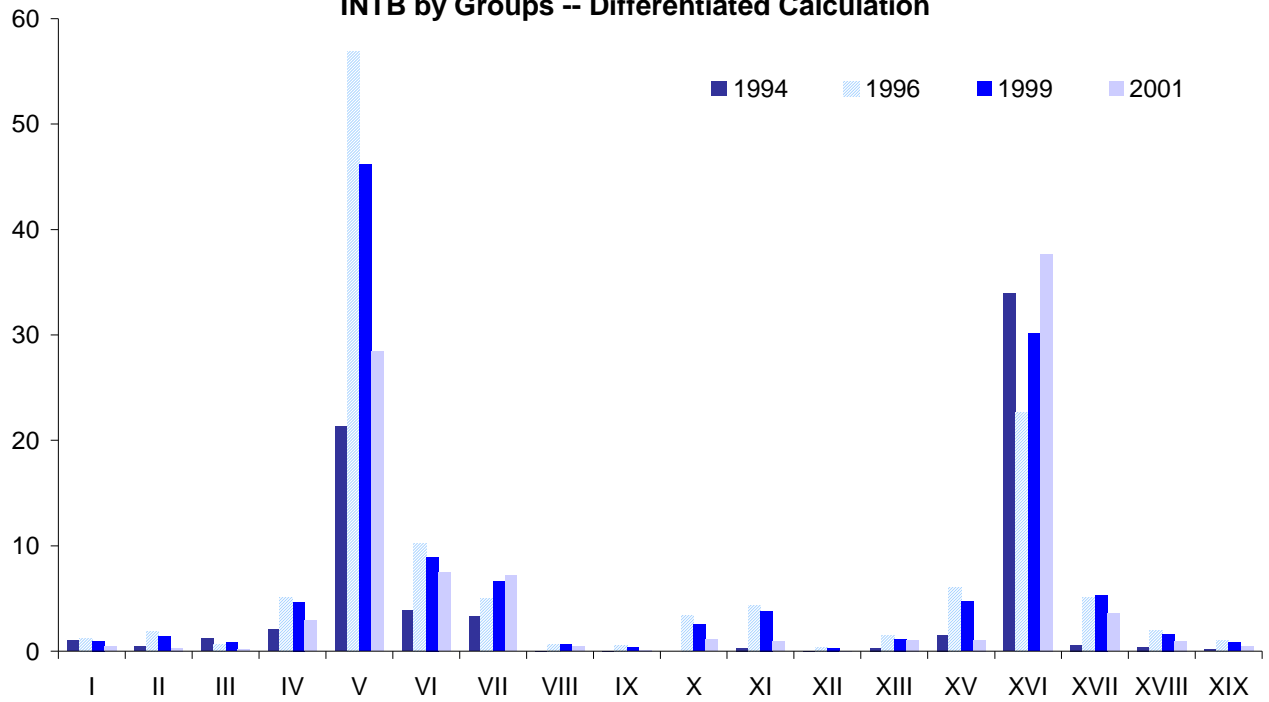


Chart 4
INTB of Food Products

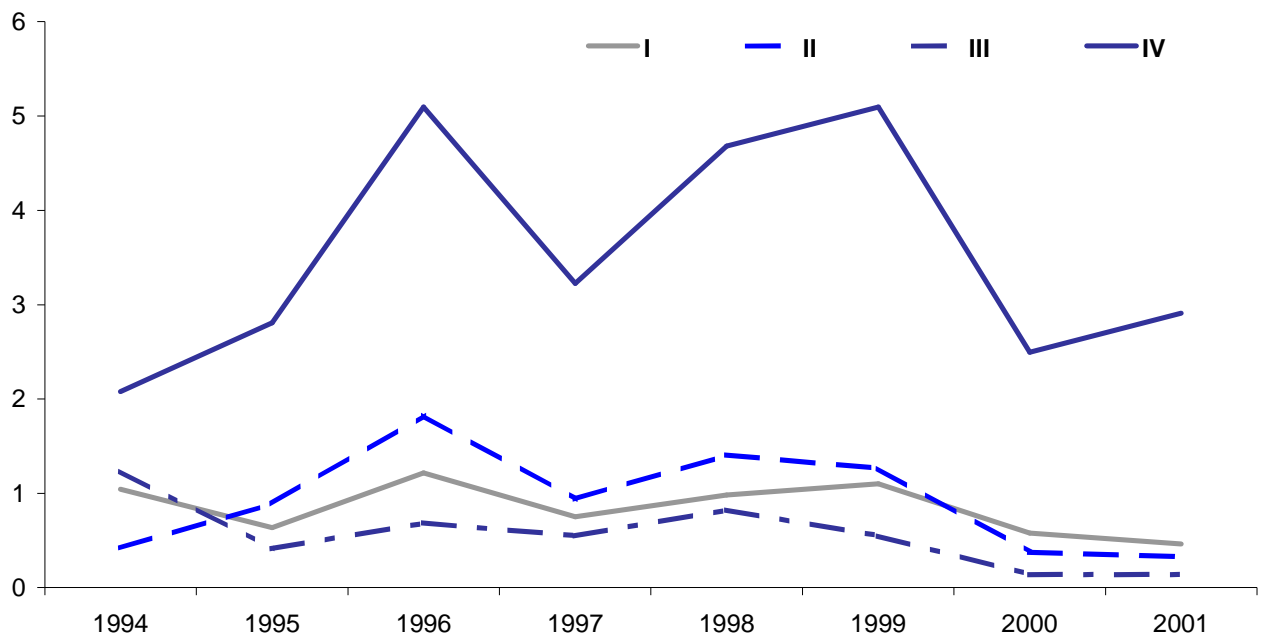


Chart 5
INTB of Textile and Shoes

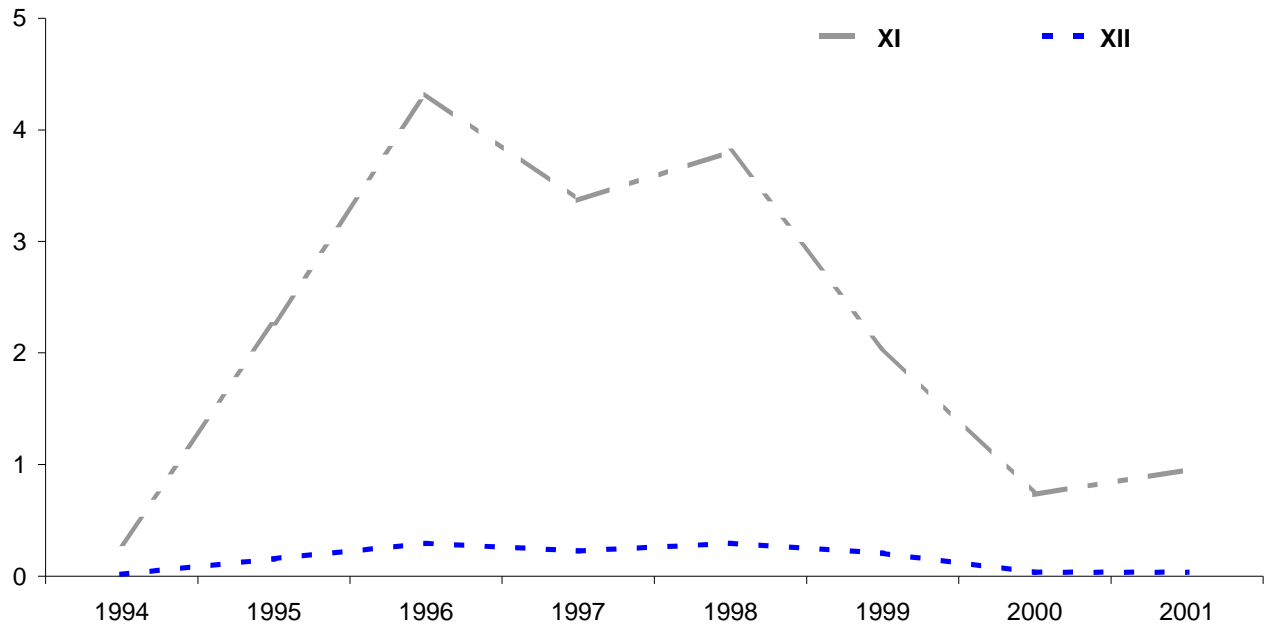


Chart 6
INTB of Transport and Equipment

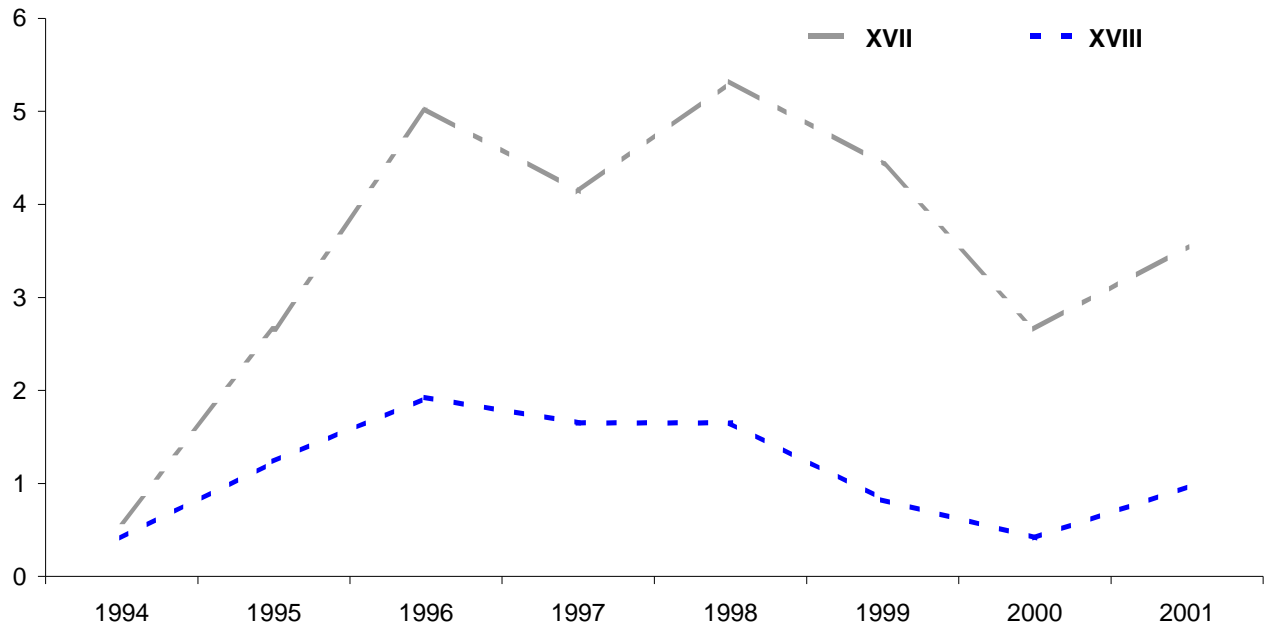


Chart 7
INTB of Machinery

