Business & Management Quarterly Review, 2(4), 46-55, 2011
ISSN 2180-2777

NON-TARIFF BARRIERS IN MALAYSIA'S AGRICULTURAL SECTOR

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ABSTRACT

The present paper describes the incidence of non-tariff measures in the country's agricultural sector from 1978 to 2007. The level of NTB protection is then measured using the frequency method. The measurements reveal that the level of protection has generally increased over the years. Significant increases in the protection level are observed in 1987 and 2004. Despite being a developing country, the trend of agricultural NTB protection appears to be similar to the trend of protection in developed market economies that provide significant protection to their agricultural sectors.
Keywords: Trade restriction, non-tariff barriers, agriculture, measurement of NTBs, developing country

INTRODUCTION

Trade liberalization under the auspices of the WTO has generally succeeded in lowering tariff protections in both the developed and developing economies. However, one of the remaining most challenging aspects of trade liberalization initiatives is to tackle the issue of non-tariff barriers (NTBs). The main problem is identifying the level of NTBs in the economic sectors. Thus, the WTO and UNCTAD are constantly focusing on identifying the incidence of NTBs and finding methods that best measure the level of NTB protection. With these measurements, the effects of NTBs on various economic variables can then be determined. Malaysia has gone through major trade liberalization and policy reforms, particularly since the 1990s. However, the level of NTBs has been reported to be high. Kee et al (2006) and Tengku Ariff and Ariffin (1995) suggest that the level of NTBs particularly in the agricultural sector is significantly higher. This is plausible as several agricultural products such as rice, tobacco, livestock, tropical fruits, coffee, and round cabbages are highly protected by NTBs (TengkuAriff and Ariffin, 1999). Furthermore a wide array of goods in the sector is subject to measures such as import licenses, which are subject to discretionary administrative procedures. However, there are no studies on Malaysia that evaluates the incidence of NTBs in the agricultural sector over an extended period of time. This prevents the analysis of the trend in NTB protection over time and empirical studies on the effects of NTBs in the agricultural sector from being conducted. Existing studies such as Ando (2005), Chang and Hayakawa (2007) and Kee et al (2006) merely measured the level of NTB protection in the sector using very limited data. For example, Ando (2005) used data from 1996 to calculate Malaysia's tariff equivalent of non-tariff measures while Chang and Hayakawa (2007) measured the level of agricultural protection in Malaysia using 1992 data. Kee et al (2006) measured the index of trade restrictiveness for the country's agricultural sector for the year 2001.

This paper has two parts. The first analyzes the incidence of non-tariff measures imposed on imports in the country's agricultural sector. It is worth mentioning here that there is no existing study to date that has examined in detail the non-tariff measures that have been imposed on agricultural imports in Malaysia. The second part of the paper presents the measurement of the NTBs in the agricultural sector. The frequency method by way of the NTB coverage ratio is used to estimate the NTBs for the period of 30 years, i.e. between 1978 and 2007. The paper is organized as follows. The next section discusses the methods that have been used by past studies to measure NTBs. Sections that describe the incidence of NTBs and the measurement of NTB protection in the country's agricultural sector, respectively, follow this. The final section concludes the paper.

Existing Literature on Measurement Of NTBs

The United Nations Conference on Trade and Development (UNCTAD) has classified six different categories of non-tariff measures (NTMs) or NTBs. These are price control measures, finance measures, quantity control measures, automatic licensing measures, technical measures and monopolistic measures (UNCTAD, 2005). The numerous types and complex nature of NTBs have made it difficult to develop an accurate and reliable method to measure the level or restrictiveness of NTB protection. Nevertheless, various attempts have been made with regard to this. Most notable are the efforts of Laird and Yeats (1990), Deardorff and Stern (1998), Anderson and Neary (1994), the IMF (1997), and Kee et al (2006).

Deardorff and Stern (1998) gave a comprehensive account of the different types of NTBs and the appropriate measurement techniques. Among the techniques, the price wedge method is recommended as a more feasible method. The method typically involves a comparison between the price of the imported product and the price of the domestic substitute. Even though choosing the appropriate prices may be difficult, the use of this method has been widespread[i]. UNCTAD (2005) highlights the potential problem in obtaining information about prices that prevail before and after the imposition of NTBs. The selection of the appropriate domestic prices is even more problematic at a more disaggregated product level. There are also factors other than NTBs that can in fact influence the price differential. For example, the price differential may arise due to differences in the commodity composition, duties and consumer preferences as well as inefficiencies of the import and distribution system (Fukao et al, 2003).

Besides the price wedge method, the quantity-impact measure can also be used in quantifying the level of NTBs even though information on quantity is difficult to obtain (UNCTAD, 2005; Deardorff and Stern, 1998). With this method, information pertaining to the quantity traded before and after NTBs are imposed is required. This is to ensure that a measure of NTB analogous to the price comparison effect can be developed. This method has been widely applied in gravity models and econometric estimates of NTBs based on the Hecksher-Ohlin and Helpman-Krugman trade models. These models attempt to measure NTBs by the residuals from the estimated regressions or through the use of dummy variables.

Another commonly used method is the frequency measure. The presence of many varieties of NTBs in a particular country and their non-uniformity has made this method popular. This method is based on the calculation of the frequency of the occurrence of NTBs. A related measure is the import coverage ratio, which incorporates the import value of the goods subject to NTBs in the calculation. Similar to the price wedge method, the frequency measure is also plagued with weaknesses. It is argued that the frequency or import coverage ratio does not reflect the restrictive impacts of NTBs on the quantity and price making decisions of foreign exporters. In addition, the method does not yield any information on prices, international trade, production and consumption (Deardorff and Stern, 1998, p.14). Of late, Movchan and Eremenko (2003) proposed an alternative method to improve the frequency measure. The proposed method takes account of the different intensities of the various types of NTBs and includes several NTBs in one measure. However, the method assigns a different value for a different intensity of the particular NTB in an ad hoc fashion.

Despite the known weaknesses of the frequency measure, the method has been used in numerous econometric studies. Bora, Kuwahara and Laird (2002) support the use of frequency measure as it provides indication of trade restrictiveness within a limit of 0 and 100 percent. This method can also be used in gravity models to identify the effects of NTBs on trade flows (Beghin, 2006). Rodriguez and Rodrik (2001) concluded that the coverage ratio is the most direct indicator of trade restriction since there are no studies that have claimed the presence of serious biases with its use. Additionally, there are no alternative indicators that have been suggested to work better. The method is also considered as the most transparent and universal in nature (Zigmantaviciene and Snieska, 2006).

Studies that have used the frequency measure, particularly the NTB coverage ratio, in the estimation of NTBs are abundant. For example, Ando (2005) has measured NTMs in 13 APEC member countries using the by-type frequency ratio. Das (2003) quantified the NTBs in India by estimating the import coverage ratio for 72 three-digit manufacturing industries and 3 use-based industry groups over the four phases of India's trade reform. The ratio is used as an

indicator of NTBs due to the lack of time-series data on domestic and international prices at industry group levels. Similarly, Clark and Bruce (2006) measured the NTM coverage ratios in the U.S. using the share of import subject to a given NTM. Other studies that employed a similar technique are those by Faini, Pritchett and Clavijo (1988), Leamer (1990), Harrigan (1993), Trefler (1993), Lee and Swagel (1997), Haveman and Thursby (2000), Qing Wang (2001), Haveman, Nair-Reichert and Thursby (2003), Mehta and Parikh (2005) and Devadason (2006).

Studies such as Moroz and Brown (1987) and Lester and Morehen (1988) have used the price wedge method to quantify NTBs. As reported by Linkins and Arce (1994), these studies measured NTBs in the form of quotas by calculating the ad valorem tariff equivalent. The tariff equivalent incorporates the difference between world price and domestic price net of wholesale and retail trade margin. Moroz and Brown also used the cost-push method in instances where price data was lacking[ii]. Meanwhile, Shuguang, Yansheng and Zhongxin (1999) used the price wedge method in their measurement of NTBs for 25 commodities in China. In their study, the price differential is calculated between the c.i.f. import price and the wholesale landed price of each imported good in the protected domestic market.

Other studies have also used dummy variables to depict the presence or absence of NTBs. For example, Dean, Feinberg, Signoret, Ferrantino and Ludema (2006) used the values 1 and 0 to show that NTBs are present and absent respectively. Disdier, Fontagne and Mimouni (2006) used a simple dummy variable equal to 1 if the importing country notifies at least one type of NTB. Baleix (2005) assigned the values 1 and 0 to the NTB variable if quotas are present and absent respectively.

In addition to these studies, there exist those that focused on the measurement of trade restrictiveness index. Anderson and Neary (1994) were the first to develop such index that provides a measure of NTBs in terms of their welfare effects. In 1997, the IMF developed its own measure of trade policy called the TRI (Trade Restrictiveness index) (IMF, 2005). This index consists of three components, one of which that rates trade restrictiveness due to NTBs. More recently, Kee et al (2006) developed three types of indices of a country's trade restrictiveness accounting for both tariffs and NTBs. Their study not only solves the problem of summarizing the various trade policy instruments into one single measure of trade restrictiveness but also lends economic meaning to the indices formulated.

Based on the literature review, it appears that many past studies have measured the level of trade protection using the NTB coverage ratio. The usage has been justified on the lack of data availability that prevents the usage of the price wedge or tariff equivalent measures. Even though the ratio is an imprecise measurement of trade protection, it provides the best available protection measure if reliable tariff equivalents do not exist (Goldberg and Maggi, 1999). In view of this and the support for its use that was mentioned previously, the level of NTBs in Malaysia's aggregate agriculture sector in this paper is also measured using the NTB coverage ratio.

Incidence of NTMs or NTBs in Malaysia's Agricultural Sector

In Malaysia, imports that are imposed with NTMs are classified into four different schedules of the Customs (Prohibition of Import) Order of the Royal Malaysian Customs. The first schedule contains a list of goods whose imports are completely banned due to national, religious, security, and health reasons. The second schedule contains goods whose imports are allowed if accompanied with import licenses. These goods are mainly controlled for health, sanitary, security, environmental protection or intellectual property reasons. The third schedule lists goods that may not be imported except with import licenses due to protective reasons. The fourth schedule is specific for products whose imports are allowed only if certain requirements are met. For example, imports are permitted only when accompanied with import permits issued by certain departments or after obtaining specific certifications. According to Alavi (1996, p.60), the objectives of the first and fourth schedules are non-protective whereas those of the second and third are protective. As imports of goods from the first schedule are totally prohibited, the discussion of the incidence of NTMs leading to the measurement of NTBs in the paper includes those from the second, third and fourth schedules only. The WTO generally classifies goods in the HS01 to HS24 groups as agricultural goods whereas those in the HS25 to HS97 groups are categorized as industrial goods[iii]. Thus, we identify agricultural goods in the various schedules on this basis. Imports of products requiring import licenses such as star anise, rice, eggs poultry,

plants, fruits, soil and pests, sugar, and wood in the rough were already listed in the second schedule since 1978. In the 1980s, more goods were brought into the schedule. They were beef, mutton, uncooked pasta, edible products of animal origins, un-worked diamonds and several mineral products[iv]. In 1993, the import license requirement was imposed on un-manufactured tobacco and tobacco refuse. In general, Malaysia is perceived to impose hefty control on un-manufactured tobacco imports. The U.S. Department of State raised concern that this measure has affected the U.S. cigarette manufacturers that had to purchase the lower quality local tobacco (U.S. Department of State, 1994). The licensing requirement imposed on the import of sugar and food is also seen as a trade restricting measure.

In 1996, some of the products from the second schedule were shifted into the fourth schedule whereby import is allowed only if specific criteria are met. These products were rice, poultry, eggs, beef and mutton. The imports of poultry, eggs and egg products, beef, and mutton require import permit which are only issued after the plants have been inspected by the country's Department of Veterinary Services. The relevant Malaysian authority seldom conducts the re-inspection of plants or slaughterhouses. This is perceived as a trade barrier as it prevents the Australian and the U.S. companies from re-applying for certification or from rectifying problems found in the initial inspection (Warr et al, 2008). Meanwhile, the import of rice not only requires import license but also must be imported through the sole import channel operated by BERNAS[v]. This monopoly of rice import by BERNAS is also viewed as a barrier as it has brought a certain disadvantage to the U.S. rice suppliers given the purchase of rice is conducted on a government-to-government basis instead (U.S. Department of State, 1994). Over the years, the import license requirement has been lifted from some of the products in the second schedule, namely uncooked pasta and mineral products in 2004 and wood in the rough as well as baryte in 2005.

Meanwhile, goods listed in the third schedule are imports imposed with licensing requirements so that temporary protection to local manufacturers can be granted. In 1978 the listed goods were butter, cabbages, cereal flour, rice vermicelli, rice bran, other brans, sharps and residues, mushrooms in airtight containers, natural yeast, ice, and sweetened forage. This requirement was gradually removed in the 1980s[vi]. New additions into the schedule were also made such as the inclusion of un-roasted coffee, milk, cream, and sterilized flavored milk. By 2007, products that are still subjected to import license are round cabbages[vii], cereal flour, milk and cream, and sterilized flavored milk.

Goods that are listed in the fourth schedule are beverages, milk and fish. Imported beverages such as whisky and brandy must be accompanied with a certificate from the country of origin. In addition, milk and milk products must have an import permit from Malaysia's Department of Veterinary Services of the Ministry of Agriculture. Imports of fish and plants should also obtain import permits or phyto-sanitary certificates from various agencies. Whisky and brandy imports have been listed in this schedule as early as 1978. In 1987, there was a significant review in the number of products that were listed. More products were included and the list is presented in Table 1. Since then, more reviews were made on the list of products under this schedule. The details on the tariff lines, type of restriction and year of the policy measure implemented are presented in Table 2.

By 2004, many more tariff lines were added in the product groups HS03 and HS18 above. New product groups such as lacs, gums, resins, etc (HS 13), sugar and sugar confectionary (HS 17), preparations of vegetables, fruits, nuts, etc (HS 20), miscellaneous edible preparations (HS 21) and beverages, spirits and vinegar (HS 22) were also classified in the schedule. Thus, the amount of agricultural imports subjected to NTBs from the fourth schedule has certainly risen since 2004. In addition, the *halal* requirement[viii] imposed on food imports particularly on the import of meat, meat products and poultry in this schedule are perceived as non-transparent, confusing and relatively strict compared to other countries[ix] (Warr et al, 2008). The nutritional labeling requirement for food imports is also viewed as a burden as the process of labeling according to specific conditions is labor intensive and costly.

Table 1: New Additions to the Fourth Schedule In 1987

HS Code	Product Description
01	Live animals
02	Meat and edible meat offal's
04	Dairy, eggs, honey, and edible products
05	Products of animal origin
06	Live trees and other plants
07	Edible vegetables
08	Edible fruits and nuts, peel of citrus or melons
09	Coffee, tea, mate and spices
10	Cereals
11	Milling industry products
12	Oil seeds, miscellaneous grains, medical plants or straw
15	Animal or vegetable fats, oils and waxes
16	Edible preparation of meat, fish, crustaceans etc

Source: Customs (Prohibition of Import) Order, 1987

Table 2: New Additions to the Fourth Schedule Made Since 1988

Product Group (HS Code)	Tariff Line	Manner Of Import	Year Imposed
03	Live snails and slugs	Letter of approval from the Director General of Agriculture, Malaysia	1988
03	Live fish	Letter of approval from Director General of Fisheries Department	1994
14	Vegetable products not elsewhere specified	Approval of Food Quality Division of the Ministry of Health	1999
18	Cocoa shells and husks	Approval of Food Quality Division of the Ministry of Health	1999
19	Other food preparations of malt extract, flour, starch, milk and cream	-Consignments are subject to inspection and treatment if necessary by Department of Agriculture -Import permit issued by Director General of Veterinary Services	1988
23	Other vegetable material, waste and residue	Import permit issued by the Ministry of Housing and Local Government	1999

Source: Customs (Prohibition of Import) Order, various issues

Measurement of NTBs

As mentioned in the earlier section, the frequency method by way of the NTB coverage ratio is used to measure the extent of protection in the country's agriculture sector. The method provides a more feasible means of measurement for aggregate NTB protection level as it merely requires one to identify the types of imports imposed with NTBs and their respective import values as well as the aggregate import value in the sector concerned. Thus, in the context of the present study, the ratio reflects the percentage of imports subjected to NTBs in the agricultural sector.

The NTB coverage ratios in each year corresponding to the time period 1978 to 2007 is calculated using the formula, $NTB = \sum_{j=1}^{l} n_j \left(\frac{m_j}{\sum_j m_j} \right), j = 1,2,\ldots..,l$ where j represents the disaggregated products in the agricultural sector, n is the binary indicator for the presence (n = 1) or absence (n = 0) of NTBs, and m refers to the value of gross imports of each disaggregated product. The disaggregated products imposed with NTBs are listed in the second, third and fourth schedules described in the preceding section. Their import values are obtained from the External Trade Statistics of the Department of Statistics, Malaysia from 1978 to 1989. From 1990 onwards, import values from United Nation's COMTRADE are used[x].

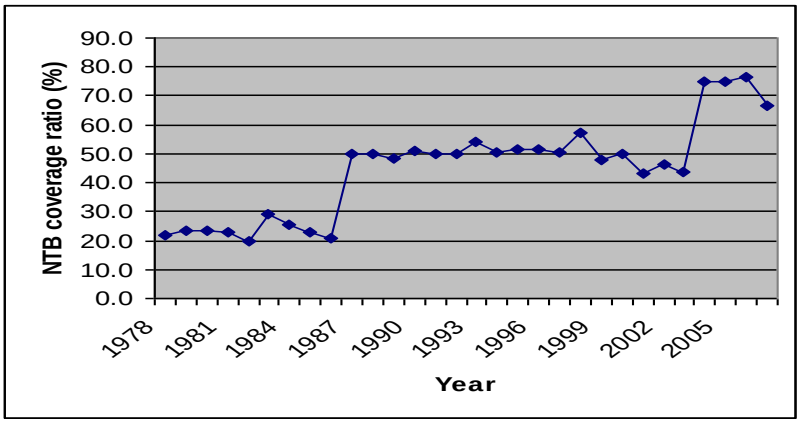
The measurements of NTB coverage ratios derived over the time period analyzed are presented in Table 3. The statistics show that the level of protection in the agricultural sector has generally increased over the years. However, between 1998 and 2003, there appears to be a brief decline in the protection level before it increased again to a high of 66.8 percent in 2007. Despite being a developing country, the trend of agricultural NTB protection appears to be similar to the trend of protection in developed market economies that provide significant protection to their agricultural sectors. The trend of NTB protection in the agricultural sector can also be examined through the graphical depiction of the measurements in Figure 1.

Table 3: NTB Coverage Ratios for Malaysia's Agricultural Sector (1978-2007)

NTB Coverage Ratios (%)			
1978	21.6	1993	54.0
1979	23.5	1994	50.3
1980	23.5	1995	51.6
1981	22.9	1996	51.7
1982	19.7	1997	50.6
1983	29.2	1998	57.1
1984	25.5	1999	48.0
1985	23.1	2000	49.9
1986	21.0	2001	43.3
1987	50.2	2002	46.5
1988	50.0	2003	43.5
1989	48.3	2004	75.1
1990	51.1	2005	74.7
1991	50.1	2006	76.5
1992	49.7	2007	66.8

Source: Author's own calculation based on the formula $NTB = \sum_{j=1}^{I} n_j \left(\frac{m_j}{\sum_j m_j} \right)$

Figure 1: NTB Coverage Ratios in The Agricultural Sector (1978 – 2007)



Based on the graphical illustration, it appears that there was a sudden increase in the NTB coverage ratio, in 1987. This corresponds to the change in policy measure in the fourth schedule possibly induced by the economic crisis experienced by the country in the mid-1980s. The ratio has remained consistently high since. During the Asian Financial Crisis, the ratio increased noticeably from 50.6 percent to 57.1 percent in 1998. In 1999, the ratio decreased slightly but increased markedly again in 2004. This can also be attributed to the policy review in the fourth schedule, which led to the imposition of NTMs on more products. The highest ratios were recorded between 2004 and 2006 before the ratio fell to 66.8 percent in 2007. The level of NTB coverage ratios for the years ahead is expected to be relatively lower. The country's

obligations to the WTO and AFTA as well as its participation in various other trade agreements would eventually lead to a gradual reduction or elimination of NTBs imposed on agricultural goods.

CONCLUSION

The paper describes the incidence of NTMs in Malaysia's agricultural sector. This enables the level of NTB protection to be measured over a period of 30 years from 1978 to 2007. It is visible from the estimations obtained that protection in the sector has been increasing over the years. The increasing trend may be attributed to the fact that a higher proportion of products are listed in the fourth schedule of the Customs (Prohibition of Import) Order compared to those in the second and third schedules. The significant increase in imports listed in the fourth schedule over the years meant that the ratio has increased markedly. Although agricultural import constitutes a small portion of the country's total import, the high NTB protection in the sector may be imposed for several reasons. The country may wish to be self-sufficient in the production of agricultural goods. The presence of import barriers will increase the price of imports and divert domestic demand to local agricultural goods. This would induce greater production of domestic substitutes in order to meet the higher demand. Thus, the country can depend less on imports of food and raw material while simultaneously developing its own agricultural productive capacity. Moreover, regulations of imports may also be imposed to safeguard the health and well-being of humans, plants, and animals. Even though this reason appears to be non-protective, NTMs such as sanitary and phyto-sanitary and technical barriers to trade can also serve as channels for disguised protectionism.

ACKNOWLEDGEMENT

The authors are greatly indebted to the officers from the Trade Department of Malaysia's Department of Statistics and the Import and Export Division of the Royal Malaysian Customs for their assistance in the gathering of data and information.

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[i] The problem is more acute in developing economies as data on prices is seldom made public.
[ii] Linkins and Arce (1994) urged readers to read Moroz and Brown, table D7, appendix D, p.30 for further explanation of this method.
[iii] In fact some parts of goods from the industrial classification are agricultural based. This is taken into account in the calculation of the NTB coverage ratios.
[iv] Examples of the mineral products are barytes, tin ores, slags and concentrates, natural sands, vermiculite, perlite, chlorites, kieserite, epsomite, earth colors, natural micaceous inoxides and others. These items, including un-worked diamonds from the stones product group are classified as agriculture products when their HS codes were converted into SITC codes. As mentioned, Bora et al (2002) classified products from the SITC 0, 1, 2 and 4 product groups are agriculture-related goods.
[v] Padiberas Nasional Berhad (BERNAS) main activities involve the importation of rice, distribution of rice, investment holding, maintenance of the rice stockpile, distribution of paddy price subsidies to farmers on behalf of the government, management of the Bumiputera Rice Millers Scheme, and buyer of last resort at the Guaranteed Minimum Price of paddy (BERNAS, 2008).
[vi] The requirement for butter was lifted in 1979. In 1980, rice vermicelli, natural yeast, ice, rice bran, other brans, sharps and other residues, and sweetened forage did not have to obtain import license anymore. Meanwhile, import license for mushrooms in airtight container was removed in 1984.
[vii] Since 1986, import quota was imposed for the import of round cabbages. This was intended to protect local farmers in Cameron Highlands who cannot compete with the lower-priced cabbages imported from China. Nevertheless, the quota on import is set to be eliminated by 2010.
[viii] *Halal* means permissible or lawful. The term is usually used in connection with *halal* meat which means meat that has been slaughtered in the manner prescribed by the shari'a.
[ix] According to Warr et al (2008), Australian exports have been badly affected by the ban in the use of mechanical or pneumatic stunning in the slaughtering of cattle.
[x] COMTRADE is the United Nation's commodity trade statistics division which provides access to information and data on International Merchandise Trade Statistics and the work of the International Merchandise Trade Statistics Section of the United Nations Statistics Division (http://comtrade.un.org)