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## *Protection Data for China*



A call for one definition

CPB, Netherlands Bureau for Economic Policy Analysis  
International Economic Analysis Division

Nico van Leeuwen

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### **Summary**

*Comparison of various sources of protection data for China reveals some striking differences. The differences between the nominal tariff rates and actual collection rates can't be entirely contributed to the exemption rates. There is reason to believe that there are other forms of revenue leakage that are going unrecorded.*

## 1. Introduction

Several papers about China's access to the World Trade Organization use different rates of protection. We mention here nominal unweighted tariffs, nominal trade weighted tariffs, duty collected value of imports, ex-ante rates, ex-post rates, tariff equivalents of import Non-Tariff Barriers, export tax equivalents of export licensing, export taxes, nominal distortions and finally effective rates of distortion.

This long list can be confusing and needs further analysis. In this paper we emphasize that a measure of protection should not only consider tariffs that directly apply to the goods that an industry produces. However, a measure should also take into account tariffs on the intermediate goods that an industry uses in production. Our efforts to create effective rates of protection in 1991 and effective import tariffs in 1997 for China show that the results of our calculations must be treated with considerable caution but they are, however, indicative of the highly distorted nature of the Chinese trade regime.

At the same time we look at the differences between tariff rates for China in recent years. We observe some very peculiar differences between the tariffs calculated from duty collected value of imports and the nominal trade weighted import tariffs, which cannot fully be explained by exemptions. This difference between rates amounts to 37.2% in 1992 and 14.4% in 1997. This means that many imported goods are subject to an exemption rate, even much more than the 50% of concessional share of total imports in 1992 reported by the World Bank (1994). Do we believe that the share of imports subject to exemptions is higher than what can be found in the statistics? Are there some forms of revenue leakages that are going unrecorded? Or do we have doubts that these duty collected values of imports may be not fully reported? In this paper we come up with interesting data to answer the above mentioned questions. There are indications that the Customs data on concessional imports cannot alone explain the low tariffs calculated from duty collected values of imports. It is likely that other imports, especially those used for priority projects, are also exempted. It is also possible that there are other forms of revenue leakage that are going unrecorded.

This paper is organised as follows. Section 2 describes the concept of effective protection. In section 3 we go in more detail to the specific rates. We attempt to calculate effective rates of protection in China in 1991 and effective import tariffs in 1997 for China using input-output

coefficients. Finally section 4 concludes and give some suggestions for further data research.

## **2. Effective protection analysis**

The measurement of nominal protection can serve a useful purpose. There are important aspects however where it can also be misleading. In particular it disregards the fact that the degree of protection of an activity depends not only on interventions that affect the price of a final good produced, but also on interventions that affect the price paid for inputs in the production process. This is a major shortcoming. Effective protection analysis offers a framework designed to overcome this shortcoming.

Sections 2.1 and 2.2, which are based on chapter 5 of Trade and Industrial Policy in Developing countries, David Greenaway and Chris Milner (1993), explain this and a range of measurement problems is discussed.

### **2.1 The effective protection concept**

Trade policy affects consumers by raising the price of imports relative to other commodities. Thus a 10 percent tariff on imported personal computers (PCs) will raise the price of imported and locally produced PCs by 10 per cent. In the simple theory of nominal protection this encourages domestic suppliers of import substitutes to increase their output. Intuitively this seems obvious. However, whether they increase their output, and to what extent they do so, depends not only upon the tariff on PCs, but also on any protection given to inputs used in their manufacturing process. Thus, for example, if semiconductors are the sole input used for the production of PCs, and if a tariff is levied both on semiconductors and on PCs, PC manufacturers may not be better off than when they were before the tariffs. This follows because at the same time as they are given an implicit subsidy on their final good (the output tariff) they face a tax on their imported input (the input tariff) The latter in effect neutralises the former. The effective protection concept explicitly recognises that we should be concerned with the *net* protection conferred on a production *process*, rather than gross protection to an industry's *output*.

A simple concept like effective protection is potentially a much richer measure than nominal protection. It focuses our attention to the full range of interventions that may effect a given

production process. As a result, the information content of this measure is greater than in the case of nominal protection. With positive nominal tariffs, effective protection to an industry may even be less than nominal protection. We can see how effective protection can be negative, such that the industry is actually penalised by intervention, and we can see how under certain circumstances it may be possible for an industry to be ‘producing’ negative value added, at world prices.

## **2.2 Measurement problems on effective protection analysis**

This section briefly summarizes some of the measurement problems one could potentially confront. One can measure anything from an effective tariff<sup>1</sup> through total effective protection. What one does depends largely on data availability and measurement complications. Some combination of the following may turn out to be relevant.

### *(1) Choice of tariffs*

In theory a tariff is a tariff! In practise however there are alternative means of defining a tariff. One could use the scheduled rate - what might be called the ex-ante rate. If there are no exemptions or preferential access agreements, this would be entirely appropriate. Where, however, such arrangement exist, the scheduled tariff may be misleading. Thus, if a country is a member of a customs union, and 90 percent of its imports entry duty free, it may not be appropriate to use the ex-ante tariff, but to rely instead on the ex-post tariff, that is the tariff rate calculated from customs returns, sometimes called the implicit tariff. This has the advantage of being a weighted average of scheduled rates, with the weights being the shares of imports by source in total imports.

In the next section we discuss this issue at length when we look at the tariffs chosen in papers concerning China’s access to WTO.

### *(2) Tariff averaging*

Effective protection can be calculated from cost-based data or input-output tables. The latter are more common. Either way, but in particular in the case of the latter, the number

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<sup>1</sup>An effective tariff can be calculated by comparing the value added at world prices and the valued added at distorted prices

of production categories is invariably significantly smaller than the number of tariff lines. Inevitably therefore tariff rates must be averaged in some way. The most common way here is to calculate weighted averages using trade shares.

Some effects of the different weighting schemes used within computing statistics of China appear in the next section (see table 3.1)

### (3) *Input-output coefficients*

We assume that an effective protection provided to value added can be defined as:

$$e_j = \frac{t_j - \sum_i a_{ij} t_i}{1 - \sum_i a_{ij}}$$

where  $a_{ij}$  is the share of final value of  $j$  accounted for by input  $i$  at world prices,  $t_j$  is the nominal tariff on  $j$  and  $t_i$  is the nominal tariff on  $i$ . In that case a fixed input-output coefficient ( $a_{ij}$ ) is imposed in calculating effective protection. There are two issues here.

First, when working with a published input-output table we are implicitly assuming that input-output relationships are identical across firms in a given sector/industry. By implication therefore all firms enjoy the same degree of effective protection from a given set of tariffs. Intra industry differences will probably exist however, and there will almost certainly lead to different output responses across firms.

The second difficulty is that  $a_{ij}$  tends to be a post-protection input-output coefficients. If  $a_{ij}$  is unaffected by protection this would not matter. However, if there is scope for substitution between taxed inputs and primary factors, the coefficient can be expected to *alter*. If substitution away from taxed inputs occurs, reliance on unadjusted  $a_{ij}$ s will lead to measured effective protection understating actual effective protection.

### (4) *Non-tariff barriers*

One of the advantages of tariffs over non-tariff barriers is that their price effects are generally more transparent. In contrast the price effects of non-tariff barriers in general, and quantitative restraints in particular, are opaque. If one wants an estimate of effective

protection that includes non-tariff barriers, some ways of estimating their tariff equivalent must be found. One approach is to compare prices in distorted and undistorted markets. These and other approaches are both complicated and exacting in terms of data requirements. Especially in the context of developing countries, this is not a trivial consideration.

In World Bank (1994) some examples of non-tariff barriers can be found. Numbers however are not easy to get. A summary of this report follows below.

**Box 2.1 Non-tariff barriers**

In addition to the comprehensive system of tariffs, a wide range of non-tariff barriers to trade have been deployed in China's trade regime. These barriers comprise a variety of administrative instruments including the mandatory import plan, canalizing imports through designated national Foreign Trade Commission, import licensing and import controls. A lot of these mechanisms are in fact overlapping, and the exact manner of the application of each is difficult to disentangle. The responsibility for implementing these measures is widely dispersed within central and local governments. As a result, in some cases, the same import requires multiple stages of import approval from different agencies.

Aside from handling planned imports, canalization is still used as a powerful instrument for controlling the import demand of a range of non-plan commodities either for balance of payment reasons and/or the protection of domestic industry. Import licensing is also used to serve the same range of objectives. There is considerable overlap between canalization and licensing, only some of it justified. Overlap between canalization and licensing seems understandable in the case of planned commodities, the fixed imports of which have to be allocated between different users. In the case of such commodities as textile yarns, sugar and televisions on the other hand, at least one of the two, i.e., either canalization or licensing, would seem redundant.

Import controls are intended essentially for domestic protection and are restricted to the machinery and electronic sector. Overall, the sectors presently subject to the highest concentration of non-tariff barriers are iron and steel products, textile yarns and machinery, i.e. critical manufacturing sectors where domestic production is significant. Available evidence suggests that considerable discretion is involved certainly in the administration of import licensing and controls. Foreign Trade Commissions and enterprises with the best connections are likely to benefit the most.

For China both in 1992 and 1995 the quantification of non-tariff barriers at the import side in the GTAP database (anti dumping duties) has been set to zero values. At the export side some numbers for both years can be found as multi fibre agreement (textiles and wearing apparel) and price undertaking (chemical, rubber and plastic products).



### *(5) Exchange rate effects*

For China we observe two elements of exchange rate effects on effective protection:

- The exchange rate is itself a distorted price in many Low Developing Countries and one should take these into account in calculating net protection! In practise one approach here is to simply 'correct' the effective rates by some uniform adjustment factor designed to proxy the degree of exchange rate distortion. As output from different sectors is likely to vary in its sensitivity to exchange rate movements this is far from being a satisfactory procedure.
- A second distortion can be found in World Bank (1994). We can learn that China's exchange rate system had some impacts on imports: The so called non-plan, nonpriority project imports are financed through the swap market and are valued at the secondary market rate. in 1992 this rate is around 20 percent higher than the official rate, whereas it is estimated that these imports account for 50 percent of the total imports. In this report it is advised at least to price a part of central government imports at the secondary rate. This would make imports cheaper.

Looking at the availability of data we show some examples of calculation of effective protection in China in the following section. At the same time we study the difference between the ex-ante and the ex-post tariffs.

### **3. Data of tariffs for China**

Quantifying several data on tariffs for China is the subject of this section First of all we make an attempt to show some results for the effective rates of protection in China in 1991, as can be found in World Bank (1994). Secondly we calculate the effective import tariffs using the input-output coefficients in 1997. Then we have a look at the tariffs which have been used in various papers, in which the impact of tariff reductions by China have been evaluated. We mention here McKibbin et al.(1999), Bach et al. (1997) and more recently Li and Lejour (1999). These papers have one thing in common. Their study entirely concentrates on reducing the import tariffs and doesn't include removing the export taxes or subsidies. At the same time no attention is paid to the non-tariff barriers. In this section we pay some attention to the actual data sources of these studies.

### 3.1 Effective rates of protection in China

Effective rates of protection (ERPs) provide an indication of the extent to which protection policies influence the allocation of resources towards, or away from particular activities or sectors. Where nominal rates of protection are different across commodities, the effective rate approach takes into account the fact that protection on intermediate inputs may offset, or overwhelm, the benefits provided to an import competing industry by protecting its output.

The following table shows a summary of the results of ERP calculations for a selection of sectors for which data were available. These results must be treated with considerable caution. They only provide a very broad indication of the trade regime's implications for incentives in the Chinese economy.

**Table 3.1: Effective rates of protection to Chinese industry (1991)**

	nominal distortion (%)	value added at distorted prices	value added at world prices	effective rate (%)
Crops	-40.0	246.6	436.9	-43.6
Animal husbandry	-30.0	20.8	21.5	-3.3
Metals	-40.0	30.2	48.8	-38.2
Electricity	0.0	5.6	-34.0	n.a.
Coal	-82.0	13.6	120.0	-88.7
Petroleum mining	-85.0	44.3	324.4	-86.3
Petroleum refining	-18.0	10.4	-167.3	n.a.
Chemicals	0.0	56.4	26.4	113.7
Machinery	46.6	51.6	-17.8	n.a.
Bldg. materials	30.9	16.3	-5.5	n.a.
Wood and pulp	30.9	6.9	-0.3	n.a.
Food processing	59.2	14.9	-64.0	n.a.
Textiles	55.0	28.1	-17.6	n.a.
Apparel	89.6	6.3	-4.1	n.a.
Paper	38.5	3.3	-5.3	n.a.
Misc. manufacturing	44.9	6.7	-6.3	n.a.

Source: World bank (1994)

The first column of the table gives the representative rates of nominal protection used for each sector<sup>2</sup>. The second show the value added at domestic prices, while the third column contains the calculated residual return to value added when international prices are received for outputs and paid for inputs. Where value added at world prices is positive, the effective rate of protection to domestic production is presented in the fourth column.

The results highlight the wide range of conflicting pressures placed on industries by the structure of protection in China. As expected, in sectors such as crops, coal petroleum mining, where output prices are currently severely depressed by trade policies, the ERP is found to be negative. This indicates that, without other forms of intervention in these sectors (planned investments, directed credits etc.), the current incentives would in fact result in a strong resource pull away from these industries. On the other hand, the depressed prices of these sectors help raise protection levels for downstream industries that use these commodities. Thus the availability of low cost energy inputs, for example, results in the chemical industry having a very high positive effective rate of assistance despite a zero nominal rate on its output.

Effective rates of protection are not meaningful when an industry has negative value added at international prices. Under the assumptions outlined above and using the rates of assistance presented in the first column of table 3.1, this is the case for 10 of the 19 sectors for which rates were calculated. This means that none of these activities would appear to be able to survive under full trade liberalization. While this is probably the case for some subsectors, such an interpretation of the results cannot be correct for the broad and highly heterogenous product categories in the table. The results are, however, indicative of the highly distorted nature of the Chinese trade regime and suggest that existing incentives exert a strong resource pull effect on a range of downstream industries as a result of depressed input prices and a cascading structure of nominal protection.

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<sup>2</sup>A nominal rate in this table is very often a choice of the most effective trade barriers which can apply for a certain sector. For crops this means that the export tax equivalent of export licensing of 40 percent prevails over the import tariff of 19 percent. These rates shouldn't therefore not be confused with the tariff rates in Li and Lejour (2000).

### **Box 3.1      The GTAP consortium**

The Global Trade Analysis Project (GTAP) provides data, models, and software for multiregion, applied general equilibrium analysis of global economic issues. It also organizes training and conferences. GTAP with headquarters at Purdue University, has organized a consortium of national and international agencies (including CPB, OECD, WTO and World Bank) which provide guidance and base-level support for the Project. More information can be found on the website <http://www.agecon.purdue.edu/gtap/index.htm>.

The most recent database is version 4, see McDougall et al (1998). This version of the database contains detailed bilateral trade, transport and protection data characterizing economic linkages among regions, linked together with individual country input-output data bases which account for inter sectoral linkages among the 50 sectors within each of 45 regions. All monetary values of the data are in \$US millions and the base year is 1995. A version 5 of the database will be available in the second half of 2000.

### **3.2      Effective import tariffs in 1997 using input-output coefficients.**

Using the calculation of effective protection from the previous section with the input output coefficients:

$$e_j = \frac{t_j - \sum_i a_{ij} t_i}{1 - \sum_i a_{ij}}$$

we can calculate the effective import tariffs for 1997 with data from the preliminary version 5 of the data base of GTAP. This yields the following table for 19 sectors<sup>3</sup>. Information on GTAP can be found in box 3.1.

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<sup>3</sup>We have aggregated some of the presently available sectors to those sectors we can somehow find in table 3.2

**Table 3.2**      **Nominal and effective import tariffs in 1997 in China (%)**

	Nominal	Effective
Agriculture	11.1	6.8
Coal	0.7	-16.4
Gas	0.0	-11.7
Oil	2.5	-7.4
Other minerals	8.1	-5.2
Food	31.9	81.5
Textiles	14.9	16.0
Non Metallic Minerals	16.6	19.3
Other Manufacturing	9.0	-7.3
Petroleum and Coal Products	28.2	90.9
Chemical, Rubber and Plastic Products	34.1	64.6
Metals	26.7	48.9
Fabricated Metal Products	12.8	-5.8
Machinery and Equipment	25.2	33.5
Electronic Equipment	19.8	24.0
Transport Equipment	91.7	184.4
Transport and Communication services	0.2	-17.1
Trade services	0.0	-16.6
Other services	4.8	-8.4
Total	18.4	18.4

Source: GTAP 5 database (preliminary version) and authors calculations

The results in table 3.2 show nominal import rates of 19 sectors which differ considerably. They vary from very low in raw materials (coal, gas and oil) and services sectors to quite high in consumer goods sectors, like transport equipment (91.7%). For the other sectors a moderate rate is found with a total average weighted import tariff of 18.4% in 1997.

The effective rates in table 3.2 are the result of the calculation of each nominal rate by sector with the equation. We notice much higher tariffs for those sectors where the rates are already high: Food, Petroleum and coal products, Chemical rubber and plastic products, Metals and finally in

the Transport Equipment. This is caused by the cumulative input-output coefficients of the respective inputs. For the sectors with low import tariffs we can observe even negative effective import tariffs. Examples here are the Raw Material sectors, Other manufacturing, Fabricated Metal Products and the services sectors. For the remaining sectors the differences between nominal and effective import tariffs are relatively small.

The nominal distortion rates in table 3.1 are somehow comparable to those of this table. The rates for some consumer goods are also high in 1991, whereas the negative distortion rate for agriculture and raw materials are caused by the export taxes. It is very difficult however to compare the effective rates of table 3.1 and 3.2.

- The nominal distortion in table 3.1 include for some sectors export taxes, which are not present in table 3.2
- Calculation of the effective rates in table 3.1 has been worked out using value added at distorted prices and value added at world prices. In table 3.2 we do not dispose of these numbers. The input-output coefficients are calculated using an input output table from GTAP at so called "agent prices"
- The definition of the sectors is not identical in the two tables.

The results of this section confirms one of the conclusions in the previous section: They must be treated with considerable caution. They only provide a very broad indication of the trade regime's implications for incentives in the Chinese economy.

### **3.3 Data sources of tariffs.**

McKibbin (1999) uses the tariffs mentioned in GTAP 4 database in 1995. This data base in return refers primarily on the UNCTAD TRAINS data base. Bach et al.(1997) also mentions the UNCTAD TRAINS 1993 database, which provides 1992/93 tariff information. Li and Lejour (2000) use the nominal tariff rates of the Statistical Yearbook of China (1998).

The imports tariffs for 1992 of these above mentioned sources can be found in table 3.2:

**Table 3.2: Some macro ex-ante import tariff rates for 1992**

Source	value in %
GTAP (trade weighted mean)	29.4
World Bank ( unweighted)	42.8
World Bank ( weighted)	31.9

The two weighted tariffs don't differ too much and the difference can be contributed to tariff averaging.

Both the papers of Bach et al. and Li and Lejour correct the tariffs with the duty exemptions which are mentioned in the World Bank Country Study. These exemptions can be classified in the previous section as the difference between the ex-ante and ex-post rate. This results in a net collection rate or ex-post tariff of only 4.9 percent in 1992. In the next two subsections we focus on the information provided by the World Bank (1994) to give some insight on this relatively low level of the tariff.

### **3.4 The differences between the ex-ante and ex-post tariffs**

The differences between the nominal tariffs in table 3.3 and the duty collected value of imports as a percentage of imports are striking. In 1992 China import duties account for only around 6.5 percent of total government revenues. A much greater part (around 68 percent) of the government tax revenue can be contributed to industrial and commercial tax<sup>4</sup>. In this respect, China is more like a developed country than a developing country. Of the other developing countries considered, only Brazil has a duty collection rate anything like as low as China (Table 3.4).

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<sup>4</sup>Source: China Statistical Yearbook, 1998, China Statistical Publishing House.

**Table 3.4: The tariff systems of China and other large developing countries**

Country	Year	Trade weighted mean (%)	Duty collected value of imports (%)
Argentina	1987	17.1	16.1
Brazil	1987	31.9	6.9
China	1992 <sup>5</sup>	31.9	5.6
Colombia	1990	15.1	16.7
Egypt	1991	na	17.0
Hungary	1989	na	9.6
India	1986	54.8	51.2
Kenya	1987	na	15.6
Pakistan	1990	35.9	30.8
Philippines	-	na	15.6

Source: World Bank Country Study, China, Foreign Trade Reform (1994),

In large part, it is China's extensive import duty exemptions and rebate system that accounts for such low collections rates. The characteristics and implications of this system are discussed in the next subsection.

### **3.5 Tariff revenues and exemptions**

The Chinese Customs Law provides relief from import duties primarily through the provision of exemptions and duty reductions allowed at the point of import. The exemptions and duty reductions are primarily allowed for export production. The administration of these exemption and duty reduction arrangements is relatively well developed. The duty exemption and duty reduction arrangements appear to operate satisfactorily.

The tariff revenue collection rate has declined from 9.7 percent in 1986 to only 5.6 percent of the value of imports in 1991. However, this decline in import tariff revenues is considerably more

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<sup>5</sup>The year for China is probably not correct. It should be 1991, which corresponds with the results of Li and Lejour (2000)



rapid than the increase in the share of concessional<sup>6</sup> imports in total imports as reported by the Customs Directorate. While concessional imports have risen to half of total imports, revenue collections have fallen to roughly one sixth of the revenues that might be expected given the tariff schedule and the structure of imports. This means that a collection ratio of 5.6 percent represents only 17.5 percent of the trade weighted average tariff of 32 percent in 1991. What this indicates is that 82.5 percent of 1991 imports should have entered the country completely duty free. In that year, however, only 50.4 percent of 1991 imports were concessional. This means that the customs data on concessional imports cannot only explain the low collection ratios. Thus the Customs data on concessional imports cannot alone explain the low collection ratio for that year. It is likely that other imports, especially those used for priority projects, are also exempted. It is also possible that there are other forms of revenue leakage that are going unrecorded.

We illustrate the above mentioned example in the following box:

<b>Box 3.2</b>		<b>Illustration of difference in import tariffs in China in 1991</b>		
Duty collection ratio		Trade weighted average		Imports subject to Duties
5.6%	/	32.6%	=	17.5%
Exemption rate:				82.5%
Concessional:				50.4%

For a more recent year no information is yet available on the concessional imports in China. We do know however from Li and Lejour (2000) that imports subject to duties have fallen to 15.3% in 1997 (actual collection rate = 2.6%; nominal tariff rate 17.0%). This means that the exemption rate is still very high at a level of almost 85%. We have no reason to believe that the concessional rate went up drastically during the period 1991 till 1997.

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<sup>6</sup>Concessional imports should be seen here as imports for which (partly) duty exemptions is granted. These imports vary from processing with supplied and imported materials, equipment imported with foreign investment, equipment for proc. with supplied materials, compensation trade and border trade

Whatever the explanation, declining duty collection ratios is a matter of some concern to the extent it is caused by an increase in exemptions on imports used for domestic consumption or in domestic production. The former is a sign of tariff evasion and the latter only serves to raise effective rates of protection to levels higher than they already are. The bulk of duty exemptions on imports in China have so far been related to exporting activity. In fact, duty exemptions on imported inputs have been critical to the success of China's export drive. The domestic content, however, remains limited, and this suggests the need for a more fundamental restructuring of the tariff structure such that upstream domestic production becomes more competitive.

### **3.6 A link to differences in the levels of imports**

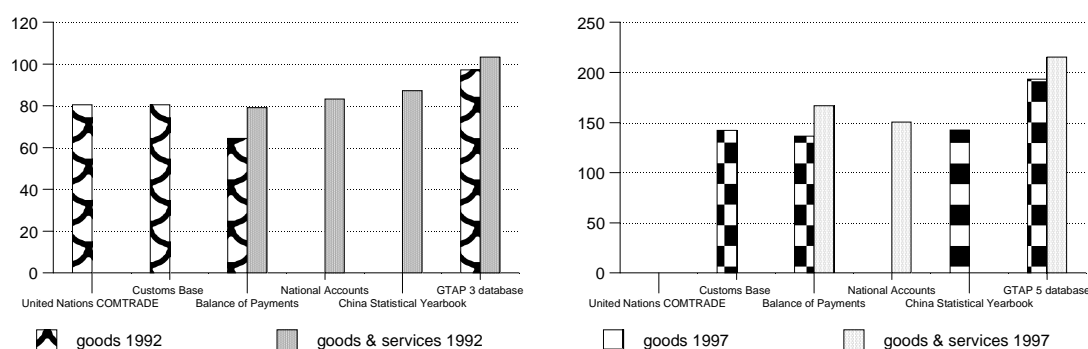
The measurement of the duty collected value of imports can be subject to unrecorded values, as can be seen from the previous subsection. However there is only one source for these numbers (China Statistical Yearbook, China Statistical publishing House) and can therefore not be compared to other sources. For the level of the related imports, which is part of the collection rate of imports, more information is available.

In determining the value of imports (and exports) we can distinguish the various statistics which are published by various (international) institutes. We can globally find:

- United Nations COMTRADE database (bilateral trade flows)
- Customs Base statistics
- Balance of Payments statistics
- National Accounts statistics
- Various other national and international sources.

It is obvious that the value of imports from these sources for China in for instance the year 1992 has different values. In the next bar chart we have collected them for both goods as the sum of goods of services.

**Figure 3.1: Some illustrative numbers of imports of goods and services in China for 1992 and 1997 in bln US dollars**



What are the causes of these different values?

- *The United Nations COMTRADE database* contains the complete set of countries in the world and the set of commodities covering total merchandise trade. It contains source-destination trade flows of individual commodities classified in accordance with the Standard International Trade Classification (SITC). They maintain a data set for reported exports and a separate set data set for reported imports. A specific country "trade total" for imports can be calculated in two ways. Either by adding up the reported total of that country or the sum the reported exports of the respective countries of origin to that specific country. It is obvious that these values are not consistent. The value in the bar chart for China represents the value of the reported imports by China in 1997.
- *The Customs Base statistics* often have the same value as the COMTRADE values, since these statistics are provided to United Nations. However, some countries have a different commodity classification, which results in deviant values.
- *Balance of Payments*. Contrary to the rule of valuing the imports inclusive Cost Insurance and Freight (CIF), these statistics are quoted exclusive these CIF values. This causes the difference between the Customs Base and the Balance of Payments statistics.
- *National Accounts*. Differences (only for the sum of goods and services) between the values of National Accounts compared to the other sources can be caused by the year of reporting. Whereas other statistics generally report the values only once, National Accounts are revised in several publications and these adjustments can be seen in figure 3.1.
- *GTAP data base*. GTAP's level is an adjusted United Nations COMTRADE level. In

stead of using the reported imports by China Gehlhar (1996) decided to use the sum the reported exports of the respective countries of origin to China. The main reason for doing so, was that 1992 was the first year for China to act as a reporter to UN COMTRADE. There is strong believe that the 1992 numbers are subject to under-reporting. This level even doesn't include the trade with Taiwan and Gehlhar believes that the actual import level therefore should even be higher than the one produced in the figure. An other reason for not using China as a reporter is the world discrepancy between total exports and imports. Before adjustments world exports are much higher than imports and one of the solutions to solve this problem is to increase the level of imports for some countries, like China. The level for 1995 (150.4 bln US Dollar) according to GTAP version 4 database shows the same level of differences with the Customs Base statistics (132.1 bln US Dollar). In 1997 the differences between GTAP (193.2 BLN US Dollar) and the other sources (142.0 bln US dollar for the Customs Base statistics) is even more pronounced. Data for this GTAP version are however preliminary.

The differences in these numbers highlight the difficulties which can come up in observing data and they may also account for the level of duty collected value of imports. Further research can shed some more light on this problem.

#### **4 Conclusions**

In order to study the protection data for China it is worthwhile to look at effective protection analysis beforehand. It is a nice concept, but the measurement problems are numerous. In an attempt by the World Bank (1994) to calculate effective protection rates for China some remarkable rates can be observed. The results must be treated with considerable caution but they are, however, indicative of the highly distorted nature of the Chinese trade regime.

The imports tariffs itself show remarkable differences between the official nominal rates and the rate calculated from the duty collected value of imports. We should wonder if these differences can simply be explained by exemptions. It is likely that other imports, especially those used for priority projects, are also exempted. It is also possible that there are other forms of revenue leakage that are going unrecorded. We can even conclude that the value of these duties are under-reported, however further research is necessary to disentangle this problem.

## References

Bach, Christian F., Will Martin and Jennifer A. Stevens (1997), China and the WTO: Tariff Offers, Exemptions, and Welfare Implications.

Gehlhar, Mark J.(1996), Reconciling Bilateral Trade Data for use in GTAP, GTAP Technical Paper No. 10

General Administration of Customs of the People's Republic of China (1993), China's Customs Statistical Yearbook 1992.

General Administration of Customs of PRC (1997), Gazette of the Ministry of Foreign Trade and Economic Cooperation of China, Issue No.25-28, or Serial No.142-145.

Greenaway, David and Chris Milner (1993), Trade and Industrial Policy in Developing Countries, The MacMillan Press LTD.

Hertel, Thomas. (1997), Global Trade Analysis: Modeling and Applications, Cambridge University Press.

Li, Xuesong, and Arjan Lejour (2000), The Sectoral Impact of China's Access to WTO - A Dynamic CGE Analysis, CPB, Netherlands Bureau for Economic Policy Analysis

McDougall, Robert, Aziz Elbehri and Truong P. Truong (1998), Global Trade, Assistance, and Protection, The GTAP 4 Data Base, Center for Global Trade Analysis, Purdue University.

Maddison, Angus (1998), Chinese Economic Performance in the Long Run, OECD Development Centers Studies, OECD.

Mao, Yushi (1998), China's Non tariff Barriers, The Economic Implications of Liberalizing APEC Tariff and Nontariff Barriers to Trade, US International Trade Commission.

McKibbin, Warwick J., and Peter Wilcoxon (1998), The Global Impacts of Trade and Financial Reform in China, Working Papers of Economics Division, Asia Pacific School of Economics and

Management, The Australian National University.

McKibbin, Warwick J. (1999), Trade Liberalization in a Dynamic Setting, Paper presented prepared for the Second Annual Conference on Global Economic Analysis in June in Denmark, Asia Pacific School of Economics and Management, The Australian National University and Brookings Institution, Washington DC.

State Statistical Bureau of China (1998), Statistical Yearbook of China 1997, China Statistical Publishing House.

World Bank (1994), China: Foreign Trade Reform, A World Bank Country Study, Washington, D.C, The World Bank.

Zhou, Mingwu, Li Xuesong, and Zhang Zhongxiang, (1999), A Dynamic CGE Model and its Required Data Set for China, Second version (Reviser: Li, Xuesong) of "Developing A 25-Sector CGE Model and its Required Data Set for China", CPB Netherlands Bureau for Economic Policy Analysis, The Hague, The Netherlands.