Is Protectionism on the Rise? Assessing National Trade Policies during the Crisis of 2008*

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Abstract

To understand the role of trade policies in the crisis of 2008, this paper constructs the overall trade restrictiveness indices for a wide range of countries using their tariff schedules in 2008 and 2009. The index summarizes the trade policy stance of a country, taking into account the share of each good in trade as well as its corresponding import demand elasticity. Results show that there is no widespread increase in protectionism via tariff policies since the global financial crisis has unfolded. While many countries have adjusted tariffs upward on selected products, only a handful of countries, such as Malawi, Russia, Argentina, Turkey and China focus on products that have significant impacts on trade flows. The United States and the European Union, by contrast, rely mainly on anti-dumping duties to shield domestic industries. Overall, while the rise in tariffs and anti-dumping duties in these countries may have jointly caused global trade to drop by as much as US$43 billion during the crisis period, it explains less than 2% of the collapse in world trade.

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1 Introduction

With the dramatic collapse of world trade in the wake of the biggest global recession in recent history, many have feared that governments may respond by increasing tariffs and other trade policy barriers to protect the domestic economies, which may indirectly prolong the recession and lead to domestic unrest. In fact, in December 2008, among the first crisis related demonstrations erupted in several cities in Russia over the increase in car tariffs (see Dec 22, 2008, New York Times). Has protectionism been rising since fall 2008? To answer this question, we compare the Overall Trade Restrictiveness Indices (OTRI) of a wide range of countries in 2008 and 2009. The OTRI summarizes the trade policy stance of a country by calculating the uniform tariff that will keep its overall imports at the current level when the country in fact has different tariffs for different goods. Unlike the trade weighted average tariffs, the OTRI takes into account the importance of each good in total imports, as well as the responsiveness of the import of each good with respect to tariff. Thus, not only are the weights proportionate to the import value of the goods, but goods that have a larger fall in imports when tariffs are imposed, i.e. those goods that are highly elastic in demand, are also given larger weights. The empirical methodology of the OTRI was first developed in Kee, Nicita and Olarreaga (2008, 2009), based on the theoretical underpinning of Anderson and Neary (1994, 1996, 2003). Irwin (forthcoming) also uses a similar methodology to study the historic protection level of the US, from 1867 to 1961.

Many recent papers have studied the trade impact of the global crisis in 2008 (see edited volumes by Baldwin and Evenett, 2009, and Baldwin, 2009). While consensus has yet to emerge among researchers, the two leading explanations provided so far are the role of international supply chain (Yi, 2009) and the lack of trade credits and finance during the crisis period (Amiti and Weinstein,

2009). Trade policy as a protectionist device has not been seen to play a big role in the global collapse of trade, neither as a cause nor a consequence. Nevertheless, anecdotal evidence suggests that some countries are actively tinkering with their trade policies. For example, during the crisis period, Bolivia and Ecuador are shown to have altered their tariffs on a large share of their imported products (Gamberoni and Newfarmer, 2009), while India is documented to have increased its use of anti-dumping (AD) duties (Bown, 2009b). How important are those changes in explaining or prolonging the collapse in world trade? The objective of this paper is thus to carefully compare the trade policies of a wide range of countries over the crisis period, and to assess by how much trade may have fallen due to the increase in tariffs and AD duties of these countries. To be clear, for the purpose of this paper, we narrowly define trade policies to only include tariffs and AD duties.

To achieve our objective, we obtained the Most Favored Nations (MFN) applied tariff schedules and the bilateral tariff schedules for a wide range of countries in 2008 and 2009.[1] The MFN applied tariffs tend to over-estimate the level of protection because they do not account for the existence of bilateral or regional tariff preferences. Hence, it is important for us to construct the OTRI based on the bilateral tariff schedules. This significantly complicates the calculation of the OTRI as each country may have up to 200 trading partners and each bilateral tariff schedule consists of nearly 5000 HS 6 digit products. To spice up the tariff policies, we also merge the bilateral tariff schedules with the World Bank Global Anti-dumping Database, maintained by Chad Bown (2009a).[2] Thus, changes in the OTRI reflect both the changes in tariffs and AD duties during the crisis period.

In addition, we need bilateral import demand elasticities and bilateral trade flow data to prop-

[1] We are extremely grateful to Mr. Mimouni Mondher from the International Trade Center in Geneva for kindly sharing the data with us, and to Richard Newfarmer and Elisa Gamberoni for facilitating the request.

[2] We are highly indebted to Chad Bown for his suggestion to include the AD data in our calculations. He also graciously shared the latest data with us for this project.

erly weigh these bilateral tariffs. We modify the multilateral import demand elasticity estimates in Kee, Nicita and Olarreaga (2008) to obtain the bilateral import demand elasticities. Bilateral trade flow data are from Comtrade. Finally, to make sure that changes in the OTRI during the crisis period purely capture changes in trade policies, we use the 2008 bilateral trade flows and elasticities as fixed weights. As such, changes in trade or elasticity due to demand shocks will not affect our OTRI measures.

Combing through the MFN and bilateral tariff schedules of all countries in our dataset, we found that, overall, there is no widespread increase in tariffs. While there are many countries that have increased tariffs on imported products, when we factor in the share of these products in trade as well as the responsiveness of these products to tariff changes, the overall impact on trade flows is minimal for most countries. However, for a handful of countries, tariff increases on big imported items in both agriculture and manufacturing pushed up their OTRI and significantly hinder trade. Russia, Malawi and Argentina all increased tariffs on manufacturing products which caused their OTRI to increase by 0.9 to 1.2 percentage points and their trade flows to drop by US$4.8 billion, US$29 million and US$914 million, respectively. Turkey on the other hand increased tariff on a wide range of agricultural products which raised its OTRI by 0.8 percentage points and caused its trade flow to decrease by US$2.2 billion. With the removal of a temporary tariff reduction on palm oil and the introduction of some anti-dumping duties, India had a large increase in the level of protectionism in agriculture products (8.3 percentage points), even though this was offset by tariff liberalization in the manufacturing sector such that the OTRI of India only increased by 0.1 percentage points. Other countries that had large drops in trade due to increase in tariffs include China (US$5 billion), Canada (US$1.8 billion) and Brazil (US$991 million). Finally, for the US and the EU, while the tariff schedules remained roughly the same throughout the crisis period, spikes

in anti-dumping duties caused their OTRI to increase by 0.5 percentage points and 0.1 percentage points respectively. Jointly, if we add up all the decrease in trade for all countries during the crisis period due to changes in tariffs and anti-dumping duties, in the worst case scenario, the total decrease in imports is about US$43 billion, which is less than half a percent of world's imports in 2008. According to the latest estimate of the World Trade Organization (WTO, 2010), world's import decreased by 24% from its 2008 level during the crisis period. Thus, trade policies at most can explain about 2 percent of the sharp drop in world trade during the crisis period, suggesting that protectionism is not the main culprit behind the collapse of world trade and the collapse of world trade did not cause protectionism to increase.

As noted before that several smaller countries, such as Bolivia and Ecuador, have adjusted a wide range of their tariffs during the crisis period. For example, Bolivia increased tariffs on 31% of the HS6 digit imported products while simultaneously decreased tariffs on 12% of other imported products. Likewise, Ecuador raised tariffs on 15% of its imported products and lowered tariffs on 27% of them. However, once import shares and their import demand elasticities are taken into account, we find that, in both countries, there is no substantial increase in their OTRIs between 2008 and 2009. To what extent these tariffs adjustments are a response to the crisis is not obvious. It is however clear that the overall level of tariff protection for these countries did not change markedly. This indicates that it is important to take into account both the relative value of the good in the import basket as well as its demand response to change in the tariffs when calculating average measures.

This paper is organized as the following. We will first briefly discuss the methodology behind the OTRI calculation in Section 2. Section 3 presents the data coverage. Section 4 shows the results and Section 5 concludes.

2 Change in the Overall Trade Restrictiveness Index

The Overall Trade Restrictiveness Index (OTRI) summarizes the impact of each country's trade policies on its aggregate imports. Its conceptual framework was first proposed in Anderson and Neary (1994, 1996, 2003), it was simplified in Feenstra (1995) and was empirically estimated in Kee, Nicita and Olarreaga (2008, 2009). It answers the following question: What is the uniform tariff that if imposed on home imports instead of the existing structure of protection would leave aggregate imports at their current level? In a partial equilibrium, when we ignore the substitution between products and the potential income effect due to tariff revenue redistribution, the OTRI is just a more sophisticated way to calculate the weighted average tariff of a country, with the weight of a good set equal to the product of the good's import demand elasticity and its share in total import. Irwin (2009) also applies the same approach to study the historic level of protection of the US.

More formally, the OTRI of a country c, $OTRI_c$, is implicitly defined by:

$$OTRI_c : \sum_n m_{n,c}\left(OTRI_c\right) = \sum_n m_{n,c}\left(t_{n,c}\right) = m_c^0, \tag{1}$$

where $m_{n,c}$ is the import value of good n in country c, $t_{n,c}$ is the ad-valorem tariff on good n in country c, and m_c^0 represents the current aggregate imports evaluated at world prices (units are chosen so that all world prices equal unity). Totally differentiating (1) in a partial equilibrium setup, and solving for $OTRI_c$ yields:

$$OTRI_c = \frac{\sum_n m_{n,c}\varepsilon_{n,c}t_{n,c}}{\sum_n m_{n,c}\varepsilon_{n,c}}, \tag{2}$$

where $\varepsilon_{n,c}$ is the import demand elasticity of good n in country c. Thus, for a given year, the OTRI of a country depends on the current year import flow and tariff of the goods and the corresponding import demand elasticity.

When comparing the OTRI of a country across two years using (2), we would keep the trade flow data and elasticity estimates constant (at base year), so that changes in the OTRI within the country across two years are purely driven by policy changes and not due to changes in trade flows associated with shifts in preference or income. In the current context, we use the trade flow information in 2008 to construct the OTRI of the countries in 2009:

$$OTRI_{c,2009} - OTRI_{c,2008} = \frac{\sum_n m_{n,c,2008}\varepsilon_{n,c,2008}\left(t_{n,c,2009} - t_{n,c,2008}\right)}{\sum_n m_{n,c,2008}\varepsilon_{n,c,2008}}. \tag{3}$$

In this way, the difference in the OTRI of a country between 2008 and 2009 only captures trade policy changes, and does not reflect the collapse of trade during the crisis period.

As shown in Kee, Nicita and Olarreaga (2009), the OTRI can be further decomposed into the import weighted average tariff, $\bar{t}_c$, and the covariance between the tariff and the import demand elasticity, $cov\left(t_{n,c}, \tilde{\varepsilon}_{n,c}\right)$:

$$OTRI_c = \bar{t}_c + cov\left(t_{n,c}, \tilde{\varepsilon}_{n,c}\right),$$

with $\tilde{\varepsilon}_{n,c}$ denotes the elasticity of good n in country c rescaled by the import-weighted elasticity across all goods in country c. The higher the import weighted average tariff or the covariance between the tariff and the import demand elasticity, the higher the OTRI. Thus, the OTRI increases if a country levies higher tariff on goods that have a larger import, and if the goods are very responsive to tariff changes.

In our empirical exercise below, we present the OTRI estimates of countries, and decompose

the OTRI into the import weighted tariff and the import weighted covariance between tariff and elasticity. This will help us understand why certain countries have large adjustment in their tariff schedule, but the OTRI remains relatively constant between 2008 and 2009.

While the trade policy of a country could consist of different tariff policies and other non-tariff measures, here, due to data limitations, we mainly focus on tariffs. However, unlike the earlier papers, we utilize the bilateral tariffs between country pairs at the HS 6 digit good level in our calculation of the OTRI. Moreover, we also employ the bilateral import demand elasticity at the same level of aggregation as the tariffs. Finally, when possible, we include any anti-dumping duties that were imposed during the crisis period.[3]

Once the change in the OTRI during crisis period of a country is calculated, some back-of-an-envelope calculations can be done to figure out the impact on trade flows. One way is to use the change in the OTRI multiplied by the trade weighted import demand elasticities of the country. For ease of description, consider index n, as the HS 6 digit good from a bilateral partner country. Then

$$\text{change in trade using the OTRI } = (OTRI_{c,2009} - OTRI_{c,2008}) \sum\nolimits_n m_{n,c,2008} \varepsilon_{n,c,2008}. \qquad (4)$$

This methodology does not restrict the changes in trade for an individual product and partner country. An alternative approach would be to calculate the change in tariff at the tariff line level

[3] For the purpose of this paper, we also calculated bilateral import demand elasticities, which vary across countries, products and partners. For each product n imported by country c from partner country p, we rely on the following formula and on estimates of the GDP function parameter, ann, from Kee, Nicita and Olarreaga (2008) to construct bilateral import demand elasticities, where s_{nc} is the share of trade in product n in the GDP of country c in 2008 and s_{ncp} is the share of trade in product n from partner country p in the GDP of country c in 2008:

$$\varepsilon_{ncp} = \frac{a_{nn}}{s_{nc}} + s_{ncp} - 1$$

for each product from each partner country, multiply that by the bilateral import demand elasticity to obtain the change in trade at tariff line level and constrain the fall in trade to be no more than the level of imports in 2008. Summing all changes in trade at the tariff line level across all partners gives us the total change in trade,

$$\text{change in trade using tariffs} = \sum\nolimits_n \max\left[m_{n,c,2008}\varepsilon_{n,c,2008}\left(t_{n,c,2009} - t_{n,c,2008}\right), -m_{n,c,2008}\right]. \quad (5)$$

3 Data

We obtained both the MFN tariff and bilateral tariff data for 135 countries from the International Trade Center (ITC) in Geneva. For India, Japan and South Korea we supplemented the ITC data with MFN schedules from other sources.[4] Table 1 presents some summary statistics of these schedules. In terms of the MFN tariffs, the countries that have the highest simple average tariff in 2009 are Sudan (20.5%) and Morocco (20.2%). However, once we factor in the presence of preferential tariffs in most bilateral trade, the average tariffs in 2009 are lower.[5] Countries that have the highest average bilateral tariffs in 2009 are Maldives (20.2%), Gambia (18.7%) and Sudan (18.5%).

Between 2008 and 2009, many countries actively adjusted their tariff policies. Countries that have had the largest percentage of tariff lines with increased tariffs during the two-year period are

[4] India's 2008 and 2009 MFN schedule as well as Japan's 2008 MFN schedule come from TRAINS. Japan's 2009 MFN schedule was obtained from <http://www.customs.go.jp/english/tariff/2010/index.htm>. South Korea's 2009 MFN schedule comes from <http://english.customs.go.kr/kcsweb/user.tdf?a=user.customtariff.CustomTariffApp&c=1001&mc=ENGLISH_INFORMATION_KOREA>. For these three countries, we lacked ad-valorem equivalents of 2009 specific tariffs, hence we used the 2008 values.

[5] The simple averages bilateral tariffs for most countries are less than those of the MFN tariffs, because of the presence of preferential tariffs in most bilateral or regional trade agreements. However, given that the MFN data we obtained from the ITC are in tariff line level, which for some countries are HS 8 or HS 10 digit level, while the bilateral tariff data are in HS 6 digit level, the average MFN tariff may appear lower than the bilateral tariffs.

Bolivia, Fiji and Ecuador. In 2009, Bolivia went through a huge adjustment in its tariff policy. It increased tariffs on 27 percent of its MFN tariff lines and on 30 percent of its bilateral tariff lines while concurrently decreasing tariffs on about 11% of its tariff lines. The net result was a jump in average bilateral tariff from 8% to 10%. Fiji and Ecuador each increased close to 15 percent of their bilateral tariff lines.[6] Other leading countries in terms of the percentage of tariff lines that have increased tariffs are Argentina (9.6% of bilateral tariff lines), Belarus (7.6%), Mexico (6.6%), Brazil (5.6%), China (4.2%) and Malawi (4.2%).

On the other hand, many countries went through tariff liberalization from 2008 to 2009. Countries that have the largest percentage of tariff lines with lower tariffs in 2009 are Costa Rica, Morocco and Mexico. Costa Rica reduced tariffs in 98 percent of its bilateral tariff line products, which led to a drop in the average tariff from 6.3 percent to 5.2 percent. Similarly, Morocco and Mexico liberalized 40 to 60 percent of their bilateral tariff line products. Other leading countries in terms of the percentage of tariff lines that have decreased tariffs are Ecuador (27%), Switzerland (23%), Ukraine (20%), and Australia (15%). Thus, it is not too surprising that we do not find a widespread increase in protectionism during the crisis period, given that most countries in fact went through tariff reduction.

Data from anti-dumping duties are retrieved from the publicly available Global Anti-dumping Database of the World Bank, which is maintained by Chad Bown (2009a). The dataset provides detailed information on the anti-dumping cases by the initiating countries. While data can be traced back as far as the early 1990s, given that our focus is the changes during the 2008-2009

[6] For Ecuador, ITC data only reflect changes up to December 2008. However, in January 2009, due to a balance-of-payment crisis, Ecuador increased tariff on 5% of tariff lines (including both ad valorem and specific tariff additions), and imposed quota on 3.7% of its tariff lines. This set of trade measures affects 23% of its imports (WTO, 2009). We complemented our ITC data with information on 75 subheadings for which there were increases in ad valorem tariffs as a result of the January 2009 measure. Data were obtained from COMEXI Resolution No. 466, of 19 January 2009 published in Official Journal No. 512 and COMEXI Resolution No. 468 of 30 January 2009.

period, we only use those cases that are initiated in and after June 2008 until September 2009, net of anti-dumping duties that were removed during the same period. In other words, we only measure the change in anti-dumping duties during the two-year period, and we are not capturing the level of anti-dumping for each of the two years. This is an important point, because many anti-dumping duties in 2008 and 2009 are due to cases filed in the 1990s. As long as these duties were not removed from the second quarter of 2008 onward, they do not affect the change in level of protectionism. Only those new cases and the removal of old duties are factored in the calculations.

Table 2 presents some summary statistics on the countries that have added anti-dumping duties since the second quarter of 2008.[7] For the most part, changes in anti-dumping duties only affect less than 1% of imports, ranging from US$8.5 billion in the EU to US$350 thousand in Chile. Nevertheless, given that some countries cannot unilaterally increase their tariffs without violating WTO agreements, AD may well be one of those few legitimate channels to increase trade protection during the crisis period.

4 Results

Table 3 presents the OTRIs and their changes from 2008 to 2009. Four sets of results are presented for each country. First, is the calculation of the OTRI of each country based on its MFN tariffs (OTRI_M). Next, is the calculation of the OTRI based on bilateral tariffs of each country with its trading partners. Here we have two versions – one uses import demand elasticities directly from Kee, Nicita and Olarreaga (2008) that are country and product specific, but common across trad-

[7] In addition to the 13 countries listed in Table 2, Global Anti-dumping database also have information for 5 more countries of the 135 present in our dataset: Pakistan is not included because we have no data on its 2009 tariff schedules; we also have no trade flow data for South Korea and South Africa at tariff line level; we fail to match the AD data with trade data for Indonesia and Peru due to tariff reclassification.

ing partners, OTRI_B. The other one uses bilateral elasticities with bilateral tariffs, OTRI_BE. Finally, we incorporate AD duties into OTRI_BE to obtain OTRI_AD. Hence, the change in OTRI_AD within a country across two years reflects changes in tariffs and AD duties jointly.

Comparing OTRI_M to OTRI_B, it is clear that using MFN tariffs tends to overestimate the level of protection of a country. This is because most bilateral tariffs include tariff preferences which cause OTRI_B to be less than OTRI_M. At the sample mean, OTRI_M is larger than OTRI_B by 75 percent. Figure 1 presents the scatter plot of OTRI_M and OTRI_B against the 45 degree line. Most countries locate above the 45 degree line indicating that their OTRI_M is larger than OTRI_B.

On the other hand, allowing for bilateral import demand elasticities marginally increases the overall level of protection, as bilateral elasticities tend to be larger than multilateral elasticities that are common across all trading partners within an imported product. At the sample mean OTRI_BE is larger than OTRI_B by 2 percent. Figure 2 presents the scatter plot of OTRI_BE and OTRI_B against the 45 degree line. Here there are about the same number of countries that are above the 45 degree line as there are below the 45 degree line.

Comparing OTRI_BE in 2008 to that of 2009, holding constant trade flows and bilateral import demand elasticities, gives us the change in the level of tariff protection of a country during the crisis period. As shown in Figure 3, most countries are located above the 45 degree line, indicating that OTRI_BE in 2009 is less than OTRI_BE in 2008. However there are quite a few exceptions, notably Malawi, Russia, Turkey, China, Argentina, Canada, and Brazil. These countries are labeled in Figure 3. For Malawi, its OTRI_BE in 2008 is 7.1%, while in 2009 is 8.3%, which implies an increase of 1.2 percentage points. Likewise, Russia increases its OTRI from 9.6% to 10.8%. Turkey also increases its tariffs in mainly agriculture products, which pushes up its OTRI from 2% to 2.7%.

China, Argentina and Canada each increases its OTRI by 0.3 percentage points. Such increases in the overall level of tariff protection could significantly disrupt trade if imports are elastic. Back of an envelope calculations suggest that, once we take into account the import demand elasticities of these countries, increases in OTRI_BE in Malawi, Russia and Turkey jointly may have led imports to drop by US$6.7 billion. The trade impact of Canada, China and Argentina is even larger, close to US$7 billion.

Countries that do not raise their MFN or bilateral tariffs are not necessarily less protectionist. In fact, there is evidence suggesting that during the crisis period, countries such as the USA, the EU and India actively levied AD duties on their partners to protect domestic producers. Based on data from the Global Anti-dumping Database, we calculate the change in OTRI_AD for a group of 13 countries where data are available. Given that AD duties are imposed at the tariff line level, which for many countries is at the 8 or 10 digit HS level, we first need to identify the share of these goods in each HS 6 category in the bilateral trade of each of the 13 countries, and only impose AD duties on the goods affected. In doing so, we avoid imposing AD duties on all HS 8 goods within the HS 6 categories, even though we are still making the assumption that AD duties affect all bilateral trade within HS 8 goods and are not distinguishable among different firms that export. For some countries, such as Turkey and India, only a portion of AD cases have information on the actual AD duties imposed (see Table 2 last column). For the missing AD duties, we use our bilateral import demand elasticity estimates to infer the minimum prohibitive AD duties.

Figure 4 compares OTRI_BE in 2008 to OTRI_AD in 2009, where OTRI_AD is OTRI_BE with AD included. For the most part, adding AD does not change the results in Figure 3. However, for selected economies, the differences are significant. Incorporating AD duties during the crisis period increases the OTRI_BE of the US by half a percentage point. This seemingly small number

in fact prompted trade to decrease by US$24 billion, if we allow AD to affect more than the existing level of pre-AD trade (see (4)), or by US$3 billion if we assume the maximum effect of AD and other tariff increase cannot exceed the existing trade in 2008 (see (5)). Likewise, for the EU, incorporating AD duties causes its OTRI_BE to increase by 0.1 percentage points. As a result, imports of the EU drop by US$2 billion. This exercise shows that while anti-dumping may not increase the overall level of protection by much, it is in fact the main instrument being used by the US and EU during the crisis period. Another heavy user of AD is India. Without AD duties, OTRI_M of India decreases by 0.2 percentage points from 2008 to 2009.[8] Once AD duties are included, the change becomes positive 0.1 percentage points, indicating that AD have made the overall level of trade restrictiveness of India worse. The net trade effect of the changes in tariff and AD duties for India is about US$306 million.[9] Nevertheless, such duties hardly explain the huge collapse in trade, which further suggests that this global collapse in trade is probably not because countries are becoming more protectionist, but instead relates to factors such as demand shocks.

Figure 5 compares AD to traditional tariff policy. The vertical axis is the change in AD duties during 2008-2009 and the horizontal axis is the change in the OTRI due to both tariffs and AD. The 45 degree line is also depicted in the figure. For the US, the change in the OTRI is entirely driven by AD duties changes, which position the US on the 45 degree line. In the case of other

[8] For Chile, India and Japan we use OTRI_M instead of OTRI_BE to calculate OTRI_AD, since 2009 bilateral tariff schedules are not available.

[9] Our estimated changes in trade in Table 3 are not directly compatible to Bown (2009b). For example, for the worse case scenarios, Bown's estimates of the AD impact in the US, EU and India are US$7 billion, US$8 billion and US$4 billion, respectively. The differences can be attributed to the following. First, our estimates are based on tariff line (HS 8 digit) data, rather than HS 6 digit data. In other words, within an HS 6 digit category, only those HS 8 digit goods that are affected by AD are included in the calculation, while Bown's estimates use HS 6 digit trade flows. Second, we use 2008 trade value in our calculation while Bown's estimates based on 2007 trade value. Third, our AD coverage is from June 2008 to September 2009, while Bown's estimates are from the first quarter of 2008 to the first quarter of 2009. Forth, we take into account the bilateral import demand elasticities in the calculation of trade impact due to AD. Finally, we include tariffs and AD in our calculation of trade changes, while Bown's estimates only focus on AD. For the EU and India, the negative impacts on trade flows due to AD are partially offset by their overall tariff reduction during the two year period.

countries, such as India and the EU, the change in AD duties is larger than that of tariffs and AD combined, given that they in fact liberalize their tariffs during the crisis period.

To understand what is behind all these changes in trade policy, Table 4 presents the level and changes of OTRI_AD in manufacturing and agricultural sectors in those countries where OTRI_AD has increased. We also decompose OTRI_AD into the import weighted average tariff and the covariance between tariff and the import demand elasticity. The possible impacts on trade flows are included in the last two columns. Within sector, countries are ranked according to their changes in OTRI_AD. It is evident that most of the changes in OTRI_AD are driven by big increases in the agricultural sector. For example, the removal of a temporary tariff reduction on palm oil and the introduction of some anti-dumping duties on agriculture products in 2009 lead for India to an increase in the level of protectionism in agriculture products of 8.3 percentage points. Likewise, Turkey increases tariffs on a wide range of agricultural products, which pushes its OTRI_AD for agricultural goods from 21.2% to 31.4%. Such big increase is partly because the tariffs on these agricultural products are now much higher (on average 28% in 2009 as opposed to 18% in 2008), and partly because these agricultural products have high import demand elasticities. Canada and Malawi also have large increases in their OTRI_AD on agricultural products. On the other hand, the overall increases in the OTRI_AD of Russia, Argentina and China are mainly driven by the manufacturing sector. The rise in car tariffs of Russia and textile tariffs of Argentina causes their sectoral and overall OTRI_AD to be higher.

Results from Table 4 also show that, jointly, if we sum up all the negative trade impacts due to increased tariffs and AD duties, world's imports may have decreased by as much as US$43 billion. In 2008, the value of world imports was about $11 trillion, this implies that the changes in trade policy may have decreased world's imports by 0.4 percent. According to the latest estimate of the

WTO (WTO, 2010), world's imports contracted 24 percent in 2009. Thus our results show that trade policy changes at most can explain less than 2 percent of the collapse in world's import during crisis period.

5 Conclusion

The fear that countries may raise tariffs to protect the domestic market in the wake of the largest global recession since the Great Depression has not materialized. Comparing the published 2008 and 2009 tariff schedules of a wide range of countries shows that only a handful of countries have raised their tariffs in a significant way. These countries include Russia, Malawi, Argentina, Turkey and China. The increase in motor vehicle tariffs in Russia not only restricted imports, it also caused one of the first reported crisis related demonstrations. For some other countries, such as the US and the EU, most of the policy actions during the crisis period are not about tariffs but anti-dumping duties. Nevertheless, even after taking anti-dumping duties into account, evidence provided in this paper suggests that the trade impact due to trade policy changes during the crisis period is minimum, and can explain no more than 2 percent of the collapse in world trade.

There are a few reasons why countries have not, so far, used tariffs as a policy instrument. First, the multitude of multilateral, regional and bilateral trade agreements impose limits on the use of traditional trade policy instruments such as tariffs. Second, many countries may be more inclined to use non-tariff measures such as bail outs and local content requirement to discriminate against imports. Overall, there are as many as 50 countries that have bail outs or state assistance. Some countries, such as the US and China also include local content requirements in their stimulus packages which discriminate against imported products. Third, trade policy generally is a response

to persistent unemployment, rather than a fall in trade. As unemployment figures have not deteriorated dramatically, overly restrictive trade policies have not been put into effect. Overall the findings of this paper suggest protectionism did not cause the collapse in world trade, neither did the collapse in world trade cause protectionism to be on the rise.

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Figure 1: Comparing the OTRI constructed using MFN and Bilateral tariffs

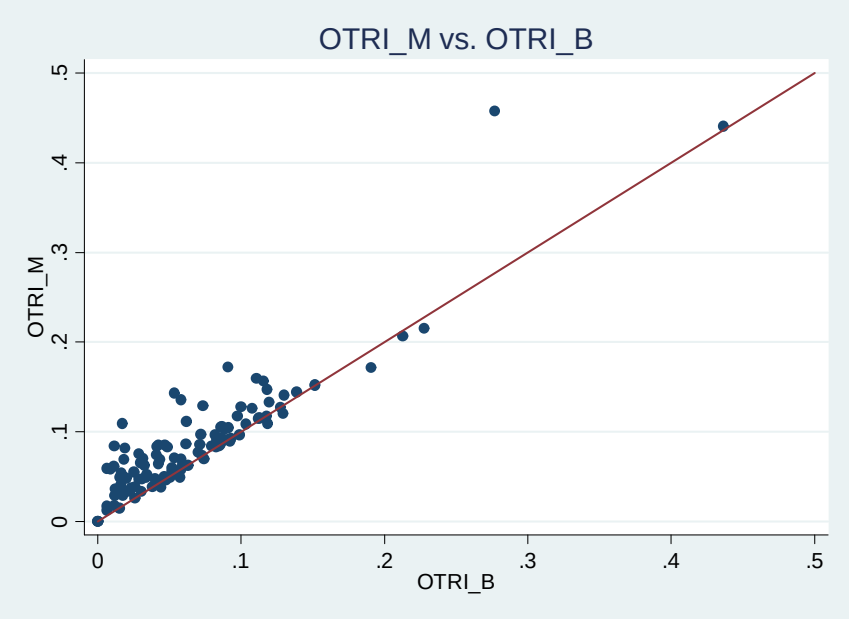

Figure 2: Comparing the OTRI constructed using bilateral and multilateral import demand elasticities

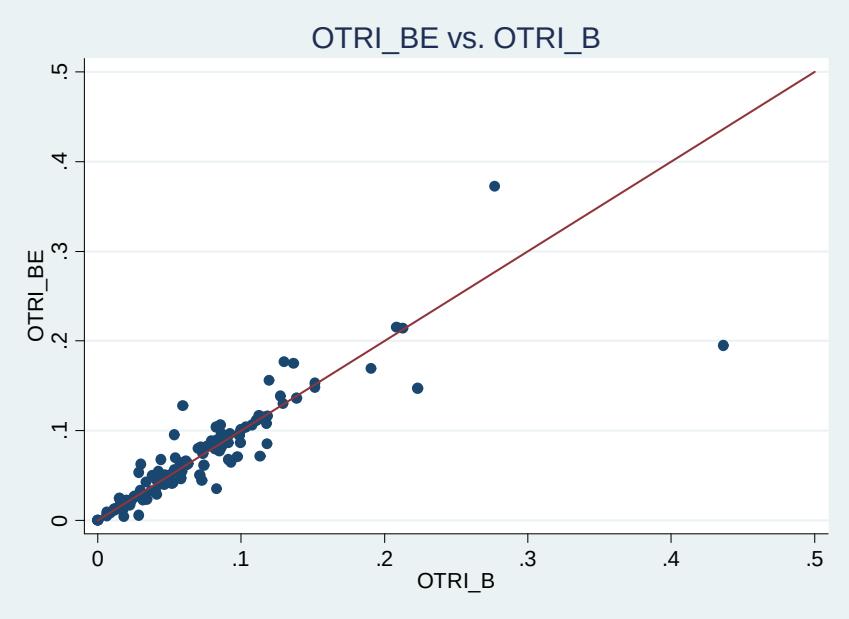

Figure 3: Comparing the OTRI in 2008 and 2009

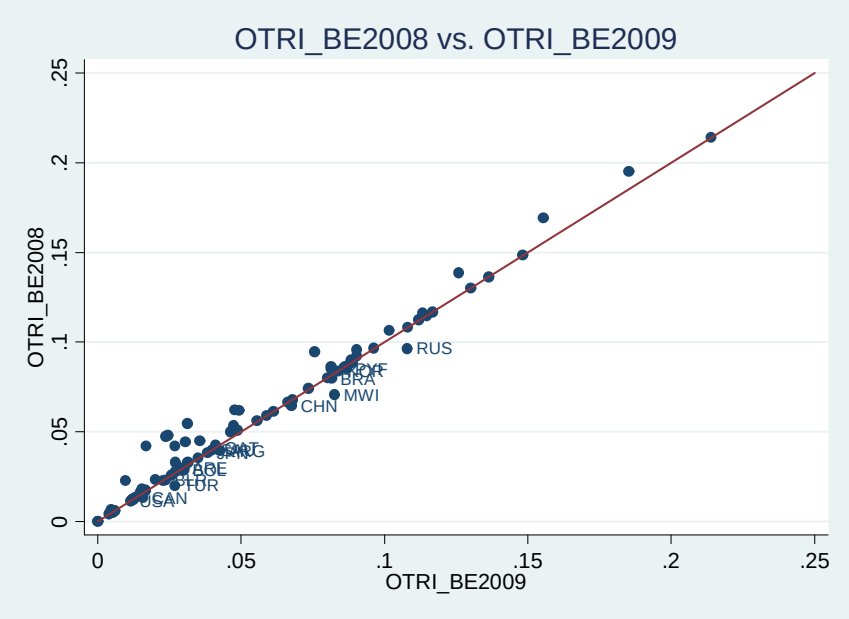

Figure 4: Comparing the OTRI in 2008 and 2009 due to changes in both tariffs and anti-dumping duties

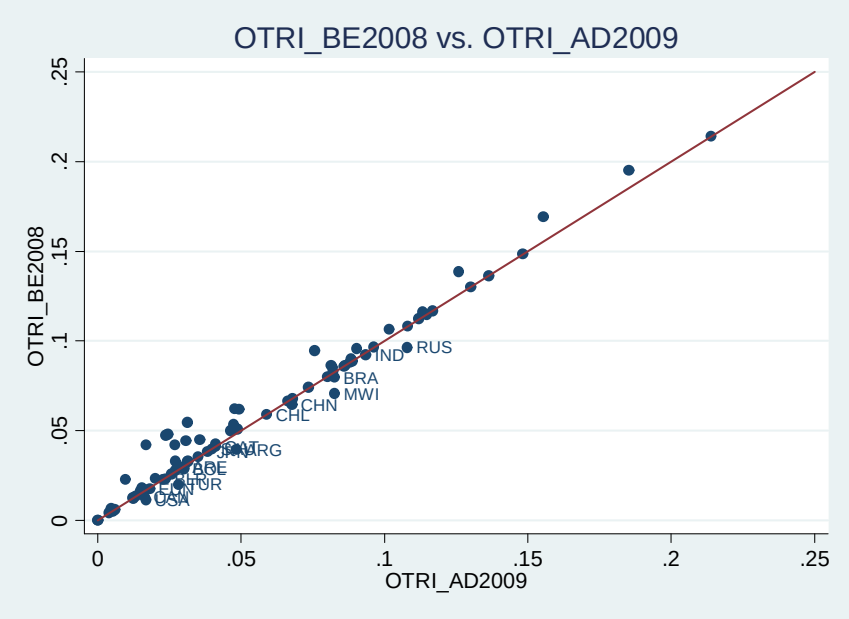

Figure 5: Anti-dumping duties vs. Tariff changes

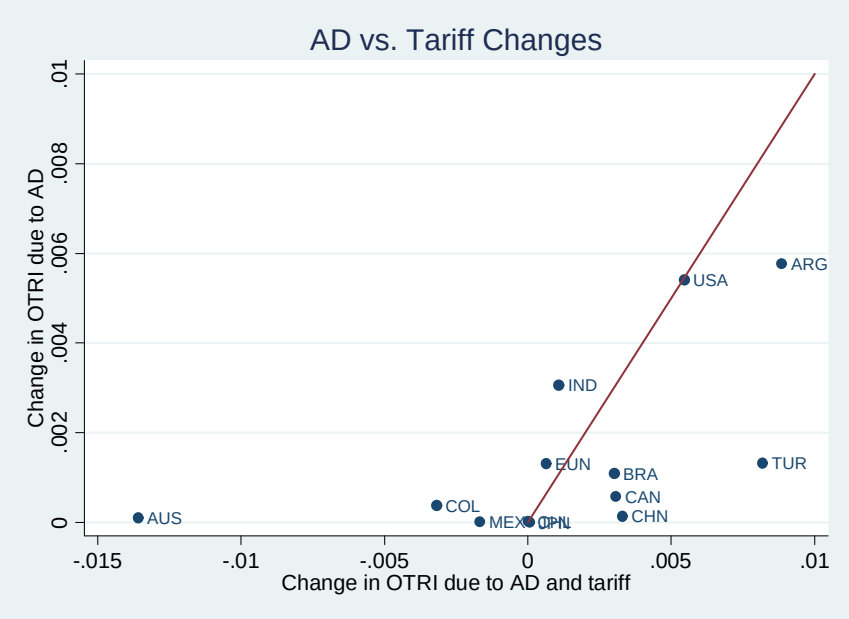

Table 1: Summary Statistics

		MFN Tariff				Bilateral Tariff				
		% of tariff line with		Simple average (%)		% of tariff line with		Simple average (%)		
country name	Code	increase	decrease	2008	2009	increase	decrease	2007	2008	2009
Afghanistan	AFG			5.6					5.6	
Albania	ALB			5.3					4.5	
Algeria	DZA	0.0	0.0	18.4	18.4	0.0	6.4		18.0	16.8
Antigua And Barbuda	ATG			10.8					9.3	
Argentina	ARG	5.8	2.0	10.3	10.8	9.5	4.8		11.8	12.6
Armenia	ARM			3.2					3.1	
Australia	AUS			3.8		0.3	14.9		3.5	2.6
Azerbaijan	AZE			10.0		1.8	4.4		8.9	8.7
Bahamas	BHS							29.9		
Bahrain	BHR			5.4		0.1	0.4		4.8	4.8
Bangladesh	BGD			15.1					14.8	
Barbados	BRB							13.0		
Belarus	BLR			11.7		7.6	4.0		13.1	13.5
Belize	BLZ			12.3					10.7	
Benin	BEN	0.0	0.0	12.1	12.1	0.0	0.0		11.9	11.9
Bhutan	BTN							21.7		
Bolivia	BOL	27.3	10.6	8.2	9.9	30.7	11.5		8.0	9.9
Bosnia And Herzegowina	BIH	0.2	7.5	8.3	8.0	0.7	12.3		6.6	5.9
Botswana	BWA	0.0	2.8	8.2	8.1	0.1	3.2		7.3	7.2
Brazil	BRA	3.3	0.1	11.3	11.5	5.6	2.0		12.8	13.2
Brunei Darussalam	BRN			3.9					2.5	
Burkina Faso	BFA	0.0	0.0	12.1	12.1	0.0	0.0		11.9	11.9
Burundi	BDI			12.7					12.0	
Cambodia	KHM							13.9		
Cameroon	CMR			18.7		0.3	2.9		17.7	17.3
Canada	CAN	0.0	2.8	6.7	6.6	1.8	0.8		3.2	4.0
Cape Verde	CPV	0.0	0.2	10.7	10.7	0.0	0.2		10.4	10.4
Central African Republic	CAF							17.5		
Chile	CHL	0.0	0.2	6.0	6.0				4.7	
China	CHN			9.9		4.2	6.9		14.0	14.5
Colombia	COL	0.2	0.6	12.1	12.0	0.3	2.1		11.8	11.8
Comoros	COM			11.2					10.7	
Costa Rica	CRI			7.0		0.5	98.1		6.3	5.2

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Table 1 – Continued

		MFN Tariff				Bilateral Tariff				
		% of tariff line with		Simple average (%)		% of tariff line with		Simple average (%)		
country name	Code	increase	decrease	2008	2009	increase	decrease	2007	2008	2009
Cote D'Ivoire	CIV	0.0	0.0	12.1	12.1	0.0	0.0		11.9	11.9
Croatia (Local Name: Hrvatska)	HRV	0.0	5.1	6.6	6.6	0.5	2.3		4.1	4.1
Cuba	CUB					2.3	3.0		12.9	12.9
Dominica	DMA							9.5		
Dominican Republic	DOM			8.8					7.9	
Ecuador	ECU	12.9	22.4	10.6	10.2	14.5	26.7		11.0	10.9
Egypt	EGY	0.2	3.2	12.4	12.4	0.7	3.3		14.8	14.7
El Salvador	SLV			6.4		0.2	0.8		5.7	5.6
Ethiopia	ETH			17.4		0.0	0.1		17.4	17.4
European Union	EUN	0.3	8.1	8.0	7.6	0.5	3.0		1.4	1.3
Fiji	FJI			14.6		15.3	2.6		15.1	14.5
French Polynesia	PYF					1.0	0.5		9.5	9.6
Gabon	GAB	0.0	0.0	18.2	18.2	0.0	0.0		17.4	17.4
Gambia	GMB	0.4	2.6	19.0	18.7	0.4	2.8		19.0	18.7
Georgia	GEO	0.0	1.7	2.1	2.0	0.0	0.3		1.3	1.3
Ghana	GHA	0.0	0.2	12.7	12.7	0.0	0.0		12.8	12.8
Grenada	GRD			11.2					9.8	
Guatemala	GTM	0.0	0.1	5.9	6.0	0.1	0.3		5.4	5.4
Guinea	GIN	0.0	0.0	12.1	12.1	0.0	0.0		11.8	11.8
Guinea-Bissau	GNB	0.0	0.0	12.1	12.1	0.0	0.0		11.9	11.9
Guyana	GUY			12.0					10.2	
Honduras	HND			6.1					5.5	
Hong Kong	HKG	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Iceland	ISL			11.7		0.2	3.1		6.6	4.9
India	IND	3.1	0.9	12.6	12.5				12.8	
Indonesia	IDN					0.0	4.6		6.7	6.5
Iran (Islamic Republic Of)	IRN			24.8					26.1	
Israel	ISR			8.5					6.2	
Japan	JPN	21.3	15.5	10.2	10.1				4.0	
Jordan	JOR							10.4		
Kazakhstan	KAZ			7.0					5.4	
Kenya	KEN	0.0	0.0	12.8	12.8	0.0	0.0		11.8	11.8
Korea, Republic Of	KOR	0.3	0.0	13.0	13.1				12.1	
Kuwait	KWT			5.2		0.0	0.5		4.6	4.5

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Table 1 – Continued

country name	Code	MFN Tariff				Bilateral Tariff				
		% of tariff line with		Simple average (%)		% of tariff line with		Simple average (%)		
		increase	decrease	2008	2009	increase	decrease	2007	2008	2009
Kyrgyzstan	KGZ	0.0	0.0	5.3	5.3	0.0	0.0		11.6	11.6
Lebanon	LBN							6.3		
Lesotho	LSO	0.0	2.8	8.2	8.1	0.1	3.2		7.3	7.2
Macau	MAC	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Macedonia, The Former Yugoslav Republic Of	MKD	0.0	7.6	9.1	8.7	0.1	10.3		6.7	6.4
Madagascar	MDG			12.9					11.3	
Malawi	MWI			13.2		4.2	1.9		13.4	14.4
Malaysia	MYS			10.7					8.7	
Maldives	MDV			21.4		0.0	0.1		20.2	20.2
Mali	MLI	0.0	0.0	12.1	12.1	0.0	0.0		11.9	11.9
Mauritania	MRT							11.9		
Mauritius	MUS	0.0	15.8	5.4	2.3	0.1	13.1		3.4	1.3
Mayotte	MYT	0.0	0.1	7.9	7.8	0.0	0.7		7.0	6.9
Mexico	MEX	4.8	40.9	11.1	9.7	6.6	39.1		10.5	9.5
Moldova, Republic Of	MDA			5.8					4.3	
Mongolia	MNG			5.0					5.0	
Morocco	MAR	0.0	70.8	23.9	20.2	0.0	61.0		18.4	15.4
Mozambique	MOZ					1.5	7.4		10.3	9.6
Namibia	NAM	0.0	2.8	8.2	8.1	0.1	3.2		7.3	7.3
Nepal	NPL	0.0	0.7	12.8	12.7	0.0	1.6		12.4	12.3
New Zealand	NZL			2.5					1.6	
Nicaragua	NIC					0.3	1.4		5.5	5.4
Niger	NER	0.0	0.0	12.1	12.1	0.0	0.0		11.9	11.9
Nigeria	NGA			12.2		3.0	11.8		12.0	11.2
Norway	NOR			11.8		0.1	7.0		6.6	5.2
Oman	OMN			5.7		0.1	0.8		5.1	5.1
Pakistan	PAK			14.6					13.3	
Panama	PAN			8.6					7.1	
Papua New Guinea	PNG			5.8					4.8	
Paraguay	PRY	0.3	10.2	9.8	8.6	0.5	13.8		11.2	10.0
Peru	PER	0.0	7.8	5.7	5.0	0.0	8.6		6.0	5.3
Philippines	PHL			7.7					6.3	
Qatar	QAT			5.5		0.2	0.4		4.9	4.8
Russian Federation	RUS	3.5	6.7	11.8	12.2	1.2	6.3		13.1	13.1

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Table 1 – Continued

		MFN Tariff				Bilateral Tariff				
		% of tariff line with		Simple average (%)		% of tariff line with		Simple average (%)		
country name	Code	increase	decrease	2008	2009	increase	decrease	2007	2008	2009
Rwanda	RWA			18.7					17.5	
Saint Kitts And Nevis	KNA			10.2					8.8	
Saint Lucia	LCA							8.5		
Saint Vincent And The Grenadines	VCT							9.4		
Saudi Arabia	SAU			5.2		0.1	0.4		4.6	4.5
Senegal	SEN	0.0	0.0	12.1	12.1	0.0	0.0		11.9	11.9
Serbia	SER			8.6		0.5	12.7		7.2	6.6
Seychelles	SYC							9.0		
Singapore	SGP			0.1					0.0	
South Africa	ZAF	0.0	2.8	8.3	8.2	0.1	5.1		6.9	6.8
Sri Lanka	LKA				12.6	0.8	3.4		11.3	11.3
Sudan	SDN	0.0	0.0	20.5	20.5	0.0	5.4		18.7	18.5
Suriname	SUR			10.9					10.0	
Swaziland	SWZ	0.0	2.8	8.2	8.1	0.1	3.2		7.3	7.2
Switzerland	CHE	2.3	80.1	12.7	11.6	1.0	22.8		4.8	4.3
Syrian Arab Republic	SYR									13.2
Taiwan, Province Of China	TWN			6.8					7.2	
Tanzania, United Republic Of	TZA	0.0	0.0	12.8	12.8	0.0	0.1		12.5	12.5
Togo	TGO	0.0	0.0	12.1	12.1	0.0	0.0		11.9	11.9
Tonga	TON									11.7
Trinidad And Tobago	TTO			9.4					7.4	
Tunisia	TUN			25.4					21.5	
Turkey	TUR			12.9		1.9	1.7		7.1	6.8
Uganda	UGA	0.0	0.0	12.8	12.8	0.0	0.0		12.0	12.0
Ukraine	UKR	1.4	21.6	8.8	5.0	0.9	19.6		7.0	5.1
United Arab Emirates	ARE			5.3		0.0	0.5		4.7	4.7
United States	USA	0.0	0.0	4.4	4.4	0.3	0.6		2.5	2.5
Uruguay	URY	0.0	0.0	9.2	9.2	0.4	1.7		10.2	10.2
Vanuatu	VUT			16.7		0.0	1.4		17.5	17.0
Venezuela	VEN	0.0	1.0	12.9	12.6	0.6	2.4		12.7	12.6
Viet Nam	VNM							19.3		
Yemen	YEM									6.6
Zambia	ZMB			13.4		0.0	3.3		12.7	12.4
Zimbabwe	ZWE			24.9					26.1	

Table 2: Anti-dumping Duties Affected Imports in 2008-2009

Country	Value (US$000)	Share in total import (%)	Share of AD import with AD data (%)
Argentina	336,499	0.59	32.33
Australia	50,931	0.03	100.00
Brazil	657,543	0.38	76.14
Canada	578,787	0.14	100.00
Chile	350	0.00	100.00
China	990,444	0.10	100.00
Colombia	21,919	0.06	100.00
European Union	8,560,695	0.38	100.00
India	1,405,095	0.44	23.35
Japan	27,417	0.004	1
Mexico	3,171	0.00	100.00
Turkey	361,681	0.18	2.03
United States	3,538,908	0.16	100.00

Note: Data retrived from Global Anti-dumping Database of World Bank.
For India, the Actual AD affected trade is 2.2 billion US dollars,
however only 1.4 billion is matched to tariffs reclassification.

Table 3: OTRI and Changes

	OTRI_M			OTRI_B			OTRI_BE			OTRI_AD		
Code	2008	2009	change	2008	2009	change	2008	2009	change	change in OTRI	change in trade using OTRI (US$000)	change in trade using tariffs (US$000)
AFG	0.013			0.006			0.009					
ALB	0.050			0.018			0.013					
ARE	0.034			0.031	0.031	0.000	0.030	0.030	0.000	0.000	-902	-902
ARG	0.085	0.098	0.013	0.042	0.045	0.003	0.039	0.043	0.003	0.009	-914,534	-551,550
ARM	0.038			0.026			0.026					
ATG	0.141			0.130			0.176					
AUS	0.074			0.073	0.053	-0.020	0.044	0.031	-0.014	-0.014	4,575,675	4,581,937
AZE	0.050			0.034	0.034	0.000	0.043	0.041	-0.001	-0.001	14,717	14,717
BDI	0.128			0.100			0.101					
BEN	0.116	0.116	0.000	0.112	0.112	0.000	0.117	0.117	0.000	0.000	0	0
BFA	0.106	0.106	0.000	0.087	0.087	0.000	0.089	0.089	0.000	0.000	0	0
BGD	0.096			0.099			0.097					
BHR	0.054			0.016	0.016	0.000	0.023	0.023	0.000	0.000	32	32
BHS				0.223			0.147					
BIH	0.083	0.081	-0.002	0.049	0.017	-0.032	0.042	0.017	-0.025	-0.025	365,320	365,320
BLR	0.070			0.031	0.032	0.001	0.023	0.024	0.000	0.000	-24,496	-23,633
BLZ	0.084			0.079			0.089					
BOL	0.083	0.085	0.002	0.041	0.041	0.000	0.029	0.030	0.001	0.001	-14,064	-624
BRA	0.096	0.099	0.002	0.082	0.084	0.002	0.080	0.081	0.002	0.003	-991,122	-631,600
BRB				0.136			0.175					
BRN	0.026			0.026			0.027					
BTN				0.049			0.049					
BWA	0.060	0.058	-0.001	0.006	0.006	0.000	0.005	0.005	0.000	0.000	521	521
CAF				0.030			0.063					
CAN	0.035	0.035	0.000	0.015	0.019	0.004	0.013	0.016	0.003	0.003	-1,842,434	-1,277,615
CHE	0.052	0.040	-0.013	0.034	0.028	-0.006	0.023	0.020	-0.003	-0.003	1,062,778	1,142,975
CHL	0.059	0.059	0.000	0.009			0.008			0.000	-1,683	-155
CHN	0.050			0.057	0.055	-0.002	0.064	0.068	0.003	0.003	-5,263,381	2,210,432
CIV	0.086	0.086	0.000	0.062	0.062	0.000	0.066	0.066	0.000	0.000	0	0
CMR	0.127			0.128	0.111	-0.017	0.139	0.126	-0.013	-0.013	57,257	57,272
COL	0.147	0.146	-0.001	0.118	0.117	-0.002	0.085	0.081	-0.004	-0.003	198,197	210,801
COM	0.115			0.113			0.071					
CPV	0.115	0.113	-0.002	0.112	0.110	-0.002	0.113	0.112	-0.001	-0.001	683	683

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Table 3 – Continued

	OTRI_M			OTRI_B			OTRI_BE			OTRI_AD		
Code	2008	2009	change	2008	2009	change	2008	2009	change	change in OTRI	change in trade using OTRI (US$000)	change in trade using tariffs (US$000)
CRI	0.046			0.047	0.022	-0.025	0.047	0.024	-0.024	-0.024	397,984	397,985
CUB	0.056	0.056	0.000	0.052	0.051	0.000						
DMA				0.054			0.069					
DOM	0.065			0.042			0.055					
DZA	0.126	0.126	0.000	0.108	0.104	-0.004	0.107	0.102	-0.005	-0.005	196,897	196,897
ECU	0.047	0.044	-0.002	0.029	0.026	-0.003	0.054	0.047	-0.006	-0.006	124,835	127,536
EGY	0.091	0.089	-0.002	0.083	0.082	-0.001	0.090	0.088	-0.002	-0.002	107,375	107,376
ETH	0.109			0.118	0.117	-0.002	0.116	0.113	-0.003	-0.003	31,763	31,763
EUN	0.041	0.039	-0.002	0.016	0.015	-0.001	0.017	0.017	-0.001	0.001	-2,013,086	-1,785,111
FJI	0.457			0.277	0.106	-0.171	0.372	0.107	-0.266	-0.266	608,284	609,203
GAB	0.144	0.144	0.000	0.139	0.139	0.000	0.136	0.136	0.000	0.000	0	0
GEO	0.017	0.017	-0.001	0.006	0.005	-0.002	0.006	0.005	-0.002	-0.002	11,914	11,914
GHA	0.091	0.091	0.000	0.091	0.091	0.000	0.086	0.086	0.000	0.000	156	156
GIN	0.120	0.120	0.000	0.129	0.129	0.000	0.130	0.130	0.000	0.000	0	0
GMB	0.152	0.151	0.000	0.152	0.151	0.000	0.148	0.148	0.000	0.000	65	65
GNB	0.157	0.157	0.000	0.116	0.116	0.000	0.115	0.115	0.000	0.000	0	0
GRD	0.097			0.072			0.082					
GTM	0.063	0.063	0.000	0.033	0.032	-0.001	0.028	0.027	-0.001	-0.001	14,531	14,531
GUY	0.136			0.058			0.055					
HKG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0
HND	0.069			0.044			0.040					
HRV	0.050	0.049	0.000	0.015	0.015	0.000	0.013	0.013	0.000	0.000	7,724	7,724
IDN				0.037	0.031	-0.006	0.033	0.027	-0.006	-0.006	990,744	990,909
IND	0.092	0.090	-0.002	0.093			0.065			0.001	-305,549	115,361
IRN	0.062			0.059			0.128					
ISL	0.032			0.016	0.013	-0.002	0.018	0.015	-0.003	-0.003	18,845	18,845
ISR	0.029			0.012			0.013					
JOR				0.054			0.054					
JPN	0.038	0.038	0.000	0.044			0.068			0.000	-96,918	-53,723
KAZ	0.048			0.020			0.023					
KEN	0.077	0.077	0.000	0.070	0.070	0.000	0.080	0.080	0.000	0.000	0	0
KGZ	0.036	0.036	0.000	0.012	0.012	0.000	0.012	0.012	0.000	0.000	0	0
KHM				0.086			0.106					
KNA	0.133			0.120			0.156					

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Table 3 – Continued

	OTRI_M			OTRI_B			OTRI_BE			OTRI_AD		
Code	2008	2009	change	2008	2009	change	2008	2009	change	change in OTRI	change in trade using OTRI (US$000)	change in trade using tariffs (US$000)
KOR	0.084	0.084	0.000	0.084			0.087					
KWT	0.090			0.083	0.080	-0.003	0.035	0.035	0.000	0.000	10,060	10,060
LBN				0.046			0.046					
LCA				0.089			0.087					
LKA		0.078		0.077	0.075	-0.001	0.083	0.082	-0.001	-0.001	10,796	10,812
LSO	0.075	0.074	-0.001	0.029	0.029	0.000	0.006	0.006	0.000	0.000	109	109
MAC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0
MAR	0.172	0.143	-0.029	0.091	0.072	-0.019	0.095	0.076	-0.019	-0.019	693,975	693,975
MDA	0.033			0.022			0.017					
MDG	0.106			0.086			0.081					
MDV	0.207			0.213	0.213	0.000	0.214	0.214	0.000	0.000	42	42
MEX	0.110	0.083	-0.027	0.017	0.016	-0.002	0.017	0.015	-0.002	-0.002	707,280	727,670
MKD	0.069	0.068	-0.001	0.018	0.017	-0.002	0.004	0.004	0.000	0.000	18,548	18,548
MLI	0.104	0.104	0.000	0.089	0.089	0.000	0.088	0.088	0.000	0.000	0	0
MNG	0.049			0.050			0.051					
MOZ				0.053	0.037	-0.015	0.042	0.027	-0.015	-0.015	101,316	101,327
MRT				0.099			0.086					
MUS	0.037	0.011	-0.027	0.023	0.009	-0.014	0.023	0.010	-0.013	-0.013	68,910	68,915
MWI	0.117			0.097	0.114	0.016	0.071	0.083	0.012	0.012	-28,559	-23,438
MYS	0.046			0.045			0.049					
MYT	0.061	0.061	0.000	0.011	0.011	0.000						
NAM	0.084	0.083	-0.001	0.011	0.011	0.000	0.013	0.012	0.000	0.000	2,143	2,143
NER	0.105	0.105	0.000	0.091	0.091	0.000	0.068	0.068	0.000	0.000	0	0
NGA	0.085			0.085	0.078	-0.007	0.086	0.081	-0.005	-0.005	240,210	310,074
NIC				0.059	0.031	-0.027	0.055	0.031	-0.023	-0.023	92,600	92,615
NOR	0.069			0.074	0.058	-0.016	0.062	0.049	-0.012	-0.012	1,593,570	1,593,570
NPL	0.171	0.164	-0.007	0.191	0.171	-0.020	0.169	0.155	-0.014	-0.014	35,112	35,112
NZL	0.029			0.018			0.017					
OMN	0.047			0.031	0.029	-0.002	0.030	0.028	-0.002	-0.002	54,504	54,504
PAK	0.083			0.083			0.104					
PAN	0.071			0.054			0.056					
PER	0.038	0.035	-0.003	0.038	0.035	-0.003	0.050	0.046	-0.004	-0.004	79,081	79,081
PHL	0.047			0.047			0.051					
PNG	0.015			0.015			0.025					

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Table 3 – Continued

	OTRI_M			OTRI_B			OTRI_BE			OTRI_AD		
Code	2008	2009	change	2008	2009	change	2008	2009	change	change in OTRI	change in trade using OTRI (US$000)	change in trade using tariffs (US$000)
PRY	0.074	0.062	-0.012	0.041	0.033	-0.008	0.045	0.036	-0.009	-0.009	92,230	92,231
PYF	0.085	0.087	0.002	0.047	0.049	0.002						
QAT	0.060			0.052	0.052	0.000	0.041	0.041	0.000	0.000	-132	-132
RUS	0.093	0.106	0.013	0.086	0.099	0.013	0.096	0.108	0.012	0.012	-4,834,623	-4,429,296
RWA	0.159			0.111			0.112					
SAU	0.050			0.046	0.046	0.000	0.040	0.040	0.000	0.000	-1,186	-1,186
SDN	0.086	0.086	0.000	0.071	0.070	-0.001	0.051	0.049	-0.002	-0.002	58,382	58,382
SEN	0.087	0.087	0.000	0.085	0.085	0.000	0.086	0.086	0.000	0.000	0	0
SER	0.064			0.059	0.037	-0.023						
SGP	0.000			0.000			0.000					
SLV	0.065			0.030	0.028	-0.002	0.033	0.031	-0.002	-0.002	21,102	21,102
SUR	0.058			0.058			0.046					
SWZ	0.082	0.080	-0.001	0.019	0.019	0.000	0.017	0.017	0.000	0.000	276	276
SYC				0.208			0.215					
SYR					0.071			0.076				
TGO	0.117	0.117	0.000	0.118	0.118	0.000	0.108	0.108	0.000	0.000	0	0
TON					0.025			0.015				
TTO	0.109			0.103			0.104					
TUN	0.152			0.152			0.153					
TUR	0.039			0.016	0.023	0.006	0.020	0.027	0.007	0.008	-2,218,696	-2,086,659
TWN	0.063			0.063			0.064					
TZA	0.089	0.089	0.000	0.092	0.092	0.000	0.097	0.096	0.000	0.000	1,610	1,610
UGA	0.129	0.129	0.000	0.073	0.072	-0.001	0.074	0.074	-0.001	-0.001	4,089	4,089
UKR	0.070	0.034	-0.036	0.058	0.027	-0.032	0.048	0.024	-0.023	-0.023	2,287,596	2,297,271
URY	0.055	0.055	0.000	0.025	0.025	0.000	0.026	0.026	0.000	0.000	2,087	2,087
USA	0.018	0.018	0.000	0.012	0.011	0.000	0.011	0.011	0.000	0.005	-24,100,000	-2,858,889
VCT				0.085			0.077					
VEN	0.143	0.140	-0.004	0.054	0.050	-0.004	0.096	0.090	-0.005	-0.005	372,535	372,740
VNM				0.099			0.095					
VUT	0.441			0.437	0.399	-0.037	0.195	0.185	-0.010	-0.010	2,321	2,321
YEM					0.046			0.038				
ZAF	0.047	0.047	-0.001	0.040	0.038	-0.002	0.033	0.031	-0.002	-0.002	199,176	199,176
ZMB	0.112			0.062	0.049	-0.013	0.062	0.048	-0.014	-0.014	88,864	88,864
ZWE	0.215			0.228								

Table 4: Decomposing the Change in the OTRI, 2008-2009

Code	Sector	Change in OTRI_AD	Change in Import weighted average tariff	Change in Covariance between tariffs and elasticities	Change in trade using OTRI (US$000)	Change in trade using tariffs (US$000)
MWI	ALL	0.012	0.012	0.000	-28559.1	-23437.9
RUS	ALL	0.012	0.018	-0.006	-4834623.0	-4429296.0
ARG	ALL	0.009	0.015	-0.006	-914533.6	-551550.1
TUR	ALL	0.008	0.007	0.001	-2218696.0	-2086659.0
USA	ALL	0.005	0.002	0.004	-24100000.0	-2858889.0
CHN	ALL	0.003	-0.001	0.004	-5263381.0	2210432.0
CAN	ALL	0.003	0.004	-0.001	-1842434.0	-1277615.0
BRA	ALL	0.003	0.003	0.000	-991122.3	-631599.9
IND	ALL	0.001	0.001	0.000	-305,549	115,361
BOL	ALL	0.001	0.000	0.002	-14063.7	-623.9
EUN	ALL	0.001	0.001	0.000	-2013086.0	-1785111.0
JPN	All	0.000	0.000	-0.000	-96918.0	-53723.0
BLR	ALL	0.000	0.001	0.000	-24495.7	-23633.0
CHL	ALL	0.000	0.000	0.000	-1683.0	-155.0
SAU	ALL	0.000	0.000	0.000	-1186.4	-1186.1
QAT	ALL	0.000	0.000	0.000	-132.4	-132.4
ARE	ALL	0.000	0.000	0.000	-901.8	-901.5
RUS	MF	0.012	0.018	-0.006	-4381372.0	-4010298.0
ARG	MF	0.011	0.015	-0.005	-926261.3	-563278.2
MWI	MF	0.006	0.006	0.000	-13262.5	-8279.2
USA	MF	0.006	0.002	0.004	-24100000.0	-2864249.0
BRA	MF	0.004	0.003	0.001	-986716.8	-632905.9
TUR	MF	0.002	0.003	-0.001	-628322.2	-620753.4
EUN	MF	0.001	0.002	0.000	-3683778.0	-3585271.0
BOL	MF	0.001	0.000	0.001	-12967.7	-3928.0
CAN	MF	0.001	0.001	0.000	-385892.7	-342905.5
JPN	MF	0.000	0.000	0.000	-425322.0	-382135.0
BLR	MF	0.000	0.000	0.000	-6453.9	-6379.1
CPV	MF	0.000	0.000	0.000	-30.3	-30.3
KWT	MF	0.000	0.000	0.000	-835.5	-835.4
ISL	MF	0.000	0.000	0.000	-155.9	-155.9
ARE	MF	0.000	0.000	0.000	-1333.5	-1333.4
SAU	MF	0.000	0.000	0.000	-303.6	-303.4
QAT	MF	0.000	0.000	0.000	-45.4	-45.4

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Table 4 – Continued

Code	Sector	Change in OTRI_AD	Change in Import weighted average tariff	Change in Covariance between tariffs and elasticities	Change in trade using OTRI (US$000)	Change in trade using tariffs (US$000)
HRV	MF	0.000	0.000	0.000	-36.2	-36.2
TUR	AG	0.102	0.101	0.001	-1590374.0	-1465905.0
IND	AG	0.083	0.296	-0.213	-1342934.0	-1342933.0
MWI	AG	0.046	0.054	-0.008	-15296.7	-15158.7
CHN	AG	0.042	0.002	0.040	-5910257.0	191009.4
CAN	AG	0.029	0.040	-0.011	-1456541.0	-934710.0
RUS	AG	0.007	0.013	-0.006	-453252.6	-418997.7
BLR	AG	0.005	0.006	0.000	-18041.9	-17253.9
GMB	AG	0.004	0.003	0.000	-350.0	-349.5
NGA	AG	0.003	0.003	0.000	-34071.8	-16525.5
ECU	AG	0.002	0.000	0.001	-3145.6	-1186.1
BOL	AG	0.001	-0.005	0.006	-1096.0	3304.0
MEX	AG	0.001	0.005	-0.004	-38122.7	-36718.2
EGY	AG	0.000	0.000	0.000	-2852.4	-2851.0
CHL	AG	0.000	-0.000	0.000	-1683.0	-155.0
LKA	AG	0.000	0.000	0.001	-249.4	-249.4
BRA	AG	0.000	0.000	0.000	-4404.3	1306.0
QAT	AG	0.000	0.000	0.000	-86.9	-86.9
SAU	AG	0.000	0.000	0.000	-882.6	-882.6
BHR	AG	0.000	0.000	0.000	-0.7	-0.7