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## NOTE

### IS PROTECTIONISM ON THE RISE? ASSESSING NATIONAL TRADE POLICIES DURING THE CRISIS OF 2008

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*Abstract*—This paper quantifies trade policy changes and the associated trade impacts for about 100 countries between 2008 and 2009. Results show that there has been no widespread increase in protectionism. Only a few countries, including Russia, Argentina, Turkey, and China, have increased tariffs on major imported products. The United States and the EU, by contrast, rely mainly on antidumping duties to shield domestic industries. Overall, while the rise in tariffs and antidumping duties may have jointly caused global trade to drop by US\$43 billion, it explains less than 2% of the collapse in world trade during the crisis period.

#### I. 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 their domestic economies, which may indirectly prolong the recession and lead to domestic unrest. In fact, in December 2008, the first of the crisis-related demonstrations erupted in several cities in Russia over the increase in car tariffs (Levy, 2008).

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 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 its 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 (those goods that are highly elastic in demand) are also given larger weights. The empirical methodology of the OTRI was first developed by Kee, Nicita, and Olarreaga (2008, 2009), based on the theoretical underpinning of Anderson and Neary (1994, 1996, 2003). Irwin (2010) also uses a similar methodology to study the historic protection level of the United States from 1867 to 1961. A major benefit of looking at the changes in the OTRI over the crisis period is that it allows us not only to measure the changes in trade policy but also to quantify the drop in trade due to those changes. This is the point of departure of our paper from the previous literature, which tends to focus on only average tariff increases or the percentage of tariff lines that have increased during the crisis period.

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A supplemental appendix is available online at [http://www.mitpressjournals.org/doi/suppl/10.1162/REST\\_a\\_00241](http://www.mitpressjournals.org/doi/suppl/10.1162/REST_a_00241).

Many recent papers have studied the trade impact of the global crisis in 2008 (see Baldwin & Evenett, 2009, and Baldwin, 2009). While consensus has yet to emerge among researchers, the two leading explanations for the large and synchronized drop in trade are the role of international supply chains (Yi, 2009) and the lack of trade credits and finance during the crisis period (Amiti & Weinstein, 2009; Chor & Manova, 2009). In a unified framework, Eaton et al. (2010) merges an input-output framework with a gravity trade model of the world and shows that changes in demand play the most significant role in explaining the large drop in trade-to-GDP ratio during the crisis, while trade frictions, which include trade policies and trade credits, explain at most about 15% of the collapse in trade. Thus, trade policy as a protectionist device has not been seen to play a substantial 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, Ecuador, and Turkey have altered their tariffs on a large share of their imported products, and India increased its use of antidumping (AD) duties. How important are those changes in explaining or prolonging the collapse in world trade? The objective of this paper is to carefully compare the trade policies of a wide range of countries over the crisis period and assess the extent of the fall in trade due to the increase in tariffs and AD duties of these countries. For the purpose of this paper, we narrowly define trade policies to include only tariffs and AD duties. Due to data limitations, we do not look at other policies that may affect trade, such as government bailouts and buy-national requirements, which could play a much larger role than tariffs and AD in affecting trade during the crisis period.

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.<sup>1</sup> The MFN-applied tariffs tend to overestimate 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 because each country may have up to 200 trading partners and each bilateral tariff schedule consists of nearly 5,000 Harmonized System (HS) 6 digit products. To capture the effect of antidumping, we also merge the bilateral tariff schedules with the World Bank Global Antidumping Database. Thus, changes in the OTRI reflect trade policy changes related to both the changes in applied tariffs and antidumping duties during the crisis period.

In addition, we need bilateral import demand elasticities and bilateral trade flow data to properly weigh these bilateral tariffs. We modify the multilateral import demand elasticity estimates in Kee et al. (2008) to obtain bilateral import demand elasticities. Bilateral trade flow data are from Comtrade. Finally, to make sure that changes in the OTRI 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.

<sup>1</sup> As a robustness check, we also compare the tariffs of 2007 to those of 2009. The results are very similar and available on request.

Going through the schedules of all countries in our data set, we found that overall, there has been no widespread increase in tariffs. Although many countries have increased tariffs on imported products, the trade impact has generally been minimal. However, for a handful of countries, tariff increases on important items in agriculture and manufacturing pushed up their OTRI and significantly affected trade. Russia, Malawi, and Argentina all increased tariffs on manufacturing products that 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 increased tariffs 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 antidumping duties, India had a large increase in the level of protectionism on agriculture products (8.3 percentage points), even though this was offset by tariff liberalization in the manufacturing sector such that India's OTRI increased only by 0.1 percentage points. Other countries that had large drops in trade due to increases in tariffs include China (US\$5 billion), Canada (US\$1.8 billion), and Brazil (US\$991 million). Finally, for the United States and the EU, although the tariff schedules remained roughly the same throughout our period of analysis, spikes in antidumping duties caused their OTRI to increase by 0.5 percentage points, and 0.1 percentage points, respectively. Jointly, if we add up all the decreases in trade for all countries during the crisis period due to changes in tariffs and antidumping duties, in the worst-case scenario, the total decrease in imports is about US\$43 billion, which is less than half a percent of the world's imports in 2008. According to the latest estimate of the World Trade Organization (2010), the world's imports decreased by 24% from its precrisis level. Thus, trade policies can explain at most 2% of the sharp drop in world trade. This suggests that protectionism was not the main culprit behind the collapse of world trade and the collapse of world trade did not cause protectionism to increase.

Countries have been restrained in terms of raising their tariffs and AD for several reasons. First, most countries are part of bilateral, regional, or multilateral trade agreements, which may have significantly restricted their ability to adjust tariffs during the crisis period. The limitations in policy space due to multilateral obligations are more relevant for developed countries, such as the EU and the United States, where the difference between bound and applied rates is generally small. This is not the case for most developing countries. Those are generally more constrained by obligations within regional and preferential trade agreements. Second, countries may recognize the adverse long-run impact of those protectionist policies in the context of an increasingly globalized economy. This is particularly the case if the exports of the countries depend heavily on imported materials: higher tariffs will severely affect exports, thus further hindering economic recovery. Similarly, global production chains and foreign direct investment (FDI) that span national borders have made it harder to distinguish domestic from foreign. Thus, many multinational firms find that traditional forms of protectionism are contrary to their interests. This could explain why most countries continued to liberalize their tariff policies during the crisis rather than raising tariffs. In this regard, carefully targeted AD may well be the more suitable policy choice. However, the modest increase in AD cases during the crisis suggests that firms may also have found this instrument inadequate to protect their interests.

This paper is organized as follows. We first briefly discuss the methodology behind the OTRI calculation in section II. Section III presents the data coverage. Section IV discusses the results, and section V concludes.

## II. Change in the Overall Trade Restrictiveness Index

The OTRI summarizes the impact of each country's trade policies on its aggregate imports. The OTRI's conceptual framework was first proposed in Anderson and Neary (1994, 1996, 2003), it was simplified in Feenstra (1995), and it was empirically estimated in Kee, Nicita, and Olarreaga (2008, 2009). The OTRI answers the following question: What is the uniform tariff that, if imposed on home imports, would leave the 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 (2010) also applies the same approach to study the historic level of protection of the United States.

We refer readers to Kee, Nicita, and Olarreaga (2008, 2009) for the formal derivation of the OTRI of a country. In this paper, we adopt a fixed-weight method to compare the OTRI of a country across two years, where the bilateral trade flow data and elasticity estimates of the base year, 2008, are used as weights:<sup>2</sup>

$$OTRI_c^{2009} - OTRI_c^{2008} = \frac{\sum_n \sum_p m_{ncp}^{2008} \varepsilon_{ncp}^{2008} (t_{ncp}^{2009} - t_{ncp}^{2008})}{\sum_n \sum_p m_{ncp}^{2008} \varepsilon_{ncp}^{2008}}, \quad (1)$$

where  $m_{ncp}$  is the bilateral import value of country  $c$  for good  $n$  from partner country  $p$ ,  $t_{ncp}$  is the ad valorem tariff of country  $c$  on good  $n$  from country  $p$ , and  $\varepsilon_{ncp}$  is the import demand elasticity of country  $c$  for good  $n$  from country  $p$ . Superscripts indicate the year of the variables. In this way, the difference in the OTRI of a country between 2008 and 2009 captures only trade policy changes and does not reflect the collapse of trade during the crisis period.

While the trade policy of a country could also consist of other nontariff measures, here, due to data limitations, we focus mainly on tariffs. However, unlike the earlier papers, we use 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 antidumping duties that were imposed during the crisis period.

Once the change in the OTRI of a country is calculated, some back-of-the-envelope calculations can be made 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. Then,

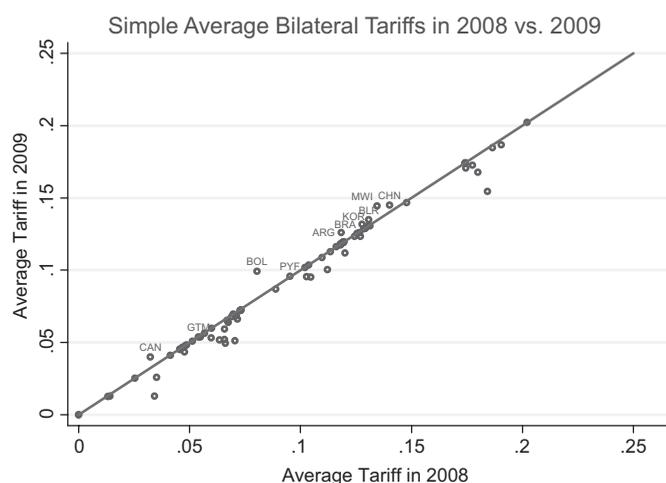
$$\begin{aligned} &\text{Change in trade using the OTRI} \\ &= (OTRI_c^{2009} - OTRI_c^{2008}) \sum_n \sum_p m_{ncp}^{2008} \varepsilon_{ncp}^{2008}. \end{aligned} \quad (2)$$

Note that there is no bound for the calculation of change in trade in this formula, and thus it is possible for the change in trade to be higher than the existing level of trade. An alternative approach would be to calculate the change in tariff at the tariff line level for each product from each partner country, multiply that by the bilateral import demand elasticity

<sup>2</sup>For the purposes 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,  $a_{mn}$ , from Kee et al. (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 (refer to Kee et al., 2010, for a proof):

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

FIGURE 1.—COMPARING AVERAGE BILATERAL TARIFFS, 2008 VERSUS 2009



to obtain the change in trade at tariff line level, and then 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 the total change in trade:

Change in trade using tariffs

$$= \sum_n \sum_p \max [m_{ncp}^{2008} \varepsilon_{ncp}^{2008} (t_{ncp}^{2009} - t_{ncp}^{2008}), -m_{ncp}^{2008}]. \quad (3)$$

### III. Data

We obtained 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.<sup>3</sup> Figure 1 summarizes the raw data by plotting the average bilateral tariff of 2008 against that of 2009, along with a 45 degree line. Only ten countries have higher average tariffs in 2009 than those of 2008. These countries are labeled in the figure and include Korea, Brazil, Argentina, China, and Canada. For Canada, the average bilateral tariff was 3.2% in 2008 and 4.0% in 2009.<sup>4</sup>

Data for antidumping duties are retrieved from the publicly available Global Antidumping Database of the World Bank, which is maintained by Chad Bown (2009a). The data set provides detailed information on antidumping cases. While data can be traced back as far as the early 1990s, given that our focus is the changes during the 2008–2009 period, we use only those cases that are initiated between June 2008 and September 2009, net of antidumping duties that were removed during the same period. By doing so, we capture only the change in antidumping duties during the two-year period and not the level of antidumping for each of the two years. This is an important point, because many antidumping duties in 2008 and 2009 are due to cases filed before the

<sup>3</sup>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](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.

<sup>4</sup>A detailed data summary table is available on request, and it is also included in the working paper version of this paper (Kee, Neagu, & Nicita, 2010).

TABLE 1.—ANTIDUMPING 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	1.00
Mexico	3,171	0.00	100.00
Turkey	361,681	0.18	2.03
United States	3,538,908	0.16	100.00

Data retrieved from the Global Anti-Dumping Database of the World Bank. For India, the actual AD-affected trade is US \$2.2 billion; however, only \$1.4 billion is matched to tariff reclassifications.

crisis. As long as these duties were not removed from the second quarter of 2008 onward, they do not affect the change in the level of protectionism. Only the new cases and the removal of old duties are factored into the calculations.

Table 1 presents some summary statistics on the countries that have added antidumping duties since the second quarter of 2008.<sup>5</sup> For the most part, changes in antidumping duties affect less than 1% of imports, ranging from US\$8.5 billion in the EU to US\$350,000 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. In addition, given that AD duties are imposed at the tariff line level, which for many countries is represented by eight- or ten-digit HS codes, we first need to identify the share of these goods in the bilateral trade of the corresponding HS 6 categories, and impose AD duties only on the goods affected. In doing so, we avoid imposing AD duties on all tariff-line goods within an HS 6 category, 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 I, last column). For the missing AD duties, we use the inverse of our bilateral import demand elasticity estimates to infer the minimum prohibitive AD duties.

### IV. Results

Figure 2 plots the level of OTRI constructed using bilateral tariffs in 2008 against the level of OTRI constructed using bilateral tariffs in 2009 and AD imposed during the 2008–2009 period.<sup>6</sup> Most are located below

<sup>5</sup>In addition to the thirteen countries listed in table 1, the global antidumping database also has information for five more countries of the 135 in our data set. Pakistan is not included because we have no data on its 2009 tariff schedules; and we also have no trade flow data for South Korea and South Africa at the tariff line level; and we fail to match the AD data with trade data for Indonesia and Peru due to tariff reclassification.

<sup>6</sup>In the working paper version of this paper, we also compare the OTRI constructed using MFN tariffs with the OTRI constructed using bilateral tariffs. We found that MFN tariffs tend to overestimate the level of protection of a country by 75%. 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, the OTRI constructed using bilateral elasticities is 2% larger than the OTRI constructed using multilateral elasticities. Finally, our results are robust to the exclusion of AD from the calculation.

the 45 degree line, indicating that most have further liberalized during the crisis. However, there are quite a few exceptions, notably Malawi, Russia, Turkey, China, Argentina, Canada, and Brazil. Malawi's OTRI for 2008 is 7.1%, and for 2009 it is 8.3%, which implies an increase of 1.2 percentage points. Russia increases its OTRI from 9.6% to 10.8%. For Turkey, the increase in tariffs of agricultural products pushes up its OTRI from 2% to 2.7%. The OTRI of China, Argentina, and Canada each increases by 0.3 percentage points. Although small, such increases in the overall level of tariff protection could significantly disrupt trade if imports are very elastic.<sup>7</sup>

For most countries, adding AD does not change their OTRI in any significant way, with the exception of the United States, the EU, and India. Incorporating AD duties increases the OTRI of the United States 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 preAD trade (see equation [2]), or by US\$3 billion if we assume the maximum effect of AD and other tariff increases cannot exceed the existing trade in 2008 (see equation [3]). Likewise, for the EU, incorporating AD duties causes its OTRI to increase by 0.1 percentage point. As a result, imports of the EU drop by US\$2 billion. This exercise shows that while antidumping may not increase the overall level of protection by much, it has been in fact the main instrument used by the United States and EU. Another heavy user of AD is India. Without AD duties, the OTRI of India decreases by 0.2 percentage points from 2008 to 2009.<sup>8</sup> Once AD duties are included, the change becomes positive 0.1 percentage points, indicating that AD duties 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.<sup>9</sup> Nevertheless, on a global scale, 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.

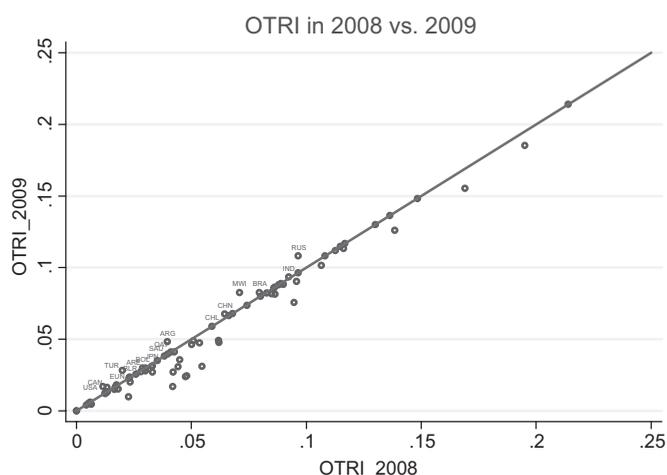
Detailed analysis further shows that for most countries, most of the changes in the OTRI are driven by increased protection in the agricultural sector. For example, in India, the removal of a temporary tariff reduction on palm oil and the introduction of some antidumping duties on agriculture products in 2009 resulted in an increase in protectionism in the agricultural sectors by about 8.3 percentage points. Likewise, Turkey increased tariffs on a wide range of agricultural products, which pushed its OTRI for agricultural goods from 21.2% to 31.4%. Canada and Malawi also have large increases in their OTRI on agricultural products. On the other hand, the overall increases in the OTRI of Russia,

<sup>7</sup> Detailed OTRI estimates for each of the countries are available on request and are also available in the working paper version of this paper (Kee et al., 2010).

<sup>8</sup> For Chile, India, and Japan, we use their MFN tariffs and AD to calculate their OTRI, since 2009 bilateral tariff schedules are not available.

<sup>9</sup> Our estimated changes in trade are not directly compatible to Bown (2009b). For example, for the worst-case scenarios, Bown's estimates of the AD impact in the United States, 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 the HS 8 digit goods that are affected by AD are included in the calculation, whereas Bown's estimates use HS 6 digit trade flows. Second, we use 2008 trade value in our calculation, whereas Bown's estimates are based on 2007 trade value. Third, our AD coverage is from June 2008 to September 2009, and Bown's estimates are from the first quarter of 2008 to the first quarter of 2009. Fourth, 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 focus on only 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.

FIGURE 2.—COMPARING THE OTRI IN 2008 AND 2009



Argentina, and China are mainly driven by increases in tariffs in the manufacturing sector (the rise in the car tariffs of Russia and textile tariffs of Argentina).<sup>10</sup>

Overall, if we sum up all the negative trade impacts due to increased tariffs and AD duties, total world's imports may have decreased by US\$43 billion. In 2008, the value of world imports was about \$11 trillion, which implies that the changes in trade policy may have decreased the world's imports by 0.4%. According to the latest estimate of the WTO (2010), the world's imports contracted by 24% in 2009. Thus, our results show that the trade policy changes we have discussed can explain less than 2% of the collapse in the world's imports.

## V. Conclusion

The fear that countries may raise tariffs to protect their domestic markets 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 significantly. 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 United State and the EU most of the policy actions during the crisis are not about tariffs but antidumping duties. Nevertheless, even after taking antidumping duties into account, evidence provided in this paper suggests that the trade impact due to trade policy changes can explain no more than 2% of the collapse in the world trade.

<sup>10</sup> The detailed analysis can be found in the working paper version of this paper (Kee et al., 2010) or are available on request.

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