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CHINA -- BROILER PRODUCTS: CAN THE SUM OF THE PARTS BE LESS THAN THE WHOLE?

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This article explores economic and legal issues in the WTO dispute China – Broiler Products (Article 21.5 – United States) (DS427). In 2011, the US initiated a dispute against the conduct and results of China’s 2009 trade remedy investigation into US broiler products (chickens). The Panel Report found that China had acted inconsistently with its WTO obligations. On the basis of a redetermination, China continued to impose duties and the United States initiated WTO compliance proceedings. The compliance Panel Report, circulated in 2018, concluded that China had failed to comply with its WTO obligations when allocating costs to construct US domestic prices for broiler products. However, China was found to have acted consistently with its WTO obligations with respect to two claims which raise some interesting legal questions. Ultimately, after almost a decade of litigation, China removed the antidumping and countervailing duties on US broiler products in 2018.

China – Broiler Products (Article 21.5 – United States) (DS427) – can the sum of the parts be less than the whole?

Maria Alcover¹ and Meredith A. Crowley²

Abstract:

This article explores economic and legal issues in the WTO dispute *China – Broiler Products (Article 21.5 – United States)* (DS427). In 2011, the US initiated a dispute against the conduct and results of China’s 2009 trade remedy investigation into US broiler products (chickens). The Panel Report found that China had acted inconsistently with its WTO obligations. On the basis of a redetermination, China continued to impose duties and the United States initiated WTO compliance proceedings. The compliance Panel Report, circulated in 2018, concluded that China had failed to comply with its WTO obligations when allocating costs to construct US domestic prices for broiler products. However, China was found to have acted consistently with its WTO obligations with respect to two claims which raise some interesting legal questions. Ultimately, after almost a decade of litigation, China removed the antidumping and countervailing duties on US broiler products in 2018.

1. Introduction

In September 2009, President Obama announced a safeguards tariff increase on tires from China – which at the time were valued at \$2.1 billion annually – because imports were causing market disruption for domestic producers. Days after the US announcement, China started its antidumping and countervailing investigation on US broiler products and, in 2010, imposed increased duties on those products. The suspicious timing hinted that China’s motive was retaliation against US policy rather than a concern with its own domestic producers.³ Moreover,

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³ "What Can We Learn about U.S.-China Trade Disputes from China's Past Trade Retaliations" by Minghao Li, Wendong Zhang, and Chad Hart; Centre for Agricultural and Rural Development, March 2018. <https://www.card.iastate.edu/products/publications/pdf/18pb22.pdf>

with Chinese imports of American chicken valued at \$800 million annually, the policy action by China appeared to be an effort at a carefully calibrated retaliation against the US tire safeguard.

The US tariff against Chinese tires reduced tire imports from China.⁴ However, China's tariff on US broiler products was even more effective. In 2009, the United States exported over 613,000 metric tons of broiler meat to China. Exports fell almost 90% after the imposition of the duties. Before the tariff, US broiler chickens were the third-most valuable agriculture-related commodity exported to China; after the tariff, they fell to thirteenth. While China only accounted for 18% of total US chicken exports in 2009, the Chinese market was crucial for US producers. About half of the chicken exported to China was in the form of chicken feet, which had a near-zero value for US consumers, but was considered a delicacy in China. Selling chicken feet to China had been an important source of profit for the US industry.

In September 2011, the United States initiated a WTO dispute against the conduct and results of China's Ministry of Commerce's (MOFCOM) antidumping and countervailing duty investigations on US broiler products. In August 2013, the WTO Panel issued its report finding in favour of the United States on nearly all US claims. However, China did not comply with the rulings and the United States brought a compliance proceeding before the original panel, pursuant to Article 21.5 of the WTO Dispute Settlement Understanding (DSU). In January 2018, the compliance panel found favour of the United States on almost all the claims. Reportedly, in February 2018, MOFCOM announced the removal of the antidumping and countervailing duties imposed on US broiler products.⁵ This was a success for the United States, which has not always been able to secure China's compliance. For instance, despite the US victory in the *China – Electronic Payment Services* dispute, China still blocks major US suppliers, such as Visa and MasterCard, from its market.⁶

This article explores certain issues that arose in the WTO dispute *China – Broiler Products (Article 21.5 – United States)* (DS427) from both a legal and an economic perspective. In the following pages, we provide a brief summary of the dispute at issue (section 2); our analysis of those particular aspects of the dispute that we have considered more interesting from a legal and economic perspective (section 3); and our conclusions (section 4).

2. Summary of the dispute

The original Panel Report in *China – Broiler Products* was circulated on 2 August 2013. There was no appeal, so the DSB adopted the report on 25 September 2013. In accordance with the sequencing agreement signed between China and the United States on 15 July 2014⁷, the United States requested the establishment of a panel pursuant to Article 21.5 of the DSU after consultations had failed to resolve the parties' disagreement as to whether China had complied

⁴ Interestingly, Chung, et. al. (2016) find that the discriminatory US tire safeguard against China was not effective at reducing overall imports or stabilizing US domestic employment.

⁵ "China drops U.S. broiler chicken import duties amid growing trade tensions", 27 February 2018. <https://www.reuters.com/article/us-usa-china-chickens/china-drops-u-s-broiler-chicken-import-duties-amid-growing-trade-tensions-idUSKCN1GB0BD>

⁶ 2018 USTR Report to Congress on China's WTO Compliance, February 2019, page 8. <https://ustr.gov/sites/default/files/2018-USTR-Report-to-Congress-on-China%27s-WTO-Compliance.pdf>

⁷ Understanding between China and the United States regarding procedures under Articles 21 and 22 of the DSU, WT/DS427/9, 18 July 2014.

with its WTO obligations. The compliance Panel Report in *China – Broiler Products (Article 21.5 – United States)* was circulated on 18 January 2018. As neither of the parties appealed it, the report was adopted by the DSB on 28 February 2018.

The compliance Panel addressed nine claims brought by the United States. China was found to have complied with its WTO obligations with respect to only two of those claims. In particular, the compliance Panel found that China did not act inconsistently with Articles 6.9 and 9.4(i) of the Anti-Dumping Agreement by failing to disclose data and calculations underlying the dumping margins for Pilgrim's Pride and Keystone and by determining a "residual" rate based on facts available to be applied to unknown "exporters"⁸, respectively.

For the other seven claims, the Panel found that China had failed to comply with both procedural and substantive obligations under the Anti-Dumping Agreement and the SCM Agreement. Regarding "procedural" obligations, China failed to "give notice" to US interested parties of the information it required of Chinese producers during the reinvestigation and also failed to provide "timely opportunities" for the US interested parties to see the requests for information issued to the Chinese producers. As per the "substantive" obligations, China acted inconsistently with its WTO obligations when determining the existence of *dumping* (erring in its construction of normal value under Article 2.2.1.1 of the Anti-Dumping Agreement), when determining *injury* to the domestic industry (erring in its assessment of price effects and consequent impact on domestic producers) and when establishing the *causal link* between the alleged unfair trade practice and the said injury (relying on its defective consideration of price effects).

We note that, pursuant to the sequencing agreement signed by the parties to the dispute, the United States reserved the right to request authorization to retaliate, in the event that an Article 21.5 compliance proceeding ruled that China had failed to comply with its WTO obligations. The United States did not request authorization to suspend concessions against China pursuant to Article 22.2 of the DSU, which seems to prove that MOFCOM effectively removed the antidumping and countervailing duties as it announced in February 2018.

3. Analysis of particular aspects

In this paper, we have focused our attention on three claims brought by the United States: the claim regarding MOFCOM's disclosure of "essential facts" (Article 6.9 of the Anti-Dumping Agreement); the claim concerning MOFCOM's application of a "residual" rate to unknown exporters (Article 9.4(i) of the Agreement); and the claim regarding MOFCOM's allocation of costs when constructing the normal value (Article 2.2.1.1 of the Anti-Dumping Agreement). We have decided to address these issues for essentially two reasons.

First, despite China's overall failure to comply with its WTO obligations, the compliance Panel found that China had acted consistently with Articles 6.9 and 9.4(i) of the Anti-Dumping Agreement regarding essential facts and residual rates. Therefore, in these two specific instances, MOFCOM's conduct serves as an example of what may be considered compatible with these specific obligations of the Anti-Dumping Agreement. From a systemic point of view, and thinking

⁸ Panel Report, paras. 7.417 and 7.438.

about possible future disputes, we find it is useful – at least from a legal perspective – to examine what conducts of an investigating authority reach the level of compliance with WTO obligations.

Second, among all the obligations with which China failed to comply, the obligation contained in Article 2.2.1.1 of the Anti-Dumping Agreement led, in our view, to the most appealing discussion in the compliance Panel Report. Whereas most of the other aspects addressed by the compliance Panel had already been discussed in previous cases, the cost allocation problem in this dispute raised some interesting issues.

From the perspective of economic analysis, this dispute highlights three substantive issues. The first issue relates to the narrow problem of how to interpret and properly implement the obligations of the Anti-Dumping Agreement with regard to cost-allocation in a dumping case. The other two lie outside the scope of what the Panel examined, but relate to an important economic question of the institutional design of the WTO agreements. These are both normative problems – what rights and obligations should the WTO agreements allow or impose with regard to in a situation like that in *Broiler Products*? Given that there was essentially no anti-competitive behaviour by US exporters, but the Chinese government had a clear interest in reducing the competitive pressure facing its domestic chicken producers, what freedoms to adjust trade policy should be allowed under the WTO? Finally, given that the case was initially filed in 2013 and was determined to be WTO-inconsistent policy in 2018, is it appropriate that the WTO agreements do not allow for redress or damages for the loss of a member's market access?

We proceed by first discussing “what China got right,” then discussing the law and economics of cost allocation, and finally offering some comments on the normative economics questions raised by this dispute.

3.1. "What China got right": Essential Facts and Residual Rate

3.1.1. Article 6.9 of the Anti-Dumping Agreement: Essential facts

In the original proceedings, the United States claimed that China failed to comply with the obligation in Article 6.9 of the Anti-Dumping Agreement to disclose the essential facts forming the basis of MOFCOM's decision to apply anti-dumping duties "by failing to make available the data and calculations it performed to determine the existence and margin of dumping, including the calculation of the normal value and export price for the three respondents". After examining MOFCOM's disclosure in relation to each individual respondent, the original Panel considered that "[w]ithout the information as to what sales prices" and "formulas" were being used to calculate normal value, export price, and the weighted-average dumping margins, the respondents would be unable to ascertain the accuracy of MOFCOM's calculations and to defend their interests. The Panel thus concluded that China acted inconsistently with Article 6.9 of the Anti-Dumping Agreement.⁹

In the compliance proceedings, the United States again claimed that China acted inconsistently with Article 6.9 of the Anti-Dumping Agreement during the reinvestigation by failing to disclose the essential facts underlying the determination of the dumping margin in respect of Pilgrim's Pride and Keystone. In particular, with respect to Pilgrim's Pride (cooperating

⁹ Original Panel Report, paras. 7.66, 7.100, 7.104, 7.106 and 7.107.

exporter), the United States argued that MOFCOM failed to disclose the data and margin calculations from the *original investigation*. With respect to Keystone (non-cooperating exporter), the United States asserted that MOFCOM failed to disclose the data and margin calculations from both the *original investigation and the reinvestigation*.¹⁰

The compliance Panel noted that Article 6.9 of the Anti-Dumping Agreement provides that "the authorities shall, before a final determination is made, inform all interested parties of the essential facts under consideration which form the basis for the decision whether to apply definitive measures". Such disclosure must take place in sufficient time for the parties to defend their interests.

The Panel then recalled the legal standard for Article 6.9 of the Anti-Dumping Agreement. It noted that the requirement to "inform" is an "active" disclosure obligation, although the investigating authority has a "large margin of discretion" as to the format or *how* all interested parties are to be informed.¹¹ Regarding *what* must be disclosed, the "essential facts under consideration" are "those facts on the record that may be taken into account by an authority in reaching a decision as to whether or not to apply definitive anti-dumping ... duties". For facts to "form the basis" of this decision, they must be "significant in the process of reaching this decision, whether it is because they are salient for a decision to apply definitive measures or salient for a contrary outcome".¹² The compliance Panel recalled its original finding that Article 6.9 of the Anti-Dumping Agreement requires the disclosure of the following essential facts in respect of the dumping determination for the cooperating exporters: (i) the data underlying the determination that form the basis for the calculation of the dumping margin, including any adjustments; (ii) the comparisons of home market and export sales; and (iii) the formulae applied for these comparisons. For the unknown and non-cooperating exporters to whom facts available are applied, the following essential facts should be disclosed: (i) the precise basis for the decision to resort to facts available, such as the failure by an interested party to provide the information that was requested; (ii) the information that was requested from an interested party; and (iii) the facts that were used to replace the missing information.¹³

Notably, the compliance Panel highlighted its previous finding in the original proceedings that "the **calculations themselves** (including any files or spreadsheets created during the calculations)" that are made to determine the dumping margin are not essential facts that must be disclosed. Despite this finding in the original report, the United States insisted, at the compliance stage, that MOFCOM should have made available the precise mathematical calculations that it performed or conducted.¹⁴ The United States argued that the requirement to disclose margin calculations was endorsed by the Appellate Body in *China – HP-SST (Japan)(EU)* when noting that "an investigating authority is expected ... to disclose, *inter alia*, ... the calculation methodology applied by [it] to determine the margin of dumping". The compliance Panel observed, however, that a margin calculation *methodology* is different from margin *calculations* themselves and that the Appellate Body's passage was made in the context the European Union's argument that "the calculation methodology, such as the formulae used in calculations and the data

¹⁰ Compliance Panel Report, para. 7.362.

¹¹ Compliance Panel Report, paras. 7.369-7.370.

¹² Compliance Panel Report, para. 7.366 (quoting Appellate Body Report, *China – GOES*, para. 240).

¹³ Compliance Panel Report, paras. 7.367-7.368.

¹⁴ Compliance Panel Report, paras. 7.367 and 7.374.

applied in the formulae", must be disclosed under Article 6.9.¹⁵ In the Panel's view, this confirms its original finding regarding "what must be disclosed: data and formulae, but not the calculations". In the light of this, the Panel concluded that the United States had not established its claim under Article 6.9 of the Anti-Dumping Agreement in respect of disclosure of "margin calculations".¹⁶

Regarding **Pilgrim's Pride**, we recall that the United States claimed that MOFCOM did not provide the original data during the reinvestigation. The compliance Panel noted that, according to the general principles on allocation of the burden of proof, it was for the United States to establish that China failed to provide the original data to Pilgrim's Pride. Although the Panel recognized that a claim of violation based on an alleged omission – here the lack of disclosure – raises evidentiary challenges, it observed that "at a minimum it should be uncontroversial to say that the mere allegation of an omission does not amount to proof". In this regard, the Panel observed that, "in none of its submissions, did the United States refer to any evidence that could support [its] factual assertion".¹⁷ For its part, China argued that MOFCOM had, in fact, disclosed the original data to Pilgrim's Pride during the reinvestigation. Initially, it relied on Exhibit CHN-8, which contained empty tables and no reference to the original investigation.¹⁸ China then submitted Exhibit CHN-45 – a spreadsheet with six separate tabs of data, the first five of which were arguably unchanged from the original investigation – and Exhibit CHN-46 – a narrative to the data in Exhibit CHN-45.¹⁹ The United States did not contest that an unredacted version of Exhibit CHN-45 as well as Exhibit CHN-46 were disclosed to Pilgrim's Pride, but it claimed that they did not "allow Pilgrim's to reconstruct its original rate of 53.4 per cent" and to identify "what has changed since". The Panel, however, found that the United States did not demonstrate that the specific explanations in CHN-46 in respect of the changes to the dumping margin equation, in connection with the dumping margin calculation disclosed in "tab six" of Exhibit CHN-45, were insufficient to allow Pilgrim's Pride to understand the changes and to ascertain their accuracy. In essence, in the Panel's view, at no point did the United States offer any evidence to support its allegation that the original data had not been disclosed. Consequently, the compliance Panel found that the United States had failed to establish its claim under Article 6.9 of the Anti-Dumping Agreement with respect to Pilgrim's Pride.²⁰

Regarding **Keystone**, we recall that the United States claimed that MOFCOM did not provide the original and the new data during the reinvestigation. There was no disagreement between the parties that Article 6.9 of the Anti-Dumping Agreement applies to non-cooperating exporters, and thus, in the context of the reinvestigation, to Keystone. The issue between them was whether MOFCOM failed to disclose the data in question to any agent allegedly representing Keystone, and in particular Steptoe. According to China, MOFCOM did not receive proof of authorization and was not therefore in a position to disclose Keystone's confidential data to an unauthorized third party. According to the United States, proof of authorization was indeed provided to MOFCOM. The United States relied on a "memorandum" of 20 May 2014, which was a letter signed by Thomas J. Trendl at Steptoe stating that MOFCOM could serve Keystone's

¹⁵ Compliance Panel Report, para. 7.376 (quoting Appellate Body Report, *China – HP-SST (Japan)(EU)*, para. 5.125). (underlining added by the Compliance Panel in *China – Broiler Products*)

¹⁶ Compliance Panel Report, paras. 7.377-7.378.

¹⁷ Compliance Panel Report, paras. 7.381 and 7.383.

¹⁸ Compliance Panel Report, para. 7.385.

¹⁹ Compliance Panel Report, paras. 7.386-7.387.

²⁰ Compliance Panel Report, paras. 7.390-7.391 and 7.393.

disclosure to him or Scott Lindsay at the US Embassy. The compliance Panel noted, however, that Keystone's authorization of Mr Trendl and/or Mr Lindsay did not accompany the "memorandum". In the light of this, the Panel found that it was not unreasonable for MOFCOM to consider that the "memorandum" of 20 May 2014 by Steptoe did not amount to authorization of agency. It further found that the United States had not established that Keystone provided such proof of authorization to MOFCOM at another time in another document. In these circumstances, the Panel concluded that MOFCOM did not act in a biased or unobjective manner in finding that the purported agents of Keystone were not authorized to receive disclosure of Keystone's confidential data at issue. Accordingly, it concluded that the United States had failed to establish its claim under Article 6.9 of the Anti-Dumping Agreement with respect to Keystone.²¹

In essence, the compliance Panel in *China – Broiler Products* confirmed its original finding and agreed with previous panels that margin calculations themselves are not "essential facts" that must be disclosed pursuant to Article 6.9 of the Anti-Dumping Agreement. In *China – X-Ray Equipment*, the panel rejected the European Union's claim that MOFCOM had violated Article 6.9 by failing to disclose its calculations of the margins of dumping.²² Similarly, in *China – Autos (US)*, the panel noted that the "details of the calculation" of a residual duty rate do not *per se* constitute facts falling within the scope of the Article 6.9 disclosure obligation.²³ However, despite this clear precedent, the United States seems to keep insisting on calculations being disclosed. One can only wonder whether the legal standard set forth for Article 6.9 of the Anti-Dumping Agreement when it comes to the disclosure of essential facts should allow for some flexibility in those cases where a general lack of transparency on the part of the investigating authority can be shown. It cannot be excluded entirely that, in a particular instance where actual calculations are not disclosed, the respondents may be unable to fully understand how the investigating authority reached its conclusions and, therefore, may be also unable to "defend their interests" properly.²⁴ In the particular case at hand, one could not avoid having the impression that China's compliance with Article 6.9 of the Anti-Dumping Agreement had more to do with the United States' inability to discharge its burden of proof than with MOFCOM's serious intention to be as transparent as possible. In a sense, the issue remains open for other contexts in which it is easier for a complainant to provide evidence about the IA's failure to disclose essential information.

3.1.2. Article 9.4(i) of the Anti-Dumping Agreement: Residual rate for unknown exporters

In the original proceedings, there was no discussion under Article 9.4(i) of the Anti-Dumping Agreement. The original Panel made findings regarding the use of facts available under Article 6.8 and Annex II of the Anti-Dumping Agreement in establishing the "residual" rate.²⁵ In the

²¹ Compliance Panel Report, paras. 7.398, 7.405, 7.408, and 7.415-7.416.

²² Panel Report, *China – X-Ray Equipment*, paras. 7.420-7.421.

²³ Panel Report, *China – Autos (US)*, para. 7.148.

²⁴ See Appellate Body Report, *China – GOES*, para. 240.

²⁵ In both its original investigation and the reinvestigation, in addition to determining individual rates for certain exporters individually examined, MOFCOM established a separate "all others" rates, which applied to exporters that had registered following the Notice of Initiation in the original investigation, and a "residual" rate, which applied to any foreign exporter or producer that had not registered in the original investigation.

original investigation, MOFCOM had used facts available to establish a "residual" rate of 105.4% for US exporters that had not registered with MOFCOM in response to the Notice of Initiation and, as a consequence, were considered unknown, and also did not file a questionnaire response. The original Panel found that MOFCOM acted inconsistently with Article 6.8 and Annex II of the Anti-Dumping Agreement because it failed to sufficiently explain which facts on the record were used to calculate the "residual" rate.²⁶

In the compliance proceedings, the United States alleged that MOFCOM acted inconsistently with Article 9.4(i) of the Anti-Dumping Agreement because, in the redetermination, it set the "residual" rate for unknown exporters in excess of the weighted average margin of dumping established with respect to exporters individually examined under Article 6.10 of the Anti-Dumping Agreement. In the redetermination, MOFCOM established the "residual" rate based on Pilgrim's Pride rate, 73.8%, the highest rate found for any of the examined exporters. This rate was applied to unknown exporters that did not register for participation in the original investigation. The United States argued that, unlike in the original investigation, MOFCOM did not invite any exporter to register and cooperate during the reinvestigation. In these circumstances, the United States noted, MOFCOM applied the 73.8% facts available rate to exporters who did not have any opportunity to cooperate in the reinvestigation. China replied that, as part of its implementation obligation, MOFCOM was not required to offer the "unknown" exporters a second opportunity to cooperate during the reinvestigation.²⁷

The compliance recalled that Article 9.4(i) of the Anti-Dumping Agreement provides that when the authorities have limited their examination to only several exporters or producers, any anti-dumping duty applied to imports from exporters or producers not included in the examination shall not exceed "the weighted average margin of dumping established with respect to the selected exporters or producers".

The Panel noted that this provision regulates the maximum amount of anti-dumping duty that may be imposed or collected in respect of imports from exporters that were not individually examined. It observed, however, that Article 9.4 "does not specifically address the duty rate that may be applied to exporters not known to the investigating authority and which therefore are not available to be selected for individual examination".²⁸

The compliance Panel stressed that neither the Anti-Dumping Agreement nor the SCM Agreement, nor any other relevant WTO agreement, provides any guidance regarding how adopted recommendations and rulings of the DSB are to be implemented. It noted that China limited the reinvestigation to those matters it considered necessary to bring MOFCOM's original determination into conformity with the Anti-Dumping Agreement. With regard to the "residual" rate at issue, this involved ensuring that the manner in which MOFCOM selected the facts available was consistent with Article 6.8 and Annex II of the Anti-Dumping Agreement. In the Panel's view, the fact that China issued a new Notice of Initiation with respect to the reinvestigation "does not necessarily mean that in the reinvestigation, MOFCOM was required to re-open or undertake a new process for establishing which exporters would be examined individually". Finally, the Panel noted that MOFCOM had originally limited the examination to three selected exporters and

²⁶ Original Panel Report, paras. 7.276, 7.278 and 7.313.

²⁷ Compliance Panel Report, paras. 7.418, 7.424, 7.426 and 7.429.

²⁸ Compliance Panel Report, para. 7.432.

continued to do so in the reinvestigation; and added: "[a]s far as we are aware, no previously 'unknown' exporter sought to participate or provide information in the reinvestigation". In the light of this, the compliance Panel found that the United States did not establish that MOFCOM failed to comply with Article 9.4(i) of the Anti-Dumping Agreement in the reinvestigation by determining a "residual" duty rate based on facts available to be applied to "unknown" exporters.²⁹

As a take away, we recall that, according to the Appellate Body, Article 9.4 of the Anti-Dumping Agreement "seeks to prevent the exporters, who were not asked to cooperate in the investigation, from being prejudiced by gaps or shortcomings in the information supplied by the investigated exporters".³⁰ By its own terms, however, Article 9.4 does not address the situation in which certain companies do not make themselves known to the investigating authority. The compliance panel in *China – Broiler Products* followed the guidance offered by the panel in *EC – Salmon (Norway)*, which found that "the investigating authority's attribution of a [higher] margin of dumping to non-cooperating companies does not fall within the scope of Article 9.4(i), which, under Article 6.10, applies only to 'known' exporters".³¹ Notably, the *EC – Salmon (Norway)* dispute never reached the compliance stage under Article 21.5 of the DSU. Conversely, in *China – Broiler Products*, the United States raised a claim under Article 9.4(i) of the Anti-Dumping Agreement *only* at the compliance stage. This might raise the question as to whether the notion of "unknown" exporters should be revisited at the compliance stage. Notably, it is unclear what the compliance Panel would have concluded had "a previously 'unknown' exporter sought to participate or provide information in the reinvestigation". On the one hand, the Panel's finding that China was not required to re-do the whole investigation to comply with the DSB rulings and recommendations, seems reasonable. Indeed, China had to bring its measures into conformity with the Anti-Dumping Agreement only with the respect to those aspects found to be WTO inconsistent.³² On the other hand, the US position does not seem entirely far-fetched, considering that, in the reinvestigation, "sampling" had already been done³³ and MOFCOM could have just issued an invitation for any potential new exporters to register and become "known".

3.2. "What China got wrong": Cost Allocation

In the original proceedings, the United States claimed that China had acted inconsistently with the first and second sentences of Article 2.2.1.1 of the Anti-Dumping Agreement because MOFCOM declined to use the respondents' normal records and their cost allocations in constructing normal value.³⁴ We recall that the products subject to investigation were fresh, chilled or frozen broiler products (including whole chickens, parts or by-products), except for live, canned or cooked products.³⁵ As background, the Panel observed that, in the course of the investigation, all three respondents had explained that, given the nature of the production of chicken products – which all have common costs up to the point of the split-off of the various parts from the whole

²⁹ Compliance Panel Report, paras. 7.434 and 7.437-7.438.

³⁰ Appellate Body Report, *United States – Hot-Rolled Steel*, para. 123. See also Appellate Body Report, *United States – Zeroing (Article 21.5 – EC)*, para. 452.

³¹ Panel Report, *EC – Salmon (Norway)*, para. 7.433.

³² Compliance Panel Report, paras. 7.436-7.437.

³³ We recall that MOFCOM had originally limited the examination to three selected exporters and continued to do so in the reinvestigation.

³⁴ Original Panel Report, para. 7.108.

³⁵ Original Panel Report, footnote 8 to para. 2.2.

chicken, such as breast meat, leg, quarters and chicken feet – they had used a "relative sales value" allocation methodology, by which "pre-split-off costs of production were allocated to the various joint products according to the proportion of *revenue* generated by the sale of those products". Conversely, in its preliminary and final anti-dumping determinations, MOFCOM used its own weight-based allocation methodology, whereby pre-split-off costs were allocated based on the *weight* of the various chicken products.³⁶

In the compliance proceedings, the issue before the Panel was whether, in its redetermination, MOFCOM complied with the second sentence of Article 2.2.1.1 of the Anti-Dumping Agreement when allocating costs for Tyson and Pilgrim's Pride.³⁷

At the outset, the compliance Panel recalled that Article 2.2.1.1 of the Anti-Dumping Agreement provides that "costs shall normally be calculated on the basis of records kept by the exporter or producer under investigation, provided that such records are in accordance with the generally accepted accounting principles of the exporting country and reasonably reflect the costs associated with the production and sale of the product under consideration." Moreover, "[a]uthorities shall consider all available evidence on the proper allocation of costs, including that which is made available by the exporter or producer in the course of the investigation provided that such allocations have been historically utilized by the exporter or producer, in particular in relation to establishing appropriate amortization and depreciation periods and allowances for capital expenditures and other development costs."

The Panel noted that the first sentence of Article 2.2.1.1 contains the rule for the *information* to be used in calculating cost of production, that is, the "records kept by the exporter or producer under investigation", except where the conditions for the application of the rule are not met. The second sentence relates to the *methodology* for allocating costs: an investigating authority must "consider all available evidence on the proper allocation of costs". Notably, "even if the actual data on costs as reported in the records are rejected under the first sentence, the allocation methodology reflected in those records may nonetheless result in a proper allocation of costs if applied to a different set of data".³⁸

The Panel then recalled that MOFCOM rejected the value-based methodology because certain products (like chicken feet) have value in the Chinese consumer market that they do not have in the US market. Instead, MOFCOM decided to use a weight-based cost allocation for the subject products. The Panel considered that MOFCOM's rejection of a value-based cost allocation that does not capture the value of a product model in its principal market is not "inherently biased or unreasonable".³⁹ The question arose as to whether MOFCOM "consider[ed] all available evidence on the proper allocation of costs", as required by the second sentence of Article 2.2.1.1

³⁶ Original Panel Report, paras. 7.114 and 7.122.

³⁷ With respect to Pilgrim's Pride, MOFCOM did not change the method and data used in the original investigation and thus China was found to have failed to comply with its implementation obligations in this regard. (Compliance Panel Report, paras. 7.13 and 7.74). With respect to Tyson, MOFCOM did conduct a redetermination. In this case, given the "low volume" of like products sold in the US domestic market, which accounted for less than 5% of Tyson's total volume of the product concerned (i.e. chicken feet) exported to China, MOFCOM proceeded to construct the normal value by using weighted average production cost, plus reasonable expenses and profit. (Compliance Panel Report, para. 7.7).

³⁸ Panel Report, para. 7.37.

³⁹ Panel Report, para. 7.51.

of the Anti-Dumping Agreement, when using a weight-based cost allocation for the subject broiler products.

In that regard, MOFCOM decided to allocate "the necessary expenses invested by a producer to produce products" on the basis of the weight of the entire broiler less the weight of feathers, blood and viscera because, it stated, the latter were non-subject products. The Panel noted that there was no dispute between the parties that feathers, blood, and viscera are not "produced" for human consumption. At the same time, however, it considered uncontroversial that "feathers, blood, and viscera are essential parts of a live broiler, and thus they are intrinsic to the production of the subject broiler product models". The Panel also noted that the distinction between subject and non-subject products, in itself, had no bearing on the question of whether MOFCOM came to a reasoned conclusion in choosing a methodology to allocate costs to subject broiler product models.⁴⁰

The Panel noted that, to comply with its obligation to "consider all available evidence on the proper allocation of costs", MOFCOM was required, at a minimum, to explain why the concern it relied upon to choose a weight-based cost allocation methodology (i.e. that allocations must "reasonably reflect costs" of production) allowed for the exclusion of certain parts of a live broiler (feathers, blood, and viscera) that are necessarily part of the production of the subject broiler product models. MOFCOM failed to do so. For this reason, the Panel concluded that China did not act consistently with the second sentence of Article 2.2.1.1 of the Anti-Dumping Agreement.⁴¹

Before delving into the details of an economic analysis of cost allocation methodologies, it is useful to draw parallels between a general issue in this case and in previous ones. In *Broiler Products*, we are again confronted with a challenge to the methodology employed by one country (China) in applying its anti-dumping policy. In this case, the methodological approach taken by China – applying a weight-based cost allocation to a multi-product firm whose production process created undesirable outputs with non-trivial disposal costs – bears a striking similarity to the approach taken by the US in the use of the “zeroing” methodology. In essence, both the weight-based cost allocation methodology and the zeroing methodology were economically-questionable methodologies which appear to have been intentionally designed to generate higher dumping margins than could otherwise be obtained.⁴² In a series of rulings, the AB struck down the use of the zeroing methodology by the US (See Prusa and Vermulst (2009), Crowley and Howse (2010)). From an economics perspective, in the vast majority of cases, the zeroing methodology was at odds with basic economic principles and gave the appearance of being a rather convoluted effort to justify import duties that would provide relief from intense import competition that was adversely impacting a domestic import-competing industry. Ultimately, the real problem with zeroing was that it was inconsistent with the spirit of what the Anti-Dumping Agreement was trying to achieve – a fair assessment of unfair trading practices.

The *Broiler Products* case with China is similar in two respects; (1) the methodology employed to assess dumping – cost allocation by weight for a multi-component product in which

⁴⁰ Panel Report, paras. 7.53-7.54 and 7.56 (original underlining).

⁴¹ Panel Report, paras. 7.58 and 7.59.

⁴² To be precise, application of the methodologies to the respective cases at issue in disputes were difficult to justify on economic grounds, but one could imagine alternative scenarios, products and market structures to which they might be appropriate. See Crowley and Howse (2010).

each component faces different demand and a different demand elasticity – is difficult to justify on economic grounds and (2) the aim of the policy seemed to be to provide relief from import competition (rather than to offset anti-competitive practices by foreign firms). In this light, we will first examine the question of why the Chinese methodology was inherently inappropriate before suggesting an alternative approach. We will then turn to the broader question of what should the Chinese have done in this situation if their real concern was reduced profitability and success of domestic import competing producers.

3.2.1. The economic approach to cost allocation and productivity estimation

Assessing the magnitude of price-cost markups for a firm and products within a firm is a long-standing exercise undertaken in academic economic research. Recently, the methodologies used to estimate costs and markups have become a hot topic for academic debate due to the concern that both market concentration and markups might be experiencing a long term secular increase (See the debate between de Loecker and Eeckhout, 2017 and Hall, 2018). To estimate markups for products within firms, there are two major difficulties for researchers or government officials: (a) the marginal cost is unobserved and depends on the use of variable inputs whose shares and prices change over time directly in response to idiosyncratic and aggregate shocks (see e.g., Amiti, Itzhoki, and Konings, 2014) and indirectly, through general equilibrium effects of the prices of factors of production⁴³; and (b) economic theory does not provide a unique rule for allocating common costs across multiple products within a multi-product firm.

Despite these challenges, economists routinely derive estimates of marginal costs by making reasonable assumptions such as the firm is a profit-maximizing entity. This approach requires detailed firm-level information. Using balance sheet data, leading contributions taking this approach for firms engaged in international trade include Berman, Martin, and Mayer (2012) and Amiti, Itzhoki, and Konings (2014). While these papers have clearly broken new important ground in firm-level studies, they are not without problems.

A key challenge in this literature is that even when an analyst obtains the complete balance sheet data for all relevant firms, information on production inputs is generally available only at the firm level--not at the firm-product level. Without some assumptions on how inputs are allocated across products, it is impossible to estimate marginal cost at the firm-product level. The seminal contribution by de Loecker, Goldberg, Khandelwal, and Pavcnik (2018) estimates firm-product level marginal costs and markups under the assumption that the production functions of single-product firms are representative of those of multi-product firms. In the case of *Broiler Products*, the challenge of estimating product-level costs is much more difficult than that of the typical multi-product manufacturing firm. Because inputs like labour to care for chickens and feed to fatten chickens are common inputs used in the production of all outputs, including high value items such as chicken breast meat and waste products that involve disposal costs such as intestines or blood, the standard approach of applying the cost shares from single product firms to the different product lines in a multi-product firm is not available. This was the starting point from which MOFCOM had to begin their analysis.

⁴³ For example, a positive productivity shock in one country that lowers the marginal cost of production would also cause the country's currency to appreciate against its trade partners and raise the cost of imported inputs and relative wage. See Corsetti, Dedola, and Leduc (2008) for a discussion.

Conceptually, for a multi-product firm that has a purely common input technology, a unique cost allocation does not necessarily exist. However, a standard economics framework can place bounds on the range of cost allocations that should be admissible. Because economics relies upon the assumption that firms seek to maximize profit, the cost allocation problem is generally framed in terms of values (monetary) rather than in other metrics such as physical quantity or number of workers employed. For example, if we assume that a firm producing three outputs (e.g. high value chicken breast, low value chicken feet, and costly-to-dispose offal), has a production technology in which all common inputs produce outputs in fixed quantity ratios, and is profit-maximising, then we can obtain constraints on feasible cost allocations.

Suppose the firm's profit function were given by:

$$\pi = p_b * q_b + p_f * q_f - c_o * q_o - C(Q)$$

where p_b , p_f , and c_o represent the prices of breast meat, feet, and the disposal price of offal; q_b , q_f , and q_o represent the numbers of units of breast meat, feet and offal produced, and $C(Q)$ is the cost of producing Q chickens. Further assume that the joint-output production function for chicken can be specified as a normalized Leontief production technology in which each chicken produces one (normalized) unit of breast meat, one (normalized) unit of feet and one (normalized) unit of offal.

Under these assumptions, we can easily derive bounds on the admissible set of cost allocations. In this example, profit maximization requires that the sum of the firm's marginal revenues over all products be greater than or equal to its marginal cost of producing chickens. Because the "price" of offal in this example is negative in this example, we can move it to the right hand side of the equation and express the profit-maximization condition in terms of one unit of chicken⁴⁴:

$$p_b + p_f \geq c_o + C(1)$$

This expression tells us that the key constraint that economic theory places on cost allocation is simply that the firm's revenues must exceed its costs. If this condition does not hold, then the firm is not a rationale profit-maximizing entity. This is a simplified version of the general result that, for a set of products with fully integrated joint production, the constraint on firm pricing and cost is that the sum of marginal revenues (and costs, for disposal outputs) must be greater than or equal to the marginal cost of production.⁴⁵ As stated here, it is not necessary to strictly allocate costs to different products proportional to the revenue they generate in order for a firm to be profit-maximizing. Generally, a value-based cost allocation can capture the idea that the integrated production process that generates high and low value outputs would very likely still take place

⁴⁴ The simple example assumes that firms are price-takers who cannot influence the price of their good and that unit cost does not change with the quantity produced. The more general expression of the profit maximization can be written $\sum_i p_i'(q_i) = C'(Q)$, i.e., the firm's profit maximizing quantity, Q , equates the sum of the marginal products of the multiple joint outputs to the marginal cost of producing Q units.

⁴⁵ This condition is an analogue of the well-known Samuelson condition on the optimal provision of public goods – the sum of marginal benefits in the population must be equal to the marginal cost of provision.

even if low-value outputs cross an arbitrary line to become waste products that are costly to dispose.

In this regard, the Panel was correct to draw attention to the fact that the Anti-Dumping Agreement is somewhat deferential to the exporter's own record of costs. What is somewhat worrisome is the Panel's suggestion that it should be relatively easy for an IA to reject exporters' records and methodologies if the IA can provide a reason for the rejection. While one can imagine many scenarios in which the firm's data is poor or incomplete and should be rejected on those grounds, economic theory suggests that considerable flexibility over the firm's exact cost-allocation rule should be permitted. Economic theory does not require a unique approach – it is reasonable to allow firms some flexibility in how to manage their own accounting of costs.

Despite this general desire to allow flexibility in firms' treatment of their own cost allocation, the same should not necessarily be said of the methodology imposed by an IA. The issue that arises with the Chinese weight-based cost allocation is that it builds in an arbitrary requirement that every output of a firm (including pure waste products) must satisfy the requirement that price exceeds cost. This is clearly a nonsense assumption in the case of waste products and is entirely arbitrary in the case of low-value by-products such as chicken feet. The arbitrary weight-based allocation is designed to show that firms choose to operate by-product lines at a long-term, persistent loss. Because the methodology is designed to deliver pricing below cost as an outcome, that is precisely what it delivers. Suppose that a chicken weighing 1 kg was comprised of 500 grams of breast meat, 100 grams of feet and 400 grams of offal, that the cost of producing this chicken was \$1, and that the respective prices for the outputs were \$3 for chicken breast, \$0.10 for chicken feet, and the disposal cost of offal were \$1. In this example, it is an exercise in nonsense to assign four-tenths of the cost of production to a waste product that requires costly disposal. Further, even if we follow a weight-based cost allocation that sets aside the weight of costly offal, the methodology would still apply five-sixths of the total unit cost of \$2 to chicken breast and one-sixth to feet, implying that the chicken feet are running at a substantial loss. In contrast, the value-based profit-maximization condition presented above is clearly satisfied as $\$3.10 > \2 . Furthermore, although it is more restrictive than simply necessary, the revenue-proportional cost allocation rejected by MOFCOM would imply two profitable product lines. In this sense, the MOFCOM methodology has a striking resemblance to zeroing – it is a methodology with a pre-determined conclusion that always finds the foreign producer at fault. In taking a position that a weight-based approach to cost allocation is acceptable as long as it is applied properly, the Panel has allowed a methodology of dubious economic merit that, in many instances, will generate high dumping margins even when no dumping or anti-competitive behaviour is taking place. This conclusion should particularly annoy those Americans who were disappointed by previous rulings that restricted the use of zeroing.

Stepping back, the larger question of why MOFCOM chose to analyse production costs of US producers is relevant. MOFCOM appears to have been concerned that the price of US chicken feet was below that of Chinese-produced chicken feet and this was reducing the profitability of Chinese producers. Although some US producers had limited US sales, the reality is that there is almost no demand for the product in the US so the price is essentially zero. In China, the price is positive. With the price in the export market above the price in the home market, there was no dumping taking place according to the Anti-Dumping Agreement's first definition of dumping.

This raises the question of what methodologies should the Anti-Dumping Agreement permit for assessing dumping. The answer from economists has long been that the criteria in the Agreement make little sense and trying to codify them is a futile exercise. The intention of the Agreement was supposed to be to prevent anti-competitive behaviour and the abuse of market power by foreign exporters. This is not being achieved with the current rules.

One approach to evaluating a firm's market power and the existence of the pricing-to-market behaviour is found in Corsetti, Crowley, Han, and Song (2019). These authors propose a new way to evaluate pricing-to-market and market power for the multi-product, multi-destination exporters that dominate global trade. This method relies exclusively on customs data including prices and quantities of exports at the level of products within firms and, notably, does not require the more detailed and difficult-to-obtain balance sheet data of individual firms. Corsetti, Crowley, Han and Song (2019) develop a two-part framework consisting of a Trade Pattern Sequential Fixed Effects (TPSFE) estimator and a product classification system to estimate the destination-specific markup elasticity to the exchange rate. This methodology allows researchers to identify pricing-to-market and market power by firms by precisely isolating cross-market variation in prices, obtained after removing time-varying factors including marginal production costs, at the level of each individual product.⁴⁶

The main takeaways from their empirical analysis are that pricing-to-market is routinely practiced by exporters, it is more pervasive in final consumer goods and more differentiated goods, it is more frequently used by larger firms than by smaller firms, and it can be observed to differing degrees in the vast majority of products exported from China. A similar analysis of UK exports by Corsetti, Crowley, and Han (2018) finds extensive pricing-to-market by UK firms that are invoicing their exports in the local currency of the foreign country to which the goods are headed. These findings confirm what economists critical of the Agreement on Anti-Dumping have long argued; the Agreement's codification of price-discrimination across markets as an unfair trading practice is sanctioning a common, profit-maximizing pricing strategy. While pricing-to-market might be coincident with anti-competitive practices, it does not, by itself, provide any useful information about whether exporters are engaging in unfair trade.

3.2.2. Broader economics questions relevant to Broiler Products

Taking a broader look at the normative problems relevant to this case, two things stand out. First, there seems to have been little evidence of pricing below cost by the US exporters, yet the Chinese pursued an antidumping rather than a safeguards case.⁴⁷ The safeguards agreement was

⁴⁶ The general approach builds on the seminal work by Knetter (1989) which first proposed to net out changes in unobservable marginal costs by using cross-market differences in prices. Because the markets in which firms operate each period can and does vary endogenously with unobservable changes in production costs and demand which are arguably correlated with changes in bilateral exchange rates, controlling for the time-varying set of destination markets---that is, a firm's trade pattern for each product---is essential to ensure that the estimated elasticity is identified.

⁴⁷ As noted earlier, because China's investigation began immediately after the US tire safeguards case, China's primary motivation may have been retaliation, rather than stabilizing its domestic industry. However, if its objective had been to stabilize output and market share of its domestic industry, then a safeguard should have been a viable policy option.

intended to provide policy flexibility from fair foreign competition. The fact that countries do not view a safeguard measure as a viable approach to providing import relief is driven by multiple factors. Firstly, the political economy of having to admit that one's own industry is behind the times is more difficult to manage than accusing foreigners of unfair practices. Second, the three-year duration of retaliation-free protection is short compared to five years under anti-dumping. Third, anti-dumping is a bilateral policy which potentially creates less international commercial tension than a non-discriminatory safeguard. Other factors are likely relevant. But we cannot understate the damage caused by the Appellate Body's decision in *Argentina-Footwear* to revive and raise the standard on an "unforeseen developments" test. Since that ruling, there has been little use of safeguards. Furthermore, efforts by WTO bodies to curb protectionism by tightening up the criteria to assess dumping margins in antidumping cases appear to vacillate between being overly restrictive in some cases (e.g., US-Mexico Steel as argued by Crowley and Howse, 2010) and too deferential to domestic authorities in others (e.g. US-China Broiler Products, as noted above).

In retrospect, the gradual shrinking of trade policy space through rulings restricting the use of safeguards and antidumping might have been gone too far. Given extensive use of extra-WTO measures to restrict imports by the US over the last two years, in hindsight, the well-intentioned efforts by WTO bodies to clarify the rules of the WTO agreements might have overshot their mark. If anything, limited use of temporary trade barriers now seems to have been one of the factors that kept the WTO functioning well in its first decade and beyond. A series of papers by Bown and Crowley (2013a, 2013b, and 2014) document that countries apply temporary trade barriers, especially anti-dumping duties, to cope with real economic shocks that are largely outside the control of domestic producers. Going forward, there is a need to re-evaluate how safeguards and antidumping policy should be optimally designed to help countries manage economic shocks.⁴⁸ A redesign would allow countries to reset the balance between policy flexibility and trade liberalism.

The last normative issue relevant to this case is the time lapse between the initial filing of the dispute in 2013 and the issuance of a compliance Panel report in 2018. The lack of any punitive damages during the long period in which any WTO case is being heard, appealed, and re-evaluated provides a strong incentive to all countries to "test" WTO rules with policies that give every appearance of being inconsistent with the Agreement from their initial introduction, but that grant considerable policy flexibility at no cost. It is not entirely clear what the best practice should be – introducing damages would provide a stronger incentive for countries to stick to the rules, but in the current environment of trade tensions, introducing damages might simply pour fuel on the populist, anti-globalization fire. At this point, it is worth stressing that the lack of any provision for redress creates an incentive to deviate from WTO rules persistently and future reform efforts should think seriously about how to better incentivize compliance.

4. Conclusions

As in the original *China – Broiler Products* dispute, China lost on almost all the claims brought by the United States at the compliance stage. Notably, China failed again to properly allocate costs when constructing the normal value of broiler products in the US market. However, its failure to comply with this obligation was not due to the fact that it used a weight-based cost

⁴⁸ A small caveat is that it is not obvious if the ideal safeguards policy would be bilateral or non-discriminatory. The papers by Bown and Crowley (2013a, 2013b, and 2014) find that countries use antidumping to respond to bilateral shocks. An ideally-designed safeguard would take into account whether the underlying shock

allocation methodology – which the authors consider economically-questionable – as opposed to the value-based cost allocation methodology suggested by the US exporters. It was due to China's inability to apply its own methodology in a coherent and consistent manner. From a legal precedent perspective, however, it is somewhat worrisome what the Panel implicitly suggested: that it should be relatively easy for an investigating authority to find a reason to reject exporters' cost-allocation methodologies and to replace them with alternative methodologies better-designed to deliver dumping as an outcome.

China did succeed in showing compliance with two obligations: the obligation to disclose essential facts and the obligation concerning "residual" rates for unknown exporters. Although the Panel properly relied on previous jurisprudence to rule on those claims, the authors consider that there is room for debate as to the appropriateness of the current legal standards for all cases. The Panel followed previous precedent when noting that only data and formulae, but not the margin calculations themselves, constitute "essential facts" that must be disclosed by an investigating authority. The authors wonder whether this interpretation should be more flexible, particularly in cases where a general lack of regulatory transparency can be shown. The Panel also followed previous caselaw when finding that the Antidumping Agreement does not address the situation in which certain companies do not make themselves known to the investigating authority, and that China could therefore attribute a higher "residual" margin of dumping to those unknown exporters. The authors wonder, however, whether the notion of "unknown" exporters should be revisited at the compliance stage, considering that potential new exporters could have appeared in the market and be willing to participate in the reinvestigation.

In any event, the *China – Broiler Products* dispute was presumably political in nature. The imposition of duties on US broiler products appears to have been a retaliatory response to the tariff increase on Chinese tires, rather than the result of a genuine trade remedy investigation based on strong underlying dumping and subsidization evidence. This could explain why China's behaviour did not change significantly after the first adverse WTO ruling in 2013. The United States had to bring a compliance proceeding to try to secure China's compliance, and eventually succeeded. In February 2018 – a month after the circulation of the compliance panel report – China announced the removal of the antidumping and countervailing duties on US broiler products. This is not the first time, however, that the United States has been forced to bring a compliance proceeding against China on trade remedies. In *China – Grain-Oriented Electrical Steel (GOES)*, the United States achieved effective victory – i.e. the removal of antidumping and countervailing duties – only after five years of WTO litigation. Regardless, China's compliance in the Broiler dispute is good news for the United States. This notwithstanding, the removal of duties came against a backdrop of an escalating trade tension between China and the United States. In January 2018, Washington increased tariffs on solar panels – mostly coming from China – and washing machines, which triggered an antidumping investigation by Beijing on US sorghum. At a general level, it is somewhat worrisome that WTO Members may use trade remedy investigations as a retaliatory mechanism rather than as a tool to seek legitimate relief from challengeable dumping and subsidization practices.

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