

Subsidization, price suppression, and expertise: causation and precision in Upland Cotton

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1. Introduction

The determination of causal linkage in trade-remedies cases – subsidies, dumping, and safeguards – has challenged WTO dispute settlement. There are two difficult questions in the context of determination of ‘serious prejudice’ under Articles 5 and 6 of the Agreement on Subsidies and Countervailing Measures (SCM Agreement). First, while theory indicates that subsidization of tradable goods may affect prices, and therefore cause ‘serious prejudice’ arising from ‘significant price suppression’, empirical validation and estimation of the magnitude of the effect is difficult. Second, the relevant treaty language does not explicitly specify the standard by which Panels must determine whether significant price suppression exists, or the standard by which Panels must determine whether this significant price suppression is caused by subsidies. These problems, combined with the institutional limitations on the ability of Panels to deal with economic evidence, make the outcome of these types of cases somewhat uncertain.

This paper analyzes the ‘serious prejudice’ component of the *Upland Cotton*¹ decision of the Appellate Body. It describes the reasoning of the Panel and of the Appellate Body in this phase of the case. It critiques this reasoning from the standpoint of the requirements of the SCM Agreement, from the standpoint of economic analysis, and from the standpoint of bureaucratic capacity. Section 2 describes the background and facts of the *Upland Cotton* case.

1 Appellate Body Report, *United States – Subsidies on Upland Cotton*, WTO Doc. WT/DS267/AB/R (Mar. 3, 2005) (adopted March 21, 2005) [hereinafter Appellate Body Report]. Reports of the Appellate Body and Panels are available at http://www.wto.org/english/tratop_e/dispu_e/dispu_status_e.htm.

Section 3 describes the legal reasoning of the Panel and Appellate Body on the issue of causation of serious prejudice, and, more particularly, significant price suppression. It examines the law of causation under the SCM Agreement, and critiques the *Upland Cotton* decision from the standpoint of the treaty text.

Section 4 examines the economic analysis of causation of ‘serious prejudice’ by virtue of significant price suppression. This is, of course, a combined legal and economic analysis, for the question of whether ‘significant price suppression’ exists is partially one of legal interpretation to determine the applicable measure, and partially one of assessment of facts, while the question of causation requires first a legal standard of causation, but also must utilize economic theory and methodology. Indeed, we suggest below that the question of the very existence of serious-price *suppression* includes an element of *causation*.

Section 5 examines the bureaucratic capacities of Panels, and of the WTO DSU mechanism, to carry out effective analyses of causation in this context, and recommends some alternative approaches. Section 6 briefly concludes.

2. Background

The US is the world’s second-largest producer of cotton. In recent years, the US has exported an increasing proportion of its production, and is now the world’s largest cotton exporter. Between 1991 and 2004, US subsidies for cotton production averaged \$1.7 billion per year (Schnepf, 2005). Brazil is a major export competitor. In 2002, Brazil brought the *Upland Cotton* case to the WTO, attacking a number of components of the US cotton program.

Brazil made five major claims: (i) that US direct payments to producers are not in fact ‘decoupled’ income support, and therefore do not qualify for exemption from relevant reduction commitments; (ii) that payments under the ‘Step-2’ program to compensate US exporters and US mills for purchase of US upland cotton at high prices are illegal export subsidies and illegal import-substitution subsidies, respectively; (iii) that US export credit guarantees are prohibited export subsidies; (iv) that the four US cotton support programs that are contingent upon market price levels (loan deficiency payments, marketing-loss assistance payments, counter-cyclical payments, and Step-2 payments, collectively the ‘price-based programs’) caused serious prejudice by virtue of significant price suppression, and therefore must be discontinued or their effects removed; and (v) that the FSC-ETI Act of 2000 is a prohibited export subsidy. We focus on the fourth claim, and within that claim on the establishment of a causal link between a subsidy and significant price suppression.

3. The law of causation of significant price suppression and serious prejudice

3.1 Articles 5(c) and 6.3(c) of the SCM Agreement

Article 5 of the SCM Agreement prohibits WTO member states from causing ‘serious prejudice’ through the use of a subsidy. Article 5 of the SCM Agreement provides as follows:

5 No Member should cause, through the use of any subsidy referred to in paragraphs 1 and 2 of Article 1, adverse effects to the interests of other Members, i.e.:

...
(c) serious prejudice to the interests of another Member.²

Article 6.3(c) of the SCM Agreement provides as follows:

6.3 Serious prejudice in the sense of paragraph (c) of Article 5 may arise in any case where one or several of the following apply:

...
(c) the effect of the subsidy is a significant price undercutting by the subsidized product as compared with the price of a like product of another Member in the same market or significant price suppression, price depression or lost sales in the same market;

The reader will note that this provision does not explicitly specify that the subsidy at issue must be a sufficient (or ‘but for’) cause, or even a necessary cause, of serious prejudice.³ However, if the subsidy need only be a contributory cause, or a cause that exacerbates existing serious prejudice, then an element of randomness is introduced to the regulatory structure, at least from the standpoint of the subsidizer. Under such a rule, for the subsidizer, even a subsidy with small effects, which would not by itself cause serious prejudice, may be actionable. The outcome would depend on other contributing factors.

This problem is somewhat analogous to the problem that exists in the safeguards context, with respect to causation of ‘serious injury’,⁴ and in the anti-dumping duties context and countervailing duties context, with respect to

2 [original footnote 13 to SCM Agreement] The term ‘serious prejudice to the interests of another Member’ is used in this Agreement in the same sense as it is used in paragraph 1 of Article XVI of GATT 1994, and includes threat of serious prejudice.

3 An intermediate layer in the causation analysis is added by Article 6.3(c) itself. That is, Article 6.3(c) defines serious prejudice as potentially arising where ‘the effect of the subsidy’ is ‘significant price suppression’.

4 See Appellate Body Report, *United States – Safeguard Measures on Imports of Fresh, Chilled or Frozen Lamb Meat from New Zealand and Australia*, WT/DS177/AB/R, WT/DS178/AB/R, adopted 16 May 2001, DSR 2001:IX, 4051; Appellate Body Report, *United States – Definitive Safeguard Measures on Imports of Wheat Gluten from the European Communities*, WT/DS166/AB/R, adopted 19 January 2001, DSR 2001:II, 717.

causation of ‘material injury’.⁵ In the safeguards and dumping contexts, the Appellate Body seems to have come to an interpretation that finds subsidies to be actionable where increased imports are merely a contributing cause, without being sufficient cause, of the requisite level of injury. However, this position is not immune from criticism, and these contexts may be different in important ways from the serious prejudice context. For example, ‘serious prejudice to the interests of another Member’ is different from ‘serious injury’. As indicated in Article 6.3, the focus of this provision is on market effects, rather than industry effects. The criteria of Article 6.3 refer to displacement and price suppression, not to industry condition.

The Appellate Body has implicitly held in the safeguards context that if increased imports are merely a contributory cause of the ‘seriously injured’ state of an industry, they can be understood as satisfying the requirement for a causal link between increased imports and serious injury under Article 4.2(b) of the Safeguards Agreement.⁶ However, to the extent that the existence of *serious* injury is dependent on another causal factor – say change in demand patterns – it seems inconsistent to find actionable serious injury in one context of increased imports but not in another otherwise identical context. But despite the attention to causation in Article 4.2(b) of the Safeguards Agreement, we might argue that safeguards law is responding not so much to causation as to existence of serious injury.

Can the same argument be made in the serious prejudice context under the SCM Agreement – that the subsidies law is responding not so much to causation as to existence of serious prejudice? Although it is not free from doubt, and the decision in *Upland Cotton* seems to hold otherwise, the better answer appears to be that it cannot. Serious prejudice seems to be required to be an exclusive result of the subsidies. The ‘prejudice’ is not injury – it is impairment of the right to a market undistorted by subsidies. Even if it is permissible that injury (or more properly, ‘prejudice’) that is not serious without supplementation by other causal factors can be the basis for a safeguards action, it seems impermissible that price suppression that is not significant without supplementation by other causal factors could be actionable as serious prejudice.

If this is true, then Panels are required to determine not simply whether significant price suppression exists and that subsidies are *a* cause, but that the subsidies alone have the power to, and did, cause significant price suppression: that they are *the* cause of the requisite level of price suppression. Of course, if other factors are causing price suppression at the same time, subsidies that alone could have caused

⁵ *U.S. – Hot Rolled Steel*, paras. 221–233 (antidumping duties); EC-DRAMS CVD panel, para. 7.404 (countervailing duties).

⁶ See Appellate Body Report, *United States – Safeguard Measures on Imports of Fresh, Chilled or Frozen Lamb Meat from New Zealand and Australia*, WT/DS177/AB/R, WT/DS178/AB/R, adopted 16 May 2001, DSR 2001:IX, 4051; Appellate Body Report, *United States – Definitive Safeguard Measures on Imports of Wheat Gluten from the European Communities*, WT/DS166/AB/R, adopted 19 January 2001, DSR 2001:II, 717.

significant price suppression would still be actionable. On the other hand, if supplementation by other factors is necessary to make the price suppression significant, then under this proposed analysis, no serious prejudice exists.

So the analogy to safeguards and dumping seems to fail. This leads to a conclusion that Panels faced with Article 6.3(c) cases must evaluate the extent to which the subsidies in question are sufficient, acting alone, to cause significant price suppression.

Most importantly, the plain meaning of Article 6.3(c) seems to call for a finding that the subsidy under investigation is sufficient, on its own, to cause significant price suppression. Eliding intervening language, ‘the effect of the subsidy’ must be ‘significant price suppression’. It would require a powerfully counter-textual interpretative strategy – one that would be starkly inconsistent with the Appellate Body’s consistent approach – to suggest that it would be acceptable for the subsidy under investigation merely to contribute to ‘significant price suppression’. The very term ‘price *suppression*’ suggests that it is the action of the subject – the subsidy – that must cause it. In *Korea–Vessels*, the Panel stated that ‘we view these terms [price suppression and price depression] as implicitly including a certain built-in concept of causation’.⁷ The Appellate Body seems to agree in the present case.⁸

It is incumbent upon the Panel to make a finding of causation. Importantly, in contrast to the situation in connection with countervailing duties under the SCM Agreement, this is not simply a review of a national authority’s finding, but *ab initio* investigation and determination.⁹ So there is no possibility here for refuge in proceduralism: for making sure that the national authority considered all the required factors and prepared a reasoned and adequate report, without evaluating whether the requisite economic relationship actually exists.

While the Panel in the present case was correct to state that the SCM Agreement does not provide it with guidance as to how to proceed, this does not mean that there are no standards to apply to its determination. In fact, Article 11 of the DSU requires a complete ‘objective assessment’ where other parts of the WTO treaty are silent on procedure and requisite quality of determination. There may be a need, either through the work of the Appellate Body, or through the work of the political bodies of the WTO, to develop a set of administrative law-type standards for these types of determinations. There may be a further need for Panels to seek greater assistance of expert economists in their assessment of economic facts, just as they have sometimes done in connection with their assessment of scientific facts.

The implication of this understanding of the relevant portion of Article 6.3(c) is clear: a Panel must evaluate the extent to which the subsidy under investigation

⁷ Panel Report, *Korea – Measures Affecting Trade in Commercial Vessels*, WT/DS273/R, para. 7.534, adopted March 7, 2005.

⁸ Appellate Body Report, para. 433.

⁹ Appellate Body Report, para. 458.

caused significant price suppression. It has an obligation under Article 11 of the DSU to make an objective assessment of the facts. An objective assessment would seem to require the use of the best methodology reasonably available: the one most likely to reach an accurate judgment. It does not appear that WTO dispute settlement has yet developed a verbal measure for the standard of proof in these types of cases, such as the ‘preponderance of the evidence’ test generally used in US civil litigation.

3.2 Defining the market: the a-index-based world market for upland cotton

The first question under Article 6.3(c) is whether the effect of the subsidy was significant price suppression ‘in the same market’. Brazil asserted that there were four relevant markets: (a) the world market for upland cotton; (b) the Brazilian market; (c) the United States market; and (d) 40 third-country markets where Brazil exports its cotton and where United States and Brazilian upland cotton are found.¹⁰ The United States argued that the relevant market under Article 6.3(c) must be ‘a particular domestic market of a Member’, and that it cannot be a ‘world market’. The Appellate Body agreed with the Panel to the effect that the scope of the market ‘for determining the area of competition between two products, may depend on several factors such as the nature of the product, the homogeneity of the conditions of competition, and transport costs’.¹¹ The ‘same market’ need not be a specific geographic location. ‘[T]wo products may be “in the same market” even if they are not necessarily sold in the same place and at the same time, as long as they are engaged in actual or potential competition.’¹² The Appellate Body agreed with the Panel that this market could well be a ‘world market’. Therefore, Article 6.3(c) does not exclude the possibility of the ‘same market’ being the ‘world market’.

The US argued that the Panel’s finding that a world market for upland cotton exists is inconsistent with the Panel’s finding that the US price for upland cotton is different from the world price.¹³ The Panel found that a world market exists, and is reflected in the A-Index.¹⁴ The Appellate Body saw no reason to disturb this

¹⁰ Panel Report, para. 7.1230.

¹¹ Appellate Body Report, para. 408 (citation omitted).

¹² *Ibid.*, para. 413.

¹³ *Ibid.*, para. 411.

¹⁴ Panel Report, paras. 7.1260–7.1274. The Panel’s ‘four main reasons’ were: prices of Brazilian and United States upland cotton are ‘constituent elements’ of the A-Index; ‘key market participants’ perceive the A-Index as reflecting the world-market price for upland cotton; the International Cotton Advisory Council treats the A-Index in a similar manner; and the Economic Research Service of the United States Department of Agriculture (the ‘USDA’) has itself referred to the A-Index as the world price. The ‘A-Index’ ‘is a composite of an average of the five lowest price quotes from a selection of the principal upland cottons traded in the world market obtained by Cotlook, a private UK-based organization.’ (Panel Report, para. 7.1264.)

finding.¹⁵ The Appellate Body noted that the Panel concluded, as a matter of fact, that Brazilian and US upland cotton compete in the world market for upland cotton. The Appellate Body therefore concluded that the Panel did not err with respect to whether Brazilian and US upland cotton were ‘in the same market’.¹⁶

The Panel used the A-Index as the world price, as the basis for its analysis of whether price suppression in the ‘same market’ existed. Here, the question before the Appellate Body was whether it was sufficient for the Panel to examine the world price, or whether it was required to analyze the price of Brazilian upland cotton in the world market.¹⁷ The Panel had found that prices for upland cotton throughout the world are largely determined by the A-Index price, and therefore found that the A-Index adequately reflected world-market prices for upland cotton.¹⁸ The Appellate Body agreed that it was unnecessary for the Panel to analyze actual sales prices of Brazilian upland cotton.¹⁹

Thus, the core question was whether the US subsidies caused significant price suppression in the A-Index.

3.3 *Price suppression and causation*

As suggested by the Panel in *Korea–Commercial Vessels*, price ‘suppression’ cannot exist separately from the causal agent being examined: the US subsidies. So to say, as Article 6.3(c) does, that the ‘effect of the subsidy’ must be ‘significant price suppression’ is to say that only reductions (or non-increases) in the price caused by the subsidy are to be considered. Reductions (or non-increases) resulting from other factors are not included in ‘price suppression’.

However, the Panel in the present case made a separate analysis of the existence of price suppression, prior to its analysis of causation, and prior to its effort to address separate causes. In effect, the Panel engaged in a bifurcated analysis, separating price suppression from causation, as opposed to a unitary analysis of whether the US subsidies caused significant price suppression.²⁰ The Panel therefore implicitly understood ‘price suppression’ to mean ‘price decline’, excluding the causal criterion from its determination.²¹

The US complained about the Panel’s order of analysis, but the Appellate Body found no legal error.²² The Appellate Body pointed out that the serious-prejudice provisions of the SCM Agreement do not provide as much guidance on separating out causes as the trade-remedy provisions of the SCM Agreement.²³ The Appellate

15 Appellate Body Report, para. 411.

16 Ibid., para. 414.

17 Ibid., para. 416.

18 Panel Report, para. 7.1313.

19 Appellate Body Report, para. 417.

20 For a description of the difference, see Cass and Knoll, 1997.

21 The Appellate Body criticized the Panel’s failure to separate fully price suppression from price decline. Appellate Body Report, para. 424.

22 Appellate Body Report, para. 431.

23 Appellate Body Report, para. 436.

Body pointed out that the definition of ‘price suppression’ implies a ‘but for’ or counterfactual analysis – but for the challenged subsidies, would price suppression have occurred? Therefore, according to the Appellate Body, some of the same factors that go into determination of price suppression go into determination of effects.²⁴

In order to determine ‘price suppression’, the Panel looked at three considerations: (i) the relative magnitude of US production and exports in the world market, (ii) general price trends in the world market as revealed by the A-Index, and (iii) the nature of the subsidies at issue, and, in particular, whether or not the nature of these subsidies is such as to have discernible price-suppression effects.²⁵

The Panel failed to contextualize its reference to the relative magnitude of US production and exports. Of course, the larger the role of the US in world markets, the greater the *possibility* that proportional changes in US supply would affect world prices. However, the Panel did not determine by how much the US subsidies resulted in increased production. So, if, as the US argued, the subsidies had little effect on production, they would have little effect on world prices, despite their size.

In fact, the Panel seemed to compare US production to Brazilian production.²⁶ But Brazilian production seems irrelevant: once the Panel had determined that the A-Index was the relevant ‘price’ for purposes of identification of suppression, the magnitude of Brazilian production became irrelevant to the determination of suppression and causation.

Similarly, it is hard to see how ‘general price trends’ tell us anything about ‘significant price suppression’ and its causation by a subsidy. Nor is it probative that US prices tracked world-market prices. As the Panel in *Korea–Commercial Vessels* stated, ‘the existence of a flat or declining price trend, on its own, would not be a sufficient basis on which to conclude that prices were “suppressed” or “depressed”. For such a conclusion to be reached, the causes of these observed trends would need to be examined’. That Panel concluded that price suppression and price depression ‘concerns what the price movements for the relevant ships would have been in the absence of (i.e., “but for”) the subsidies at issue.’²⁷ That Panel’s perspective is worth quoting at length:

the question to be answered in respect of the affirmative link between subsidies and prices is, in the case of alleged price depression, whether in the absence of the subsidies prices for ships would not have declined, or would have declined by less than was in fact the case. For price suppression, the question would be whether, in the absence of the subsidies, ship prices would have increased, or would have increased by more than was in fact the case. Such a framework implies also

24 *Ibid.*, para. 433.

25 Panel Report, para. 7.1280.

26 Panel Report, para. 7.1284.

27 *Korea – Commercial Vessels*, supra note 7, at para. 7.537.

analyzing the various factors contributing to the particular market situation forming the subject of the complaint, i.e., supply and demand factors, production costs, relative efficiency, etc.²⁸

However, the Panel in *Upland Cotton* found an overall drop in prices ‘relevant’ but not ‘conclusive’.²⁹ The Appellate Body agreed.

[I]n our view, one would normally expect a discernible correlation between significantly suppressed prices and the challenged subsidies if the effect of these subsidies is significant price suppression. Accordingly, this is an important factor in any analysis of whether the effect of a subsidy is significant price suppression within the meaning of Article 6.3(c). However, we recognize that mere correlation between payment of subsidies and significantly suppressed prices would be insufficient, without more, to prove that the effect of the subsidies is significant price suppression.³⁰

But both the Panel and the Appellate Body seem to confuse price suppression with price reduction. If subsidization caused a rise in prices to be less dramatic than it otherwise would be, this should constitute price suppression. Similarly, it is entirely possible for prices to decline for other reasons without any influence by a subsidy. So the evidence of a decline in prices is not only not conclusive, it is not relevant. On the other hand, it would be relevant if changes in the magnitude of subsidies were correlated with changes in the magnitude of price change, and if it could be shown to what extent causation ran from magnitude of subsidies to magnitude of price change, rather than vice-versa, in the context of price-based subsidies.

The Panel had found that ‘except for a short period in MY 2000, the adjusted world price was *below* the marketing loan rate throughout virtually *the whole period from MY 1999 to 2002*.’³¹ This fact would suggest that farmers might be induced to plant on the basis of a marketing loan rate above the world price. The US argued that the Panel failed to address economic decisions of US upland cotton farmers at the time of planting. Specifically, the US argued that upland cotton prices would have supported a planting decision at the relevant times without the influence of the subsidies. The US presented evidence that at each of the times when farmers were making planting decisions, the expected world price realized at harvest was always higher than the marketing loan rate, meaning that the marketing loan rate-based subsidy would not have affected farmers’ decisions, and therefore would not have affected quantities produced. However, the Appellate Body accepted the Panel’s view that farmers might be induced to plant by the insulation from price declines provided by the marketing loan rate-subsidy

28 *Ibid.*, para. 7.615.

29 Panel Report, para. 7.1288.

30 Appellate Body Report, para. 451.

31 Panel Report, para. 7.1294 (original emphasis).

program.³² The Appellate Body determined that these are factual matters that the Appellate Body could not review.³³

The US also presented data showing that US cotton-planted acreage responded to expected market prices, that US farmers changed acreage commensurately with changes made by cotton farmers in the rest of the world, and that the US share of world cotton production remained stable, demonstrating that US farmers respond to the same market signals as cotton farmers elsewhere. The Appellate Body simply noted that the Panel considered this data.³⁴

Brazil submitted a report by Dr Daniel Sumner, and Sumner participated in several Panel meetings. Based on his modeling, Sumner found that but for the subject subsidies, the quantity of US production of upland cotton would have been an average of 28.7% lower than actual, and US exports would have been 41.2% lower than actual, from 1999 to 2002. He also found that but for the US subsidies, the A-Index would have been 12.6% higher during the same period.³⁵ The US expressed several concerns regarding the model used by Sumner. The model itself was owned and operated by FAPRI, the Food and Agricultural Policy Research Institute, and was not available to Brazil, the US, or the Panel. However, the US argued and presented evidence to the effect that Dr Sumner had made inappropriate assumptions and otherwise used the model in ways that were improper. For example, the US argued that FAPRI and the US Department of Agriculture both found that the impact of decoupled payments on acreage under cultivation was negligible, while ‘Dr Sumner’s model produces results suggesting cotton acreage impacts as high as 15.9% – that is, more than 50 times larger than what the FAPRI model would indicate.’³⁶

It is fair to say that the Panel did not, in its report, attempt to deal with the concerns expressed by the US regarding the model presented by Brazil. Delphically, the Panel declared that:

We have not relied upon the quantitative results of the modeling exercise – in terms of estimating any numerical value for the effects of the United States subsidies, nor, indirectly, in our examination of the causal link required under Articles 5 and 6.3 of the *SCM Agreement*.³⁷

[W]e have taken the analysis in question into account where relevant to our analysis of the existence and nature of the subsidies in question, and their effects,

32 Appellate Body Report, para. 445.

33 Appellate Body Report, para. 441.

34 *Ibid.*, para. 446.

35 Panel Report, para. 7.1202.

36 *United States – Subsidies on Upland Cotton* (WT/DS267), Comments of the United States of America on Comments by Brazil on U.S. Comments Concerning Brazil’s Econometric Model January 28, 2004, p. 2, available at http://www.ustr.gov/assets/Trade_Agreements/Monitoring_Enforcement/Dispute_Settlement/WTO/Dispute_Settlement_Listings/asset_upload_file156_5598.pdf.

37 Panel Report, para. 7.1205.

under the relevant provisions of the *SCM Agreement*, and have attributed to them the evidentiary weight we deemed appropriate.³⁸

How is it possible to take this information into account, without saying why or where, and still perform an ‘objective assessment’ of the facts in accordance with Article 11 of the DSU? How is it possible to perform an objective assessment of the facts without engaging with the debate about the appropriate assumptions and parameters of these models? In this context, an objective assessment of the facts must use the best analytical tools available, which means using appropriately configured models. It is incumbent upon a Panel in this context therefore to evaluate the configuration of a model, and to use that model to determine causation of significant price suppression.

The Appellate Body has found a violation of Article 11 of the DSU when Panels have failed to ensure that a domestic competent authority evaluated all relevant economic factors and that the authority’s explanation of its determination is reasoned and adequate.³⁹ It seems that, *a fortiori*, where a panel has an obligation itself to evaluate evidence, that this evaluation must be ‘reasoned and adequate’.

The Panel also found that other studies prepared by non-governmental and governmental organizations, focusing on related issues but not addressing the specific legal issues salient to the Panel’s work, and using assumptions that were not endorsed by the Panel, could only be used in the same way: ‘we have taken the analyses in question into account where relevant to our analysis of the existence and nature of the subsidies, and their effects’.⁴⁰

The Panel focused on price-contingent subsidies,⁴¹ suggesting that the nature of these subsidies – their structure, design, and operation – is relevant to their effects.⁴² The distinction between price-contingent and non-price-contingent subsidies was critical to the Panel’s analysis of causal nexus.

- With respect to the marketing loan program, pursuant to which repayment was reduced by reference to declines in world market prices, the Panel concluded: ‘We have no doubt that the payments stimulate production and exports and result in lower world market prices than would prevail in their absence.’⁴³ The Panel

38 Panel Report, para. 7.1209.

39 Appellate Body Report, *United States – Safeguard Measures on Imports of Fresh, Chilled or Frozen Lamb Meat from New Zealand and Australia*, WT/DS177/AB/R, WT/DS178/AB/R, adopted 16 May 2001. National authorities making similar determinations are held to a higher standard of explanation. Recall that Article 4.2(c) of the Safeguards Agreement requires a national agency making injury determinations to publish a ‘detailed analysis of the case under investigation as well as a demonstration of the relevance of the factors examined’. Of course, there is no similar requirement applicable to Panels under Article 6.3 of the SCM Agreement. Yet the contexts seem similar, and presumably the requirement of the Safeguards Agreement can provide context by which to interpret the requirements of DSU Article 11.

40 Panel Report, para. 7.1215.

41 The Panel declined to aggregate the non-price-contingent subsidies with the price-contingent subsidies, because they are ‘of a different nature and effect’. Panel Report, para. 7.1307.

42 Panel Report, para. 7.1289.

43 *Ibid.*, para. 7.1291.

especially emphasized the structure of the US subsidy, linking payments to the A-Index. However, the fact that US subsidies are determined by reference to the A-Index does not by itself prove that these subsidies affected the A-Index. The Panel cited reports, provided by Brazil, of US Department of Agriculture economists to the effect that the structure, design, and operation of the program stimulated production and exports, and resulted in lower world-market prices than would prevail otherwise.⁴⁴ However, the Panel did not explain the basis for its judgment that the evidence presented by Brazil was more persuasive than the contrary evidence presented by the US. As noted above, in these cases, Panels are required to comply with the DSU Article 11 requirement of an ‘objective assessment of the facts’. The Panel noted that the payments were ‘very large’.⁴⁵ However, very large payments do not necessarily affect volume of production, or price.

- The Panel found that the user marketing (Step 2) payments contributed to artificially higher prices in the US.⁴⁶ The Panel inferred that these higher prices resulted in greater volumes of production that in turn had an effect on price.⁴⁷ However, again, this syllogism, and the magnitude of the effect, is dependent on a number of market conditions. While the Panel referred to information on the record about the *amount of the subsidies*, it made no attempt to quantify the effect on exports and world market prices. Again, the Panel merely asserted that the subsidies are ‘a very large amount’.⁴⁸
- The Panel engaged in a similar approach with respect to other price-linked payments. With respect to counter-cyclical payments (CCPs), the Panel stated that ‘[w]e have confirmed a strong positive relationship between upland cotton (base acre) producers receiving annual payments and upland cotton production’.⁴⁹ The portion of the Panel Report cited for this, Section VII:D, deals with the availability of the Peace Clause, and contains no analytical treatment of this issue. The availability of the Peace Clause is not dependent on the effects on production of the relevant measures.
- The Panel concluded as to the results of these three types of price-contingent subsidies as follows: ‘In the particular facts and circumstances of this dispute, we consider that these three subsidies therefore [referring to price contingency] have a nexus with the subsidized product and the single effects-related variable – world price – that we are called upon to examine in our price suppression analysis under Article 6.3(c). The effects of these three price-contingent subsidies are, in our view, manifest in the movements in upland cotton prices in the same world market during the reference period.’⁵⁰

44 *Ibid.*, para. 7.1295.

45 *Ibid.*, para. 7.1297.

46 *Ibid.*, para. 7.1298.

47 *Ibid.*, para. 7.1299.

48 *Ibid.*, para. 7.1300.

49 *Ibid.*, para. 7.1302, citing Section VII:D of the Panel Report.

50 *Ibid.*, para. 7.1303.

The Appellate Body concurred: ‘the Panel found that the price-contingent subsidies stimulated United States production and exports of upland cotton and thereby lowered United States upland cotton prices. This seems to us to support the Panel’s conclusion that the effect of the price-contingent subsidies is significant price suppression.’⁵¹ It should be noted that the Panel really made no factual findings to the effect that the US subsidies reduced, or prevented an increase in, US upland cotton prices.

The Panel declined to develop a definition of the term ‘significant’,⁵² but determined that it was only required to ‘filter out effects of insignificant degree or magnitude’. It might have drawn guidance on the ultimate purpose of examining whether ‘significant price suppression’ exists: a determination of ‘serious prejudice’. It seems strange to suggest that ‘significant’ in this context means ‘not insignificant’, when the phenomenon examined must be constitutive of ‘serious prejudice’. In addition, some would argue that the positive term ‘significant’ requires something more than effects that are ‘not insignificant’.⁵³

The Panel found that the step from ‘significant price suppression’ to ‘serious prejudice’ required no further analysis – there is no requirement for a separate finding of ‘serious prejudice’ once ‘significant price suppression’ is found.⁵⁴ If this is correct, then, as suggested above, the ‘serious-prejudice’ context should have influenced the understanding of the word ‘significant’ in this context. The Oxford English Dictionary defines ‘serious’ (in the relevant context) as ‘[w]eighted, important, grave; (of quantity or degree) considerable, not trifling’. Only the last of these terms is consistent with the Panel’s understanding of ‘significant’ as ‘not insignificant’. Furthermore, in determining that what it found to be ‘significant price suppression’ also constituted ‘serious prejudice’, the Panel traveled in the other direction: it determined that its finding that the price suppression was ‘significant’ was sufficient to constitute a finding that the prejudice was ‘serious’.⁵⁵ By adopting a low threshold for ‘significant’ price suppression, and engaging in no further analysis to find ‘serious’ prejudice, the Panel magically transformed ‘not insignificant’ to ‘serious’. This style of argument allowed the Panel to make no real findings of either causation or magnitude of effects.

While the Panel found that the question of ‘significant price suppression’ is one of degree of suppression,⁵⁶ it merely referred to (i) the magnitude of US production and exports, (ii) overall price trends, (iii) the market-price contingent,

51 Appellate Body Report, para. 450, citing Panel Report, paras. 7.1291, 7.1295–7.1296, 7.1299, and 7.1308–7.1311.

52 Following *Indonesia – Autos*, para. 14.254. *The New Shorter Oxford English Dictionary*, L. Brown (ed.) (Clarendon Press, 1993), defines ‘significant’ as: ‘important, notable; consequential’.

53 In footnote 18 of the SCM Agreement, the treaty refers to effects that are ‘not insignificant’. An interpretation based on *effet utile* would give effect to the difference between a reference to ‘significant’ and a reference to ‘not insignificant’.

54 Panel Report, paras. 7.1376; 7.1389.

55 *Ibid.*, paras. 7.1393–7.1394.

56 *Ibid.*, para. 7.1328.

countercyclical nature of the US programs, and (iv) the ‘order of magnitude’ of the subsidies. On this basis – without ever looking at evidence of degree of price suppression – the Panel concluded that ‘we are certainly not, by any means, looking at an insignificant or unimportant world price phenomenon’.⁵⁷ This begs the question.

Of course, the central question here is to what extent was the A-Index price suppressed by US subsidies (the ‘effect of a subsidy’ – not the subsidized exports). The Panel examined the existence of ‘significant price suppression’ prior to its examination of causation by challenged subsidies. This order of analysis seems comparable to the so-called ‘bifurcated test’ applied by some commissioners of the US International Trade Commission in injury determinations in connection with countervailing duty cases and dumping cases (see Sykes, 1996).⁵⁸ Under the bifurcated test, the ITC first determines whether the requisite material injury exists, and second examines the contribution of the dumped imports to the injury. The bifurcated test allows a finding of causation where other causes may play an important contributory role.

The Panel found a causal link between the price-contingent subsidies and the significant price suppression, for four reasons:⁵⁹

1. The US exerts a substantial proportionate influence in the world upland cotton market. The Appellate Body stated that ‘if the price-contingent subsidies increased United States production and exports or decreased prices for United States upland cotton, then the fact that United States production and exports of upland cotton significantly influenced world market prices would make it more likely that the effect of the price-contingent subsidies is significant price suppression. Accordingly, this fact seems to support the Panel’s conclusion, when read in conjunction with its other findings.’⁶⁰ This seems a rather restrained endorsement.
2. The price-contingent subsidies were directly linked to world prices for upland cotton, thereby insulating US producers from low prices. The Panel found that Step 2 payments stimulated demand for US upland cotton by eliminating any positive difference between US internal prices and international prices, resulting in lower world-market prices than would prevail in their absence. The market loss-assistance payments and counter-cyclical payments were made in response to low prices for upland cotton, and stimulated US production by reducing risk associated with price variability. For the Appellate Body, this supported the Panel’s conclusion that the effect of price-contingent subsidies is significant price suppression.⁶¹

⁵⁷ *Ibid.*, para. 7.1332.

⁵⁸ There has been some recent criticism of the ITC approach to injury determination. See *Bratsk Aluminium Smelter v. US*, 444 F.3d 1369 (Fed. Cir. 2006).

⁵⁹ Panel Report, paras. 7.1347–7.1356.

⁶⁰ Appellate Body Report, para. 449.

⁶¹ *Ibid.*, para. 450, citing Panel Report, paras. 7.1291, 7.1295–7.1296, 7.1299, and 7.1308–7.1311.

3. There is a discernible temporal coincidence of suppressed world market prices and the price-contingent US subsidies. The Appellate Body recognized that temporal correlation would be insufficient without more.⁶²
4. US upland cotton producers would not have been economically capable of remaining in the production of upland cotton but for the subsidies at issue, *and* the effect of these subsidies was to allow US producers to sell upland cotton at a price lower than would otherwise have been necessary to cover their total costs.⁶³ While the Appellate Body accepted the US argument that a focus on variable costs may be more relevant than a focus on total costs, it did not find error.⁶⁴

This causal link is itself rather circumstantial, and weak. Note that the burden of proof regarding the causal link is for the complainant to meet. Moreover, the Panel did not attempt to quantify the impact of the US subsidies on quantity produced or price, and so had no way of knowing whether the US subsidies caused ‘significant price suppression’. There also seems little way to know the relative significance of the price suppression so caused. The Panel did not quantify subsidies, except to find that they were ‘very large’. This goes to causation, especially as the US claimed that some of the expenditures went to farmers who did not raise upland cotton. It also goes to burden of proof – what is the standard of permissible inference from observations such as ‘very large amounts’?

The Appellate Body found no requirement for quantification of the subsidy.⁶⁵ This seems strange, as it is difficult to see how a Panel could determine causation of ‘significant price suppression’ by the subsidy without knowing the magnitude of the subsidy. The Appellate Body did find that ‘[i]n the present case, the Panel could have been more explicit and specified what it meant by “very large amounts”, beyond including cross-references to its earlier findings regarding certain subsidies. Nevertheless, the information before the Panel clearly supports the Panel’s general statements regarding the magnitude of the price-contingent subsidies.’⁶⁶

In *Korea–Commercial Vessels*, Korea argued that the following elements must be followed in order to analyze causation in this context:

First, the subsidy must be quantified with respect to each subsidized producer. Second, the effect of the subsidy on the prices of the subsidized shipbuilder (‘the subsidy effect margin’) must be quantified, by estimating the non-subsidized cost of the product and comparing this with the producer’s price for the product. Third, a ‘price suppression and depression margin’ must be quantified, i.e., the margin by which the prices of the complaining Member’s like product have been suppressed or depressed. In this step, Korea argues, the effects of all other factors

62 Ibid., para. 451.

63 Appellate Body Report, para. 420.

64 Ibid., para. 453.

65 Ibid., para. 462.

66 Ibid., para. 468 (citations omitted).

on prices (including cost reductions, competition from other, non-subsidized, sources, etc.) also must be identified and eliminated.⁶⁷

While this method of analysis seems appealing, albeit difficult to implement, neither the Panel nor the Appellate Body in the present case required anything approaching this level of social scientific precision.

Having found this rather speculative causal link, the Panel found that it was not broken by five alternative causes: (i) weakness in world demand for cotton due to competing low-priced synthetics, and weak world economic growth; (ii) burgeoning US textile imports, causing greater US exports of cotton; (iii) the tendency of a strong US dollar to have an inverse effect on the world price of cotton; (iv) Chinese subsidized cotton and the release of millions of bales of government stocks; and (v) upland cotton planting decisions driven by other factors such as the effect of technology on production, relative movement of upland cotton prices versus competing crops, and expected prices for the upcoming crop year.⁶⁸

As to the first factor, the Panel asserted that increased US production belied the US argument that competition from synthetics was causing reductions in cotton prices. Yet, depending on existing capacity and the structure of variable costs compared to fixed costs, it is entirely plausible that the price effects observed were at least somewhat, or principally, due to low-priced synthetics, rather than the US subsidies supporting continued production.

As to the second factor, the Panel did not understand that imports of textiles and apparel to the US might reduce domestic demand for US-produced cotton, causing producers to seek export markets. Thus, US exports of cotton might rise without having a significant price effect, because the exports of cotton are replacing cotton used abroad in producing greater amounts of textiles and clothing for export to the US.

With respect to the third factor – the strong US dollar – the Panel declined to examine the contribution of this factor to price suppression of cotton, but merely asserted, seemingly irrelevantly, that the value of the dollar did not affect producer decisions. Yet the Panel's responsibility here was to provide an objective assessment of the facts. This would require the Panel to examine the degree to which a strong US dollar caused price suppression, in order to know whether the US subsidies were the cause of significant price suppression. Otherwise, it is not an 'assessment' of the facts, but a guess at the facts.

As to Chinese subsidies and exports, the Panel conceded that this would exert a downward pressure on prices, but stated that the additional Chinese supply was smaller than US exports, and that US production and exports either continued and/or increased. However, without examining the price effects of the Chinese cotton, it is not possible to know whether price-suppression effects observed were caused by US subsidies.

⁶⁷ *Korea – Commercial Vessels*, Panel Report, *supra* note 7, para. 7.608.

⁶⁸ Panel Report, paras. 7.1357–7.1363; Appellate Body Report, para. 421.

Finally, the US argued that technological and other price factors had more of an effect on US production decisions than its subsidies. The Panel concluded that ‘United States producers continued to grow upland cotton due to United States subsidies rather than market prices or expected market revenue.’⁶⁹ But it was incumbent on the Panel to assess the relative magnitude of these effects in order to know whether the US subsidies caused significant price suppression.

Without evaluating the contribution to price suppression of these other causes, the Panel had no way of knowing the actual contribution of US subsidies to price suppression, or whether that contribution was ‘significant’. The Panel begged the question of whether these other alternative causes of price suppression contributed enough to make any price suppression caused by the US subsidies not ‘significant’.

The Appellate Body agreed with the Panel that it is necessary to ensure that the effects of other factors in prices are not improperly attributed to the challenged subsidies.⁷⁰ The Appellate Body compared the Panel’s approach with respect to causation and non-attribution to the Appellate Body’s jurisprudence under the Agreement on Safeguards.⁷¹ ‘Although the Panel found that some of them had price-suppressive effects, it did not attribute those effects to the United States’s price-contingent subsidies.’ But the Appellate Body’s position on non-attribution in the safeguards setting has always been incoherent: the Appellate Body believes that separation is required, but cannot articulate a purpose for separation given that (in its view) there is no need to determine that the increased imports (in that context) are sufficient on their own to cause serious injury.

The Appellate Body quoted the Panel with respect to these other causal factors:

Although some of these factors may have contributed to lower, and even suppressed, world upland cotton prices during MY 1999–2002, they do not attenuate the genuine and substantial causal link that we have found between the United States mandatory price-contingent subsidies at issue and the significant price suppression. Nor do they reduce the effect of the mandatory price-contingent subsidies to a level which cannot be considered ‘significant’.⁷²

The Appellate Body concluded: ‘In sum, the Panel Report shows that it examined the other factors raised by the United States. Although the Panel found that some of them had price-suppressive effects, it did not attribute those effects to the United States’ price-contingent subsidies.’ Thus, the Appellate Body seemed to signal that it would follow its nonattribution approach developed in connection with safeguards and dumping.

⁶⁹ Panel Report, para. 7.1362.

⁷⁰ Appellate Body Report, para. 437 (citation omitted).

⁷¹ *Ibid.*, para. 438.

⁷² Appellate Body Report, para. 457, quoting Panel Report, para. 7.1363

In the end, the Appellate Body was dissatisfied with the Panel's report with respect to these matters.

Overall, the Panel evidently conducted an extensive analysis, but we believe that, in its reasoning, the Panel could have provided a more detailed explanation of its analysis of the complex facts and economic arguments arising in this dispute. The Panel could have done so in order to demonstrate precisely how it evaluated the different factors bearing on the relationship between the price-contingent subsidies and significant price suppression. Nevertheless, in the light of the Panel's examination of the relevant evidence, coupled with its legal reasoning, we find no legal error in the Panel's causation analysis.⁷³

The Appellate Body seemed rather mechanically textualist in requiring of the Panel only what Art. 6.3(c) explicitly specifies, and little more. But the requirement to determine causation, combined with the DSU Article 11 requirement of an 'objective assessment', serves as a general 'requirement' that a reasonable determination be made, rather than that only the analysis specifically called for be done.

4. The economic analysis of causation of serious-prejudice and significant price suppression

So far there have been three serious-prejudice WTO disputes: *Indonesia–Autos*, *US–Upland Cotton*, and *Korea–Vessels*. In all three cases, the requesting parties based their claims at least partly on SCM Article 6.3(c), but *US–Upland Cotton* is the first and, currently, only serious-prejudice dispute where a party relied on economic modeling in presenting its claims and arguments.

One reason for the relatively small number of serious-prejudice cases is the difficulty to establish causation between subsidy and serious prejudice. In addition, putting forward a hypothesis of causation naturally entails the risk of Type I errors (rejecting the hypothesis when it is actually true) and Type II errors (accepting the hypothesis when it is actually false) since, as Robert Hudec had argued in the context of subsidies disputes: 'In the hands of a clever advocate, there is always some alternative explanation for events that have occurred, and even more ways to explain events that haven't' (Hudec, 1998). In other words, there are likely to be instances where governments financing subsidies that actually cause serious prejudice are found 'not guilty' and even more instances where governments financing subsidies that do not actually cause serious prejudice are found 'guilty'.

A legitimate question therefore is whether the risk of Type I or Type II errors in serious-prejudice disputes is such that the entire exercise is called into question. More generally, the question arises as to whether one can attach sufficient confidence in the determination of the effects of the domestic subsidies to actually trust the WTO domestic-subsidy regime.

⁷³ *Ibid.*, para. 458.

Steinberg and Josling recognize that the need to show causation for a successful case based on Article 6.3 SCM poses a challenge (Steinberg and Josling, 2003). In their view, however, this challenge can be surmounted by using two tools of economic analysis: regression analysis on subsidy and trade data, and simulation of the effect of subsidies by models. For Steinberg and Josling, these tools ‘offer the only effective means of distilling whether subsidies are in fact causing “serious prejudice”. Without using these techniques, the problem of hidden or spurious correlations [between subsidy and displacement (in Art 6.3(a) and (b) cases) or price (in Art 6.3(c) cases)] would render Article 6.3 virtually useless.’

Regression analysis is a statistical tool for the investigation of relationships between variables. It is the most common method used to estimate econometric models, which are used by economists to establish relationships between economic variables. The fact that econometric models are estimated with statistical methods implies that they can be subjected to various statistical tests to evaluate their accuracy and robustness.

Estimating econometric models can be of great use in trade-remedy investigations to determine whether subsidized imports (in countervailing duty cases), dumped imports (anti-dumping cases), or simply imports (in safeguard cases) have caused injury to domestic industry. A particular regression technique actually used in such investigations is the Granger-causality analysis, which tests whether one variable consistently precedes another.

In general, regression analysis requires many observations of the dependent and independent variables to be sufficiently statistically reliable. Granger-causality is even more demanding in terms of its data requirements. In practice, this means that establishing causality based on econometric estimation might be feasible in trade-remedy investigations where both the dependent (industry performance) and the independent variable (imports) can be observed on a quarterly basis or even more frequently. This is definitely not the case in disputes about actionable subsidies because here the independent variable is not subsidized imports but the subsidy itself, which normally is only observed on a yearly basis. It is not surprising, therefore, that parties have not submitted evidence based on regression analysis in any of the three serious prejudice disputes decided to date.

Leaving aside direct estimation, probably the best alternative to determine causation is the counter-factual or ‘but for’ approach. The basic idea of the counter-factual approach to causation is that a causal claim of the form ‘event *c* caused event *e*’ can be explained in terms of counter-factual conditionals of the form ‘if *c* had not occurred, *e* would not have occurred’. The intuition that supports the counter-factual approach is the close association that is made between a cause of an event and a *sine qua non* condition of its occurrence. Here a cause is the condition ‘but for’ which the effect would not have occurred.

In this approach, the central problem is one of constructing the best possible counter-factual state of the world or ‘anti-monde’, i.e. what today’s world would have looked like ‘if *c* had not occurred’. Once the counter-factual has been

constructed, it is then possible to compare it with the actual world to arrive at a view as to whether ‘event c caused event e ’.

In economics, there are essentially two ways to construct the ‘anti-monde’. One is simply to use trend analysis and assume that today’s world would have been a continuation of yesterday’s world along past trends. The other is to use an empirical simulation model.

Broadly, there are two classes of empirical economic models: estimated econometric models and calibrated models. Like all models, they are based on assumptions. There is, however, a major difference between the two classes. Econometric models use statistical techniques to test their validity, whereas calibration models take them for granted, although some of the assumptions may in fact be based on econometric estimations. Calibration models are always calibrated so as to replicate the observed data. Hence, although they may incorporate some parameters that are econometrically estimated, other parameters are simply chosen to ensure that the model assumptions and the observed data are mutually consistent. These choices are not amenable to statistical tests. By contrast, econometric models do not perfectly replicate the observed data. They only provide a ‘best fit’ between the model assumptions and the observed data, but they allow testing the statistical validity of the assumptions.

In *US-Upland Cotton*, the Panel primarily used trend analysis to determine the existence of a causal link between some of the challenged US subsidies and the significant price suppression in the world cotton market. The Panel observed that the ‘A-Index in MY 1999–MY 2002 was, on average, 29.5 per cent below its 1980–1998 average’,⁷⁴ and implicitly assumed that the A-index of the world cotton price during the reference period 1999–2002 would have remained at the same level as during the period 1980–1998 in the absence of US subsidies. The difference between the counter-factual price of 73.54 and the observed price of 51.88 US-cents/lb, a fall of 29.5%, was ascribed to the subsidies.

It is surprising that the Panel report contains no analysis of the behavior of the A-index during the period 1980–1998 other than the average level. Even a cursory examination would have shown that the A-index fluctuated substantially during the period and that the values observed during the period 1999–2002 were in fact not exceptional. The decline in the A-index started well before 1999: it went down from a peak of about 95 US-cents/lb in 1994/1995 to about 70 in 1998/1999 and to a trough of 45 in 2001/2002. A similar decline had occurred earlier. For instance, the A-index fell from a peak of about 90 US-cents/lb in 1979/1980 to a trough of about 50 in 1985/1986. There was no reason, therefore, to assume that the proper counter-factual for the period 1999–2002 was the average value of the period 1980–1998. The Appellate Body did not comment on this matter.

⁷⁴ The original footnote 1463 reads: ‘The A-Index averaged 73.54 and 51.88 US-cents/lb in the periods of MY 1980–1998 and MY 1999–2002, respectively. Exhibit BRA-209.’ Panel Report, para. 7.1351.

As already noted, the Panel also ‘took account’ of the results of a simulation of an ‘econometric model’ submitted by Brazil in support of its claim of a causal link between US subsidies and serious prejudice in the form of price suppression. The simulation was performed by an external expert, Dr Daniel Sumner, using an adapted version of the Food and Agricultural Policy Research Institute (FAPRI) model. The simulation showed that ‘but for’ US-cotton subsidy programs providing direct price support, US exports would have declined on average by 41.2 % and world cotton prices would have been on average 12.6 % higher during the period 1999–2002. The United States objected to the changes made by Sumner to the FAPRI model, arguing that Sumner’s adaptations and modifications made it different from the FAPRI system, introduced some errors, and exaggerated the results. The US argued that differences in the methodology for estimating US crop acreage exaggerated the US production response, and the choice of a more inelastic foreign-demand estimate exaggerated the world price change.

In the end, the Panel decided to take the ‘analyses in question into account where relevant to [its] analysis of the existence and nature of subsidies, and their effects’.⁷⁵ However, the Panel did not rely ‘upon the quantitative results of the modeling exercise – in terms of estimating the numerical value for the effects of the United States subsidies, nor indirectly, in [the] examination of the causal link’.⁷⁶ The Panel was willing to grant that the ‘outcomes of the simulations are consistent with the general proposition that subsidies bestowed by Member governments have the potential to distort production and trade and the elimination of subsidies would tend to reduce “artificial” incentives for production in the subsidizing Member’, but was not willing to go beyond that.⁷⁷

This conclusion by the Panel seems to reveal an important impediment to the use of economic models in dispute-settlement cases pointed out by the WTO Secretariat: ‘When disagreements about a model turn on many technical issues, and when economists themselves give conflicting views about the issues, a Panel may feel that it is not in a position to resolve those questions ... More fundamentally, a Panel may conclude that economic analysis is not necessary for the resolution of the dispute before it. In this respect, the *US–Upland Cotton* Panel found that the serious-prejudice provisions do not require a precise quantification’ (WTO Secretariat, 2005).

The Panel in *US–Upland Cotton* did not, therefore, follow the reasoning of Steinberg and Josling (2003) that the need to show causation in Article 6.3 SCM disputes implies the use of empirical economic models. Instead, it based its conclusion that a causal link exists between the US subsidies and the significant price suppression it had found on three elements: the fact that the US ‘exerts a substantial proportionate influence in the world upland cotton’ market in view of the

75 Panel Report, para. 7.1209.

76 Ibid., para. 7.1205.

77 Ibid., para. 7.1207.

magnitude of its production and export of upland cotton; the magnitude and the price-contingent nature of US subsidies; and the ‘discernable temporal coincidence of suppressed world market prices and the price-contingent United States subsidies’, including the fact already referred to that the ‘A-Index in MY 1999–MY 2002 was, on average, 29.5 per cent below its 1980–1998 average’. The Appellate Body remained silent on the use of empirical economic models in Article 6.3 SCM disputes.

Was the Panel right in ignoring the results of simulations of the ‘econometric model’ for the determination of the causal link? Our answer is yes, but not for the same reason as that given by the WTO Secretariat (WTO Secretariat, 2005). To our mind, the problem with the modeling exercise submitted by Brazil is not so much that it entailed disagreements among economists or that the Panel was unable to weigh the different views, but simply that it relied on a model that cannot possibly answer the question at hand.

Contrary to what the Panel, and Sumner himself (Sumner, 2003), asserted, the simulations submitted by Brazil are not based on an ‘econometric model’ but on a ‘calibration model’. As already indicated, the difference between the two types of models is substantial. To quote the Economics Nobel Prize winner James Heckman, ‘given the weak empirical foundations for [calibration] models, it is not surprising that the policy counterfactuals based on them are controversial and few outside the subfield take the estimates of the ... consequences of policies produced by this line of research very seriously. At the same time, the models are intellectually interesting frameworks and demonstrate what is logically possible’ (Heckman, 2000).

It is right, therefore, to assert that the simulations prepared by Sumner indicate that a causal link between US subsidies and the world cotton price is ‘logically possible’. But the simulations do not provide a sense of the degree of confidence that can be placed on this logical possibility, as would be the case with an econometric model. In reality, the problem with the calibration model is that it *assumes* from beginning to end that there is a positive relationship between US subsidies and the world cotton price;⁷⁸ it never tests it. However, if one is ready to accept the assumptions embedded in the model (including those made regarding the values of the different parameters), then the simulations can be very useful in quantifying the effects of the subsidies on the world price. Hence, the interesting result of the simulations submitted by Brazil is not that there is a causal link between US subsidies and the world cotton price, but rather that taking all the assumptions of the model for granted, world cotton prices would have been on average 12.6 % higher during the period 1999–2002 in the absence of US subsidies.

78 Obviously, the model does not posit a direct relationship between US subsidies and world cotton prices. Rather it assumes a complex set of relationships between large numbers of variables that imply an indirect relationship.

At the same time, one should not over-emphasize the fact that the calibration model was not estimated. For one thing, many of its key parameters, in particular demand and supply elasticities, are borrowed from econometric studies. In addition, it is possible to test the robustness of the model's prediction by running sensitivity analysis on these key parameters.

One of the principal arguments raised by the United States in its appeal against the Panel decision was that 'the Panel should have considered to what extent other market participants would increase supply or reduce demand in response to any alleged increase in cotton prices resulting from the absence of US payments'.⁷⁹ The Appellate Body noted that the dispute between the US and Brazil lies in whether the Panel took into account supply and demand elasticities of third countries 'as reflected in these model [simulations] or otherwise'.⁸⁰ However, the Appellate Body was unable to reach a verdict on what is ultimately an empirical inquiry. It simply noted that 'the Panel indicated expressly that it had taken the models in question into account. It would have been helpful had the Panel revealed how it used these models in examining the question of third country responses. Nevertheless, we are not prepared to second-guess the Panel's appreciation and weighing of the evidence before it.'⁸¹

In the *Upland Cotton* case, the Panel stated that it did not rely fully on these empirical studies. Rather, it seemed to develop a qualitative analysis, incorporating a similar logic in a less mathematically rigorous manner. But by failing to make clear its assumptions about the magnitude of the various components of causation of price suppression, and the magnitude of effects of other factors that would cause price suppression, the Panel failed to develop a convincing case. While the Appellate Body accepted this case, it did so reluctantly.

5. Institutional capacities to determine causation of serious prejudice and significant price suppression

At least in the context of serious prejudice cases, where the Panel is required to make the initial determination of the existence and causation of serious prejudice, it may be possible for Panels to use experts to assist.

5.1 Panel use of experts in economics, including econometrics

Just as biology provides the best tools available to determine whether there is a scientific basis for a sanitary measure, modern economics provides the best tools available in order to determine the effects of subsidies on prices. So, where the SCM Agreement calls for a determination by a Panel of whether a subsidy has caused significant price suppression, a Panel would be wise to use the tools

⁷⁹ Appellate Body Report, para. 447, quoting Panel Report, United States' appellant's submission, para. 237.

⁸⁰ *Ibid.*, para. 447.

⁸¹ *Ibid.*, para. 448.

provided by economics, or to engage expert economists, or to evaluate reports provided by expert economists.

Panels are permitted to establish ‘expert review groups’ under Article 13.2 of the DSU. This facility has not been used yet (see Pauwelyn, 2002), but it seems well-designed for use in cases where the Panel must make complex economic determinations such as the one required in the instant case. Panels have called upon individual experts in six cases: *Japan–Apples*, *Australia–Salmon*, *EC–Asbestos* (initial Panel and Article 21.5 Panel), *Japan–Agricultural Products*, *US–Shrimp*, and *EC–Hormones*. However, in none of these cases has the Panel consulted experts on economic issues. In *Dominican Republic–Cigarettes* and in *India–Quantitative Restrictions*, the Panels sought economic information from the IMF.

Article 24 of the SCM Agreement calls for the establishment of a ‘permanent group of experts’ in order to perform certain functions under that Agreement, including to assist Panels in connection with certain issues relating to prohibited subsidies. However, given the limited mandate under the SCM Agreement for its permanent group of experts, the more useful course would seem to be to utilize expert review groups under Article 13 of the DSU.

The determination of significant price suppression and its causation would seem amenable to a report from an expert review group comprised of economic experts in relevant disciplines, including trade economics and econometrics. Engaging expert review groups to work through the difficult issues of appropriate assumptions and modeling techniques would relieve Panels of a burden that they generally cannot bear. Article 13 of the DSU has been found to provide Panels with broad flexibility to utilize experts. So it is curious that economic experts have not been used.

It might be argued that it is better to have the litigants bring their own experts, and have the Panel determine which experts present the better argument. However, Panels generally lack the expertise to critique complex economic analyses. ‘A non-expert cannot independently and directly check complex theoretical propositions that do not have simple observational consequences ... Whatever checking the non-expert can manage must rely on indirect devices like demeanor, credentials, and reputation’ (Brewer, 1998).

In fact, in other trade-remedies cases, Panels and the Appellate Body have sought refuge in procedural criticism of national economic analyses. They might feel more comfortable engaging in a full review of national determinations of dumping margins and subsidization, injury, and causation, in accordance with the terms of the treaty, if they could rely on expert review groups.

Indeed, in a number of contexts relating to remedies, development, and other matters, experts in economics would appear useful. It may even be appropriate to develop a coherent ‘economic jurisprudence’ with respect to certain issues. While it might be objected that the WTO treaty does not contemplate rule or determination by economists, it appears reasonable to respond that where the treaty framers expressed rights and obligations in terms of economic concepts, they

implicitly called for an accurate use of those economic concepts. The use of expert review panels appears to be a reasonable, treaty-specified method of achieving this goal.

5.2 *Appellate review*

The Appellate Body cautioned that ‘[t]o the extent that the United States’ arguments concern the Panel’s appreciation and weighing of the evidence, we note from the outset that the Appellate Body will not interfere lightly with the Panel’s discretion ‘as the trier of facts’.⁸² However, ‘[w]hether the Panel properly interpreted the requirements of Article 6.3(c) of the SCM Agreement and properly applied that interpretation to the facts in this case is a legal question’.⁸³ Nevertheless, in several contexts, the Appellate Body declined to examine the Panel’s appreciation and weighing of the evidence.⁸⁴

Recall that in these cases, the Panel is the fact-finder, not the reviewer of a national administrative-agency record. There may be some need to develop an administrative law of the WTO, with a more fully articulated standard of review for these findings. The US claimed before the Appellate Body that the Panel had failed to ‘set out the findings of fact, the applicability of relevant provisions and the basic rationale behind any findings and recommendations that it makes’ as required by Article 12.7 of the DSU. At several critical junctures, the Panel’s findings of facts can only be described as conclusory. Article 12.7 would seem to require not just a statement of the ‘findings of fact’ – the conclusions – but also the ‘basic rationale’ behind these findings. Here, the basic rationale was elided because the facts examined by the Panel do not indeed support a logical inference of causation. The Appellate Body declined to rule on the US claim that the Panel failed to satisfy the requirements of Article 12.7, because the US’s Notice of Appeal did not provide adequate notice of this claim to Brazil.⁸⁵

The US did not make a claim under Article 11 of the DSU.⁸⁶ Therefore, it did not allege that the Panel failed to ‘make an objective assessment of the matter before it, including an objective assessment of the facts of the case’ pursuant to Article 11. This is important, because part of the US concern was with the Panel’s assessment of the facts. Under Article 17.6 of the DSU, appeals are ‘limited to issues of law covered in the panel report and legal interpretations developed by the panel’.

5.3 *Is determination of serious prejudice worthwhile?*

Probably more than anyone else, Alan Sykes has taken a dim view of the WTO regime contained in the SCM Agreement. He has questioned whether the treatment of domestic subsidies under WTO law is actually desirable given that its

⁸² Appellate Body Report, para. 399 (citation omitted).

⁸³ Ibid.

⁸⁴ See, e.g., *ibid.*, para. 448.

⁸⁵ *Ibid.*, paras. 492, 496.

⁸⁶ *Ibid.*, para. 398.

‘criteria for determining which government programs are actionable ... are highly imperfect from an economic standpoint, and the challenges associated with efforts to do a better job are vast. It is by no means clear that general principles to sort unacceptable from acceptable domestic subsidy programs can be devised and administered successfully.’⁸⁷ This paper has not considered the broader question raised by Sykes about the possibility to determine what constitutes an undesirable subsidy from an economic standpoint. Instead, it has focused on a downstream issue, namely what should the role of economic models be in the determination of causation between actionable subsidies and serious prejudice by the Panel?

6. Conclusion

The *Upland Cotton* case illustrates the challenges that Panels face when they are required to evaluate complex economic matters. The serious prejudice provisions of the SCM Agreement call for an initial determination by the Panel, rather than the review of national agency determinations that is called for in the countervailing duty provisions. In the countervailing duty context, as in the safeguards and dumping contexts, the Appellate Body has seemed satisfied to have Panels engage in procedural review of national agency determinations, rather than substantive review. Although this position is subject to question, given the substantive requirements of WTO law, it is patently untenable in the serious prejudice context, where there is no initial national agency determination. In these cases, requirements to determine issues such as ‘causation’, ‘price suppression’, and ‘significant’ must be understood as requirements that Panels use the best analytical tools reasonably available to make such determinations.

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⁸⁷ For a useful and clear treatment, see Sykes, 2003.

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