Abstract

This event study seeks to investigate how capital markets evaluate the effectiveness of the World Trade Organization’s dispute resolution and enforcement mechanism. Event studies have been widely used in the domestic context to measure the impact of litigation on stock prices of involved corporations. This paper expands the existing Law and Finance research from the traditional domestic context to the international WTO level. WTO anti-subsidization cases are examined in this event study because there the link between WTO disputes and private corporations is most evident. First rather anecdotal evidence from ten single-beneficiary cases suggests that requests for panel implementation and the circulation of panel and Appellate Body reports tend to have statistically significant impacts on the beneficiary’s share price. The requests for consultations, formal panel implementations, and the adoption of rulings did not result in significant effects for shareholder wealth what is consistent with findings in the domestic context.

JEL classification: F13, K33, K42, P45

Keywords: Event Study, WTO Disputes, Subsidies, Shareholder Wealth

1 Introduction

No aspect of the World Trade Organization (WTO) has received more attention than its dispute resolution provisions. In particular, a lot has been written about the disadvantages of the WTO’s dispute settlement procedure and enforcement mechanism. The defending parties have, for instance, a strong incentive to postpone the panel proceedings as countervailing measures – if any – are never retroactive; this is one of the main reasons why the enforcement mechanism is perceived as rather

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3 69 % of all panel reports are appealed at the WTO Appellate Body. See http://www.worldtradelaw.net/dsc/database/appealcount.asp, August 04, 2008.

4 Only challenged actions that are still in place after a panel ruling are subject to possible countervailing measures. There is no retroactive or even punitive damage compensation in WTO law. See Art. 20 SCM Agreement.
weak. Despite this and other drawbacks, the overall compliance rate with WTO dispute rulings is surprisingly high; in 97.7 % of all cases, the challenged actions are brought into compliance with the final ruling of the Dispute Settlement Body.5

This paper seeks to test how financial markets evaluate the impact of WTO disputes on affected companies. At the first glance, this might seem impossible because WTO disputes can only be filed by member states and always address the action of another state. Although companies are only indirectly affected by WTO disputes, there exists a subgroup of cases where the link between the disputes and the companies’ stock market value is straightforward. These are cases in which a member state seeks to eliminate an actionable6 or prohibited7 subsidization for a specific corporation or industry in another country.8 In those disputes exists a limited number of beneficiaries which can easily be assessed.9 Therefore, subsidies cases are the best subgroup of WTO disputes to examine in an event study. According to the Efficient Market Hypothesis, the announcement of the WTO dispute settlement proceedings should have had a significant negative impact on the stock price of the subsidy recipient if the firm benefited and if it could rationally be assumed that governmental support had to be withdrawn in the near future. If there is no abnormal return associated with the announcement of WTO anti-subsidy panels, then the financial markets might perceive the dispute resolution system as ineffective – i.e. that capital markets assume that the subsidization will not or only partially be withdrawn. It might also be assumed that the subsidization will officially be withdrawn but continues in an indirect, less transparent way.10 Hence, this event study tests whether the well-known drawbacks of the WTO dispute resolution and enforcement system are incorporated in the stock price (i.e. no statistically significant abnormal return) or not (i.e. an abnormal return should be associated with the announcement of WTO anti-subsidy panels as found in the domestic context). To the author’s knowledge, up to now there exists no event study in the WTO context and only very few in an international context.11

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5 The final ruling is in most cases the report of the Appellate Body. See supra note 5.
6 Art. 5 and Art. 6 SCM Agreement.
7 Art. 3 SCM Agreement.
8 75 out of the total 363 WTO disputes involve violations of the SCM Agreement, Petersmann (2006).
9 More general trade barriers might benefit whole industries or groups, which makes an assessment of stock price effects hard to determine. Subsidies cases, by contrast, are targeted at the subsidization of one or a few specific corporations.
10 Another reason for no effect could of course be the fact that there the firm did not benefit from the subsidy, but this seems unlikely in the case of a challenged subsidy.
The paper is organized as follows: Section 2 briefly summarizes event studies in the domestic context. Section 3 discusses the applicability of the event study methodology to WTO cases, and in Section 4, the effectiveness of the WTO dispute resolution and enforcement mechanism is examined. The empirical analysis is presented in Section 5, and Section 6 concludes.

2 Event Studies in the Domestic Context

Event studies have been used extensively in the domestic context to assess the impact of various types of litigation on plaintiff and defendant corporations’ equity prices. It is widely accepted that this financial econometrics tool offers a fruitful means for evaluating the welfare implications of private and government actions. Furthermore, event studies are routinely employed in U.S. securities litigation.

Almost all studies examining the impact of domestic corporate litigation found that defendants experience economically meaningful and statistically significant wealth losses upon the filing of the suit (between -0.81% to -5.05%), whereas plaintiff firms experience no significant positive wealth effects. As the joint wealth effects for plaintiffs and defendants are found to be negative, it is suggested that inter-firm lawsuits are not a value-enhancing way for corporations to settle their disagreements. For government suits, the negative wealth effects for defendants tend to be even higher. Table 1 and Table 2 from Bhagat and Romano (2002) provide an overview of the impact of litigation on corporate value. Most studies find statistically significant negative effects for defendants upon the filing of the cases, which implies that markets immediately incorporate all publicly available information about the expected cost and possible damage award associated with the suit. This is in accordance with the semi-strong version of the Efficient Market Hypothesis, which posits that the price of a publicly traded stock reflects all public information on the present value of the future cash flow associated with ownership of the security.

13 Klick and Sitkoff (2008), pp. 760, 831
14 There exists only one event study which finds a positive wealth effect for plaintiffs, namely Bizjak and Coles (1995).
15 This finding is consistent with the notion that government agencies have more leverage and resources at their disposal to use in a legal battle or that the type of the suits is more serious—or both. Bhagat, Bizjak, and Coles (1998), pp. 8–9.
16 For government suits, allegation was already found to lead to statistically significant abnormal returns. See Karpoff and Lott (1993).
17 This is—of course—only true for highly developed capital markets. As the studies described above look at US litigation only, this does not constitute a problem. Whether all markets that have to be examined in the WTO event study context can be considered well developed capital markets will be discussed in a later stage of the paper.
18 The event study methodology was originally developed to test the Efficient Market Hypothesis. See Fama et al. (1969). In general, Capital Market Theory differentiates between three forms of the Efficient Market Hypothesis:
Applicability of the Event Study Methodology in the WTO Context

It is, of course, disputable whether the event study methodology can and should be applied to WTO disputes at all. WTO disputes can only be filed by member states and always address the action of another WTO member state. In general, there exist a variety of companies or even whole industries which are indirectly affected by a challenged action, e.g. by an illegitimately high duty on a certain product category. The effect of a respective WTO panel could – in theory – only be measured to the extent that the affected company suffered from that duty. As exporting companies usually export to strong, semi-strong, and weak market efficiency. In the strongest form all publicly and privately available information is immediately incorporated in the market price of publicly traded companies. The semi-strong form states that only all publicly available information is reflected stock price. Until recently, the latter form of the Efficient Market Hypothesis was universally considered to be the most realistic model of capital markets. See e.g. Ross, Westerfield, and Jaffe (2005), pp. 354-364 or Fama (1991). Some scholars have begun to question this view, but the prevailing view remains that capital market work efficiently and the event study methodology is not invalidated by these concerns. Bhagat and Romano (2007), p. 948.
many different countries, the effect of a high duty in a single importing country tends to be low.\textsuperscript{19} Therefore, the application of the event study methodology is unlikely to lead to statistically significant results for those kind of disputes.

This might be different for a subset of WTO cases where the link between disputes and private corporations is more straightforward: anti-subsidy cases. These are disputes for which a member state seeks to eliminate a certain subsidy in another member state which might constitute an actionable\textsuperscript{20} or prohibited\textsuperscript{21} subsidization according to the Agreement on Subsidies and Countervailing Measures\textsuperscript{22} (SCM). In order to be challengeable, the subsidy has to be “specific”. A subsidy is considered to be \textit{specific} in the sense of Art. 2 SCM and its interpretation through the WTO Dispute Settlement Body\textsuperscript{23} (DSB) if the granting authority explicitly limits the access to certain enterprises – which can happen either \textit{de jure}\textsuperscript{24} or \textit{de facto}\textsuperscript{25}. This specificity requirement limits the number of beneficiaries and makes them easily identifiable. Hence, linking WTO panels and specific private corporations is no longer a problem: they can be assessed for WTO anti-subsidy disputes.

According to the Efficient Market Hypothesis, the announcement of a WTO anti-subsidy procedure should have had a significant negative impact on the stock price of the subsidy recipient if (a) the firm benefited in a substantial manner and if (b) it could rationally be assumed that governmental support had to be withdrawn in the near future (see Figure 1).\textsuperscript{26} It seems a rational assumption that the former criterion will most certainly be fulfilled as the complaining state would otherwise not have requested a WTO panel in the first place.\textsuperscript{27} The latter criterion is a bit more difficult. Whether capital markets believe that the subsidization will end the near future\textsuperscript{28} depends on two variables: (i) the facts of the case and (ii) the actual effectiveness of the WTO dispute resolution mechanism. ‘Facts of the case’ refers to whether the challenged subsidization is actually prohibited or at least actionable under the

\textsuperscript{19} Of course, if the government of the company’s most important import market imposes a duty on the good, then there should be an effect associated with the imposition, and later the challenge, of that duty.
\textsuperscript{20} Art. 5 and Art. 6 SCM Agreement.
\textsuperscript{21} Art. 3 SCM Agreement.
\textsuperscript{22} 75 out of the total 363 WTO disputes involve violations of the SCM Agreement, Petersmann (2006).
\textsuperscript{23} See especially the panel and/or appellate reports on: US – Lead and Bismuth II (DS 138), US – Countervailing Measures on Certain EC Products (DS 165), US – Softwood Lumber IV (DS 257). For more detailed information see e.g. Matsushita, Schoenbaum, and Mavroidis (2006), pp. 352-355.
\textsuperscript{24} Art. 2.1 (a) SCM.
\textsuperscript{25} Art. 2.1 (c) SCM.
\textsuperscript{26} It is most likely that only the implementation of a panel and not the request for consultation will trigger such a market reaction. This issue will be discussed in Section 0, p. 10.
\textsuperscript{27} If the subsidization was not substantial and did not have had severe consequences for domestic competitors, then the complaining state would not want bear the costs associated with a WTO panel.
\textsuperscript{28} As discounted future subsidy flows are the maximum that could be deducted from the beneficiary’s stock price, it is important that the subsidization not only ends in, for instance, five years from now. The net present value of the abolished future subsidy flows gets substantially smaller the later the subsidy is withdrawn.
SCM Agreement, and how high the probability of a negative ruling is expected to be. But the high complainant win-rate of above 90% suggests that all cases that reach the panel stage at the WTO will be lost with almost certainty.\(^{29}\) Hence, it can be assumed the reaction financial markets will mainly depend on the perceived effectiveness of the dispute settlement system.\(^{30}\) There are good reasons to believe in a relatively effective as well as in a relatively ineffective dispute resolution system. This topic will be addressed extensively in the next section. Leaving this aside for a moment, it is interesting to look at the scenarios that follow: If capital markets perceive the dispute settlement system as a relatively effective means to end the subsidization of a certain enterprise, then the announcement of a WTO anti-subsidy panel should have had a significant negative impact on the firm’s market valuation.\(^{31}\) If financial markets believe that the dispute resolution mechanism is rather ineffective – i.e. it is assumed that the subsidization will not or only partially be withdrawn at some vague point in the future\(^{32}\) – then the panel proceeding announcement should not have had an effect on the stock price.\(^{33}\) Hence, the test for statistically significant abnormal returns – i.e. the event study methodology – should

\[^{29}\text{Guzman (2002b), pp. 2-3.}\]

\[^{30}\text{This belief is, of course, affected not only by the structure of the dispute settlement system, but also by the actual outcomes of previous panels.}\]

\[^{31}\text{In the form of discounting the Net Present Value of abolished future subsidy flows.}\]

\[^{32}\text{It might also be assumed that the subsidization will officially be withdrawn but continues in an indirect, less transparent way.}\]

\[^{33}\text{In the best case, we find a clear zero-effect.}\]
allow drawing first cautious inferences about the perceived effectiveness of the WTO dispute resolution and enforcement mechanism.

4 Dispute Resolution and Enforcement at the WTO

As mentioned in the beginning, there has been no aspect of the World Trade Organization that has received more attention than its dispute resolution and enforcement provisions. The following section abstains from giving a broad introduction to the WTO’s dispute settlement system and immediately addresses the question whether the system is relatively effective or not. In this paper, effectiveness is defined as the power of law and its enforcement mechanism to change states’ behavior. More narrowly, it is asked whether or not the WTO dispute resolution has an impact on states decisions and whether it elicits compliance.

There exists a trade-off between efficiency enhancing and efficiency decreasing factors. One of the major drawbacks of the WTO dispute settlement system constitutes the fact that sanctions – if any – are never retroactive. Only if a challenged action remains in place after a negative panel ruling, the Dispute Settlement Body may allow the aggrieved party to withdraw concessions. According to Art. 22.4 DSU, this suspension of concessions shall be substantially equivalent to the ongoing harm suffered from the violation. Furthermore, Art. 20 SCM implicitly states that the WTO system does not allow for retroactive or even punitive damage compensation in subsidies cases. As these proactive countervailing measures may only be imposed after a “reasonable period of time” (Art. 21.3 DSU), the defending parties have a strong incentive to delay panel proceedings. The violation and the associated benefits can basically remain in place unhampered for the duration of the panel proceedings. Evidence for this – besides the length of the disputes of one to three years – is the relatively high appeal rate of 69%: an outflow of a practice which further delays the final ruling.

Additionally, it has been argued that the WTO dispute settlement system can be seen as a system embracing a liability rule rather than a property rule. This means that a party found to be in violation of its WTO obligations might choose to continue to violate and pay the ‘price’ for it. The ‘price’ paid by the violator would be the harm from an eventually imposed countervailing duty. This can be seen as

35 According to Art. 21.3 DSU, the defendant member state has a “reasonable period of time” to bring its policies into conformity with its obligations after it has been found to have violated them.
36 Although it is discussed in the literature whether in the case ‘Australia – Automotive Leather’ (DS 126) some sort of retroactivity has been introduced.
awarding _expectation damages_ instead of enforcing _specific performance_.

This view addresses, for instance, the European Communities’ conduct after losing the famous ‘Bananas’ as well as the ‘Beef Hormones’ case. In both cases, the EC refused to comply with the panel rulings and decided to rather pay the ‘price’. In the ‘Bananas’ case, the United States imposed substantial sanctions beyond the harm suffered. The EC challenged this excessive retaliation practice before a WTO arbitration panel which decided that the relevant provision of the Dispute Settlement Understanding (DSU) cannot be interpreted as a justification for countermeasures of punitive nature. The US had implicitly argued that the purpose of a sanction was to enforce a property rule and that a careful calibration of sanctions was unnecessary. The arbitrators refused to permit ‘punitive’ sanctions and thereby acknowledged that countervailing measures are more in the nature of compensation. Hence, the interpretation of several scholars is that the WTO system allows violations to persist as long as the violator is willing to pay compensation – which is the essence of a liability rule approach.

Other scholars have strongly opposed the view that the WTO would allow for _efficient breach_. They believe that a WTO member is obliged to comply with its obligations in all circumstances. Especially Art. 22.1 and 22.8 DSU indicate that there is no institutional equivalence between suspension of concession and the obligation to perform the WTO contract (_pacta sunt servanda_).

The latter view might find empirical support in the high overall compliance rate of 97.7%. This compliance rate seems surprisingly high in the light of the above discussed drawbacks of the dispute resolution system. As these shortcomings suggest a rather ineffective system which does not offer sufficient deterrence in a classical Beckerian sense, there must be additional factors that drive the observed compliance.

The three driving forces, that have been identified, are domestic pressure for compliance, reputation, and the threat of excessive unilateral sanctions. _Domestic pressure for compliance_ arises from the high

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42 Decision by the Arbitrators on DS 27, see WTO document WT/DS27/ARB (April 9, 1999).
45 Most prominently John H. Jackson, see Jackson (2004).
47 The final ruling is in most of the cases the report of the Appellate Body. See supra note 3.
49 All three factors were already the driving forces behind the high compliance rate under the old GATT 1947 system. See e.g. Schwartz and Sykes (2002), pp. 193-199.
potential costs that countervailing measures may cause. The affected industry will suffer economic harm from the potential countervailing duty, and the government will suffer political costs due to reduced political support from the affected industry and its workers. This tends to be a realistic assumption as countervailing duties are usually imposed on a product category that is different from the product at stake, which raises the political costs even more.\textsuperscript{50} Furthermore, there is a consensus in almost all societies that the domestic government should abide by its international obligations. Deviations are in general only tolerated in severe cases which address national security or food safety issues.\textsuperscript{51}

Another factor driving the compliance is \textit{reputation}. Nations that violate their commitments may be expected to face some reputational cost in the form of a credibility loss for future interactions.\textsuperscript{52} Moreover, this cost will not only be borne in future dealings with the aggrieved nation, but also in dealings with all other nations that are aware of the violation. This multi-player repeated game might drive states to comply.

The third factor driving compliance is the \textit{threat of unilateral sanctions}. Especially the United States made excessive use of this practice. Section 301 of the U.S. Trade Act of 1974 has long authorized the executive branch to retaliate for breach of trade agreements.\textsuperscript{53} But also the EC has similar statutes which have been applied. Furthermore, the WTO SCM Agreement allows explicitly for unilateral measures – the so called \textit{Track I-procedure}.\textsuperscript{54} Therefore – rather than being a merely hypothetical and uncredible threat – the quite frequently applied unilateral sanctions constitute an important compliance force in the international trading regime. A large subset of the WTO disputes presented in Section 0 (p. 10) address allegedly excessive unilateral sanctions. As WTO disputes tend to take up to three years and challenged actions will most likely only be withdrawn after the panel ruling, the unilaterally imposes sanctions are likely to remain in place for a considerable period of time once they have been imposed.\textsuperscript{55} Taken together, the three factors \textit{domestic pressure}, \textit{reputation}, and \textit{unilateral sanctions} may explain why the overall compliance with WTO commitments as well as the dispute rulings is as high as observed. These three forces already allowed the old GATT system to work reasonably well despite its drawbacks in substantial areas.\textsuperscript{56} Nevertheless, there are good reasons to believe in a relatively ineffective dispute

\textsuperscript{50} In theory, the concession shall be withdrawn in the same trade area, but practice has shown that cross-sector-retaliation is common.

\textsuperscript{51} For instance, the European beef hormones case. See supra note 41.

\textsuperscript{52} Schwartz and Sykes (2002), p. 196. See also Guzman (2008), pp. 71-118.

\textsuperscript{53} See United States Trade Act of 1974.

\textsuperscript{54} Art. 10 SCM et seqq. in connection with Art. VI GATT 1994.

\textsuperscript{55} Unless the harmed state has enough retaliatory power to threaten credibly with the imposition of unilateral sanctions itself.

\textsuperscript{56} The old GATT system did not, for instance, offer a meaningful prospect of formal sanctions for violations that persisted after a reasonable period of time.
resolution system as well as good reasons to believe in a rather effective system. The trade-off between both sides is summarized in Figure 2. The complete event study will hopefully shed some light on which side outweighs the other.

![Factors driving the effectiveness of the WTO dispute resolution system](image)

**Figure 2:** Factors driving the effectiveness of the WTO dispute resolution system

5 **Empirical Analysis**

This section gives an overview of the so far conducted and further planned empirical analysis. First, the coding and selection of the relevant cases is explained. Section 0 outlines the events under investigation, Section 0 briefly elaborates on the methodology, and Section 0 covers data and source issues. The subsequent two sections discuss the limitations of the examined sample group and summarize the first results. Section 6 gives a brief outlook and outlines potential extensions.

5.1 **WTO Subsidies Cases**

For the reasons outlined in Section 3, the cases examined in this event study are WTO disputes which involve violations of the Agreement on Subsidies and Countervailing Measures. The period of observation runs from the foundation of the WTO in 1995 to 2007. There exist 25 subsidies cases that went to a panel stage, i.e. went from the bilateral consultation phase to a formal panel that resulted in a
ruling by the Dispute Settlement Body.\textsuperscript{57} Five non-compliance cases (Art. 21.5 DSU) that followed major cases are also taken into account because they also might have triggered stock markets reactions. According to Art. 21.5 DSU, the involved member states can request the Dispute Settlement Body to review the implementation of the Panel or Appellate Body ruling.

The 31 cases are divided into two categories: Cases which challenge the legality of a \textit{subsidy} and cases which target unilaterally imposed \textit{countervailing duties} on allegedly subsidized products. 20 cases fall in the former group, 11 cases in the latter group. As outlined before, we may expect to find a \textit{negative effect} on the stock market value of the benefitting corporations in cases that target allegedly prohibited or actionable subsidies.

In contrast, a corporation’s stock might show a \textit{positive reaction} if firm suffers substantially from an imposed countervailing duty. The \textit{countervailing duty-disputes} challenge unilaterally imposed duties on allegedly subsidized products. These disputes offer the prospect of removing the duty and increased sales for the corporation suffering from the countervailing duty. Hence, a rather positive stock market reaction is expected. This effect is likely to be higher for cases in which the market of duty-imposing country plays an important role for the company’s revenue.\textsuperscript{58} With the exception of three cases which involve only one company,\textsuperscript{59} it is quite difficult to determine the firms which are subject to the countervailing duty. Therefore, the “true” subsidies cases are examined first.

In theory, those subsidies cases are likely to yield clearer effects when there is only \textit{one} beneficiary of the challenged governmental action. There are 10 disputes that have one beneficiary (see Table 3) and 10 cases that have multiple beneficiaries (see Table 4). So far, the single-beneficiary cases have been

\textsuperscript{57} In between 1995 and 2007, 85 out of the total 369 WTO disputes involve violations of the Agreement on Subsidies and Countervailing Measures. All 85 disputes have been reviewed and coded. The total number of cases includes also cases that did not go to the panel stage or that were filed by different member state on the same subject matter. Only slight above 50\% of the disputes go from a consultation phase to a panel stage. See Horn and Mavroidis (2008), and www.worldtradelaw.net, (June 20, 2008). So far, only those cases have been examined which went to a panel stage (should the ‘Request for Consultations’ show statistically significant results in the remaining sample, then these excluded cases will be statistically examined). In five cases, the subject matters were agricultural products. These cases were also eliminated from the sample because agricultural subsidies are primarily covered by the Agreement on Agriculture and the beneficiaries tend to be highly dispersed. Most importantly, the substantive law of the Agreement on Agriculture differs to a great extent from the SCM Agreement. Furthermore, one primarily Safeguards related case got excluded. Finally, when one accounts for cases that address the same subject matter but were filed by different member states or were filed on the basis of a different legal ground, then the total number drops to 31 cases (e.g. the cases DS 54, 55, 59, and 64 were counted as one case because they all addressed Automotive Industry support measures in Indonesia). All examined beneficiaries have to be publicly traded corporations over the whole period under review.

\textsuperscript{58} Especially the U.S. market plays an important role for many exporting countries. As the United States made excessive use of unilaterally imposed countervailing duties, the harm for the affected corporations tend to be harsh. The prospect of the duty removal under a WTO panel should consequently lead to a rather positive stock price reaction for the affected corporations.

\textsuperscript{59} Disputes DS 296, DS 299, and DS 336 – DRAMs duties on Hynix chips.
<table>
<thead>
<tr>
<th>Dispute</th>
<th>Topic</th>
<th>Defendant</th>
<th>Complainant</th>
<th>Legal Basis</th>
<th>Affected Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS 46</td>
<td>Aircraft</td>
<td>Brazil</td>
<td>Canada</td>
<td>SCM</td>
<td>Embraer</td>
</tr>
<tr>
<td>DS 46 (Art. 21.5)</td>
<td>Aircraft</td>
<td>Brazil</td>
<td>Canada</td>
<td>SCM, DSU</td>
<td>Embraer</td>
</tr>
<tr>
<td>DS 46 (Art. 21.5 II)</td>
<td>Aircraft</td>
<td>Brazil</td>
<td>Canada</td>
<td>SCM, DSU</td>
<td>Embraer</td>
</tr>
<tr>
<td>DS 70</td>
<td>Aircraft</td>
<td>Canada</td>
<td>Brazil</td>
<td>SCM</td>
<td>Bombardier</td>
</tr>
<tr>
<td>DS 70 (Art. 21.5)</td>
<td>Aircraft</td>
<td>Canada</td>
<td>Brazil</td>
<td>SCM, DSU</td>
<td>Bombardier</td>
</tr>
<tr>
<td>DS 222</td>
<td>Aircraft Credits and Guarantees</td>
<td>Canada</td>
<td>Brazil</td>
<td>SCM</td>
<td>Bombardier</td>
</tr>
<tr>
<td>DS 316</td>
<td>Measures Affecting Trade in LCA</td>
<td>EC</td>
<td>US</td>
<td>SCM</td>
<td>Airbus</td>
</tr>
<tr>
<td>DS 347</td>
<td>Measures Affecting Trade in LCA</td>
<td>EC</td>
<td>US</td>
<td>SCM</td>
<td>Airbus</td>
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<tr>
<td>DS 317</td>
<td>Measures Affecting Trade in LCA</td>
<td>US</td>
<td>EC</td>
<td>SCM</td>
<td>Boeing</td>
</tr>
<tr>
<td>DS 353</td>
<td>Measures Affecting Trade in LCA</td>
<td>US</td>
<td>EC</td>
<td>SCM</td>
<td>Boeing</td>
</tr>
</tbody>
</table>

Table 3: Relevant single-firm subsidies cases that went to the panel stage

<table>
<thead>
<tr>
<th>Dispute</th>
<th>Topic</th>
<th>Defendant</th>
<th>Complainant</th>
<th>Legal Basis</th>
<th>Affected Corporations</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS 273</td>
<td>Commercial Vessels</td>
<td>Korea</td>
<td>EC</td>
<td>SCM, GATT, DSU</td>
<td>DHI, Hally, Daedong, Daewoo</td>
</tr>
<tr>
<td>DS 301</td>
<td>Commercial Vessels</td>
<td>EC</td>
<td>Korea</td>
<td>SCM</td>
<td>Various European Shipbuilders</td>
</tr>
<tr>
<td>DS 126</td>
<td>Automotive Leather</td>
<td>Australia</td>
<td>US</td>
<td>SCM</td>
<td>Howe, Australian Leather Upholstery, Australian Leather Holding</td>
</tr>
<tr>
<td>DS 126 (Art. 21.5)</td>
<td>Automotive Leather</td>
<td>Australia</td>
<td>US</td>
<td>SCM, DSU</td>
<td>Howe, Australian Leather Upholstery, Australian Leather Holding</td>
</tr>
<tr>
<td>DS 54 / 55 / 59 / 64</td>
<td>Autos</td>
<td>Indonesia</td>
<td>EC, Japan, US</td>
<td>SCM, TRIMs, GATT</td>
<td>PT Timor Putra Nasional (Indonesia) and Kia (Korea)</td>
</tr>
<tr>
<td>DS 139</td>
<td>Autos</td>
<td>Canada</td>
<td>Japan</td>
<td>SCM, GATT, GATS</td>
<td>US manufacturers benefiting from &quot;The Auto Pact&quot;</td>
</tr>
<tr>
<td>DS 142</td>
<td>Autos</td>
<td>Canada</td>
<td>EC</td>
<td>SCM, GATT, GATS</td>
<td>US manufacturers benefiting from &quot;The Auto Pact&quot;</td>
</tr>
<tr>
<td>DS 108</td>
<td>Foreign Sales Corporations</td>
<td>US</td>
<td>EC</td>
<td>AA, SCM</td>
<td>US export industry</td>
</tr>
<tr>
<td>DS 217</td>
<td>Bryd Amendment</td>
<td>US</td>
<td>EC</td>
<td>ADA, SCM</td>
<td>Beneficiaries from redistribution</td>
</tr>
<tr>
<td>DS 234</td>
<td>Bryd Amendment</td>
<td>US</td>
<td>Canada, Mexico</td>
<td>ADA, SCM</td>
<td>Beneficiaries from redistribution</td>
</tr>
</tbody>
</table>

Table 4: Relevant multiple-firm subsidies cases that went to the Panel Stage

<table>
<thead>
<tr>
<th>Dispute</th>
<th>Topic</th>
<th>Defendant</th>
<th>Complainant</th>
<th>Legal Basis</th>
<th>Affected Corporations</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS 138</td>
<td>Lead and Bismuth II</td>
<td>US</td>
<td>EC</td>
<td>SCM, DSU</td>
<td>United Engineering Steel, British Steel, BSES</td>
</tr>
<tr>
<td>DS 194</td>
<td>Export Restraints</td>
<td>US</td>
<td>Canada</td>
<td>SCM</td>
<td>Canadian Export Industry</td>
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<tr>
<td>DS 212</td>
<td>CVDs on EC Goods from former state-owned companies</td>
<td>US</td>
<td>EC</td>
<td>SCM</td>
<td>Several different firms mentioned in &quot;Specific Cases&quot;</td>
</tr>
<tr>
<td>DS 212 (Art. 21.5)</td>
<td>CVDs on EC Goods from former state-owned companies</td>
<td>US</td>
<td>EC</td>
<td>SCM, DSU</td>
<td>Several different firms mentioned in &quot;Specific Cases&quot;</td>
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<tr>
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<td>Carbon Steel</td>
<td>US</td>
<td>EC</td>
<td>SCM</td>
<td>German Steel Producers</td>
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<tr>
<td>DS 280</td>
<td>CVD on Steel Plate from Mexico</td>
<td>US</td>
<td>Mexico</td>
<td>SCM</td>
<td>Mexican Steel Producers</td>
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<tr>
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<td>Countervailing Duties on DRAMS</td>
<td>US</td>
<td>Korea</td>
<td>SCM, DSU</td>
<td>Hynix</td>
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<tr>
<td>DS 299</td>
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<td>DS 336</td>
<td>Countervailing Duties on DRAMS</td>
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<td>Korea</td>
<td>SCM</td>
<td>Hynix</td>
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<tr>
<td>DS 345</td>
<td>US Customs Bond Directive</td>
<td>US</td>
<td>India</td>
<td>ADA, SCM, GATT</td>
<td>Indian Shrimp Industry</td>
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</tbody>
</table>

Table 5: Relevant anti-countervailing duty cases that went to the Panel Stage
statistically examined. All of them are aircraft disputes between the EU and the US, and Canada and Brazil respectively. In the next step, also the anti-countervailing duties will be examined (see Table 5).

5.2 Events under Investigation

For the disputes described above, the following specific events have been determined as events under investigation: The announcement of (a) the request for consultations, (b) the request for panel implementation, (c) the actual panel implementation, (d) the circulation of the panel report, (e) a potential appeal, and (f) the adoption of the report by the Dispute Settlement Body (DSB). For the Art. 21.5 DSU compliance cases, the same events have been examined – with the exception of the request for consultations as member states can immediately request the imposition of a compliance panel. Additionally, subsequent arbitration panels under Art. 22.6 DSU have been examined. Arbitration panels can grant the right to retaliate, i.e. authorize the suspension of concessions.

In order to avoid time lags between the request by a member state and the actual implementation by the DSB, the requests have been added to the events under investigation. As the requests are made public and thus reach media and markets, an effect should rather be found for requests than for actual implementations. In turn, it has to be ascertained that the dates given by WTO correspond to the media coverage. If the information reached the media only slowly – and consequently the capital markets – then the event window has to be extended, which significantly reduces the probability of finding an abnormal return. Therefore, daily abnormal returns of a 10-day event-window are used for the analysis of the single-beneficiaries cases. This allows detecting high daily abnormal returns which may get lost through averaging over the whole event window.

5.3 Methodology

The standard event study methodology has been applied in this paper. The expected returns have been calculated with both commonly used statistical models – the Constant Expected Returns Model and the

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60 Art. 21.5 DSU.
62 For instance, the request for the implementation of a panel might have been sent to the DSB five days before its next scheduled meeting. Instead of solely focusing on the days on which the Dispute Settlement Body met and adopted the request of the complaining member state, the individual requests have been examined.
63 The request for panel implementation is comparable to the filing of a suit in the domestic context. Almost all domestic event studies found statistically significant effect for the filing of a suit. See Table 1 and 2, Bhagat and Romano (2002a), pp. 157, 158.
64 For the effect of a wider event window on statistical significance see Bhagat and Romano (2002a), pp. 148-151.
The Market Model is used in this study as primary estimation model. The expected return is estimated by a linear function of the return of the market as a whole:

\[
R_t = a_i + \beta_i \cdot R_{mt} + \varepsilon_t
\]

where \( R_t \) is the expected return for stock \( i \) over time period \( t \), \( a_i \) is a firm-specific constant, and \( \beta_i \) is a firm-specific coefficient which estimates how firm \( i \)'s return has varied historically in relation to the market return. \( R_{mt} \) is the market return for the period \( t \), and \( \varepsilon_t \) is the usual statistical error term (the disturbance term is assumed to be \( N(0,\sigma^2) \)). To estimate \( a_i \) and \( \beta_i \), an ordinary least squares regression on actual returns of firm \( i \) has been performed. 200 as well as 100 daily returns of the period preceding every event period have been used for the determination of the expected return.

The daily abnormal returns for firm \( i \) during the event window have been standardized in order to test for statistical significance. The standardized abnormal return is the ratio between the daily abnormal return and standard deviation of the abnormal return during the estimation period. Nonparametric tests, such as the Fisher sign test and the Wilcoxon signed rank test will be conducted after the abnormal returns have been cumulated.

5.4 Data and Sources

The daily closing price data for the companies’ stock, the stocks of the closest competitors, and the respective market indexes have been examined. The timeframe includes the period of the dispute settlement proceedings, two years preceding the dispute window, and two years after the dispute window. The two years before and after the dispute are included to put the observed price movements during the window into historical perspective. The stock price data was obtained from Thomson Datastream. A problem with raw stock price data spanning several years is that price movements may reflect nothing more than a stock split or a dividend payment, neither of which affect shareholder
wealth. To avoid distortion from stock splits and dividends in the examination of stock prices over time, in the graphical and event study analyses that follow, adjusted closing prices provided by Datastream are used. For the market return, the respective Datastream market return indices have been used. The following stocks and benchmark markets have been examined for the single-beneficiary event studies: Bombardier’s Class B stock listing at the Toronto Stock Exchange (benchmark market: S&P TSX 60 Total Return Index), Boeing’s NYSE listing (benchmark market: Dow Jones Composite 65 Total Return Index), EADS’s Paris listing (benchmark market: Paris CAC 40 Total Return Index), and the São Paulo listing for Embraer (Empresa Brasileira de Aeronáutica S.A.) with the benchmark market BOVESPA.

For the specification of the event days, their announcement by the WTO and their publication in the Wall Street Journal (WSJ) are examined. Additionally, coverage in the Financial Times will be used as the worldwide coverage might be slightly better.

5.5 The Single-Beneficiaries Cases and Their Limitations

In order to get a better grasp of the data, the ten single-beneficiary cases have been examined individually, i.e. ten single-firm event studies have been performed (see data appendix p. 23). The abnormal returns have been calculated for every day in the 10-day event window (starting two days before and ending six days after the WTO announcement). So far, the abnormal returns have not been averaged or cumulated because the dataset contains several problems which need to be addressed. First, all single-firm cases are disputes in the aircraft sector and they involve the two major competitors in their respective markets: EU (Airbus) v. US (Boeing), and Canada (Bombardier) v. Brazil (Embraer). Airbus and Boeing compete in the large civil aircraft market (100 seats and more); Bombardier and Embraer compete in the market for regional jets.

Secondly, six of the cases have been litigated pair-wise, i.e. at the same time (DS 46 and DS 70, DS 46 Art. 21.5 and DS 70 Art. 21.5, DS 316 and DS 317). Negative effects from a panel might be cancelled out by the positive effect of raising rival’s cost through a simultaneous panel proceeding. Hence, the panel rulings have to be interpreted relative to each other, e.g. whether Canada was found to subsidized

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70 Klick and Sitkoff (2008), p. 791.
71 Since October 2006, Airbus is a 100 % subsidiary of EADS (European Aeronautic Defence and Space Company N.V.). Between 2001 and 2006, Airbus was a formal joint stock company of EADS and BAE Systems (former British Aerospace) which owned 80 % and 20 % respectively.
72 Other benchmark markets have been tested like S&P TSX Composite for Bombardier, the Dow Jones Industrial Index for Boeing, the STOXX 50 and DAX for EADS, and the MSCI Brazil Index for Embraer.
73 There exist several recent single-firm event studies, e.g. Klick and Sitkoff (2008), Weinstein (2008), Warren-Boulton and Dalkir (2001), or Baginski et al. (1991).
74 The requests as well as the DSB decisions were made on the same dates.

15
more relative to Brazil or not. Thirdly, the aircraft industry is an exceptional industry to which a lot of
national prestige and interest is attached. This may induce a higher reluctance for the states to comply
with a negative finding of the Dispute Settlement Body. As capital markets may anticipate this,
statistically significant abnormal returns may be harder to detect.

Another problem arises from fact that individual stocks tend to be very volatile what yields high
standard deviations relative to the abnormal returns. This is especially true in the case of the Brazilian
aircraft manufacturer Embraer which was only privatized in the late 90ies and the stock’s free float was
very limited before 2002. As all cases, in which Embraer is involved, fall into that period, their results
have to be interpreted with caution. Furthermore, it seems difficult to use control groups as the
involved corporations are ‘national stars’ which usually do not have other national competitors. The
general problem arises that WTO anti-subsidy panels tend to have a selection bias towards ‘national
champions’. This is inherent to the nature of the World Trade Organization – it only deals with
transnational cases. As for the ten examined cases, the governments of the respective global duopolists
take each other to court.

5.6 First Results from the Single-Beneficiary Cases

The results of the ten single-firm anti-subsidization cases can be found in the Appendix (Section 7.1, p.
23). The results have been sorted by event type as described in Section 0. Day 0 is defined as the day of
the WTO announcement; two days before and six days after this announcement have also been
examined. The name of the beneficiary can be found next to the WTO dispute number, e.g. DS 70 –
Bom. stands for dispute DS 70 with the beneficiary Bombardier. All dispute numbers and the names
of the affected corporations can also be found in Table 3. The column Abnormal presents the abnormal
return of the beneficiary’s stock on that day. The presented data has been calculated with the Market
Model and a 200-day estimation period. Also, the Constant Expected Return Model and 100-day
estimation periods have been applied for all events. The column S.A. presents the standardized
abnormal return which is the ratio between the abnormal return and standard deviation of the
abnormal return during the estimation period. Accordingly, significance levels have been added to the
abnormal returns.

75 Embraer’s stock was highly volatile before 2002 due to the limited the free float. Already small trades were able
move the stock considerably.
76 The abbreviation Em. stands for the Brazilian aircraft manufacturer Embraer.
77 The results from the 100-day estimation period and the Expected Return Model remained basically unchanged in
comparison to the presented 200-day Market Model results.
78 For standardized abnormal returns bigger than 1.65 or smaller than -1.65, there is a 10% chance that the observed
abnormal return reflects a random variation. For values of 1.96 (-1.96) and 2.575 (-2.575), the chances are 5% and
1% respectively.
The first results of the ten single-firm anti-subsidization cases are relatively consistent with the findings in the domestic context. In only one out of six\(^\text{79}\) cases, the request for consultations led to a statistically significant negative wealth loss (Boeing’s stock lost -2.06 %\(^{**}\)).\(^{80}\) This share price reaction matches with an article published in the Wall Street Journal which states that the U.S. is sued for subsidizing Boeing with US-$ 23 billion.\(^{81}\) This may have been unexpected by capital markets because Airbus was generally perceived as a highly subsidized firm and Boeing as rather independent firm. Although the magnitude of Europe’s claim (US-$ 23 billion) might be exaggerated and somewhat unrealistic, it nevertheless is tremendously substantial in comparison to Boeing’s market capitalization of US-$ 41.5 billion.\(^{82}\) Of course, the request for consultations is only the beginning of a panel proceeding and only half of the cases go from the consultation phase to a panel stage.\(^{83}\) But even a small likelihood of a substantial negative panel ruling might have worried financial markets.

For the other five cases, the request for consultations did not show any statistically significant effects (see Table 6 in the appendix). This finding is consistent with the notion that the request for panel implementation is more comparable to the domestic filing of a suit than the request for consultations. Panels will only take place in one out of two cases for which consultations had been requested.\(^{84}\) Another reason might be that the claims were not that high in comparison to the respective market capitalizations.\(^{85}\)

As Table 7 shows, the request for panel implementation did have negative wealth effects for Bombardier in DS 222 (-4.91 %\(^{**}\) and -4.92 %\(^{**}\)), and positive effects for Boeing (DS 317) and Bombardier (DS 70

\(^{79}\) Implementation review cases under Art. 21.5 DSU (also called compliance cases) do not have a consultation phase, i.e. there exists no request for consultations. The implementation of a review panel can be requested after a certain period of time. Consequently, the three Art. 21.5 cases are not taken into consideration here. Furthermore, Brazil’s request for consultations in case DS 46 was dropped due to a limited free float in the period preceding the request.

\(^{80}\) As commonly applied, *, **, and *** describe 10%, 5% and 1% significance levels respectively.


\(^{82}\) On October 6, 2004, Boeing’s closing price was US-$ 52.36 and the average total shares outstanding in 2004 793.2 million. See Boeing’s annual report 2004, Boeing (2004), p. 97. Hence, Boeing’s market capitalization on the day of the request for consultation was US-$ 41.5 billion.

\(^{83}\) See supra note 57.

\(^{84}\) See supra note 57.

\(^{85}\) With the exception of Airbus which faced a US-$ 40 billion claim. Still, it was long in the media that Airbus was heavily subsidized and that the U.S. was about to take the EU to the WTO. The U.S. had warned the European Commission multiple times that it might file a WTO complaint regarding the A-380 financing. The 2000 Foreign Trade Barriers Report of the U.S. Trade Representative already stated that the “government support of Airbus raises serious concerns about the [EU] adherence to their bilateral and multilateral obligations in [the aircraft] sector” (Foreign Trade Barriers Report 2000, p. 103). The Airbus subsidies have strained the trade relationship between the U.S. and the EU ever since Airbus’ entry into the market in 1974. See Pavenik (2002), p. 733. Hence, it is not surprising that no statistically significant effect can be found for Airbus’ parent holding EADS. As the information had long been in the market, the likelihood that the Airbus subsidization will be taken to WTO had already incorporated into the stock price. The request for consultations by the U.S. did not come as a surprise and did not provide new information to financial markets.
Art. 21.5). The positive wealth effects for Boeing (+1.82 %*) and Bombardier (+4.47 %**) come along with Wall Street Journal articles in support of the respective corporation which is assumed to be subsidizing less (e.g. “US about to take Airbus to WTO”\(^{86}\)). This stresses the in the previous section described interdependence between pair-wise disputes. On the exact same days, Boeing’s and Bombardier’s respective competitors had also been taken to the panel stage.\(^{87}\) Interestingly, Boeing suffered an abnormal return of -1.04 % (although not significant) the day\(^{88}\) of the following Wall Street Journal articles: “EU countersues US over Boeing aid”\(^{89}\), and “Global Dogfight: Airplane Battle Spotlights Power of a Quirky Court”.\(^{90}\) Boeing’s abnormal return may correspond to a further update in believes about US subsidization and the power of a WTO panel to classify those subsidies as violations of WTO law.\(^{91}\)

More isolated effects should be found, by contrast to pair-wise cases, for disputes that are litigated alone. One the first glance, these are the disputes DS 222, DS 46 Art. 21.5 II, DS 347 and DS 353, but DS 347 and DS 353 still overlap with the original panels DS 316 and DS 317. Therefore, closer attention should be drawn to DS 222.\(^{92}\) It is the only single-beneficiary subsidy case that has not been litigated pair-wise.\(^{93}\) Bombardier incurred very significant losses on two consecutive days\(^{94}\) (-4.91 %** and -4.92 %**) upon Brazil’s request for panel implementation. In the time period around this event, no other important information was released to which this drop in share price could have been associated. Additionally, there might have been a learning process in the market about WTO disputes in general. As the dispute number ‘DS 222’ suggests, Brazil’s complaint was the 222\(^{nd}\) dispute at the WTO.\(^{95}\) The disputes DS 46 and DS 70 had a high precedential value for SCM cases.\(^{96}\) Overall, it seems to be a plausible inference that the detected decrease in Bombardier’s share price was a market reaction towards the request for panel implementation. This is consistent with the notion that a dispute, once it reaches the panel stage, is almost lost with certainty what should be worrisome from a corporate

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\(^{87}\) DS 316 (Airbus/EADS) and DS 317 (Boeing), and DS 46 (Embraer) and DS 70 (Bombardier) have been litigated pair-wise.

\(^{88}\) On the same day, Airbus suffered a 1.85 % drop in share price (Z-value -1.48).

\(^{89}\) Although the US and EU made the request for panel implementation the same day, the Wall Street Journal only publishes the article the next day. A reason for this might be that information about the US request leaked or the request by the EU was only made in the evening of the same day.

\(^{90}\) See The Wall Street Journal, June 1, 2005.

\(^{91}\) It can – of course – also just be a random outcome.

\(^{92}\) The event study of the Embraer cases faces the problem of Embraer’s very high volatility. See supra note 75.

\(^{93}\) DS 46 Art. 21.5 II is a compliance panel.

\(^{94}\) The drop on the consecutive day might be due to the fact that markets abandoned the hope that Canada would take Brazil’s aircraft manufacturer Embraer to the WTO.

\(^{95}\) Although only half of the cases went to a panel stage. See supra note 30.

finance perspective. Additionally, the request for panel implementation is the closest equivalent to the filing of a suit in a domestic court for which statistically significant stock price reactions have been widely found. On the contrary, the actual panel implementation by the Dispute Settlement Body should not matter as the announcement of panel proceedings (i.e. the request by a member state) already updates public information. The actual panel implementation does not offer any new information to financial markets. Consistently, no statistically significant abnormal return could be detected for the actual DSB panel implementation dates in any of the cases (see Table 8).

Statistically significant abnormal returns have been found on subsequent days for Bombardier (DS 70 and DS 70 Art. 21.5) upon the circulation of the panel report (up to +5.07 %*** on good news, see Table 9) and upon the circulation of the Appellate Body report (up to -3.59 %** on bad news, see Table 10). Abnormal returns were also detected for the cases DS 46, DS 46 Art. 21.5, and DS 70 Art. 21.5, but they were not statistically significant due to increased volatility. The circulation of the panel report did not have any effect on Bombardier’s stock in case DS 222. This is consistent with the ruling which found that Canada was only in violation in one of six claims.

With regard to the pair-wise disputes, the panel rulings have to be interpreted relative to each other. The simultaneous release of the panel reports for DS 46 and DS 70 had adverse effects for Embraer, and positive effects for Bombardier. Bombardier’s share price rose over 12 % in three days (significant at the 95 % and 99 % level), and Embraer’s stock fell by almost 10 % in three days (although not statistically significant due to limited free float and the high volatility). The DS 70 panel found that certain Canadian measures were inconsistent with the SCM Agreement, but Brazil’s major claim addressing export subsidies had been rejected. Simultaneously, Brazil was found to be in violation of WTO law (DS 46). Canada had claimed that a Brazilian export scheme called PROEX allowed Embraer to reduce its price by 15 to 20 percent. The elimination of this price advantage may turn the deal in Bombardier’s favor as airlines agree that the quality of regional does not vary tremendously and competition is mainly concentrated on price. In this light, the stock market reactions to the panel rulings do not surprise.

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97 The complainant win-rate is approximately 90 %. See supra note 29.
98 See Section 2, p. 3.
99 The US-EC disputes (DS 316, DS 317, DS 353) have not been decided yet.
100 See WTO document WT/DS222/R.
101 See WTO document WT/DS70/R.
102 See WTO document WT/DS46/R.
103 Financial Times, August 2, 1999.
104 Stehmann (1999), p. 120.
In line with the findings for the circulation of panel reports, abnormal returns have also been detected upon the circulation of the Appellate Body reports (see Table 10). For the simultaneous appeals in DS 46 and DS 70, an abnormal return of -3.59** was detected for Bombardier – the stock fell more than 6% in three days. As no other company news hit the market, this loss seems to be a reaction to the Appellate Body ruling which revised some of the for Canada positive panel findings. For Brazil, the Appellate Body upheld the panel finding that the PROEX scheme constitutes a prohibited export subsidy. Accordingly, Embraer’s share dropped again, but not statistically significant.

The results of the circulation of the Compliance Panel reports under Art. 21.5 DSU are also summarized in Table 9, Circulation of Panel Report. In dispute DS 46 Art. 21.5, Brazil was found to be in violation of Art. 4.7 SCM as it had not withdrawn the export subsidies for regional aircraft within 90 days of the adoption of the original panel and Appellate Body reports. The simultaneously published report for DS 70 Art. 21.5 stated that Canada was mostly in compliance with the DSB ruling. Given the relatively positive finding for Canada and negative for Brazil, Bombardier’s share price rose by +4.45%. Again, no statistically significant effect could be detected for Embraer.

Both compliance panel reports have been appealed and, once more, the decisions by the Appellate Body were circulated on the same day. The Appellate Body mainly upheld both panel rulings – i.e. that Brazil had failed to implement the recommendations of the DSB, and that Canada was not violating the recommendations regarding export subsidies. Due to overlapping information for Bombardier, no clear effect could be detected (see Table 10). Two positive announcements were made: Bombardier released information that it had US-$ 1 billion in orders for a new 86-seat jetliner, and that a major US airline had raised its order volume to US-$ 2.2 billion.

Finally, the effects of arbitration awards have been analyzed. The Dispute Settlement Body has granted arbitration awards for two subsidies cases (DS 46 Art. 21.5 and DS 222). These awards specify the height of an allowed retaliation. The retaliation takes form of imposed duties on imported goods

105 See WTO document WT/DS70/AB/R.
106 See WTO document WT/DS46/AB/R.
107 See WTO document WT/DS46/RW.
108 See WTO document WT/DS70/RW.
109 See WTO document WT/DS46/AB/RW and WT/DS70/AB/RW.
111 Bombardier Inc. reports Delta Air Lines raised its order for Bombardier’s regional jets to 104 firm orders from 94, for total of more than $ 2.2 billion. See The Wall Street Journal, July 24, 2000.
112 For instance in DS 222, Brazil was allowed to suspend concessions in a total amount of US-$ 247,797,000. In the course of DS 46 Art. 21.5, Canada was allowed suspend C-$ 344.2 million per year. As Brazil advised the DSB of changes it had made, the latter countervailing duties were never imposed.
from the defendant state. As those duties are usually imposed on a different product category,\textsuperscript{113} it is not surprising to find only mixed results (see Table 12). Bombardier (DS 222) suffered a substantial negative abnormal return on the day Brazil \textit{requested to impose the awarded retaliation}, but this happened only one day after a profit warning and on the same day that Bombardier announced to lay-off 3,000 workers\textsuperscript{114} (see Table 13). Hence, the highly statistically significant abnormal return cannot be determined as clear retaliation request effect.

Further, the DSB has to authorize the requested suspension of concession. For dispute DS 46 Art. 21.5, Canada received, pursuant to Art. 22.7 DSU and Art. 4.10 SCM, authorization from the DSB to suspend tariff concessions covering trade in a maximum amount of C$ 344.2 million per year. The same day, Brazil advised the DSB of changes that it had made to the measures at issue and claimed that PROEX had been brought into compliance with the obligations under the SCM Agreement. It followed a disagreement between Canada and Brazil as to whether the measures taken by Brazil to comply with the rulings and recommendations of the DSB bring Brazil into conformity with the provisions of the SCM Agreement. Canada requested the DSB to refer the matter again to the original panel and did not impose countervailing duties.\textsuperscript{115} Thus, it does not surprise that Embraer shares did not fall upon the DSB’s authorization of retaliation (see table 14). By contrast, a statistically significant shareholder wealth effect (+6.07 \%*) was found for Bombardier (DS 222) on the day of the DSB’s authorization to retaliate. On this day, Brazil had announced that it does not intend to impose the authorized trade sanctions and that it would continue working on a negotiated settlement.\textsuperscript{116}

6 Preliminary Conclusion and Extensions

The results of the single-beneficiary event study suggest that the request for panel implementation and the circulation of the panel as well as Appellate Body reports can substantially affect the share prices of the subsidized corporations. Despite these findings, the results have to be interpreted with caution due to the limited sample size and the limitations discussed in section 5.5 (p. 15) and can therefore not be generalized. Nevertheless, we are only just beginning to understand how the Dispute Settlement Understanding affects litigation patterns, state behavior, and other involved parties like corporations. This paper provides first evidence that WTO panels can affect the stock market evaluation of involved

\textsuperscript{113} Although the countervailing duties are supposed to be imposed on the same product category, in practice this does not happen very often.


\textsuperscript{115} Pursuant to Art. 21.5 DSU. A second compliance panel, DS 46 Art. 21.5 II, was the result of this request.

firms. The detected shareholder wealth effects seem to support the hypothesis that the financial markets perceive the WTO dispute resolution system as relatively effective for subsidies cases. Further, the findings from the simultaneous Brazilian-Canadian disputes suggest that WTO disputes are not perceived as a shareholder value enhancing way to settle disputes. Both states had been found to illegally subsidize what limits Bombardier’s as well as Embraer’s future access to government funding. This is somewhat similar to the findings in the domestic context.

Final conclusion can, of course, only be drawn when the other cases groups have been examined. The multiple-firm subsidies cases (Table 4) and countervailing duties cases (Table 5) will be examined next. If the subgroup of countervailing duties panels leads to interesting results, one could also examine anti-dumping cases. The structure of these panels is similar – the only difference is that the countervailing duty has been imposed on allegedly dumped products instead of subsidized products. Furthermore, the statistical power may be increased by using a different estimation period, e.g. 50 to 250 days before an event.

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117 See Stehmann (1999), p. 120.
118 See Bhagat and Romano (2002a), p. 163.
### 7 Appendix

#### 7.1 Event Study of Single-Beneficiary Cases

<table>
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Table 6: Request for Consultations
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Table 7: Request for Panel Implementation

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Table 8: Panel Implementation
## Table 9: Circulation of Panel Report

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## Table 10: Circulation of Appellate Body Report

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Table 12: Arbitration Award

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Table 13: Awarded retaliation requested

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Table 14: Retaliation authorized

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7.2 List of Relevant WTO disputes

7.2.1 Single-Beneficiary Disputes

- Brazil – Export Financing Programme for Aircraft (DS 46)
- Brazil – Export Financing Programme for Aircraft (DS 46 Art. 21.5)
- Brazil – Export Financing Programme for Aircraft (DS 46 Art. 21.5 II)
- Canada – Measures Affecting the Export of Civilian Aircraft (DS 70)
- Canada – Measures Affecting the Export of Civilian Aircraft (DS 70 Art. 21.5)
- Canada – Export Credits and Loan Guarantees for Regional Aircraft (DS 222)
- European Communities – Measures Affecting Trade Large Civil Aircraft (DS 316)
- European Communities – Measures Affecting Trade Large Civil Aircraft (DS 347)
- United States – Measures Affecting Trade Large Civil Aircraft (DS 317)
- United States – Measures Affecting Trade Large Civil Aircraft (DS 353)

7.2.2 Other relevant WTO subsidies cases

- Australia – Subsidies Provided to Producers and Exporters of Automotive Leather (DS 126)
- Australia – Subsidies Provided to Producers and Exporters of Automotive Leather (DS 126 Art. 21.5)
- Canada – Certain Measures Affecting the Automotive Industry (DS 139)
- Canada – Certain Measures Affecting the Automotive Industry (DS 142)
- European Communities – Commercial Vessels (DS 301)
- Indonesia – Autos (DS 54/55/59/64)
- Korea – Commercial Vessels (DS 273)
- United States – Bryd Amendment (DS 217)
- United States – Bryd Amendment (DS 234)
- United States – Tax Treatment for ‘Foreign Sales Corporations’ (DS 108)

7.2.3 Relevant WTO SCM countervailing duty cases

- European Communities – Countervailing Duties on DRAMS (DS 299)
- Japan – Countervailing Duties on DRAMS (DS 336)
- United States – Lead and Bismuth II (DS 138)
- United States – Export Restraints (DS 194)
• United States – CVDs on EC Goods from former state-owned companies (DS 212)
• United States – CVDs on EC Goods from former state-owned companies (DS 212 Art. 21.5)
• United States – Carbon Steel (DS 213)
• United States – Softwood Lumber (DS 236/257/264/277)
• United States – CVD on Steel Plate from Mexico (DS 295)
• United States – Countervailing Duties on DRAMS (DS 296)
• United States – US Customs Bond Directive (DS 345)
References


