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Economic Integration, EU-US Trade Conflicts and WTO Dispute Settlement*

Fritz Breuss

Abstract


Since its inception in 1995, more than 330 disputes have been raised under the WTO Dispute Settlement System. The major players in world trade – the EU and the USA – are also the busiest users of this instrument. After looking at links between economic integration and WTO involvement and a survey of the actual transatlantic WTO trade disputes, the welfare implications of the four most prominent trade disputes between the EU and the USA ("mini trade wars") are analyzed with GTAP5: the Hormones, the Bananas, the FSC and the Steel cases. The economic analysis reveals that the level of suspension of concessions hardly coincides with the level of nullification or impairment (expressed in lost trade effects) if one considers the overall welfare implications of retaliation with tariffs. The idea of "rebalancing" retaliation is a myth. Tariffs are a very bad instrument of retaliation. Maybe a mechanism of direct transfers or financial compensation would be better.

Keywords: law, European law, GATT, international agreements, economic integration, globalization, international trade, model simulations, trade policy, international relations, WTO, economics, law

The author/s

Fritz Breuss is Jean Monnet Professor for Economics of European Integration at the Research Institute for European Affairs at the Vienna University of Economics and Business Administration and researcher at the Austrian Institute of Economic Research, Vienna. E-Mail: fritz.breuss@wu-wien.ac.at

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Fritz Breuss
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1. Introduction [↑]

Today’s Multilateral Trading System (MTS) consists of the world-wide liberalization ambitions under the WTO and of a subset of numerous Regional Trade Agreements (RTAs). The number of WTO members steadily increases, holding at 148. Similarly the number of RTAs increases with a particular surge since the early nineties. One of the most powerful and still expanding customs union is those of the European Union (EU). Increasing integration in the EU, on the one hand increases its negotiation power at the WTO, on the other hand it diminishes the need for settling trade disputes within its borders and, hence, makes hands free for conflict settling vis à vis third countries. The increasing intra-regional trade share (presently around ¾ of total trade) raises the question whether the EU needs the WTO at all! With the formation of the WTO in 1995, we have an internationally accepted Dispute Settlement Mechanism (DSM). The EU – as will be demonstrated later – uses this instrument quite often (see also Benedek, 2005); in the transatlantic trade disputes the EU is more often the complaining than the defending party. The EU is actively involved in 27 WTO disputes, 15 of them are disputes with the USA.

Since its inception on 1 January 1995, 330 disputes have been raised under the WTO Dispute Settlement Understanding (DSU). Most complaints (185) involved developed WTO Members and were targeted against other developed countries (more than 117). More than 100 complaints were lodged by less-developed WTO Members. The latter increasingly make use of the Dispute Settlement System. Most of the cases dealt with ended with the implementation of the trade policy measures which comply with WTO rules as demanded by the WTO Dispute Settlement Body (see Palmetier-Mavroides, 2004).

Whether the WTO Dispute Settlement System was more successful than the former GATT is an open question. Some (e.g. Petersmann, 2004, p. xvii) find that the WTO system was more successful than those of GATT, others question this position. In comparing the GATT and the WTO dispute settlement systems Busch-Reinhardt (2003) conclude that the probability of a rich-country complainant to win full concession has improved unambiguously under the WTO, whereas the respective probability of a poor-country complainant has remained broadly the same under both systems. This underlines the opinion of many critics that there is a “bias” in the system because the developed countries (primarily the G4 countries Canada, EC, Japan and US) account for over 60% of all complaints (Horn-Mavroidis-Nordström, 1999; Bagwell-Mavroidis-Staiger, 2004). According to Besson-Mehdi (2004) developing countries are unlikely to win disputes because of asymmetric legal capacity and economic dependence via bilateral assistance and other international politics factors. Holmes-Rollo-Young (2003), however, question that there is evidence of a bias against developing countries. The sugar case (Australia – DS 265; Brazil – DS 266; Thailand – DS 283; EU’s export subsidies on sugar) and cotton case (Brazil against the USA, DS 267; subsidies on upland cotton) are recent examples of the successful use of the WTO dispute settlement system by developing countries or better by newly-industrializing countries.

In this paper we want firstly look on the nexus between economic integration and WTO involvement. Then we directly focus on the peculiarities connected with retaliation in WTO dispute settlement. It follows an overview of the actual transatlantic trade disputes. Then we analyze explicitly the four most prominent transatlantic trade dispute cases in the last few years (hormones, bananas, FSC and steel) with the help of a computable general equilibrium model (GTAP) in order to see the dimension of the economic impact and the problems connected with retaliation as it is practiced today. The most significant results are those relating to the combined effect of the violation and the retaliation (“mini trade wars”). In all cases but one, both sides suffer a welfare loss, the exception being the FSC case where the EU as the plaintiff gains while the US loses. Our study goes beyond the usual implications of breaching WTO Agreements and the following retaliation on trade volumes by including also terms of trade effects and, thus, national welfare of the plaintiff and defendant country. In concluding we draw lessons for the direction of a possible reform which is under way in the Doha Development Round.

2. Economic integration and WTO involvement

In general one can assert that the larger a Regional Trade Agreement (RTA) grows – like the ever enlarging EU – the less it is concerned with internal trade disputes. According to the EC Treaty there are no internal barriers and discrimination within the Union. On the other hand it has more capacities to deal with external trade disputes: a) because its negotiation power has increased. EU-25 has a world trade share of 25% (up 5 percentage points from EU-15); and b) it can concentrate its legal capacities to less important trade disruptions before the WTO.

RTAs are a major and perhaps irreversible feature of today's multilateral trading system (MTS). The vast majority of the 148 WTO members are party to one or more RTA. Since World War II and in particular since the early nineties a surge in RTA has occurred. Crawford-Fiorentino (2005, p. 1) blame the sluggish progress in multilateral trade negotiations under the Doha Development Round. It might have accelerated further the rush to forge RTAs. Between January 2004 and February 2005 alone, 43 RTAs have been notified to the WTO, making this the most prolific RTA period in recorded history. More than 250 RTAs have been notified to the WTO. Over 170 RTAs are currently in force (see Crawford-Fiorentino, 2005). Among the best known examples of RTAs are the European Union (EU), the European Free Trade Association (EFTA), the North American Free Trade Agreement (NAFTA), the Southern Common Market (MERCOSUR), the Association of the Southeast Asian Nations (ASEAN) Free Trade Area, and the Common Market of Eastern and Southern Africa (COMESA; see WTO homepage). Of course the degree of deepness of integration is different. Only customs unions (like the EU or MERCOSUR) conduct a common commercial policy with a common external tariff. All other RTAs consist of a looser arrangement with a free trade arrangement. The intra-EU25 trade amounts to around $\frac{3}{4}$ of its total trade. Taking into account the additional free trade partners (the customs union with Turkey, free trade agreements with EFTA, with the ACP, with Mexico and South Africa) the EU trades freely with more than $\frac{3}{4}$ of its total trade. This raises the question whether the EU needs WTO at all! In comparison, the intra-NAFTA export share amounts only to somewhat more than 50 percent (see WTO, 2003, p. 56). In the future the further enlarging EU will need the WTO not so much to improve its welfare via free trade with third countries (in particular with industrial countries) but to use it as a platform for regulating its developing policy vis à vis developing countries.

Whether or not the formation of RTA is endogenous (Baier-Bergstrand, 2004) or exogenous (by pure political will), RTAs are exceptions from the MFA of GATT under Art. XXIV. But only if they are organized as a customs union they perform as a single partner in WTO trade negotiations like in the present Doha Round. In the EU – the most powerful customs union in the world – the process of integration continues. Formed in 1957 with six members the EC has steadily increased up to 25 members in 2004; and the process of enlargement goes on. Hand in hand with EU enlargement its negotiation power in the GATT and later in the WTO increased. The only comparable powerful negotiation partner in WTO is the USA, as the power of Japan has diminished and China's power is only at the rise. The forthcoming WTO accession of Russia will introduce another potentially important player. The consequence for developing countries is dramatic. Less dependence from their imports and increasing negotiation power in the WTO coincide in the EU with the optimal tariff theory proposition that a monopolist improves welfare by increasing tariffs and not by lowering it.

Besides the general nexus of economic integration and WTO involvement, in the case of the European Union we have a specific nexus. The EU already climbed the highest degree of economic integration – from a customs union in the sixties to a single market and an economic and monetary union with the euro in the nineties. This implies also the centralization of several policy areas. One specific area is the Common Agricultural Policy (CAP) with a complex subsidy system on the export and the domestic side. Whereas other policy areas primarily organize the rules of the game within the EU, the CAP consists of regulations for several products not only for the Internal Market but also for the external trade. Two of the most prominent cases where the trade regimes of the EU interfered with WTO Agreements were the “Bananas” case (DS 27) in the nineties and recently the “EU sugar regime” case (Australia – DS 265; Brazil – DS 266; Thailand – DS 283) but also the case of genetically modified organism (USA – DS 291).

The most important trading partner is the USA. In the following, therefore we concentrate on the transatlantic trade relations and trade disputes. On the occasion of the European Union-USA summit, which took place on 20 June 2005 in Washington, Eurostat (Eurostat, 2005) reaffirmed the high degree of transatlantic interdependence in trade of goods (a quarter of extra-EU25 exports of goods goes to the USA) and services (a third of extra-EU25 trade in services goes to the USA) as well as in foreign direct investment (FDI; 45% of EU-25 outward and inward FDI).

The EU25 and the USA are each other's main trading partner, and account for the largest bilateral trade relationship in the world. The EU25 and the USA are also each other's most important source for FDI. In 2004, the EU25 exported around 235 billion euro of *goods* to the USA, while imports amounted to 160 bn. The most notable feature of EU-US trade over recent years has been the continued growth in the EU25 trade surplus, from just over 20 bn in 1999 to more than 75 bn in 2004. EU25 imports from the USA fell from 22% of total EU25 imports in 1999 to 15% in 2004, while exports declined from 27% in 1999 to 24% in 2004. In 2004, the EU25 exported around 120 billion euro of *services* to the USA, while imports of services from the USA amounted to around 100 bn. The EU25 had a surplus of 15 bn in trade in services with the USA, which amounted for a third of total extra-EU25 trade in services. In 2003 (latest data), the EU25 invested nearly 54 billion euro in the USA, and received just over 50 bn of US investment. The USA was the largest investment partner of the EU25, accounting for nearly 45% of both outward and inwards flows of *FDI*.

3. “Rebalancing” retaliation in WTO Dispute Settlement – myth and reality [↑]

The ability of the WTO to authorize trade retaliation as a response to persistent violations is perhaps the most salient, but also the most controversial feature of its dispute settlement system. Although it is the main purpose of retaliation to achieve compliance, most authors seem to take it for granted that the current system of trade retaliation performs some kind of “rebalancing” by allowing the complaining Member to suspend concessions and obligations under the WTO Agreements vis-à-vis the responding Member of a level equivalent to the level of nullification and impairment caused by the latter's WTO-inconsistent measure (Article 22.4 of the “Understanding on Rules and Procedures Governing the Settlement of Disputes” =DSU; see Annex 2 of the WTO Agreement). We will demonstrate that this perception is misguided. In current practice, “WTO retaliation authorizations are, in reality, random” (Spamann, 2005, p. 2).

Although “rebalancing” is not a clearly defined legal concept, Article 22.4 of the DSU, is often interpreted as such: “*The level of the suspension of concessions or other obligations authorized by the DSB (Dispute Settlement Body) shall be equivalent to the level of the nullification or impairment*”.

The “bad” caused by the continuing violation to the complaining WTO member (nullification) is answered by another “bad” caused to the respondent member (suspension). Due to several side-effects, “rebalancing” never means a restoration of the status quo ante (see Spamann, 2005, pp. 3-4). One reason is that even an identically specified measure will have different effects depending on the size and composition of the trade flow. The other reason is that suspension must be targeted against the responding member, while the underlying violation will usually have covered trade with all members. But also the retaliation of one complainant against one violating member has external effects on other WTO members as we will demonstrate later.

3.1. Calculating the “exact” damage or the result of a bazaar deal? [↑]

In practice, however, it is very difficult to “calculate” the damage or the level of nullification or impairment. One simple approach, often applied by the WTO Arbitrators is to approximate it by trade effects in the sense of lost trade (i.e. lost turnover) as the relevant comparator. In the “Hormones case” the calculation of the lost trade was by far the most transparent calculation. In the “Bananas case” and in the other cases of EU-US trade disputes where sanctions were allowed, these calculations were neither transparent nor plausible (see Breuss, 2004, p. 283 ff.). Finally, it seems that the outcome of the level of nullification is more the result of a political bazaar deal.

Table 1

3.2. Theory of WTO Dispute Settlement

The theoretical literature on this subject is not very extensive. There are only a few explicit theoretical and some empirical contributions to explain the economic reasoning of the GATT/WTO (e.g. Hungerford, 1991; Rodrik, 1995; Staiger, 1995; Bagwell-Staiger, 1999, 2002; Spagnolo, 2001) or of the system of dispute settlement in particular (e.g., Anderson, 2002; Bütler-Hauser, 2000; Maggi, 1999; Bown, 2002, 2004; Kohler, 2004). WTO's major principles, reciprocity and nondiscrimination are simple rules that, when used together, can deliver an efficient outcome. Both rules can help to neutralize externalities resulting from terms-of-trade effects (Bagwell-Staiger, 1999, p. 237). Another strand of modern trade and tariff literature – building on the literature of endogenous tariff formation (see e.g. Mayer, 1984) – deals with the politico-economic explanation of “trade wars”⁽¹⁾. Grossman-Helpman (1995) build on a strategic interaction between interest groups and politicians in the domestic arena and strategic interaction between government in the international arena. Such models can be used to analyze the rise and fall of the Bananas dispute between the EC and the US (see Breuss, 2003). Many authors have shown that primarily large countries will win trade wars (e.g. Whalley, 1985, chapter 14; McMillan, 1986; Kennan-Riezman, 1988; Breuss, 2003).

Only a few authors have dealt with the peculiarities of retaliation in WTO dispute settlement. Anderson (2002) shows that equal trade effects will only coincidentally, if ever, proxy for equal welfare effects. The simply calculated foregone trade effects must, however, not coincide with the more proper welfare effects. Welfare effects are the standard comparator in economic policy analysis, and welfare improvements – and not only a simple increase in trade are also the ultimate goal of the WTO Agreements (see Spamann, 2005, p. 6). Although welfare effects are the only truly general comparator for the level of nullification, they are, admittedly difficult to calculate. Without a general equilibrium analysis it cannot be done. Kohler (2004) in commenting the general equilibrium calculations of the economic impact of the transatlantic trade disputes by Breuss (2004) analyzes the concept of “rebalancing” with the theoretical toolkit of Bagwell-Staiger (2002). Kohler (2004) sees the logic behind the new DS system of the WTO as a kind of repeated game in which one side does not comply with formerly agreed upon WTO rules. The WTO DSM allows for sanctions – presently primarily via retaliatory tariffs. He offers a cooperative interpretation of non-compliance. A permanent unilateral non-compliance could (in a two-country case) in the end lead to the collapse of the former agreement. In practice – if only two countries (even if they are so powerful as the EU and the USA) are involved in a trade dispute – within the multilateral agreements of WTO with 148 members a collapse of an agreement is not plausible. Kohler (2004, p. 331) then weighs “economic values” against “political values”. This makes it more understandable that although (as we will show in the analysis of the economic impact of the four EU-US mini trade wars) both, the plaintiff and the defendant may lose in welfare terms, both governments – due to political economy motives – still prefer the outcome to the initial situation (the original agreement). In this interpretation – according to Kohler (2004, p. 332) – “the DSM is a useful vehicle to ‘re-balance’ the agreement, towards a new political equilibrium”. However, each retaliatory action answering the non-compliance with a former agreement has incalculable consequences when the retaliation is not executed with some form of transfers but with imposing retaliatory tariffs. And then we are at the outset of our proposition that retaliation in the present form never (or only by chance) can “rebalance” the original status.

3.3 Unintended consequences of “rebalancing”

In contrast to the “Hormones” and the “Bananas” cases, in the “FSC” case the calculation of the damage for EC firms should have been simpler, because the US budget pays for the FSC subsidies and must therefore provide respective amounts in the budget plans.

Contrary to the first two cases the FSC induced trade conflict between the EU and the USA – when it would not have been solved – could have led to a trade war of considerable dimension and it would have involved nearly all sectors of both economies with consequences on welfare, allocation, efficiency, labor markets and change in sectoral competitiveness in both countries, which are not easily predictable. The larger the retaliatory level at stake the plainer one sees the problems with the present practice of sanctions by the WTO-DS system. Without a detailed computable general equilibrium model (CGE) for both countries one is simply not able to evaluate all the economic interactions and consequences of such a trade war. In this case, it can be argued to the extreme, that the present method of sanctions allowed by the WTO-DS system is irresponsible. The WTO DSB simply does not know the economic consequences of its retaliatory practice in all details. However, the WTO dispute settlement system does not work on its own interest, but on behalf of the complainant and defendant parties. This calls for a reform of the present system which works only with retaliatory tariffs.

3.4. Peculiar sectoral impact of retaliation

Retaliation can take place in different sectors, either in the same sector (agriculture in the “Hormones” case) or in other sectors. Additionally, the USA sometimes resort to a “carousel” type of suspension where the concessions and other obligations subject to suspension change every now and then, in particular in terms of product coverage. In the “Bananas” case the Arbitrators concluded, based on Art. 22.3(a) that the Appellate Body has found that nullification occurred in the “same sector(s)”. That means that violations under the GATT and the GATS in the original dispute were closely related and all concerned a single import regime in respect of one product, i.e., bananas. In DSU legal terms (Art. 22.3(f(i))), US retaliations by imposing tariffs on industrial goods concern the “same sector(s)” (i.e., all goods!) as the bananas belong to! In economic terms, however, it makes a difference in which sectors a country retaliates against violations in, say the agricultural sector (bananas). Among specific sectors that suffered the most were bed linen, bath products (for example UK company “The Body Shop” and French company “Le Laboratoire du Bain”), folding cartons and boxes for luxury goods (e.g., German company “Karton Druck”), lead acid batteries (e.g., Italian company FIAM), luxury handbags and wallets (e.g., French company “Louis Vuitton” and Italian company “Gucci”), lithographs and coffee-making machines.

In addition to the USA sanctions against the WTO-illegal EC import regime for bananas, the Arbitrators decided in favor of Ecuador and determined that the level of Ecuador’s nullification and impairment is US\$ 201.6 million per year. Ecuador is allowed to suspend concessions under the TRIPS agreement. Ecuador was allowed to apply sanctions in form of “cross-retaliation” according to Art. 22.3.c (suspension of concessions under another covered agreement as in the Bananas case, namely those concerning the agricultural sector). Ecuador, however, decided not to implement sanctions against the EU. A classical case of the “biased” position of small and poor countries vis-à-vis large and powerful trade regions, like the EU.

3.5. Retaliation with tariffs

As a rule a decision by the arbitrators under DSU (e.g. in the “Hormones” case that “the suspension by the United States of the application to the European Communities and its member States of tariff concessions and related obligations under GATT 1994 covering trade in a maximum amount of US\$ 116.8 million per year would be consistent with Article 22.4 of the DSU”) is interpreted as the authorization for the complaining party to impose countermeasures up to the level of nullification or impairment in the form of additional 100% ad valorem duties. The retaliatory tariff is meant to be and is usually prohibitive. That means that the imports of the targeted products of the retaliation list come to a halt completely

or that they decline considerably (depending on the price elasticity of demand). In the first case no tariff revenue can be collected in the second case only a limited amount.

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4. The transatlantic WTO trade disputes [↑]

Since 1995, around 330 bilateral disputes (as of 29 April 2005) were filed with the WTO (2). As complainants, 19.4% of which concern the EC, 24.8% the USA, and the rest is distributed to other countries, each involved not more than 9%. As respondent, 27.1% concern the EC, 21.7% the USA, and the rest concerns other countries, each not more than 8% (see Breuss, 2004, Table A.1). At present (3), the EC is actively involved in 27 WTO disputes: in 16 of these cases the EC is the complaining party while in the remaining 11 cases the EC is on the defending side (4). These cases relate to the EC's relations with 11 of its trading partners ((Argentina, Australia, Brazil (5), Canada, India, Korea, Thailand and the US). Dispute settlement activities against the US continue to represent the majority of EC's active disputes (15 cases; see Table 2). In most of these disputes it is the EC which is the complaining party (10 disputes), being the defendant in 5 cases (GMOs, Hormones, customs procedures, aircraft subsidies and Geographical Indications) (6). Regarding the substance of EC's offensive cases with the US, a major part concerns the misuse of trade defense instruments (Anti-dumping, CVD and Safeguards).

Table 2

4.1. Anatomy and economic impact of four EU-US mini trade wars [↑]

In the following we analyse the economic impact of the four most prominent EU-US trade conflicts, the "Hormones" case, the "Bananas" case, the "FSC" case and the "Steel" case. When either the USA or the EU is retaliating against each other because of having violated WTO agreements we have the situation of a (retaliatory) "trade war": both parties reduce trade by imposing trade contracting measures simultaneously. As these trade disputes have a fairly low dimension – they amount only to 0.01% to around 2% of bilateral EU-US trade – we call them "mini trade wars". A more detailed description of the history of these cases can be found in Breuss (2004). Here we concentrate only on the general equilibrium impact of the mini trade wars.

Out of the large number of DS cases, in only seven occasions the WTO-Dispute Settlement authorities (Arbitrators) allowed the complainant party to introduce retaliatory measures against another WTO member (see Ortino-Petersmann, 2004, p. xviii). Three cases concerned EU-US trade dispute, namely the Hormones case, the Bananas case and the FSC case.

A shortcoming – criticized often by economists (e.g., see Keck, 2004; Kohler, 2004) – of all the WTO Arbitrators calculations of the level of damage (or level of nullification) is that primarily partial analytical calculations are applied. Therefore we use a general equilibrium model for our exercise. The welfare and trade implications of the four "mini trade wars" between the EU and the USA are analyzed with the help of model simulations with the *computable general equilibrium model GTAP5* (Dimaranan-McDougall, 2002). We apply the model with 12 countries/regions (USA, Canada, Mexico, EU, EFTA, Turkey, Brazil, Latin America, China, Japan, Korea and ROW), 7 commodities/sectors (Bananas, Meat, Food, Other Primaries, Steel, Manufactures, Services) and with 5 factors of production (Land, Unskilled Labor, Skilled Labor, Capital, Natural Resources). Although a CGE model is the adequate instrument to analyze trade policy issues it has limitations. This is the case in the banana dispute and more so in the case of retaliation, taking into account the very detailed products affected. In order to get some idea of the complex economic implications of breaching WTO regulations and the following retaliation one has to make compromises or rely on partial equilibrium analysis.

Example: As data for trade and wholesale in Bananas are not explicitly provided in the GTAP5 database we approximated this sector with “vegetables, fruit, and nuts”.

4.1.1. The Hormones case [↑](#)

Since 1 January 1989, according to Directive 88/146/EEC, replaced later by Directive 96/22/EC, the EU bans the use of hormones for growth promoting purposes in meat production. Such prohibition concerns both domestic production and imports. Contrary to the EU’s approach, some other countries allow the use of hormones in cattle for growth promoting purposes. In particular, countries such as the United States allow the use of six hormones. This has led the USA, joined by Canada, to contest the EU prohibition on imports of meat treated with these six substances. In 1996, these two countries initiated a case under the WTO DS system against the EU import measures. In August 1997, the WTO Panel charged with the examination of the compatibility of the EU prohibition with WTO rules, and in particular with the WTO Agreement on SPS rules said that the prohibition was not based on a risk assessment, that it was inconsistent with the level of sanitary protection adopted with regard to different substances which posed the same health risk to humans, and that it was not based on existing international standards by the Codex Alimentarius Commission which the Panel had found to be mandatory. The EU appealed the report before the WTO Appellate Body, which reversed two out of the three Panel findings. It upheld the finding on risk assessment, albeit with a number of important clarifications. On 16 January 1998, the WTO Appellate Body issued a report stating that the EU legislation banning the use of certain growth-promoting hormones was not based on a risk assessment as required by the WTO agreement on Sanitary and Phytosanitary (SPS) measures. In particular the AB found that the scientific material used by the EU was too general in nature, as it did not evaluate the risks arising from hormone residues in meat products. The Arbitrator granted the Community a “reasonable period” of 15 months (until 13 May 1999) to collect further significant scientific studies in this case. As a reaction, in 1999, the Scientific Committee on Veterinary Measures relating to Public Health (SCVMPH) concluded that oestradiol 17b should be considered a carcinogen. For the 5 other hormones (testosterone, progesterone, trenbolone acetate, zeranol and melengestrol acetate), the SCVMPH assessment was that the current state of knowledge does not make it possible to give a quantitative estimate of the risk to consumers. The assessment by the SCVMPH and the 17 studies the EC supplied, however, were not significant enough to prove the risk of cancer.

Therefore, the USA and Canada had requested the Dispute Settlement Body (DSB) of the WTO to authorize the suspension of the application to the EC and its Member States to tariff concessions covering trade in an amount of US\$ 202 million per year. The EC, however, calculated only a loss of US exports to the EC by US\$ 53 million. On 12 July 1999 in a Solomon decision by the WTO Arbitrator (WTO, 1999b) determined the level of nullification or impairment suffered by the USA and Canada was *US\$ 116.8 million per year* and *CND\$ 11.3 million per year*, respectively (see [Table 1](#)).

In 2000 the Commission – based on the assessment by the SCVMPH – made a proposal to amend Directive 96/22/EC concerning the prohibition on the use in stock farming of certain substances having hormonal or thyrostatic action and of beta-agonists (Directive 2003/74/EC, entered into force on 14 October 2003). The Commission will regularly review scientific information that may become available in the future.

Since 29 July 1999, the USA has taken countervailing measures worth US\$ 700.8 million (US\$ 116.8 million over six years). This amounts to 0.05% of the total EU exports to the USA each year, or 0.11% of agricultural EU exports to the USA each year. As the Hormones case is not yet resolved, the sanctions taken by the US are still in place. On 1 August 1999, Canada also imposed 100% ad valorem tariffs on, in particular, beef and pork products.

The retaliatory tariff measures by the USA concern the same sector (Agriculture) and concern a variety of EC agricultural products. In the analysis of the economic impact of the import ban by the EU, the retaliation by the USA and the “mini-trade war” (simultaneous actions and counter action) we refer to these agreed upon costs of the level of damage.

Three scenarios are simulated with the GTAP5 model:

1. In the *first scenario*, the EU imposes a trade regime (in the Hormones case the ban on US exports of beef to the EC market as of 13 May 1999) which does not comply with WTO rules (violates several agreements). The trade restriction (increase of import tariffs) is so calibrated that the meat imports of the EU from the USA are reduced by US\$ 116.8 million. This is equal to the estimated level of nullification and impairment by the WTO DS decision.
2. In the *second scenario*, the USA retaliates against the EU according to the decision of the WTO arbitrators. The USA reduces its imports from the EU by US\$ 116.8 million distributed on several sectors. As the retaliation list of products (see Annex II in WTO, 1999b) is very detailed we implemented these retaliations in the sectors “meat”, “food”, “other primary products” and “manufacturing”.
3. In the *third scenario* we simulate the economic impact of the combined implementation of measures and counter-measures of the scenarios (1) and (2). This situation we call “mini trade war”.

Table 3

The *results* of our model simulations can be summarized as follows:

- All the effects are small due to the low amount of impairment involved relative to total trade between both partners.
- Nevertheless, the ban on hormone treated US beef seems to have the effect of “shooting the EU themselves in the foot”. Scenario (1) leads to welfare losses (measured by the total welfare measure of GTAP5, covering allocation and terms of trade effects) in the EU and in the USA. However, they are twice as high in the EU. Obviously, the EU population weighs health higher than simply more consumption of beef (which is implied in the traditional welfare measure). Therefore, a simple welfare measure may be misleading. However, the EU can improve their terms of trade, whereas the US loses here. Trade between both partners slightly decreases.
- The retaliation by the USA (scenario 2) leads to welfare losses for the EU, whereas in the USA only negative allocative effects occur. Their terms of trade improve. Again, one could say that the tariff-imposer USA is “shooting in its foot”! Bilateral trade volume declines. Real GDP decreases, nominal GDP increases slightly in the US due to additional tariff revenues.
- The “mini trade war” between the USA and the EU is given when both scenarios (1) and (2) are simulated together -which in reality takes place in this trade dispute. Quantitatively, the results are the sum of the effects of both scenarios. Welfare decreases more than in the USA (due to terms of trade improvements (7)). Trade between each other declines, so does real GDP. In both cases the negative effects are stronger in the EU than in the USA.

The results confirm Anderson’s (2002) theoretical statement that the trade loss equivalent never translates into equivalent damage to economic welfare, except by coincidence. In general, both the complainant and the respondent will suffer a welfare loss by retaliation. Therefore, when a complainant (in the hormones case the US) implements retaliatory measures by imposing (prohibitive) measures by raising the import tariffs by 100% on an arbitrary list of products, this not only hurts the respondent (in this case the EU) by reducing its export chances, it also hurts the complainant (its consumers) and therefore one often speaks in this context of a situation of “shooting oneself in the foot” (see e.g. Mavroides, 2001, p. 46 for such a phrase).

Since the Hormones case is not yet resolved (it is a rare case of lasting non-compliance), the sanctions amounting to US\$ 116.8 million per year are still maintained by the US government. So the estimated welfare and trade effects calculated on the basis of an annual measure must be sextupled already. A new EU Directive (2003/74/EC) concerning the prohibition on the use of hormones has entered into force on 14 October 2003. As a consequence the European Commission requested the USA and Canada to lift their trade sanctions on 15 October 2003 (see the DS 320 case of [Table 2](#)).

Non-compliance and retaliation leading to “mini trade wars” can have several unintended side effects. In [Table 3](#) we presented only the economic impact of this “mini trade war” for the two parties involved (EU and USA). The retaliation measures taken by the complainant US against the respondent EU may, however, also influence third countries via trade diversion. This “externalities” of WTO-allowed retaliation was not considered from the designers of the WTO dispute settlement system. In scenario (3) the third country effects are positive as in all other 10 regions the overall welfare measure is positive. Only in the case of the welfare measure due to misallocation the EFTA and Turkey would lose somewhat.

4.1.2. The Bananas case [↑](#)

In 1993 the EU accepted a regime for the importation, sale and distribution of bananas (Common Market Organization for bananas), established by Council Reg. No. 404/93 on the common organization of the market in bananas and subsequent EC legislation, regulations and administrative measures, including those reflecting the provisions of the Framework Agreement on Bananas (the “BFA”), which implement, supplement and amend that regime. The idea behind this import regime with a complicated tariff-quota system was first, to have a common trade regime for EC’s Single Market and second, to prefer ACP countries (including former EC member states colonies) at the expense of traditional bananas supplier from Latin America and the USA. Only after nearly a decade, the Banana dispute had been resolved (see Breuss-Griller-Vranes, 2003 [\(8\)](#)). With the Council Regulation (EC) No 2587/2001 the EU adjusted its Common Organization of the Market in Bananas, coming into force as of January 1, 2002. As a consequence of the earlier agreement with the USA and Ecuador, the US government lifted its sanctions as of 1 July 2001 already. The EU will introduce a Tariff Only regime for imports of bananas no later than 1 January 2006 [\(9\)](#).

The Bananas dispute with the EU started in 1996. Ecuador, Guatemala, Honduras, Mexico and the USA filed a complaint against this import regime for bananas (with the third parties Saint Lucia, Dominican Republic, Nicaragua and Jamaica) at the WTO by starting formal consultations with the EC in February 1996. Following request by the complainants, in April, 1996 WTO panels were set up. The EU import regime was found to be illegal by the WTO in 1997. The main criticisms were the setting aside of a quantity reserved solely for ACP imports (fails to conform to the “non-discrimination requirements” of Article XIII of GATT 1994), and the allocation of licenses on a “historical” basis (i.e., reflecting past sales; which violates Articles II and XVII of GATS). According to WTO, this did not eliminate the “dragon” discrimination vis-à-vis third-country operators. In the Bananas case several WTO provisions are relevant or agreements are violated, respectively: GATT (I, II, III, X, XI, XIII), Licensing (1, 3), Agriculture, TRIMS(2) and GATS (II, XVI, XVII).

After several “asks” by the applicants (USA) and “offers” by the respondent (EU) – see [Table 1](#) – the Arbitrators (WTO, 1999a) determined that the level of nullification and impairment is *US\$ 191.4 million per year*. In contrast to the Hormones case, the way in which the Arbitrators dealt with these calculations is highly intransparent.

Since March 1999, the USA has taken countervailing measures worth US\$ 478.5 million (US\$ 191.4 over 2 ½ years; March 1999 to July 2001). This amounts to 0.08% of the total EU exports to the USA each year, or 0.19% of agricultural EU exports to the USA each year. With a world market share of some 23% the EU is the world's second biggest banana importer, following the USA (30%).

Before calculating the general equilibrium impact of the bananas case one must, however, confess that it is nearly impossible with a CGE model with relatively broadly defined sectors to capture the effects of single products. The Banana dispute as described earlier, is a very complex case, involving goods trade and services, tariffs and quotas and a whole bunch of countries. In addition to the USA and the Latin American producers also the 78 ACP countries and the EU are involved in the Banana case. To make the story even more complex, within the EU there are at least four groups with different trade regimes before the EU implemented its common organization of the market in bananas in 1993: a) free trade countries (Austria, Finland, Germany, and Sweden); b) Tariff imposing countries (Belgium, the Netherlands, Luxembourg, Denmark and Ireland); c) ACP supplied countries (Italy and the United Kingdom); d) Countries with own production (France, Greece, Spain and Portugal). In each of these groups the welfare implications of the EU banana regime of 1993 were different (see Badinger-Breuss-Mahlberg, 2003).

The following CGE simulations are therefore a rough approximation of the subtleties of the Banana case. On the one hand, we take the EU only as a group and on the other hand, we just analyse the bilateral trade problems between the EU (as a group) and the USA. Furthermore, we only look at the welfare and trade implications caused by the reduction of EU banana imports from the USA and the following retaliation by the USA. We neglect the effects of other countries involved (Ecuador, Guatemala, Honduras, Mexico and the third parties Saint Lucia, Dominican Republic, Nicaragua and Jamaica, and also the ACP countries).

Again we consider three scenarios:

1. In the *first scenario*, the EU has in place its import regime for bananas which is discriminating according to WTO. The damage is worth US\$ 191.4 million per year. The EU Banana regime is implemented in the GTAP5 model by assuming that in the "banana sector" the EU imports from the USA are reduced by the amount of damage calculated by the WTO arbitrators (US\$ 191.4 million per year).
2. In the *second scenario*, the USA imposes trade sanctions according to the WTO DSB decisions worth the same amount. As in the Hormones case we have the same ambiguity in the WTO arbitrators decision concerning the retaliatory sanctions. But again we interpret it as the authorization for the USA to impose countermeasures in the form of additional 100% ad valorem tariffs on certain products originating from the EU. In this scenario the US reduces imports from EU by US\$ 116.8 million according to the retaliation list of products. As the products of retaliation concern all manufactured goods we reduce US imports from the EU in the "manufactures" sector by US\$ 191.4 million.
3. In the *third scenario* we calculate the economic effects of the "mini trade war" in the case of the banana dispute between the EU and the USA. This scenario consists of the combined implementation of the measures of the scenarios (1) and (2).

Table 4

The *results* of our model simulations can be summarized as follows (see Table 4):

- Again, due to the small dimension of the levels of trade restrictions and/or amount of impairment, the effects are small.
- The EC import regime for bananas (scenario 1) is similar to the Hormones case, as this acts as “shooting the EU themselves in the foot” insofar, as it ends in a loss in consumer welfare (misallocation) but due to terms of trade gains in a slight overall welfare improvement of the EU. Total trade between the partners is dampened. Total real GDP in both regions decline. In a partial-equilibrium analysis of EC’s banana regime, Badinger-Breuss-Mahlberg (2002) come to similar conclusions concerning the EU as a whole. The overall welfare loss over the period 1993-1998 amounted to Euro 68 million or 0.0011% of GDP. Behind this overall welfare loss, the EU member states performed differently. Countries with formerly free trade regimes for bananas (Austria, Finland, Germany and Sweden) are welfare losers by 0.0131 % of GDP. Also the group of tariff imposing countries (Belgium-Luxembourg, the Netherlands, Denmark and Ireland) is w welfare loser (-0.0149 % of GDP). From the countries which are supplied by ACP countries, Italy (0.0025 % of GDP) is a winner and United Kingdom (-0.0001 % of GDP) is a loser. Counties with own bananas production are partly winners (France and Greece) and partly losers (Portugal and Spain). Overall their welfare gain was 0.0161 % of GDP (10).
- The retaliation by the USA (scenario 2) leads to welfare losses in the EU, but to slight gains in the USA. This is again due to terms of trade gains in the US. Bilateral exports shrink and also real GDP declines in both regions.
- The “mini trade war” between the USA and the EU has led to welfare losses in both regions of nearly equal size in both countries. Bilateral trade was hampered quite a lot. Real GDP declines in both regions.

The third-country (welfare) externalities of scenario (3) are for all other ten regions in the GTAP5 simulations positive. Only if looking at the allocation components of the welfare measure, the EFTA and Turkey suffered slightly from the “mini” bananas trade war between the EU and the USA.

4.1.3. The Foreign Sales Corporations case ↑

On 28 November 1997 the EU requested for consultations on the US Internal Revenue Code (sections 921-927) and related measures establishing special tax treatment for “Foreign Sales Corporations” (FSC). The FSC scheme provides for an exemption to the general tax rules which results in substantial tax savings for US companies exporting through FSCs. The EC argued that the exemptions from the US direct (income) taxes of a portion of FSC income related to exports and of dividends distributed to US parent companies constitute export subsidies contrary to Article XVI GATT 1994 and Article 3.1(a) of the Agreement on Subsidies and Countervailing Measures (ASCM).

The USA decided to introduce the FSC scheme in 1984 as a replacement of its old export promoting tax scheme, the so-called DISC that was condemned by a GATT panel in 1981. The EC contested the legality of the FSC scheme. After unsuccessful rounds of consultations the EC decided to request the establishment of a WTO Panel in September 1998. In the WTO Panel report of 8 October 1999, the FSC was found to constitute a prohibited *export subsidy* under the Subsidies Agreement and (in relation to agricultural products) an export subsidy in violation of the Agriculture Agreement.

As the implementation deadline was exceeded without a satisfactory change in the FSC regulations, on 17 November 2000 the EU has requested the WTO to authorize trade sanctions on the USA up to a maximum amount of US\$ 4.043 billion in the FSC trade dispute. This amount was based on the value of the subsidy granted by the USA under the FSC scheme according to the figures in the fiscal year 2001 US Budget proposal.

The Panel decision of 20 August 2001 confirmed the EU position that also the revised US FSC regulation (“FSC Repeal and Extraterritorial Income Exclusion Act of 2000” – ETI), set into force on 15 November 2000, was still not consistent with the SCM Agreement and the Agreement of Agriculture. Additionally, the legislation maintained in place the FSC regime at least until the year 2002.

On 30 August 2002 the WTO arbitrators estimated the damage of nullification for the EU amounting to US\$ 4,043 million (see [Table 1](#)). As of 7 May 2003 the WTO – based on its earlier decision – authorized the EU to apply countermeasures of up to US\$ 4 billion against the USA. The WTO Dispute Settlement Body authorized the EU to increase customs duties up to the level of 100%, for a total of US\$ 4,043 billion of US trade (WTO, 2002a).

As the EU's objective was not the punitive duties on US products but the creation of an incentive for US to withdraw the illegal exports subsidy, limited countermeasures were applied only as from 1 March 2004. The application of duties started at an initial level of 5% and increased monthly up to a level of 17% in March 2005.

On 31 January 2005 the EU Council (Council Regulation 171/2005) adopted a regulation suspending such sanctions retroactively as from 1 January 2005 in the light of the process of complying by the United States. However, the trade sanctions will apply again after 1 January 2006 or, at the latest, 60 days after the adoption of the compliance panel/Appellate Body report finding the US law WTO incompatible. Although the EU appreciated that the US Congress has repealed the previous FSC tax scheme it is not satisfied with the solution. Despite European opposition, the US Congress chose to perpetuate the WTO-prohibited tax subsidies (FSC/ETI export subsidy system) through a transition period and the permanent “grandfathering” of exiting contracts. These provisions, which are now contained in the American Jobs Creation Act (AJCA) are – and this was confirmed by a WTO panel decision of 30 September 2005 – still violating WTO rules. The EU estimates that these advantages, for example, to add up to over €750 million for Boeing alone (see the [European Commission Trade portal](#)).

As the EU started only gradually to implement the countermeasures in 2004, the calculation of the welfare and trade implications of this transatlantic “mini trade war” amounting to a maximum retaliation level of US\$ 4 billion is hypothetical. The FSC case is quantitatively by far the most important case for both sides. Utilizing the whole US\$ 4 billion would amount to 2 ½% of EU's import from the US.

To evaluate the economic impact we simulate three scenarios:

1. In the *first scenario* the US subsidizes exports to the EU (but in principle to all third countries) by the estimated amount of US\$ 4 billion. The implementation into the GTAP5 model is done in practically all 7 sectors so as to increase the export subsidies in order to reach an increase of US exports to the EU by US\$ 4 billion.
2. In the *second scenario* the EU retaliates with the same amount. Here, the WTO decision is interpreted straightforwardly by the EU as the authorization to impose 100% ad valorem duties on import goods from the USA ([11](#)). In this scenario the EU reduces imports from the USA amounting to US\$ 4 billion according to the list of retaliation of products. In our model simulations this means an increase of import tariffs in the sectors meat, food, other primary goods, steel and manufactures.
3. In the *third scenario* we simulate the – now not so small – “mini trade war” between the EU and the US in the FSC case. For this purpose we implement the scenarios (1) and (2) simultaneously into the model.

As mentioned above, in reality the FSC regulation of the US aims not only at stimulating exports to the EU but also to other third countries. As those, however, did not apply for sanctions at the WTO, we can only measure the possible economic impact for the EU-US relations.

The *results* can be summarized as follows (see [Table 5](#)):

- As the amount of the WTO-illegal subsidies involved is much higher than in the former cases (Hormones and Bananas), the impact is also larger in terms of welfare, trade and terms of trade. The retaliatory measures amount to US\$ 4 billion which is 2.4% of EU's imports from the USA. In scenario (1), the isolated effects of the WTO-illegal FSC scheme is simulated. Export subsidies have the classical text book effects (12). Welfare and terms of trade decrease in the export subsidizing country. The EU gains in welfare, mainly due to the relatively strong improvement of the terms of trade. US exports to the EU increase by 1.72%. Also EU exports to the US increase slightly. Overall, there is a slight increase in real GDP.
- In scenario (2) overall welfare in the EU increases, mainly due to the terms of trade gains. The introduction of retaliatory tariffs, however, deteriorates welfare due to allocation in the EU. The USA loses welfare. The trade restrictions would result in a decline in bilateral exports, whereby the US exports to the EU would shrink strongly (by 1.88%). Real GDP declines in both countries.
- The trade war in the FSC case (scenario 3) would be – due to the high volume of trade policy measures involved – no longer a “mini trade war”. Overall, it seems as the EU would gain this trade war at the expense of the USA. EU welfare and its terms of trade would increase; those of the US would decrease. The former export stimulating effect of the FSC scheme would be more than neutralized in this trade war. Bilateral exports would decline by nearly the same amount (0.15%) in both countries. There would be a Trade Creation effect in the EU because intra-EU trade would be stimulated by 0.04%.

Table 5

Besides the impact of the FSC “trade war” on both parties (EU and the US) it is also interesting to study the externalities of this dispute in other third countries. By using a 12 country/region CGE model we can study these third-country effects. It turns out that all other eight regions would slightly improve total welfare in case of scenario (3); the ROW would lose somewhat. In addition to the ROW, three regions/countries (Canada, Mexico and EFTA) would have slight negative allocation effects. In scenario (1) – the simulation of the impact of the FSC scheme of the US alone – leads to welfare losses all over the regions in the GTAP5 model (except for the EU, due to terms of trade gains).

4.1.4. The Steel case

On 20 March 2002, the US imposed severe restrictions on steel from the rest of the world with import tariffs as high as 30%. These safeguard measures applied to imports from all countries, except for products of Canada, Israel, Jordan and Mexico, and also for products of developing countries when they were members of the WTO. Given that this left the EU – the world's largest steel producer, with 159 million tons of crude steel (19% of world production; data as of 2001) – as the only remaining sizeable steel market, this created a serious risk that the EU would be flooded by steel shut out of the US market. The extent of possible trade diversion was estimated by the European Commission as high as 15 million tons per year, 56% of current EU import levels. EU steel imports were already at record levels (imports in 2001 stood at 26.6 million tons, compared to 15.4 million tons in 1997, an overall increase of 73% over the last 4 years).

The EU reacted to the US safeguard measures for steel imports by two actions: (a) introduction of own safeguard measures to avoid trade diversion to the EU market; (b) request of a decision by the WTO (panel).

(a) The European Commission on 27 March 2002 adopted temporary safeguard measures on steel. This regulation measures covered up to 21 steel products. These temporary measures lasted for a maximum of 6 months and were non-discriminatory. Developing countries were excluded from the measures and they also not applied to imports from Russia, Ukraine and Kazakhstan. On 27 September 2002, after a detailed investigation, the European Commission adjusted the safeguard measures and restricted it to seven products. The “short list” of retaliatory (safeguard) import tariffs amounted to €380 million, the “long list” amounted to €600 million.

(b) The second front on which the EU fought the US steel protectionism was the establishing of a panel at the WTO. Following the establishment of a WTO panel on United States – “Definitive Safeguard Measures on Imports of Certain Steel Products” of 3 June 2002, seven other countries requested a panel: Japan, Korea, China, Switzerland, Norway, New Zealand and Brazil. As a counter-action the United States requested a Panel against the EU safeguard measures which was established on 16 September 2002

At that time no estimation of the damage the EU and the USA might have suffered from the counter-safeguard actions in the steel sector were available. When the US safeguard measures were announced, the Commission estimated that they would affect more than US\$ 2 billion of EU steel exports. By the new exemptions the level of damage by the EU would have amounted only to roughly US\$ 1 billion.

The Appellate Body of the WTO (WTO, 2003b), on 10 November 2003, issued its report on the complaints brought to the WTO by Brazil, China, the European Communities, Japan, Korea, New Zealand, Norway and Switzerland against United States – “Definitive Safeguard Measures on Imports of Certain Steel Products”. It upheld most of the Panel’s conclusions that the US measures were inconsistent with the WTO Safeguard Agreement and the GATT 1994 but reversed some findings regarding tin mill products and stainless steel wire which did not affect the overall result.

Without authorization of a concrete amount of countervailing measures by the WTO, the European Union’s threat of retaliation led President Bush to the decision to terminate US steel safeguard measures on 4 December 2003. The Tariffs were dismantled, 16 months earlier than originally planned. The European Union’s threat of retaliation added to the pressure. It was poised to impose tariffs on trade worth up to US\$ 2.3 billion (or €2.4 billion), targeting exports from states that will be vital to Mr. Bush’s re-election campaign, such as Florida and Wisconsin. The scale of the threat was daunting – ten and 20 times greater, respectively, than the retaliation provoked by disputes over bananas and beef hormones. In the 20 months since the tariffs were imposed, the US steel industry has consolidated. The steel case is a classical example of the “endogenous tariff theory“ (see Mayer, 1984; and Grossman-Helpman, 1995). The electorate around Pittsburgh, a big steel town lobbied for the introduction of protective measures for their uncompetitive industries to secure jobs. The counter lobby, the steel-using industries cried for the lift of the safeguard steel measures. They argue that they have lost as many as 26.000 jobs because of the tariffs.

As a consequence of the dismantling of US steel safeguard measures, on 12 December 2003 the EU Council adopted a Regulation repealing EU countermeasures established by Regulation 1031/2002 of 6 December 2003.

The transatlantic Steel dispute ended before the WTO arbitrators could determine the level of damage the EU economy might have suffered due to the US safeguard measures and how big the damage might have been in the United States caused by the EU counter measures over the 20 month period of this dispute. Because no official WTO estimations exist as to the possible damage we make some hypothetical assumptions in our model simulations in three steps:

1. In the *first scenario* we simulate the impact of the safeguard measures by the US implemented at 20 March 2002 amounting to an estimated “damage” for the EU by US\$ 1 billion. First, the USA increases import tariffs on steel imports from seven countries/regions (EU, EFTA, Turkey, Brazil, China, Japan and Korea; LDCs, and the NAFTA countries Canada and Mexico were exempted from the safeguard measures) resulting in additional import tariff revenues in the USA by around US\$ 391 million. As the EU Commission already estimated the potential damage in the EU to amount to around US\$ 1 billion less steel exports to the US market, we calibrate the US safeguard measures in order to target a US\$ 1 billion steel import reduction from the EU (which amounts to 0.4% of US imports from the EU). The asserted trade diversion effects (reallocation of steel exports from the US market to the EU market) cannot be detected – at least in the aggregate steel sector in the GTAP5 model simulations. An indication that the trade diversion effect must not have been large is the reduction of the number of products for which the EU introduced counter safeguard measures from originally 21 to only 7 steel products. If one accepts the procedure of implementing the steel case one can look at the welfare implications (see [Table 6](#)). With the exception of the EFTA and Turkey all countries/regions targeted by the US safeguard measures suffer a welfare loss. The EU suffers a welfare loss due to misallocation and terms of trade losses. The US gain terms of trade but suffer allocation losses, resulting in an overall welfare gain. Both countries suffer a slight real GDP loss. Bilateral trade declined, more so the exports of the EU to the US than the other way round.
2. In the *second scenario* we simulate the introduction fictional retaliatory measures by the EU amounting to an assumed US\$ 1 billion. As mentioned earlier, the European Union’s threat of retaliation was much higher (US\$ 2.3 billion). In our model simulations the sectors food and manufactures are targeted primarily. It turns out that the overall welfare of the EU would have increased (those of the US decreased) due to the terms of trade improvements resulting from the retaliating. However, there are negative allocation effects in both countries. Bilateral trade between the EU and the USA would decline, stronger in the USA than in the EU. Real GDP would slightly decrease in both countries (see [Table 6](#)).
3. In the “*mini trade war*” *scenario* we combine the scenarios (1) and (2). This results in welfare losses on both sides of the Atlantic (“shooting in their own feet”). Welfare due to allocation as well as terms of trade deteriorates in both countries. Bilateral trade would have declined by 0.6%. Real GDP is down in both countries. The simulation of the hypothetical steel “mini trade war” between the EU and the USA leads to an overall trade diversion. The exports of all countries/regions not exempted from the US steel measures EU will be redirected from the US to the EU. Besides the EU and the USA, China, Japan and Korea would have experienced welfare losses.

[Table 6](#)

5. Major findings and suggestions for a reform of the DS system [↑]

The complexity of WTO dispute settlement proceedings is underlined by the fact that, since the beginning in 1997 of the “full review of dispute settlement rules and procedures under the WTO” mandated by the 1994 Ministerial Decision on the Application and Review of the DSU, numerous proposals for improving and clarifying the DSU has been made and discussed in WTO bodies, also during the ongoing Doha Development Round (see WTO, 2003a). Most of these proposals refer to institutional and /or procedural changes; rarely do they touch intrinsic economic problems with the DS system. The reason for the lack of proposals to improve the WTO DS system from an economic point of view may be due to the fact that WTO issues are primarily a playground for lawyers.

Our economic evaluation of four EU-US “mini trade wars” has revealed the following findings and peculiarities:

5.1. The level of damage, calculated by the WTO versus the real economic impact [↑]

The four cases studied showed that the estimation of the correct level of the suspension of concessions “equal to the nullification or impairment“ is practically impossible. The calculation always involves the comparison between the actual situations with one hypothetical in which the trade measures would be WTO-legal. In both cases one has to estimate practically all parameters. A small change in the assumption of only one parameter results in considerable changes of the final result. As such calculations always have to be made under uncertainty one should at least do this exercise under two conditions: (a) The Arbitrators should make sensitivity analyses when fixing the level of impairment; (b) much more transparency is necessary (a good example is the Hormones case, a very bad example is the Bananas case). The concept of equivalence draws more on notions of fairness than on economic accuracy.

As Anderson (2002) demonstrated theoretically and we calculated via model simulations in this paper, “trade loss equivalence would never translate into equivalent damage to economic welfare, except by coincidence”. Hence, a complete “rebalancing” is an illusion. The estimated damage is always a static approximation to a possible loss by the complainant. If he is allowed to introduce retaliatory import tariffs in the amount of the “damage” this will enhance reactions by importers and will either reduce imports of the targeted products either completely (100% extra tariffs act prohibitive) or not fully (13). In short, the damage calculated by WTO arbitrators may finally be quite different from the overall economic impact of the introduction of retaliatory measures, in the economy of the complainant, in those of the defendant and also in third countries.

In other respects too the WTO dispute settlement system is flawed. It only looks at future actions. Past wrongs go uncompensated. Trade retaliation under WTO only target non-compliance after the “reasonable period of time” has elapsed following a Panel or Appellate Body finding against a respondent’s wrong policy regime. The damage caused in preceding years to the complainant’s export industry is simply ignored by DSU procedures. Further more, by retaliating it is the complainant’s import-competing industries that enjoy temporary assistance because of the prohibitive retaliatory tariffs imposed. This does not help the export industry that has been denied market access by the respondent’s wrong policy in the first place.

5.2. Questionable system of retaliation

The WTO dispute settlement system’s objective is twofold (see Bronckers-van den Broek, 2005, p. 102): “(i) to obtain a satisfactory solution to the dispute in the interest of the disputing parties, and (ii) more broadly to guarantee compliance in the interest of all WTO Members. When a Member is temporarily unable or unwilling to comply with a WTO dispute settlement ruling, the complainant currently has a right to try to negotiate compensation, in the form of alternative trade concessions. When the parties do not reach agreement on compensation, the complainant can be authorized to suspend concessions toward the non-complying party (retaliation). Compensation and retaliation are temporary solutions only, and are merely instruments to ‘restore the balance of concessions’ with compliance as the ultimate objective.” Although the system so far has proven quite effective, it suffers from significant flaws. If no agreement on compensation (trade concession) is reached the only practical remedy for sanctions of the WTO Dispute Settlement Body consist of allowing the complainants to impose tariff measures. The present tariff sanction system is questionable for several reasons (see also Bronckers-van den Broek, 2005, p. 103-106):

- it is counterproductive because it leads to trade contraction and, hence goes against the very trade liberalizing principles of the GATT/WTO;
- retaliation does not bring relief to the exporters injured by the WTO-illegal measures;
- trade retaliation damage also innocent bystanders (external side-effects);
- existing remedies are unwieldy; the more trade of a country is affected by WTO-illegal measures, the more difficult it is to find imports that can be restricted without hurting consumers.

Additionally, theory and the empirical evidence (via simulations with CGE trade models) suggest that import tariffs may lead to a trade war. Trade wars can only be won by large (and hence, powerful) countries. This is the result of optimum tariff theory. That means that small (and more so, poor less developed countries (LDCs) are discriminated in two respects. On the one hand, due to a lack of legal resources they make less use of the WTO DS system. On the other hand, if they are authorized to retaliate against a large country or trading bloc (like the EU), they do not implement such sanctions (e.g., Ecuador in its “cross-retaliation” case against the EU) either because they fear to lose the trade war or to lose the necessary aids from the large country (e.g., from the EU) or they hope for preferential treatment in debt negotiations in the Paris Club. Countermeasures in form of retaliatory tariffs are bad policy. They amount to “shooting oneself in the foot” (see Mavroidis, 2001, p. 46). Through countermeasures, at least a small and poor WTO member imposes an additional cost on society. Precisely because of the budgetary constraints, adoption of countermeasures is simply not an option for the poorer WTO members. The present system of compensation in the WTO illustrates the disadvantageous position of LDCs. Even “cross-retaliation” in the area of TRIPS, which may have seemed to be more promising from the perspective of compliance-seeking developing countries, does not offer them the relief they hoped for, as can be seen in Ecuador’s experience in the Bananas dispute with the EU (see Bronckers, 2001, p. 61).

5.3. Unpleasant implications of tariff retaliation ↑

Retaliatory measures and the FSC cases have demonstrated that retaliatory measures tend to injure a motley assembly of exporters and importers, often smaller companies, who rarely, if ever, have an interest in the original dispute (e.g., Bananas against luxury bags from “Gucci”). Besides these anecdotal remarks one can strictly prove from general equilibrium analysis of trade policy measures that the imposed tariffs on a randomly selected list of products (sometimes aggravated by a “carousel” method) can have implications which are not foreseen by WTO Arbitrators if they do not dispose of a very detailed CGE world trade model. As long as such model devices are not at hand, the WTO DSB decisions on retaliatory tariffs – although not carrying out them on their own but on behalf of the WTO member states – are irresponsible. First promising attempts to correct such omissions can be found in the decisions of the Arbitrators in the FSC and the Byrd Amendment (CDSOA) cases. In the CDSOA case in particular, the Arbitrators have undertaken considerable effort to figure out the substitution elasticities (between domestic and import demand) and pass through coefficients from various partial and general equilibrium models available in order to determine the trade effect of the CDSOA disbursements and hence the level of damage for the complaining parties (14). On the one hand they may discriminate unintended small and poor WTO members. On the other hand the Arbitrators can not fully estimate the economic consequences of their decisions for the parties involved directly and more so for the countries not involved directly. So, not only the instruments of tariffs are inefficient, in so far as they have several externalities (terms-of-trade effects and other misallocation), it punishes companies which have nothing to do with the trade policies imposed by the government (in case of the EU by the Commission).

5.4. Who controls the retaliators? ↑

Furthermore, besides the problem of calculating the level of damage a country suffers from another not complying with WTO rules the question of controlling was overlooked by the DS architects. Once the amount of impairment is set by the Arbitrators in the WTO DS procedure, who controls ever whether the country (in our case the USA) which has the allowance to retaliate really only reduced imports by the amount authorized by the WTO? Additionally, who controls the distribution of the retaliatory tariff revenues – if there are collected any – to the companies suffering the damage? In practice companies suffering the damage by WTO-illegal measures are not compensated out of the tariff revenues collected by the complainant government. Discussions to develop schemes within the European Union in this respect so far have not led to any result (see Benedek, 2005, p. 305 ff.). Tariffs are therefore very bad instruments for countermeasures, on the one hand resulting in negative welfare effects for the retaliating country and on the other hand leading practically to no extra tariff revenues which could be used for compensation (15).

5.5. Large countries win trade wars ↑

Furthermore, one must conclude from the theoretical analysis (see Grossman-Helpman, 1995; Breuss, 2003) that only large and powerful countries can win trade wars (tariff wars seem designed for large countries!). That implies that small and poor countries (LDCs) are disadvantaged not only from the access of the DS process (“biased”) but also from the bad outlook ever to win a tariff war against a large country.

5.6. Transfers instead of tariffs for retaliation ↑

A wide range of proposals for improving the WTO’s system of remedies has already put forward (16): We have found that – from an economic point of view – tariffs are very bad instruments for countermeasures. Although “the right to request financial reparation for a wrongful act, including damages incurred in the past, is a basic principle of international law in case compliance is not possible” (Bronckers, 2001, p. 62), the question is the method in which sanctions should be executed. A much more efficient and easier retaliation instrument than tariffs would be direct transfers from the government of the non-complying country to the government of the country having got the authorization of compensation by the WTO. The latter government could then easily redistribute the received transfers to the companies which suffered the concrete loss. Bronckers-van den Broek (2005) call this form of retaliation “financial compensation”. This is not a novel idea: reparation by governments of injury for which they can be held responsible is part of the tradition of public international law. It was already proposed in the GATT in 1966 (see Bronckers-van den Broek, 2005, p. 110) and was also proposed more recently in the WTO. Such a transfer or financial compensation scheme has several advantages over the present tariff-ridden retaliation system. It solves more or less all the problems inherent in the retaliation system by tariffs. This method of retaliation would come closer to the ideal of “rebalancing” because there would be no negative external and distorting effects as with a tariff. Whether transfers as retaliatory measures would also be covered by the present DSU legislation is an open question. Article 22.1 DSU never speaks about tariffs explicitly but only on “compensation and the suspension of concessions or other obligations”.

Suspension of concessions implies as a rule the reintroduction of tariffs as the major part of concessions in former GATT rounds consists of tariff reductions (17). One could (newly!) interpret “other obligations” as the duty of countries not complying with WTO rules to pay transfers to the countries hurt by the non-compliant action. This should be a recoverable claim, determined by the usual DSU procedure. The problem, however, is that the complainant would interfere into the national autonomy of the respondent which is excluded from the present WTO system (18). Anyway, the DSU would have to be amended (see also Bronckers-van den Broek, 2005, p. 123 ff.).

5.7. Compensation instead of retaliation

There are other suggestions put forward to improve the retaliatory procedure. Anderson (2002) pleads for compensation instead of retaliation. A complainant unhappy with the respondent’s policy reform should be entitled to seek compensation until satisfactory reforms are implemented. Compensation could come in the form of a temporary lowering of the respondent’s import barriers on some other products, which should be offered on a most-favored-nation (MFN) basis. Instead of the restrictive effect of retaliation to both countries involved in the trade dispute, compensation in this form would simply mean trade liberalization. According to Anderson (2002) the concept of compensation would not only favor the complainant but also third countries and by granting compensation, the respondent would gain greater control of procedures. With retaliation, by contrast, the complainant can keep pressure on the respondent until the latter complies. Anderson’s suggestion, however, would confuse the ongoing general liberalization rounds under WTO. Such a “mandatory compensation” system, as Bronckers-van den Broek (2005, p. 107) would call it has also its disadvantages. The advantage of trade compensation, as opposed to retaliation, is that compensation does not restrict trade but actually opens up trade, albeit temporarily, for as long as the non-complying measure remains in place. In practice, however, compensation is hardly ever offered because it is very difficult for countries to find and offer compensatory reductions of trade restrictions.

5.8. “Tradable retaliation rights”

Mexico (19), realizing the prominent problem with the WTO dispute settlement procedure that small and developing countries have difficulties in finding the capacity to effectively retaliate against trading partners (e.g. if developing countries or LDCs do not find a trade sector or agreement in respect of which the suspension of concessions would bring about compliance without affecting its own interests) being in violation of their WTO commitments, proposed that retaliation rights be made tradable (WTO, 2002b; see also Bagwell-Mavroidis-Staiger, 2004). Bagwell-Mavroidis-Staiger (2003) offer a first formal analysis of the possibility that retaliation rights within the WTO system be allocated through auctions. The results, however, are highly sensitive to the auction format chosen.

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Endnotes

(1) A “trade war” refers to two or more nations raising or creating tariffs or other trade barriers on each other in retaliation for other trade barriers. It is the opposite of free trade. Whalley (1985, p. 232) speaks in this context of a “retaliatory trade war”. According to „Deardoff’s Glossary of International Economics“ „trade wars“ are generally, a period in which each of two countries alternate in further restricting trade from the other; more specifically, a trade war is the process of tariffs and retaliation (see <http://www-personal.umich.edu/~alandear/glossary/t.html>)

(2) Holmes-Rollo-Young (2003, Table 10) find that complainants overwhelmingly win (88% of the completed cases). However, the US won only in 40% of the cases against the EU, whereas the EU won in 91% of the cases against the US. Canada and the US have won in only 67% or 76% of the cases, compared to the average of 88% winning cases.

(3) As of 9 June 2005 (see European Commission, 2005). For details, see also the homepage: http://europa.eu.int/comm/trade/issues/respectrules/dispute/index_en.htm

- (4) Since the running out of the MFA, Chinese textiles flooded the US but also the EU markets. Before this textile conflict EU-China was brought to the WTO, on 10 June 2005 the EU and China have agreed a deal that will manage the growth of Chinese textile imports to the EU until the end of 2008.
- (5) A prominent case against the EU is the Sugar subsidies case, a joint case with Australia, Brazil and Thailand (DS 265, DS 266, and DS 283). On 4 August 2004 the panel found that EU exports of C sugar and exports of ACP/Indian equivalent sugar were subsidies contrary to the WTO Agreement on Agriculture. The AB confirmed the panel's ruling.
- (6) The asymmetry in the transatlantic trade relations concerning the compliance with WTO dispute settlement recommendations is also mirrored in many other barriers to trade and investment, mentioned in the 2003 report by the European Commission (2003).
- (7) The fact that the USA and the EU are more or less equally large world trade players (with a market share of around 20% each) lead to the theoretical effects, derived from the theory of optimal tariffs (see Johnson, 1958), that they can influence the terms of trade. Improvements occur if one of these two regions either makes a protectionist first mover step (increases tariffs) or in case of a mutual retaliatory game the terms of trade improvements depend on the asymmetry of measures taken (see Breuss, 2003 for an extensive discussion of the implications of trade wars).
- (8) More information on the "EU US Banana Trade War", also called "Bananadrama" can be found on the website: http://www.bananalink.org.uk/trade_war/trade_war.htm.
- (9) On 30 March 2005 Ecuador, Colombia, Costa Rica, Panama, Honduras and Guatemala requested arbitration at the WTO on the level of duty proposed by the EU in the new tariff-only system for the EU's import regime for bananas. The new tariff proposed by the EU and notified to the WTO on 31 January 2005 of €230 per tonne for MFN suppliers – mostly in Latin America – is intended to replace as of 1 January 2006 the present regime based on tariff quotas. Also Borrell-Bauer (2004) reach the conclusion that a tariff above €75 a tonne imposes big cost in Latin America; therefore they conclude that the "EU banana drama is not over yet".
- (10) Messerlin (2001) reaches similar conclusions as to the negative welfare implications for the EU.
- (11) The Council Regulation (EC) No 2193/2003 of 8 December 2003 in its comment (under point 2), makes it clear that the "Community was authorized by the DSB to impose countermeasures up to a level of US\$ 4043 million in the form of additional 100% ad valorem duties on certain products originating in the United States of America". In the appendix to this Council Regulation one can find the list of products chosen for retaliation.
- (12) Bagwell-Staiger (2004b) present a first formal analysis of the international rules that govern the use of subsidies to domestic production (as distinct from export subsidies).
- (13) In the most recent decision by the Arbitrators in the "Byrd Amendment" case (WTO, 2004), for the first time they tried to overcome this bias. Instead of determining a one and for all "static" value of damage they developed a formula which allows to adjust the level of damage (and hence the level of retaliation) to the yearly development of the CDSOA disbursement of the US government.
- (14) The Arbitrators of the CDSOA case (WTO, 2004, p. 24) make interesting statements as to the new modelling approach they have applied. "We recognize that, in relying on an economic model in this arbitration, we may be breaking new grounds". "However, we note that economic modelling has already been applied in the US – FSC (Article 22.6 – US) arbitration. We are also mindful that applying economic models in arbitration under Article 22.6 of the DSU may make such proceedings more complex and costlier. We acknowledge that economic analysis requires expertise that may not be readily available to all WTO Members". In the most recent World Trade Report 2005, a separate chapter deals with "Quantitative Economics in WTO Dispute Settlement" (see WTO, 2005).
- (15) Some countries like Thailand and the Philippines (see WTO, 2003a, pp. 76-77) suggest a mechanism by which the defendant may ask for a panel in order to control the compliance of the retaliating country with the exact level of nullification he was authorized by the arbitrators.

(16) An overview of proposals made by members in the context of the DSU Review can be found on the website of the Institution of International Economic Law, at <http://www.law.georgetown.edu/iel/research/projects/dsureview/synopsis.html>. Further hints in this respect are also given by Bronckers-van den Broek (2005), p. 106, footnote 11.

(17) In the case “US Anti-Dumping Act of 1916” the WTO arbitrators have – as a novelty – authorized the EU to impose sanctions consisting in an Anti-Dumping „mirror legislation“ in the EU.

(18) Bagwell-Staiger (2004a) analyze the importance of sovereign rights of nations in an interdependent world.

(19) Mexico pointed also to another fundamental problem of the WTO DS system, namely the period of time during which a WTO-inconsistent measure can be in place without the slightest consequence. Illegal measures might be in place for more than three years (in the Bananas case for nearly a decade). This amounts to a “de facto waiver” in which a Member can maintain a WTO-inconsistent measure. To speed up this process, Mexico proposes a procedure of “retroactivity” by which the defending party can take preventive or provisional retaliation measures relatively early which are then clarified by the WTO Arbitrators later (see WTO, 2002b, p. 1-5).

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Table I

'Rebalancing' or the random outcome of calculations of the level of nullification or impairment: EU-US cases

Case	Applicant's 'ask' (US\$)	Respondent's 'offer' (US\$)	(Ask + offer)/2 US\$	Award US\$
EC – Bananas III(US)	520 m	0	260 m	191.4 m
EC – Bananas III (ECU)	450 m	? (assumption: 0)	225 m	201.6 m
EC – Hormones (US)	202 m	53.3 m	127.7 m	116.8 m
EC – Hormones (CAN)	75 m C\$	3.5 m C\$	39.3 m C\$	11.3 m C\$
US – FSC	4,043 m	1,110 m	2,576.5 m	4,043 m
US – Byrd	CDSO+	0	0.5 x CDSO+	0.72 x CDSO
US – Sec 110(5) Copyright	25.5 m	0.7 m	13.1 m	1.2 m €

CDSO = Continued Dumping and Subsidy Offset Act of 2000 ("Byrd" Amendment)

Source: Spamann (2005), p. 38.

Table II

Active EU-US WTO Dispute Settlement Cases

Dispute Settlement No.	Subject	Procedural stage
I. Defensive Cases (EC is defendant against USA)		
(1) DS 48 + DS 26 <i>Hormones</i>	EC bans all imports of US beef and beef products – including those that have not been treated with hormones – as of 15 June 1999	US and Canada maintain sanctions against EC exports (starting with July 1999) by US\$ 116.8 million per year and CND\$ 11.3 million per year
(2) DS 174 <i>Trademarks & geographical indications</i>	Violation of TRIPS and GATT	Panel
(3) DS 291 <i>GMOs (Genetically modified organism)</i>	Measures affecting the approval and marketing of certain biotech products	Panel
(4) DS 315 <i>Customs procedures</i>	EC customs regime (not uniformly applied measures)	Panel
(5) DS 316 <i>Aircraft subsidies (Airbus/Boeing)</i>	Airbus/Boeing: measures affecting trade in large civil aircraft; US accuses EC to subsidies Airbus inconsistent with the SCM agreement and the GATT 1994	Consultations/Panel

II. Offensive Cases (EC is complaining against USA)		
(1) DS 136 <i>1916 Anti-Dumping Act</i>	US antidumping legislation of 1916 incompatible with the WTO Agreements	Implementation; EC has the right to suspend its obligations under the GATT 1994 and the AD Agreement – adopting specific anti-dumping rules for US products as of 24 February 2004
(2) DS 217 <i>"Byrd amendment" The Continued Dumping and Subsidy Offset Act of 2000 (CDSOA)</i>	Byrd amendment (Oct 2000) allows to pay proceeds from anti-dumping and countervailing duty cases to US companies responsible for bringing the cases (more than US\$ 1 bio. distributed)	Implementation; EC and 6 other co-complainants (Brazil, Canada, India, Japan, Korea, Mexico) obtained DSB's authorization to impose countermeasures on US products; EC imposes additional duty of 15% on imports from USA as of 1 May 2005
(3) DS 212 <i>Follow-up of "British Steel case"</i>	US countervailing measures on privatized EU firms	Implementation; final panel report expected to be circulated in June 2005
(4) DS 108 <i>Foreign Sales Corporation (FSC)</i>	FSC scheme of 1984; illegal export subsidy under the Subsidies Agreement	Implementation; until new US regime is in force, the EU countermeasures remain in force (up to a maximum of US\$ 4.043 bio). EU started with extra duties of 5% in 1 March 2004 and increased it to 17% in March 2005. EU Council Regulation of 31 January 2005 suspended sanctions retroactively as from 1 January 2005.
(5) DS 294 <i>Zero methodologies of dumping margins</i>	EU condemned the "zeroing" methodology of calculating dumping margins	Panel
(6) DS 160 <i>Section 110(5) of US Copyright Act</i>	US Copyright Act is incompatible with TRIPs Agreement	Implementation; in September 2003, the US made the agreed payment (€1.219.900 per year 2001-2003; a special fee to US right holders)
(7) DS 176 <i>Section 211 of the US Omnibus Appropriations Act "Havana Club"</i>	Section 211 should diminish the rights of owners of U.S. trademarks previously belonged to a Cuban national or company; this is in violation of both the national treatment and the MFN obligations of the TRIPs Agreement	Implementation; implementation period to change the US law has been extended until 30 June 2005
(8) DS 317 <i>Aircraft subsidies (Airbus/Boeing)</i>	Boeing – according to EU – gets subsidies inconsistent with SCM Agreement	Consultation/Panel
(9) DS 319 <i>AD measures on steel bars (Firth Rixson)</i>	US Department of Commerce (DOC) imposed an anti-dumping duty of 125.77% on imports of stainless steel bars from the UK made by Firth Rixson Special Steels Ltd. (FRSS); possible breach of WTO AD Agreement	Consultations
(10) DS 320 <i>Continued suspension of obligations in the Hormones dispute</i>	EC requested consultations with Canada and the US against the application of countermeasures. New EC legislation is WTO-consistent	Panel established

Source: European Commission (2005).

Table III

The Hormones case: Results of Model Simulations

Scenarios	Welfare Total*) (as % of GDP)		Welfare Allocation (as % of GDP)		Terms of Trade (%-change)	
	EU	USA	EU	USA	EU	USA
(I)	-0.000539	-0.000264	-0.000750	-0.000001	0.000676	-0.002122
(II)	-0.000334	0.000129	0.000003	-0.000028	-0.001097	0.001288
(III)	-0.000873	-0.000135	-0.000747	-0.000029	-0.000420	-0.000830
	Exports with Partner (%-change)		GDP, nominal (%-change)		GDP, real (%-change)	
(I)	-0.008001	-0.028448	0.001249	-0.001964	-0.000750	-0.000001
(II)	-0.061330	-0.012093	-0.002345	0.001747	0.000003	-0.000028
(III)	-0.069338	-0.040547	-0.001100	-0.000322	-0.000747	-0.000029

*) Total welfare = allocation plus terms of trade plus other effects.

Hormones case:

(I) = EU bans MEAT imports from the USA amounting to US\$ 116.8 million (input in the meat sector).

(II) = USA reduces imports from EU by US\$ 116.8 million according to retaliation list of products (inputs in the sectors: meat, foot, other primary and manufactures).

(III) = EU versus USA trade war: Scenarios (I) + (II) combined.

Source: Own simulations with the GTAP5 model.

Table IV

The Bananas case: Results of Model Simulations

Scenarios	Welfare Total*) (as % of GDP)		Welfare Allocation (as % of GDP)		Terms of Trade (%-change)	
	EU	USA	EU	USA	EU	USA
(I)	0.000201	-0.000756	-0.000139	-0.000171	0.001079	-0.004780
(II)	-0.000671	0.000177	-0.000143	-0.000024	-0.001732	0.001558
(III)	-0.000470	-0.000579	-0.000281	-0.000196	-0.000653	-0.003221
	Exports with Partner (%-change)		GDP, nominal (%-change)		GDP, real (%-change)	
(I)	-0.013515	-0.065884	0.003328	-0.004246	-0.000139	-0.000171
(II)	-0.105096	-0.018708	-0.003803	0.002279	-0.000143	-0.000024
(III)	-0.118611	-0.084593	-0.000476	-0.001967	-0.000281	-0.000196

*) Total welfare = allocation plus terms of trade plus other effects.

Bananas case:

(I) = EU blocks BANANAS imports from the USA amounting to US\$ 191.4 million (input in the "bananas" sector).

(II) = USA reduces imports from EU by US\$ 191.4 million according to retaliation list of products (input in the manufacturing sector).

(III) = EU versus USA trade war: Scenarios (I) + (II) combined.

Source: Own simulations with the GTAP5 model.

Table V

The FSC case: Results of Model Simulations

Scenarios	Welfare Total*) (as % of GDP)		Welfare Allocation (as % of GDP)		Terms of Trade (%-change)	
	EU	USA	EU	USA	EU	USA
(I)	0.010163	-0.002143	0.002144	0.000686	0.028071	-0.035651
(II)	0.007094	-0.015304	-0.001326	-0.000983	0.026789	-0.115756
(III)	0.017251	-0.017441	0.000816	-0.000296	0.054861	-0.151408
	Exports with Partner (%-change)		GDP, nominal (%-change)		GDP, real (%-change)	
(I)	0.239033	1.739642	-0.031311	0.053677	0.002144	0.000687
(II)	-0.390677	-1.888334	0.075005	-0.102136	-0.001327	-0.000982
(III)	-0.151643	-0.148694	0.043694	-0.048459	0.000817	-0.000295

*) Total welfare = allocation plus terms of trade plus other effects.

FSC case:

(I) = USA subsidizes exports to EU by US\$ 4,043 billion (input in all 7 sectors).

(II) = EU reduces imports from USA by US\$ 4 billion according to retaliation list of products (inputs in the sectors: meat, food, other primaries, steel and manufactures).

(III) = EU versus USA trade war: Scenarios (I) + (II) combined.

Source: Own simulations with the GTAP5 model.

Table VI

The Steel case: Results of Model Simulations

Scenarios	Welfare Total*) (as % of GDP)		Welfare Allocation (as % of GDP)		Terms of Trade (%-change)	
	EU	USA	EU	USA	EU	USA
(I)	-0.003174	0.001096	-0.000614	-0.000412	-0.008291	0.013025
(II)	0.002142	-0.004161	-0.000181	-0.000278	0.007402	-0.031401
(III)	-0.001030	-0.003065	-0.000795	-0.000690	-0.000889	-0.018376
	Exports with Partner (%-change)		GDP, nominal (%-change)		GDP, real (%-change)	
(I)	-0.467466	-0.110962	-0.016206	0.013390	-0.000614	-0.000412
(II)	-0.106857	-0.511811	0.020733	-0.027991	-0.000181	-0.000278
(III)	-0.574330	-0.622773	0.004527	-0.014602	-0.000795	-0.000690

*) Total welfare = allocation plus terms of trade plus other effects.

Steel case:

(I) = USA introduces safeguard measures for steel imports from the rest of the world (tariffs increase to 30%; inputs in the steel sector in seven regions: EU, EFTA, Turkey, Brazil, China, Japan and Korea); USA reduces steel imports from EU by US\$ 1 billion.

(II) = EU reduces imports from USA by around US\$ 1 billion (inputs in the sectors: food and manufactures).

(III) = EU versus USA trade war: Scenarios (I) + (II) combined.

Source: Own simulations with the GTAP5 model.