International Institutions and Market Expectations: Stock Price Responses to the WTO Ruling on the 2002 U.S. Steel Tariffs.

Nathan Jensen
Assistant Professor
Department of Political Science
Washington University in St. Louis

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Abstract:

Many scholars argue that international institutions have little power to enforce laws, punish offenders, or force compliance. Others stress that international institutions are important actors, specifically in the regulation of international trade. In this paper I argue that the recent trade dispute saga over U.S. steel protection provides us with a critical case to evaluate the role of the World Trade Organization in settling trade disputes and specifically stabilizing expectations of market actors over future steel policy. I argue that stock prices can serve as an important tool in answering these questions. My empirical results point to the importance of the WTO and the role of the WTO dispute settlement in stabilizing market expectations.

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”This is as close to a real trade war as we’ve had for a while”

-Gary Hufbauer, trade expert, Institute for International Economics[1]

“This is a precious system, the jewel of multilateralism. However, it is vulnerable and can only thrive with the continued support of Member governments, who must be willing to abide by the rules they agreed upon.”

-Former WTO Director-General Mike Moore[2]

1. Introduction

On March 4, 2002 President Bush announced that the United States was imposing sweeping three-year tariffs on imported steel ranging from 8% to 30% to combat a surge in steel imports.[3] Major steel producing countries such as China, South Korea and the members of the European Union immediately appealed to the World Trade Organization (WTO), stating the U.S. steel tariffs were a clear violation of multilateral trade rules. The WTO convened a panel to study the dispute and on July 7, 2003 the World Trade Organization Dispute Settlement Body (DSB) ruled against the steel tariffs. After considering an appeal by the United States the WTO Appellate Body (AB) issued a final ruling on November 10, 2003 striking down the steel tariffs in full. The AB final ruling

[1] “US Steel Tariffs Ruled Illegal, Sparking Potential Trade War: WTO Rejects US Appeal; Hot Issue For White House As EU Promises Retaliation.” *Wall Street Journal* 11/11/03, A1.

[2] Moore 2003, 109

[3] The legal justification for these tariffs was done through Section 201 of U.S. Trade Law.

found the U.S. steel tariffs in violation of multilateral trade rules and authorized retaliatory sanctions if the United States did not comply.

Roughly one year from Presidential elections, President Bush was caught in a tough spot between the steel producers (mostly concentrated important electoral constituencies), steel consumers (auto manufacturing, tube and wire industries, aircraft, etc), and industries being threatened by the retaliatory sanctions (motorcycles, textiles, citrus products). According to the Wall Street Journal:

> The World Trade Organization ruled President Bush's tariffs on imported steel illegal, forcing the White House to either drop them and antagonize workers in key electoral states or stand firm and risk retaliatory tariffs on U.S. products by the European Union, Japan and other trading partners. (Wall Street Journal Nov. 11, 2003)

To the dismay of a number of steel producers and their affiliated unions, President Bush announced on December 4, 2003 the lifting of the steel tariffs, ending the trade dispute.

In this paper I argue that this steel saga provides us with a critical case to evaluate the impact of both tariff policy and WTO rulings on U.S. industries. Although this is a clear case of the WTO striking down a domestic government's trade policy and the government fully complying, I argue that the importance of this case to the United States government and the uncertainty surrounding it provides a critical case to evaluate the role of the WTO in stabilizing expectations over future trade policy. Did the WTO ruling against the U.S. steel tariffs lead to an immediate change in the expectations of market actors? Conversely, did market actors only realize that these sweeping steel tariffs would be repealed after Bush's announcement in his change in policy?

Answering these questions provides useful insights into an important public policy topic. Equally important, finding a scientific way to test theories on the impact of

the WTO ruling provides us with the tools to evaluate of the impact of international institutions on domestic economies. I argue that stock prices can serve as an important tool in answering these questions. Analyzing stock prices movements allows us to evaluate how tariff policy and WTO rulings affect market expectations of future firm performance.

It is important to stress that the focus of this paper isn't a narrow study of the impact of WTO rulings on financial markets. Rather, I argue that the information contained in stock prices, expectations of the future, provide us with a novel set of tools to analyze the impact of international institutions on domestic economics. Stock price movements can be harnessed to answer substantive questions in international politics.

2. International Institutions

Many scholars argue that international regimes or international institutions have limited power to enforce laws, punish offenders, or force compliance.[4] Nation-states even within a complex web of international institutions are still essentially in a "self-help system" where compliance with international agreements is dependent on either a nation-state choosing to comply or another nation-state/coalition of nation-states compelling the offending state to comply. For example, variants of Hegemonic Stability Theory states that a hegemonic nation-state, a nation-state with a preponderance of power in the

[4] The classic works are Waltz (1959, 1975) and Mearsheimer (1994). This is counter to former Director-General of the WTO Mike Moore's (2003, 101) claim that "For what makes the WTO unique in the international architecture is the binding nature of its dispute mechanism."

international system, creates and maintains international institutions.[5] Other nation-states may benefit from the existence of this institution, but the creation and survival of the institution is based on hegemonic leadership in the international system.[6]

Other scholars, such as Robert Keohane (1984) have argued that international institutions are valuable in that they reduce transaction costs, allow for side-payments, and stabilize expectations. This third benefit of international institutions, stabilizing of expectations, is the cornerstone of the World Trade Organization, possibly providing major benefits to the world trading system. The World Trade Organization is valuable if countries that violate multilateral trade laws are found in violation by the DSB and the country complies with the WTO ruling.[7]

Although Keohane and other scholars argue that these international institutions stabilize the expectations on the behavior of other states, for economic actors the micro-foundation is in the stabilizing expectations of market actors. In terms of international trade, the value of an international institution isn't in forcing states to comply with rulings or constraining the behavior of states. For market actors, the value of an international institution in its ability to reduce risks by stabilizing the expectations on future policy affecting firms. Any study evaluating the impact of the WTO should focus on how the institutions affect firms affected by trade policy.

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[5] See Keohane (1984) and Stein (1984) for an interesting discussion of the literature.

[6] For an interesting theoretical discussion on the impact of international regimes see Krasner (1982).

[7] Ideally, the WTO punishment mechanism would deter countries from violating multilateral trade laws.

Unfortunately, few studies to date have directly test the impact of the WTO in stabilizing expectations of future trade policy. Some scholars have focused on looking at the record of disputes and compliance of WTO cases to evaluate the effectiveness of the WTO.[8] Although these studies provide valuable information on the functioning of the WTO, they can not directly address the importance question of if the WTO stabilizes expectations on future trade policy. First, not all trade disputes are taken to the DSB and many are settled before the final DSB ruling. By tabulating the compliance record we are potentially utilizing a biased sample of disputes.

Second, and more importantly, we fail to directly evaluate how the WTO affects the stabilization of expectations. For example, the United States has complied/partially complied with most WTO rulings, but we can not evaluate how this affects the world trading system. Do market actors "expect" that the U.S. will comply with all WTO rulings, even those in politically sensitive cases? Or, do market actors wait until after the U.S. has formally complied with WTO rulings before changing their expectations of U.S. trade policy?

Before we deal with how to answer these questions, in the next section I provide an overview of the WTO and the WTO Dispute Settlement Understanding. In the following section I argue that stock market movements can be utilized to explore how the WTO affects expectations on trade policy.

3. WTO and WTO Dispute Settlement

On January 1, 1995, roughly 50 years after plans for an International Trade Organization were thwarted by domestic political actors in the United States. This

[8] For example see Busch and Reinhard 2004.

organization emerged from the General Agreement and Trade and Tariffs (GATT) regime that had dominated the multilateral trade system since the 1940s. This new organization replaced GATT and included a number of new features that both deepened trade liberalization and increased the legalization of dispute mechanisms.[9]

Although the new WTO continued to liberalize international trade through multilateral negotiations, the largest change in the new institution was the Dispute Settlement Understanding (DSU). Under the GATT system governments could seek dispute rulings on whether other countries were complying with agreed upon liberalizations and if any changes in domestic legislation violated multilateral trade rules. Unfortunately for the plaintiffs of these cases, even the most vocal proponents of the value of international law could point to a number of institutional flaws in the GATT dispute mechanism. Most obvious of which was the requirement for all parties, including the defendant, to agree to both the adoption arbitration panel reports and the authorization of sanctions.[10] This is not far from allowing defendants at a criminal trial to veto the rulings of the judge and not accept the sentence offered.

[9] For an interesting discussion of the impact of further legalization with the GATT/WTO framework see Goldstein and Martin (2000). For a formal treatment of the benefits of WTO membership see Bagwell and Staiger (2004). For an empirical test of the impact of the WTO on trade policy, see Rose (2004). For an excellent overview of the WTO dispute mechanism see Lawrence (2003).

[10] See Jackson (1997) and Garrett and Smith (2004).

The new WTO remedied a number of these previous flaws. Under the current system, any government with WTO membership may file a complaint to the WTO.[11] Both the defending government and plaintiff government are given sixty days to negotiate prior to any WTO action. Almost half (46%) of all WTO cases are settled during this period.[12]

If the complaint is not resolved, the WTO convenes an ad hoc committee, the DSB, to investigate the dispute. The members of the panel are nominated by the WTO Secretariate, but all parties are given the right to veto members. As expected, the panel selection is a contentious process and in some cases, if both parties cannot agree to a panel in an appropriate amount of time, the WTO secretariate may select the members.

Findings of the DSB can, and often are, appealed to the Appellate Body (68% of the time).[13] The Appellate Body (AB) consists of 7 judges serving 4 year terms. Each dispute is assigned three judges on a rotating basis. The AB, far from being a rubber stamp on ad hoc findings, can modify or reverse the conclusions of panel findings, but may not reverse or modify any facts.[14]

Even with this improved institutional framework, the DSU is no panacea for enforcing multilateral trade rules. First, there is a selection bias in the cases that are heard before the WTO. Countries are often leery of initiating WTO disputes because

[11] Only WTO member governments may file complaints.

[12] Busch and Reinhart (2004).

[13] World Trade Organization (2004).

[14] In practice major reversals by the AB are quite rare.

countries often respond with "countersuits" in different trade areas.[15] Simply, utilizing the WTO dispute mechanism can trigger a trade war.

Second, most WTO disputes are settled prior to the final panel ruling. Sometimes the cases are dropped when two countries are suing over the same issue area. One recent example is the Boeing-Airbus battle where both the E.U. and U.S. filed WTO complaints in October 2004 over subsidies to aircraft manufacturers. In January 2005 both the U.S. and the E.U. agreed to drop the case and agreed to negotiate directly over the issue of aircraft subsidies.

Finally, the WTO, as most international institutions, has no ability to directly punish offending governments. The DSU allows for sanctions, but these sanctions are authorized by the WTO, and imposed by the plaintiff countries. That is, the WTO allows a country to retaliate by imposing sanctions, but does not guarantee that the government has the market power or the political will to impose these sanctions.[16] Thus, sanctions are rarely authorized, and even more seldom used.

Although the WTO is a tremendous improvement over the GATT system, there are obvious flaws in the system.[17] In the words of Busch and Reinhart "In fact, the new dispute settlement system has struggled to induce the defendant in US-EC disputes to liberalize when it counts the most: namely, in the 'highest stakes' cases'" (Busch and Reinhart 2003b, 466). The authors find that in the 32 disputes between the U.S. and EC

[15] Busch and Reinhart (2002).

[16] Busch and Reinhart (2003a).

[17] See Rosendorff (2005) for an argument on the value of the DSB for providing flexibility in the international trading system.

from 1995-2001, 21 ended will full concessions, 3 cases of partial concession, and 8 cases of no concession by the defendant. Even if the defendant chooses to comply, the timing of compliance is always an issue. According to Garrett and Smith (2004) in cases where the U.S. is the defendant, the WTO rulings forced compliance in a short time in some cases (4 days) in other cases the U.S. waited over a year (456 days). In two cases the U.S. was found in violation, but the temporary measures had already expired.

Clearly, WTO disputes entail a considerable amount of uncertainty. As stated earlier, over half of trade disputes do not even make it to the stage of the WTO ad hoc DSB; they are settled prior to any WTO ruling (Busch and Reinhart 2003a). Second, even after the WTO ad hoc committee has issued a ruling, the AB can modify the ruling. Third, even after the final AB ruling, many countries negotiate a compromise short of the full measures approved by the WTO. Fourth, the timing of compliance varies dramatically. Finally, in some cases, the defending country never complies.

In this project I explore the precise impact of the WTO and WTO rulings on market expectations. As evidenced, the WTO rulings, settlements, and compliance are all uncertain affairs. Past studies of WTO compliance have focused on the historical record of compliance to make claims about the importance of the WTO and the probability of compliance. In this project I take a different approach.

I argue that the recent U.S. steel dispute provides a critical case study to explore the impact of WTO disputes. First, this dispute is considered a "high stakes" dispute both in the objective economic impact and the perceived political importance of the dispute.[18]

[18] See Elms (2004) for a discussion of the psychological aspects of trade disputes for the negotiators.

Second, this is a case where the U.S. is a defendant, thus providing an important test of the value of the WTO dispute mechanism. Can the WTO "force" the United States, the largest economy in the world, to capitulate on an important economic and political issue? In the following sections I provide details the steel dispute and show how stock price movements can answer these questions.

4. The 2002 Steel Tariffs

Few industries in the world remain as heavily protected as the steel industry. In the United States, after the decline of a number of large U.S. steel mills after World War II and the growth of mini-mills in developing countries, steel policy has become a major political issue. Since 1997 over 40 steel companies filed for bankruptcy, while others cut jobs and production in response to four decades of weak demand, expanded steel production abroad, and ballooning pension (legacy) costs for retired steel workers. These industries are concentrated in a number of industrial cities, complicating the ability of these communities to recover from a devastating blow to their manufacturing base. Politically, these constituencies remain concentrated, well organized, and housed in important electoral districts; a formula for strong political influence.

During President Bush's 2000 campaign for the White House aid to the steel industry was one of Bush's strategies to capture voters in the important states of Ohio, Pennsylvania, and West Virginia.[19] On March 6, 2002 President Bush upheld this

[19] The United States International Trade Commission's hearings on steel tariff policy provide further evidence of the companies and states involved in steel production. For example, on Oct 1, 2001 the USITC hearings included politicians from Michigan,

campaign promise by announcing the United States would increase tariffs on imported steel of 8% to 30%.[20] Deputy U.S. Trade Representative Linnet Deily, in a letter to the Director General of the World Trade Organization, justified these tariffs:

> Last June, President Bush launched a multilateral effort to address the root problems that have plagued the world steel industry for so long. Over the past months, the United States has been urging governments to dismantle subsidies and other trade-distorting benefits and reduce inefficient excess capacity. For decades, governments around the globe have sought to bolster and strengthen their steel producers through massive subsidy programs, closed domestic markets, and protectionist regulation. These policies have repeatedly led to overcapacity in global steel production and a glut of low-priced steel on world markets.

The U.S. announcement of safeguard tariffs threatened to become one of the largest trade disputes since the beginnings of the WTO. These safeguards not only affected a large number of major economies, steel policy is an important policy area for politicians in both developed and emerging market economies.[21]

The European Union responded almost immediately by appealing for a WTO investigation of the U.S. tariffs. The EU argued that these tariffs were a clear violation of WTO rules and constructed case 248 (definitive safeguard measures on imports of certain steel products) against the United States on March 13th, 2002. Other countries followed suit. Japan and South Korea filed cases against the U.S. on March 26th, 2002 (Cases 249 and 251). In April Switzerland and Norway filed cases (Cases 253, 254) followed by

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Pennsylvania, West Virginia and Ohio. See http://www.usitc.gov/steel/default.htm for witness lists and Senators present at the hearings.

[20] The analysis and recommendations for this tariff policy was solicited from the United States International Trade Commission.

[21] See McGillivray (2004).

cases brought up by New Zealand and Brazil in May 2002 (Cases 258, 259). Soon all major affected steel producing nations filed WTO cases.

Insert Table 1

These sweeping steel tariffs on multiple products affecting a number of countries could have lead to a long and complex WTO dispute process. In most of the major disputes involving a number of claimants, each country prepared a separate case for the WTO panel. This dispute is unique in the high level of coordination between the claimants, presenting a unified front on the tariffs.[22]

The ad hoc DSB panel issued a preliminary ruling on March 27, 2003 against essentially all of the new U.S. steel tariffs.[23] The European Union responded to this ruling by applauding the WTO and drafting a list of U.S. products, including textiles, agricultural products, and motorcycles to be targeted as retaliatory sanctions if the U.S. did not comply with the WTO ruling.[24] On July 7, 2003 the DSB issued a final decision against the U.S. steel tariffs.

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[22] See WTO (2003).

[23] http://www.wto.org/english/news_e/news03_e/panel_report_11july03_e.htm. See also Hufbauer and Goodrich (2003b)

[24] Under the WTO's Dispute Understanding Article 22, all retaliatory measure has to be approved by an article 22 arbitration panel. These industries are concentrated in swing states such as Wisconsin (motorcycles), North and South Carolina (textiles), and Florida (citrus products).

The United States appealed this ruling, making a number of sophisticated arguments about flaws in the WTO's analysis.[25] Although the U.S. blanket tariffs across ten types of steel products was a clear violation, the U.S. claim that surges in steel imports forced the use of steel safeguards has some merit in some steel product cases.[26]

At this time a considerable amount of uncertainty remained. There was considerable debate about both if the AB would uphold its preliminary ruling and when the AB would rule on the case. Some insiders argued that the WTO panel went too far and that there was a serious case of the reversal of the original ruling. The amount of products involved in this case (essentially all type of steel) and the number of countries in this dispute also made the probability of a long case very likely.[27]

Even after the WTO AB ruling a considerable amount of uncertainty remained in Bush's response. The President won the 2000 election after a historically close election, and had razor thin margins in a number of important steel producing, and steel consuming (heavy manufacturing) states. This electoral calculus was further complicated by the threat of EU sanctions in goods produced in important electoral districts. Some media outlets predicted that the U.S. would attempt a new legal challenge in the WTO. According to the Wall Street Journal, "But even after weeks of heavy lobbying in Washington by both U.S. steelmakers and companies that want the duties eliminated, the

[25] See Hufbauer and Goodrich (2003a) for on details on the case.

[26] See Hufbauer and Goodrich (2003a).

[27] Interview with WTO Legal Affairs January 13, 2005.

Bush administration appears to be no closer to deciding what to do in response."[28] On December 3, one day before Bush's announcement on the lifting of tariffs, newspapers were reporting that the steel industry was hopeful that Bush would only suspend the steel tariffs, not eliminate them altogether.[29]

On December 4 President Bush capitulated. He argued that the changes in international economy prompted the U.S. change in policy and proposed immediately lifting the steel tariffs. President Bush states, "These safeguard measures have now achieved their purpose, and as a result of change economic circumstances it is time to lift them." Leo W. Gerard, President of the United Steelworks of America took a different perspective. "Our trading partners obviously engaged the administration in a game of guts poker. Instead of telling them to bring it on, the President blinked."[30]

The central question of this paper is did the WTO ruling signal an end to the steel tariffs? In this high stakes case, how did the WTO ruling affect the perceptions of the future of the U.S. steel industry? Did market participants understand that the WTO prescribed the end of the steel tariffs, or was their still some speculation that Bush would keep the steel supports in place? I turn to stock market data to answer these questions.

5. Research Design

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[28] *Wall Street Journal Update* November 10 2003 by Neil King Jr. and Scott Miller: WTO Ruling Pressures Bush on U.S. Steel Tariffs.

[29] Reuters Update3 December 3, 2003: "Bush expected to lift steel tariffs on Thursday." By Adam Entous and Doug Palmer.

[30] Wayne Washington, *The Boston Globe* Dec 5, 2003 page A1. "Bush Lifts Steel Import Tariffs."

I argue that stock prices, the expected stream of discounted future dividends, measure the market's expectations on the future of the steel industry. Formally, standard asset pricing models assume that stock prices are simply the sum of the present value of future dividends.[31] The price of a firm's stock is a function of the expected performance of a firm relative to the risk free interest rate. Market participants buy and sell the rights to future dividends in the form of equities. Changes in expectations of streams of future dividends will be reflected by an increased demand for this stock. This leads to an increase in stock price.

Stock prices fall when an event has a negative impact on future firm performance. Stock price movements are informative in that they reflect changes in expectations of future performance.[32] New information emerges about future steel sales, leading to stock prices that adjust to the new set of expectations. As political events change expectations of future dividends, stock prices should adjust immediately.

These political events include changing patterns of trade policy. For example, stock prices react to changing patterns of trade protectionism. As domestic industries are protected from foreign competition via tariffs, quotas, etc the stock prices of the protected firms increase. McGillivrary (2003, 2004) finds that stock market movements inform us

[31] For Further treatment of the formulas for calculating stock prices, see Brealey and Myers (1991).

[32] The efficient market hypothesis suggests that the current asset prices (stock price) are the best predictor of the future asset price. See Leblang (2002).

as to the industries receiving trade protection. Stock prices adjust to perceptions of future patterns of protection.[33]

I use stock price movements to test theories on the impact of the international institutions on expectations of future trade policy. In the WTO steel case, we can examine market reactions to specific announcements on tariff policy. Although the recent steel tariffs were originally enacted by the Bush administration, only to be repealed at a later date, the question is when was the uncertainty over the steel tariffs resolved? I highlight three plausible hypotheses below.

International Hypothesis: Stock prices react to the WTO ruling on the steel tariffs.

[33] Hays, Stix, and Freeman (2000) argue that political institutions mitigate the impact of political information on financial markets. They argue that complex coalition politics and weak central banks limit the financial markets ability to react and adjust to political events. This argument is supported by the empirical analysis of Pantzalis, Stangeland and Turtle (2000). My argument is that the Hays, Six, and Freeman (2000) critique strengthens the argument for using equity indexes as a proxy for expectations of future economic performance. That is, political events that have a positive impact on stock markets are events that should have a positive long run impact on the economy. In the case of WTO compliance, one could argue that the value of future economic cooperation can be measured in stock prices. Countries that lose WTO cases and refuse to comply will lead to overall lower stock market returns. I leave these tests for future research.

One possibility is that stock prices will react immediately to the WTO ruling on the U.S. steel tariffs. In this case, uncertainty is resolved when the WTO rules that the U.S. steel tariffs violate multilateral trade rules.[34]

Domestic Hypothesis: Stock prices react to Bush's announcement on the lifting of tariffs.

If WTO compliance is uncertain, markets should react strongly to Bush's announcements on steel policy. Even though the WTO ruled against the U.S. steel tariffs, some uncertainty remained about Bush's response to the WTO ruling. A second hypothesis is that steel stock prices should drop in response to Bush's announcement.

Diversion Hypothesis: Stock prices will not react to WTO or domestic announcements.

One final hypothesis is that all actors anticipated that the U.S. steel tariffs were violations of WTO rules and were therefore unsustainable. In this case, steel stock prices will not react to announcements by either the WTO or Bush's lifting of steel tariffs.

This hypothesis highlights an interesting question. If all market actors know that these tariffs are unsustainable, why do politicians enact them? I label this hypothesis the "Diversion Hypothesis" in that it relates the scholarly literature on diversionary war theory.[35] Politicians may engage in international trade disputes, not because they have distributional consequences, but for the electoral consequences.

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[34] This is assuming that the there was uncertainty of the final outcome prior to this ruling. I turn this specific issue in the following section.

[35] See Stoll (1984), Levy (1989), Marra et. al. (1990), Gaubatz (1991), Nincic and Hinckley (1991), Mogan and Bickers (1992), Richards et. al. (1993), James and Oneal

To summarize, I highlight three testable hypotheses in Table 2. First, WTO rulings may have a substantial impact on the distributional implications of trade policy. Steel stock prices may react immediately to WTO rulings. Second, domestic politics may still dominate trade policy, even in areas of clear WTO violations. There may be a high level of uncertainty of U.S. compliance with WTO rulings on important trade decisions. In this case, only announcements or policy changes by domestic actors, President Bush in this case, has an impact on steel stock prices. Finally, there is the possibility that neither WTO rulings nor announcements on tariff policy have any real impact on domestic stock prices. In this case, the trade dispute has no real distributional impact for domestic industries.

Insert Table 2

6. The Data

To illustrate the potential value of this method I will evaluate the impact of the U.S. steel tariffs on both steel stock prices and a U.S. stock market index. Stock market data was collected on the following time series via DATASTREAM: 1) the FTSE U.S. Steel and Metals Index (*U.S. Steel Index*) and the 2) FTSE U.S. Total Market Index (*U.S. Stock Index*) and 3) FTSE World Market Index (*World Index*) and 4) an author constructed index of the major mills affected by the steel tariffs, and 5) data on the three largest U.S. steel manufacturers (*U.S. Steel*, *Nucor*, and *AK Steel*).[36]

(1991), DeRouen (1995), Meernik and Waterman (1996), Smith (1996), Gelpi (1997), Leeds and Davis (1997), Miller (1999).

[36] All three of these indexes are price weighted indexes of a basket of steel stocks, the U.S. total market (highly correlated with the S&P 500), or a world market index.

In Chart 1, I present a times-series of the returns of the U.S. Steel Index, the U.S. Total Market Index, and the World Market Index for November and December of 2003. During this time period the WTO upheld its final ruling on November 10, 2003 and the United States agreed to comply with the WTO ruling and lift steel tariffs on December 4, 2003. Both of these events are associated with a roughly 3% decline in the U.S. Steel Market Index.

These two dips in the steel stock index, although substantial, look relatively normal within the context of the relatively volatile U.S. Steel stock index. Only through a serious empirical analysis can we explore the significance of market reactions to this announcement.

Insert Chart 1

Insert Figure 1

This WTO saga is a long chain of events listed in Figure 1. I argue that the two key events to focus on are the WTO AB final ruling on the steel cases and Bush's announcement on U.S. compliance with the WTO ruling. I ignore the pre-tariff period and Bush's announcement of the steel tariffs because information on steel policy is slowly diffused to market actors over a long time period, making an event study impossible.

More importantly, why don't we evaluate the impact of market actors' reactions to the original WTO ruling? In most WTO cases the original ruling is upheld and in very few cases does the AB reverse a decision. One reason is that the U.S. steel case is atypical in that interviews with members of the WTO legal affairs division argued that there were concerns that there were potential flaws in the original ruling and that a

reversal was possible.[37] Second, the complexity of case posed problems for the claimant governments. Ironically, the sweeping nature of the WTO tariffs affecting a number of countries across a number of steel products made reversal more likely. The U.S. defendant could submit a challenge to the appeal, while historically the complainant governments all provide individual and uncoordinated evidence on the case. The steel case is the perhaps the first case where member governments coordinated their responses and provided one unified argument against all of the U.S. steel tariffs.

Third, related to points one and two, the timing of this AB ruling was a surprise. Under most circumstances a complicated case such as the Steel case would take a considerable amount of time to sort out. Even with the DSB ruling against the U.S. the appeal to the AB could take many months, if not years, if the WTO was forced to write detailed reports on each of the issues brought up each of the complainants. In the end the AB settled on one document outlining all of the issues and upholding the DSB initial ruling. By issuing this single document, the AB shaved months from the process.[38]

Thus the final AB ruling in this case is an excellent measure how the WTO affects expectations of future policy. This ruling could possible overturn part of the previous WTO ruling, and the timing of this ruling was much shorter than the usual cases. The AB ruling was both marked with considerable uncertainty on how/and when the WTO would rule on the U.S. steel case.

Thus, to empirically test for the impact of steel tariffs and WTO rulings on U.S. market and steel stock prices, I construct 2 time variables. The time variables include the

[37] Author interview with WTO legal affairs (January 13, 2005).

[38] Author interview with WTO Legal Affairs on January 13, 2005.

final WTO ruling on November 10, 2003 (*Final Ruling*), and President Bush's December 4, 2003 announcement on the final removal of steel tariffs (*Removal*). (See Table II)

Insert Table 2

For the final WTO ruling and the removal of the tariffs, I explore stock market reactions on the day of the announcement. This assumes that the information in the announcement is not known beforehand and traders adjust to the new information immediately.[39] In the empirical section of this paper I explore other event windows and discuss their implications.

7. Methodology

A number of recent scholarly works have explored the relationship between politics and stock market movements. For example, Herron et. al. (1999) identifies 15 economic sectors where stock prices vary significantly with changes in expectations on the 1992 U.S. presidential election.[40] Herron (2000) estimates that had the Labor Party won the 1992 British election; the British stock market would have dropped 5% and had a surge in volatility. Leblang (2003) finds that increases in Al Gore's probability of winning the 2000 presidential election led to lower levels of volatility in the U.S. stock

[39] In an interview with WTO Legal Affairs on January 13, 2005, there were no claims that any information on this case leaked out prior to the issuing of the formal ruling. See WTO 1994 for information on the formal procedures governing information on panel hearings.

[40] They used the Iowa Political Stock Market as a proxy for expectations of the presidential election.

market. McGillivray (2003, 2004) uses stock price dispersion to test the impact to electoral institutions and redistributive policies.

Many studies implemented event study analysis to test for abnormal returns in stock data after the arrival of new political information.[41] For example, Gilligan and Krehbiel (1988) use an event study of U.S. oil and gas stock prices to estimate the impact of rules on congressional outcomes. Roberts (1990) estimates the impact of the 1980 U.S. presidential and Senate elections on a basket of defense industry stocks. Boardman, Vertinsky and Whistler (1997) estimate the impact of regulatory legislation, specifically on legislation to protect the northern spotted owl, on US firm's stock prices. Pantzalis, Stangeland and Turtle (2000) estimate the impact of political uncertainty on stock market returns in 33 countries from 1974-1995.

Although the traditional event study methodology has important merits, we are not only interested in the level of stock market returns, but also the volatility of these returns. To estimate the impact of political events on the mean and variance of stock market returns I employ the same methodology as Leblang (2003) and Bernhard and Leblang (2003), a Generalized Autoregressive Conditional Heteroscedasticity model (GARCH). This method allows us to model both the conditional mean return and the variance.

The GARCH model has a number of features making it useful for time-series analysis of financial market data. One important empirical regularity in stock market returns is the presence of volatility clustering. That is, financial markets do not exhibit

[41] See Dyckman et al. (1984) and Prabhala (1997) for a comparison of different event study analyses.

consistent volatility across time periods, rather some periods experience higher volatility than others. Standard ARCH models, the parent of the GARCH model, allow us to model the variance at time t as a function of variance at time t-1. The GARCH model, models the conditional variance at time t as a function of the variance at time t-1 and set exogenous variables.

Formally, the conditional mean of the GARCH (1,1) model is:

$$\log R = \lambda + \beta_1 \log M + \beta_2 W + \varepsilon_t$$

$$\varepsilon_t \sim N(0,\sigma^2)$$

logR is defined as log difference in the daily steel stock prices, λ is the constant, logM is the log difference of the US total market index, W is a period dummy for different WTO ruling periods, and ε_t is the error term distributed normally with a mean of zero.[42]

I model the conditional variance as:

$$\sigma^2 = \omega + \alpha\, \varepsilon^2_{t-1} + \beta\, \sigma^2_{t-1}$$

The variance (σ^2) of the time-series is modeled using a constant (ω), lagged errors ε^2_{t-1} (the ARCH term), lagged variance (σ^2_{t-1}). Using this method I can control for the serial correlation and kurtosis (fat tails) often found in financial times series.

8. Empirical Analysis

In the first column of Table 3 I present a baseline GARCH regression where I model the mean steel index return as a function of the return of a total market index and a constant. As expected, positive changes in the total U.S. market are associated with positive changes in the U.S. steel index. The conditional variance is model using the

[42] This setup is consistent with the Capital Asset Pricing Model (Sharpe 1984). A more general model of portfolio returns is arbitrage pricing theory (APT) (Ross 1976).

methodology explained in section 7, a GARCH (1,1) model where variance is a function constant (ω), lagged errors ε^2_{t-1} (the ARCH term), lagged variance σ^2_{t-1} (the GARCH term). I also include the log of total shares traded on the NYSE (*Volume*) into the variance equation.

In the second column I include dummy variables for the day the tariff was implemented (Tariff) the day of the final WTO announcement on November 10, 2003 (Final Ruling) and the day of Bush's announcement on the lifting of the steel tariffs on December 4, 2004 (Removal).[43] Interestingly, markets reacted negatively to the tariff announcement. One reason for this is that the markets had been expecting a tariff announcement and had priced this information into the prices before this announcement was made. The real debate was the level of the tariff, where some media outlets predicted a 40% tariff on imported steel, considerably higher than the actual steel tariff. Both the final ruling and the removal variables are negative and statistically significant. In the third column we present a second GARCH model, dropping the tariff announcement. In both models, the substantive impact of the WTO ruling is substantially stronger than that of Bush's final tariff announcement. For the sake of comparison, I include estimates from a simple Ordinary Least Squares (OLS) model jn column 3. The substantive results are unchanged.

Insert Table 3

[43] For all regressions I use the date of the announcement as the first trading day when traders could buy or sell stocks on the news of the WTO ruling or the Bush repeal of the tariffs.

One potential concern is that information about the WTO final ruling or Bush's intentions on lifting the tariffs may have been leaked prior to the actual announcement date, similar to the leaking of information on the implementation of the tariffs. To test for this I analyzed numerous media outlets in the two weeks prior to each announcement.[44] Although I found little information about the WTO announcement prior to the ruling, I did find some news reports about Bush's expected response to the tariffs.

Although most media outlets responded to the WTO steel ruling by arguing that Bush's response was uncertain, some information about Bush's potential response to the steel tariffs was leaked early. The earliest reports that I found were on November 30, where a number of sources argued that Bush was expected to lift the steel tariffs within a week. On December 2, Bush held a campaign fundraiser in the steel city of Pittsburgh, where a number of newspapers reported that they expected Bush to announce his steel policy. Although President Bush made no direct mention of his future response to the WTO ruling, on the evening of December 3, Bush met with Vice President Cheney, members of the U.S. Trade Representatives, and steel industry leaders announcing his intentions for the future steel tariffs.

Clearly either some of the information on Bush's policy leaked out or market actors were correctly predicting the repeal of the Steel tariffs as early as November 30. Traders had the opportunity to react to this information as early as Monday, December 1, potentially leading to a sell-off in steel stocks. To test for this I estimated my model using both a dummy for December 1, 2003 and a dummy for the period between

[44] I investigated all newspapers in the Lexis-Nexis academic database.

December 1 and December 4, 2003. In all of these models the WTO announcement on November 10 remains negative and statistically significant, and none of the new time variables are statistically significant. I conclude that the major sell-off in U.S. steel markets was in response to the WTO ruling and not to Bush's decision.

Insert Table 4

To test the robustness of this result I utilized an alternative stock price measure. I construct an unweighted index of steel company stocks that are most affected by the steel tariffs. Of the 19 publicly listed U.S. steel produces, 7 firms both produce steel products covered by the steel tariffs and are major, traditional steel manufacturers. I provide more details on the coding of this variable in the appendix. In both sets of regressions, the substantive results are unchanged.

Insert Table 5

In Table 5 I replicate these same tests using individual company data. Only five U.S. steel companies remain in the top 50 steel producers in the world. Of these five, only three firms have stock data available that is appropriate for this project: U.S. Steel, Nucor Steel, and AK Steel.[45] In columns 1, 2, and 3 I present the results. In all three cases the individual stock prices responded negatively to the WTO announcement and their reactions to Bush's announcement varied considerably across firms. When the event window is widened to two days for both the WTO announcement (Nov 10-11) and

[45] Other major steel producers include Bethlehem Steel (Chapter 11, purchased by International Steel Group), LTV (Chapter 11, purchased by International Steel Group), National Steel (Chapter 11) and North Star (owned by the private firm Cargill).

Bush's announcement (Dec 4-5), I find that only the WTO announcement is significant.[46] I conclude that although Bush's announcement may have had some minor negative impact on expectations for the future, the real adjustment was in response to the WTO announcement.

9. Conclusions

In this paper I argue that stock price movements can be informative on the impact and importance of international institutions on domestic economies. I use the recent U.S. steel trade dispute to illustrate this approach and analyze the impact of the trade dispute and WTO's rule in adjudicating on U.S. steel stock returns and the overall U.S. stock market.

My empirical results show that although the U.S. steel dispute has generated a tremendous amount of attention and domestic debate, the final decision on the steel tariffs wasn't decided within the walls of the White House, it was decided within the confines of the WTO Appellate panel. Market participations reacted to the WTO announcement, and little evidence suggests that Bush's response was uncertain. The World Trade Organization effectively stabilized the expectations of market actors.

These findings point to a potential avenue for exploring the value of the WTO in other dispute areas. Stock prices can be useful in empirical testing existing theories on WTO compliance. Equities price movements provide information on how WTO rulings and domestic political responses to these rulings affect domestic firms' future expectations.

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[46] I also tested the widened Bush announcement window of December 1-4. Only the WTO announcement was significant.

Table 1: WTO Case Timeline

Date	**Country**	**WTO Case Number**[47]
3/13/02	EC	248
3/26/02	Japan	249
3/26/03	South Korea	251
4/2/02	China	252
4/8/02	Switzerland	253
4/10/02	Norway	254
5/21/02	New Zealand	258
5/23/02	Brazil	259
11/11/02	Chinese Taipei	274

Source: WTO.org

Table 2: U.S. Steel Stock Price Responses

	WTO Announcement	Bush Announcement
International Hypothesis	Negative	None
Domestic Hypothesis	None	Negative
Diversion Hypothesis	None	None

Table 3: U.S. Steel Index Returns

Mean	Baseline GARCH	WTO GARCH	WTO GARCH	WTO OLS
U.S. Stock Index	0.542*** (14.03)	0.542*** (13.99)	0.541*** (13.99)	0.550*** (14.18)
Tariff		-2.722*** (-49.09)		
Final Ruling		-2.310*** (-38.41)	-2.308*** (-38.49)	-2.318*** (37.70)
Removal		-0.431*** (-6.73)	-0.428*** (-6.70)	-0.437*** (-6.68)
Constant	0.009 (0.18)	0.014 (0.28)	0.012 (0.24)	0.030 (0.52)
Variance				
Volume	0.690*** (81.73)	0.684*** (55.51)	0.689*** (127.77)	
Arch	0.132*** (3.01)	0.132*** (3.01)	0.133*** (3.06)	
Garch	0.500*** (3.45)	0.506*** (3.30)	0.501*** (3.93)	
Constant	-14.125*** (-73.79)	-14.035*** (-86.70)	-14.118*** (-65.22)	
N	1261	1261	1261	1261

Note: The dependent variable is the log of the difference in the steel stock price index. All estimates utilize Huber-White semi-robust standard errors. T-statistics are reported in the parentheses. Stata 7.0 was used for the estimated of all GARCH models.
***=p<0.01
**=p<0.05
*=p<0.10

Table 4: Affected U.S. Steel Firms

Mean	Affected Firms
U.S. Stock Index	0.478***
	(14.69)
Final Ruling	-2.594***
	(-57.88)
Removal	2.982
	(0.56)
Constant	0.041
	(0.98)
Variance	
Volume	1.397***
	(47.47)
Arch	0.103
	(1.59)
Garch	0.722***
	(2.98)
Constant	-30.095***
	(-57.28)
N	1261

Note: The dependent variable is the log of the difference in the steel stock price index. Details on the construction of this index are included in the appendix. All estimates utilize White-Huber semi-robust standard errors. T-statistics are reported in the parentheses. Stata 7.0 was used for the estimated of all GARCH models.

***=p<0.01

**=p<0.05

*=p<0.10

Table 5: Individual Company Returns

Mean	USX	Nucor	AK
U.S. Stock Index	0.555***	0.550***	0.418***
	(11.77)	(11.46)	(6.79)
Final Ruling	-3.424***	-1.81***	-11.057**
	(-42.43)	(-23.69)	(-2.07)
Removal	0.516***	-1.134***	16.500***
	(5.62)	(-13.90)	(3.87)
Constant	0.005	0.032	0.014
	(0.07)	(0.50)	(0.15)
Variance			
Volume	0.182***	0.380	1.103***
	(15.23)	(86.68)	(62.55)
Arch	1.38**	0.148***	0.239***
	(2.41)	(4.25)	(2.63)
Garch	0.111	0.467***	0.352***
	(0.56)	(5.70)	(3.31)
Constant	-2.192***	-7.132***	-21.386***
	(-4.79)	(-65.38)	(-105.99)
N	1261	1261	1261

Note: The dependent variable is the log of the difference in the steel stock price index. All estimates utilize Huber-White semi-robust standard errors. T-statistics are reported in the parentheses. Stata 7.0 was used for the estimated of all GARCH models.
***=p<0.01
**=p<0.05
*=p<0.10

Chart 1: U.S. Steel Stock Returns

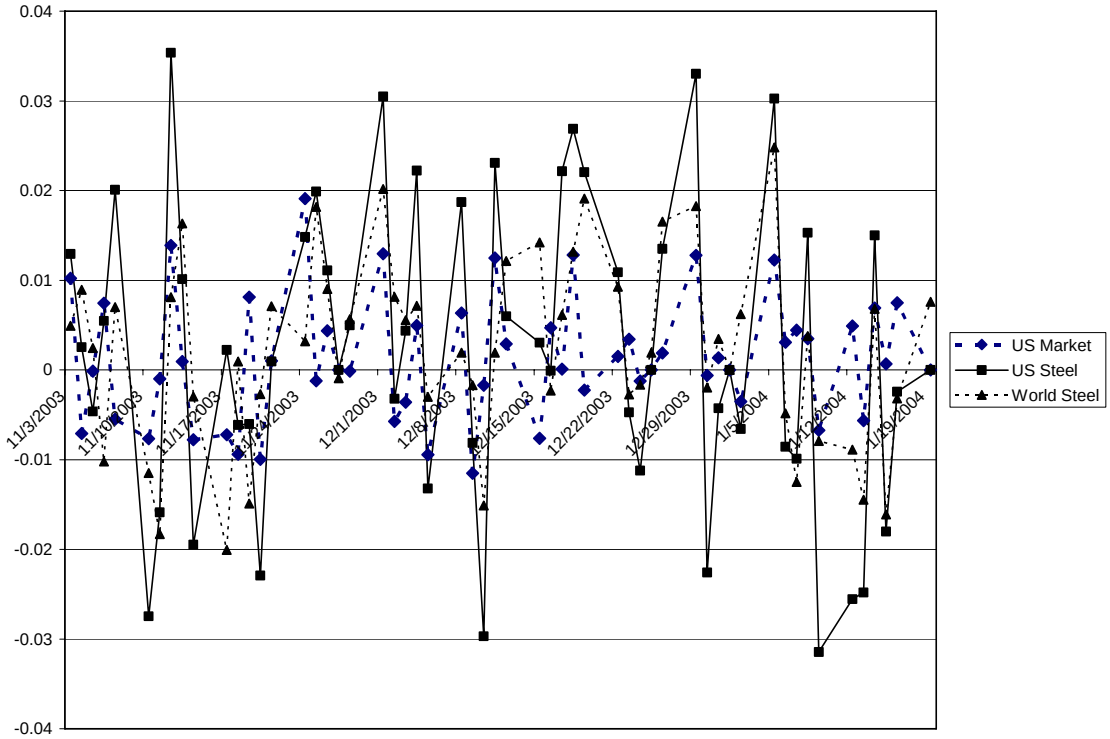

Figure 1: WTO Dispute Time-Time

Pre-Tariff—Tariff—WTO Case—WTO Ruling—Appeal—Final Ruling—Compliance

Appendix: US Steel Companies and Affected US Steel Companies

Below is a list of all publicly listed U.S. steel firms available from DATASTREAM. I identify the more efficient mini mills from the older traditional US steel producers (*) by utilizing public information from corporate reports and company analysis on the production technologies utilized by all firms. I construct an unweighted index of the affected US steel companies used in Table 4.

AK Steel*
Allegheny Tech*
AM Castle
Carpenter Tech*
Commercial Mtls*
Niagara
NN
Nucor*
Olympic Steel
Oregon Steel
Quanex*
Reliance
Roanoke
Schnitzer
Steel Dynamics*
US Steel*
Universal Stainless
Webco
Worthington

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