

Chip War: Rethinking on the WTO Dispute Settlement Mechanism

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Abstract. This paper examines the challenges faced by the World Trade Organisation (WTO) Dispute Settlement Mechanism and proposes the necessity for improvement and reform. By analyzing the case of the chip war, the paper identifies the delay and self-compliance as major factors contributing to these challenges. To address these issues, an efficiency reform is proposed, including streamlining procedures, rebuilding the Appellate Body, and strengthening enforcement mechanisms. While several suggestions have been put forward, unresolved issues regarding the restoration of member parties' credibility still require attention. The paper aims to contribute to revitalizing this successful dispute settlement mechanism.

Keywords: Sino-US trade war, chip war, WTO Dispute Settlement Understanding, WTO Dispute Settlement Body, Appellate Body.

1. Introduction

Dispute settlement serves as the cornerstone of the trading league including various countries, with the World Trade Organization (WTO) considering it as a pivotal contribution to global economic stability. The Dispute Settlement Body (DSB), comprising all WTO members, plays a vital role in resolving trade disputes [1]. The DSB possesses the authority to accept or reject panel decisions, underscoring the democratic nature of the mechanism. Widely regarded as the most effective and dynamic international adjudication system, the WTO dispute settlement mechanism faces challenges because of the emergence of the chip war.

Since 2018, a trade war has unfolded between China and the US, reaching its pinnacle with the chip war. In response to China's progress in computer science, the US has imposed export bans on semiconductors, related products, services, and technologies [2]. Escalating measures, including tariff increases, between these two global superpowers have eroded confidence in the dispute settlement mechanism, hindering the resolution of the chip war.

This paper takes the chip war as a case study to analyze the limitations of the WTO dispute settlement understanding (DSU). It shows a fact which procedural steps are complex and time-consuming, resulting in serious delaying mess. Additionally, there are certain difficulties in implementing rulings. Meanwhile, ensuring compliance and the mutual influence of countermeasures is being questioned [3]. To foster international trade liberalization and reduce barriers, reforming the WTO dispute settlement mechanism becomes imperative. Recommendations for reform include expediting the litigation process and streamlining procedural steps to address time-consuming issues. Time management and case scheduling mechanisms should be implemented. The reinvigorate of the appeal body should be implemented, which includes the rebuild of its member and improvement and expediting of the appeals process, aiming to improve its effectiveness and transparency. Strengthening the authority and enforcement capabilities of the dispute settlement body is crucial. Allocating additional resources and enhancing the expertise of the DSB members can elevate its effectiveness and enforceability. By addressing these shortcomings and implementing the suggested reforms, the DSU system can be enhanced, promoting a more efficient and equitable resolution of trade disputes.

2. Background and Current Situation of the Chip War

2.1. Definition and Importance of the Chip War

The chip war, initially referring to the competition and rivalry in the development and production of advanced semiconductors, has evolved into a critical aspect of the ongoing Sino-US trade war. It represents the intensified technical and trade competition specifically of China and the US in the semiconductor industry [4]. The chip war encompasses various areas, including the innovation of semiconductors, emerging fields such as quantum computing, and advancements in manufacturing processes.

The chip war holds significant economic implications as it is intertwined with the larger trade war. Advanced chip manufacturing capabilities have the potential to attract substantial investments and ensure the safety and stability of the global supply chain [5]. Conversely, actions aimed at undermining semiconductor manufacturing capabilities, such as imposing high tariffs, can weaken a rival's comprehensive national power on a comprehensive scale. This ongoing competition highlights the strategic importance of semiconductor technology in geopolitics [6]. Recognizing the advantages that technological superiority can confer, the two superpowers are engaging in a race for chip dominance that expands far beyond mere technological competition. The race exerts influences on industries, economies, national security, and global power dynamics.

This paper argues that the importance of chips in the modern economy can be attributed to three key reasons. First, semiconductors serve as the foundation for technological innovation across various industries. Their computing abilities are pivotal for driving technological advancements, and leadership in chip manufacturing equates to broader technological superiority [7]. Second, chips and semiconductors themselves are vital contributors to the modern economy. They generate economic value, create employment opportunities, and attracts investment through manufacturing, design, research and development, and related services. Third, semiconductors and chips are critical materials for modern industries. Their computing capabilities enable logical operations, making them the central component in electronic devices. The stable and sustainable semiconductor production plays a crucial role in ensuring the resilience of global supply chains. Without the ability to manufacture chips, an embargo can have devastating consequences. In general, the dominant computing and storage capabilities of semiconductors and chips position them as indispensable entities in the modern economy.

2.2. Background and Factors influencing the Sino-US chip war

The chip war can be viewed as the climax of the Sino-US trade war, which arose due to the significant trade imbalance of China and the US. America has consistently raised concerns about China's trade practices, including allegations of unfair subsidies, non-tariff barriers, and intellectual property theft [8]. As a result, President Trump initiated the trade war in 2018 by requiring tariffs to specific goods, to which China promptly retaliated with countermeasures. However, the escalation of the trade war has been driven not only by economic factors but also by technological competition and national security concerns.

The trade war, especially in the semiconductor industry, has been greatly intensified due to technological competition and concerns about national security. The US has been accusing China of rampant IP theft and expressing concerns about China's technological ambitions and potential threats to American competitiveness. The recognition of semiconductors' crucial role in the modern economy and their implications for national security further emphasizes why chips have become a focal point in the trade war.

Semiconductors have profound implications for national security. They are integral to the equipment used in defense systems, communication networks, cybersecurity, and spying. Both superpowers have raised concerns about the potential risks associated with relying on foreign-made semiconductors. National security concerns have been explicitly cited by the US in the case DS615, highlighting the importance of semiconductors in this context.

Moreover, the vulnerability of global semiconductor supply chains has been exposed by the trade war. The complex networks connecting chip design, manufacturing, and assembly across multiple countries have created dependencies that, when disrupted, can have severe consequences for industries. Recognizing these risks, two superpowers are both striving to secure critical semiconductor manufacturing capabilities to mitigate supply chain vulnerabilities and ensure a steady supply of advanced chips.

2.3. Chip war's influence and its impact on global trade

As far, the chip war has had a profound impact on society and daily life. It has disrupted global supply chains, resulting in significant challenges for industries worldwide [9]. The imposition of restrictions on technology transfers, export controls, and tariffs has hindered the smooth flow of essential raw materials, leading to shortages and production delays in various industries. Manufacturers, faced with unstable conditions, have been forced to increase prices to offset rising costs. These cost increases are ultimately passed on to consumers, who are already experiencing the reality of higher prices. The uncertainties and rising costs have eroded business confidence, resulting in decreased investment, slower economic growth, and even the potential for recession.

Observing the consequences of the chip war, countries are reevaluating their policies and seeking to reduce dependencies on a single state or diversify their supply sources. The search for alternative suppliers is driven by the aim to mitigate the risks of shortages. This trend has sparked the decentralization of manufacturing capacities, reshaping the global trade landscape. Notably, regional manufacturing centers, such as the European Union and Japan, have witnessed a rise in prominence. The decentralization trend is causing countries to relocate their factories to places other than China and the US. As countries compete to establish resilient supply chains, regional collaborations and partnerships between neighboring countries have become increasingly, allowing for cost-sharing and resource optimization. Additionally, the diversification of import and export destinations has led to a reconfiguration of global trade flows [10].

Furthermore, the ongoing chip war between two superpowers has significant geopolitical implications. National security concerns further intensify the conflict, contributing to an escalation of competition and hostility. This trend has led to a reshaping of global alliances and bilateral relationships, with more countries being compelled to choose sides between the two superpowers. The formation of political alliance is also evolving into broader technical and economic alliance, which involves the sharing of technology and the reduction of tariffs.

3. Current Status and Issues of the WTO DSU system

3.1. Overview of the WTO DSU system

The establishment of the WTO trade dispute settlement can be traced back to the negotiations of the Uruguay Round. At that time, trade disputes handled under GATT lacked an effective dispute settlement mechanism with enforceable provisions. To address the increasing complexity of trading and the need for a stronger system, the WTO developed the DSU. The DSU is guided by principles of equity, speed, effectiveness, and mutual acceptance, and it consists of two fundamental components. One of these is a two-instance adjudication regime, and the other is a negative consensus.

The procedure for dispute settlement, known as the two-instance adjudication regime, involves two separate panels and is regulated in such a way that countries in dispute first undertake a 60-day consultation period to attempt resolving their differences [11]. Only if consultations fail, the party can order a dispute settlement panel, which takes 45 days to establish. The panel then has 6 months to deliver the final report to the parties involved and three weeks to provide it to WTO members. If no member objects to the report, the Dispute Settlement Body (DSB) takes 60 days to adopt it. The total procedure cost one year without an appeal, which is time-consuming. The negative consensus, a significant innovation, ensures that a single party cannot prohibit the formation of the panel or the adoption of a ruling by the DSB [12]. Either side can appeal the ruling, and the Appellate Body,

composed of seven experts, reviews the panel's report. This additional procedure takes 60 to 90 days, with 30 days for the DSB to adopt the appeals report, extending the total time to one year and three months. Such delays can cause significant damage during the dispute [13].

3.2. Operation of the WTO DSU System in the Chip War

Turning to the chip war, China initiated consultations with the US on December 12, 2022, regarding the specific measures implemented by the US related to the trade of semiconductor chips and associated services and technologies intended for or related to China. The case, DS615, remained in consultation for 8 months until July 2022. Although the US accepted the consultation request, it consistently argued that the mentioned measures were connected to national security and therefore not subject to review or resolution by the WTO dispute settlement process. This defiance of WTO regulations exacerbates the dangers posed by the Appellate Body disaster. America has been blocking the selection process for new Appellate Body members since 2017, rendering it non-operational. Obviously, the chip war exacerbated the damage caused by the Appellate Body's loss. Requests for consultation sharply decreased (20 in 2019, only 14 in 2020-2021), and although more panels were established, no reports were produced [14]. Clearly, the emerging trend of two superpowers resolving disputes outside the WTO undermines its credibility and effectiveness, weakening public confidence in the system. The DSB, in this context, merely provides a platform for superpowers consultations, lacking significance and replaceability. The US's statement that subsequent steps lack binding force further perpetuates the absence of the DSU in the chip war, deteriorating trust in the system. It is a vicious circle.

3.3. Challenges and Issues of the WTO DSU System in the Chip War

Several contributing factors have led to the reduction in the effectiveness of the WTO DSU System. One significant issue that arises is the time-consuming nature of the DSU procedure, characterized by complex steps, each with its own set of rules and requirements. These complexities contribute to delays throughout the process. Meanwhile, parties involved must comply with strict procedural guidelines, including submitting comprehensive written reports, evidence, and relevant documents, requiring extensive preparation and allocation of significant resources. The constraint on available experts poses a huge challenge for developing countries seeking to initiate the appeal [15]. Moreover, the accumulation of cases has posed significant challenges for the DSB to effectively resolve disputes, leading to an extended overall duration of the DSU procedure, further exacerbating its time-consuming nature. The loss of the Appellate Body is another key factor which significantly impacted the effectiveness of the mechanism, as there is no functioning body to hear and decide on appeals, ultimately leading to the potential breakdown of the DSU. Furthermore, the failure has shed light on the weaknesses of the system, undermining the credibility and compliance of the DSU and encouraging non-compliance with WTO rules. Countries may turn to alternative solutions or retaliate, as evident in the Chip war, where the two superpowers opted to continue and escalate the trade war instead of seeking peace through negotiation.

A robust dispute settlement requires effective solutions and a strong enforcement mechanism that ensure compliance with rulings. However, the WTO Trade Dispute Settlement System faces limitations and challenges which are common in international law. Non-compliance is a significant concern, as enforcement relies entirely on the willingness of parties and is influenced by domestic politics and external pressures [16]. Several countries may be unwilling to implement rulings or find ways to evade their obligations. For example, the US has shown disobedience under the DSU. Another concern relates to the efficacy of enforcement and remedies in the WTO Trade Dispute Settlement System. Retaliation is a commonly employed measure, whereby the WTO can sanction retaliatory actions if a country fails to adhere to its obligations regulated by the WTO. While retaliation can provide leverage to the winning party when both parties are on equal footing, its effectiveness may be limited when the winning party is weaker than the losing party. Furthermore, retaliatory measures have the potential to escalate the situation, as the imposition of tariffs and

strengthening trading barrier can create a ripple effect that impacts other economies. Therefore, the potential risks and unintended consequences associated with retaliatory measures should be carefully considered when seeking effective enforcement and resolution of disputes.

In summary, the WTO DSU System has been instrumental in resolving trade conflicts and ensuring a rules-based international trading environment. However, the challenges and shortcomings exposed by the chip war and other factors require careful consideration and reform. The time-consuming nature of the DSU procedure, the absence of a operating Appellate Body, and limitations in enforcement measures all undermine the system's effectiveness and credibility.

4. Reflection on the WTO Trade Dispute Settlement System

4.1. Necessity and Objectives of Efficiency Reform

Recognizing the concerns raised about the efficiency of the DSU, there is a pressing need for reform to enhance its efficiency [17]. The current DSU faces challenges in providing timely and effective resolution of trade disputes. In light of these challenges, the reform aims to streamline procedures and improve the overall effectiveness of the dispute settlement mechanism. The DSU, characterized by its complex, time-consuming, and costly nature, has weakened the efficacy of the mechanism. Moreover, the absence of the Appellate Body has caused delays and triggered a crisis within the system. Additionally, concerns about the enforcement and effectiveness of WTO rulings have prompted the need for effectiveness reform. Sometimes, even if the WTO rulings are binding, some parties may not be willing to implement them. Furthermore, the effectiveness of commonly used measures, such as retaliation, is being questioned. In conclusion, efficiency reform of DSU is not only crucial to provide timely resolution of trade disputes but also the key to revitalization the system.

4.2. Improvements of Dispute Settlement Procedures

Despite being crucial to the WTO, the DSU remains its nature of complex, time-consuming, and costly. Simplifying and accelerating dispute settlement procedures is vital to provide timely resolution of trade disputes and prevent prolonged disruptions to trade activities. The current DSU consists of multiply stages, including consultation, panel hearings, leading to lengthy proceedings. Some of them are time-consuming, which may lead to uncertainty for member countries. Accelerating the procedure can enable timely dispute resolution, avoiding prolonged disruptions to trade activities and preventing further damage. Some of procedures are expansive, requiring extensive documents that need experts and investigations, which imposes significant financial burdens on member states, particularly for developing countries with limited resources. Simplification of these procedures can help reduce these costs and allow parties to address disputes more efficiently. Simplification allows for greater accessibility to the process, enabling all member nations, regardless of their legal capacity or expert resources, to participate. Developing countries can better ensure that their concerns are addressed and their interests are safeguarded, contributing to the creation of a more inclusive and equitable DSU. This helps building a more inclusive and equitable DSU. The WTO can enhance efficiency in its DSU and foster trust among member nations by simplifying and accelerating the procedures.

The loss of the Appellate Body has prompted a reevaluation of the appeal process. Having found the disadvantages of appeal process, several countries have sought alternative avenues for dispute resolution, thereby undermining the authority of the WTO. Rebuilding and improvement of the appeal process are of paramount importance. The primary challenge is overcoming the lack of sufficient members, arising from the blockage in the appointment process. The US has been blocking the appointment process since 2018, citing lack of trust in the mechanism. Restoring trust and ensuring nominations are based on merit are the initial steps in rebuilding the Appellate Body. All members must reach a consensus on the appointment of the Appellate Body, while allocating more resources to the Appellate Body is crucial for prompt dispute resolution, enhancing efficiency and timeliness. Transparency is essential to enhance the credibility and legitimacy of DSU, prioritizing measures that

allow interested parties to present their arguments and streamlining the appeal process to enhance public trust.

4.3. Strengthening the Authority and Enforcement of Dispute Settlement Bodies

The DSB plays a vital role as the core component of the DSU and serves as the primary forum for resolving trade disputes among WTO member countries. However, the authority and enforcement mechanisms of the DSB have come under increasing scrutiny and encountered significant challenges in recent years, thereby compromising compliance with WTO rulings and agreements [18]. To address these issues, there is an urgent need to strengthen the resources and expertise of the DSB. Ensuring adequate resources for DSB is indispensable for efficient functioning. This includes increasing current funding, providing more staff, reducing legal barriers and simplifying related process. Adequate resources will significantly enhance the credibility of DSB and its authority. To bolster efficiency and accuracy in dispute resolution, equipping panel members with deep knowledge of different areas of trade, such as agriculture and industry, is essential. The DSB must have specialized knowledge in the field of international trade law to interpret documents uploaded by member countries or international conventions.

Unfortunately, implementing reforms on the enforcement mechanisms may prove challenging, given the self-compliance nature of international law. There are limited improvements that can be made to the enforcement mechanism itself, but enhancing public awareness could be a viable option. Improving transparency and promoting rulings would increase public awareness of WTO decisions, resulting in a higher cost for violating those rulings [19]. Member countries face reputational risks and internal pressure if they fail to meet their obligations, which contributes to greater compliance. However, the common use of retaliation should also be reconsidered. As a mechanism for enforcing compliance with WTO rules, the effectiveness and fairness of retaliation must be ensured. One crucial factor is proportionality. Establishing a principle of proportionality is essential, as the same measure can have different impacts on countries of varying scales. Exploring alternative formulations of dispute resolution to reduce reliance on retaliatory measures is also important. Retaliation, in essence, remains a damaging approach, and encouraging a more cooperative approach to resolving trade disputes is preferable.

5. Conclusion

In conclusion, the WTO DSU System plays a crucial role in resolving trade conflicts and maintaining a rules-based international trading environment. However, the ongoing chip war and the increasing complexity of technological competition have highlighted several challenges and shortcomings in the system.

Efficiency reform is imperative to enhance the effectiveness of the WTO dispute settlement mechanism. The DSU's time-consuming and complex procedures, along with the absence of the Appellate Body, have led to delays and triggered a crisis in the system. Streamlining dispute settlement procedures and rebuilding the Appellate Body are vital steps to ensure timely and equitable resolution of trade disputes.

Strengthening the authority and enforcement of dispute settlement bodies, particularly the DSB, is essential to ensure compliance with WTO rulings and agreements. Adequate resources and expertise must be allocated to the DSB to facilitate efficient functioning and impartial dispute resolution.

The challenges facing the enforcement mechanism of the WTO are common in international law, where enforcement relies on the willingness of parties and is influenced by various factors, including domestic politics and external pressures. Enhancing public awareness of WTO decisions can increase compliance and encourage parties to meet their obligations, further reinforcing the credibility of the system.

To preserve the credibility and legitimacy of the WTO, it is essential to strike a balance between the concerns raised by member countries and the need for an efficient and effective dispute settlement

mechanism [20]. Enhancing transparency, streamlining procedures, and rebuilding the Appellate Body will be instrumental in addressing the present crisis and maintaining a fair and balanced global trade environment. Achieving these goals is paramount in safeguarding the credibility and effectiveness of the WTO DSU System and fostering confidence among member nations.

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