Unravelling Factors Influencing the Mutually Agreed Solution in International Trade Disputes: An Empirical Exploration Based on WTO Disputes

Research Article

Christina Siyu Tao* and Qi Shen

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Abstract: This study explores the factors influencing the achievement of a mutually agreed solution (MAS) in international trade disputes, drawing insights and patterns from the WTO dispute experience. Through an in-depth examination of prevailing literature and compliance theories, the research pinpoints various factors that impact the achievement of MAS in WTO disputes, including the dynamics of economic size, experience in WTO litigation, reputation as a respondent, and costs in time. The results, obtained through a probit model, reveal the significance of economic size in achieving MAS, where the complainant's GDP surpasses that of the respondent but not the per capita GDP and trade ratio. Originally, this study discloses that experience in WTO litigation as a disputing party and reputation as the respondent also influence the willingness to settle amicably. While this research primarily centres on the WTO, its findings, derived from WTO data, have broader implications. The identified factors are not only pertinent to WTO members but also hold relevance for solving trade disputes between states. Recognizing these factors is crucial for policymakers across different trade platforms to devise strategies that bolster collaboration and elevate the efficacy of their respective dispute-resolution mechanisms. By illuminating the complexities of the decision-making processes in achieving MAS, this study offers invaluable insights. These insights are instrumental for all stakeholders involved in trade disputes, guiding them towards forging consensus-driven solutions that uphold the principles of just and balanced international trade.

***Corresponding author: Christina Siyu Tao**, Lecturer in Law, LLB, LLM and PhD in Law, Victoria University, Melbourne, VIC, Australia, E-mail: Christina.tao@vu.edu.au
Qi Shen, Associate Professor in Economics, Bachelor's in Mathematics, Master and PhD in Economics, Central University of Finance and Economics, Beijing, China, E-mail: qishen@cufe.edu.cn

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1 Introduction

The resolution of disputes within the World Trade Organization (WTO) is a critical aspect of the global trading system. The dispute settlement mechanism (DSM) is the central pillar of the world's multilateral trading system and the WTO's unique contribution to the stability of the global economy.[1] The principles of DSM are to achieve an equitable, fast, efficient, and mutually acceptable solution; thus, the priority is to settle disputes through consultation if possible.[2] With the aim of achieving positive solutions to disputes, the *Understanding on Rules and Procedures Governing the Settlement of Disputes* ('the DSU') provides that a solution that is mutually acceptable to disputing parties is clearly preferred.[3] It encourage parties involved in a dispute to opt for a mutually agreed solution ('MAS') rather than pursuing formal adjudication. According to the WTO's Annual Report 2010, over half of the disputes formally brought to the WTO dispute settlement mechanism were settled or presumed to have resulted in an amicable settlement between the dispute parties without a formal ruling from a panel or the Appellate Body.[4]

Even though the WTO DSM faces challenges, and its appellate function is currently non-functional, research on MAS remains significant for several reasons. Unlike panel or Appellate Body decisions, MAS allows for a broader range of negotiated outcomes tailored to the specific circumstances of the dispute, which can help preserve diplomatic and trade relationships between disputing parties. Researching MAS can also provide valuable insights into the dynamics of international negotiations, which can be applied to other areas of international law and diplomacy. Given these, understanding the dynamics, incentives and conditions that lead to MAS is crucial for policymakers, negotiators and legal practitioners dealing with international trade disputes.

While considerable attention has been conducted on various aspects of WTO dispute settlement, there has been relatively little focus given on the analysis of achieving MAS. Despite the limited attention given to the MAS, theoretical and empirical studies have reported contradictorily regarding the incentives that drive

1 World Trade Organization, *Understanding the WTO*, 5th ed. (World Trade Organization Information and External Relations Division, 2011) 55.

2 Ibid, at 60.

3 *Understanding on Rules and Procedures Governing the Settlement of Disputes* 1869 U.N.T.S. 401 33 I. L.M. 1226 (1994), hereinafter the *Dispute Settlement Understanding*/DSU, Article 3.5.

4 WTO, *Annual Report 2010* (Geneva, WTO Secretariat Publication) at 82.

parties to reach a MAS. Therefore, the lack of clarity and limited analysis inspires this research to delve deeper into exploring the factors influencing the achievement of MAS in WTO disputes.

In exploring deep into the subject matter, this research does a thorough review of the existing literature on the determinants influencing MAS. While prior studies have revolved around domestic interests, coalitions, normative force, sanctions, and legal capacity, this research fills a critical gap by addressing other critical variables. Acknowledging the value of the established literature, this study explores deeper and wider into the realm of influencing factors that go beyond traditional political and legal considerations. The analysis is further strengthened by the application of compliance theories in international law, which provide a foundation for the nuanced application of rational choice theory in the MAS context. Through this reinforced theoretical framework, the study uncovers the intricate factors at play in influencing MAS, eventually enabling empirical quantification of these factors and providing a more holistic understanding of their role in shaping MAS outcomes.

Informed by both established literature and rational choice theory, this research utilizes a probit model for empirical study, focusing on select independent variables. Compared with other empirical studies on this topic, this study diverges from the prevailing empirical literature in multiple respects. It exploits the most recent and comprehensive data from 1995 to 2018. It evaluates the data from the notified MAS separately from the non-litigation dispute data, rather than presuming all non-litigation disputes were settled. Subsequently, it compared the two sets of results to determine if they generated similar outcomes. To delineate economic size, the research employs different indicators such as GDP ratio, per capita GDP ratio, and trade ratio to examine their influence on MAS decision-making. This research also offers a unique perspective by analysing diverse factors beyond the economic size and its influence on retaliation capabilities. The model incorporates factors such as prior experience in WTO disputes, the reputation as the respondent, and time cost considerations. The inclusion of experience variables, such as the number of previous involvements in WTO disputes, captures the potential influence of past experiences on the parties' willingness to reach a mutually agreed solution. Furthermore, reputation, both at the individual party and institutional level, is considered a potential determinant of achieving MAS. By incorporating these non-economic factors, this research aims to provide a more comprehensive understanding of the dynamics behind achieving MAS in WTO disputes.

By interweaving empirical investigation with theoretical insights, this study aims to contribute to the broader understanding of mutually agreed solutions in international trade disputes. The examination of factors influencing MAS in WTO disputes sheds light on patterns and dynamics that can be influential in understanding other global conflicts. The findings can offer invaluable guidance for

policymakers, shaping strategies that enhance cooperative efforts and boost the efficacy of the dispute resolution framework. Crucially, this research adopts an economic lens to elucidate a legal issue. The cross-disciplinary approach bridges the gap between law and economics to provide a holistic understanding. This approach not only adds depth to the findings but also makes the research accessible to relevantly more diverse readers.

2 Literature Review and Compliance Theories

Considering current literature and compliance theories in international law is vital in the research of WTO MAS. Firstly, existing literature provides a foundation, establishing what is already known and identifying gaps that need further exploration. It also offers insight into the various factors that might affect the achievement of MAS. Secondly, compliance theories in international law not only give frameworks to understand why states adhere to the agreed regulations, but also elucidate the underlying that drive countries to seek MAS.

2.1 Previous Studies on Achieving MAS in WTO

Scholars have delved into various factors that could influence parties in achieving a MAS. This study reviewed related literatures and summarised them into three aspects: political, legal, and economic.

2.1.1 Political Aspects

2.1.1.1 Domestic Interests

Beginning with political influences, Hudec's study in the 1990s investigated the factors that prompted governments to make politically influenced concessions including community pressure.[5] In Putnam's two-level game, the pull of domestic interest groups and international communities on governments in turn affects Members' behaviour in the WTO dispute.[6] While the effects of interest groups on a Member's trade policies have been studies,[7] scholars also considers the influence of

5 Robert E. Hudec, *Enforcing International Trade Law: The evolution of the modern GATT legal system* (Butterworth Legal Publishers, Austin TX, 1993).

6 Robert D. Ptunam, 'Diplomacy and Domestic Politics: The Logic of Two-Level Games' 41:2 (1988) International Organisation 203.

7 Michael Bailey, Judith Goldstein, and Barry R. Weingast. 'The Institutional Roots of American Trade Policy: Politics, Coalitions, and International Trade' *World Politics* 49, no. 3 (1997): 309. Sean D Ehrlich,

interest groups as a general across the WTO Members.[8] Busch and Reinhardt (2001) stated that 'for most of states most of the time, factors may have little importance compared to the domestic political benefits'.[9] Shaffer (2003) noticed that domestic interest groups often pressured governments to take stances in trade disputes.[10] Davis (2012) also argued that domestic politics influence Members choose to adjudicate rather than settle the differences.[11]

2.1.1.2 Democracy and Open Economy of Disputing Parties

Recent studies have turned to the importance of government structure in democracy. Busch's further research proposed that highly democratic states are more likely than others to settle disputes through concessions primarily at the consultation stage, because the increased transparency of a panel proceeding might deter democratic countries that are heavily accountable at the ballot box from compromising in full public view.[12] Busch and Reinhardt (2001) analysed the pattern of settlements based on empirical studies and reaffirmed that democratic countries are more likely to settle their disputes cooperatively in the consultation stage as compared to pairs with one or more states which are not fully democratic.[13] Similary, Busch further explored

'Access to Protection: Domestic Institutions and Trade Policies in Democracies' *International Organization* 61, no. 3 (2007): 571–606; 'The Tariff and the Lobbyist: Political Institutions, Interest Group Politics, and US Trade Policy' *International Studies Quarterly* 52 (2008):427–445. Ehrlich, Sean D. Access Points: An Institutional Theory of Policy Bias and Policy. Complexity. Oxford: Oxford University Press, 2011. Davis, Christina L. &Yuki Shirato. 'Firms, Governments, and WTO Adjudication: Japan's Selection of WTO Disputes' *World Politics* 59: 2 (2007), 274–313.

8 Christina Fattore, 'Interest Group Influence on WTO Dispute Behaviour: A test of state commitment' 46:6 (2012) Journal of World Trade, 1261–1280. Judith Goldstein, 'International Institutions and Domestic Politics: GATT, WTO, and the Liberalization of International Trade' *in The WTO as an International Organization* (edited by Anne O. Krueger. Chicago: University of Chicago Press, 1998); – and Lisa L. Martin. 'Legalization, Trade Liberalization, and Domestic Politics: A Cautionary Note' *International Organization 54, no. 3 (2000):*
603–632. Marc L. Busch and Eric Reinhardt, Bargaining in the Shadow of the Law: Early Settlement in GATT/WTO Disputes' 24 (2000) *Fordham International Law Journal* 158.

9 Marc L. Busch and Eric Reinhardt, 'Bargaining in the Shadow of the Law: Early Settlement in GATT/WTO Disputes' 24 (2000) *Fordham International Law Journal* 158, 165.

10 Gregory C. Shaffer, *Defending Interests: Public-Private Partnerships in WTO Litigation* (Brookings Institution Press, Washington, 2003).

11 Christina L. Davis, *Why Adjudicate? Enforcing Trade Rules in the WTO* (Princeton University Press, Princeton, 2012).

12 Marc L. Busch, 'Democracy, Consultation, and the Panelling of Disputes under GATT' 44 *Journal of Conflict Resolution* 425 (2000), at 435. He also states that pairs of democracies are no more likely than non-democratic pairs to resolve their disputes cooperatively after a panel has been formed.

13 Marc L. Busch and Eric Reinhardt, 'Developing Countries and General Agreement on Tariffs and Trade/World Trade Organization Dispute Settlement' 37 Journal of World Trade 719 (2006).

the concept of open economies within WTO disputes, asserting that the most open economies were less likely than the least open economies to make concessions at the consultation and panel stages.[14] Cases against more open economies were likely to be less clearcut because such economies were surrounded by fewer protectionist walls and had less slack to liberalize further.[15] This proposition reflects the liberal theory that the presence of domestic liberal and/or democratic institutions affects states' external behaviour and promotes compliance with international rules.[16]

2.1.1.3 Coalition

Coalition and alliances among WTO Members are also important political factors that shape the WTO settlement. In Bagwell and Staiger's (2004) view, the coalition of third-parties could prevent disputants from making bilateral settlements that discriminated against other Members and undermined the multilateral equilibrium.[17] Later, Busch and Reinhardt's (2006) empirical research reaffirmed that third parties could lower the prospects for early settlement and increase the likelihood of adjudication.[18] It reflects Petersmann's proposition that the larger the number of complainants involved in a dispute, the less likely is a respondent to meet the many and often conflicting demands being made of it, and the lower the prospects for concessions.[19] Davis (2012) also revealed that the coalition could enhance bargaining power and influence the agreement reached. In Johns and Pelc's research (2014), they constructed a formal model in which third parties make settlement less likely.[20]

2.1.2 Legal Aspects

2.1.2.1 Normative Force and Sanction

Hudec (1993) posited that the basic force behind the procedure stemmed from the normative force of the decisions and the potential sanctions from the complainant,

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14 Busch and Eric Reinhardt, 'Three's a Crowd: Third Parties and WTO Dispute Settlement' *World Politics* 58 (2006) 446, 473; also see, March L. Busch, 'Accommodating Unilateralism? U.S. Section 301 and GATT/WTO Dispute Settlement' (Typescript, Queen's School of Business).

15 See Busch, above n 12, at 436.

16 Busch and Eric Reinhardt, Bargaining in the Shadow of the Law: Early Settlement in GATT/WTO Disputes' 24 (2001) *Fordham International Law Journal* 158–172.

17 Kyle Bagweel and Robert W. Staiger, 'Multilateral Trade Negotiations, Bilateral Opportunism and the Rules of GATT/WTO' 63:1 (2004) *Journal of International Economics* 63.

18 Busch and Eric Reinhardt, above n 14.

19 Ernst-Urlich Petersmann, *The GATT/WTO Dispute Settlement System* (London: Kluwer Publisher, 1997) 222.

20 Leslie Johns and Krzysztof J. Pelc, 'Who Gets to Be in the Room? Manipulating Participation in WTO Disputes' 68 (2014) *International Organisation* 663–699.

compelling the respondent's cooperation.[21] The normative power of the GATT rules combined with the threat of sanctions from the complainant elicits the cooperation of the respondent.[22] Reinhardt (2001) constructed a bargaining model to delineate why states might opt for a plea bargain. His model suggested that the respondent would be compelled to offer an early settlement despite a lack of inherent interest in compliance, due to the perceived resolve of the complainant and uncertainty regarding the execution of retaliatory measures.[23] The twin levers of the legal norm and the uncertainty around a complainant's willingness to implement retaliatory measures elicit early settlement. Bown and Reynolds (2015) later substantiated those asymmetries in bilateral retaliation capacities significantly impacted the outcomes of negotiated trade policy under the dispute settlement.[24]

2.1.2.2 Legal Capacity

Several scholars, such as Holmes, Rollo and Young (2003), Shaffer (2006), Shaffer and Nordstorm (2008), Horn and Kaunitz (2008), Busch, Reinhardt and Shaffer (2009), have endeavoured to ascertain how legal capacity influenced the variation in Members' use of WTO litigation, particularly in developing countries.[25] While developing countries are constrained by their capacity to launch litigation, more legal capacity would help Members participate in all aspects of WTO dispute settlement. The evaluation of legal capacity primarily relies on three proxies: per capita income or gross domestic product (GDP), the size of a Member's delegation in Geneva, and the bureaucratic quality and efficiency of a Member's institutions.[26] Guzman and Simmons (2005) considered the capacity of economic size, WTO staff

21 Robert E. Hudec, above n 5.

22 Ibid.

23 Eric Reinhardt, 'Adjudication without Enforcement in GATT Disputes' 45 *Journal of Conflict Resolution* 174 (2001), at 192. 174.

24 Chad P. Bown and Kara M. Reynolds, 'Trade Agreements and Enforcement: Evidence from WTO Dispute Settlement' (World Bank Group, Development Research Croup Trade and International Integration Team, April 2015).

25 Peter Holmes, Jim Rollo, and Alasdair R. Young, 'Emerging Trends in WTO Dispute Settlement: Back to the GATT?' (Discussion Paper No.3133, World Bank, Washington D.C.). Greory Shaffer, 'The Challenges of WTO Law: Strategies for Developing Countre Adaptation' 5:2 (2006) *World Trade Review* 177–198; – and H, Nordstorm, 'Access to Justice in the World Trade Organisation: The case for a small claim's procedure: a preliminary analysis' 7:4 (2008) *World Trade Review* 587–640. Lacarte-MuroÅL, J. and P. Gappah, 'Developing Countries and the WTO Legal and Dispute Settlement System: A View from the Bench' 3: 3 (2000) *Journal of International Economic Law,* 395–401; Francois, J., H. Horn, and N. Kaunitz (2008), 'Trading Profiles and Developing Country Participation in the WTO Dispute Settlement System', International Centre for Trade and Sustainable Development Issue Paper No. 6, ICTSD, Geneva.

26 Marc L. Busch, Eric Reinhardt, and Gregory Shaffer, 'Does Legal Capacity Matter? A survey of WTO Members' 8:4 (2009) *World Trade Review* 559–577.

resources, general diplomatic resources, domestic financial resources and past participation in WTO disputes, and then concluded that the capacity constraints the number of dispute cases pursued.[27]

2.1.3 Economic Aspects

2.1.3.1 Power and Economic Sizes

Several studies have underscored the role of power dynamics in WTO dispute settlement. The general consensus was that stronger economic powers excert significant influence on the dispute outcomes. Busch and Reinhardt (2003) presented evidence that rich complainants were more likely to extract concessions from defendants than poor complainants. Interestingly, however, they argued that the inability to threaten concession withdrawal due to market power deficits did not seem to significantly affect the outcomes.

Contrastingly, Guzman and Simmons (2005) examined whether richer or more powerful countries enjoyed an advantage in dispute settlement, and inferred that the inequality could be explained by any form of retaliation or sanction and capacity constraints (including the financial, institutional and human capital costs of a dispute).[28] Further, Bown and Reynolds (2015) consistently found evidence of a positive relationship between retaliation capacity variables and the growth of disputed import volumes. Notably, they found that the larger the complainant's imports from the respondent, the more capacity the complainant had to exert meaningful trade retaliation threat, thereby influencing the respondent's compliance.

Echoing the theory of settlement bargaining with asymmetric information, Ahn, Lee and Park suggested that the relative economic sizes of the disputing parties affected the likelihood of non-litigation.[29] Their conclusion postulated that 'greater disparity between the two countries' GDP decreases the likelihood of non-litigation, [and] this effect is stronger when the respondent country has a size advantage over the complainant country'.[30] This research used the data of WTO disputes that didn't pursue formal litigation after the consultation request or panel suspension, and then assumed that they implied a settlement between the disputing parties. The relative economic sizes were measured by the gross GDP and the economic characteristics including G2 (US and EU), IND (Industrial), LDC (Least Developed) and DEV

27 Andrew T. Guzman and Beth A. Simmons, 'Power Plays and Capacity Constraints: The Selection of Defendants in World Trade Organisation Disputes' 34:2 (2005) *Journal of Legal Studies* 557–598.

28 Ibdi.

29 Dukgeun Ahn, Jihong Lee and Jee-Hyeong Park, 'Understanding Non-litigated Disputes in the WTO Dispute Settlement System' 47 (2013) *Journal of World Trade 985*.

30 Ibid.

(Developing) countries. World Bank research findings corroborated this perspective and demonstrated a stark divergence in cases settled by mutual agreement, the United States and other developed countries initiating 57 % and traditional less developed countries only initiating 16 %.[31]

In Colares's study on the high complainant success rate, he computed each respondent's trade-to-GDP ratio to ascertain whether a respondent's trade dependence influenced its disposition towards settlement. It assumed that a respondent with lower trade dependence should be more inclined to settle, because any concession would not necessarily create potential broad repercussions in its economy. He regressed the ratio against the settlement rate. Contrary to the assumption, he concluded that a respondent's overall trade or import levels were not likely to affect their attitude towards dispute settlement.[32]

2.1.3.2 Transaction Costs

Regarding transaction cost and the economic size of the disputing parties, Poletti, Bièvre and Chatagnier argued that a complainant's ability to impose costs on a respondent and its preference for accepting loss over gains from retaliation increased the chances of cooperation.[33] They further posited that agreements could prove mutually beneficial as the respondent could bargain for a smaller reduction than a judgment might mandate, while the complainant secured relief from a likely non-compliant respondent.[34]

Contrary to the notion that democracies are more likely to settle disputes in consultation, Guzman and Simmons (2002) argued that there is no inherent tendency in democracies to prefer panel resolution.[35] They invoked the theory of transaction costs that the settlement ranged with full information lies between the expected payoffs of the two parties. The complainant would refuse to settle unless it receives concessions that are at least as valuable as the gains from the panel ruling, but the respondent would not offer concessions greater than what it expects to lose before a

31 Holmes, Rollo and Young, above n 25, 19. Page 21 Cases that are settled by mutual agreement have a very different profile from other categories of settled cases, both geographically and by issue. This may be evidence of some use of political/economic weight to persuade respondents to settle 'out of court.'

32 Juscelino F. Colares, 'A Theory of WTO Adjudication: From Empirical Analysis to Biased Rule Development' 42 Vanderbilt Journal of Transnational Law 383 (2009), at 413–415, 422. Data on respondents overall merchandize trade (export + import) and GDP was obtained from each Member's 'Trade Profile' in the WTO website.

33 Arlo Poletti, Dirk de Bievre, J. Tyson Chatagnier, 'Cooperation in the Shadow of WTO Law: Why Litigate When You Can Negotiate' 14(S1) World Trade Review S33 (2015), at S53.

34 Ibid.

35 Andrew Guzman and Beth A. Simmons, 'To Settle or Empanel? An Empirical Analysis of Litigation and Settlement at the World Trade Organization' 31 (2002) *Journal of Legal Studies* 205, 227.

panel.[36] Following this line of reasoning, Bown conducted an empirical study and concluded that the potential cost of retaliation was a greater driving force for governments' commitment rather than the cost of adhering to international obligations.[37]

2.1.3.3 Subject Matter of a Dispute

Guzman and Simmons (2002) inferred that the subject matter of a dispute (continuous or discontinuous) influences democracies to either reach a negotiated settlement or opt for a panel.[38] When democratic pairs dispute a discontinuous issue, especially an all-or-nothing proposition, they are willing to escalate to the panel phase; however, democratic pairs dealing with continuous issues usually settle at the consultation stage.[39] There is nothing inherent in a democracy alone that suggests dispute parties prefer to resolve their cases before a panel. The subject matter of a dispute, rather than legal culture or a high comfort level with 'the rule of law', better account for these patterns of escalating disputes to panels.[40]

In the pursuit of understanding the factors that facilitate a MAS, numerous assumptions have been proposed by scholars, but consensus remains elusive. The lack of definitive interpretation inspires this paper to explore the motivations for achieving MAS from compliance theories.

2.2 Compliance Theories

Compliance theories in international law, in the broad sense, comprise liberal, legitimacy and realism theories. This multifaceted interplay of theoretical perspectives offers a comprehensive understanding of compliance as well as mutual settlement in the WTO dispute settlement landscape.

2.2.1 Liberal Theory

Liberal theory[41] rejects the focus on the state as a unitary actor prevalent in rational theory but emphasises domestic actors and structures when explaining external

36 Ibid, at 209.

37 Chad P. Bown, 'On the Economic Success of GATT/WTO Dispute Settlement' 86(3) The Review of Economics and Statistics 811 (2004), at 811 and 822.

38 Guzman and Simmons, above n 35, 213 and 214.

39 Ibid.

40 Ibid, at 227.

41 Andrew Moravcsik, 'Taking Preference Seriously: A Liberal Theory of International Politics' (1997) 51 *International Organization* 513; Anne-Marie Slaughter, 'International Law in a World of Liberal

behaviour.[42] Liberalists consider that a state's preferences for compliance 'are strongly influenced by the myriad interactions of numerous participants in the domestic and the transnational political process'.[43] The presence of domestic liberal and/or democratic institutions promotes compliance with international rules.[44] As the liberal theory emphasises domestic actors and structures to induce compliance, it 'pays considerable attention to the preference of individuals and groups in domestic and transnational society and their representation by government institutions in the domestic legal order'.[45] A variation on the liberal theory of compliance is the transnational legal process.[46] Similar to liberal theory but more concrete, the transnational legal process pays considerable attention to multinational corporations, non-governmental organisations (NGOs), international organisations, private individuals and others. The non-compliance could directly restrict individuals from enjoying their inviolable economic rights.[47] It focuses on both domestic and international levels and the interaction of public and private actors in making, interpreting, enforcing and internalising rules of transnational law.[48] Harold Horgiu Koh claims that the process of interpreting global norms and internalising them into domestic law leads to the reconstruction of national interests and eventually provides the key to unlocking the puzzle of why nations obey.[49]

States' (1995) 6 *European Journal of International Law* 503; Kal Raustiala, 'Domestic Institutions and International Regulatory Cooperation: Comparative Responses to the Convention on Biological Diversity' (1997) 49 *World Politics* 482 (use a variant of liberal theory to explain divergent approaches to international regulatory cooperation); Oran R. Young, *Compliance and Public Authority A theory with International Application* (The Johns Hopkins University Press, 1979).

42 Ibid, Andrew Moravcsik, 514.

43 Dirk Pulkowski, 'Testing Compliance Theories: Towards US Obedience of International Law in the Avena Case' (2006) 19 *Leiden Journal of International Law* 511, 519.

44 Kal Raustiala, above n 41, 409–410; also see, Andrew Moravcsik, above n 41, 513; Robert Owen Keohane and Joseph S. Nye, *Power and Interdependence: World Politics in transition* (Little Brown, 1977) 29–30.

45 Mary E. Footer, Mary E. Footer, 'Some Theoretical and Legal Perspectives on WTO Compliance' 38 (2008) *Netherlands Yearbook of International Law* 61, 70.

46 Harold Hongju Koh, 'Why Do Nations Obey International Law?' (1997) 106 *Yale Law Journal* 2599; – 'Transnational Legal Process' (1996) 75 *Nebraska Law Review* 181; Maya Steinitz, 'Transnational Legal Process Theories' in Cesare P.R. Romano, Karen J. Alter and Chrisanthi Avgerou (eds.) *The Oxford Handbook of International Adjudication* (Oxford University Press, 2013); Oona A. Hathaway and Ariel N. Lavinbuk, 'Rationalism and Revisionism in International Law' (2006) 119 *Harvard Law Review* 1404 (Hathaway applied both the transnational legal process and the collateral consequences to explain why countries would commit to treaties and how treaties influence or fail to influence state behaviour).

47 Intan Innayatun Soeparna, 'The Nexus between State Liability Principle and WTO Law' 7:3 (2016) *Asian Journal of Law and Economics* 323, 323.

48 Harold Hongju Koh, 'Transnational Legal Process' (1996) 75 *Nebraska Law Review* 181, 183 and 184.

49 Harold Hongju Koh, above n 46, at 2659.

2.2.2 Legitimacy

The legitimacy theory in the context of normative compliance has also been discussed by several scholars.[50] The fundamental premise is that legitimacy of the right process of rule creation itself is a central factor eliciting compliance. The theory focuses on the power of norms and ideas because legitimacy is a norm or value that influences states' behaviour towards compliance. Specifically, the norm (in the sense of a principle, rule or standard) has certain innate qualities derived from its origin, content and articulation, leading states to take it seriously.[51] Frank proposes four factors determining whether a state complies with international law: determinacy (the clarity of the rule or norm), symbolic validation (the presence of procedural practices or rituals), coherence (the connection between rational principles and the rule) and adherence (the connection between the rule and secondary rules used to interpret and apply primary rule).[52] Harold Koh suggests that legitimacy also provides an internal reason for states to comply with international law rather than fear of retaliation or even self-interest, as those rules exert a compliance pull on governments.[53]

A variation of legitimacy is the constructivist approach, which emphasises the importance of language 'norm and rules' in international relations.[54] Constructivism considers that states may comply with norms instrumentally to demonstrate that they have adapted to the social environment or structure.[55] Constructivists[56] believe

50 Thomas M. Franck, *Fairness in International Law and Institutions* (Clarendon Press, 1995); – *The Power of Legitimacy Among Nations* (Oxford University Press, 1990); – 'Legitimacy in the International System' (1988) 82 *Amsterdam Journal of International Law* 705; Robert O. Keohane, 'International Relations and International Law: Two Optics' (1997) 38 *Harvard International Law Journal* 487; Jutta Brunnee and Stephen J. Toope, *Legitimacy and Legality in International Law: An Interactional Account* (Cambridge University Press, 2010); Christopher A. Thomas, 'The Uses and Abuses of Legitimacy in International Law' (2014) *Oxford Journal of Legal Studies* 729.

51 Mary E. Footer, above n 45, 72.

52 Andrew T. Guzman, 'A Compliance-Based Theory of International Law' (2002) 90 *California Law Review* 1826, 1834; also see, Thomas M. Franck, 'Legitimacy in the International System' (1988) 82:4 *The American Journal of International Law* 705, 713–759.

53 Harold Hongju Koh, 'Why Do Nations Obey International Law?' (1997) 106 *Yale Law Journal* 2599, 2659.

54 K. M. Fierke, 'Constructivism' in Timothy Dunne, Tim Dunne, Milja Kurki anad Steve Smith (eds.) *International Relations Theories: Disciple and Diversity* (Oxford University Press, 2007) 167, 169.

55 M Finnemore and K Sikkink, 'International Norm Dynamics and Political Change' (1998) 52 *International Organization* 887, 903.

56 Martha Finnemore, *National Interests in International Society* (Cornell University Press, 1996); – and K Sikkink, above n 55; Alexander Wendt, 'Collective Identity Formation and the International State' (1994) 88 *American Political Science Review* 384; Jutta Brunnee and Stephen Toope, 'International Law and Constructivism: Elements of an Interactional Theory of International Law' (2000) 39

that international social structures themselves inform the behaviour of states and, hence, are central to bringing about compliance with international law. Another norm-driven approach to compliance is management. Managerialism[57] has developed a prominent management model of compliance with international commitments that is largely norm-driven. However, it also contains important rationalist themes, as it borrows from institutional theory to explain the interactions of states in international institutions.[58]

2.2.3 Realism

Realism is economistic in nature, meaning that compliance occurs where the benefits of doing so outweigh the costs. Most realists see rules 'per se as not affecting state behaviour, but as reflections of the interests of states exogenously determined'.[59] In other words, states will only comply with international law if they consider it in their interests to do so.

A more nuanced form of realism is the rational choice theory,[60] which is specific in explaining why states abide by international law. It emphasises the structure of

Columbia Journal of Transnational Law 19; Maja Zehfuss, *Constructivism in International Relations: The Politics of Reality* (Cambridge University Press, 2002); Harlan Grant Cohen, 'Can International Law Work? A Constructivist Expansion' (2009) 27 *Berkeley Journal of International Law* 278.

57 Abram Chayes and A. Handler Chayes, *The New Sovereignty: Compliance with International Regulatory Agreement* (Harvard University Press, 1995). They claim three factors affecting the propensity of states to comply with international law: (1) compliance avoids the need to recalculate the costs and benefits of a decision; (2) treaties are consent-based instruments that serve the interests of the participating states; (3) a general norm of compliance furthers state compliance in any particular instance. They argue that a compliance norm causes decision-makers to comply not out of fear of sanctions, but rather because the norm itself generates compliance pull.

58 Kal Raustiala, above n 41, 407.

59 Markus Burgstaller, *Theories of Compliance with International Law* (Nijhoff Publish, 2005) 95. See also, Hans J. Morgenthau, *Politics Among Nations: The Struggle for Power and Peace* (Alfred A. Knopf, 5th edition, 1973); Claire R. Kelley, 'Realist Theory and Real Constrains' (2004) 44 *Virginia Journal of International Law* 545; Louise Henkin, *How Nations Behave: Law and Foreign Policy* (Columbia University Press, 2nd edtion, 1979).

60 Andrew T. Guzman, *How International Law Works: A Rationale Choice Theory* (Oxford University Press, 2008); – 'A Compliance-Based Theory of International Law' (2002) 90 *California Law Review* 1826; Markus Burgstaller, *Theories of Compliance with International Law* (Nijhoff, Leiden, 2005), – 'Amenities and Pitfalls of a Reputational Theory of Compliance with International Law' (2007) 76 *Nordic Journal of International Law* 39; Kal Raustiala, above n 41; Joel P. Trachtman, *The Economic Structure of International Law* (Harvard University Press, 2008); – 'The Theory of Firm and the Theory of the International Economic Organization: Toward Comparative Institutional Analysis' (1997) 17 *Northwesten Journal of International Law & Business* 470; Jack L. Goldsmith and Eric A. Posner Kirkland & Ellis, *The Limits of International Law* (Oxford University Press, 2005); Jeffery L. Dunoff and

interests, power and incentives at play in the compliance of international law,[61] assuming governments are rational and self-interested.[62] Markus Burgstaller believes that compliance occurs where a state faces direct sanctions for noncompliance. Kal Raustiala suggests that providing 'reciprocal benefits to states can effectively, if imperfectly, promote compliance and that can be withdrawn in the event of noncompliance by another state'.[63] Jack Goldsmith and Eric Posner claim that 'international law emerges from states acting rationally to maximize their interests, given their perceptions of the interests of other states and the distribution of state power'.[64] Joel Trachtman applies the rational approach to evaluate why certain legal institutions emerge, which can also be regarded as rational choice institutionalism. He proposes four strategies for the allocation of transaction costs and suggests the establishment of a formal institutional mechanism for dealing with the reallocation of rights.

Guzman's perspective, sceptical of normative pressure, postulates that states are rational entities, self-interestedly striving to maximise their own interests without concern for the welfare of other states.[65] By attempting to clarify compliance within a rational choice framework, Guzman identifies three influential factors in state compliance: reciprocity, reputation and retaliation.

2.3 Alignment of Literature and Compliance Theory

Each theory identifies a distinctive set of variables that explain variation in state behaviours. The literature resonates with these compliance theories. The political aspects, such as domestic interests and the democracy of dispute parties, emphasize the role of domestic and institutional factors in line with liberal theory. Legal aspects

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Joel P. Trachtman, 'Economic Analysis of International Law' (1999) 24 *Yale Journal of International Law*; John K. Setear, 'Responses to Breach of a Treaty and Rationalist International Relations Theory: The Rules of Release and Remediation in the Law of Treaties and the Law of State Responsibility' (1997) 83 *Virginia Law Review* 1; Oona A. Hathaway and Ariel N. Lavinbuk, above n 46.

61 Mary E. Footer, above n 45, 68; Margaret R. Somer, 'We're No Angels: Realism, Rationale Choice, Rationality in Social Science' (1998) 104 American of Sociology 722, 722.

62 Jinyul Ju, 'Imaginary Risk, Public Health Regulation, and WTO Trade Dispute: A Rational Choice Perspective' 1:1 (2010) *Asian Journal of Law and Economics*.

63 Kal Raustiala, above n 41, at 401.

64 Jack L. Goldsmith and Eric A. Posner, above n 60, 3.

65 Andrew Guzman, *How International Law Works: A Rational Choice Theory* (Oxford: Oxford University Press, 2008) at 17. 'States, therefore, have no innate preference for complying with international law, they are unaffected by the 'legitimacy' of a rule of law (Franck 1995), past consent to a rule is insufficient to ensure compliance, and there is no assumption that decision-makers have internalized a norm of compliance with international law (Koh, 1997)'.

like the normative force of decisions and potential sanctions mirror the legitimacy theory. Furthermore, the third-party system embedded in WTO dispute settlement underscores the constructivism inherent in legitimacy theory. Legal capacity and the economic aspects resonate with realism theory.

The variables of liberal theory, along with the political aspects, pose a significant challenge for empirical analyses based on currently available data. As such, this study considers factors impacting MAS beyond mere political considerations. Notably, previous research frequently highlights the roles of economic power, sanctions, and associated costs.

Guzman's rational choice theory appears to be a more fitting approach for exploring the motivations of MAS when contrasted with rational choice institutionalism. The complaint and the respondent, as rational actors, are driven by their desire to maximize benefits (through reciprocity and enhanced reputation) and minimize costs (through avoidance of retaliation). These considerations offer crucial insights into the motivations underpinning the achievement of MAS. Further empirical studies could build on this theoretical framework to shed more light on the specific conditions and factors that facilitate MAS in WTO disputes.

In light of the literature and overview of compliance theories, the framework of rational choice provides a solid theoretical foundation to examine how the interplay of variable factors influences the achievement of MAS. It also paves the way for empirical studies to quantify these factors and examine their impact on MAS outcomes, thereby potentially improving the understanding of the motivations and patterns leading to MAS.

3 Empirical Analysis

Drawing inspiration from current literature and grounded in rational choice theory, this study differentiates itself from existing empirical research on this topic. Utilising a comprehensive dataset spanning from 1995 to 2018, this study covers a significantly longer sample period compared to prior research. While past empirical studies suggested that non-litigated disputes might have been resolved through mutual agreement, this research uniquely determines MAS based strictly on its official notification to the DSB. A probit model is employed to analyse both the officially notified MAS data and the non-litigated dispute data, aiming to ascertain if they yield comparable outcomes. Beyond economic size, this study also examines varied influences on MAS outcomes, encompassing past involvement in WTO disputes, reputation as the respondent and time cost. By integrating both economic and non-economic variables, the study offers a comprehensive view of the factors driving MAS outcomes.

3.1 Data

For the application of the probit model, the dependent variable indicates whether disputing parties use MAS to settle their international trade disputes. The independent variables represent factors influencing this decision.

3.1.1 Timeframe

The data was collected on WTO disputes from the establishment of the WTO in 1995–2018. It should be noted that the dispute process, from the establishment of a panel to the adoption of the panel or Appellate Body's report by the DSB, must take place within nine months where there is no appeal against the panel report or 12 months where the report is appealed to the Appellate Body.[66] Once a dispute runs its full course to a first ruling, the process normally takes no more than 12–15 months if the dispute is appealed.[67] As some disputes take longer than this, disputes from 2019 may have not yet been settled before the Appellate Body crisis and the COVID-19 pandemic. The blockage of Appellate Body appointments hindered the appeals mechanism, undermining the dispute resolution process. Concurrently, the pandemic led to trade restrictions and heightened tensions, further complicating dispute settlement. To ensure accurate representation and analysis, this study excludes WTO disputes after 2019.

3.1.2 Notified MAS and Non-Litigated Disputes

A MAS can be reached at various stages of dispute resolution. The initial stage involves bilateral consultations intended to offer a platform for the parties in dispute to negotiate an agreement. As stated in article 4:3 of the DSU, the Member, to which the request is made, is obliged to enter consultation in good faith within 30 days of receiving the request. Next, if the bilateral consultation does not successfully resolve the dispute prior to the establishment of a panel, the parties can also ask the WTO Director-General to mediate or try to help in any other way. Even if the dispute progresses to the stage of adjudication, the parties are also encouraged to continue their efforts to find a mutual concession. During the adjudication stage, the panel should consult regularly with the parties and give them adequate opportunity to develop a mutually satisfactory solution.[68] A MAS could be reached after the panel's formation, its composition, or even following the issue of an interim report.

66 Article 20 of the DSU.

67 See World Trade Organization, above n 1, at 59.

68 The DSU, Article 11.

Nonetheless, it is essential that a MAS be achieved before the final panel report is issued to parties. Once the panel report is issued, the system has lost its best chance to influence the respondent's stance where 'the anticipation of a ruling, but not its actualization, induces concession from a respondent'.[69] To secure sufficient time before issuing the final report, parties may request a panel suspend its work for a period not exceeding 12 months.[70] Such a pause typically enables parties to achieve a MAS.

According to the DSU, a MAS related to matters formally raised under the consultation and dispute settlement provisions of the covered agreements, must be notified to the DSB and the relevant councils and committees.[71] This notification is intended to inform any WTO Member who may raise concerns regarding the agreement, ensuring that the parties do not settle on terms that are detrimental to a third party or inconsistent with the WTO rules. Among 19 types of current dispute statuses,[72] 'withdraw or MAS', 'MAS on implementation notified' and 'mutually acceptable solution on implementation notified' indicate that a MAS has been notified to the DSB (see below Table 1).

Table 1: Notified MAS and non-litigated disputes.

	Current status	Notified	Non-litigated
1	Appellate Body report circulated	0	0
2	Authority for panel lapsed	0	1
3	Authorization to retaliate granted	0	0
4	Authorization to retaliate requested	0	0
5	Compliance proceedings completed with finding(s) of non-compliance	0	0

69 Eric Reinhardt, 'Adjudication without Enforcement in GATT Disputes' 45 Journal of Conflict Resolution 174 (2001), at 192.

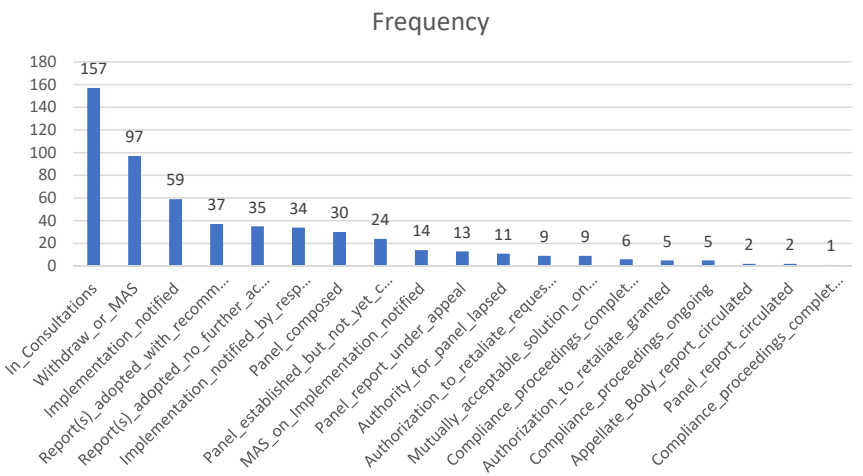
70 The DSU, Article 12: 12.

71 Article 3.6 of the DSU, 'Mutually agreed solutions to matters formally raised under the consultation and dispute settlement provisions of the covered agreements shall be notified to the DSB and the relevant Councils and Committees, where any Member may raise any point relating thereto'.

72 See general (arranged in alphabetic order), Appellate Body Report Circulated, Authority for Panel Lapsed, Authorization to retaliate granted, Authorization to retaliate requested, Compliance proceedings completed with finding(s) of non-compliance, Compliance proceedings completed without finding(s) of non-compliance, Compliance proceedings ongoing, Implementation notified, Implementation notified by respondent, In consultations, MAS on Implementation notified, Mutually acceptable solution on implementation notified, Panel composed, Panel established, but not yet composed, Panel report circulated, Panel report under appeal, Report(s) adopted no further action required, Report(s) adopted with recommendation, Withdraw or MAS.

Table 1: (continued)

	Current status	Notified	Non-litigated
6	Compliance proceedings completed without finding of non-compliance	0	0
7	Compliance proceedings ongoing	0	0
8	Implementation notified	0	0
9	Implementation notified by respondent	0	0
10	In consultations	0	1
11	MAS on implementation notified	1	1
12	Mutually acceptable solution on implementation notified	1	1
13	Panel composed	0	1
14	Panel established but not yet composed	0	1
15	Panel report circulated	0	0
16	Panel report under appeal	0	0
17	Report(s) adopted no further action required	0	0
18	Report(s) adopted with recommendation to bring measure(s) into conformity	0	0
19	Withdraw or MAS	1	1



Accordingly, it is important to consider that some non-litigated disputes may have reached a mutually satisfactory agreement in private but failed to report to the DSB.[73] As highlighted by Reinhardt's theoretical model, the chances of a respondent

73 Non-litigated disputes include disputes having the current status as 'in consultation', 'authority for panel lapsed', 'panel composed' and 'panel established but not yet composed'. As stated above, this research assumes that disputes before the end of 2016 should have been settled or withdrawn by the time of this research.

conceding are generally greater prior to a ruling than afterwards.[74] Previous empirical study have also revealed that a significant number of pending disputes, up to 43 %, have indeed been resolved in some way before litigation.[75]

However, it is possible that disputes remain pending without achieving a settlement. Complainants may choose not to pursue their initial complaint if they realize the issues have little merit or lack the resources or knowledge to move forward with the process.[76] It is also challenging to determine whether the removal of an inconsistent measure by the respondent resulted from the concession to the complainant without further internal information. Consequently, distinguishing between disputes settled by a MAS and those that are still pending or terminated can be difficult.

As shown in Table 1, WTO disputes encompass 19 distinct status types. For the purposes of the probit model in this study, a status of "MAS achieved" is denoted by 1, and "non-MAS" by 0.

Previous research treated non-litigated disputes as settled, incorporating seven status types. Beyond the statuses of notified MAS (11, 12, 19), previous research presumed non-litigated disputes to be settled if their statuses were 'Authority for panel lapsed' (2), 'In consultation' (10), 'Panel Composed' (13), or 'Panel established but not yet composed' (14). While it's plausible that non-litigated cases reached a resolution, especially if several years passed without status updates, this classification might not be entirely accurate. Consequently, this research utilises the probit model to evaluate two datasets: notified MAS with 120 samples (11, 12, 19) and non-litigated disputes with 342 samples (11, 12, 19, 2, 10, 13, 14).

To ensure the validity and integrity of the findings, this study takes a cautious approach. It neither considers all non-litigated disputes as achieving a MAS nor disregards them. Unlike previous empirical studies mixing notified MAS and non-litigated disputes, this study first analyses notified MAS disputes and subsequently incorporates non-litigated disputes to assess whether their inclusion affects the results. While it is impossible to eliminate all sources of selection bias, the aim is to define a specific scope to minimize bias in the analysis.

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74 See Reinhardt, above n 69, at 190. In particular, the probability of full concessions by the respondent jumps an average of 27 % after a panel is established, but it drops 18 % if the panel rules for the complainant and 55 % if the panel rules for the respondent.

75 Kara M. Reynolds, 'Why Are So Many WTO Disputes Abandoned?' 6 Frontiers of Economics and Globalization 191 (2009), at 193.

76 Ibid, at 200.

3.2 Independent Variables

Inspired by the literature and based on the rational choice theory, this study will focus on economic size, sanctions, transaction cost, and reputation, rather than the influence of political aspects and legal norms.

3.2.1 Beyond Political and Normative Considerations

Considering the factor of domestic interests can indeed be intricate, especially when this study is dealing with 550 WTO disputes. Domestic interests can vary widely between countries and across different issues within a single country. Moreover, domestic interests are influenced by politics, parties, and social, economic, and cultural contexts, which can be challenging to quantify and generalise in large-scale analysis. It's difficult to create variables that capture the complexities of domestic interests across different countries and disputes. Data on domestic interests may not be readily available and might require a significant amount of time and resources to collect.

The notion that democratic countries and open economies are more likely to achieve a MAS is based on the argument that 'unobserved pressures from industrial constituents motivate complainants to file for dispute settlement and these pressures are highly correlated with democracy'.[77] This argument reflects liberal theory that emphasizes the existence of domestic factors and structures when explaining external behaviour. Accordingly, Busch contends that the lack of a paper trail is helpful in providing the disputants with some cover from audiences at home and abroad, and electoral concerns through audience costs explain why democracies and open economies are more likely to make concessions at the concession stage than at the panel stage.[78] However, if pressure from domestic factors compels the government to file for dispute, they may expect to prosecute disputes in full public view with transparency because of their democratic institutions and open economy. Although the propensity for democracies to escalate disputes to a panel cannot be confirmed, some democratic countries do not prefer to settle disputes by mutual agreement. For example, Japan had by far the highest percentage of disputes conceded and Canada had the lowest settlement rate, yet both Japan and Canada can be regarded as democracies and opening markets.[79]

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77 See Busch, above n 12, at 432.

78 Ibid, at 443.

79 Robert E. Hudec, above n 5, 301. Although Japan is 'an economic giant … its traditional isolation and its relatively closed society and economy [have led Japan] to avoid confrontational extremes in litigation and to settle complaints against it wherever possible'. Until the end of 2014 Canada was the respondent in 18 disputes of which one was settled mutually (5.6 %); Japan was the respondent in 15 disputes of which four was settled via MAS (26.7 %).

When contemplating the role of legal norms in dispute resolution under the legitimacy theory, it is often assumed that parties strive to achieve a MAS based on previously agreed WTO rules for normative compliance. Accordingly, referring disputes to a panel merely formalizes the agreed-on outcome and is seen as a result, not a causative factor or the decision to cooperate.[80] This view, however, holds inconsistencies. WTO disputes often arise when a respondent fails to uphold commitments agreed upon in earlier negotiations. If the respondent fails to comply with its WTO obligations, it will not reach a MAS based on the norm of WTO rules because it has already chosen to break them. Besides, the existence of a dispute implies a conflict of interest and not a harmonious relationship. The norm itself is not an independent basis of conforming behaviour; rather it needs to operate in the face of an underlying power contest.

3.2.2 Comparative Economic Size

When considering the economic sizes of dispute parties, Ahn, Lee, and Park hypothesize that a larger discrepancy in the economic sizes between disputing parties reduces the likelihood of avoiding litigation. Colares, on the other hand, suggests that the overall trade volumes of the dispute parties may not have an impact on the settlement. It's suggested that a higher GDP for either the complainant or the respondent may be associated with an increase in disputes, but not necessarily with an increase in resolved disputes, indicating that GDP itself doesn't directly influence concessions.

In the context of rational choice theory, considering transaction costs and the potential costs of retaliation, this study proposes that a complainant's capacity to levy costs through retaliation can bolster the probability of cooperation in multilateral trade negotiations. In simpler terms, if the complainant's economic strength surpasses that of the respondent, the threat of retaliation could significantly influence the likelihood of achieving MAS.

Unlike previous research, this study quantifies economic size by considering several indicators of the GDP ratio, per capita GDP, and the trade volume of the disputing parties. The GDP ratio between the two parties highlights the difference in the sizes of the two economies, while the per capita GDP ratio reflects the disparity in population wealth. To prevent multicollinearity, the GDP ratio and the per capita GDP ratio are not included in the same equation. Besides the economic strength and wealth of the dispute parties, the trade volume is also a key variable. This is evaluated

80 George W. Downs, David M. Rocke, and Peter N. Barsoom, 'Is the good news about compliance good news about cooperation?' 50(3) International Organization 379 (1996), at 401.

by dividing the trade volume of the complainant by that of the respondent, providing a relative measure of the trade power between the two parties.

3.2.3 Experience in WTO Litigation

Apart from the economic size, this research hypothesizes that a Member's past involvement in WTO disputes as a disputing party, referred to here as the Members' experience, may directly influence the likelihood of reaching MAS. This study assumes that an experienced dispute party (either as complainant or respondent) may have a low willingness to settle a dispute amicably because the rich experience may increase the possibility of winning and reduce the relevant cost of litigation.

A Member with substantial dispute experience might have a thorough understanding of the mechanism, along with an enhanced knowledge of strategies and tactics that can be employed during negotiations. As a result, such Members could be more inclined to litigate, driven by the belief in a higher chance of a favourable outcome, potentially reducing their willingness to agree to a mutual settlement. However, experienced Members might have a deeper understanding of the costs and benefits associated with prolonged litigation, and therefore, might be more open to negotiating a MAS to minimize unnecessary expenditure of resources. Besides, their extensive experience could lead them to push for a win, especially if they have a successful track record in past disputes.

A quantitative indicator is applied to measure the number of WTO disputes in which a Member has been engaged as the complainant and the respondent. To define the independent variable, the experience of a complainant can be calculated as the sum of 'C as C' (as the complainant) and 'C as R' (as the respondent). Correspondingly, the experience of a respondent can be calculated as the sum of 'R as C' (as the complainant) and 'R as R' (as the respondent).

3.2.4 Reputation as the Respondent

A member's experience as a respondent in the WTO disputes, which may be perceived as a reputation of being a rule violator, may also impact the achievement of a MAS. This study hypothesizes that if a Member does not have a good reputation for compliance it may have a low willingness to settle a dispute amicably.

One main driver is the desire to avoid developing a reputation for easy compromise and they may fear that agreeing to a MAS may be seem like an admission of guilt. Repeatedly seeking mutual settlements might be interpreted by other WTO members as a sign of weakness, potentially undermining the Member's bargaining position in future disputes. In essence, they could become an easier target for complaints, as other members might assume that they would be more inclined to

settle disputes amicably to avoid further litigation. This could lead to an increased number of disputes directed towards them, with the belief that these disputes can be settled with less resistance.

Furthermore, such experienced Members might be less concerned with preserving a positive reputation for compliance. They might instead focus on demonstrating their resilience and steadfastness in the face of disputes, seeing this as a more important aspect of their international trade persona. Members may regard the maintenance of their stance and the defence of their policies as paramount, even in the face of potential rule violation allegations. Therefore, they may opt to engage in full dispute settlement proceedings rather than pursuing an MAS, viewing the potential outcome as a reinforcement of their position, regardless of the result.

A quantitative indicator is also applied to measure a Member's reputation. The reputation variable is calculated as 'C as R' for the complainant's reputation and 'R as R' for the respondent's reputation. C's and R's experience refers to the total number of disputes involved as either complainant or respondent, while C's and R's reputation only calculates the number of disputes involved as respondent.

Previous empirical studies have not fully investigated this aspect of WTO dispute resolution, and consequently, this study uses the Granger Causality Test to explore whether a member's dispute experience and reputational standing can forecast the probability of achieving a MAS (see Table 1).

3.2.5 Costs in Time

Litigation itself imposes costs from multiple sources on both the complainant and the respondent. These costs include legal fees, time expenditure, economic losses from drawn-out disagreements, administrative resources, and even potential opportunities. Parties can minimize these costs by reducing the time on litigation and opting for MAS.

Dispute parties incur fees for investigation, data collection, economic analysis, a conservative estimate of attorney fees, hiring of an expert witness for testimony, travel, accommodation, communication, and paralegal and secretarial assistance during the pre-litigation stage.[81] Taking attorney fees as an example, the cost of legal services might run to 89,950–247,100 USD[82] or more for complex cases. For example, in *Japan–Measures Affecting Consumer Photographic Film and Paper* dispute,[83]

81 Chad P. Bown and Bernard M. Hoekman, 'WTO Dispute Settlement and the Missing Developing Country Cases: engaging the private sector' 8(4) Journal of International Economic Law 861 (2005), at 870.

82 Ibid, at 870. Even though Advisory Centre on WTO Law was set up to provide legal counselling to developing and less developed countries on a reduced-cost basis, members need to make a one-time contribution to the endowment fund and pay the cost of other things.

83 *Japan–Measures Affecting Consumer Photographic Film and Paper* DISPUTE DS44.

lawyers charged Kodak and Fuji legal services fees in excess of 10 million USD.[84] Resolving a dispute also involves a considerable amount of administrative work, from documentation and paperwork to communication and coordination. Most crucially, disputes can disrupt normal trade relations, which can lead to economic losses for both parties. In some cause, these losses can outweigh the potential benefits of winning the disputes.

Trade disputes can be complex and long-lasting affairs. Lengthy litigation processes can be incredibly draining and can disrupt normal trade relations for an extended period. The longer a dispute lasts, the more cost and resources are drained. Since the costs of each dispute are unable to be calculated, this study chooses to apply the time duration of a dispute as a quantitative measure to present the costs of being involved in a dispute.

The time duration is calculated as the difference between the end date (reports adopted, no further action required) and the start date (consultation requested). However, a few disputes do not have an end time according to the WTO website.[85] Because of 296 missing values for the end time, only 277 samples (the sub-sample) are assessed by adding the time duration as an independent variable.

3.3 Empirical Model

In economic modelling, a probit model is frequently employed when the dependent variable represents the probability of an event occurrence and is binary in nature. The dependent variable Y can have only two possible values; denoted as 1 and 0.

$$P(Y=1)$$

In such a model, the dependent variable is formed as a linear combination of the independent variables X, where β is a vector of unknown parameters. The dependent variable on the left side of the econometric equation relies on the independent variables on the right side of the equation.

$$P(Y=1) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \varepsilon$$

In this equation, the X_1, X_2, …, X_n are the independent variables. The coefficient of each independent variable measures how the independent variable influences the dependent variable. The disturb term is supposed to have a normal distribution.

84 Gregory Shaffer, 'How to Make the WTO Dispute Settlement System Work for Developing Countries' (ICTSD Resource Paper No. 5, March 2003) at 16.

85 WTO, 'Chronological list of disputes cases' https://www.wto.org/english/tratop_e/dispu_e/dispu_status_e.htm.

When used with a binary dependent variable, this model is known as a linear probability model and can be used to describe conditional probabilities.

In this paper, the dependent variable is the probability that dispute parties will choose to achieve a MAS. The outcome dependent variable is binary: *Y* is 1 if dispute parties choose to settle via a MAS, otherwise 0.

Before adding these variables into the probit model, the Granger Causality Test is applied to examine the causality relationship. The test applies the null hypothesis that Members' experience and reputation have no Granger cause on the possibility of achieving MAS. If the *P* value is relatively small, the null hypothesis should be rejected.

The result of Granger Causality Test in Table 1 shows that the *P* values of all four tests are less than a significant level of 20 % and the null hypothesis should be rejected. It means Members' experience and reputation are probably the Granger causes of achieving MAS, which ensures their involvement in the probit model as independent variables.

To avoid multicollinearity, it is also necessary to apply the correlation coefficient to measure the linear relationship between two variables. The correlation coefficient is 1 between the same two variables. If two variables have high correlation coefficients, the two variables cannot be put into one probit model econometric equation.

Table 2 shows that the correlation coefficient between C's experience and C's reputation is large (0.9875), so C's experience and C's reputation cannot be put in an econometric equation at the same time without risking multicollinearity. Similarly, the large correlation coefficient (0.9897) also shows that R's experience and R's reputation should not be used in an econometric equation at the same time.

If the value of a correlation coefficient is between –1 and –0.8 or between 0.8 and 1, it means the two variables have strong linear relationship, either positive or negative. If the value of a correlation coefficient is between –0.2 and 0.2, it means the two variables probably have no linear relationship. If the value of a correlation coefficient is between –0.8 and –0.2 or between 0.2 and 0.8, it means no sufficient evidence can conclude the linear relationship between these two variables.

Table 2: The result of Granger Causality Test.

Null hypothesis	*P* value
Complaint's experience does not Granger cause MAS	0.0630
Complaint's reputation does not Granger cause MAS	0.0814
Respondent's experience does not Granger cause MAS	0.1933
Respondent's reputation does not Granger cause MAS	0.1872

Note: Experience includes the total number of being involved in WTO disputes either as a complaint or respondent; Reputation only includes the number of being involved in WTO disputes as a respondent.

Table 3: Correlation coefficients for experience and reputation variables.

	Complainant's reputation	Respondent's reputation	Complainant's experience	Respondent's experience
Complainant's reputation	1			
Respondent's reputation	0.0076	1		
Complainant's experience	0.9875	−0.0143	1	
Respondent's experience	−0.0162	0.9897	−0.0373	1

Note: The value of a correlation coefficient is between −1 and 1. A positive correlation coefficient means the two variables has positive linear relationship, which means the two variables change in the same direction. A negative correlation coefficient means the two variables has negative linear relationship, which means the two variables change with the opposite direction.

4 Empirical Findings

4.1 Probit Model Results

As stated above, a MAS can be defined narrowly, by including only notified MAS or broadly by including non-litigated disputes.[86] Because of the different scope of data, the probit model is applied to assess data for notified MAS (Table 4) and data for non-litigated disputes (Table 5) separately. To avoid the problem of multicollinearity, the assessment involves different combinations of independent variables. Generally, the ratio of GDP and the ratio of per capita GDP cannot be included in the same model, nor can C's/R's experience and C's/R's reputation.

The models presented in Table 4 are divided into six combinations. Model 1 zeroes in on the independent variables: GDP ratio, trade ratio, and the experience of both complainant (C) and respondent (R). Conversely, Model 2 is centred on GDP, trade ratio, and the reputation of both C and R. Model 3 prioritizes the independent variables per capita GDP ratio, trade ratio, and the experience of both C and R, while Model 4 zeroes in on the per capita GDP ratio, trade ratio, and the reputation of both C and R. Models 5 and 6 echo Models 1 and 2 but utilize the sub-sample and include time as an independent variable. To check for robustness, a broad definition of MAS is used to test the models in Table 4. The assortment of independent variables in Table 4 mirrors that in Table 3, but the data scope is focused on non-litigated disputes.

4.1.1 Probit Model Result for Notified MAS

Table 4 presents significant findings for certain independent variables: GDP ratio, the complainant's and respondent's experience and reputation (noted as $^{**}p < 0.05$,

86 The scope of non-litigated disputes, above n 73.

Table 4: The probit results for notified MAS.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
GDP ratio	0.00590** (2.37)	0.00564** (2.29)			0.00530* (1.70)	0.00534* (1.72)
Trade ratio	0.0127 (0.23)	0.00924 (0.17)	−0.00733 (−0.13)	−0.0116 (−0.21)	0.0246 (0.32)	0.0150 (0.20)
C's experience	−0.00401*** (−3.43)		−0.00370*** (−3.23)		−0.00339** (−2.24)	
R's experience	−0.00259*** (−2.64)		−0.00291*** (−2.95)		−0.00215 (−1.52)	
C's reputation		−0.00800*** (−3.42)		−0.00764*** (−3.30)		−0.00679** (−2.26)
R's reputation		−0.00493** (−2.53)		−0.00545*** (−2.78)		−0.00338 (−1.20)
GDP per capita ratio			0.00482 (0.92)	0.00516 (0.99)		
Time					−0.000118 (−1.24)	−0.000130 (−1.37)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
N	550	550	550	550	277	277

Notes: (1) In each mode, the blank means the independent variable is not included in the Mode. (2) GDP ratio: ratio of GDP of dispute parties; Trade ratio: ratio of trade volume of dispute parties; C's experience: the number of disputes the complainant involved in as the complainant and the respondent; R's experience: the number of disputes the respondent involved in as the complainant and the respondent; C's reputation: the number of disputes the complaint involved in as the respondent; R's reputation: the number of disputes the respondent involved in as the respondent; GDP per capita ratio: ratio of GDP per capita of dispute parties; time: the time of litigation. (3) A positive number means the independent variable has a positive relationship with the dependent variables; a negative number means the independent variable has a negative relationship with the dependent variables. (4) $*p < 0.1$, $**p < 0.05$, $***p < 0.01$ (p stands for the P value). The lower the P value is, the more the correspondent independent variable influences the dependent variable significantly. The P value without a star means the influence of the correspondent independent variable is not significant. The P value with a star(s) means the influence of the correspondent independent variable is significant. The number of stars represents the level of significant influence. (5) The numbers in parentheses mean the standard error of the corresponding coefficient number. (6) N is the sample number, which means the number of cases or observations. (7) Constant means the probit models all have intercept terms.

Table 5: The probit result for non-litigated disputes.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
GDP ratio	0.00286 (1.10)	0.00297 (1.14)			0.00339 (1.12)	0.00331 (1.10)
Trade ratio	0.0363 (0.72)	0.0314 (0.61)	0.0351 (0.70)	0.0296 (0.58)	0.0106 (0.14)	0.00645 (0.08)
C's experience	−0.00140 (−1.58)		−0.00102 (−1.13)		−0.00343** (−2.32)	
R's experience	−0.00168** (−2.08)		−0.00216*** (−2.68)		−0.00230* (−1.65)	
C's reputation		−0.00246 (−1.42)		−0.00180 (−1.02)		−0.00649** (−2.22)
R's reputation		−0.00263* (−1.67)		−0.00351** (−2.24)		−0.00404 (−1.45)
GDP per capita ratio			−0.00648 (−1.30)	−0.00589 (−1.19)		
Time					−0.000173* (−1.83)	−0.000182* (−1.92)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
N	550	550	550	550	277	277

Note: The econometric models in Table 4 are the same as Table 3, but Table 4 assesses non-litigation WTO disputes.

***$p < 0.01$). However, other variables, such as the trade ratio, per capita GDP ratio and time are not significant ($p < 0.1$).

4.1.1.1 Economic Size

The positive correlation for the GDP ratio suggests that MAS is more likely when the complainant's GDP is larger than that of the respondent. Conversely, the possibility of reaching a MAS diminishes if the respondent's GDP surpasses that of the complainant. These findings corroborate the hypothesis that the chance of achieving a MAS is dependent on the economic size of both the complainant and respondent, not solely the economic size of the complainant or the respondent.

Despite the initial expectations, the *P* value of the trade ratio is not significant across all models. This contradicts the hypothesis that the trade volume of the complainant and the respondent may affect the likelihood of achieving a MAS.

When replacing the GDP ratio with the per capita GDP ratio, the findings are insignificant. A comparison of coefficients for the GDP ratio and per capita GDP ratio indicates that the economic size of the parties – rather than their per capita GDP – influences the likelihood of achieving a MAS.

4.1.1.2 Experience in WTO Dispute

The experience of both the complainant and the respondent has a significant negative effect on the probability of achieving MAS in all six modes. This implies that parties are less inclined towards settling a dispute amicably when they have a certain experience of WTO disputes prior to the current dispute.

4.1.1.3 Reputation as the Respondent

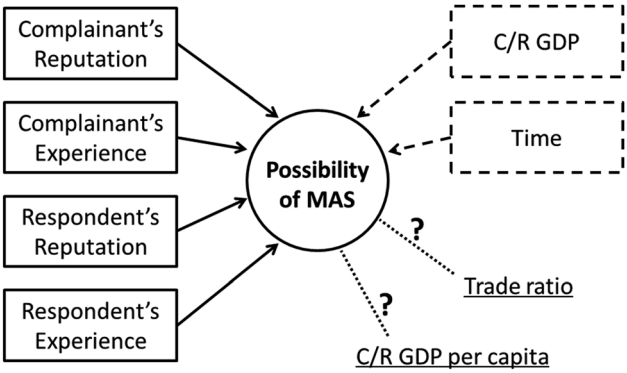
Furthermore, the complainant's and respondent's reputations also exhibit a significantly negative relationship with the probability of achieving a MAS. If a Member has a history of involvement in several disputes as the respondent, they are less likely to achieve a MAS, regardless of their role (complainant or respondent) in the current dispute.

4.1.1.4 Time

Lastly, the coefficient for the variable "time" in the sub-sample model is near zero and insignificant. This suggests that the duration of WTO litigation doesn't influence the probability of attaining a MAS.

4.1.2 Probit Model Results for Non-Litigated Disputes

The probit outcomes in Table 5 echo some findings from Table 4. The coefficients for experience and reputation remain negatively significant, though not to the same



Graph 1: The result of probit model.

degree as in Table 4. The variables for trade ratio and per capita GDP ratio remain insignificant as well.

However, a divergence from Table 4 is observed with the GDP ratio not being significant, while the time cost becomes significant in Table 5. Given that the results of each table can be used to verify the robustness of the other, the findings on the variables of experience and reputation can be considered robust. In contrast, the results regarding the GDP ratio and time cost variables appear to lack robustness.

The results presented above are summarised in Graph 1. The variables of C's/R's experience and C's/R's reputation are significant variables affecting the possibility of achieving MAS, and these findings have passed the test of robustness. While the variables of the GDP ratio and time cost didn't pass the robust test, they still might influence the achievement of MAS to some extent, given that GDP ratio is significant in Table 4 and time cost in Table 5. However, the trade ratio and GDP per capital variables consistently showed no significance across all models, suggesting they might not influence the achievement of MAS.

Previous research concentrated on how the economic size, evaluated by GDP and trade volume, impacts the likelihood of achieving MAS. To verify the robustness of models, this study considers indicators of GDP ratio, GDP per capita ratio, and trade ratio, and introduces distinct scopes of MAS including notified MAS and non-litigated disputes. The findings of this research align with existing literature to an extent, suggesting that economic size may impact the achievement of MAS. The findings reveal that the economic size's effect on MAS predominantly relates to the GDP ratio of disputing parties, rather than trade volume or GDP per capita.

Drawing from the rational choice theory, this study considers other influential factors, such as the disputing parties' prior experience with WTO disputes, the reputation associated with being the respondent alleged to breach the WTO rules,

and the time cost. Uniquely, this is the first study to employ a quantitative method to test the hypothesis of how experience and reputation impact the achievement of MAS. The findings indicate that the variables introduced in this study are the most robust and consistent in influencing the likelihood of outcomes. It substantially develops the current literature on dispute settlement, providing a deeper understanding of the variables that can impact the achievement of MAS.

4.2 Empirical Evidence of the Role of Rational Choice Theory in Choosing MAS

The GDP ratio, which indicates the relative economic size of the disputing parties, appears to influence the likelihood of achieving a MAS. The data suggests that a MAS is more probable when the complainant's GDP is larger than the respondent's GDP. However, the likelihood of achieving a MAS decreases when the respondent's GDP exceeds that of the complainant. These results can be interpreted in terms of rational choice: a complainant will take into account its own economic standing and the potential impact of its sanctions on the respondent. If the complainant is a country with a smaller, weaker economy, the costs associated with retaliation may be prohibitive, leading to a diminished incentive to impose sanctions. As a result, the threat of sanctions often reduced. From the respondent's perspective, the credibility of the threat of retaliatory sanctions is critical. This credibility is partially determined by the complainant's capacity to effectively penalize non-compliance. In essence, for retaliation to be effective, the respondent or violator must perceive the threat of punishment as credible, and the intended penalty must have a significant impact on the violator's benefits or exceed the benefits gained from non-compliance. This intersection of empirical data and theoretical constructs illuminates the intricacies of decision-making within the framework of rational choice theory in WTO disputes.

The empirical findings indicate a correlation between a Member's history of involvement in disputes as a respondent and their likelihood of achieving a MAS. This is irrespective of whether they serve as a complainant or respondent in the current dispute. Members' reputation for compliance is formed through assessments of their past conduct and projections of future adherence based on those assessments. Given that states understand their conduct in one dispute can influence perceptions and negotiations in subsequent disputes, they were supposed to be motivated to sustain a positive reputation for compliance. On the opposite, they might be less concerned with preserving a positive reputation for compliance. They may fear the achievement of a MAS might signify an admission of guilt and indicate a propensity for easy compromise, thereby undermining future bargaining positions. Thus, they might opt for full dispute settlement proceedings over MAS.

Members with substantial experience in WTO disputes may exhibit a decreased inclination towards achieving amicable dispute resolutions. This observation is in line with the principles of reciprocity embedded within rational choice theory. In essence, these experienced members may have developed refined strategies and skills over the course of their involvement in previous disputes, fostering a belief that they can effectively navigate and possibly gain an advantage in the WTO's adversarial dispute resolution process. This belief might lead them to opt for full dispute proceedings rather than pursuing a mutually agreed solution, viewing this approach as potentially more beneficial in their reciprocal interactions within the WTO framework.

The cost of litigation qualified by time does not show any significance. Parties might not primarily consider the time cost of litigation as a determining factor in deciding the achievement of a MAS. They may instead focus on their mutual and reciprocal interactions, aiming to maintain a balanced exchange in the long run. Hence, they might choose to fully engage in the dispute resolution proceedings, despite the extended duration and associated time costs, if they believe this approach will uphold their interests and maintain their bargaining power in future disputes. This suggests a strategic calculation beyond immediate costs. There are opportunity costs associated with devoting resources to the litigation and in terms of other tasks not carried out. Disputes may also lead to political costs that arise domestically for a government in terms of public approval towards such a diplomatic conflict;[87] harm relationships between states through reduced future benefits; and threaten the political standing of national leaders.[88]

5 Conclusion

In conclusion, the factors influencing the achievement of a MAS in WTO disputes go beyond political considerations and involve a complex interplay of economic size, experience in WTO litigation, and reputation as a respondent.

The economic size of the disputing parties, as measured by GDP ratios of the complainant and the respondent, plays a significant role in the likelihood of reaching a MAS. Rational choice theory suggests that a complainant's economic strength relative to the respondent can influence the probability of cooperation. If the complainant's economic power exceeds that of the respondent, the threat of retaliation through sanctions becomes more credible, potentially increasing the chances of achieving a MAS. On the other hand, when the respondent's GDP surpasses that of the

87 Ibid.

88 See Guzman and Simmons, above n 35, at 208.

complainant, the likelihood of reaching a MAS decreases. These findings highlight the importance of economic considerations in decision-making during WTO disputes.

Experience in WTO litigation also influences the likelihood of reaching a MAS. Members with a history of involvement in disputes may have a lower willingness to settle amicably due to their enhanced knowledge of strategies and tactics employed during negotiations. While experienced members might be more inclined to litigate, driven by the belief in a higher chance of a favourable outcome, their understanding of the costs and benefits associated with prolonged litigation could make them more open to negotiating a MAS to minimize resource expenditure. The balance between seeking a win and recognizing the costs of extended litigation plays a crucial role in determining the approach taken by experienced Members.

A member's reputation as a respondent, which may be perceived as a rule violator, can also impact the achievement of a MAS. Members with a reputation for non-compliance may have a low willingness to settle disputes amicably to avoid developing a reputation for easy compromise. They may prioritize demonstrating resilience and steadfastness, even at the cost of prolonged dispute settlement proceedings. The desire to maintain a positive reputation for compliance and the fear of being seen as weak or admitting guilt contribute to the decision-making process.

Although litigation imposes significant costs in terms of legal fees, time expenditure, economic losses, and administrative resources, the cost of time itself does not show a significant influence on the achievement of a MAS. Parties may prioritize their mutual and reciprocal interactions and focus on maintaining a balanced exchange in the long run. They might choose to engage fully in dispute settlement proceedings, even with extended durations and associated time costs, if they believe it will uphold their interests and bargaining power in future disputes. The strategic calculation extends beyond immediate costs, taking into account opportunity costs and potential political consequences.

Understanding these factors and their influence on the likelihood of achieving a MAS in WTO disputes is essential for policymakers, negotiators, and researchers. The empirical evidence presented in this study provides valuable insights into the decision-making processes involved in dispute resolution, shedding light on the complex dynamics beyond political considerations. By considering these factors, stakeholders can better navigate the dispute settlement process and work towards mutually agreeable solutions that promote fair and equitable international trade.