Dispute Settlement Mechanisms and Power Asymmetry in Regional Trade Agreements

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Abstract

Rosendorff (2005) argues that the WTO's legalized dispute settlement mechanism (DSM) enhances the stability of the trade system by allowing occasional violations which do not necessarily entail the violator's withdrawal from the treaty. Therefore, an agreement with a DSM trades off lower per-period cooperation for the smaller per-period probability of breakdown, thereby bringing less rigidity as well as more stability into the WTO system. I apply his game-theoretic model to regional trade agreements (RTAs) where the issue of power asymmetries seems more salient than in the WTO's dispute resolution. Notwithstanding the recent surge in regionalism, dispute settlement mechanisms (DSMs) in RTAs are much less in use than that of the WTO. The structural analysis demonstrates that DSMs in RTAs yield increased levels of power disparity by providing differential levels of flexibility to stronger and weaker member countries. The gains in flexibility of stronger countries do not necessarily improve the structural stability of the regional trade system, because of the significant losses sustained by weaker countries. Therefore, the legal mechanism of dispute settlement generates a trade-off in gains between large and small countries in RTAs instead of the trade-off between "rigidity and stability" found in the WTO's DSM. This finding illustrates that the relative disuse of a RTA-DSM results from the superiority of the WTO-DSM in minimizing inequality across countries with power asymmetry. It also implies that despite the resurgence of regionalism, multilateralism might survive.

1 Introduction

Along with the rise of global economic interdependence, Regional Trade Agreements (RTAs)[1] have become increasingly common in the international trade system after the end of the Second World War. RTAs have spread throughout the world across continents and among states with

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[1]In this paper, the term "regional trade agreements (RTAs)" is used to refer to all types of non-multilateral agreements: free trade areas, customs unions, common markets, and economic unions. It also includes international trade pacts across different regions such as EU-Mexico and Korea-Chile.

economies of varying sizes.[2] Most nations are involved in one or more RTAs; even nations without any RTAs are not completely outside the range of RTAs. Even if states are not members of RTAs, they are impacted by RTAs. As Bhagwati (1995) has put it, we now live in a world like a "spaghetti bowl" where every nation is connected with different types of RTAs in a very complex way.

The first generation of regionalism represented inward-looking economic policies of import-substitution, which led to exclusive regional integration among developing countries during the 1960s (De Melo, Panagariya, and Rodrik 1993). Since the early 1990s, the rapid increase in the formation of RTAs is considered the emergence of a "new regionalism" which differs from the regionalism of the 1960s regarding its outward-oriented policies as well as comprehensive membership across countries with different levels of development. This second generation of regionalism involves increasing participation of relatively small countries. Beyond traditional gains, the special focus on the perspectives of small countries allows various roles of RTAs such as momentum to domestic policy reform, an insurance to ensure access to large markets, and a strategic linkage for security arrangement (Perroni and Whalley 1994; Whalley 1996). Some people argue that the rising number of small countries in RTAs results from the "innocent bystander problem," in which small countries in a natural trading region might suffer from extremely high cost by being an innocent bystander when they do not join RTAs (Kose and Riezman 2002; Krugman 1991; Nordström 1995). Baldwin and Jaimovich (2012)'s empirical test found that the "contagion/domino effect" of regionalism is present.

A large body of literature in the study of RTAs focuses on the debate over their relationship with multilateral trade systems and on their impact on national economic welfare. Some scholars argue the proliferation of regionalism works against multilateralism such that Bhagwati and Krueger (1995) considered this trend a threat to liberalization of the world trading system, calling it a "mistake". However, Summers (1991) suggests that there are significant positive effects from greater levels of regional integration (Levy and Srinivasan 1996). There are some studies on the issue of "legalism" of RTAs regarding domestic political factors and international institutional factors (Chase, Yanovich, Crawford, Ugaz, and WTO 2013; Jo and Namgung 2012; Smith 2000).

Previous studies found that the WTO-DSM has been used more frequently than RTA-DSMs.[3] Davey (2006) describes that this disparity in use concludes that a WTO-DSM is more legitimate and effective than the DSMs found in RTAs. The relative disuse of RTA-DSMs does not mean that an analysis of RTA-DSMs is unimportant; rather, this empirical regularity of disuse leads to the puzzle of this paper. The puzzle between the surge of regional trade agreements and the DSMs in RTAs in much less use brings us to questions this paper investigates: (1) why do states design the DSMs in RTAs the way they do?; and (2) why do the DSMs in RTAs generate the outcomes they generate?

Seeking answers to those questions, this paper compares the design and effects of DSMs in

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[2]According to the WTO database, "some 575 notifications of RTAs had been received by the GATT/WTO, as of 31 July 2013. Of these, 408 notifications were made under Article XXIV of the GATT 1947 or GATT 1994; 38 under the Enabling Clause; and 129 under Article V of the GATS. Of these 575 RTAs, 379 were in force."

[3]Some might argue that the NAFTA-DSM has been used to some extent. However, the success of its use is far from clear.

RTAs with those in the WTO with a focus on the structure of the DSMs. Regarding the role of the WTO's DSM, Rosendorff (2005) argues that the DSM brought more flexibility to the multilateral system, which helped enhance the structural stability of the trading system. I expand Rosendorff's game theoretic model of the WTO's DSM to the DSMs found in RTAs in order to examine the role of DSMs in RTAs in the disputes among countries that are asymmetric in their market power. The game theoretic model of regional trade games allows us to analyze strategies of member states and shows that the DSMs in RTAs generate disparity in the extent of flexibility allowed to asymmetric member countries. Therefore, this study brings us to what lies at the root of relative disuse of RTA-DSM and further, the implications of the cause of the lack of use of RTA-DSMs.

This paper is structured as follows. After discussing previous research on the dispute settlement mechanisms in international trade agreements in section 2, I introduce the basic setup of Rosendorff's model and describe the dispute settlement strategies for the member states of the WTO in section 3. In section 4, I extend his model for the WTO's DSM to the DSMs used in RTAs and discuss what factors alter the dispute settlement strategies of RTA member countries. Section 5 concludes with some implementation issues of DSMs in RTAs that may arise.

2   Previous Research on Dispute Settlement Mechanisms

While regionalism gathered momentum over the last two decades, the legalization of international institutions also attracted the attention of academics as another salient trend in international trade systems. Legalization through the development of Dispute Settlement Mechanisms (DSMs) has been examined regarding the effect of legalized international trade organization on the stability of the system and the goals of the institution, i.e., enhanced international cooperation and trade proliferation (Keohane, Moravcsik, and Slaughter 2000; Koremenos, Lipson, and Snidal 2001; Maggi 1999; Rosendorff 2005; Yarbrough and Yarbrough 1997). Previous studies on the DSMs have been largely carried out on the multilateral trade system, the WTO. Some argue that the WTO, vested with more legal power through the DSMs helped enhance the level of international cooperation among member countries.

Among those who support the positive role of the DSM in international trade system, there are different explanations on the procedure the legalized institution helps raise the level of international cooperation. Some scholars argue that legalization of the WTO with the stick of the DSM prevents the member states from defection, thereby increasing the level of compliance from the member states (Goldstein, Kahler, Keohane, and Slaughter 2000; Smith 2000). A harsher punishment against defection by member states helps strengthen the bargaining power of developing countries (Park 2000).[4] Also, legalization of international organization allows transmitting information to voters on a nation's trade behavior, which increases compliance rate of member states (Chaudoin 2010; Fang 2008; Mansfield, Milner, and Rosendorff 2000, 2002b).

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[4] "Irreversible investment" strengthens the punishment power of the small countries disproportionately, which helps raise the bargaining position for small countries (Park 2000).

However, the role of a DSM in the level of punishment allowed in the trade system has also been considered a carrot by providing more opportunities for members to manipulate the system (Fearon 1998; Rosendorff 2005; Rosendorff and Milner 2001). Rosendorff (2005) argues having a DSM in international trades enhances the stability of the system not by increasing the level of international cooperation but by decreasing the probability of violation. He shows how this mechanism brings flexibility to the WTO by allowing members to decide whether to stay in the system even after they commit a violation.

Unlike the positive role of the DSM after all in Rosendorff's analysis, the DSM is also considered a cause of an inefficient outcomes in trade negotiations for countries because it deters use of harsh punishment. Ludema (2001) argues that use of stronger punishment against defections disabled by the DSM reduces the level of national welfare by preventing countries from using autarky as a part of the punishment. Some scholars also cast doubt on the role of the DSM, particularly for developing countries. Empirical studies found that under the WTO, the system of dispute settlement discouraged developing countries' participation in legal disputes (Bown 2005).[5] The dispute settlement system not only reinforces the power disparity of the trade regime but also expands the gap between rich and poor member states in their use of the WTO's DSM (Busch and Reinhardt 2003).[6]

In addition to the WTO's DSM, RTAs usually have dispute settlement mechanisms. In all the overlapping areas between the WTO and the RTAs, such as intellectual property, services, and investment, RTAs include chapters which discuss dispute settlement procedures. Empirical studies on RTA-DSMs have continuously tried to understand the role of DSMs used in RTAs and the factors which determine the levels of legalism in RTAs (Chase, Yanovich, Crawford, Ugaz, and WTO 2013; Jo and Namgung 2012; Mansfield, Milner, and Rosendorff 2002a; Mansfield, Milner, and Pevehouse 2008; Smith 2000).

However, studies on DSMs of RTAs have not yet fully explained their dynamics but largely focus on potential conflicts between the two dispute settlement mechanisms (Hillman 2009; Marceau and Wyatt 2010).[7] Despite a rising number of empirical studies on RTA-DSMs with a focus on legalism, systemic analysis of RTA-DSMs have rarely been made. Hence, this paper explores the dispute settlement mechanisms found in RTAs in comparison with the DSM of the WTO. A game theoretical model helps us to examine the structural difference in the role of DSMs between a regional and multilateral trading system and the expected consequences of the difference in terms of dispute settlement strategies for member countries in treaties.

In the study of regionalism as well as multilateralism, there have been a handful of game theo-

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[5]Bown (2005) examines determinants of decision on participation of disputing countries. The dispute settlement understanding of the WTO has institutional bias because of its self-representative and self-enforcing character. Small countries are lack of resources to monitor and recognize the WTO violations as well as for legal proceedings. Furthermore, they find tariff retaliation as a retaliatory mean useless due to their lack of ability to affect the world.

[6]Busch and Reinhardt (2003) argue that it is not a lack of market power but a lack of legal capacity developing countries have in their disposal as a mean of retaliation.

[7]Marceau and Wyatt (2010) focus on the issue of a trade countermeasure under a RTA, which brings into a "double litigation" problem due to its retaliatory character which is considered a breach of the WTO rules. They also suggest provisions which require that for an RTA to be WTO-compliant, as a remedy of rescuing WTO-RTA conflicts of jurisdiction problems.

retical analyses (Aghion, Antràs, and Helpman 2007; Riezman 1985).[8] This paper extends the structural analysis on the DSM in Rosendorff's (2005) "*Stability and Rigidity*" from the WTO's DSM to the DSMs found in RTAs. This RTA game-theoretic model allows us to analyze how DSMs affect the decision making of member states regarding their trade behavior in the treaty, i.e., cooperation or violation. It also gives implications for the effect of the dispute settlement system on asymmetric member countries. Hence, this paper allows a broader understanding of the contemporary international trade "spaghetti bowl."

3 Trade Games: Rosendorff's Model of the WTO's DSM

For an analysis of the structure of the DSMs found in RTAs, this paper develops the game-theoretic model specified in Rosendorff's article "*Stability and Rigidity*," which focuses on the role of the WTO's DSM in the context of a bilateral relationship for the sake of simplicity. In this section, the model of Rosendorff is introduced first to help explore a structural analysis of the role of a DSM for the system of regional trade agreements in the remaining sections. This section consists of three parts: the setting of economies, trade games without the DSM, and trade games with the DSM.

The following sections describe the basic logic of a bilateral trade game within an international trade regime of the WTO and compare these games with and without the DSM. The structural analysis of bilateral trade games shows how the introduction of a DSM allows member states to "temporarily suspend their obligations in periods of unexpected, but heightened, domestic political pressure for protection" (Rosendorff 2005, p.389).

As a necessary basis of the extension to a RTA-DSM model presented in Section 4, this section draws extensively from "*Stability and Rigidity*" of Rosendorff (2005). Some notations are modified for a smooth link to the extension. Also, some parts are modified and additional explanations are added if needed.

3.1 The Economy

All equations in this section are drawn from "*Stability and Rigidity*" of Rosendorff (2005) with some changes in notations.

Players   Consider the two states which have different sizes of their economies: the stronger state (large economy) and the weaker state (small economy) denoted by P_s and P_w respectively.[9] The two states have different endowments on three goods x, m, and

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[8]Riezman (1985) builds a cooperative game-theoretic model in the absence of transferable utility. Aghion, Antràs, and Helpman (2007) conducts a dynamic model of bargaining with transferable utility in order to evaluate the gains between multilateralism and regionalism.

[9]The notations of players, P_s and P_w, are used to link two models: the WTO-DSM and the RTA-DSM models. Rosendorff (2005) does not differentiate parties by power/economy asymmetries. In RTAs, the disparity of power among members are focused for the analysis of a DSM under the system. By separating member states based on the relative size of power, the game represents different effects of DSMs on the behavioral decision of asymmetric members of regional trade pacts.

z which is a numeraire good.[10] All other things are assumed to be identical. The stronger state, P_s, produces βx and $(1 - \beta)m$ with $\beta > \frac{1}{2}$. The weaker state, P_w, complements. P_s will export x and import m.[11] The additively separable utility is assumed to be

$$U(x, m, z) = u(x) + u(m) + z. \tag{1}$$

Tariff   A tariff on an imported good is a single instrument each state could use. P_s can apply tariff t on m, and P_w can apply tariff τ on x. Therefore, an increase in t raises price of m, reducing consumer surplus in the stronger state where an increase in τ which is the tariff abroad, lowers the price of x at home, increasing its consumer surplus.[12] In the stronger state, firms which compete with imports earn profits $\Pi_m(t)$ while firms which exports x earn profits $\Pi_x(\tau)$. $T(t)$ is a notation for tariff revenues which is the function of t. The weaker state's payoffs are symmetric.

Political   The political pressure denoted by a and α are the private information which every
Pressure   state knows at the beginning of each period. a and α (both are non-negative) are the weights put on the interests of the import-competing sector in P_s and P_w, respectively. a and α vary from round to round to represent varying economic conditions; and, they are independently and identically distributed on $(0, +\infty)$ with cumulative distribution function (cdf) of Φ.

Therefore, the government utility for P_s is

$$G_s(t, \tau; a) = CS(t, \tau) + a\Pi_m(t) + \Pi_x(\tau) + T(t). \tag{2}$$

Similarly, the utility of the government for P_w is

$$G_w(t, \tau; \alpha) = CS(t, \tau) + \alpha\Pi_x(\tau) + \Pi_m(t) + T(\tau). \tag{3}$$

The following section describes utilities of governments of member states in an international trade pact without a dispute-resolution system in a one-shot and repeated Prisoners' Dilemma (PD) game.

3.2   International Trade Regime

Cooperation in Both Sides: C_i

Under the existing trade agreement, two member states have agreed to limit tariffs to t^c and τ^c. Assume these levels of tax are Pareto optimal and set to maximize sum of both states' incomes over time. Therefore, the utility of the stronger state under cooperation, $C_s(a)$, is

$$G_s(t^c, \tau^c; a) = CS(t^c, \tau^c) + a\Pi_m(t^c) + \Pi_x(\tau^c) + T(t^c) = C_s(a). \tag{4}$$

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[10]A good is referred to as numeraire if prices and money are measured in term of units of that good.

[11]By the implication of the Heckscher-Ohlin theorem (Rosendorff 2005, p.392)

[12]By utility maximization and market clearing (Rosendorff 2005, p.392)

For the weaker member, the utility with cooperation is

$$G_w(t^c, \tau^c; \alpha) = CS(t^c, \tau^c) + \alpha\Pi_x(\tau^c) + \Pi_m(t^c) + T(\tau^c) = C_w(\alpha). \tag{5}$$

Defection in Both Sides: N_i

Under the Nash equilibrium for the one-round game, each player can set their tariff levels at

$$t(\tau) = \arg\max_t G_s(t, \tau; a),$$

and

$$\tau(t) = \arg\max_\tau G_w(t, \tau; \alpha).$$

for P_s and P_w, respectively.

Let us denote t^N, τ^N as the simultaneous solution regarding the two equations above. Then, let the following $N_s(a, \alpha)$ be the stronger party's utility under the Nash equilibrium.

$$N_s(a, \alpha) = G_s(t^N(a, \alpha), \tau^N(a, \alpha); a)$$

Optimal Defection: D_i

Let us use the case of the stronger party for simplicity. In order to maximize the utility from the defection, the stronger party decides a level of defective tariff of $t^D(a)$ under the assumption of the other party's cooperative tariff. The optimal defection for P_s is

$$t^D(a) = \arg\max_t G_s(t, \tau^c; a).$$

Therefore, the utility under the optimal defection for P_s is

$$D_s(a) = G(t^D(a), \tau^C; a).$$

Sucker's Payoff: S_i

There is a possibility that cooperation results in a sucker's payoff to the cooperative player if the other player decides to defect from its cooperative tariffs. For example, P_s ends up with the following sucker's payoff if it cooperates while the other party does not.

$$S_s(a) = G_s(t^c, \tau^D(\alpha); a)$$

Prisoners' Dilemma

Those conditions of C_i, D_i, S_i, N_i described above create a game of Prisoners' Dilemma. We have $D_s(a) > C_s(a) > N_s(a, \alpha) > S_s(a, \alpha)$ for the stronger member, and $D_w(\alpha) > C_w(\alpha) > N_w(a, \alpha) > S_w(a, \alpha)$ for the weaker player. *Figure* 1 is the 2×2 normal form representation of the one-shot Prisoners' Dilemma(PD) captured from *"Stability and Rigidity"* (Rosendorff 2005, p.393).

Weak Player

		C	D
Strong Player	C	$C_s(a), C_w(\alpha)$	$S_s(a, \alpha), D_w(\alpha)$
	D	$D_s(a), S_w(a, \alpha)$	$N_s(a, \alpha), N_w(a, \alpha)$

Figure 1: A One-Shot PD Game

Now, let us denote $B_i(a) = D_i(a) - C_i(a)$ with $B_i'(a) > 0$ for all $i = strong(s)$, $weak(w)$, meaning that an increase in political pressure to protect trade raises the gains from defection as opposed to cooperation. In the infinitely repeated game, member states maximize their expected sum of discounted one shot payoffs. If lower tariffs are enforced with *Grim Trigger*, a strong party breaks the agreement when $B_s(a) > \frac{\delta}{1-\delta}(C_s - N_s) \equiv \wedge_{PD}$. For this stronger country, let us denote $\tilde{a}$ such that $B_s(\tilde{a}) = \frac{\delta}{1-\delta}(C_s - N_s)$. According to *figure 2*, the best response of a stronger player, P_s, is derived as following:

Cooperate if $a < \tilde{a}$

Defect if $a > \tilde{a}$, or P_w defected in the past

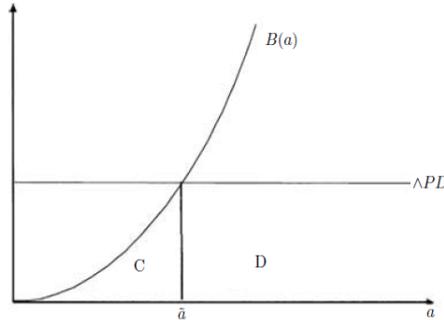Cooperate or Defect if $a = \tilde{a}$.

Figure 2: Under the WTO without the DSM (Rosendorff 2005, p.393)

Similarly, the best response of a weaker state, P_w, is as following:

Cooperate if $\alpha < \tilde{\alpha}$

Defect if $\alpha > \tilde{\alpha}$, or P_s defected in the past

Cooperate or Defect if $\alpha = \tilde{\alpha}$.

3.3   Games with a Dispute Settlement Mechanism

An international trade agreement with a dispute resolution mechanism provides another option to its member states, in addition to the two choices at either end of their decision spectrum: *Cooperate* or *Defect*. A Dispute Settlement Mechanism (DSM) allows members that violate the trade agreements to stay in the pact even after they fail to cooperate under the condition that

they comply with the panel ruling by paying the compensation. The compensation is derived by a loss function of the complainant, which calculates the loss to the complainant by the defection of the defendant. Therefore, with this system of dispute settlement, a loss function is taken to the consideration of payoffs for the trade strategies of member states in the international pact.

Loss Compensation: L_i

Consider defending players who are allowed to stay in the treaty by paying a compensation if they lost a case through a DSM. Under a game with a DSM, compensation becomes another component of payoffs for strategies of state players.[13] The level of compensation is calculated on the basis of the loss to the cooperative player by the violating behavior of the other player. If the stronger player defects, then the compensation a panel sets is how much loss a weak party, the complainant, has sustained due to the defect action of the stronger party. The amount of loss the complainant gets paid as compensation in the case of winning is the difference between the complainant's expected payoff under the full cooperation by both players and the payoff to the complainant when it becomes a sucker player. Therefore, the loss function is as follows.

$$L_w(a, \alpha) = C_w(\alpha) - S_w(a, \alpha).$$

Since the level of a is known once the panel is called, we could get the average across α. Then, the expected value of the loss, the compensation, is as follows.
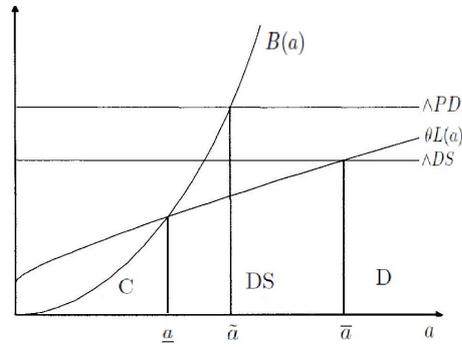
$$L_w(a) = \int_\alpha L_w(a, \alpha) d\Phi.$$

Figure 3: Under the WTO with the DSM (Rosendorff 2005, p.395)

Figure 3 shows a "Dispute Settlement Strategy (DSS)" of a WTO member country in the presence of the DSM. Rosendorff (2005) defines two cutpoints for a DSS;(1) $\underline{a}$ such that $\theta L(\underline{a}) = B(\underline{a})$, and (2) $\bar{a}$ such that $\theta L(\bar{a}) = \frac{\delta}{1-\delta}(p^2(N - S - D + C) + p(D - 2N + S)) \equiv \wedge_{DS}$ where $p = Pr(a < \underline{a})$, and $I = \int_\alpha \int_a I(a, \alpha) d\Phi d\Phi$ for $I = D, N, S, C$.[14]

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[13]In a game without a DSM, however, players adopt the *Grim Trigger* strategy. Once a player defects, the player is out of the treaty for all the possible rounds in the future, without an opportunity to stay by paying compensation.

[14]For more details, see (Rosendorff 2005, p.394).

In the infinitely repeated game with a DSM, the stronger party having drawn politics type $\hat{a}$ has the following DSS:

[C]   if $\hat{a} < \underline{a}$, $t = t^c$

[DS] if $\underline{a} \leqq \hat{a} \leqq \bar{a}$, $t = t^D(\hat{a})$ and pay compensation if lost

[D]   if $\hat{a} > \bar{a}$, $t = t^D(\hat{a})$ and exit from the treaty without paying compensation if lost

4   Trade Games: Regional Trade Agreements

In this section, I extends the game theoretic model of Rosendorff (2005) previously introduced from the WTO-DSM to the RTA-DSMs in order to compare the effects of the DSMs to the trading system between the WTO and RTAs. The DSMs in RTAs are very similar to the WTO-DSM by emulation. Once there is an alleged defection from cooperative tariffs filed by a member player, the disputants seek diplomatic resolution for the case through a meeting of the body appointed to oversee the agreement at the first step of dispute resolution. If the two players fail to reach an agreed solution at this second stage of the dispute settlement, a panel is called.

In terms of levels of legalism, however, RTA-DSMs are different from the WTO-DSM. Most RTA-DSMs do not have a standing body; rather, they call an ad-hoc panel if necessary. RTA-DSMs do not provide external legal support to member countries while member states gain access to professional legal assistance from the WTO secretariat. Also, the costs of the case proceedings are to be shared equally by both disputants, which yields a disparity in financial burden among countries with different sized economies. The following section lays out the costs considerations in RTAs which are not considered as a substantial component of an international trade game under the WTO.

4.1   Considerations for the RTA Model

Costs Consideration

Proposition 1. $K_{weak} > K_{strong}$ *where K_i is the member i's burden of costs for a case proceeding and DSM maintenance, which is proportional to the size of their power/economy (i=strong, weak).*

Previous studies find that the design of dispute resolution in RTAs and that of the WTO are similar to each other due to emulation. By an empirical study, Jo and Namgung (2012) examine the effect of emulation on the design of DSMs in preferential trade agreements by sharing memberships. Previous studies on the level of legalism of RTAs also find the propensity of a medium level of legalism in a RTA where a permanent body does not hold.[15]

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[15]The term, "high and medium level of legalism," follows the typology used in the studies of Jo and Namgung (2012) which associates with a more detailed classification carried by Smith (2000). Chase, Yanovich, Crawford, Ugaz, and WTO (2013) use different names for the level of legalism in RTAs, i.e., quasi-judicial and judicial for medium and high legalism, respectively.

Most RTA-DSMs with a medium level of legalism have the binding panel ruling decided by ad-hoc panels while the WTO, with higher legalism, holds a standing body as well as grants an access to trained WTO officials to disputing members. By having ad-hoc panels instead of a standing body, RTA members are able to lower the expenses involved in the DSM maintenance which fall on their shoulders. Therefore, Some argue that states prefer a different type of DSM for RTAs as an alternative to the DSM found in the WTO, which results in a lower level of legalism in DSMs found in RTAs. In this paper, nevertheless, I argue that no matter what the goal of the design of RTA-DSMs is, i.e., a similar DSM by emulation or a different DSM for an alternative forum, there are differences in the design and effects of DSMs between RTAs and the WTO because of their differential structures of international trade institutions where the DSMs operate.

Legalization of international trade institutions raises the costs of litigation, which requires participating countries to have greater financial capacity. Disparities in legal resources affect member countries' ability to formally participate in litigation of the trade agreements.[16] Members of RTAs must bear the costs of case prosecution and maintenance of the DSM. The expenses for the legal process of dispute settlements are divided and evenly separated in RTAs. This cost sharing system yields a disparity in the burdens allocated among members with disparate sized legal resources. The issue of disproportionality becomes more serious in RTAs that involve small number of memberships or more power asymmetric partners. The logic of economies of scale explains why the more multilateral the international agreements are the more likely they are to be institutionalized (Chase, Yanovich, Crawford, Ugaz, and WTO 2013).

In regional trade negotiations, moreover, members are unable to gain access to the kinds of professional external legal assistance which is available in multilateral regimes. For instance, in the WTO's DSM, disputing parties have legal support from trained experts of the WTO secretariat at their disposal prior to and during dispute proceedings. Less-developed countries have faced more barriers to initiate legal disputes due to a lack of their legal resources. Therefore, costs consideration is expected to have more weights to Dispute Settlement Strategies (DSS) of less-developed countries than that of developed countries. The DSM without external support yields disparities in the DSS of member countries with different amount of legal resources.

Therefore, the design of the DSMs found in RTAs entails an inequality of legal expenses of disputes in terms of the extent of burden due to differential financial and legal resources of asymmetric signatories.

Winning Probability in Disputes

Proposition 2. $\theta_{weak} < \theta_{strong}$ where θ_i is the member i's probability of winning in disputes (i=strong, weak).

Weaker members in disputes against stronger partners are more likely to be vulnerable to the economic and diplomatic consequences of being involved in dispute resolution. In domestic politics, the deterioration of the nation's economic conditions and aggravation of international

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[16]Larger and richer countries are more likely to become a complainant participating in WTO litigation. Bown (2005) shows that a state's capacity to pay for legal services, measured by GDP as a proxy, is positively associated with the decision of the state to become a complainant or interested third party.

political relationships with stronger countries are likely to result in unfavorable election outcomes to incumbents of the weaker state. Therefore, larger and richer complainants more effectively derive concession from weaker country defendant before a panel ruling is issued. Moreover, panel rules under RTAs tend to be more vulnerable to nationality bias, thereby being considered less legitimate than that of the WTO which consists of a standing body and the process of appellate review. Under this power-based structure of RTA-DSMs, larger and richer countries disproportionately win disputes during consultations or panel deliberations prior to rulings at the expense of smaller and poorer countries (Busch and Reinhardt 2003). Therefore, the fact that RTAs hold less-likely impartial third-party review and require ad hoc panels allows us to expect more inequality of panel ruling of RTA-DSMs favorable to larger states.

The system of dispute resolution under the WTO, however, is considered more rule-based where power disparities across countries are more effectively offset than RTAs (Davey 2006). In Rosendorff (2005)'s model for the WTO, it is assumed that the panel ruling is equal for all members. Rosendorff (2005) does not take the power disparity of trading partners into consideration for his trade game, which is reasonable because a more rule-based system of WTO-DSM mitigates asymmetries in bargaining power among members with different sized economies more effectively than a more power-based RTA-DSM.

Hence, the design of dispute resolution in RTAs yields more disparity in the rate of winning in disputes than the WTO. Weaker and smaller countries disproportionately fail to win in disputes under the more power-based system of RTA-DSMs than more rule-based system of WTO-DSM. Therefore, $\theta_{weak} < \theta < \theta_{strong}$ *where θ is the common probability of winning in disputes of the WTO-DSM for all members and θ_i is the member i's probability of winning in disputes of the RTA-DSMs (i=strong, weak).*

4.2   Dispute Settlement Strategy in RTAs

Figure 4 is a normal form representation of the one-shot Prisoners' Dilemma (PD) game for regional trade agreements. This normal form stage game includes two additional factors discussed above, *costs* and *probability of winning in disputes*, on the top of the WTO trade game in Rosendorff (2005). These additional components reflect the differences in setting of trade games under disparate international trade regimes: multilateralism and regionalism.

In the infinitely repeated game, let us define the Dispute Settlement Strategy (DSS) for a stronger party with politics type $\hat{a}$ drawn, by two cutpoints, a_1 and a_2 such that

[C]   if $\hat{a} < a_1$, $t = t^c$

[DS] if $a_1 \leqq \hat{a} \leqq a_2$, $t = t^D(\hat{a})$ and pay compensation if lost

[D]   if $\hat{a} > a_2$, $t = t^D(\hat{a})$ and exit from the treaty without paying compensation if lost

The first cutpoint in the DSS above determines whether a player cooperates or defects without the intention of entire withdrawal from the treaty. In order to do so, a player compares their expected cooperation value, denoted by $\underline{C}_i$, with the expected benefits of temporary suspension of their obligations. The state needs to know how much it will gain from a violation and how

		Weaker Player, P_w		
		C	DS	D
P_s	C	$C_s(a)$ $C_w(\alpha)$	$S_s(a,\hat{\alpha}) + \theta_s L_s(\hat{\alpha}) - K_s$ $D_w(\hat{\alpha}) - \theta_s L_s(\hat{\alpha}) - K_w$	$S_s(a,\hat{\alpha}) - K_s$ $D_w(\hat{\alpha}) - K_w$
	DS	$D_s(\hat{a}) - \theta_w L_w(\hat{a}) - K_s$ $S_w(\hat{a},\alpha) + \theta_w L_w(\hat{a}) - K_w$	$N_s(\hat{a},\hat{\alpha}) + \theta_s L_s(\hat{\alpha}) - \theta_w L_w(\hat{a}) - K_s$ $N_w(\hat{a},\hat{\alpha}) + \theta_w L_w(\hat{a}) - \theta_s L_s(\hat{\alpha}) - K_w$	$N_s(\hat{a},\hat{\alpha}) - \theta_w L_w(\hat{a}) - K_s$ $N_w(\hat{a},\hat{\alpha}) + \theta_w L_w(\hat{a}) - K_w$
	D	$D_s(\hat{a}) - K_s$ $S_w(\hat{a},\alpha) - K_w$	$N_s(\hat{a},\hat{\alpha}) + \theta_s L_s(\hat{\alpha}) - K_s$ $N_w(\hat{a},\hat{\alpha}) - \theta_s L_s(\hat{\alpha}) - K_w$	$N_s(\hat{a},\hat{\alpha}) - K_s$ $N_w(\hat{a},\hat{\alpha}) - K_w$

Figure 4: Payoffs in the 3×3 Normal Form

much it will lose from their payment of compensation if they lose the resulting dispute. If a player gains more by temporary defection than by cooperation, it will defect once and stay in the treaty. For example, P_s given a draw $\hat{a}$ defects without the exit from the treaty if $D_s(\hat{a}) - \theta_w L_w(\hat{a}) - K_s > \underline{C}_s(\hat{a})$ which is the expected value of cooperation.[17]

Therefore, we define the first cutpoint, a_1, such that $D_s(a_1) - \theta_w L_w(a_1) - K_s = \underline{C}_s(a_1)$ as a lower bound for the player to temporarily defect followed by staying in the treaty.

The second cutpoint in the DSS determines whether a violating member country pays compensation set by a panel in order to stay in the treaty forever or exits from the treaty by defying the panel ruling. In order to make that decision, a violator compares the maximum level of the penalty to pay, which is calculated with the probability of losing set by 1, with the level of losses by the exit from the pact forever, i.e., the present discounted expected losses of future punishments. Therefore, the second cutpoint, a_2, satisfies $L_w(a_2) = \frac{\delta}{1-\delta}(\underline{C}_s - N_s) \equiv \wedge_{DS}$.[18] In other words, P_s given a draw $\hat{a}$ will pay compensation to stay in the system after defection rather than the exit from the agreement, when $L_w(\hat{a}) < \frac{\delta}{1-\delta}(\underline{C}_s - N_s)$.

The following section examines the differences in the DSS between regional trade agreements and multilateral trade agreements in the presence of DSMs. In order to see the dynamics of the change in the DSS by each additional element in RTAs, I first analyze the effect of changes in the winning chance of θ_i on the DSS, before taking the costs of legal process in the DSM into consideration. The two-step process allows a structural analysis on the differential effects of those changes in games on the DSS between stronger and weaker states in RTAs.

Changes from Disparate Winning Probability

First, let us take the changes in θ_i, "**Proposition 2.** $\theta_{weak} < \theta_{strong}$," into consideration. In a more power-based RTA trade game, θ_w, the probability with which the weaker country wins in disputes is smaller than θ which is the common probability with which a member state wins in

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[17]P_s has the expected value for cooperation:

$$\underline{C}_s(a) = \Phi(\alpha_1)C_s(a) + \int_{\alpha_1}^{+\infty} S_s(a,\alpha)d\Phi(\alpha) + \theta_s \int_{\alpha_1}^{\alpha_2} L_s(\alpha)d\Phi(\alpha). \qquad (6)$$

[18]For details of $\wedge_{DS}$, please see appendix in Rosendorff (2005) p.394.

the WTO. Therefore, θ_w, which is also the probability of failing to win in RTA-DSM disputes for a stronger member, is smaller than that of a weaker player, θ_s. This smaller θ_w with which a stronger player loses changes the first cutpoint of the DSS for the stronger player, a_1, smaller than the first cutpoint in the WTO, $\underline{a}$. The smaller chance of losing a RTA-DSM case also results in the second cutpoint of the DSS for the stronger player, a_2, which is larger than that of the WTO, $\bar{a}$.
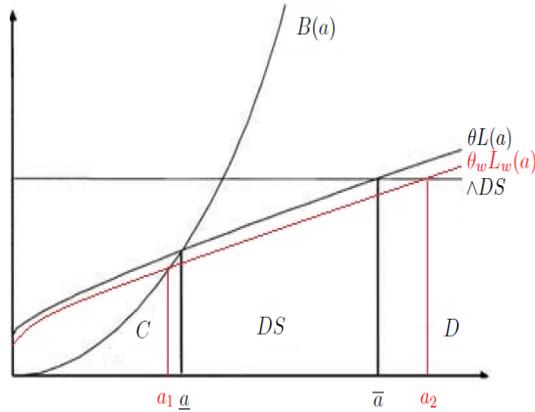

Figure 5: *Stronger Party*: The No-Defect Condition with a lower θ

Figure 5 represents these changes in cutpoints on the DSS from having a smaller losing probability for a stronger member, θ_w, which is the probability of winning in disputes for a weaker member. The changes in two cutpoints, smaller a_1 and larger a_2, widen the area of temporary defection for the stronger party's DSS, denoted by DS in *Figure* 5. The enlarged area of DS results from decrease in the areas of C and D, representing cooperation and defection respectively. With the larger area of temporary suspension of their obligations, the stronger party has more flexibility in their strategies, i.e., more capability of manipulating the trade agreement.
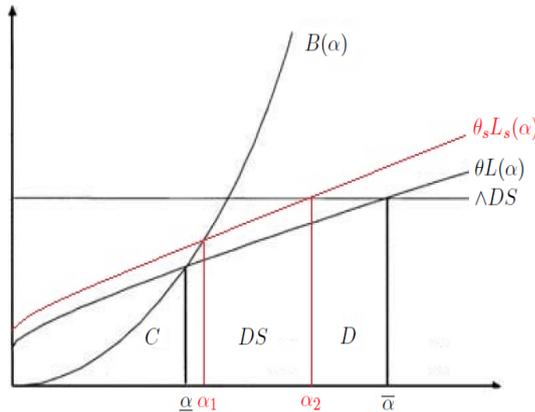

Figure 6: *Weaker Party*: The No-Defect Condition with a greater θ

The increased area of manipulation, DS, results from decrease in the area of full defection more than decrease in the area of full cooperation. Hence, in the DSMs of RTAs, the lower

probability of losing in disputes for stronger parties enhances flexibility of their DSS than that of the WTO-DSM, largely by decreasing the probability of their violations.

Figure 6 shows changes in cutpoints on the DSS of a weaker member by its probability of losing in disputes, θ_s, which is larger than that of a strong member in RTA-DSMs as well as that of both members in the WTO-DSM. The larger α_1 and smaller α_2 than $\underline{\alpha}$ and $\bar{\alpha}$ respectively, narrow the area of temporary defection for the weaker party's DSS, denoted by DS in *Figure* 6. The narrower range of temporary suspension of their obligations represents less flexibility in the DSS of weaker states, i.e., being less capable of manipulating the trade agreement. The decreased area of manipulation, DS, results from increase in the area of full defection more than that of full cooperation. Hence, in the DSMs of RTAs, weaker parties' higher probability of losing in disputes decreases the level of flexibility in the DSS, largely by increasing the probability of pure violations.

Changes from Disproportional Burdens of Costs

Second, let us consider disparities in burdens of costs that a dispute settlement procedure involves in. Recall "**Proposition 1.** $K_{weak} > K_{strong}$." For a stronger party's DSS, adding K_s pulls up the lower bound, a_1, where P_s is indifferent between cooperation and temporary defection. The additional component of K_s, however, pulls down the upper bound, a_2, where the stronger player is indifferent between the stay in the treaty after violation and the exit from it [*Figure* 7]. The costs burden of K_w for the weaker state also changes DSS cutpoints, α_1 and α_2, in the same way that K_s affects a_1 and a_2 [*Figure* 8].

Disparities in cost burdens, K_i, therefore, narrow the pseudo-defection area denoted by DS on the DSS of both stronger and weaker parties. The magnitudes of the contraction by the costs burden, however, are different depending on their probability of winning in the dispute. For a stronger member, its lower probability of losing the dispute which is the winning probability of a weaker member, θ_w, makes the downsizing effect of K_s on the area of DS relatively small, thereby keeping the area of DS greater than the size of DS in the weaker member [*Figure* 7].
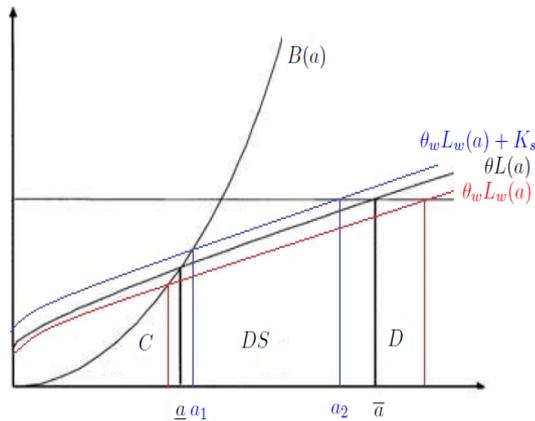

Figure 7: *Stronger Party*: The No-Defect Condition with K_s

The steeper slope by θ_s of a weaker party's DSS allows the costs burden of K_w to squeeze the area of DS greater than it does with the lower slope [*figure* 8]. Therefore, a weaker state ends

up with a much narrower range of DS in their DSS than that of a stronger state in RTA-DSMs, not only because the weaker member's larger costs burden of K_w but also greater effect of K_w on the range of DS.
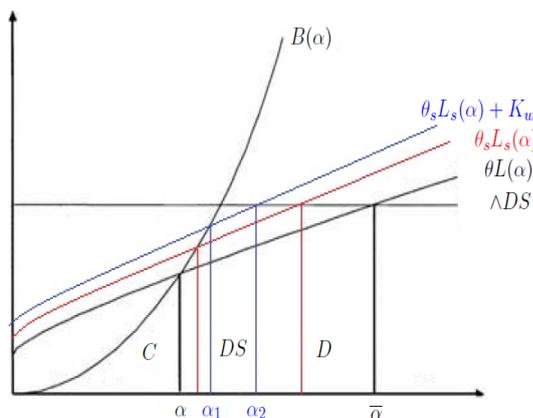

Figure 8: *Weaker Party*: The No-Defect Condition with K_w

Hence, the differential chances of winning and burdens of costs involved in disputes of RTA-DSMs result in the disparity in ranges of trade behaviors allowed to member countries with power asymmetries. The introduction of DSMs brings flexibility into the DSS of member states in both multilateral and regional trade agreements. The inherent difference in structure of two trade regimes, nevertheless, yields differential effect of a DSM on the strategies of asymmetric member states between the WTO and a RTA, regarding the magnitude and direction of these changes.

RTAs give a stronger state a smaller chance of failing in disputes against a weaker party, which enlarges the area of DS on the stronger member's DSS and gives more flexibility to the stronger member in their strategies for dispute resolution in RTAs. A weaker state in RTAs, however, has a smaller area of DS with a larger area of full cooperation and defection due to their greater chance of losing the case against a stronger disputing party. Therefore, the weaker member state has less flexibility in the DSS of RTAs with a stronger partner.

The burdens of costs of the DSMs found in RTAs reduce the range of DS for all member countries regardless the size of the power asymmetries. However, due to differential probabilities of members' winning in disputes, disparities in costs burdens narrow the range of DS greater to a weaker member than to a stronger member, thereby increasing the gap in the range of DS between them. Hence, DSMs in RTAs allow stronger parties a wider range of DS where a party defects once but is allowed to stay in the pact forever by paying compensation. However, weaker parties have a narrower range of DS, thereby having less flexibility in the treaty relative to stronger parties.

5   Concluding Remarks

The development of international trade cooperation alongside the consistent rise of global economic interdependence has driven the increased level of multilateralism of the WTO. Nevertheless, the tradition of multilateral trade negotiation has more recently been replaced by RTAs since the early 1990s. To understand the dynamics of regional trade agreements and its implications for the world trade system, this paper analyzes a structural (dis)advantage of the regional trade agreements to large and small economies by comparing the role of DSMs between regional and multilateral trade systems.

This extension of Rosendorff's game-theoretic model from the WTO to RTAs finds that DSMs found in RTAs reinforce inequalities in international trade system with a greater magnitude because of the increased levels of disparities in strategic flexibility between member states with power asymmetries. The system of dispute resolution under a RTA grants more room for manipulating the trade agreement to stronger member countries when it comes to international trade disputes in the treaty. A weaker state has less flexibility in a DSM of a RTA than it would have in the WTO. Therefore, the WTO's DSM is more efficient and sophisticated to deal with trade disputes among member countries by minimizing inequality across countries with power asymmetry. This superiority of the WTO-DSM provides an explanation for the more frequent use of the WTO's DSM than that of the RTA-DSMs.

Legalization of international trade institutions helps to enhance stability of the trading system by bringing flexibility into strategies of member countries. It raises the level of stability of the WTO by bringing flexibility into strategies of member countries. In RTAs, however, DSMs yield disparity in the extent of flexibility allowed to asymmetric partners. This issue of disparity makes the positive effect of DSMs to stability of the system uncertain in the case of regional trade agreements. Hence, the WTO system is more stable than the regional trading system, which implies that multilateralism might survive in the world trade system in spite of the recent resurgence of regionalism.

Those findings imply that even though small and weak countries in a natural trading region might suffer from extremely high cost by being an innocent bystander, they need to be more careful going into RTAs with larger and strong countries, especially if they face high political pressure at home for sensitive trade sectors such that they are highly likely to be the cause of defection. Also, access to external legal support for member nations with small economies in RTAs would help minimize the disparities in dispute settlement mechanisms of RTAs with asymmetric partners. They also imply that the WTO might provide more incentives or lowering the burdens of being a WTO member for small and weak countries who otherwise are more interested in RTAs, despite disadvantages associated with RTAs.

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