The Dependence Dilemma: Engagement, Vulnerability, and the Politics of Derisking

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Abstract

What makes economic interdependence a force for peace rather than a source of strategic vulnerability? We argue that interdependence generates both pacifying opportunity costs and dangerous dependence, and the tension between these two forces is the key to understanding when economic engagement promotes peace and when it provokes war. We develop a dynamic model of economic dependence and conflict that generates both the pacifying and conflict-inducing effects of interdependence within a single unified framework. We show that states use 'derisking' as a strategic middle path, selectively restricting economic engagement to reset future leverage without destroying the gains from exchange that make peace valuable. The theory explains why dependence-driven wars are rare yet possible. Forward-looking leaders prefer incurring the costs of economic restraint to the catastrophic risks of conflict. When derisking is structurally foreclosed or restrictions destroy too much economic value, the commitment problem cannot be managed through policy and preventive war may occur.

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Introduction

The tension between the gains from economic engagement and the strategic vulnerability it creates defines a central problem in international order. As economic ties deepen, states with political disputes enjoy larger gains from exchange, raising the opportunity costs of war. Yet the same dependence that makes conflict costly can also create political leverage, allowing one partner to exploit the other's reliance on economic engagement. Deeper engagement risks strategic vulnerability while disengagement sacrifices the peace-enhancing benefits of trade.

This dependence dilemma sits at the heart of a long-standing debate in international relations. An influential line of scholarship holds that trade partners are less likely to wage war against one another because the economic gains from exchange would be destroyed by conflict.[1] Another strand argues that economic ties can generate coercion, escalation, and even war when states become vulnerable to economic leverage or fear of losing access to vital markets and resources.[2] These perspectives capture different effects of economic interdependence that emerge as dependence evolves over time. When dependence is stable, the opportunity costs of losing trade and fighting promote peace. When dependence is expected to shift, changes in leverage generate incentives for coercion and conflict. This dynamic tension lies at the core of economic statecraft in an era where the world's most consequential relationships are simultaneously too valuable to abandon and too dangerous to deepen.

This paper develops a theoretical framework that formalizes this dynamic and identifies the conditions under which pacifying opportunity costs and dangerous dependence each dominate. The model incorporates two key features. First, economic dependence deepens over time. As states become more reliant on a partner's goods, markets, and capital, severance becomes increasingly costly, generating growing leverage and a commitment problem.

[1] Kant 1939; Rosecrance 1986; Smith 1937.

[2] Copeland 1996; Crescenzi 2003; Hirschman 1945; Pevehouse 2004; Record 2009.

States that anticipate future vulnerability may prefer war today to future political capitulation. Second, trade and investment relationships are endogenous policy choices. States can restrict or terminate economic ties in anticipation of future risks. Because war destroys the gains from exchange, these policies reduce not only future vulnerability but also the opportunity costs that deter fighting, making derisking a double-edged instrument. Whether derisking promotes peace or war depends on which effect prevails: the attenuation of the commitment problem or the erosion of the opportunity costs that deter fighting.

Our analysis yields three interconnected results that together resolve the dependence dilemma. We first show that stable economic dependence produces peace. In our model, dependence affects the cost of fighting; countries pay adjustment costs to secure alternative trade partners if existing trade relations are lost. In negotiations, these costs generate leverage, which shapes bargaining concessions and political settlements. Importantly, peace prevails so long as dependence is sufficiently stable over time.

Second we find that the conflict-inducing force is dynamic. When states anticipate that deepening dependence will erode their future bargaining position, even substantial concessions may fail to offset projected future vulnerability. This generates a commitment problem that makes preventive war attractive. States that anticipate becoming more vulnerable in negotiations in the future may fight in the present to avoid future political losses.

Our final result explains the rarity of preventive war through endogenous trade policy. Forward-looking states have an incentive to derisk or decouple their economic ties to maintain peace. In our framework, derisking is the selective restriction of economic engagement to blunt the growth of dependence without altogether destroying the opportunity costs that make peaceful exchange valuable, and decoupling is the severance of economic ties to avoid future vulnerability altogether. Whether derisking can prevent extortion and promote peace hinges on their effectiveness in mitigating the commitment problems versus driving down the opportunity cost of war. When derisking is structurally foreclosed or destroys too much economic value, the commitment problem cannot be managed and preventive war becomes

the only escape from future vulnerability.

These findings advance the literature on economic interdependence and conflict in two ways. First, we provide a formal dynamic mechanism linking economic dependence to both war and peace within a single unified framework. In doing so, we establish when and why dependence creates political leverage and how dynamic shifts in leverage can bring about bargaining failures and conflict. Second, we demonstrate that derisking is an equilibrium response to the dependence dilemma. Strategic restrictions on the speed and magnitude of economic dependence endogenously resolves the tension between opportunity costs and commitment problems. The conditions under which derisking in our analysis fails – when there exist exogenous structural limitations on derisking restrictions or when derisking results in the destruction of excessive economic value – define the scope conditions for dependence-driven conflict. Otherwise, carefully managed trade produces peace.

Our theory yields insights into the emergence of derisking as a tool of economic statecraft in contemporary global trade relations. In June 2023, the European Commission detailed the logic of derisking as part of its European Economic Security Strategy: to "provide a framework for a robust assessment and management of risks to economic security... while preserving and increasing our economic dynamism."[3] In a July 2025 address to the European Parliament, President of the European Commission Ursula von der Leyen applied this logic directly to China's rare earth leverage: "I have already spoken about China's domination of the rare earth permanent magnets market. And how that can be used for economic leverage. This is why we are developing alternative supply sources in close cooperation with our partners. Of course, dialogue with China is also essential. We are engaging with Beijing so that it loosens its export restrictions. Because as I said at the outset - we do not believe strategic decoupling is in our interest. I believe that for Europe, it would be

[3]European Commission and High Representative for Foreign Affairs and Security Policy. European Economic Security Strategy. JOIN(2023) 20 final. Brussels, June 20, 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=JOIN:2023:20:FIN

inefficient and ineffective. But we will continue to de-risk. Because we have learnt the lesson. About the extent to which dependencies are vulnerabilities. And how tech, trade and security are inherently linked. Derisking is simply a matter of European independence."[4] These developments reflect the strategic logic of the dependence dilemma and underscore the central role of managing economic interdependence in contemporary international politics.

Related Literature

The relationship between economic exchange and conflict has been an enduring point of debate among scholars of international relations. A large body of research supports the claim that trade exerts a pacifying effect on interstate conflict. A core theoretical mechanism emphasizes opportunity costs: trade generates gains that are forgone when conflict disrupts exchange, raising the costs of escalation and reducing incentives to fight.[5] A second theoretical mechanism emphasizes information and signaling: economic linkages can create costly instruments for communicating resolve that help avert bargaining breakdown and militarized escalation.[6] Empirically, the "trade promotes peace" hypothesis is supported in prominent dyadic analyses that report a negative association between trade and militarized conflict.[7] Our study accounts for the opportunity cost of war as the loss of economic gains when fighting, and reveals that it plays a pacifying role when economic dependence is deepening over time.

A number of studies also identify conflict-inducing effects of trade pattern and trade policies. One line of reasoning emphasizes that asymmetric economic dependence—arising from unequal gains from trade or differing costs of exiting trade relations—can be leveraged for

[4]Von der Leyen, Ursula. "Speech by President von der Leyen at the EP Plenary Joint Debate on EU-China Relations." European Commission Press Corner, speech_25_1764, July 8, 2025. `https://ec.europa.eu/commission/presscorner/detail/en/speech_25_1764`

[5]Polachek and Xiang 2010; Polachek 1980.

[6]Gartzke, Li and Boehmer 2001.

[7]Mansfield 1995; Oneal and Russett 1999a; Polachek, Robst and Chang 1999.

political coercion by the less dependent side, generating a security dilemma that increases the risk of conflict.[8] In a formal treatment of this logic, Wagner (1988) shows that leveraging economic dependence for political concessions generally requires compensation sufficient to satisfy both parties. We extend this logic by incorporating states' forward-looking calculations about whether present compensation can offset future vulnerability from rising dependence, showing that the compensation mechanism is inadequate when projected increases in dependence are sufficiently large.

Relatedly, Crescenzi (2003) argues that states incur *exit costs* when they face damaged trade relations and struggle to find new partners or adapt production to alternative markets, demonstrating that conflict can arise when one state's exit costs are high while its partner's are low. Subsequent work has reinforced the idea that asymmetric exit costs can be destabilizing and that trade can encourage low-level conflict or coercive behavior short of war.[9] We build on the exit-cost idea by conceptualizing dependence as adjustment costs incurred when access to established trade partners is lost, and we show that asymmetries in the *dynamic* evolution of these costs can exacerbate tensions, whereas more balanced shifts encourage peace.

Recent scholarship also examines how derisking policy influences the risk of conflict. Mayer, Mejean and Thoenig (2025) develop a formal model showing that attempts to decrease import dependence may lead to war by lowering the opportunity cost of fighting. Asymmetric information is at the heart of Mayer et al's argument - states bargain under uncertainty, and the opportunity costs of war enter their risk-reward calculations in bargaining. Reduced opportunity costs make states less willing to strike a conciliatory position in bargaining. This mechanism contrasts with the one studied in this paper. Our argument is grounded in a complete-information environment, instead focusing on how economic dependence can generate dynamic commitment problems. Thus, the present study contributes to the literature by expanding the analysis of derisking policy's effects on conflict to a second

[8] Hirschman 1945.

[9] Peterson 2014; Pevehouse 2004.

rationalist explanation for war; dynamic commitment problems.

Another line of work argues that trade's impact on conflict is conditional on states' expectations about the future strategic environment. Benson and Niou (2007) model trade and conflict decisions jointly under incomplete information, showing that expectations about conflict and coercion can themselves shape trade ties and that interdependence may generate bluffing and bargaining failure rather than uniformly promoting peace. Copeland (2015) argues that conflict may arise when states are pessimistic about their future prospects for trade, choosing war now to secure access before losing it. Unlike Copeland, our explanation does not point to fear of lost trade or pessimistic expectations. Rather, our model highlights how deepening dependence – which may arise from long and beneficial trade relationships that result in heavy specialization – can result in political leverage and incentives for conflict.

Finally, the mechanism generating war in our model is related to, but distinct from, the economic commitment problems described in Monteiro and Debs (2020) and Bonfatti and O'Rourke (2018). In both of these works, economic forces reshape the future balance of power, either through hegemonic disruption[10] or import dependence constraining military production,[11] leading to shifting-power commitment problems. In contrast, our study focuses on a novel source of the commitment problem - endogenous dependence accumulation, not power shifts. We show that preventive war can arise from anticipated continuation of trade under increasingly coercive terms - the dependent state fights now to preserve autonomy before its bargaining position weakens.

Model

Two countries, whom we refer to as State 1 and State 2, repeatedly bargain over a disputed policy. The interaction occurs over an infinite number of periods indexed by $t = 1, 2, 3....$ In each period, the interaction is characterized by a commonly observed state-variable $s_t \in$

[10] Monteiro and Debs 2020.

[11] Bonfatti and O'Rourke 2018.

$\{T, NT\} \times \{L, H\}$. The value of s_t represents whether State 1 and State 2 are trading (T) or not (NT), and whether one's dependence on the other is low (L) or high (H). In every round of bargaining, States obtain extra economic benefits when they maintain an economic relationship (T). Both the sequence of actions in each period and states' per-period payoff depend on the value of s_t. We assume that State 1 and State 2 have an economic partnership at the outset of the bargaining, and their economic dependence has not shifted yet, so $s_1 = \{T, L\}$.

In a period in which $s_t = \{T, L\}$, both states have the option to continue or sever their existing economic partnership. If either state chooses to sever the relationship, then the economic partnership is terminated and states incur a one-time adjustment cost a_i due to their dependence on the economic partnership, and $s_{t'} = \{NT, L\}\ \forall t' > t$. If both states choose to continue the relationship, then the economic partnership is extended into the next period. States discount future period-payoffs by a common factor $\delta \in (0, 1)$, and we normalize states' dynamic payoffs by $1 - \delta$.

In all cases, bargaining over the disputed policy follows trade decisions. State 1 makes an offer $x_t \in [0, 1]$ and State 2 chooses to accept or reject. If State 2 accepts, then both states receive the bargaining payoff of the disputed policy. In particular, both states also obtain an extra benefit γ from the economic partnership only if $s_t = \{T, \cdot\}$. State 1 receives $\mu_1(x_t, \{T, \cdot\}) = \gamma + x_t$ and State 2 receives $\mu_2(x_t, \{T, \cdot\}) = \gamma + 1 - x_t$. In $s_t = \{NT, \cdot\}$, neither state receives the economic benefit, with State 1 receiving $\mu_1(x_t, \{NT, \cdot\}) = x_t$ and State 2 receiving $\mu_2(x_t, \{NT, \cdot\}) = 1 - x_t$. Finally, the game enters period $t + 1$, where with probability $d > 0$ that there will be an increase in states' economic dependence, and their adjustment costs become $a_i' > a_i$ in all future periods.

If State 2 rejects, then states receive their war payoff in the current and all future periods. We incorporate the idea that war affects the benefits states can capture from their trade relationship. We use $\beta \in [0, 1)$ to parameterize the proportion of an existing trade relationship that is not negatively affected by fighting. This captures the idea that states

may continue trading, reaping β proportion of the economic benefit γ even though war has broken out. Finally, states pay one-time adjustment costs depending on whether their economic dependence has increased ($\{\cdot, H\}$) or not ($\{\cdot, L\}$). Formally, the war payoffs in each state of the world are as follows.

First, the war payoff in $s_t = \{T, L\}$ is :

$$w_i^{T,L} = p_i - c_i + \beta\gamma - (1-\delta)a_i \tag{1}$$

where a_i is replaced with a_i' in $s_t = \{T, H\}$.

Second, the war payoff in $s_t = \{NT, L\}$ is:

$$w_i^{NT,L} = p_i - c_i - (1-\delta)a_i \tag{2}$$

where a_i is replaced with a_i' in $s_t = \{NT, H\}$.[12]

Gathering all this together, we can write each player's dynamic payoff. Let σ be a (pure) strategy profile, and with a slight abuse of notation, let $x_t(\sigma)$ be the offer made under σ in period t. Further, let $W_t(\sigma)$ be the probability of war in period t under σ. With this, State i's dynamic payoff under strategy profile σ is:

$$(1-\delta)\sum_{t=1}^{\infty}\delta^{t-1}[W_t(\sigma)w_i(s_t) + (1-W_t(\sigma))\mu_i(x_t(\sigma), s_t)]. \tag{3}$$

Key Features of the Model

A central assumption in commercial liberalism is that peaceful commerce generates mutual gains and that war disrupts or terminates trade, thereby eliminating these benefits.[13] A prominent critique—the predation or "barbarian" logic—contends that economic exchange

[12] This adjustment cost is only incurred in period t if trade is severed at the beginning of t, then $\forall t' > t$, this adjustment cost is no longer part of the war payoff.

[13] Mansfield 2021; Mansfield and Pollins 2001; McMillan 1997; Polachek and Xiang 2010; Polachek 1980.

does not always make war prohibitively costly because belligerents may appropriate economic value through force, for example by seizing assets, territory or resources, or market access. Related to this critique, recent work shows that trade between enemies may persist during wartime when exchange does not enhance the adversary's war–fighting capacity or when cutting trade would undermine the state's long–run security.[14] Historical evidence likewise documents episodes in which states continued commerce while fighting.[15] Moreover, belligerents can reroute economic exchange through neutral intermediaries, implying substantial recomposition of trade patterns rather than complete breakdowns of commerce even when direct trade declines sharply; in such cases, the welfare losses of war may be smaller than conventional accounts suggest.[16] Taken together, these studies suggest that war can substantially reduce bilateral trade without necessarily eliminating commercial benefits altogether.

Our model incorporates a more flexible view while preserving the opportunity-cost logic central to commercial-peace arguments. Let γ denote trade benefits that countries stand to gain from trade under peace.[17] We introduce $\beta \in [0, 1)$ to capture the fraction of trade benefits that persists during war: if conflict occurs while the countries maintain a trade relationship, each retains $\beta\gamma$ in commercial gains, so the loss of trade benefits is $(1 - \beta)\gamma$. Put differently, war destroys $(1 - \beta)\gamma$ of the gains from trade, which corresponds to the opportunity-cost logic of war. This formulation nests the standard benchmark of complete trade cessation ($\beta = 0$) while allowing wartime commerce to range from autarky to largely uninterrupted exchange.

We then operationalize economic dependence as the adjustment costs states incur during

[14] Grinberg 2021.

[15] Giltner 1997; Levy 1998.

[16] Gowa and Mansfield 1993; Gowa and Hicks 2017.

[17] We assume a common trade benefit γ across both countries and both dependence stages for tractability and to keep the analysis focused on the security implications of *changing* dependence rather than on heterogeneity in the gains from trade. This symmetry is not necessary to derive our results, which we formally demonstrate in Appendix A.6. Thus, we opt for the simpler specification here to ease the presentation.

the transition from disrupted trade ties to the establishment of alternative relationships. These trade-related costs reflect the substitution frictions triggered by war disruption: first, the time and capital required to search for and secure alternative suppliers and markets—especially when substitutes are limited by product heterogeneity or specificity—and second, the frictions associated with reorganizing exchange after new partners are found, including renegotiating contracts, building production infrastructure, and adapting to different standards or technologies.[18] We capture these adjustment costs with parameter a_i, that are incurred when present trade ties are severed.

Finally, we treat adjustment costs as dynamic. As states become more reliant on a partner's commodities or markets, severing the trade relationship becomes increasingly expensive because trade-flow decline is larger, equivalent substitutes of supplying or buying are scarcer, and relocation or adaptation process takes longer, all of which can generate more costs during the transitional process. We represent this dynamic with two parameters, a_i' and $d \in (0, 1)$. Here, a_i' denotes the adjustment cost in a future period when dependence is deeper, and d governs the rate at which adjustment costs rise from a_i toward a_i'. Higher values of a_i' or d therefore indicate a larger magnitude–or faster growth–of dependence-related costs following future trade disruption.

A natural question is whether the model needs both the fraction of the surplus that survives war, β, and the adjustment costs, a_i and a_i', since both shape how war bears on the trade relationship. The two parameters are distinct. The parameter β determines how much of the recurring trade surplus, $\beta\gamma$, states retain while fighting, so it operates through the opportunity cost of war and is decisive for whether states sever trade rather than fight. The adjustment cost a_i is a separate, one-time cost paid when an established relationship is dissolved, and our analysis finds that it is the growth in this cost, $a_2' - a_2$,

[18]The European gas market can illustrate these frictions: where pipeline infrastructure and contracting arrangements lock in supply relationships, shifting away from a dominant supplier can impose substantial transitional losses because new pipelines and sourcing capacity require years of planning, approvals, and investment (Gent and Crescenzi 2021, p. 132-133).

that creates the dynamic commitment problem that drives conflict. The two forces are independent; as our analysis reveals, war can occur even when fighting destroys none of the surplus ($\beta = 1$), provided dependence is growing, and war never occurs absent growth in dependence ($a_2' = a_2$), whatever the value of β.

It is also worth highlighting a force that is not included in our baseline model to clarify the scope restrictions of our analysis. Specifically, our model abstracts away from wars of conquest such as those studied by Gent and Crescenzi (2021), in which states pursue war because they expect that the spoils of conquest outweigh the cost of fighting. Instead, our interest is in potential conflicts that might arise *when* and *because* states are trading with each other and, as a result, there exist opportunity costs for fighting that create disincentives for conflict. In the final section of our discussion of the results, we describe the results of an extension of the model that allows for conquest. The qualitative results of our analysis carry over to this extension.

Equilibrium Analysis

As is standard in the analysis of dynamic games, we study stationary, Markov perfect equilibrium (MPE).[19] In this context, MPE amounts to subgame perfect equilibrium with two additional requirements: that states condition their behavior in period t only on the state variable s_t and that they use the same strategies in any t, t' such that $s_t = s_{t'}$.[20]

To begin, we characterize how bargaining behavior is shaped by economic dependence. For our first two results, we focus on equilibrium behavior when states do not sever trade on the path of play. This allows us to establish a baseline understanding of how dependence shapes patterns of bargaining and fighting before moving on to the broader question of whether states, anticipating the effects of dependence, choose to trade at all.

[19] Maskin and Tirole 2001.

[20] Our qualitative results of importance hold across all equilibria, including those that relax the assumption of stationary play. A focus on stationary equilibria simplifies the presentation of the results significantly.

Our first result focuses on two forces - one static and one dynamic. First, we demonstrate that dependence leads states to make political concessions. The logic of this result is tied to the classic logic of bargaining. As a state becomes more economically dependent, its outside option of war becomes worse because it anticipates the need to pay adjustment costs, and therefore it is willing to concede more in bargaining. Second, we show that dynamic considerations also come into play, but in the opposite direction. When a state anticipates that it will grow more dependent in the future, it receives concessions in the present. The intuition for this is also straightforward. Because a state anticipates future dependence, it must be compensated in the present lest it fight in order to prevent this dependence from occurring. The following result formally demonstrates these forces.

Lemma 1. *In any equilibrium in which neither state severs trade on the path of play,*

1. *in a period in which State 2 is highly dependent, $s_t = \{T, H\}$, the highest demand State 2 is willing to accept, denoted $x_t^{T,H}$, is increasing in a_2'.*

2. *in a period in which State 2 is not highly dependent, $s_t = \{T, L\}$, the highest demand State 2 is willing to accept, denoted $x_t^{T,L}$, is decreasing in a_2'.*

This result highlights the dynamic nature of the relationship between economic dependence and political concessions. The first part of the result focuses on the effect of economic dependence in the *present*, when a further increase in dependence is not on the horizon. Under these conditions, State 2 knows that its dependence entails adjustment costs in the event of war. Accordingly, in equilibrium dependence correlates with political concessions. The extent of State 2's dependence directly correlates with the magnitude of the concessions made to State 1—an increase in $a_2^{'}$ results in greater concessions. The higher State 2's post-shift dependence, denoted as a_2', the greater the political concessions State 1 can extract from State 2. Consequently, post-shift economic dependence exposes State 2 to political vulnerability. Importantly, this depends on an environment of *stable* dependence, as is the

case in a period in which $s_t = \{T, H\}$, when dependence has already increased and will not increase further.

In contrast, if dependence is expected to increase over time, as is the case in a period in which $s_t = \{T, L\}$, State 1 is compelled to make political concessions to State 2. In this case, higher anticipated *future* dependence, a_2', enables State 2 to secure more favorable concessions from State 1. Why is this? Anticipating an increase in its economic dependence, State 2 is fully aware of the political concessions it will need to make once it becomes more economically dependent in the future. Thus, State 2 has an incentive to demand more in the present period to compensate it for the anticipated loss of bargaining power following the shift in economic dependence. State 1, desiring to maintain the trade relationship and to secure a stronger bargaining position in the future, is compelled to concede to State 2's demands. The disparity between State 2's future and present economic dependence, denoted as $a_2' - a_2$, determines the extent of political concessions State 1 needs to make to State 2. In sum, an anticipated increase in dependence in the *future* allows State 2 to extract additional concessions in the *present*.

With the relationship between economic dependence and political concessions detailed, we now turn to one of our central questions: when can economic dependence lead to war? We find that a high level of anticipated *future* economic dependence creates an incentive for war. The following result establishes this formally.

Proposition 1. *Suppose that σ is an equilibrium in which neither state severs trade on the path of play in any period.*

If

$$a_2^{'} > \frac{(1-\beta)\gamma + p + c_2 + (1-\delta+\delta d)a_2}{\delta d} \equiv \overline{a}_2^{'}$$

or, equivalently

$$d > \frac{(1-\beta)\gamma + p + c_2 + (1-\delta)a_2}{\delta(a_2' - a_2)} \equiv \overline{d}$$

then under σ State 2 rejects all offers in a period in which $s_t = \{T, L\}$ and results in war.

As this result shows, if the dynamic shift in dependence is sufficiently high, State 2 will reject any offer made in a period in which it is (i) trading with its partner and (ii) its current level of dependence is low. Therefore, dynamics are important; war due to economic dependence can only occur in our model as the result of an anticipated shift in a state's *future* dependence. As indicated in the proposition, both the size and speed of an increase in economic dependence, drive this finding.

The first factor that determines whether dependence leads to war is the size of the shift in dependence, represented by a_2'. State 2, recognizing the looming increase in its future adjustment cost, develops a preference for engaging in war before becoming further economically dependent on the relationship with State 1. This comes from the significant difference between the future adjustment cost, a_2', and the present adjustment cost, a_2. Lemma 1 shows that although its future economic dependence allows State 2 to extract some concessions on the political issue in the present, this bargaining advantage will vanish in the future once its dependence increases. At this point, State 2's outside option of war is worse because its adjustment cost has risen due to the increase in dependence. As is typical in bargaining models, this weakens its hand in political negotiations. When the potential shift in its adjustment cost is sufficiently large, State 2 prefers to engage in war and incur the lower adjustment cost a_2 in order to prevent State 1 from exploiting its future dependence. In this case, even conceding the entire issue in a period before increased dependence is not sufficient to compensate State 2 for this anticipated loss. Knowing this, in equilibrium State 1 makes a non-serious offer, anticipating that State 2 will inevitably reject it.

The second factor is how quickly State 2's increased dependence on State 1 is expected to arrive, which is represented by the parameter d. The role of d is best understood as a consequence of the dynamics outlined in Lemma 1. Recall that an anticipated upward shift in dependence confers both a short-term advantage and a long-term disadvantage to State 2 in bargaining. As Lemma 1 illustrates, d gives State 2 some bargaining leverage over the political issue at present. However, once dependence increases State 2 loses this

advantage, and must settle for worse outcomes in bargaining. A higher value of d implies that State 2 loses its temporary bargaining advantage more quickly. If d is sufficiently high, the permanent loss of bargaining power in the future outweighs the temporary gains from the concessions State 2 receives in the present.

Moreover, Proposition 1 also yields clear comparative statics that clarify when greater trade makes peace more likely. In particular, the war threshold varies systematically with both (i) the gains from trade and (ii) the dynamic growth in State 2's trade dependence. The following result contains the findings.

Corollary 1. *The propensity of war decreases as:*

- *The trade benefits γ increases*
- *The dynamic change in Country 2's trade dependence, $a_2' - a_2$, decreases*

First, $\bar{a}_2'$ increases in the size of trade benefits, γ. Larger trade gains make the war condition more stringent: for a given distribution of a_2', the set of values for which $a_2' > \bar{a}_2'$ shrinks as γ rises, and the corresponding probability of war declines. The intuition follows from comparing bargaining and fighting payoffs. Higher γ raises the value of peace—since the full trade surplus is realized under a negotiated settlement—while also increasing the economic cost of war because conflict destroys $(1-\beta)\gamma$ of the surplus. Second, $\bar{d}$ decreases in the temporal rise in State 2's adjustment cost, $a_2' - a_2$. The key factor in Proposition 1 is the anticipated shift in dependence, $a_2' - a_2$, which governs how sharply State 2's bargaining position is expected to deteriorate once dependence rises. When the gap $a_2' - a_2$ is smaller, it implies a less severe expected decline in bargaining leverage. As a result, war is less worthwhile as a means of forestalling future vulnerability because the future disadvantage that motivates preventive action is attenuated.

In conclusion, Proposition 1 identifies growing economic dependence as a source of international conflict. This resonates with conclusions drawn by critics of commercial liberalism that economic dependence can manifest in tension and conflict when states exploit others'

economic dependence to gain bargaining leverage and extract concessions. However, our model shows that economic dependence indeed provides states with bargaining leverage over the political dispute, but it does not generate conflict unconditionally. Instead, in our framework it is the *expected increase* in economic dependence that drives states to fight to avert making undesirable political concessions in the future.

Why Economic Dependence Rarely Causes War

So far, we have found that dynamic shifts in economic dependence can cause war in equilibrium. However, wars of economic dependence are empirically rare. What accounts for this? The key insight, which we formally outline in this section, is that trade is not exogenous. Rather, states make decisions about the extent of their trade relationships, and trade relations can be manipulated to reduce dependencies if those dependencies are expected to result in intolerable bargaining vulnerability or war.

We present two results to study how states manage their trade relationships. First, we consider the choice of whether to terminate the trade relationship altogether - decoupling. In the previous section, we studied equilibrium behavior when states do engage in trade. In contrast, this section considers equilibrium trade decisions. We show that if the total costs of fighting are not offset by gains from economic engagement, then states will break off trade to avoid bargaining under the shadow of economic vulnerability. Second, we consider a less extreme form of trade policy - derisking. We show that when gains from economic engagement are not totally dominated by costs of conflict but states are still concerned about coercive bargaining vulnerability, then states may place limits on trade to reduce the extent and/or speed of an increase in dependence to avoid being coerced. To do this, dependent states choose a derisking strategy that reduces their future vulnerability and alleviates the commitment problem dynamics studied above. However, derisking also leads to a reduction in the current benefits of trade, potentially lowering the opportunity cost of war. Our results detail how these two forces interact to drive peace and war under endogenous economic policy.

Decoupling

Our first result focuses on the decision to trade in the first place. As outlined in the previous section, trade may come at a great cost - a war to avoid increasing dependence. The following proposition shows that if war is sufficiently costly relative to the benefits of trade, states will forgo trade in the first place to maintain peace.

Proposition 2. *If $a_2' > \overline{a}_2'$, then in equilibrium, State 1 severs trade in state $\{T, L\}$ if and only if*

$$\gamma\beta < c_1 + c_2.$$

Equivalently,

$$\underbrace{\gamma}_{\text{Total gains from trade}} < \underbrace{\gamma(1-\beta)}_{\text{Trade destroyed by war}} + \underbrace{c_1 + c_2}_{\text{Direct kinetic costs of fighting}}.$$

Further, if trade is severed then the equilibrium probability of war is 0.

The intuition for this result is straightforward. Trade generates economic surplus γ. At the same time, war imposes two types of costs: the direct kinetic costs of fighting, $c_1 + c_2$, and the opportunity cost of lost trade, $\gamma(1-\beta)$, since only a fraction β of trade survives conflict. Because war is the outside option in bargaining, these costs matter even if conflict never occurs. Bargaining outcomes are pinned to what each side would receive in war. As a result, both the economic losses and kinetic costs associated with conflict shape bargaining positions in peace as well as affecting states if war breaks out. The possibility of war brings war costs into states' decisions to trade or decouple, regardless of whether trading results in war or coercive bargaining while trading peacefully.

The decision to decouple is thus a decision about exposure to coercive bargaining. Maintaining trade deepens economic ties, which both brings economic benefits but also exposes states to the economic stakes of conflict, which includes the direct costs of fighting and also the destruction of a portion of the gains from trade. The relevant comparison is whether the

residual gains from trade justify bearing these potential war-related costs.

When the portion of trade that survives war, $\gamma\beta$, is smaller than the total kinetic costs of fighting, $c_1 + c_2$, the economic relationship does not provide benefits that offset the strategic vulnerability to coercion. The combined direct and opportunity costs of conflict outweigh the effective value of maintaining trade. Under those conditions, severing trade removes the source of bargaining vulnerability ex ante. States choose to decouple when economic gains from engagement are insufficient to offset the strategic vulnerability created by deepening dependence, allowing them to confront political disputes without economic vulnerability shaping the terms of bargaining.

Derisking

Proposition 2 studies a blunt tool for avoiding war: severing a trade relationship entirely. In practice however, states have a variety of policy levers at their disposal for managing their trade relationships. Though these tools vary, they all have the consequence of placing limits on either the extent or speed of an increase in economic dependence.

Decoupling refers to the complete severance of economic ties between two countries, whereas derisking is a more gradual and fine-grained approach aimed at mitigating the security risks associated with economic engagement. Unlike decoupling, derisking seeks to preserve basic trade ties and retain the benefits of a globally interconnected economy while managing the commitment problem that deepening dependence creates. US National Security Advisor in the Biden administration Jake Sullivan identified the underlying problem directly: "ignoring economic dependencies that had built up over the decades of liberalization had become really perilous—from energy uncertainty in Europe to supply-chain vulnerabilities in medical equipment, semiconductors, and critical minerals. These were the kinds of dependencies that could be exploited for economic or geopolitical leverage."[21]

[21] Jake Sullivan, "Renewing American Economic Leadership," Brookings Institution, Washington, D.C., April 27, 2023. `https://bidenwhitehouse.archives.gov/briefing-room/speeches-remarks/2023/04`

Sullivan's diagnosis maps directly onto the central mechanism of our theory: it is the dynamic accumulation of dependence over time—not its current level—that generates political leverage and motivates the strategic policy response. His prescription was the "small yard, high fence" formulation: protecting "foundational technologies" through "carefully tailored restrictions" on exports with direct national security applications, rather than severing the broader commercial relationship altogether. Even as the Biden administration tightened export controls on advanced semiconductors to China, it continued to recognize the importance of the Chinese market for U.S. integrated circuit producers. This logic emerged in parallel as an organizing principle of economic statecraft among the world's major economies. European Commission President Ursula von der Leyen articulated the "de-risking not decoupling" framing in March 2023, and within months it had been adopted across the Atlantic and codified at the multilateral level. In June 2023, the European Commission detailed the logic of derisking as part of its European Economic Security Strategy: to "provide a framework for a robust assessment and management of risks to economic security... while preserving and increasing our economic dynamism."[22] The 2023 G7 Hiroshima Summit codified this consensus, committing member states to an approach "based on diversifying and deepening partnerships and de-risking, not de-coupling."[23]

To study such tools, in this section we extend the model to allow for this kind of fine-grained manipulation of trade relationships to emerge endogenously. Formally, we extend the model as follows. Prior to play in period 1, Country 2 selects a level of derisking policy denoted τ, with $\tau \in [0, \overline{\tau}]$ and $\overline{\tau} > 0$.[24] Although bilateral trade flows are mediated by firms,

/27/remarks-by-national-security-advisor-jake-sullivan-on-renewing-american-economic-leadership-at-the-brookings-institution/

[22]European Commission and High Representative for Foreign Affairs and Security Policy. *European Economic Security Strategy.* JOIN(2023) 20 final. Brussels, June 20, 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023JC0020

[23]G7 Hiroshima Leaders' Communiqué, May 20, 2023. https://bidenwhitehouse.archives.gov/briefing-room/statements-releases/2023/05/20/g7-hiroshima-leaders-communique/

[24]To ease the presentation by ensuring that State 2 always selects an interior value of τ, throughout we

states shape these flows through export controls, investment screening, sectoral subsidies, and procurement preferences, thus we model derisking as a state-level choice of τ that governs bilateral dependence. Following this choice, the timing, actions, and state transitions of the game are as in the baseline game analyzed previously. The choice of τ enters the model through a modification of stage payoffs. In particular, we assume that a_2, γ, and a_2' are functions of the chosen value of τ. We write these as $a_2(\tau), \gamma(\tau)$, and $a_2'(\tau)$. Throughout, we assume that these functions are twice continuously differentiable in τ. Additionally, we impose a set of assumptions on these functions to capture relevant features of derisking policy. First, we assume that $\frac{\partial a_2'}{\partial \tau} < \frac{\partial a_2}{\partial \tau} < 0$—as a forward-looking policy, derisking reduces the dynamic growth of trade dependence by imposing a stronger restraining effect on one's future adjustment cost.[25] Second, we assume that $\frac{\partial \gamma}{\partial \tau} < 0$—the higher the strength of the derisking policy, the lower the benefits of trade.

Before moving along to our analysis of this extension, we discuss how this extension captures relevant features of derisking policy. The most important feature of our modeling of derisking policy is that trade policy has general effects on states' incentives. Rather than targeting adjustment costs, trade benefits, or the speed of dependence in isolation, trade policy necessarily influences these factors in tandem. The United States, for example, has pursued derisking policies to insulate itself from potential Chinese supply disruptions in rare earth materials. Efforts to accelerate investment in mining in allied countries and build a domestic supply chain are designed to expand the set of available alternatives and reduce the costs of shifting away from China—reducing a_2' and d in the language of our model. However, derisking also entails costs. It can deprive U.S. firms of access to cost-effective raw materials and reduce bilateral trade as the U.S. shifts toward alternative suppliers, reducing γ. Costs may also arise from China's countermeasures, such as retaliatory export controls.

assume that $\beta \left.\frac{\partial \gamma}{\partial \tau}\right|_{\tau=0} - (1-\delta) \left.\frac{\partial a_2}{\partial \tau}\right|_{\tau=0} > 0$ and $\beta \left.\frac{\partial \gamma}{\partial \tau}\right|_{\tau=\overline{\tau}} - (1-\delta) \left.\frac{\partial a_2}{\partial \tau}\right|_{\tau=\overline{\tau}} < 0$

[25] Substantively, this amounts to an assumption that derisking in the present carries over into the future. For example, if domestic production facilities become effective in the present, then this assumption states that they also reduce future adjustment costs as well.

All of these reduce the gains generated by U.S.-China economic engagement.

Our first result characterizes the level of derisking states choose in equilibrium.

Lemma 2. *If* $\delta > \frac{a_2(\hat{\tau})-c_1-c_2}{a_2(\hat{\tau})}$*, then in equilibrium, State 2 sets* $\tau^* = \min\{\tilde{\tau}, \hat{\tau}\}$ *where* $\tilde{\tau}$ *is the unique solution to*

$$\beta \left.\frac{\partial \gamma}{\partial \tau}\right|_{\tau=\tilde{\tau}} - (1-\delta) \left.\frac{\partial a_2}{\partial \tau}\right|_{\tau=\tilde{\tau}} = 0.$$

$\hat{\tau}$ *is the unique solution to*

$$\beta\gamma(\hat{\tau}) = c_1 + c_2$$

Lemma 2 provides insight into State 2's choice of derisking policy. The first equation is the first-order condition of State 2's war payoff in the first period under an existing trade relationship; the second is the condition at which State 1 is indifferent between maintaining and severing trade. State 2 must trade off how its choice of τ affects State 1's subsequent trade decision and, given that trade outcome, which derisking level yields the highest payoff. A higher τ reduces State 2's dependence cost but also lowers State 1's incentive to maintain trade as economic gains shrink. When states are sufficiently patient, State 2 wants to avoid pushing derisking to the point of breaking down trade, and so chooses the derisking level that secures the highest payoff conditional on State 1 remaining willing to trade.

It follows that State 2 chooses the feasible value of τ that maximizes its equilibrium continuation payoff under an existing trade relationship. On the one hand, State 2 knows that $\hat{\tau}$ is the highest level of derisking that ensures that State 1 will not sever the trade relationship. On the other, State 2 wants to choose the unique value of $\tilde{\tau}$ that maximizes its first-period war payoff. As a consequence of the bargaining structure of the model, in every equilibrium State 2's continuation value in the first period of the game is equal to its first-period war payoff: either State 1 makes an offer of x_t that renders State 2 indifferent over war and acceptance, or State 1 is unable to compensate State 2 for its feared future economic dependence, and State 2 rejects all offers. This implies that the optimal choice for State 2 is the smaller value of the two thresholds.

Given that τ represents derisking policy, this raises an important question: does peace or war follow equilibrium derisking?

Proposition 3. *Fix τ^*. If*

$$d \leq \frac{(1-\beta)\gamma(\tau^*) + p + c_2 + (1-\delta)a_2(\tau^*)}{\delta(a_2'(\tau^*) - a_2(\tau^*))} \tag{4}$$

then derisking leads to peace in equilibrium.

Otherwise, war occurs following derisking in equilibrium.

Proposition 3 shows that both peace and war can occur following derisking. As discussed above, derisking policy aims to reduce economic dependence, and our analysis has shown that political leverage arising from economic dependence can trigger a commitment problem-driven war.

Given this, the occurrence of war following derisking raises an important question: what is the causal effect of derisking on the probability of war in equilibrium? One possibility is that wars following derisking are the result of derisking's inefficacy. If this is the case, derisking is simply not effective enough to overcome the commitment problem that drives war in our model. Another, more pernicious possibility is that derisking *increases* the risk of war, leading to war when it would not otherwise occur.

Fortunately, the model allows us to directly address this question by thinking through counterfactuals under derisking and no derisking. To do this, we hold fixed the parameters of the model and compare the risk of war under these two conditions. Drawing from Proposition 3, we define a key cutoff, $D(\tau)$, as follows:

$$D(\tau) = \frac{(1-\beta)\gamma(\tau) + p + c_2 + (1-\delta)a_2(\tau)}{\delta(a_2'(\tau) - a_2(\tau))}. \tag{5}$$

The value of $D(\tau)$ relative to the speed of dependence d determines the relationship between a given level of derisking τ and the risk of war. The value of $D(\tau^*)$ compared to

d determines whether war occurs following equilibrium derisking; the relationship between $D(0)$ and d is the relevant counterfactual under no derisking.

The following result shows that derisking has an overall ambiguous effect on the probability of war. Under some conditions derisking is a force for peace, but derisking may also cause war in equilibrium.

Proposition 4. *Let $D(0)$ be the value of the dependence cutoff under no derisking, and $D(\tau^*)$ be the value of the dependence cutoff under equilibrium derisking level*

1. *If $D(0) \leq d < D(\tau^*)$ then derisking causes peace in equilibrium.*
2. *If $D(\tau^*) < d \leq D(0)$ then derisking causes war in equilibrium.*
3. *If either $\max\{D(\tau^*), D(0)\} < d$ or $d < \min\{D(\tau^*), D(0)\}$ then derisking has no effect on the probabilty of war in equilibrium.*

Proposition 4 shows that derisking has a nuanced effect on the occurrence of war in equilibrium. The logic of this result hinges on two competing forces.

The first is the logic of commitment problems. Derisking policy, by lowering the effect of current and future economic dependence, encourages peace by ameliorating the commitment problem. As Corollary 1 showed, decreases in $a_2' - a_2$, all else equal, reduce the risk of war. In the derisking extension this quantity is a function of τ, with $a_2'(\tau) - a_2(\tau)$ decreasing in τ. Thus, one effect of derisking is a reduction in the commitment problem caused by future dependence.

The second force is that derisking reduces the opportunity cost of war. Any policy that restricts or redirects economic flows to reduce dependence necessarily sacrifices some of the efficiency gains that generate the benefits of trade. The loss of these gains reduces the cost of fighting, as states no longer enjoy large benefits from trade that would be lost if war breaks out. As Corollary 1 showed, decreases in γ increase the probability of war. Thus, by undercutting the opportunity costs of war, derisking also serves as a force that increases the probability of war in equilibrium.

When derisking is relatively more effective in slowing down the growth in dependence than reducing the opportunity cost of war, then derisking should play a pacifying role. Figure 1 shows that the key threshold $D(\tau)$ above which dynamic dependence triggers war increases with the equilibrium choice of τ^*. If no derisking measures are implemented ($D(0)$) and the critical threshold in Proposition 3 is not met, and war occurs. However, if the equilibrium value of τ^* increases $D(\tau)$ such that the critical threshold is met, then war does not occur. Therefore, if $D(0) \leq d < D(\tau^*)$, *derisking causes peace in equilibrium.* The reason for this is intuitive - derisking serves to reduce the extent of current and future economic dependence, thus reducing the incentives for commitment-problem driven war.

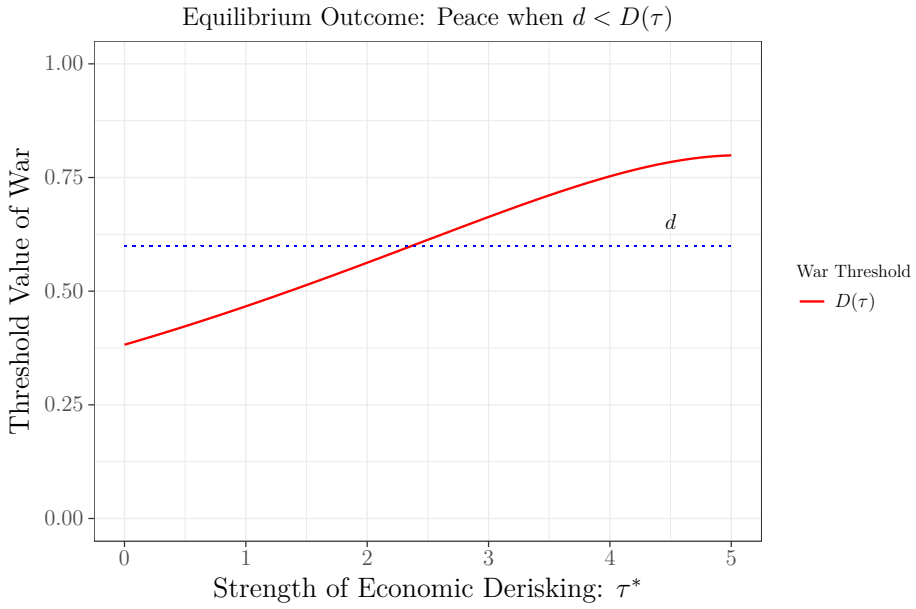

Figure 1. Derisking Causing Peace

Proposition 4 also shows that derisking may lead to war. When derisking erodes the opportunity costs of conflict faster than it attenuates the commitment problem, conflict risk rises rather than falls in equilibrium. Figure 2 illustrates this case. The key threshold $D(\tau)$ decreases as τ^* increases, pushing the relationship into the conflict zone. If peace prevails without derisking ($d \leq D(0)$) but war occurs after derisking ($d > D(\tau^*)$), derisking causes war in equilibrium.

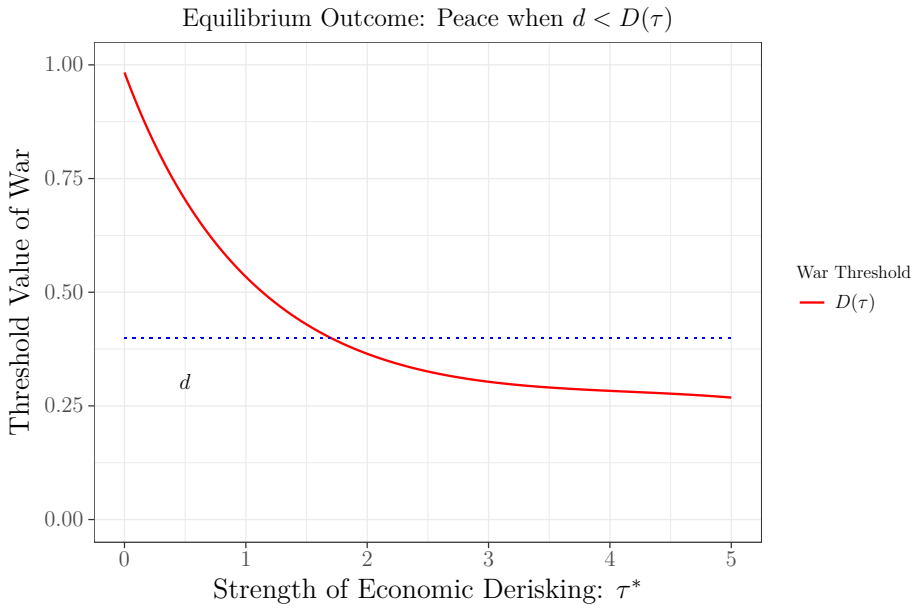

Figure 2. Derisking Causing War

This outcome is an equilibrium response to the dependence dilemma. When the anticipated costs of future dependence are sufficiently severe, a state may rationally choose a τ^* that accepts higher conflict risk in exchange for reducing future leverage exposure — paying the cost of a degraded relationship now to avoid a future in which deepening dependence forecloses acceptable bargaining outcomes altogether.

The contemporary US-China relationship illustrates this equilibrium. Facing what Treasury Secretary Scott Bessent and US Trade Representative Jamieson Greer described at an October 2025 press conference as the "Chinese chokehold on the world of rare earth and rare earth materials," the Trump administration has pursued aggressive derisking while explicitly preserving the broader commercial relationship.[26]

Bessent articulated the trade-off directly: "China's actions have once again demonstrated the risk of being dependent on them on rare earths, and for that matter, anything... The

[26]Scott Bessent and Jamieson Greer, "Treasury Secretary Bessent and U.S. Trade Representative Greer Hold News Conference," news conference, Washington, DC, October 15, 2025, C-SPAN video, at 15:15, https://www.c-span.org/program/news-conference/treasury-secretary-bessent-and-us-trade-representative-greer-hold-news-conference/667157.

world does not want to decouple, we want to de-risk, but signals like this are signs of decoupling, which we don't believe China wants."[27] When asked whether room remained for a positive economic relationship despite the conflict, Greer replied: "There certainly is. The reality is, there are a lot of areas where we can trade with the Chinese."[28] This reflects a sharply revised upward assessment of a' in rare earths prompted by China's demonstrated willingness to deploy rare earth controls as leverage across multiple disputes—revealing that future adjustment costs are larger and more immediately threatening than prior assessments implied. Whether the resulting equilibrium falls in case 1 or case 2 depends on whether the increase in τ^* attenuates the commitment problem faster than it erodes opportunity costs.

The logic of Proposition 4 reinforces the central finding of this section: wars of economic dependence are rare. Derisking gives forward-looking states a policy instrument to manage the commitment problem before it becomes severe enough to trigger conflict. Even when derisking erodes economic value and raises conflict risk, the increase is typically bounded—states choose τ^* to maximize their equilibrium payoff, which means accepting only as much conflict risk as the reduction in future leverage exposure warrants. The conditions under which war actually occurs are therefore more demanding than the baseline commitment problem alone would suggest: derisking must fail either because the chosen τ^* does not attenuate the commitment problem fast enough or because it is structurally infeasible, leaving the dependent state with no administrative lever to manipulate the terms of its dependence. It is this second condition that drives the cases we examine in the following section: one in which derisking was available, was deployed, and preserved peace, and one in which the structure of dependence rendered derisking infeasible and preventive war the equilibrium outcome.

[27] Bessent and Greer, "Treasury Secretary Bessent and U.S. Trade Representative Greer," at 8:44.

[28] Bessent and Greer, "Treasury Secretary Bessent and U.S. Trade Representative Greer," at 14:29.

Discussion

In this section, we use two case studies to illustrate the logic of the dependence dilemma. Throughout, we aim to show that the causal mechanisms identified by the formal model operated in these cases. Our argument is that the relationship between interdependence and peace is conditional on whether states are able to manage the growth of dependence through derisking. Thus, our cases are intended to illustrate the logic of derisking and its connection to conflict. To do so, we rely on evidence from primary and secondary sources, tracing the motivations and logic of key decisionmakers when possible.[29] In particular, our analysis focuses on the endogeneity of policy choices to minimize the commitment problem. We demonstrate that the decision to derisk or resort to war is driven by the strategic tension between preserving current economic benefits (γ) and the need to mitigate the risk of future adjustment costs a' as dependence grows at rate d. When policy options exist to balance these tensions, states choose to derisk. When these options are exogenously constrained, rendering derisking ineffective or infeasible, states may escalate to war.

First, we argue that Taiwan's "No Haste, Be Patient" policy illustrates a successful derisking equilibrium, in which a state facing accelerating dependence utilizes a coordinated portfolio of instruments to slow the rate of vulnerability accumulation and cap future adjustment costs, avoiding war in the process. Second, we argue that Japan's 1941 Southern Advance illustrates the preventive war equilibrium. We provide evidence that Japan's resort to war was driven by the exogenous increase in its dependence on Southeast Asia and restrictions on the effectiveness of derisking policy. With domestic substitution exhausted and the supply base beyond administrative reach, Japan faced a choice between conceding the fixed political stake and military conquest. To eliminate the source of external leverage before the peaceful bargaining range vanished entirely, Japan launched an attack to seize Southeast Asia and its resources. The contrast with Taiwan helps to illustrate the logic of derisking we have laid out above. Taiwan derisked because its capital investment dependence

[29] Goemans and Spaniel 2016; Lorentzen, Fravel and Paine 2015.

was administratively tractable. Japan could not derisk because its critical input dependence was not.

Given that our case analysis focuses on the role of derisking, it is important to clarify the connection between the model's formalism and the case evidence. Importantly, our model represents the effect of derisking on present dependence, future dependence, and the gains from trade through the *shape* of the functions $a_2(\tau)$, $a_2'(\tau)$, and $\gamma(\tau)$, rather than through a single parameter. Substantively, the shape of these functions captures the overall structure of a state's dependence. Thus, our case analysis focuses on the multifaceted nature of derisking, in addition to whether derisking is feasible given the structural nature of a state's dependence.

Taiwan's "No Haste, Be Patient" Policy, 1996–2001

In the late 1980s and 1990s, Taiwan experienced a dramatic expansion of cross-strait economic integration. After legalizing indirect investment in the People's Republic of China (PRC), Taiwanese capital flowed rapidly into the mainland. Between 1991 and 1995, approved Taiwan investment projects in China increased dramatically, and by the mid-1990s the mainland had become the leading destination for Taiwanese outward investment.[30] However, in 1996, President Lee Teng-Hui launched a sequence of policies that severely restricted this integration through investment caps, cultivation of alternative partners, and prohibition on investment in sectors identified as sensitive.

Why did Taiwan deliberately slow integration at the moment when access to the mainland promised extraordinary economic growth? Below, we provide evidence that Taiwanese leaders anticipated that unchecked reliance on market exchange would rapidly worsen Taiwan's future bargaining position over the fixed political dispute of sovereignty. Rather than allow economic dependence to accumulate until Beijing gained decisive leverage, leaders chose to proactively manage the trajectory of integration. Critically, the form of that dependence

[30] Deng 2000; Rosen and Wang 2011, p. 30; Ministry of Economic Affairs Investment Commission 1990.

made this approach both feasible and effective. Because Taiwan's growing exposure to China was concentrated in outward capital investment flows, the state sat between the investor and the destination and could intervene at any point. The parameters of integration were, in principle, manipulable.

It is clear that Taiwanese decisionmakers perceived a connection between economic dependence and political leverage. On many occasions between 1996 and 1997, President Lee Teng-hui called for "no haste, be patient", stressing the need to prevent economic dependence from becoming a source of political vulnerability where Beijing could use "economic means" to achieve political ends and "blackmail" the island in future negotiations.[31] Security officials echoed the concern that China's growing integration into the global economy would strengthen its "political influence" over Taiwan, and from a strategic perspective, Taiwan should diversify its investments by going to countries other than China to prevent a situation of over-concentration.[32] Consistent with the logic of our model, Taiwanese decisionmakers clearly perceived a dependence dilemma; they feared that unchecked economic growth might become a liability, rendering Taiwan dependent on China and vulnerable to political leverage.

Consistent with our theoretical analysis, Taiwan adopted policies specifically aimed to reduce both the speed (d) and magnitude (a_2') of its increasing dependence on China. In August 1996, Lee launched the "No Haste, Be Patient" (NHBP) policy, utilizing specific levers to target both of these factors. That these levers were available at all reflects the malleable structure of Taiwan's capital investment dependence; the state retained administrative discretion over the form, pace, and destination of outward investment, and it used that discretion deliberately.

The policy targeted the rate of dependence (d) through administrative speed governors. By institutionalizing a US$50 million cap on individual projects and requiring multi-level

[31] Lee 1996; Lee 1997; Gellman 1997. The Chinese-language original of Lee's address is archived at the Academia Historica, Taipei.

[32] Tanner 2007, p. 53; Lin 2002.

inter-ministerial approvals, the state created a bureaucratic bottleneck.[33] The MAC justified these "thick" approval processes as a security necessity; by increasing the administrative time required for capital transfer, the state attempted to reduce d. The policy also targeted the ceiling of future adjustment costs (a_2') through sectoral bans. The administration specifically prohibited investment in high-tech R&D and large-scale infrastructure.[34] The rejection of the proposed Formosa Plastics power plant project was emblematic of this logic, as large-scale capital-intensive infrastructure investment would have given Beijing precisely the leverage over deeply embedded Taiwanese capital that the policy sought to prevent. Labor-intensive manufacturing was permitted to move; capital-intensive investment that would have deepened political exposure was not.

A complementary instrument targeted adjustment costs through the cultivation of outside options. Launched in 1993 and reinvigorated alongside NHBP in 1996, the "Go South" policy (*Nanxiang Zhengce*) sought to redirect Taiwanese investment toward Southeast Asia in order to reduce the mainland's share of Taiwan's total exposure.[35] Rather than restricting the terms of integration with Beijing, it aimed to build the alternative markets and production networks that would lower the cost of any future disengagement. The policy achieved only limited results; Taiwanese capital proved difficult to redirect, and the 1997 Asian financial crisis disrupted several target economies.[36] Its partial failure does not diminish its significance in illustrating the logic of our theoretical framework. Rather, consistent with our theory, Go South illustrates that Taiwan's derisking strategy was a coordinated portfolio of instruments rather than a single lever, each targeting a distinct parameter of the model.

Our theoretical analysis also sheds light on why alternatives to NHBP were ultimately not pursued. Below, we focus on two counterfactual policies that were considered by Taiwanese decisionmakers, but ultimately discarded: a move toward independence and full economic

[33] Deng 2000.

[34] Chung et al. 2005; Deng 2000.

[35] Lin 2016, p. 60; Roy 2003, p. 217.

[36] Lin 2016, pp. 94-95.

decoupling. By identifying the logical path through which policies are *and* are not chosen, formal models are particularly well-suited to consider counterfactual policies, illuminating why they were not chosen.[37]

In response to Taiwan's growing economic ties to China, pro-independence advocates argued for moves toward formal independence despite the growing risk that China would eventually possess overwhelming coercive leverage. A formal declaration of independence would have likely triggered a high-cost military confrontation; in the logic of our model, this represents a preventive conflict intended to resolve the sovereignty dispute while the state still possesses the material autonomy to resist. By escalating in the present, these actors sought to forestall a future where the bargaining range had vanished due to asymmetric dependence. However, the high opportunity cost of war $(1-\beta)\gamma$, combined with the demonstrated military asymmetry of the 1995–96 crisis and the constraints of democratic accountability, rendered this option unattractive. The NCCU trend data confirm that across all waves from 1994 through the late 1990s, the "independence as soon as possible" category consistently attracted only a small fraction of respondents, approximately 5–6 percent, while large pluralities clustered in status-quo-preserving categories.[38]

Full economic decoupling from China was another option that was considered but ultimately discarded. This strategy was championed by a coalition of Democratic Progressive Party activists, labor organizations, and economic nationalists who argued that any degree of dependence made future political concessions inevitable. However, the "present-mindedness" of the median voter, who prioritized the immediate economic benefits (γ) of cross-strait relations, created a political ceiling for this strategy. The NCCU data show that in the mid-1990s, respondents consistently assigned substantial value to economic exchange, with full decoupling enjoying little support relative to the status-quo-maintaining options.[39] This domestic misalignment between the preferences of the security elite and the electorate led the

[37] Bueno De Mesquita 2020; Fearon 1991; Levy 2008.

[38] Election Study Center, National Chengchi University 2026; Rigger 2001, p. 165.

[39] Election Study Center, National Chengchi University 2026.

administration to select the NHBP derisking strategy. Importantly, and consistent with our theoretical analysis, opposition to total severance was driven by an acknowledgement that, though it would eliminate external leverage, this reduced leverage would come prohibitive domestic economic cost.

In sum, Taiwan's NHBP policy is consistent with the logic of derisking that emerges from our theoretical analysis. Anticipating that unchecked integration would increase Beijing's future leverage, leaders adopted a coordinated portfolio of instruments to slow the rate of dependence accumulation, cap the adjustment cost through sectoral restrictions, and build outside options through Go South. These instruments were available because Taiwan's dependence was in outward capital investment, a form of integration the state could administer, restrict, and redirect. Faced with prohibitive war costs and democratic constraints, Taiwan utilized that structural advantage to manage the trajectory of dependence rather than accept total vulnerability.

Japan's Southern Advance, 1941

Beginning in the early 1930s, Japan sought to draw the Netherlands East Indies (NEI) into a subordinate political-economic relationship under its leadership. For most of the decade Japan pursued this aim through trade and diplomacy, and it did not turn to military force until the decade's end. Why did Japan choose a risky and costly military advance to achieve what it had long sought by peaceful means?

Below we argue that, consistent with the logic of our model, Japanese leaders feared that growing dependence on Dutch oil would rapidly worsen their future bargaining position over the very subordination of the NEI they sought. Japan's options to mitigate this growing dependence through peaceful derisking policy were infeasible because of the structure of its dependence, which was concentrated in a single non-substitutable commodity. Consequently, Japan chose war to restructure the underlying economic environment and forestall the coercive leverage it anticipated.

Importantly, the case of Japan during this time period corresponds to the structure of our formal model. First, there existed a fixed, high-stakes political dispute understood by both parties over the political and economic control of the Netherlands East Indies, which Japan sought to bring under its direction, while the Dutch sought to preserve their autonomy. Second, Japan faced growing dependence on NEI for oil supply. The expanding embargo of the U.S. rapidly closed off Japan's major import sources, driving up Japan's resource dependence on Southeast Asia, especially NEI. Third, Japanese leaders held forward-looking beliefs, acknowledging that this increasingly dependent relationship would weaken Japan's bargaining position as it pursued control over the NEI. Fourth, Japan possessed options that correspond to our model: it could continue to bargain under worsening dependence, attempt derisking, or initiate preventive conflict.

Japanese planning documents in late 1930s set out concrete designs on the Netherlands East Indies, aiming to eventually incorporate NEI into its "Greater East Asia Co-Prosperity Sphere", which amounts to an exclusive regional bloc under Japanese leadership. Japan's aims reached far beyond commerce into the domestic political economy of the Indies, including the entry and settlement of Japanese nationals, mining rights even in government-reserved areas, fishing rights in territorial waters, Japanese-run air, shipping, port, and submarine-cable services, and preferential treatment for Japanese firms and goods.[40] In sum, Japan sought command over the Indies' immigration, natural resources, transport, communications, and finance—the very levers by which a state governs its own economy.

The Netherlands Indies government saw its autonomy at stake and resisted. This awareness ran back to late 1939, when Ambassador Grew, US Ambassador to Japan, informed the US Secretary of State that a Dutch newspaper reported the Secretary of the Japanese Legation's declaration that "Japan intends to demand in the Dutch East Indies the same rights as Soviet Russia has recently secured in the Baltic States, and he is reported to have added that the Netherlands, lacking adequate force, could do nothing about it."[41] The chief

[40] Van Mook 2010, pp. 67-71.

[41] The Ambassador in Japan (Grew) to the Secretary of State, Tokyo, February 15, 1940, in *Foreign*

Dutch negotiator judged Japan's "ultimate objective" to be their "subjection ... under the direct rule or the supreme leadership of Japan".[42] The Netherlands authorities resisted both the specific demands and the principle behind them. They refused "any attempt to link the yen with the guilder, any control or inspection of harbors, navigation, imports and exports, production, or any other internal and external functions of this country,"[43] and treated "the entry of Japanese nationals" as a matter of domestic jurisdiction.[44] More fundamentally, they rejected the very claim that the Indies belonged in Japan's order and insisted the Indies "could not be regarded as falling within any co-prosperity sphere under Japanese leadership."[45] Other foreign observers likewise suspected that Japan meant to bring the NEI under its control. In January 1941, the U.S. Secretary of State, Cordell Hull, feared that Japan might pursue a strategy that mirrored the one Japan had already pursued elsewhere in Asia, remarking that "the military group in Japan is undoubtedly out for general domination in that entire southern area, a fact they really avow rather than disavow, and that probably in due course both Indochina and Thailand will be brought under the sovereignty of Japan just as Manchuria in Asia."[46]

The policymaking logic of Japan mirrors the logic of equilibrium play in our theoretical model. Japanese policymakers focused on the interaction between the speed of interdiction

Relations of the United States, Diplomatic Papers, 1940, The Far East, vol. IV, doc. 3, `https://history.state.gov/historicaldocuments/frus1940v04/d3`.

[42] Van Mook 2010, pp. 13–14.

[43] The Consul General at Batavia (Foote) to the Secretary of State, Batavia, September 5, 1940, in *Foreign Relations of the United States, Diplomatic Papers, 1940, The Far East*, vol. IV, doc. 125, `https://history.state.gov/historicaldocuments/frus1940v04/d125`.

[44] Morley et al. 1980, pp. 138–139.

[45] The Ambassador in Japan (Grew) to the Secretary of State, Tokyo, June 9, 1941, in *Foreign Relations of the United States, Diplomatic Papers, 1941, The Far East*, vol. V, doc. 179, `https://history.state.gov/historicaldocuments/frus1941v05/d179`.

[46] Memorandum of Conversation, by the Secretary of State, Washington, January 13, 1941, in *Foreign Relations of the United States, Diplomatic Papers, 1941, The Far East*, vol. V, doc. 14, `https://history.state.gov/historicaldocuments/frus1941v05/d14`.

(d) and the catastrophic future trade dependence on NEI (a_2') caused by a potential oil cutoff from the West. By the late 1930s, the United States alone supplied roughly 80 percent of Japan's total oil imports, with the NEI providing most of the remainder.[47] Because of Japan's military expansion into China, the U.S. issued an embargo on aircraft and aircraft parts beginning in July 1938, and later extended this embargo to a wide variety of aviation-related materials, scrap iron and steel.[48] This expanding embargo list indicated to Japanese leaders that the eventual cutoff of U.S. oil supplies was inevitable. As the United States progressively tightened its export controls on strategic assets, Japan's outside options left Southeast Asia as the only alternative supplier. Consequently, Japan's anticipated dependence on NEI for oil rose sharply.[49] By early 1941, the consensus among Japanese elites was that Southeast Asia had become Japan's sole viable region for supplying needed war materials.[50] For Japan, the writing on the wall was clear; its dependence on access to Southeast Asian markets would only increase as time went on.

Japanese officials grasped that the longer they bargained from a position of growing dependence, the less they could expect to obtain by bargaining at all. In the 1940-41 negotiations, Japan's first mission leader Kobayashi told the Dutch that oil was "a matter of life and death for the empire,"[51] and his successor Yoshizawa also expressed to Japanese Foreign Minister Matsuoka the slim prospects of obtaining entry permission for Japanese enterprises.[52] In May 1941, bargaining positions began to harden. Japanese Vice Foreign Minister Ohashi perceived the Dutch's "stiffening attitude" and in return recalled their negotiator and, according to the US Ambassador to Japan, intimated that Japan "might be

[47] Copeland 2015, p. 178.

[48] Iriye 1987, p. 177.

[49] Barnhart 1987, pp. 136-175.

[50] Duus, Myers and Peattie 2021, pp. 218-219.

[51] The Chargé Near the Netherlands Government in the United Kingdom (Schoenfeld) to the Secretary of State, London, October 9, 1940, in *Foreign Relations of the United States, Diplomatic Papers, 1940, The Far East*, vol. IV, doc. 207, `https://history.state.gov/historicaldocuments/frus1940v04/d207`.

[52] Morley et al. 1980, p. 149.

compelled to take further steps which they strongly dislike to take."[53] In the language of our model, Japanese leaders recognized that NEI's bargaining leverage would increase as Japan's future dependence on it deepened, creating worsening counterfactual bargaining terms for Japan.

Finally, why did Japan, unlike Taiwan, choose conflict to deal with this growing dependence? Our theoretical analysis provides an answer; derisking is not a panacea. Rather, derisking can only work if states are actually able to gain access to alternative trade partners, increase domestic production, or take other steps to reduce future dependence. Japan lacked the ability to effectively implement such policies due to the sectoral character of its dependence. Japan's dependence was on a single physical commodity–oil–produced in specific geographic locations, transported through vulnerable sea lanes, and replaceable only through industrial processes Japan had not yet mastered. Japan could not slow its military's consumption of oil through bureaucratic approval processes, nor could it redirect its import dependence the way Taiwan redirected its outward investment through Go South. The structure of the dependence foreclosed the instruments the model identifies as the path to derisking.

We see further evidence of this in a previous, failed attempt by Japan to pursue peaceful derisking; Japan had, in fact, attempted the one form of derisking policy available to it. Embodied in the 1937 Seven Year Plan and the Synthetic Oil Industry Law, Japan's synthetic-fuel program was projected by the U.S. Embassy in Tokyo to make the country 60 percent self-sufficient in gasoline by 1943-44.[54] This was a genuine effort to reduce future dependence by building a domestic substitute for imported oil. It failed. Even at its

[53]The Ambassador in Japan (Grew) to the Secretary of State, Tokyo, May 24, 1941, in *Foreign Relations of the United States, Diplomatic Papers, 1941, The Far East*, vol. V, doc. 160, `https://history.state.gov/historicaldocuments/frus1941v05/d160`.

[54]Joseph C. Grew, Ambassador in Japan, to the Secretary of State, 2 April 1937, in U.S. Department of State, *Foreign Relations of the United States, 1937*, vol. 4, *The Far East* (Washington, DC: U.S. Government Printing Office, 1954), doc. 877, `https://history.state.gov/historicaldocuments/frus1937v04/d877`.

peak production in 1944, Japan's synthetic-fuel output was roughly 6 percent of the plan's target and a small fraction of the country's wartime needs.[55] The program collapsed due to insufficient industrial capacity, a shortage of the catalytic and alloy metals required for high-pressure hydrogenation, and competition from the war economy for the same labor and materials the program required. With domestic substitution exhausted, there was no diversification instrument that the state could use to manipulate both d and a_i'.

Since derisking through diversification was structurally infeasible, and derisking through import substitution had already failed, Japan faced a choice between accepting an ever-weakening bargaining position over its goals in the NEI and initiating preventive conquest. Though a peaceful policy of bargaining would have maintained the benefits of trade Japan enjoyed in the short-term, Japanese leaders viewed long-term concessions as an existential capitulation of its regional status.[56] Thus, peaceful acquiescence to growing economic dependence essentially ensured severe concessions Japan would have to make in the future. Consistent with the logic of our model, the decision for southward advance was triggered by the knowledge that viable derisking alternatives had been exhausted and that the trajectory of deepening dependence would only create a worse bargaining counterfactual.

Historical evidence confirms that the decision for war was driven by the anticipation of this future dependence rather than a reaction to deprivation caused by U.S. sanctions. By August 1940, the Japanese Navy had concluded that Japan would be obliged to seize the NEI by force.[57] These assessments preceded the full U.S. oil embargo by nearly a year. On July 2, 1941, twenty-four days before Roosevelt's executive order freezing Japanese assets, the Imperial Conference formally adopted the "Outline of National Policy in View of the Changing Situation," which committed Japan to southward advance even at the risk of war with the United States and Britain.[58] This decision was reached while oil still flowed

[55] Stranges 1993, p. 264.

[56] Ike 1967, p. 263.

[57] Morley et al. 1980, p. 255.

[58] Ike 1967, p. 78.

from the United States, before the financial freeze of July 26, 1941, and before the formal oil embargo of August 1, 1941. In late 1941, Japan put its long-standing *Nanshin-ron* ("southward advance") doctrine into practice. Japan's Southern Army launched a series of rapid operations in a deliberate sequence through which it advanced southward to seize the region's most valuable oil assets.

To conclude, our model highlights that Japan's Southern Advance was a strategic instrument used to resolve the dependence dilemma before the peaceful bargaining range collapsed entirely. Anticipating that unchecked U.S. interdiction would lead to a catastrophic increase in future adjustment costs on NEI ($a_2' - a_2$), and having exhausted the one domestic instrument available for reducing a_2', the Japanese leadership opted for preventive conflict. We interpret Japan's decision to seize Southeast Asia as reflecting the logic that Japan would grow increasingly vulnerable to coercion in future bargaining over its political objectives as its dependence on Southeast Asian resources deepened. Further, we have focused on Japan's attempts at *derisking*, arguing that war was ultimately the result of structural constraints that prevented Japan from managing its dependence through economic policy.

As such, our coverage of this case complements existing treatments such as Copeland (2015). Copeland reads the Pacific War as the product of Japan's pessimistic expectations about future U.S. trade: as Washington maintained the oil embargo to push Japan south rather than north against the Soviet Union, Tokyo struck to escape impending economic strangulation. Our treatment of the case shares Copeland's view that it was the dynamics of dependence, rather than dependence as a static condition, that drove the decision for war. Our interest, however, lies in a different part of the story. Copeland's account turns on what Japan feared would be taken away; ours turns on what Japan could, or could not, do about it. Our coverage of this case has thus focused on *derisking* — whether a state can manage the trajectory of its dependence by peaceful means before the leverage that dependence creates becomes problematic. Our account has focused on the inefficacy of derisking due to the nature of Japan's dependence. Thus, our novel focus on Japan's failed attempts to derisk

allows for an illustrative comparison with our coverage of Taiwan's successful derisking.

Extensions and Robustness

We also investigate a series of robustness checks, and show that our main findings still hold in those extensions. We describe these extensions briefly below and relegate formal presentations and extended discussion to corresponding sections in the Appendix.

Our first extension, presented in Appendix A.2, shows that our main results are not sensitive to the ultimatum bargaining protocol. We study an extension with a random proposer, in which each state has some chance of making a proposal in each period. Our main findings hold. Further, this provides insights about relative dependence. Sufficiently asymmetric growth in dependence –where one state's dependence grows much faster than the other's – can lead the faster-growing dependent state to launch a preemptive war or pursue decoupling.

Our second extension incorporates military conquest for economic gains, including the idea that states fight to capture material benefits even when a trade relationship is absent. This is described by the conquest extension model presented in Appendix A.3 in which states can extract a fraction of trade benefits through force regardless of the status of trade. The main finding is that war occurs in equilibrium when those trade benefits are sufficiently war-exploitative. This extension also speaks to war incentives stemming from competition to control markets that provide states with material benefits and political advantages.[59]

Our third extension relaxes the assumption that war disrupts trade permanently. We model war such that, with some probability, trade resumes in the following period rather than being lost forever, which raises the prospects for war by lowering its cost. This does not alter our qualitative results, but it makes their presentation more cumbersome, so we retain the simpler specification in the text. This extension can be found in Appendix A.4.

[59] Gent and Crescenzi 2021.

Our fourth extension focuses on distribution of the gains from trade. A natural question is whether states could manage the commitment problem by bargaining over the division of the trade surplus rather than only over the political issue. In Appendix A.5 we allow exactly this and show that it does not eliminate the possibility of war.

Conclusion

In relationships where deep economic engagement coexists with unresolved political disputes, interdependence produces a dilemma that deepens over time. Exchange raises the costs of conflict while concentrating leverage in the hands of the less dependent side, gradually weakening the bargaining position of the more exposed state. This paper shows when this dilemma can be managed and when it cannot. States need not choose between full engagement and full severance. They can derisk by selectively restricting ties to slow the accumulation of future adjustment costs while preserving enough of the gains from trade to maintain the opportunity costs of conflict. Derisking works when the structure of dependence gives the exposed state control over the scale and trajectory of its exposure. When restrictions erode opportunity costs faster than they mitigate the commitment problem, derisking increases conflict risk, which a state may rationally accept to limit future vulnerability. Where the structure of dependence denies these instruments, derisking cannot resolve the dilemma.

Our model generates two outcomes from a single theoretical framework: managed interdependence that sustains peace and unmanaged dependence that leads to preventive war. The commitment problem that leads to dependence and conflict and the pacifying effects of trade stemming from opportunity cost of war are not competing forces from competing theories. Rather, they are two faces of the same relationship, and which one dominates depends on whether the trajectory of dependence can be managed through policy before it becomes acute enough to make conflict rational. Taiwan's No Haste, Be Patient policy illustrates the first path. Administrative control over the terms of capital dependence let

Taiwanese leaders slow the buildup of future vulnerability while preserving the relationship that made peace valuable. Japan's Southern Advance illustrates the second. Dependence on a single non-substitutable commodity, with no domestic substitute and a supply base beyond administrative reach, left the commitment problem unmanageable and made preventive war the equilibrium outcome. Interdependence may sustain peace, but not because integration is inherently safe. Deepening ties can indeed produce preventive war. Peace holds when states can manage their exposure, and this capacity is determined by the structure of the relationship.

These results speak directly to contemporary economic statecraft. The US derisking posture in rare earths in 2025 reflects a revised assessment of the severity of the commitment problem. China's escalating use of export controls revealed that adjustment costs in this sector are larger, more immediate, and more usable as leverage than previously assumed.[60] Production disruptions followed. Ford temporarily halted Explorer output after a supplier ran short of rare earth magnets.[61] Goldman Sachs estimated that disruption to just 10 percent of rare-earth-dependent production could wipe out $150 billion in economic output.[62] When the commitment problem is assessed as more severe, accepting greater economic costs to attenuate it becomes the equilibrium response. This logic is reflected in the Trump administration's January 2026 Section 232 proclamation on processed critical minerals, which explicitly links rising dependence to vulnerability. The proclamation finds that "as of 2024, the United States was 100 percent net-import reliant for 12 critical minerals, and 50 percent or greater net-import reliant for a further 29 critical minerals," even as "demand for critical

[60]Gracelin Baskaran, "China's New Rare Earth and Magnet Restrictions Threaten U.S. Defense Supply Chains," Center for Strategic and International Studies, October 14, 2025, https://www.csis.org/analysis/chinas-new-rare-earth-and-magnet-restrictions-threaten-us-defense-supply-chains.

[61]Chris Isidore, "Rare Earths Shortage Could Cause Pandemic-Era Disruptions, Experts Say," CNN Business, June 10, 2025, https://www.cnn.com/2025/06/10/business/rare-earths-shortage-impact.

[62]Anmol Choubey, "Goldman Sachs Flags Risk of Disruption in Supply of Rare Earths, Key Minerals," Reuters, October 21, 2025, https://www.reuters.com/world/asia-pacific/goldman-sachs-flags-risk-disruption-supply-rare-earths-key-minerals-2025-10-21/.

minerals is rapidly increasing and will continue to increase"—circumstances it characterizes as "a significant national security vulnerability that could be exploited by foreign actors."[63] On this basis, the administration pursued a set of measures to reduce import reliance and build alternative supply chains, including negotiations with trading partners and the potential use of trade restrictions. Whether this resolves the dilemma or elevates conflict risk turns on a calculation the model identifies but prior theory does not: whether restrictions are eroding the relationship's deterrent value faster than they are reducing future leverage exposure. That calculation is complicated by a structural asymmetry specific to rare earths, where building alternative supply chains takes years while the economic costs of restriction are immediate.

These results yield direct implications for economic statecraft. National Security Advisor Jake Sullivan's "small yard, high fence" captures the intuition behind derisking, but the model shows that its implementation turns on a tradeoff that policy discussions leave implicit. Policies that reduce future leverage exposure also destroy current economic value and weaken the opportunity cost deterrent. Whether derisking stabilizes the relationship or raises conflict risk depends on the balance between these effects and the pace at which future adjustment costs accumulate. The model identifies three configurations policymakers should watch for.

The first is a single yard that is correctly targeted but so economically vital that restricting it erodes the deterrent even when targeting is precise. Advanced semiconductors and rare earths illustrate this. In rare earths, Chinese processing dominance is near total and the bilateral gains at stake are large. In advanced semiconductors, fabrication is concentrated in Taiwan and increasingly the United States, coordinated export controls limit what that ecosystem can supply to China, and the Chinese market accounts for a substantial share of global revenue for firms in the supply chain. In both sectors, even well calibrated restrictions

[63]Proclamation 11001, "Adjusting Imports of Processed Critical Minerals and Their Derivative Products into the United States," January 14, 2026, *Federal Register* 91, no. 12 (January 20, 2026): 2439, at paras. 5, 6, 10, `https://www.govinfo.gov/content/pkg/FR-2026-01-20/pdf/2026-01045.pdf`.

impose substantial immediate economic costs.

The second is the expansion of economic controls across multiple yards. Each restricted sector may be justified by a leverage concern, but together they can destroy a large share of the economic value generated by the broader relationship. As these losses accumulate, the deterrent weakens and conflict risk rises even though each measure appears well targeted.

The third configuration is structural infeasibility. When dependence is concentrated in a non-substitutable commodity or production process that the dependent state cannot administer, redirect, or replicate domestically, derisking is not a calibration problem but an impossibility. Japan in 1941 faced this configuration. Oil dependence was concentrated in a geographically captive, externally coercible supply base with no viable domestic substitute, and the commitment problem was confronted directly through force. Whether a relationship faces structural infeasibility depends on the tractability of the dependence.

The world's most consequential economic relationships are often entangled with its most consequential political disputes. Growing interdependence in these relationships generate both the opportunity costs that sustain peace and the leverage dynamics that can unravel it. Our theory shows why this tension persists, when it can be managed through derisking, and when it cannot.

References

Barnhart, Michael A. 1987. *Japan Prepares for Total War: The Search for Economic Security, 1919–1941*. Ithaca, NY: Cornell University Press.

Benson, Brett V and Emerson MS Niou. 2007. "Economic interdependence and peace: A game-theoretic analysis." *Journal of East Asian Studies* 7(1):35–59.

Bonfatti, Roberto and Kevin Hjortshøj O'Rourke. 2018. "Growth, import dependence, and war." *The Economic Journal* 128(614):2222–2257.

Bueno De Mesquita, Bruce. 2020. "SOME INSIGHTS FROM GAME THEORY." *Counterfactual Thought Experiments in World Politics: Logical, Methodological, and Psychological Perspectives* p. 211.

Chung, Chien-peng et al. 2005. Shanghaied? The Economic and Political Implications of the China–Taiwan Commercial Relationship. RAND Monograph MG-302 RAND Corporation Santa Monica, CA: .

Copeland, Dale C. 1996. *Economic Interdependence and War*. Princeton, NJ: Princeton University Press.

Copeland, Dale C. 2015. *Economic Interdependence and War*. Princeton Studies in International History and Politics Princeton, NJ: Princeton University Press.

Crescenzi, Mark JC. 2003. "Economic exit, interdependence, and conflict." *The journal of Politics* 65(3):809–832.

Deng, Ping. 2000. "Taiwan's Restriction of Investment in China in the 1990s: A Relative Gains Approach." *Asian Survey* 40(6):958–980.

Duus, Peter, Ramon H Myers and Mark R Peattie. 2021. *The Japanese wartime empire, 1931-1945*. Princeton University Press.

Election Study Center, National Chengchi University. 2026. "Important Political Indicators: Taiwan Independence vs. Unification Trend." https://esc.nccu.edu.tw/PageDoc/Detail?fid=7801&id=6963.

Fearon, James D. 1991. "Counterfactuals and hypothesis testing in political science." *World politics* 43(2):169–195.

Gartzke, Erik, Quan Li and Charles Boehmer. 2001. "Investing in the peace: Economic interdependence and international conflict." *International organization* 55(2):391–438.

Gellman, Barton. 1997. "Leader Asserts Taiwan Is 'Independent, Sovereign'." *The Washington Post* .
URL: https://www.washingtonpost.com/archive/politics/1997/11/08/leader-asserts-taiwan-is-independent-sovereign/d081e9da-ba1e-4201-a134-8fa0d338ee7a/

Gent, Stephen E and Mark JC Crescenzi. 2021. *Market Power Politics: War, Institutions, and Strategic Delay in World Politics*. Oxford University Press.

Giltner, Philip. 1997. "Trade in 'Phoney'Wartime: The Danish-German 'Maltese'Agreement of 9 October 1939." *The International History Review* 19(2):333–346.

Goemans, Hein and William Spaniel. 2016. "Multimethod research: A case for formal theory." *Security Studies* 25(1):25–33.

Gowa, Joanne and Edward D Mansfield. 1993. "Power politics and international trade." *American political science review* 87(2):408–420.

Gowa, Joanne and Raymond Hicks. 2017. "Commerce and conflict: New data about the Great War." *British Journal of Political Science* 47(3):653–674.

Grinberg, Mariya. 2021. "Wartime Commercial Policy and Trade between Enemies." *International Security* 46(1):9–52.

Hirschman, Albert O. 1945. *National power and the structure of foreign trade*. Vol. 105 Univ of California Press.

Ike, Nobutaka, ed. 1967. *Japan's Decision for War: Records of the 1941 Policy Conferences*. Stanford, CA: Stanford University Press. Translated and edited by Nobutaka Ike.

Iriye, Akira. 1987. *The Origins of the Second World War in Asia and the Pacific*. London: Longman.

Kant, Immanuel. 1939. *Perpetual peace*. Columbia University Press.

Lee, Teng-hui. 1996. "President Lee's Address to the 11th Plenary Session of the National Unification Council." Office of the President, Republic of China (Taiwan).
URL: `https://english.president.gov.tw/NEWS/954`

Lee, Teng-hui. 1997. "President Lee Addresses National Unification Council." Office of the President, Republic of China (Taiwan).
URL: `https://english.president.gov.tw/NEWS/1126`

Levy, Jack S. 1998. Historical Perspectives on Interdependence and Conflict. In *Workshop on New Directions on Trade and Conflict, Annual Meeting of the International Studies Association, Minneapolis, MN*. pp. 18–21.

Levy, Jack S. 2008. "Counterfactuals and case studies.".

Lin, Miao-jung. 2002. "NSC Official Claims 'Go South' Policy Would Help Security." *Taipei Times* p. 3.
URL: `https://www.taipeitimes.com/News/taiwan/archives/2002/08/28/165868`

Lin, Syaru Shirley. 2016. *Taiwan's China Dilemma: Contested Identities and Multiple Interests in Taiwan's Cross-Strait Economic Policy*. Stanford, CA: Stanford University Press.

Lorentzen, Peter L, M Taylor Fravel and Jack Paine. 2015. "Using process tracing to evaluate formal models.".

Mansfield, Edward D. 1995. *Power, trade, and war*. Princeton University Press.

Mansfield, Edward D. 2021. *Power, trade, and war*. Princeton University Press.

Mansfield, Edward D and Brian M Pollins. 2001. "The study of interdependence and conflict: Recent advances, open questions, and directions for future research." *Journal of Conflict Resolution* 45(6):834–859.

Maskin, Eric and Jean Tirole. 2001. "Markov perfect equilibrium: I. Observable actions." *Journal of Economic Theory* 100(2):191–219.

Mayer, Thierry, Isabelle Mejean and Mathias Thoenig. 2025. *The fragmentation paradox: De-risking trade and global safety*. Centre for Economic Policy Research.

McMillan, Susan M. 1997. "Interdependence and conflict." *Mershon International Studies Review* 41(Supplement_1):33–58.

Ministry of Economic Affairs Investment Commission. 1990. "Statistics on Overseas Investment by Taiwanese Firms.". Taipei: Ministry of Economic Affairs.

Monteiro, Nuno P and Alexandre Debs. 2020. "An economic theory of war." *The Journal of Politics* 82(1):255–268.

Morley, James William et al. 1980. *The Fateful choice: Japan's advance into Southeast Asia, 1939-1941: selected translations from Taiheiyō Sensō e no michi, kaisen gaikō shi*. Cambridge University Press.

Oneal, John R and Bruce Russett. 1999a. "Assessing the liberal peace with alternative specifications: Trade still reduces conflict." *Journal of Peace Research* 36(4):423–442.

Peterson, Timothy M. 2014. "Dyadic trade, exit costs, and conflict." *Journal of Conflict Resolution* 58(4):564–591.

Pevehouse, Jon C. 2004. "Interdependence theory and the measurement of international conflict." *The Journal of Politics* 66(1):247–266.

Polachek, Solomon and Jun Xiang. 2010. "How opportunity costs decrease the probability of war in an incomplete information game." *International Organization* 64(1):133–144.

Polachek, Solomon W, John Robst and Yuan-Ching Chang. 1999. "Liberalism and interdependence: Extending the trade-conflict model." *Journal of Peace Research* 36(4):405–422.

Polachek, Solomon William. 1980. "Conflict and trade." *Journal of conflict resolution* 24(1):55–78.

Record, Jeffrey. 2009. *Japan's decision for war in 1941: some enduring lessons*. US Army War College, Strategic Studies Institute.

Rigger, Shelley. 2001. *From Opposition to Power: Taiwan's Democratic Progressive Party*. Boulder: Lynne Rienner.

Rosecrance, Richard N. 1986. *The rise of the trading state: Commerce and conquest in the modern world*. New York: Basic.

Rosen, Daniel H and Zhi Wang. 2011. *The Implications of China-Taiwan Economic Liberalization*. Vol. 93 Peterson Institute.

Roy, Denny. 2003. *Taiwan: A political history*. Cornell University Press.

Smith, Adam. 1937. *The wealth of nations [1776]*. Vol. 11937 na.

Stranges, Anthony N. 1993. "Synthetic Fuel Production in Prewar and World War II Japan: A Case Study in Technological Failure." *Annals of Science* 50(3):229–265.

Tanner, Murray Scot. 2007. *Chinese economic coercion against Taiwan: A tricky weapon to use*. Rand Corporation.

Van Mook, Hubertus. 2010. *The Netherlands, Indies and Japan: Their Relations 1940-1941*. Vol. 38 Routledge.

Wagner, R Harrison. 1988. "Economic interdependence, bargaining power, and political influence." *International Organization* 42(3):461–483.

Appendix

Contents

A Proofs

A.1 Lemmas & Propositions in the Baseline Model

Lemma 1. *In any equilibrium in which neither state severs trade on the path of play,*

1. *in a period in which State 2 is highly dependent, $s_t = \{T, H\}$, the highest demand State 2 is willing to accept, denoted $x_t^{T,H}$, is increasing in a_2'.*

2. *in a period in which State 2 is not highly dependent, $s_t = \{T, L\}$, the highest demand State 2 is willing to accept, denoted $x_t^{T,L}$, is decreasing in a_2'.*

Proof. In $s_t = \{T, H\}$, consider a strategy profile, σ, is a stationary Markov perfect equilibrium in which neither country severs trade. In the bargaining stage, Country 1 offers $(x_t^{T,H}, 1 - x_t^{T,H})$, Country 2 decides to accept or reject.

If Country 2 accepts, it receives the division of the political issue $1 - x_t^{T,H}$, and the additional trade benefit γ since neither country severs trade, and the game enters the next period characterized by the same s_t. Countries discount future period-payoff by a common factor $\delta \in (0, 1)$ and countries' dynamic payoffs are normalized by $1 - \delta$. Formally, Country 2 receives the continuation payoff

$$V_2^{T,H} = (1 - \delta)(\gamma + 1 - x_t^{T,H}) + \delta V_2^{T,H}$$

implying $V_2^{T,H} = \gamma + 1 - x_t^{T,H}$. If Country 2 rejects the offer, then war occurs and Country 2's war payoff consists of three parts: (i) it pays the one-time adjustment costs for trade losses

due to war, $(1-\delta)a_2'$; (ii) it retains some trade benefits that survived the war disruption, $\beta\gamma$; (iii) it obtains the war utility over the political issue, $1-p-c_2$ according to canonical results in ultimatum bargaining models. Formally, it receives the continuation (war) payoff

$$W_2^{T,H} = 1 - p - c_2 + \beta\gamma - (1-\delta)a_2'$$

Country 2 accepts Country 1's proposed offer $(x_t^{T,H}, 1-x_t^{T,H})$ if and only if $V_2^{T,H} \geq W_2^{T,H}$, implying

$$x_t^{T,H} \leq (1-\beta)\gamma + p + c_2 + (1-\delta)a_2' \equiv \hat{x}_{T,H}$$

and $\hat{x}_{T,H} > 0$ obviously. Conditional on making an offer, it is easy to prove that Country 1 has no incentive to deviate from making $\hat{x}_{T,H}$.

Now, Country 1 has to decide whether to make this offer or any non-serious offer that Country 2 rejects and leads to war. If Country 1 offers $\hat{x}_{T,H}$ which Country 2 accepts, Country 1 receives the division of the political issue $\hat{x}_{T,H}$, and the additional trade benefit γ in the current period. Then the game enters the next period characterized by the same s_t. Formally, it receives continuation payoff

$$V_1^{T,H} = (1-\delta)(\gamma + \hat{x}_{T,H}) + \delta V_1^{T,H}$$

implying $V_1^{T,H} = \gamma + \hat{x}_{T,H}$. If Country 1 makes a non-serious offer, then Country 2 would reject it and war occurs, and Country 1 receives its war payoff that also consists of the same three components. Formally, it receives the continuation (war) payoff

$$W_1^{T,H} = p - c_1 + \beta\gamma - (1-\delta)a_1'$$

Country 1 prefers to offer $(\hat{x}_{T,H}, 1-\hat{x}_{T,H})$ if and only if $V_1^{T,H} \geq W_1^{T,H}$, implying

$$c_1 + c_2 + 2(1-\beta)\gamma + (1-\delta)(a_1' + a_2') \geq 0$$

which holds always. Thus, in $s_t = \{T, H\}$, any equilibrium characterized by trade and high dependence, there is always peaceful bargaining between Country 1 and Country 2, Country 1 offers $(\hat{x}_{T,H}, 1-\hat{x}_{T,H})$ and Country 2 accepts

$$\hat{x}_{T,H} = (1-\beta)\gamma + p + c_2 + (1-\delta)a_2'$$

which is increasing in a_2'.

In $s_t = \{T, L\}$, consider a strategy profile, σ, is a stationary Markov perfect equilibrium

in which neither country severs trade. In period $t+1$, s_{t+1} transits to $\{T, H\}$ with probability d, and remains the same with probability $1-d$. In the bargaining stage, Country 1 offers $(x_t^{T,L}, 1-x_t^{T,L})$, Country 2 decides to accept or reject.

If Country 2 accepts, it receives the division over the political issue and the additional trade benefits in the current period, knowing that in the next period, it will receive the same continuation payoff if the game is characterized by the same state-variable, $s_{t+1} = \{T, L\}$, and it will receive a different continuation payoff if the game transits to the different state-of-the-world, $s_{t+1} = \{T, H\}$. Formally, Country 2 receives the continuation payoff

$$V_2^{T,L} = (1-\delta)(\gamma + 1 - x_t^{T,L}) + \delta[dV_2^{T,H} + (1-d)V_2^{T,L}]$$

$V_2^{T,H}$ is characterized in the previous analysis which equals Country 2's war payoff in $s_t = \{T, H\}$. Then

$$V_2^{T,L} = \frac{(1-\delta)(\gamma + 1 - x_t^{T,L}) + \delta d[1 - p - c_2 + \beta\gamma - (1-\delta)a_2']}{1-\delta(1-d)}$$

if Country 2 rejects the offer, then war occurs and Country 2's war payoff consists of three components. The first two are identical to those specified earlier, while the third differs, capturing the one-time adjustment cost reflecting its low dependence on Country 1, $(1-\delta)a_2$. Formally, it receives the continuation (war) payoff

$$W_2^{T,L} = 1 - p - c_2 + \beta\gamma - (1-\delta)a_2$$

Country 2 prefers to accept Country 1's proposed offer $(x_t^{T,L}, 1-x_t^{T,L})$ if and only if $V_2^{T,L} \geq W_2^{T,L}$, implying

$$x_t^{T,L} \leq (1-\beta)\gamma + p + c_2 + (1-\delta)a_2 - \delta d(a_2' - a_2) \equiv \hat{x}_{T,L}$$

This offer is feasible when $\hat{x}_{T,L} > 0$, otherwise Country 1 has to concede the whole political issue and make a positive transfer in order to reach a peaceful settlement with Country 2. Since the size of the political issue is normalized to one, the most Country 1 can offer is one–the value of political issue. This means Country 2 will reject any offer made by Country 1 when $\hat{x}_{T,L} < 0$. From now on, assuming $\hat{x}_{T,L} \in (0, 1)$.

Country 1 then has to decide whether to make $\hat{x}_{T,L}$ or any non-serious offer that Country 2 rejects and leads to war. If Country 1 offers $\hat{x}_{T,L}$, it receives the continuation payoff

$$V_1^{T,L} = (1-\delta)(\gamma + \hat{x}_{T,L}) + \delta d V_1^{T,H} + \delta(1-d)V_1^{T,L}$$

$V_1^{T,H}$ is characterized in the previous analysis. Then

$$V_1^{T,L} = \frac{(1-\delta)(\gamma + \hat{x}_{T,L}) + \delta d V_1^{T,H}}{1 - \delta + \delta d}$$

if Country 1 makes a non-serious offer, then Country 2 will reject it and war occurs, and Country 1 receives its war payoff. Formally, Country 1 receives the continuation payoff

$$W_1^{T,L} = p - c_1 + \beta\gamma - (1-\delta)a_1$$

Country 1 prefers to offer $\hat{x}_{T,L}$ if and only if $V_1^{T,L} \geq W_1^{T,L}$, which implies

$$c_1 + c_2 + 2(1-\beta)\gamma + (1-\delta)(a_1 + a_2) > 0$$

which holds always. Thus, in $s_t = \{T, L\}$, in any equilibrium characterized by peaceful bargaining between Country 1 and Country 2, Country 1 offers $(\hat{x}_{T,L}, 1 - \hat{x}_{T,L})$ and Country 2 accepts

$$\hat{x}_{T,L} = (1-\beta)\gamma + p + c_2 + (1-\delta)a_2 - \delta d(a_2' - a_2)$$

which is decreasing in a_2'. This completes the proof. □

Proposition 1. *Suppose that σ is an equilibrium in which neither state severs trade on the path of play in any period.*

If

$$a_2' > \frac{(1-\beta)\gamma + p + c_2 + (1 - \delta + \delta d)a_2}{\delta d} \equiv \overline{a}_2'$$

or, equivalently

$$d > \frac{(1-\beta)\gamma + p + c_2 + (1-\delta)a_2}{\delta(a_2' - a_2)} \equiv \overline{d}$$

then under σ State 2 rejects all offers in a period in which $s_t = \{T, L\}$ and results in war.

Proof. Suppose there exists an equilibrium σ such that neither country severs trade on the path of play. Lemma 1 shows that

$$\hat{x}_{T,L} = (1-\beta)\gamma + p + c_2 + (1-\delta)a_2 - \delta d(a_2' - a_2)$$

$\hat{x}_{T,L} < 0$ when

$$a_2' > \frac{(1-\beta)\gamma + p + c_2 + (1 - \delta + \delta d)a_2}{\delta d} \equiv \overline{a_2'}$$

In this case, the most Country 1 can offer Country 2 is the whole political issue. If

Country 2 accepts the whole political issue, it receives the continuation payoff

$$V_2^{T,L} = \frac{(1-\delta)(\gamma+1) + \delta d[1-p-c_2+\beta\gamma-(1-\delta)a_2']}{1-\delta+\delta d}$$

if Country 2 rejects the whole political issue, it receives war payoff

$$W_2^{T,L} = 1-p-c_2+\beta\gamma-(1-\delta)a_2$$

Country 2 prefers to accept $\hat{x}_{T,L}$ if and only if $V_2^{T,L} \geq W_2^{T,L}$, which implies that

$$a_2' \leq \frac{(1-\beta)\gamma+p+c_2+(1-\delta+\delta d)a_2}{\delta d} = \overline{a_2'}$$

which contradicts the assumption that $a_2' > \overline{a_2'}$. Thus, Country 2 prefers to rejects the whole political issue when its future adjustment cost is sufficiently large. Thus, there is no peaceful bargaining between Country 1 and Country 2 when $a_2' > \overline{a_2'}$. If neither state severs trade in the equilibrium, then the bargaining outcome is war. Rearrange the terms of $\bar{a_2'}$ and put d on the left-hand side, the condition for war is equivalent to

$$d > \frac{(1-\beta)\gamma+p+c_2+(1-\delta)a_2}{\delta(a_2'-a_2)} \equiv \bar{d}$$

This completes the proof. □

Corollary 1. *The propensity of war decreases as:*

- *The trade benefits γ increases*
- *The dynamic change in Country 2's trade dependence, $a_2' - a_2$, decreases*

Proof. Lemma 1 and Proposition 1 establish the conditions under which there exists an equilibrium featuring war on-the-path-of-play. Bargaining breaks down and war ensues when $a_2 > \bar{a_2'}$ or $d > \bar{d}$. The comparative statics w.r.t γ and $a_2' - a_2$ shows how likely war will happen in equilibrium given fixed values of a_2' and d.

(i) Differentiating the thresholds with respect to γ,

$$\frac{\partial \bar{a_2'}}{\partial \gamma} = \frac{1-\beta}{\delta d} > 0, \qquad \frac{\partial \bar{d}}{\partial \gamma} = \frac{1-\beta}{\delta(a_2'-a_2)} > 0,$$

since $\beta < 1$, $\delta \in (0,1)$, $d > 0$, and $a_2' > a_2$. Both $\bar{a_2'}$ and $\bar{d}$ increase with γ—a_2' or d has to exceed a higher threshold for bargaining to break down—thereby shrinking the range of a_2' and d in which war occurs.

(ii) Holding a_2 fixed and differentiating $\bar{d}$ with respect to a_2',

$$\frac{\partial \bar{d}}{\partial a_2'} = -\frac{(1-\beta)\gamma + p + c_2 + (1-\delta)a_2}{\delta(a_2' - a_2)^2} < 0.$$

Thus $\bar{d}$ decreases in the dynamic difference between a_2' and a_2—if $a_2' - a_2$ becomes smaller, then $\bar{d}$ becomes larger, so d must exceed a higher threshold to trigger bargaining failure, which means war is less likely to occur on the path.

Since both derivatives are strict, the set of values of d (respectively a_2') for which the war condition holds strictly shrinks in each case.

This completes the proof.

□

Proposition 2. *If $a_2' > \overline{a}_2'$, then in equilibrium, State 1 severs trade in state $\{T, L\}$ if and only if*

$$\gamma\beta < c_1 + c_2.$$

Equivalently,

$$\underbrace{\gamma}_{\text{Total gains from trade}} < \underbrace{\gamma(1-\beta)}_{\text{Trade destroyed by war}} + \underbrace{c_1 + c_2}_{\text{Direct kinetic costs of fighting}}.$$

Further, if trade is severed then the equilibrium probability of war is 0.

Proof. Suppose σ is an equilibrium in which $a_2' > \bar{a_2'}$, the previous analysis shows that the bargaining between countries fails and war occurs if neither country severs trade.

Fix Country 1's strategy at this stage as 'Trade'. Then, if Country 2 severs trade, it receives the continuation payoff

$$V_2^{NT,L} = 1 - p - c_2 - (1-\delta)a_2$$

if Country 2 extends trade, then neither one severs trade. Previous analysis shows that at the bargaining stage, Country 1 will make Country 2 just indifferent between accept and reject. In other words, Country 2 will receive a payoff equivalent to its war payoff in $s_t = \{T, L\}$. Formally, Country 2 receives the continuation payoff

$$V_2^{T,L} = 1 - p - c_2 + \beta\gamma - (1-\delta)a_2$$

it is easy to verify that $V_2^{T,L} > V_2^{NT,L}$ always holds, Country 2 always extends trade.

Given Country 2's strategy of 'Trade', if Country 1 severs trade, it receives the continuation payoff

$$V_1^{NT,L} = p + c_2 - (1-\delta)a_1$$

if Country 1 extends trade, then they keep trade. Previous analysis implies that at the bargaining stage, bargaining breaks down and war occurs. Formally, Country 1 receives the war payoff

$$W_1^{T,L} = p - c_1 + \beta\gamma - (1-\delta)a_1$$

Country 1 prefers to extend trade if and only if $V_1^{T,L} > V_1^{NT,L}$, which implies $c_1 + c_2 < \beta\gamma$; Country 1 severs trade if $c_1 + c_1 > \beta\gamma$, or equivalently,

$$\gamma < \gamma(1-\beta) + c_1 + c_2$$

This completes the proof. □

Lemma 2. *If $\delta > \frac{a_2(\hat{\tau}) - c_1 - c_2}{a_2(\hat{\tau})}$, then in equilibrium, State 2 sets $\tau^* = \min\{\tilde{\tau}, \hat{\tau}\}$ where $\tilde{\tau}$ is the unique solution to*

$$\beta \left.\frac{\partial \gamma}{\partial \tau}\right|_{\tau=\tilde{\tau}} - (1-\delta) \left.\frac{\partial a_2}{\partial \tau}\right|_{\tau=\tilde{\tau}} = 0.$$

$\hat{\tau}$ is the unique solution to

$$\beta\gamma(\hat{\tau}) = c_1 + c_2$$

Proof. Country 2's continuation payoff in $s_t = \{T, L\}$ is

$$V_2^T(\tau_2) = 1 - p - c_2 + \beta\gamma(\tau_2) - (1-\delta)a_2(\tau_2)$$

Country 2 chooses the value of τ_2 that maximizes $V_2^{T,L}$. To ensure the existence of a solution, assuming Country 2's continuation payoff function is strictly concave in τ_2. The following is a sufficient condition for strict concavity

$$\beta\frac{\partial^2\gamma}{\partial\tau^2} < (1-\delta)\frac{\partial^2 a_2}{\partial\tau^2} \tag{A.1.1}$$

Further, the following assumption guarantees an interior solution

$$\beta\left.\frac{\partial\gamma}{\partial\tau}\right|_{\tau=0} > (1-\delta)\left.\frac{\partial a_2}{\partial\tau}\right|_{\tau=0}, \qquad \beta\left.\frac{\partial\gamma}{\partial\tau}\right|_{\tau=\bar{\tau}} < (1-\delta)\left.\frac{\partial a_2}{\partial\tau}\right|_{\tau=\bar{\tau}} \tag{A.1.2}$$

assuming A.1.1 and A.1.2 hold.

At the beginning of the game, State 2 picks a derisking level, τ_2, that maximizes its war payoffs when there is trade and there is not trade (decoupling), respectively. State 2's war

payoff under decoupling is

$$V_2^A(\tau_2) = 1 - p - c_2 - (1-\delta)a_2(\tau_2)$$

From the analysis of Proposition 2, Country 1 decouples if and only if $\beta\gamma(\tau_2) < c_1 + c_2$ and keeps trade otherwise. Let $\hat{\tau}$ satisfy the indifference condition in State 1's decoupling calculus

$$\beta\gamma(\hat{\tau}) = c_1 + c_2$$

$\forall \tau_2 \in (\hat{\tau}, \bar{\tau}]$, $\beta\gamma(\tau_2) < c_1 + c_2$, State 1 decouples; $\forall \tau_2 \in [0, \hat{\tau})$, $\beta\gamma(\tau_2) > c_1 + c_2$, State 1 keeps trade. Suppose Country 1 keeps trade in an equilibrium, let $\tilde{\tau}$ satisfy the F.O.C of $V_2^T(\tau_2)$ in $s_t = \{T, L\}$

$$\beta \left.\frac{\partial \gamma}{\partial \tau}\right|_{\tilde{\tau}} - (1-\delta) \left.\frac{\partial a_2}{\partial \tau}\right|_{\tilde{\tau}} = 0.$$

Given Country 1's strategy, Country 2 chooses the optimal value of τ_2: it chooses either the value of τ_2 that maximizes $V_2^T(\tau_2)$, or the value of τ_2 that maximizes $V_2^A(\tau_2)$, depending on which one yields it a higher equilibrium utility.

First, consider the case $\tilde{\tau} < \hat{\tau}$, implying $\beta\gamma(\tilde{\tau}) > c_1 + c_2$. If $\tau_2 = \tilde{\tau}$, Country 2 receives its war payoff in $s_t = \{T, L\}$

$$V_2^T(\tilde{\tau}) = 1 - p - c_2 + \beta\gamma(\tilde{\tau}) - (1-\delta)a_2(\tilde{\tau})$$

The strict concavity of V_2^T guarantees that $\forall \tau_2' \in [0, \hat{\tau}], V_2^T(\tau_2 = \tilde{\tau}) > V_2^T(\tau_2 = \tau_2')$. Thus, State 2 will not deviate to $\forall \tau_2' \in [0, \hat{\tau}], \tau_2' \neq \tilde{\tau}$. For $\forall \tau_2' \in (\hat{\tau}, \bar{\tau}]$, it must be $\beta\gamma(\tau_2') < c_1 + c_2$, leads to decoupling by State 1. If $\tau_2 = \tau_2' > \hat{\tau}$, State 2 receives it war payoff in $s_t = \{NT, L\}$

$$V_2^A(\tau_2') = 1 - p - c_2 - (1-\delta)a_2(\tau_2')$$

$\arg\max_{\tau_2'} V_2^A(\tau_2') = \bar{\tau}$, State 2's payoff under autarky is

$$V_2^A(\bar{\tau}) = 1 - p - c_2 - (1-\delta)a_2(\bar{\tau})$$

$\tilde{\tau}$ and $\bar{\tau}$ are the equilibrium candidates of Country 2's derisking choice. $\tau_2 = \tilde{\tau}$ if and only if $V_2^T(\tilde{\tau}) > V_2^A(\bar{\tau})$

$$(1-\delta)a_2(\bar{\tau}) > (1-\delta)a_2(\tilde{\tau}) - \beta\gamma(\tilde{\tau}) \tag{A.1.3}$$

State 1 keeps trade. Otherwise, $\tau_2 = \bar{\tau}$, State 1 decouples.

Second, consider the case $\tilde{\tau} > \hat{\tau}$, implying $\beta\gamma(\tilde{\tau}) < c_1 + c_2$. If $\tau_2 = \tilde{\tau}$, State 2 will receive

its war payoff in $s_t = \{NT, L\}$

$$V_2^A(\tilde{\tau}) = 1 - p - c_2 - (1-\delta)a_2(\tilde{\tau})$$

noting that $\tau_2 = \tilde{\tau}$ can not hold in equilibrium because $\forall \tau_2' > \tilde{\tau}$ is a profitable deviation for State 2 , since $a_2(\tau_2)$ decreases in τ_2. In fact, $\forall \tau_2 \in (\hat{\tau}, \bar{\tau}]$ leads to decoupling by State 1, by the same analysis, State 2 chooses $\bar{\tau}$ to maximize its war payoff under autarky $V_2^A(\tau_2)$

$$V_2^A(\bar{\tau}) = 1 - p - c_2 - (1-\delta)a_2(\bar{\tau})$$

$\forall \tau_2 \in [0, \hat{\tau}]$, it must be $\beta\gamma(\tau_2) \geq c_1 + c_2$, State 1 keeps trade, State 2 receives its war payoff in $s_t = \{T, L\}$

$$V_2^T(\tau_2) = 1 - p - c_2 + \beta\gamma(\tau_2) - (1-\delta)a_2(\tau_2)$$

By strict concavity of V_2^T in τ_2, $\arg\max_{\tau_2} V_2^T(\tau_2) = \hat{\tau}$. State 2 receives payoff

$$V_2^T(\hat{\tau}) = 1 - p - c_2 + \beta\gamma(\hat{\tau}) - (1-\delta)a_2(\hat{\tau})$$

$\bar{\tau}$ and $\hat{\tau}$ are the equilibrium candidates of Country 2's derisking choice. $\tau_2 = \hat{\tau}$ if and only if $V_2^T(\hat{\tau}) > V_2^T(\bar{\tau})$

$$(1-\delta)a_2(\bar{\tau}) > (1-\delta)a_2(\hat{\tau}) - \beta\gamma(\hat{\tau}) \tag{A.1.4}$$

State 1 keeps trade. Otherwise, $\tau_2 = \bar{\tau}$, State 1 decouples.

A.1.1 and A.1.2 together implies that

$$(1-\delta)a_2(\hat{\tau}) - \beta\gamma(\hat{\tau}) > (1-\delta)a_2(\tilde{\tau}) - \beta\gamma(\tilde{\tau})$$

thus if

$$\beta\gamma(\hat{\tau}) > (1-\delta)a_2(\hat{\tau})$$

in all cases, Country 2's equilibrium choice of τ_2 never causes decoupling by Country 1. Let $\tau^* = \min\{\tilde{\tau}, \hat{\tau}\}$, in equilibrium, Country 2's chooses $\tau_2 = \tau^*$. Since $\beta\gamma(\hat{\tau}) = c_1 + c_2$, equivalently

$$\delta > \frac{a_2(\hat{\tau}) - c_1 - c_2}{a_2(\hat{\tau})}$$

This completes the proof. □

Proposition 3. *Fix τ^*. If*

$$d \leq \frac{(1-\beta)\gamma(\tau^*) + p + c_2 + (1-\delta)a_2(\tau^*)}{\delta(a_2'(\tau^*) - a_2(\tau^*))} \tag{4}$$

then derisking leads to peace in equilibrium.

Otherwise, war occurs following derisking in equilibrium.

Proof. After choosing τ^*, the analysis of the subsequent interactions remains the same. To see whether peace or war occurs after choosing τ^*, re-write that the condition of war in Proposition 1 as a function of τ^*

$$d > \frac{(1-\beta)\gamma(\tau^*) + p + c_2 + (1-\delta)a_2(\tau^*)}{\delta(a_2'(\tau^*) - a_2(\tau^*))} \equiv D(\tau^*)$$

denote the right-hand side of the inequality as $D(\tau^*)$. Fix τ^*, if $d \leq D(\tau^*)$, then there is still peaceful bargaining in equilibrium; if $d > D(\tau^*)$, then previous analysis implies that bargaining fails and war occurs in equilibrium. This completes the proof. □

Proposition 4. *Let $D(0)$ be the value of the dependence cutoff under no derisking, and $D(\tau^*)$ be the value of the dependence cutoff under equilibrium derisking level*

1. *If $D(0) \leq d < D(\tau^*)$ then derisking causes peace in equilibrium.*
2. *If $D(\tau^*) < d \leq D(0)$ then derisking causes war in equilibrium.*
3. *If either $\max\{D(\tau^*), D(0)\} < d$ or $d < \min\{D(\tau^*), D(0)\}$ then derisking has no effect on the probabilty of war in equilibrium.*

Proof. The effect of τ^* on the bargaining outcome and the probability of war, is indicated by the direction of the first-order derivative of $D(\tau^*)$ with respect to τ^*. $\partial D(\tau)/\partial\tau$ is positive if and only if

$$\delta\left(\frac{\partial a_2'}{\partial\tau} - \frac{\partial a_2}{\partial\tau}\right)\left[(1-\beta)\gamma(\tau) + p + c_2 + (1-\delta)a_2(\tau)\right] < \left[(1-\beta)\frac{\partial\gamma}{\partial\tau} + (1-\delta)\frac{\partial a_2}{\partial\tau}\right]\delta\big(a_2'(\tau) - a_2(\tau)\big)$$

which can be expressed in the form of

$$\frac{\partial}{\partial\tau}(\ln F(\tau)) < \frac{\partial}{\partial\tau}(\ln G(\tau)) \tag{A.1.5}$$

where $F(\tau) = a_2'(\tau) - a_2(\tau)$ and $G(\tau) = (1-\beta)\gamma(\tau) + p + c_2 + (1-\delta)a_2(\tau)$. This means, compared with the scenario when no derisking measures are implemented ($D(\tau = 0)$), whether τ^* increases or decreases the war threshold $D(\tau^*)$ depends on if τ^* is more effective in mitigating the dynamic rise in Country 2's adjustment costs or reducing Country 2's opportunity cost of fighting and present dependence cost.

For now, assuming A.1.5 holds, that implementing derisking measures increases the value of $D(\tau)$. Denote the critical threshold when no derisking measures are implemented as

$D(0)$. Further assuming that without derisking measures, the dynamic growth in Country 2's dependence is large enough to cause bargaining failure and war, $d \geq D(0)$. Then, after choosing the optimal τ^*, there are two cases.

- If $D(0) \leq d < D(\tau^*)$, then after derisking, peace occurs in equilibrium, and specifically, implementing derisking measures decreases the probability of war since war would happen otherwise
- If $\max\{D(0), D(\tau^*)\} < d$, then after derisking, war still occurs in equilibrium, and implementing derisking measures has no effect on the probability of war in equilibrium since war likewise happens without derisking measures.

When the dynamic growth in Country 2's dependence is not significant enough to cause war without derisking measures, that is, $d \leq D(0)$, there is only one case.

- $d < \min\{D(0), D(\tau^*)\}$, then with derisking, peace still occurs in equilibrium, and implementing derisking measures has no effect on the probability of war in equilibrium since peace likewise happens without derisking measures.

The last step is consider the scenario in which A.1.5 does not hold, in other words, the reverse of it holds that implementing derisking measures decrease the value of $D(\tau)$. As before, assuming without derisking measures, the dynamic growth of Country 2's dependence is sufficiently large to cause bargaining failure and war, $d > D(0)$. Then, after choosing the optimal τ^*, there is only one case:

- $\max\{D(\tau^*), D(0)\} < d$, then with derisking, war still occurs in equilibrium, and implementing derisking measures has no effect on the probability of war in equilibrium since war would still occur without derisking measures.

When the dynamic growth in Country 2's dependence is not significant enough to cause war without derisking measures, that is, $d \leq D(0)$, there are two cases:

- If $D(\tau^*) < d \leq D(0)$, then after derisking, war occurs in equilibrium, and specifically, implementing derisking measures increases the probability of war since there would be peace without derisking measures.
- If $d < \min\{D(\tau^*), D(0)\}$, then after derisking, there is still peace in equilibrium, and implementing derisking measures has no effect on the probability of war in equilibrium since peace likewise happens without derisking measures.

This exhausts the cases of discussion and completes the proof.

□

A.2 Extension: Randomized Proposing Power

In this section, we study the extension that both states have the power to make proposals. In each period, with probability π, Country 1 is selected to make the offer and Country 2 decides to accept or reject; with probability $1-\pi$, Country 2 is selected to make the offer and Country 1 decides to accept or reject. We show how the proposing power coupled with growing economic dependence influence the bargaining leverage, the risk of war and the decision to sever trade.

Throughout the analysis, we denote the identity of the selected proposer, $i \in \{1,2\}$, which is an element in the state-variable s_t. When the trade tie is severed, the state-variable is characterized by $s_t = \{NT, i\}$, $i \in \{1,2\}$; when there is trade, the state-variable is characterized by $s_t = \{T\} \times \{L, H\} \times \{1,2\}$. We focus on the stationary Markov perfect equilibrium.

We present four main results. Proposition A.2.1 shows that the peace still prevails after the increase in trade dependence and the severance of trade; Proposition A.2.2 shows that before the increase in trade dependence, the peaceful equilibrium offer—those will be accepted by the receiver—now depends on the *symmetry* of the dynamic shifts between countries' adjustment costs; Proposition A.2.3 shows that large *asymmetric* dynamic shifts of trade dependence can cause bargaining failure and potential conflicts; Proposition A.2.4 shows that when both sides have the proposal power, large *asymmetric* dynamic shifts of trade dependence drive countries to preventively sever trade ties to preserve future bargaining positions even if they can peacefully bargain at present. Overall, our analysis shows that the extension with randomized proposing power does not qualitatively change the results in the main model.

Proofs

The first result shows that there is always peaceful bargaining after trade severance ($s_t = \{NT, i\}$), and there is always peaceful bargaining and trade after the increases in economic dependence ($s_t = \{T, H, i\}$).

Proposition A.2.1. *With randomized proposing power:*

- *Countries always peacefully bargain after the severance of trade.*
- *Countries always peacefully bargain and trade with each other after the increases in economic dependence.*

Proof. Suppose $s_t = \{NT, 1\}$, in which Country 1 is the proposer. In the bargaining stage,

if Country 2 accepts the offer $(x_t^N, 1-x_t^N)$, it receives the continuation payoff

$$V_2^{NT} = (1-\delta)(1-x_t^{NT}) + \delta[\pi V_2^{NT} + (1-\pi)V_2^{NT'}]$$
$$V_2^{NT} = \frac{(1-\delta)(1-x_t^{NT}) + \delta(1-\pi)V_2^{NT'}}{1-\delta\pi}$$

where $V_2^{NT'}$ is Country 2's continuation payoff when Country 2 is the proposer; if Country 2 rejects the offer, it receives the war payoff

$$W_2^{NT} = 1 - p - c_2$$

Country 2 accepts any x_t^{NT} such that $V_2^{NT} \geq W_2^{NT}$, implying $x_t^{NT} \leq 1 - V_2^{NT'} + \frac{(1-\delta\pi)(V_2^{NT'} - 1 + p + c_2)}{1-\delta}$. It is easy to verify that in equilibrium, it is optimal for Country 1 to offer

$$\widehat{x_t^{NT}} = 1 - V_2^{NT'} + \frac{(1-\delta\pi)(V_2^{NT'} - 1 + p + c_2)}{1-\delta}$$

in any equilibrium, Country 2's continuation payoff is no less than its war payoff, so $V_2^{NT'} \geq 1 - p - c_2$ always. Then it is easy to verify that $\widehat{x_t^{NT}} > 0$ obviously, which implies that Country 2 will never reject Country 1's offer $\widehat{x_t^{NT}}$ in $s_t = \{NT, 1\}$, so there is always peaceful bargaining when Country 1 is the proposer.

Suppose $s_t = \{NT, 2\}$, in which Country 2 is the proposer. In the bargaining stage, if Country 1 accepts the offer $(x_t^{NT'}, 1-x_t^{NT'})$, it receives the continuation payoff

$$V_1^{NT'} = (1-\delta)x_t^{NT'} + \delta[\pi V_1^{NT} + (1-\pi)V_1^{NT'}]$$
$$V_1^{NT'} = \frac{(1-\delta)x_t^{NT'} + \delta\pi V_1^{NT}}{1-\delta(1-\pi)}$$

where V_1^{NT} is Country 1's continuation payoff when Country 1 is the proposer. If Country 1 rejects the offer, it receives the war payoff

$$W_1^{NT} = p - c_1$$

Country 1 accepts any $x_t^{NT'}$ such that $V_1^{NT'} \geq W_1^{NT}$, implying $x_t^{NT'} \geq p - c_1 + \frac{\delta\pi(p - c_1 - V_1^{NT})}{1-\delta}$. In equilibrium, it is optimal for Country 2 to offer

$$\widetilde{x_t^{NT}} = p - c_1 + \frac{\delta\pi(p - c_1 - V_1^{NT})}{1-\delta}$$

by the same argument, in any equilibrium, Country 1's continuation payoff must be no less

than its war payoff, so $V_1^{NT} \geq p - c_1$ always, implying $\widetilde{x_t^{NT}} < 1$ obviously. Thus, Country 1 will never reject Country 2's offer $\widetilde{x_t^{NT}}$ in $s_t = \{NT, 2\}$, so there is always peaceful bargaining when Country 2 is the proposer. This completes the proof that there is always peaceful bargaining between Country 1 and Country 2 after the severance of trade.

Next, suppose $s_t = \{T, H, 1\}$, Country 1 and Country 2 are in the high dependence stage, they keep the trade tie and Country 1 is selected to be the proposer. In the bargaining stage, if Country 2 accepts the offer $(x_t^{T,H}, 1 - x_t^{T,H})$, it receives the continuation payoff

$$V_2^{T,H} = (1-\delta)(\gamma + 1 - x_t^{T,H}) + \delta[\pi V_2^{T,H} + (1-\pi)V_2^{T,H'}]$$
$$V_2^{T,H} = \frac{(1-\delta)(\gamma + 1 - x_t^{T,H}) + \delta(1-\pi)V_2^{T,H'}}{1 - \delta\pi}$$

where $V_2^{T,H'}$ is Country 2's continuation payoff when Country 2 is the proposer in $s_t = \{T, H, 2\}$; if Country 2 rejects the offer, it receives the war payoff

$$W_2^{T,H} = 1 - p - c_2 + \beta\gamma - (1-\delta)a_2'$$

Country 2 accepts any $x_t^{T,H}$ such that $V_2^{T,H} \geq W_2^{T,H}$, implying $x_t^{T,H} \leq p + c_2 + (1-\beta)\gamma + (1-\delta)a_2' + \frac{\delta(1-\pi)}{1-\delta}(V_2^{T,H'} - W_2^{T,H})$. In equilibrium, Country 1 will offer

$$\widehat{x_t^{T,H}} = p + c_2 + (1-\beta)\gamma + (1-\delta)a_2' + \frac{\delta(1-\pi)}{1-\delta}(V_2^{T,H'} - W_2^{T,H})$$

by the same argument, in any equilibrium, $V_2^{T,H'} \geq W_2^{T,H}$ always, implying $\widehat{x_t^{T,H}} > 0$ obviously. Thus, Country 2 will never reject Country 1's offer $\widehat{x_t^{T,H}}$ in $s_t = \{T, H, 1\}$. $V_2^{T,H'}$ depends on the equilibrium offer made by Country 2 in $s_t = \{T, H, 2\}$ which will be characterized later, denote that equilibrium offer as $\widetilde{x_t^{T,H}}$.

Suppose $s_t = \{T, H, 2\}$ in which Country 2 is the proposer. In the bargaining stage, if Country 1 accepts the offer $(x_t^{T,H'}, 1 - x_t^{T,H'})$, it receives the continuation payoff

$$V_1^{T,H'} = (1-\delta)(\gamma + x_t^{T,H'}) + \delta[\pi V_1^{T,H} + (1-\pi)V_1^{T,H'}]$$
$$V_1^{T,H'} = \frac{(1-\delta)(\gamma + x_t^{T,H'}) + \delta\pi V_1^{T,H}}{1 - \delta(1-\pi)}$$

if Country 1 rejects the offer, it receives the war payoff

$$W_1^{T,H'} = p - c_1 + \beta\gamma - (1-\delta)a_1'$$

Country 1 accepts any $x_t^{T,H'}$ such that $V_1^{T,H'} \geq W_1^{T,H'}$, implying $x_t^{T,H'} \geq p - c_1 - (1-\beta)\gamma - (1-\delta)a_1' - \frac{\delta\pi}{1-\delta}(V_1^{T,H} - W_1^{T,H'})$. In equilibrium, Country 2 will offer

$$\widetilde{x_t^{T,H}} = p - c_1 - (1-\beta)\gamma - (1-\delta)a_1' - \frac{\delta\pi}{1-\delta}(V_1^{T,H} - W_1^{T,H'})$$

by the same argument, in any equilibrium, $V_1^{T,H} \geq W_1^{T,H'}$ always, implying $\widetilde{x_t^{T,H}} < 1$ obviously. Thus, Country 1 will never reject Country 2's offer $\widetilde{x_t^{T,H}}$ in $s_t = \{T, H, 2\}$.

Suppose there exists an equilibrium in which $\widehat{x_t^{T,H}} \in (0,1)$ and $\widetilde{x_t^{T,H}} \in (0,1)$, then the offers can be explicitly characterized. Assuming $\widetilde{x_t^{T,H}} \in (0,1)$ implies $V_2^{T,H'} = \gamma + 1 - p + c_1 + (1-\beta)\gamma + (1-\delta)a_1'$. Then,

$$\widehat{x_t^{T,H}} = p + \frac{\delta(1-\pi)}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1'] + \frac{1-\delta\pi}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2']$$

assuming $\widehat{x_t^{T,H}} \in (0,1)$ implies $V_1^{T,H} = \gamma + p + c_2 + (1-\beta)\gamma + (1-\delta)a_2'$. Then,

$$\widetilde{x_t^{T,H}} = p - \frac{1-\delta(1-\pi)}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1'] - \frac{\delta\pi}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2']$$

since $V_1^{T,H} > W_1^{T,H}$, Country 1 prefers to offer $\widehat{x_t^{T,H}}$ rather than a non-serious offer; $V_2^{T,H'} > W_2^{T,H'}$, Country 2 prefers to offer $\widetilde{x_t^{T,H}}$ rather than a non-serious offer.

As to trade decision in $s_t = \{T, H, 1\}$, suppose Country 1 extends trade. If Country 2 severs trade, it receives $1 - p - c_2 - (1-\delta)a_2'$; if Country 2 extends trade, it receives $1 - p - c_2 + \beta\gamma - (1-\delta)a_2'$, thus Country 2 always extends trade. Then, back to Country 1, if it severs trade, it receives $p + c_2 - (1-\delta)a_1'$; if Country 1 extends trade, it receives $\gamma + p + c_2 + (1-\beta)\gamma + (1-\delta)a_2'$, thus Country 1 always extends trade.

As to the trade decision in $s_t = \{T, H, 2\}$, if Country 2 severs trade, it receives $1 - p + c_1 - (1-\delta)a_2'$; if Country 2 extends trade, it receives $\gamma + 1 - p + c_1 + (1-\beta)\gamma + (1-\delta)a_1'$, thus Country 2 always extends trade. If Country 1 severs trade, it receives $p - c_1 - (1-\delta)a_1'$; if Country 1 extends trade, it receives $p - c_1 + \beta\gamma - (1-\delta)a_1'$, thus Country 1 always extends trade. This completes the proof that Country 1 and Country 2 always peacefully bargain and trade after the increase in economic dependence.

$\widehat{x_t^{T,H}} \in (0,1)$ and $\widetilde{x_t^{T,H}} \in (0,1)$ implies the following condition

$$c_1 + c_2 + 2(1-\beta)\gamma + (1-\delta)(a_1' + a_2') < 1 - \delta \tag{A.2.1}$$

□

The second result characterizes the equilibrium offers before countries enter the high trade dependence stage, that is, $s_t = \{T, L, \cdot\}$. The key insight is that in any equilibrium characterized by peaceful bargaining, the symmetry of the dynamic growth in adjustment costs factors into the equilibrium offer that countries make.

Proposition A.2.2. *Before the increase of economic dependence, in any equilibrium in which countries peacefully bargain and trade with each other:*

- $\widehat{x_t^{T,L}} = p + \frac{\delta(1-\pi)}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1] + \frac{1-\delta\pi}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2] - \delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)]$
- $\widetilde{x_t^{T,L}} = p - \frac{1-\delta(1-\pi)}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1] - \frac{\delta\pi}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2] - \delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)]$

Proof. Starting with $s_t = \{T, L, 1\}$ in which Country 1 is the proposer. In the bargaining stage, if Country 2 accepts the offer $(x_t^{T,L}, 1 - x_t^{T,L})$, it receives the continuation payoff

$$V_2^{T,L} = (1-\delta)(\gamma + 1 - x_t^{T,L}) + \delta[\pi d V_2^{T,H} + (1-\pi)d V_2^{T,H'} + \pi(1-d)V_2^{T,L} + (1-\pi)(1-d)V_2^{T,L'}]$$

$$V_2^{T,L} = \frac{(1-\delta)(\gamma + 1 - x_t^{T,L}) + \delta\pi d V_2^{T,H} + \delta(1-\pi)d V_2^{T,H'} + \delta(1-\pi)(1-d)V_2^{T,L'}}{1-\delta\pi(1-d)}$$

where $V_2^{T,L'}$ is Country 2's continuation payoff when Country 2 is the proposer in $s_t = \{T, L, 2\}$; if Country 2 rejects the offer, it receives the war payoff

$$W_2^{T,L} = 1 - p - c_2 + \beta\gamma - (1-\delta)a_2$$

Country 2 accepts any $x_t^{T,L}$ such that $V_2^{T,L} \geq W_2^{T,L}$. $V_2^{T,L'}$ depends on the equilibrium offer made by Country 2 in $s_t = \{T, L, 2\}$, denote that equilibrium offer as $\widetilde{x_t^{T,L}}$. Moreover, assuming A.2.1 holds such that $\widehat{x_t^{T,H}} \in (0,1)$ and $\widetilde{x_t^{T,H}} \in (0,1)$.

Suppose there exists an equilibrium in which states peacefully bargain before the increase of economic dependence. To explicitly characterize the equilibrium offers in $s_t = \{T, L, 1\}$, from now on, assuming $\widehat{x_t^{T,L}} \in (0,1)$ and $\widetilde{x_t^{T,L}} \in (0,1)$. $\widetilde{x_t^{T,L}} \in (0,1)$ implies $V_2^{T,L'} = \gamma + 1 - p + c_1 + (1-\beta)\gamma + (1-\delta)a_1$. Then

$$\widehat{x_t^{T,L}} = p + \frac{\delta(1-\pi)}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1] + \frac{1-\delta\pi}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2] - \delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)]$$

by construction, $\widehat{x_t^{T,L}} \in (0,1)$. $\widehat{x_t^{T,L}} > 0$ implies

$$\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] < p + \frac{\delta(1-\pi)}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1] + \frac{1-\delta\pi}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2] \equiv \bar{\Delta}$$

$\widehat{x_t^{T,L}} < 1$ implies

$$\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] > p-1 + \frac{\delta(1-\pi)}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1] + \frac{1-\delta\pi}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2] \equiv \underline{\Delta}$$

thus $\widehat{x_t^{T,L}} \in (0,1)$ if and only if

$$\underline{\Delta} < \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < \bar{\Delta}$$

Country 1 will receive $V_1^{T,L} = \gamma + p + c_2 + (1-\beta)\gamma + (1-\delta)a_2$. It is easy to prove that Country 1 prefers to offer $\widehat{x_t^{T,L}}$ rather than bargain non-seriously, and that both countries prefer to trade with each other.

Then in $s_t = \{T, L, 2\}$, in which Country 2 is the proposer. In the bargaining stage, if Country 1 accepts the offer $(x_t^{T,L'}, 1 - x_t^{T,L'})$, it receives the continuation payoff

$$V_1^{T,L'} = (1-\delta)(\gamma + x_t^{T,L'}) + \delta[\pi d V_1^{T,H} + (1-\pi)d V_1^{T,H'} + \pi(1-d)V_1^{T,L} + (1-\pi)(1-d)V_1^{T,L'}]$$

$$V_1^{T,L'} = \frac{(1-\delta)(\gamma + x_t^{T,L'}) + \delta\pi d V_1^{T,H} + \delta(1-\pi)d V_1^{T,H'} + \delta\pi(1-d)V_1^{T,L}}{1-\delta(1-\pi)(1-d)}$$

if Country 1 rejects the offer, it receives the war payoff

$$W_1^{T,L'} = p - c_1 + \beta\gamma - (1-\delta)a_1$$

Country 1 accepts any $x_t^{T,L'}$ such that $V_1^{T,L'} \geq W_1^{T,L'}$. $\widehat{x_t^{T,L}} \in (0,1)$ implies $V_1^{T,L} = \gamma + p + c_2 + (1-\beta)\gamma + (1-\delta)a_2$. Then

$$\widehat{x_t^{T,L}} = p - \frac{1-\delta(1-\pi)}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1] - \frac{\delta\pi}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2] - \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)]$$

by construction, $\widetilde{x_t^{T,L}} \in (0,1)$. $\widetilde{x_t^{T,L}} > 0$ implies

$$\delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < p - \frac{1-\delta(1-\pi)}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1] - \frac{\delta\pi}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2] \equiv \bar{\Delta}'$$

$\widetilde{x_t^{T,L}} < 1$ implies

$$\delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] > p - 1 - \frac{1-\delta(1-\pi)}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1] - \frac{\delta\pi}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2] \equiv \underline{\Delta'}$$

thus $\widetilde{x_t^{T,L}} \in (0,1)$ if and only if

$$\underline{\Delta'} < \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < \bar{\Delta}'$$

Country 2 will receive $V_2^{T,L'} = \gamma + 1 - p + c_1 + (1-\beta)\gamma + (1-\delta)a_1$. It is easy to prove that Country 2 prefers to offer $\widetilde{x_t^{T,L}}$ rather than bargain non-seriously, and that both states prefer to trade with each other.

It is easy to verify that $\bar{\Delta} > \bar{\Delta}'$ and $\underline{\Delta'} < \underline{\Delta}$. Thus, $\widehat{x_t^{T,L}} \in (0,1)$ and $\widetilde{x_t^{T,L}} \in (0,1)$ holds

if and only if

$$\underline{\Delta} < \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < \bar{\Delta}'$$

where $\underline{\Delta} < \bar{\Delta}'$ implies

$$c_1 + c_2 + 2(1-\beta)\gamma + (1-\delta)(a_1 + a_2) < 1 - \delta \tag{A.2.2}$$

which obviously holds under the condition A.2.1. This completes the proof. □

The third result shows that anticipated shifts in economic dependence still causes bargaining failure and war, with the key insight that now the bargaining outcome depends on both countries' dynamic trade dependence. Specifically, the *asymmetry* of the dynamic growth in countries' adjustment costs determines whether bargaining breaks down. As before, countries sever trade to avoid war when the opportunity cost of war is sufficiently high.

Proposition A.2.3. *Before the increase of economic dependence,*

- *Suppose σ is an equilibrium in which neither country severs trade on-the-path-of-play, large asymmetric dynamic growth in countries' future dependence cause bargaining failure and war, specifically:*
  - *In $s_t = \{T, L, 2\}$, Country 1 fights when $\delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < p - 1 - \frac{1-\delta+\delta\pi d}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1] - \frac{\delta\pi d}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2]$, Country 2 will sever trade if $\beta < \frac{c_1+c_2}{\gamma}$.*
  - *In $s_t = \{T, L, 1\}$, Country 2 fights when $\delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] > p + \frac{\delta d(1-\pi)}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_2] + \frac{1-\delta[1-(1-\pi)d]}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2]$, Country 1 will sever trade if $\beta < \frac{c_1+c_2}{\gamma}$.*
- *Anticipating the bargaining failure, countries will sever trade to avoid war when the opportunity cost of war is sufficiently large.*
  - *In $s_t = \{T, L, i\}$, Country i will sever trade if $\beta < \frac{c_1+c_2}{\gamma}$.*

Proof. In $s_t = \{T, L, 2\}$, suppose there is an equilibrium in which $\widetilde{x_t^{T,L}} > 1$, meaning Country 1 rejects any offer made by Country 2 in $s_t = \{T, L, 2\}$. Then, this implies $V_2^{T,L'} = 1 - p - c_2 + \beta\gamma - (1-\delta)a_2$. By previous analysis,

$$\widehat{x_t^{T,L}} = p + \frac{\delta d(1-\pi)}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1] + \frac{1-\delta+\delta d(1-\pi)}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2] - \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)]$$

There only exists the equilibrium in which $\widehat{x_t^{T,L}} > 1$[64], implying

$$\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] < p-1+\frac{\delta d(1-\pi)}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1]+\frac{1-\delta+\delta d(1-\pi)}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2]$$

Country 2 accepts any offer $x_t^{T,L}$, and Country 1 offers $\widehat{x_t^{T,L}} = 1$ in $s_t = \{T, L, 1\}$. Then in $s_t = \{T, L, 2\}$, in which Country 2 is the proposer. If Country 1 accepts the offer, it receives the continuation payoff

$$V_1^{T,L'} = \frac{(1-\delta)(\gamma + x_t^{T,L'}) + \delta\pi d V_1^{T,H} + \delta(1-\pi)d V_1^{T,H'} + \delta\pi(1-d)V_1^{T,L}}{1-\delta(1-\pi)(1-d)}$$

$\widehat{x_t^{T,L}} > 1$ implies

$$V_1^{T,L} = \frac{(1-\delta)(\gamma+1) + \delta\pi d V_1^{T,H} + \delta(1-\pi)d V_1^{T,H'} + \delta(1-\pi)(1-d)V_1^{T,L'}}{1-\delta\pi(1-d)}$$

plug in $V_1^{T,L'}$, yields

$$\frac{1-\delta+\delta d}{1-\delta}V_1^{T,L'} = \gamma + \delta\pi(1-d) + [1-\delta\pi(1-d)]x_t^{T,L'} + \frac{\delta\pi d}{1-\delta}(V_1^{T,H} - V_1^{T,H'}) + \frac{\delta d}{1-\delta}V_1^{T,H'}$$

if Country 1 rejects the offer, it receives the war payoff

$$W_1^{T,L'} = p - c_1 + \beta\gamma - (1-\delta)a_1$$

Country 1 accepts any $x_t^{T,L'}$ such that $V_1^{T,L'} \geq W_1^{T,L'}$, implying in equilibrium Country 2 offers $x_t^{T,L'} = \widetilde{x_t^{T,L}}$ such that

$$[1-\delta\pi(1-d)]\widetilde{x_t^{T,L}} = p-\delta\pi(1-d)-\frac{1-\delta+\delta\pi d}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1]-\frac{\delta\pi d}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2]-\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)]$$

by construction, $\widetilde{x_t^{T,L}} > 1$, implying

$$\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] < p-1-\frac{1-\delta+\delta\pi d}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1]-\frac{\delta\pi d}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2] \equiv \underline{\Delta_1}$$

This shows that when Country 2 is selected to be the proposer before the increase in trade dependence, Country 1 cares about its future dependence on Country 2 relative to Country 2's future dependence on itself, knowing that in the next period, there is some chance that Country 2 will again be selected to the proposer, by which time its own dependence has rise

[64] $\widehat{x_t^{T,L}}$ has three cases: when Country 2 rejects all offers; Country 2 accepts a valid offer; Country 2 accepts all offers. It turned out that only the last case can constitute an equilibrium in the case $\widetilde{x_t^{T,L}} > 1$

to a_1' that will be exploited by Country 2 in the political bargaining. Country 1 weights this vulnerability against the chance of itself being selected as the proposer in the next period and exploiting Country 2's future dependence a_2'. If the former consideration outweighs the latter—when $a_1' - a_1$ is sufficiently large, then Country 1 will reject any offer made by Country 2 in the present, and resort to military force to avoid future political vulnerability due to its significant future dependence on Country 2.

Anticipating the bargaining failure and the resulting war, in $s_t = \{T, L, 2\}$, if Country 2 severs trade, it receives $1 - p + c_1 - (1-\delta)a_2$; if Country 2 extends trade, war occurs and it receives $1 - p - c_2 + \beta\gamma - (1-\delta)a_2$. Country 2 prefers to extend trade if and only if

$$1 - p - c_2 + \beta\gamma - (1-\delta)a_2 > 1 - p + c_1 - (1-\delta)a_2 \rightarrow c_1 + c_2 < \beta\gamma$$

Country 2 severs trade if and only if $c_1 + c_2 > \beta\gamma$. Thus, in any equilibrium in which bargaining breaks down in $s_t = \{T, L, 2\}$, Country 2 severs trade if $\beta < \frac{c_1+c_2}{\gamma}$[65].

In $s_t = \{T, L, 1\}$, suppose there is an equilibrium in which $\widehat{x_t^{T,L}} < 0$, meaning Country 2 rejects any offer made by Country 1 in $s_t = \{T, L, 1\}$. Then, this implies $V_1^{T,L} = p - c_1 + \beta\gamma - (1-\delta)a_1$. By previous analysis,

$$\widetilde{x_t^{T,L}} = p - \frac{1-\delta+\delta\pi d}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1] - \frac{\delta\pi d}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2] - \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)]$$

There only exists the equilibrium in which $\widetilde{x_t^{T,L}} < 0$[66], implying

$$\delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] > p - \frac{1-\delta+\delta\pi d}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1] - \frac{\delta\pi d}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2]$$

Country 1 accepts any offer $x_t^{T,L'}$, and Country 2 offers $\widetilde{x_t^{T,L}} = 0$ in $s_t = \{T, L, 2\}$. Then in $s_t = \{T, L, 1\}$, in which Country 1 is the proposer. If Country 2 accepts the offer, it receives the continuation payoff

$$V_2^{T,L} = \frac{(1-\delta)(\gamma + 1 - x_t^{T,L}) + \delta\pi d V_2^{T,H} + \delta(1-\pi)d V_2^{T,H'} + \delta(1-\pi)(1-d)V_2^{T,L'}}{1 - \delta\pi(1-d)}$$

$\widetilde{x_t^{T,L}} < 0$ implies

$$V_2^{T,L'} = \frac{(1-\delta)(\gamma + 1) + \delta\pi d V_2^{T,H} + \delta(1-\pi)d V_2^{T,H'} + \delta\pi(1-d)V_2^{T,L}}{1 - \delta(1-\pi)(1-d)}$$

[65] Countries peacefully bargain in $s_t = \{T, L, 1\}$ since $\widehat{x_t^{T,L}} > 1$.

[66] $\widetilde{x_t^{T,L}}$ has three cases: when Country 1 rejects all offers; Country 1 accepts a valid offer; Country 1 accepts all offers. It turned out that only the last case can constitute an equilibrium in the case $\widehat{x_t^{T,L}} < 0$.

plug in $V_2^{T,L'}$, yields

$$\frac{1-\delta+\delta d}{1-\delta}V_2^{T,L} = \gamma+\delta(1-\pi)(1-d)+[1-\delta(1-\pi)(1-d)](1-x_t^{T,L})+\frac{\delta(1-\pi)d}{1-\delta}(V_2^{T,H'}-V_2^{T,H})+\frac{\delta d}{1-\delta}V_2^{T,H}$$

if Country 2 rejects the offer, it receives the war payoff

$$W_2^{T,L} = 1-p-c_2+\beta\gamma-(1-\delta)a_2$$

Country 2 accepts any $x_t^{T,L}$ such that $V_2^{T,L} \geq W_2^{T,L}$, implying in equilibrium Country 1 offers $x_t^{T,L} = \widehat{x_t^{T,L}}$ such that

$$[1-\delta(1-\pi)(1-d)]\widehat{x_t^{T,L}} = p+\frac{\delta d(1-\pi)}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1]+\frac{1-\delta[1-(1-\pi)d]}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2]-\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)]$$

by construction, $\widehat{x_t^{T,L}} < 0$, implying

$$\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] > p+\frac{\delta d(1-\pi)}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1]+\frac{1-\delta[1-(1-\pi)d]}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2] \equiv \bar{\Delta}_2$$

This shows that when Country 1 is selected to be the proposer before the increase in trade dependence, Country 2 cares about its own future dependence on Country 1 relative to Country 1's future dependence on itself, knowing that in the next period, there is some chance that Country 1 will again be selected to be the proposer, by which time its own dependence has risen to a_2' that will be exploited by Country 1 in the political bargaining. Country 2 weights this vulnerability against the chance of itself being selected as the proposer in the next period and exploiting Country 1's future dependence a_1'. If the former consideration outweighs the latter—when $a_2'-a_2$ is sufficiently large, then Country 2 will reject any offer made by Country 1 in the present, and resort to military force to avoid future political vulnerability due to its significant future dependence on Country 1.

Anticipating the bargaining failure and the resulting war, in $s_t = \{T, L, 1\}$, if Country 1 severs trade, it receives $p+c_2-(1-\delta)a_1$; if Country 1 extends trade, war occurs and it receives $p-c_1+\beta\gamma-(1-\delta)a_1$. Country 1 prefers to extend trade if and only if

$$p-c_1+\beta\gamma-(1-\delta)a_1 > p+c_2-(1-\delta)a_1 \rightarrow c_1+c_2 < \beta\gamma$$

Country 1 severs trade if and only if $c_1+c_2 > \beta\gamma$. Thus, in any equilibrium in which bargaining breaks down in $s_t = \{T, L, 1\}$, Country 1 severs trade if $\beta < \frac{c_1+c_2}{\gamma}$[67]. This completes the proof.

[67] Countries peacefully bargain in $s_t = \{T, L, 2\}$ since $\widehat{x_t^{T,L}} < 0$.

□

The last proposition delivers a new result on endogenous trade decisions. In particular, large *asymmetric* dynamic growth in trade dependence not only causes bargaining failure and war—as illustrated in the previous result, but also drives countries to sever trade in order to preserve their bargaining power even if they can bargain peacefully.

Proposition A.2.4. *Before the increases in economic dependence, large asymmetric growth in countries' future dependence can cause trade severance even if countries can bargain peacefully over the political issue.*

• *In $s_t = \{T, L, 1\}$, Country 1 extends trade when $\Delta^* < \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < \underline{\Delta}$; Country 1 severs trade when $\underline{\Delta_1} < \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < \Delta^*$ even if countries peacefully bargain.*

• *In $s_t = \{T, L, 2\}$, Country 2 extends trade when $\bar{\Delta}' < \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < \Delta^{**}$; Country 2 severs trade $\Delta^{**} < \delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < \bar{\Delta}''$ even if countries peacefully bargain.*

Proof. In $s_t = \{T, L, 1\}$, suppose there is an equilibrium in which $\widehat{x_t^{T,L}} > 1$, such that Country 2 accepts any offer in $s_t = \{T, L, 1\}$, so Country 1 can offer $\widehat{x_t^{T,L}} = 1$ (keep the whole political issue for itself); further assuming that $\widetilde{x_t^{T,L}} \in (0, 1)$, such that countries peacefully bargain in $s_t = \{T, L, 2\}$.

By previous analysis, $\widehat{x_t^{T,L}} > 1$ implies

$$\delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] < p - 1 + \frac{\delta(1-\pi)}{1-\delta}[c_1 + (1-\beta)\gamma + (1-\delta)a_1] + \frac{1-\delta\pi}{1-\delta}[c_2 + (1-\beta)\gamma + (1-\delta)a_2] = \underline{\Delta}$$

Then, it is easy to verify that in this case, Country 2 always extends trade. If Country 1 extends trade, it receives the continuation payoff

$$V_1^{T,L} = \frac{(1-\delta)(\gamma+1) + \delta\pi d V_1^{T,H} + \delta(1-\pi) d V_1^{T,H'} + \delta(1-\pi)(1-d) V_1^{T,L'}}{1 - \delta\pi(1-d)}$$

if Country 1 severs trade, it receives $p + c_2 - (1-\delta)a_1$. Country 1 prefers to extend trade if and only if

$$\delta d[\pi(a_2' - a_2) - (1-\pi)(a_1' - a_1)] > p - 1 + c_2 - \gamma - (1-\delta)a_1 - \frac{\delta\pi d}{1-\delta}[c_1 + c_2 + 2(1-\beta)\gamma + (1-\delta)(a_1 + a_2)] + \frac{\delta(1-\pi) + \delta\pi d}{1-\delta}(c_1 + c_2 - \beta\gamma) \equiv \Delta^*$$

Then in $s_t = \{T, L, 2\}$, in which Country 2 is the proposer. If Country 1 accepts the offer, it receives the continuation payoff

$$V_1^{T,L'} = \frac{(1-\delta)(\gamma + x_t^{T,L'}) + \delta\pi d V_1^{T,H} + \delta(1-\pi) d V_1^{T,H'} + \delta\pi(1-d) V_1^{T,L}}{1 - \delta(1-\pi)(1-d)}$$

if Country 1 rejects the offer, it receives the war payoff

$$W_1^{T,L'} = p - c_1 + \beta\gamma - (1-\delta)a_1$$

since assuming $\widehat{x_t^{T,L}} > 1$, plug in the recursive format of $V_1^{T,L}$ yields

$$\frac{1-\delta+\delta d}{1-\delta}V_1^{T,L'} = [1-\delta\pi(1-d)]x_t^{T,L'} + \frac{\delta\pi d}{1-\delta}(V_1^{T,H} - V_1^{T,H'}) + \frac{\delta d}{1-\delta}V_1^{T,H'} + \gamma + \delta\pi(1-d)$$

Country 1 accepts any $x_t^{T,L'}$ such that $V_1^{T,L'} \geq W_1^{T,L'}$, implying in equilibrium, Country 2 offers $x_t^{T,L'} = \widetilde{x_t^{T,L}}$ such that

$$\widetilde{x_t^{T,L}} = \frac{p-1-\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)]}{1-\delta\pi(1-d)} + 1 - \frac{(1-\delta+\delta\pi d)[c_1+(1-\beta)\gamma+(1-\delta)a_1]}{(1-\delta)[1-\delta\pi(1-d)]} - \frac{\delta\pi d[c_2+(1-\beta)\gamma+(1-\delta)a_2]}{(1-\delta)[1-\delta\pi(1-d)]}$$

by assumption $\widetilde{x_t^{T,L}} \in (0,1)$. $\widetilde{x_t^{T,L}} < 1$ implies

$$\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] > p-1-\frac{1-\delta+\delta\pi d}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1]-\frac{\delta\pi d}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2] \equiv \underline{\Delta_1}$$

$\widetilde{x_t^{T,L}} > 0$ implies

$$\delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] < p-\delta\pi(1-d)-\frac{1-\delta+\delta\pi d}{1-\delta}[c_1+(1-\beta)\gamma+(1-\delta)a_1]-\frac{\delta\pi d}{1-\delta}[c_2+(1-\beta)\gamma+(1-\delta)a_2] \equiv \bar{\Delta_1}$$

It is easy to verify that $\underline{\Delta_1} < \underline{\Delta}$ obviously, and $\underline{\Delta} < \bar{\Delta_1}$ holds under assumption A.2.1. Thus, $\widehat{x_t^{T,L}} > 1$ and $\widetilde{x_t^{T,L}} \in (0,1)$ hold if and only if

$$\underline{\Delta_1} < \delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] < \underline{\Delta}$$

It is easy to verify that $\Delta^* < \underline{\Delta}$ obviously, and $\Delta^* > \underline{\Delta_1}$ implies $\beta < \frac{c_1+c_2}{\gamma}$. Then in $s_t = \{T, L, 1\}$, when $\beta < \frac{c_1+c_2}{\gamma}$, $\underline{\Delta_1} < \Delta^* < \underline{\Delta}$, Country 1 extends trade when

$$\Delta^* < \delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] < \underline{\Delta}$$

Country 1 severs trade when

$$\underline{\Delta_1} < \delta d[\pi(a_2'-a_2)-(1-\pi)(a_1'-a_1)] < \Delta^* \tag{A.2.3}$$

It is easy to verify that in $s_t = \{T, L, 2\}$, both countries prefer to trade with each other. Thus, in the equilibrium that countries peacefully bargain in $s_t = \{T, L, 1\}$, Country 1 severs trade if the growth in its trade dependence is significantly larger than Country 2's,

as outline in A.2.3. Together, this holds when there is asymmetry in the dynamic evolution of countries' adjustment costs—Country 1 faces a relatively larger future dependence—but the differential between their dynamic growth of adjustment costs is still bounded[68].

The proofs in $s_t = \{T, L, 2\}$ follows a similar logical flow. This completes the proof.

□

The main model does not yield this result because when countries can bargain peacefully and Country 1 is the proposer, it always wants to extend trade which enables it to not only exploit Country 2's future dependence and but also reap bargaining surplus. This changes once we give them equal proposing power. When Country 1 is the proposer in the current period, it can obtain all current bargaining surplus. However, it is aware that this privilege may switch in the next period if Country 2 is selected to the proposer then, in which case Country 1 face the exploitation of its future dependence by Country 2. It is due to this disadvantaged scenario that in the present period, Country 1 is concerned about the dynamic growth in its adjustment costs and wants to sever trade in advance even if there is peaceful bargaining between them.

[68] if the diff-in-diff of the adjustment costs is further below $\underline{\Delta}_1$, this only influences the off-path outcome, Country 1 severs trade on-the-path.

A.3 Extension: Economic Conquest

In this section, we study an extension model in which countries can use military conquest to capture trade benefits either after trade is lost or when there is not trade tie between them. We identify the conditions under which wars of conquest will happen in equilibrium. In the analysis below, we use $q \in [0,1]$ to capture the amount of economic benefits that can be seized by the winning country in the war, all else being the same as in the main model.

We present three main results. Proposition A.3.1 shows that countries sever trade to avoid the high trade losses due to war, but they use military conquest to re-capture trade benefits if those benefits are war-exploitative. Proposition A.3.2 shows that such military conquests do not happen always, there exists conditions under which sever trade can engender peaceful bargaining. Proposition A.3.3 shows that if those trade benefits are more war-exploitative, countries will fight over those benefits even when there is no dynamic growth in economic dependence.

Suppose there is no trade, countries can obtain $q\gamma$ when defeating the opponent in war. Thus, countries war payoffs in $s_t = \{NT, \cdot\}$are:

$$W_1^{NT} = p(1+q\gamma) - c_1 = p - c_1 + pq\gamma$$
$$W_2^{NT} = (1-p)(1+q\gamma) - c_2 = 1 - p - c_2 + (1-p)q\gamma$$

It is easy to prove that analysis regarding the conditions for bargaining failure remains the same, as in this extension, whether trade benefit is conquerable only affects the trade decision stage.

We first show whether there can be peaceful bargaining in $s_t = \{NT, \cdot\}$. In the bargaining stage, Country 1 makes an offer $(x_t^{NT}, 1 - x_t^{NT})$, if Country 2 accepts, it receives

$$V_2^{NT} = (1-\delta)(1 - x_t^{NT}) + \delta V_2^{NT}$$

implying $V_2^{NT} = 1 - x_t^{NT}$; if Country 2 rejects, it receives war payoff

$$W_2^{NT} = 1 - p - c_2 + (1-p)q\gamma$$

Country 2 accepts x_t^{NT} such that

$$x_t^{NT} \leq p + c_2 - (1-p)q\gamma \equiv x_{NT}^*$$

Country 2 will reject any offer made by Country 1 when $x^*_{NT} < 0$,

$$x^*_{NT} < 0 \rightarrow q > \frac{p + c_2}{(1-p)\gamma}$$

thus Country 2 accepts x^*_{NT} if $q < \frac{p+c_2}{(1-p)\gamma}$; Country 2 rejects any offer made by Country 1 if $q > \frac{p+c_2}{(1-p)\gamma}$

Assuming $q < \frac{p+c_2}{(1-p)\gamma}$, so x^*_{NT} is a feasible offer that Country 2 is willing to accept. If Country 1 offers x^*_{NT}, it receives

$$V_1^{NT} = p + c_2 - (1-p)q\gamma$$

if Country 1 makes a non-serious offer that Country 2 rejects, it receives

$$W_1^{NT} = p - c_1 + pq\gamma$$

Country 1 prefers to offer x^*_{NT} if and only if $q < \frac{c_1+c_2}{\gamma}$; Country 1 prefers to make a non-serious offer that leads to war if and only if $q > \frac{c_1+c_2}{\gamma}$.

The first result shows that when q is sufficiently high, there can be war after trade severance. This stands in contrast with the result in the main model in which there is always peaceful bargaining after trade severance and when countries address solely the political issue.

Proposition A.3.1. *When $\beta < \underline{\beta}$ and $q > \bar{q}$, if growing economic dependence causes bargaining failure, then countries sever trade and fight over the trade benefit.*

Proof. From the analysis of the main model, assuming $a_2' > \bar{a_2'}$ such that growing economic dependence causes bargaining failure between Country 1 and Country 2. In addition, assuming $q > \min\{\frac{c_1+c_2}{\gamma}, \frac{p+c_2}{(1-p)\gamma}\}$ such that countries fight to recover lost trade benefits.

At the trade-decision stage, suppose Country 1 extends trade. If Country 2 severs trade, it receives

$$W_2^{NT,L} = 1 - p - c_2 + (1-p)q\gamma - (1-\delta)a_2$$

if Country 2 accepts to trade, it receives

$$W_2^{T,L} = 1 - p - c_2 + \beta\gamma - (1-\delta)a_2$$

Country 2 prefers to sever trade if and only if

$$W_2^{T,L} \leq W_2^{NT,L} \rightarrow \beta < (1-p)q$$

if $\beta > (1-p)q$, Country 2 prefers to trade with Country 1.

Suppose Country 2 prefers to trade with Country 1, then if Country 1 severs trade, it receives

$$W_1^{NT,L} = p - c_1 + pq\gamma - (1-\delta)a_1$$

if Country 1 extends to trade, it receives

$$W_1^{T,L} = p - c_1 + \beta\gamma - (1-\delta)a_1$$

Country 1 prefers to trade if and only if

$$W_1^{T,L} \geq W_1^{NT,L} \rightarrow \beta > pq$$

if $\beta < pq$, Country 1 prefers to sever trade.

In all, as long as $\beta < \max\{(1-p)q, pq\}$, one of the countries will sever trade. Therefore, define $\bar{q} = \min\{\frac{c_1+c_2}{\gamma}, \frac{p+c_2}{(1-p)\gamma}\}$ and $\underline{\beta} = \max\{(1-p)q, pq\}$. When $q > \bar{q}$ and $\beta < \underline{\beta}$, if bargaining fails due to large shifts in Country 2's economic dependence, then countries sever trade due to low β—fighting while trading is not cost-effective because of the large trade losses. However, because of high q—considerable potential of recovering lost economic benefits through military conquest, countries fight and trade severance does not maintain peace. □

The second result shows that anticipating bargaining failure due to large shifts in economic dependence, there exists conditions under which countries sever trade and peacefully settle the political dispute.

Proposition A.3.2. *When $q < \bar{q}$ and $\beta < \max\{(1-p)q, \frac{c_1+c_2-(1-p)q\gamma}{\gamma}\}$, if growing economic dependence causes bargaining failure, countries sever trade and then peacefully bargain over political disputes.*

Proof. Assuming $q < \min\{\frac{c_1+c_2}{\gamma}, \frac{p+c_2}{(1-p)\gamma}\}$, then Country 1 and Country 2 can peacefully bargain over the political dispute after trade severance. In addition, assuming $a_2' > \bar{a_2'}$ such that growing economic dependence causes bargaining failure between Country 1 and Country 2.

At the trade decision stage, by previous analysis, Country 2 will be willing to trade if and only if

$$\beta > (1-p)q$$

otherwise Country 2 will sever trade. Suppose Country 2 is willing to trade with Country 1,

then if Country 1 severs trade, it will receive

$$V_1^{NT,L} = p + c_2 - (1-p)q\gamma - (1-\delta)a_1$$

if Country 1 extends to trade, it will receive

$$W_1^{T,L} = p - c_1 + \beta\gamma - (1-\delta)a_1$$

Country 1 prefers to extend trade if and only if

$$\beta\gamma > c_1 + c_2 - (1-p)q\gamma \rightarrow \beta > \frac{c_1 + c_2 - (1-p)q\gamma}{\gamma} \equiv \hat{\beta}$$

Country 1 prefers to sever trade if and only if $\beta < \hat{\beta}$. Thus, when $\beta < \max\{(1-p)q, \frac{c_1+c_2-(1-p)q\gamma}{\gamma}\}$, one of the countries prefers to sever trade.

Therefore, when $q < \bar{q}$ and $\beta < \max\{(1-p)q, \frac{c_1+c_2-(1-p)q\gamma}{\gamma}\}$, countries sever trade due to low β—war causes large losses of trade benefit, and then peacefully bargain over the political dispute due to low q—small potential of recovering lost economic benefits through military conquest. □

The third result shows that given a high q and a favorable balance of power, countries will fight over trade benefits even without growing economic dependence, that is, in $s_t = \{NT, \cdot\}$.

Proposition A.3.3. *If $p > c_1$, $q > \frac{\beta}{1-p}$ and $\beta > \frac{p+c_2}{\gamma}$, then Country 2 will sever trade and fight over economic resources even if its economic dependence does not grow over time.*

Proof. Assuming $q > \min\{\frac{c_1+c_2}{\gamma}, \frac{p+c_2}{(1-p)\gamma}\}$ such that countries have incentive to fight over the economic benefits should trade be severed. Under the assumption $p > c_1$, we have $\frac{c_1+c_2}{\gamma} < \frac{p+c_2}{(1-p)\gamma}$. Further assume that there is no growing economic dependence between Country 1 and Country 2, their adjustment costs are a_1 and a_2.

By previous analysis, Country 2 is willing to trade if and only if $\beta > (1-p)q$, otherwise Country 2 will sever trade. For Country 1, it is willing to extend trade if and only if

$$\gamma + p + c_2 + (1-\beta)\gamma + (1-\delta)a_2 > p - c_1 + pq\gamma - (1-\delta)a_1$$

which yields

$$q < \frac{c_1 + c_2 + \gamma + (1-\beta)\gamma + (1-\delta)(a_1 + a_2)}{p\gamma} \equiv q^*$$

it is easy to verify that $q^* > 1$ obviously. Thus, $q < q^*$ always and Country 1 is always

willing to trade with Country 2. This is because without growing dependence there is always peaceful bargaining over the political issue and Country 1 leverages Country 2's dependence for concessions over the political issue and enjoys all bargaining surplus.

However, given a high q, Country 2 may not want to be exploited by Country 1, instead, Country 2 may have the incentive to sever trade and obtain economic resources through fighting if the balance of power also favors Country 2.

This can happen if $q > \frac{\beta}{1-p}$. As long as $\beta > \frac{p+c_2}{\gamma}$, then $\frac{\beta}{1-p} > \frac{p+c_2}{(1-p)\gamma}$. Thus, Country 2 will sever trade and fight over economic benefits if $q > \frac{\beta}{1-p}$ and $\beta > \frac{p+c_2}{\gamma}$.

□

A.4 Extension: Non-absorbing War

In this section, we study the extension model in which war is not state-absorbing. With probability π, states receive war payoff in the current and all subsequent periods; with probability $1-\pi$, states receive war payoffs in the current period, and trade resumes in the next period. We demonstrate that assuming war only temporarily disrupts trade benefit does not increase the incentive of fighting.

We focus on the peaceful bargaining equilibrium, and show that neither player has incentives of one-shot deviation to fighting before increases in economic dependence.

Proofs

Proposition A.4.1. *In $s_t = \{T, L\}$, $\pi < 1$ does not increase the probability of war.*

Proof. If State 2 accepts the offer $(x_t^{T,L}, 1 - x_t^{T,L})$, it receives the payoff

$$V_2^{T,L} = (1-\delta)(\gamma + 1 - x_t^{T,L}) + \delta[dV_2^{T,H} + (1-d)V_2^{T,L}]$$

where $V_2^{T,H} = 1 - p - c_2 + \beta\gamma - (1-\delta)a_2'$ by previous analysis, implying

$$V_2^{T,L} = \frac{(1-\delta)(\gamma + 1 - x_t^{T,L}) + \delta d V_2^{T,H}}{1 - \delta + \delta d}$$

If State 2 now rejects the offer in the current period and then revert to accepting the offer from the next period, its payoff from the one-shot deviation is

$$W_2^{T,L} = \pi[1 - p - c_2 + \beta\gamma - (1-\delta)a_2] + (1-\pi)[(1-\delta)(1 - p - c_2 + \beta\gamma - (1-\delta)a_2) + \delta V_2^{T,L}]$$

A one-shot deviation for State 2 is not profitable if and only if $W_2^{T,L} \leq V_2^{T,L}$,

$$[1 - (1-\pi)\delta][1 - p - c_2 + \beta\gamma - (1-\delta)a_2] + (1-\pi)\delta V_2^{T,L} \leq V_2^{T,L}$$

implying

$$x_t^{T,L} \leq p + c_2 + (1-\beta)\gamma + (1-\delta)a_2 - \delta d(a_2' - a_2)$$

which holds as the same offer when $\pi = 1$, thus State 2 has no profitable deviation.

Suppose $a_2' < \overline{a_2'}$ such that $x_t^{T,L} > 0$. It is optimal for State 1 to offer $x_t^{T,L} = p + c_2 + (1-\beta)\gamma + (1-\delta)a_2 - \delta d(a_2' - a_2)$. State 1's continuation payoff is

$$V_1^{T,L} = \frac{(1-\delta)(\gamma + x_t^{T,L}) + \delta d V_1^{T,H}}{1 - \delta + \delta d} = \gamma + p + c_2 + (1-\beta)\gamma + (1-\delta)a_2$$

If State makes a non-serious offer, its one-shot deviation payoff is

$$W_1^{T,L} = \pi[p - c_1 + \beta\gamma - (1-\delta)a_1] + (1-\pi)[(1-\delta)(p - c_1 + \beta\gamma - (1-\delta)a_1) + \delta V_1^{T,L}]$$

State 1 has no incentive of one-shot deviation if and only if $V_1^{T,L} \geq W_1^{T,L}$, implying

$$c_1 + c_2 + 2(1-\beta)\gamma + (1-\delta)(a_1 + a_2) \geq 0$$

which holds as all terms are positive by assumption. Therefore, State 1 has no incentive to deviate. This completes the proof.

□

A.5 Extension: Bargaining over the Trade Surplus

In the baseline model each state receives a fixed trade benefit γ in every trading period. Here we let the states bargain over the division of the trade surplus alongside the political issue. In each trading period the total surplus is a divisible amount $\Gamma > 0$: State 1 proposes a division of the political issue, $x \in [0,1]$, together with a division of the surplus, allocating itself $g \in [0,\Gamma]$ and State 2 the remainder $\Gamma - g$; State 2 then accepts or rejects. The baseline corresponds to a surplus that is split equally, $\Gamma = 2\gamma$ with g fixed at γ. War payoffs are unchanged from the baseline. Because war follows the rejection of a proposal, the proposed division g does not govern wartime exchange; during conflict each state retains β times its baseline share of the surplus, $\beta\Gamma/2 = \beta\gamma$, independent of g. All other elements of the game are as in the baseline. Write State 2's war payoffs as

$$w_2^{T,L} = (1-p) - c_2 + \beta\gamma - (1-\delta)a_2, \qquad w_2^{T,H} = (1-p) - c_2 + \beta\gamma - (1-\delta)a_2'.$$

Our main result of this extension is that allowing for bargaining over γ does not rule out commitment-problem driven war. Rather, the incentives of State 2 to fight given sufficiently high growth in economic dependence persists even if the players are able to bargain over a reallocation of the trade benefits. Thus, our qualitative results persist even under endogenous division of the trade surplus. The following result shows this formally.

Proposition A.5.1. *In the extension with a divisible trade surplus Γ, define*

$$\bar{a}_2'^{\text{div}} = a_2 + \frac{1+\Gamma - w_2^{T,L}}{\delta d}, \qquad \bar{d}^{\text{div}} = \frac{1+\Gamma - w_2^{T,L}}{\delta\,(a_2' - a_2)}.$$

If $a_2' > \bar{a}_2'^{\text{div}}$ (equivalently $d > \bar{d}^{\text{div}}$), then in every Markov perfect equilibrium in which they trade on-the-path-of-play, State 2 rejects all offers in any period with $s_t = \{T, L\}$ and war occurs, including the offer that allocates to State 2 the entire political issue and the entire trade surplus.

Proof. Fix a Markov perfect equilibrium. In $\{T, H\}$ dependence is absorbing and the stage game is that of the baseline; State 1 holds State 2 to its reservation, so State 2's continuation value is $w_2^{T,H}$, independent of any prior division of the surplus.

Consider a period with $s_t = \{T, L\}$. In any single period State 2 can receive at most the entire pie, a flow of $1 + \Gamma$. Hence the most generous peaceful continuation value State 2 can be promised in $\{T, L\}$ is obtained by granting it the whole pie until dependence shifts:

$$V_2^{\max} = (1-\delta)(1+\Gamma) + \delta\Big[d\, w_2^{T,H} + (1-d)\, V_2^{\max}\Big],$$

where with probability d the state transitions to $\{T, H\}$, yielding $w_2^{T,H}$, and with probability $1-d$ it remains in $\{T, L\}$, where State 2 again receives at most $1+\Gamma$. Solving,

$$V_2^{\max} = \frac{(1-\delta)(1+\Gamma) + \delta d\, w_2^{T,H}}{1-\delta+\delta d}.$$

Rejecting yields war from the current period onward at the low adjustment cost, a payoff of $w_2^{T,L}$. War is unavoidable precisely when even the maximal offer is rejected, $V_2^{\max} < w_2^{T,L}$. Using $w_2^{T,L} - w_2^{T,H} = (1-\delta)(a_2' - a_2)$,

$$V_2^{\max} < w_2^{T,L} \iff 1+\Gamma < w_2^{T,L} + \delta d\,(a_2' - a_2) \iff a_2' > a_2 + \frac{1+\Gamma-w_2^{T,L}}{\delta d},$$

which is $\bar{a}_2'^{\text{div}}$; rearranging in d gives $\bar{d}^{\text{div}}$. Further, note that the threshold is finite for every finite Γ. Finally, since $w_2^{T,L}$ does not depend on a_2' while $w_2^{T,H} \to -\infty$ as $a_2' \to \infty$, the set of a_2' satisfying the inequality is nonempty. □

A.6 Heterogeneous gains from trade.

Our baseline imposes a common surplus γ for both states and both dependence stages. Relaxing this does not alter the qualitative results. Suppose State 2 receives γ_2 from the relationship (and retains $\beta\gamma_2$ during war). Because the preventive-war condition is determined by the dependent state's participation constraint, the war threshold of Proposition 1 simply substitutes $\gamma \to \gamma_2$:

$$\bar{a}_2' = \frac{(1-\beta)\gamma_2 + p + c_2 + (1-\delta+\delta d)a_2}{\delta d}.$$

State 1's trade benefit γ_1 enters only its decision to maintain or sever trade (Proposition 2), not State 2's war calculus.

Allowing the benefit to rise with dependence ($\gamma_2' > \gamma_2$) only reinforces peace, since the additional surplus available in the high-dependence stage raises the value of a negotiated settlement. In every case the comparative statics of Corollary 1 are preserved: war becomes less likely as the relevant trade benefit grows.

In summary, allowing for heterogeneous gains from trade—whether across countries or across stages of dependence—does not eliminate the *mechanism* behind our finding, which holds as long as the dependent state's adjustment costs grow faster than its gains from trade. The constant-γ assumption therefore simplifies exposition without driving the results.