Are Trade Agreements Effective Buffers in Trade Wars?

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ABSTRACT

We theoretically examine whether a US-Japan trade agreement would be effective as a buffer against the US-China trade war. There are two ways to mitigate the negative impacts of US protectionism: a "domestic pressure effect to suppress external pressure" and a "free trade agreement (FTA) effect. The former is an effect arising from Japanese protectionist political pressure to suppress the negative impacts of US tariff increases on Japan's political support function. The latter is an effect of the Japan-US free trade agreement. In the absence of a US–Japan trade agreement, both Japan and China's political support functions decrease when the US raises tariffs. By contrast, when an FTA is agreed between Japan and the US, an increase in US tariffs causes the Chinese political support function to decrease, while the Japanese political support function increases. The US–Japan trade agreement thus plays an effective role as a buffer in mitigating the negative impacts of the US–China trade war on Japan.

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1. Introduction

The US-China trade war has drawn great interest not only from the governments, businesses, and consumers of the two countries, but also from concerned countries around the world that have trade relations with both countries. Research on such trade wars has a long history. Scitovsky (1942) was the first to study tariff wars between major powers, and then Johnson (1953-1954) formulated Scitovsky's argument in terms of a two-country, two-good neoclassical trade theory. He showed that a large country can increase its economic welfare by imposing tariffs even at the risk of retaliatory tariffs by its trading partners.

In addition, Syropoulos (2002) examined trade wars using a more general analytical framework that takes into account the size of each country's economy, factor endowments, and production technology, after surveying a series of studies after Johnson which include Gorman (1958), Horwell (1966), Kuga (1973), Otani (1980), Mayer (1981), Riezman (1982), Thursby and Jensen (1983), Hamilton and Whalley (1983), and Kennan and Riezman (1988). Based on the results of these previous studies, trade policy researchers such as Perroni and Whalley (1996), Loridas (2011), Dong and Whalley (2012), Krugman (2016), Li (2017), and Li et al. (2018) have pointed to the possibility of tariff wars between major economies due to mutual retaliatory tariffs.

However, a series of studies on tariff wars have focused their analysis on the countries concerned in tariff wars and have rarely studied the effects of tariff wars on the economies and politics of third countries that do not participate in them. How will the US-China trade war affect the economies and politics of third countries? What kind of policy responses would be effective for third countries in response to the US-China trade war?

In this paper we find that tariff wars affect third-country trade through two channels. The first is the direct trade effect on third countries through the imposition of tariffs by the US and China. While the imposition of tariffs reduces exports between the US and China, it may increase US and Chinese exports to third countries, which have a relatively lower tariff rate, and increase third-country imports. The second is the trade effect of an increase in the optimal tariff rates of the US and China on third countries. If the optimal tariff rates of both the US and China increase due to a trade war, the third country's exports to both the US and China will decrease. Thus, in a US-China trade war, the third country's trade balance may deteriorate due to increased imports and decreased exports. The trade effects of such a trade war on a third country have not been fully examined in previous tariff war studies.

Furthermore, previous studies have not sufficiently examined third country policy responses to trade wars. In this paper, we examine the effectiveness of the "suppression effect of domestic pressure on external pressure" and the "FTA effect" in policy responses by third countries. The "suppression effect of domestic pressure on external pressure" refers to the effect of domestic protectionist political pressure to suppress the negative impact of the imposition of US tariffs. The "FTA effect" refers to the effect that countries that have agreed FTAs with the US and China can increase their own political support functions compared to countries that have not agreed FTAs. The effectiveness of such policy responses has not been thoroughly examined.

In Section 2, we develop a model to examine the trade effects of trade wars on third countries and the effectiveness of policy responses, including FTAs with the US and other countries. The model is characterized by the following: First, it is a Cournot-type oligopolistic three-country trade model that can analyze the effects of domestic political pressure and FTAs in a third country. This model follows Rosendorff (1996), Ornelas (2005), and Saggi and Yildiz (2010) and is a standard political economy model that can analyze the policy responses of the third country. Domestic political pressure is examined using the political support function developed by Baldwin (1987). He defined a political support function for the government that takes into account the political pressure of the producers and gives more weight to producer profits than to consumer surplus or tariff revenues. Such a political support function has been generally used in Grossman and Helpman (1995), Rosendorff (1996), Milner and Rosendorff (1997), Ornelas (2005), Saggi and Yildiz (2010), Mansfield and Milner (2012), Ishiguro (2017), and many other international trade studies.

The second feature of the model is that it explicitly addresses the optimal tariff rates for the countries concerned and for the third country in the tariff war. Kennan and Riezman (1990), Richardson (1990), Bagwell and Staiger (1999), Bond et al. (2004), Ornelas (2005), Saggi (2006), and Saggi and Yildiz (2009) showed that FTA and customs union countries reduce their optimal tariff rates for extraterritorial countries along with intra-regional tariff cuts. Such a phenomenon is the so-called tariff complementarity effect. Using this argument, countries in a tariff war may raise the optimal tariff rate on a third country while raising the tariff rates on their respective counterparts. If this increase in the optimal tariff rate is large enough, then there will be trade-reducing and/or trade-diverting effects on the third country. However, the conventional discussion of tariff wars does not discuss the trade effects of such an optimal tariff rate on a third country.

Section 3 examines the trade effects of the optimal tariff rates of the countries concerned in the tariff war on the third country, focusing on the differences in trade regimes. The effect of the optimal tariff rate depends on the type of trade regime in which the country concerned participates, and in particular on which countries it has agreed to FTAs with. Trade regimes with Japan as a third country can be divided into the following three categories. First, there is no FTA between the three countries (<φ>), second, there is an FTA between Japan and the US (<AJ>), and third, Japan serves as a hub and has individual FTAs with the US and China (<Jh>). Saggi (2006) and Saggi and Yildiz (2009) show that the optimal tariff rates for extraterritorial countries differ between FTAs and customs unions. Using their argument, it is possible that the optimal tariff rates imposed by the countries involved in a tariff war on extraterritorial countries also differ depending on the trade regime. In this section, we show that the optimal tariff rates imposed by tariff warring countries on third countries differ across trade regimes, resulting in different trade effects for third countries and different policy responses to tariff wars in third countries.

Section 4 considers the effectiveness of protectionist political pressure within Japan and Japan's FTA as Japan's policy response to the US-China trade war. First, we show that protectionist political pressure within Japan has the effective effect of suppressing external pressure to mitigate the negative impact of the US-China trade war. Second, we explain that the US-Japan FTA has a positive effect that avoids the negative impact of the US tariff imposition and raises the political support function. A Japan-US FTA could serve as an effective buffer for Japan. Furthermore, Japan can further boost its political support functions if it can agree on an FTA with China.

2. Trade war model with political support functions and optimal tariff rates

We construct a model for analyzing trade wars. The features of this model are, first, a three-country trade model of Cournot-type oligopolistic competition, which is the standard trade theory generally used since Brander and Spencer (1984). Second, it evaluates the economic welfare of each country using the political support functions defined by Baldwin (1987), and third, it defines the optimal tariff rate based on these political support functions.

In our model, international trade is assumed to be between three symmetrical countries (A, J, and C) involving two goods, (x and v), and the markets in each country are considered to be divided (Saggi 2006; Saggi and Yildiz 2011; Yildiz 2014). Trade regime <φ> is assumed in the three-country political economy model of Cournot-type oligopolistic competition, in which the three countries impose tariffs on one another. This assumption is later changed to reflect trade regimes <AJ> and <Jh>.

Let the consumer's utility function in country A, u_A, be such that $u_A = X_A - (1/2)X_A^2 + v$. X_A denotes the quantities of homogeneous good x consumed in country A, which firms in each country produce in an imperfectly competitive manner. v is the numeraire good produced competitively in each country, and its price on the world and domestic markets is standardized to 1. A similar consumer's utility function is assumed for countries J and C. According to the utility maximization conditions, we obtain the inverse demand function of good x, such that $p_A = 1 - X_A$. p_A denotes the market price of good x in country A. Then, the consumer surplus of good x in country A, CS_A, is described by $CS_A = (1/2)X_A^2$.

We assume that there is one firm in each country that produces good x, and that these firms supply good x to the markets of three countries. The total supply quantities of good x to the market in country A, X_A, is $X_A = x_{AA} + x_{JA} + x_{CA}$. Here, x_{iA} represents the quantities supplied by firms in country i (i = A, J, C) to the market in country A. For simplicity, the production and transportation costs in each country c_i (i = A, J, C) are eliminated as $c_A = c_J = c_C = 0$.

The profits for a firm belonging to country i (i = A, J, C) in country A's market, π_{iA}, are defined as the total revenue generated in each country, less tariffs paid on exports, as follows:

$$\pi_{AA} = p_A(X_A)x_{AA}, \pi_{JA} = [p_A(X_A) - t_A]x_{JA}, \pi_{CA} = [p_A(X_A) - t_A]x_{CA}$$

t_A is the tariff rate in country A. Assuming most-favored-nation treatment, the same tariff rates are set for countries J and C by country A.

We assume that each firm produces in a Cournot-type oligopolistic competition, taking the tariff rates for each country as given. If we assume interior solutions, the quantities supplied by each firm to country A's market x_{iA} (i=A, J, C) in equilibrium can be expressed as follows:

$$x_{AA} = (1 + 2t_A)/4, x_{JA} = x_{CA} = (1 - 2t_A)/4$$

The quantities supplied by each firm to the markets in countries J and C, x_{iJ}, x_{iC}, (i = A, J, C), can similarly be obtained; thus, t_J and t_C are the tariff rates in countries J and C.

$$x_{JJ} = (1 + 2t_J)/4, x_{AJ} = x_{CJ} = (1 - 2t_J)/4$$

$$x_{CC} = (1 + 2t_C)/4, x_{AC} = x_{JC} = (1 - 2t_C)/4$$

The economic effects of the increased tariff rates in country A are as follows: the increased tariff rates in country A increase the quantity of goods supplied by the firm in country A ($\partial x_{AA}/\partial t_A = 1/2 > 0$), decrease the quantity of goods supplied by the firms in countries J and C ($\partial x_{JA}/\partial t_A = \partial x_{CA}/\partial t_A = -1/2 < 0$), and decrease the consumption in country A ($\partial X_A/\partial t_A = -1/2 < 0$). Moreover, if we impose a positive condition on the quantity supplied by the firms in each country, the consumer surplus in country A is a decreasing function of the tariff rates in country A ($\partial CS_A/\partial t_A = -(3-2t_A)/8 < 0$). The firm profit in country A is an increasing function of the tariff rates in country A ($\partial \pi_{AA}/\partial t_A = (1+2t_A)/4 > 0$) and a decreasing tariff rate function in countries J and C ($\partial \pi_{AJ}/\partial t_J = -(1-2t_J)/4 < 0$, $\partial \pi_{AC}/\partial t_C = -(1-2t_C)/4 < 0$). Tariff wars under oligopolistic competition foster competition to acquire rents from firms in other countries (Brander and Spencer 1984).

We assume that the political support functions for each government (Baldwin 1987; Milner and Rosendorff 1997; Ornelas 2005; Saggi and Yildiz 2010) are

$$PS_i(t_i) = CS_i + (1 + \eta_i)\pi_i + TR_i, i = A, J, C \tag{1}$$

The political support function for each country's government, PS_i, is constructed by the consumer surplus (CS_i), firm profits ($\pi_i = \pi_{iA} + \pi_{iJ} + \pi_{iC}$), and tariff revenues ($TR_i = t_i(x_{mi} + x_{ni})$; i, m, n = A, J, C, $i \neq m \neq n$). Here, tariff revenue is collected by the government and distributed among consumers and firms in a lump sum. η_i expresses the weight coefficient of firm profits for consumer surplus and tariff revenues. This index represents firms' political pressure, and an increase in η_i indicates an increase in the political pressure exerted by domestic firms on their governments.

Where the proportion of state-owned firms is higher, as in socialist economies, and where the government values the profits of state-owned firms, η_i becomes larger. Moreover, even in capitalist economies, η_i becomes larger when there is strong political pressure on the government from interest groups and private firms. In such economies, consumer surpluses are suppressed, and firm profits and employment are promoted. These differences in political pressure affect the political support function. The Trump administration plunged the US into a tariff war in response to political pressure from industries and regions facing worsening business conditions and job cuts due to increased

imports from China.

The optimal tariff rate t_i^* (i = A, J, C), which maximizes the political support function for each government, is defined as

$$t_i^* = argmax PS_i(t_i) \tag{2}$$

The optimal tariff rate for each country's government, t_i^* (i = A, J, C) differs depending on the weighting given to firm profits, η_i (i = A, J, C). If a government values firm profits and employment (i.e., η_i is large), it will favor higher optimal tariff rates, while if it values consumer surplus (i.e., η_i is small), it will favor lower optimal tariff rates. The political pressure of interest groups in each country affects the optimal tariff rate and the government's political support function.

3. Analysis of trade wars under different trade regimes and political pressures

We analyze the effect of domestic political pressure η_i (i = A, J, C) on each country's political support function PS_i (i = A, J, C). The effect depends on the trade regime in which each country participates. In what follows, we distinguish three trade regimes in the trade relationship between the three countries, i.e., Japan, the US, and China. First, when there is no FTA between the three countries (trade regime <φ>), second, when there is an FTA between Japan and the US (trade regime <AJ>), and third, when Japan serves as a hub and agrees FTAs with the US and China separately (trade regime <Jh>).

3.1. Trade regime <φ>: effects of no FTA between the three countries

We examine the effect on the political support function of each country, expressed as $PS_i(\varphi)$ (i = A, J, C), when domestic political pressure in country A, η_A, has strengthened under trade regime <φ>, where all three countries A, J, and C impose tariffs on one another.

The optimal tariff rate, t_i^* (i = A, J, C) can be determined for each country in solving Equation (2), which requires t_i^* to be positive, whereby -1.5 < η_i < 2.5. Thus,

$$t_i^* = (2\eta_i + 3)/2(5 - 2\eta_i) \tag{3}$$

The effects of political pressure in each country, η_i (i = A, J, C), on optimal tariff rates, t_i^*, are as follows:

$$\partial t_i^*/\partial \eta_i = 31/4(2\eta_i - 5)^2 > 0$$

The three countries are initially symmetrical, and so the effects of domestic political pressure on their optimal tariff rates are the same. An increase in political pressure, η_i, causes an increase in the optimal tariff rate t_i^*. The increased optimal tariff rate, t_i^*, reduces consumer surplus and increases the firm's domestic profits, resulting in an increase in employment. When there is a decline in firm profits and employment resulting from increased imports, as has been the case with the US and China, political pressure strengthens the demand to raise the optimal tariff rate to protect profits and employment.

Each country's political support function under trade regime <φ>, $PS_i(\varphi)$ (i = A, J, C), is induced as follows: the first term expresses consumer surplus, the second expresses tariff revenue, and the third expresses firm profits. The first item in the third term, firm profits, is domestic profit, while the second and third items express profits from exports.

$$PS_A(\varphi) = (1/2)[(3 - 2t_A^*)/4]^2 + (1/2)t_A^*(1 - 2t_A^*)$$
$$+ (1 + \eta_A)\left[[(1 + 2t_A^*)/4]^2 + \left[(1 - 2t_J^*)/4\right]^2 + [(1 - 2t_C^*)/4]^2\right] \tag{4}$$

$$PS_J(\varphi) = (1/2)[(3 - 2t_J^*)/4]^2 + (1/2)t_J^*(1 - 2t_J^*)$$
$$+(1 + \eta_J)\left[[(1 + 2t_J^*)/4]^2 + [(1 - 2t_A^*)/4]^2 + [(1 - 2t_C^*)/4]^2\right] \qquad (5)$$

$$PS_C(\varphi) = (1/2)[(3 - 2t_C^*)/4]^2 + (1/2)t_C^*(1 - 2t_C^*)$$
$$+(1 + \eta_C)\left[[(1 + 2t_C^*)/4]^2 + [(1 - 2t_A^*)/4]^2 + [(1 - 2t_J^*)/4]^2\right] \qquad (6)$$

Figure 1 explains the relationship between political pressure in country A and the political support functions of each country, expressed using Equations (4)–(6), $PS_i(\varphi)$ (i = A, J, C). The vertical axis represents the political support function in each country, $PS_i(\varphi)$ (i = A, J, C), while the horizontal axis represents the political pressure in country A, expressed by η_A. η_A is on the horizontal axis, which takes an initial value of 0, and thereafter increases by increments of 0.1. As political pressure within country A, η_A, increases, country A's optimal tariff rate, t_A^*, increases. The political support functions $PS_{A0}(\varphi)$ and $PS_{J0}(\varphi) = PS_{C0}(\varphi)$ represent the case wherein political pressure in countries J and C is such that $\eta_J = \eta_C = 0$, while political support functions $PS_{A1}(\varphi)$ and $PS_{J1}(\varphi) = PS_{C1}(\varphi)$ represent the case wherein political pressure in countries J and C is such that $\eta_J = \eta_C = 0.1$.
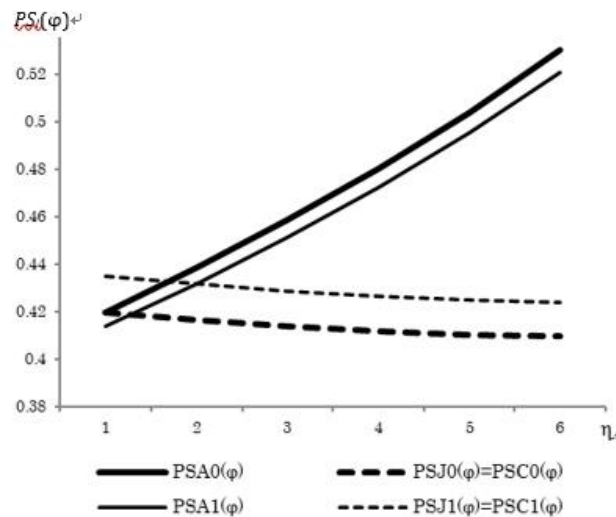

Figure 1. Effects on political support function $PS_i(\varphi)$.

We examine the effect of political pressure in country A, η_A, where political pressure in countries J and C is such that $\eta_J = \eta_C = 0$, on the political support functions of each country, $PS_i(\varphi)$. In the absence of political pressure in countries J and C, as country A's political pressure gradually increases, its political support function $PS_{A0}(\varphi)$ increases, while the political support functions of countries J and C, $PS_{J0}(\varphi) = PS_{C0}(\varphi)$, gradually decrease. In country A, as political pressure increases, the optimal tariff rate t_A^* increases, and consumer surplus and tariff revenues decrease. The decline in consumer surplus and tariff revenues is caused by reduced imports resulting from the increased tariff rates. However, to the extent that these declines are outweighed by increases in firms' domestic profits and profits from exports—the increase in firm profits expands employment—country A's political support function, $PS_{A0}(\varphi)$, increases. The increased domestic profits are caused by an increase in domestic production and sales. Because the tariff rates in countries J and C remain unchanged, the increased profits from exports are because of increased political pressure (firm profit weighting η_A). Alternatively, in countries J and C, country A's increased tariff rate, t_A^*, reduces the profit from exports to country A, while their consumer surplus, tariff revenue, and domestic profits do not change. As a result, the political support functions of countries J and C, $PS_{J0}(\varphi) = PS_{C0}(\varphi)$,

gradually decline together with the decrease in profit from exports.

Next, we highlight the effects of political pressure in country A, η_A, on each country's political support function, $PS_i(\varphi)$, where political pressure in countries J and C is such that $\eta_J = \eta_C = 0.1$, meaning that the optimal tariff rate in countries J and C is initially high. The political support function for country A, $PS_{A1}(\varphi)$, increases, while those for countries J and C, $PS_{J1}(\varphi) = PS_{C1}(\varphi)$, decline. As shown in Figure 1, however, the political support function for country A, $PS_{A1}(\varphi)$, is lower than $PS_{A0}(\varphi)$, while the political support function for countries J and C, $PS_{J1}(\varphi) = PS_{C1}(\varphi)$, is higher than $PS_{J0}(\varphi) = PS_{C0}(\varphi)$. The increased optimal tariff rates due to the rise in domestic political pressure in countries J and C ($\eta_J = \eta_C = 0.1$)—retaliatory tariffs increased by countries J and C in response to a tariff rate increase in country A—suppresses the negative impact of the tariff increase by country A. These results can be expressed as follows:

Result 1. Domestic pressure effect to suppress external pressure: Domestic political pressure suppresses the negative impact of tariff rate increases in foreign countries on the home country's political support function.

At the initial point in time 1, where political pressure in countries J and C is expressed by $\eta_J = \eta_C = 0.1$ and that in country A is expressed by $\eta_A = 0$, the political support function for country A, $PS_{A1}(\varphi)$, is lower than the political those for countries J and C, $PS_{J1}(\varphi) = PS_{C1}(\varphi)$. As political pressure in country A—the optimal tariff rate—increases, the political support function of country A, $PS_{A1}(\varphi)$, increases, while the political support functions of countries J and C, $PS_{J1}(\varphi) = PS_{C1}(\varphi)$, decline. When political pressure in country A increases above $\eta_A = 0.1$ (time point 2), the political support functions of the countries reverse, with country A's political support function, $PS_{A1}(\varphi)$, exceeding those of countries J and C, $PS_{J1}(\varphi) = PS_{C1}(\varphi)$.
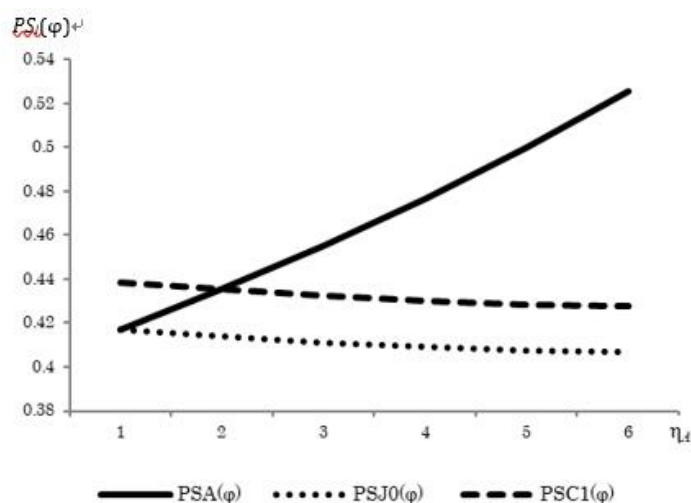

Figure 2. Effects of different political pressures on $PS_i(\varphi)$.

Figure 2 shows the effect of increasing political pressure in country A, η_A, on the political support function of each country, $PS_i(\varphi)$ (i = A, J, C), where political pressure differs between each country η_i (i = A, J, C), such that ($\eta_J = 0 < \eta_C = 0.1$). Political support functions $PS_{J0}(\varphi)$ and $PS_{C1}(\varphi)$ respectively represent the cases wherein political pressure in country J is $\eta_J = 0$ and that in country C is $\eta_C = 0.1$.

At the initial point in time 1 ($\eta_A = \eta_J = 0, \eta_C = 0.1$), the political support function $PS_{C1}(\varphi)$ is the largest for country C, which has the highest political pressure, i.e., the highest optimal tariff rate. With the increase in political pressure in country A, η_A, the political support function for country A, $PS_A(\varphi)$, increases monotonically; however, the political

support functions for countries J and C decrease continuously. It can, however, be seen that the political support function is always greater for country C, where domestic political pressure is greater than that for country J. Differences in domestic political pressure ($\eta_J = 0 < \eta_C = 0.1$) result in differences in "domestic pressure effects to suppress external pressure," which suppress the negative impacts of the increased tariff rate caused by country A. Since the optimal tariff rate is higher in country C than in country J, consumer surplus and tariff revenues are greater in country J, but the effects on domestic profits and export profits are sufficiently greater in country C. As a result, the political support function is larger in country C than in country J.

3.2. Trade regime <AJ>: effects of the Japan-US Trade Agreement

We consider the effect on the political support function in each country under trade regime <AJ>, in which political pressure in country A, η_A (that is the optimal tariff rate), has increased; PS_i (AJ) (i = A, J, C). An FTA has already been agreed between countries A and J and tariffs eliminated, while tariffs are mutually imposed between countries A and C and between countries J and C. As indicated earlier, while an FTA has been agreed between Japan and the US, no FTA has been concluded between China and the US or Japan.

The optimal tariff rate for each country under trade regime <AJ>, t_i* (i = A, J, C), is as follows: the optimal tariff rate differs between countries A and J, which have agreed to an FTA, and country C, which has not agreed to an FTA with those countries.

$$t_i^* = (2\eta_i + 3)/(21 - 2\eta_i), i = A, J \tag{7}$$

$$t_C^* = (2\eta_C + 3)/2(5 - 2\eta_C) \tag{8}$$

The condition for the optimal tariff rate of countries A and J, t_i* (i = A, J), to be positive is -1.5 $<\eta_i<$ 10.5, while that for the optimal tariff rate of country C to be positive is -1.5 $< \eta_C <$ 2.5. Comparing Equations (7) and (8), if domestic political pressure is equal, the optimal tariff rate for non-FTA countries, t_C*, always exceeds the that for FTA countries, t_i* (i = A, J), such that (t_C* > t_A* = t_J*).

The effect of political pressure in each country, η_i, on the optimal tariff rate t_i* (i = A, J, C) is as follows:

$$\partial t_i^*/\partial \eta_i = 48/(21 - 2\eta_i)^2 > 0, i = A, J$$

$$\partial t_C^*/\partial \eta_C = 32/(4\eta_C - 10)^2 > 0$$

Thus, political pressure in each country, η_i (i = A, J, C), increases the optimal tariff rate t_i* (i = A, J, C). If the initial domestic political pressure is equal, the tariff effect of political pressure in non-FTA countries always exceeds the tariff effect in FTA-signatory countries (∂t_C*/$\partial \eta_C$ > ∂t_A*/$\partial \eta_A = \partial t_J$*/$\partial \eta_J$).

The political support function for each country, PS_i (AJ) (i = A, J, C) can be obtained as follows:

$$PS_A(AJ) = (1/2)[(3 - t_A^*)/4]^2 + (1/4)t_A^*(1 - 3t_A^*)$$
$$+(1 + \eta_A)\left[[(1 + t_A^*)/4]^2 + \left[(1 + t_J^*)/4\right]^2 + [(1 - 2t_C^*)/4]^2\right] \tag{9}$$

$$PS_J(AJ) = (1/2)\left[(3 - t_J^*)/4\right]^2 + (1/4)t_J^*(1 - 3t_J^*)$$
$$+(1 + \eta_J)\left[\left[(1 + t_J^*)/4\right]^2 + [(1 + t_A^*)/4]^2 + [(1 - 2t_C^*)/4]^2\right] \tag{10}$$

$$PS_C(AJ) = (1/2)[(3 - 2t_C^*)/4]^2 + (1/2)t_C^*(1 - 2t_C^*)$$
$$+(1 + \eta_C)\left[[(1 + 2t_C^*)/4]^2 + [(1 - 3t_A^*)/4]^2 + \left[(1 - 3t_J^*)/4\right]^2\right] \tag{11}$$

We examine the effect of domestic political pressure under trade regime <AJ> on the political support function of each country, PS_i(AJ) (i = A, J, C), in two situations: 1) where political pressure (η_A) increases in FTA-signatory country A and 2) where political pressure increases in the non-FTA country (η_C).

1) Where domestic political pressure (η_A) increases within an FTA-signatory country

Figure 3 explains the effect of an increase in political pressure—the optimal tariff rate—in FTA-signatory country A on the political support function of each country, PS_i(AJ) (i = A, J, C), where political pressure in countries J and C is such that $\eta_J = \eta_C = 0$. As political pressure in country A, η_A, steadily increases, so country A's political support function, PS_{A0}(AJ), increases, while the political support function for non-FTA country C, PS_{C0}(AJ), steadily decreases. In this case, the political support function of FTA-signatory country J, PS_{J0}(AJ), unlike the case under trade regime <φ>, increases together with the political support function of country A, PS_{A0}(AJ). As can be seen from Figure 3, however, its rate of increase is less than that of country A's political support function, PS_{J0}(AJ).
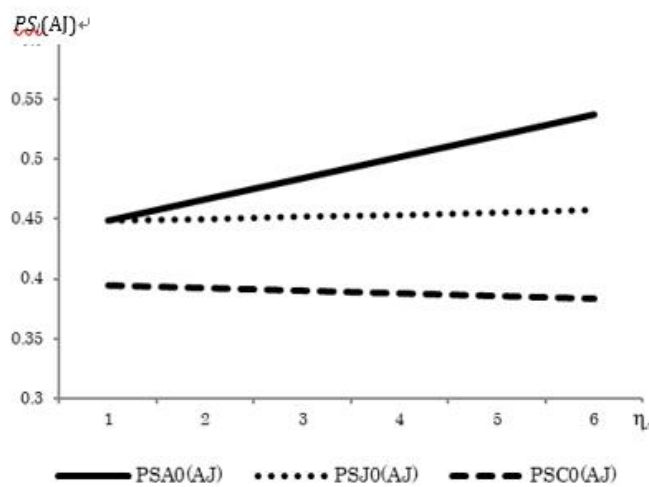

Figure 3. Effects of η_A on political support function PS_i(AJ).

In country A, as political pressure increases, optimal tariff rate t_A^* increases, and consumer surplus and tariff revenues decrease. However, to the extent that these decreases are exceeded by increases in firms' domestic and export profits to country J, country A's political support function, PS_{A0}(AJ), increases. In this case, consumer surplus, tariff revenue, and domestic profits remain unchanged in FTA-signatory country J, while export profits to country A increase, causing an increase in the political support function for country J, PS_{J0}(AJ). The increase in export profits in country J is induced by firms in country J possessing greater competitive strength when exporting tariff-free to the market in country A, compared to firms from country C, upon whom export tariffs are imposed. The agreement of an FTA with country A generates a trade diversion effect from country C to country J in country A's market, causing an increase in the political support function of country J. In non-FTA country C, however, country A's optimal tariff rate, t_A^*, increases, reducing the export profits to country A and reducing its political support function, PS_{C0}(AJ). The above results can be summarized as follows:

Result 2. FTA effect: An increase in political pressure in FTA-signatory country A increases the export profits for FTA-partner country J, which raises the political support functions in FTA-partner country J. However, the export profits in non-FTA country C decline, reducing its political support function.

Figure 4 explains the effects of political pressure in country A, η_A, on the political support functions of each

country, PS_i(AJ) (i = A, J, C), where political pressure in countries J and C is such that $\eta_J = \eta_C = 0.1$. The moving mode in each of the country's political support functions, PS_i(AJ) (i = A, J, C), is the same as where $\eta_J = \eta_C = 0$. The difference arises from the different initial conditions ($\eta_A = 0$, $\eta_J = 0.1$) of political pressure in countries A and J at initial point 1, where the political support function for country J, PS_{J1}(AJ), exceeds the political support function of country A, PS_{A0}(AJ). This is the "domestic pressure effect to suppress external pressure" pointed out earlier. FTA-signatory country J can suppress the decline of the political support function through the FTA effect and the domestic pressure effect to suppress external pressure. As political pressure in country A, η_A, increases, and from time point 2 (η_A = 0.1), their political support functions reverse, with country A's political support function, PS_{A0}(AJ), exceeding country J's political support function PS_{J1}(AJ).
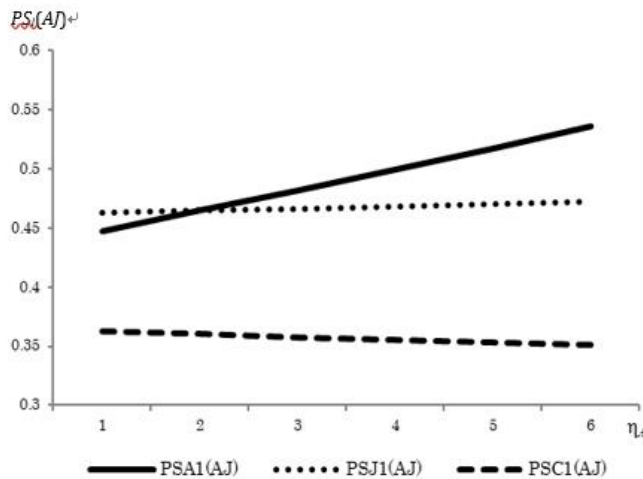

Figure 4. Effects of different political pressures on PS_i (AJ).

2) Where political pressure (η_C) increases within a non-FTA country

Figure 5 explains this effect in non-FTA country C, η_C, on the political support functions for each country, PS_i (AJ) (i = A, J, C), where political pressure in countries A and J is such that $\eta_A = \eta_J = 0$. As domestic political pressure in country C, η_C, steadily increases, the political support function for country C, PS_{C0}(AJ), increases, while the political support functions of countries A and J, PS_{i0}(AJ) (i = A, J), both decrease.
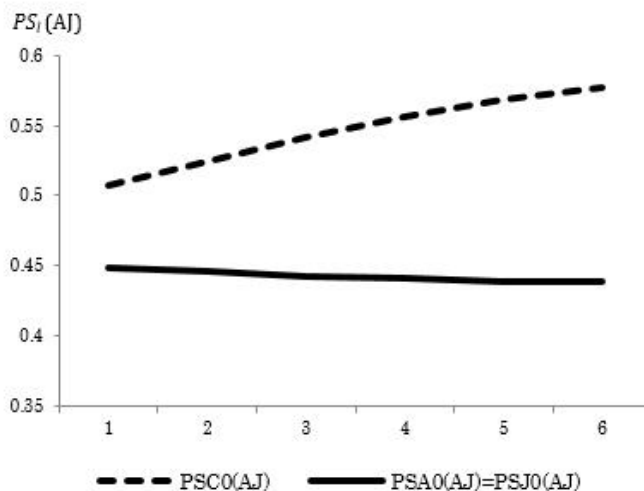

Figure 5. Effects of η_C on political support function PS_i (AJ).

In country C, as political pressure increases, optimal tariff rate t_C* increases, and consumer surplus and tariff revenues decrease. However, because the decreases are outweighed by firms' increases in domestic profits and export profits, the political support function for country C, $PS_{C0}(AJ)$, increases. In this case, in countries A and J, consumer surplus, tariff revenues, and domestic profits are unchanged, while export profits to country C decline, which reduces the political support functions of countries A and J, $PS_{i0}(AJ)$ (i = A, J). Thus, no positive effect was produced by the agreement of an FTA between countries A and J in response to increased political pressure in a non-FTA country.

3.3. Trade regime <Jh>: effects of plural trade agreements

We consider the effect of an increase in domestic political pressure in country A on the political support functions of each country, PS_i (Jh) (i = A, J, C), under trade regime <Jh>, which is a hub-and-spoke trade regime, in which country J is the hub and countries A and C are the spokes. Country J has agreed to FTAs with countries A and C and eliminated tariffs; however, tariffs remain imposed between countries A and C.

Under trade regime <Jh>, the tariff rate in hub country J is unchanged at 0%; however, the optimal tariff rate in spoke countries A and C, t_i* (i = A, C), is determined subject to domestic political pressure as follows:

$$t_i^* = (2\eta_i + 3)/(21 - 2\eta_i) \tag{12}$$

The condition for the optimal tariff rate for both countries A and C, t_i* (i = A, C), to be positive is -1.5 $<\eta_i<$ 10.5.

The effect of increased political pressure in each country η_i (i = A, C) on optimal tariff rates, t_i* (i = A, C), is expressed as

$$\partial t_i^*/\partial \eta_i = (2\eta_i + 27)/(21 - 2\eta_i)^2 > 0$$

Thus, increased political pressure in each country η_i increases the optimal tariff rate t_i* (i = A, C). The political support function for each country, PS_i (Jh) (i = A, J, C), can be obtained as follows:

$$PS_A(Jh) = (1/2)[(3 - t_A^*)/4]^2 + (1/4)t_A^*(1 - 3t_A^*) \\ +(1 + \eta_A)[[(1 + t_A^*)/4]^2 + (1/4)^2 + [(1 - 3t_C^*)/4]^2] \tag{13}$$

$$PS_J(Jh) = (1/2)(3/4)^2 + (3/4)^2 \\ +[(1 + t_A^*)/4]^2 + [(1 + t_C^*)/4] \tag{14}$$

$$PS_C(Jh) = (1/2)[(3 - t_C^*)/4]^2 + (1/4)t_C^*(1 - 3t_C^*) \\ +(1 + \eta_C)[[(1 + t_C^*)/4]^2 + [(1 - 3t_A^*)/4]^2 + (1/4)^2] \tag{15}$$

Figure 6 explains the effects of an increase in political pressure in spoke country A on the political support function of each country PS_i (Jh) (i = A, J, C), where political pressures in countries J and C are such that $\eta_J = \eta_C = 0$. As political pressure within country A steadily increases, the political support function for country A, PS_{A0} (Jh), increases; conversely, the political support function for country C, PS_{C0}(Jh), decreases. It is worth noting here that the political support function for hub country J, PS_{J0} (Jh), increases and is shown to be almost twice as high as those of spoke countries A and C.
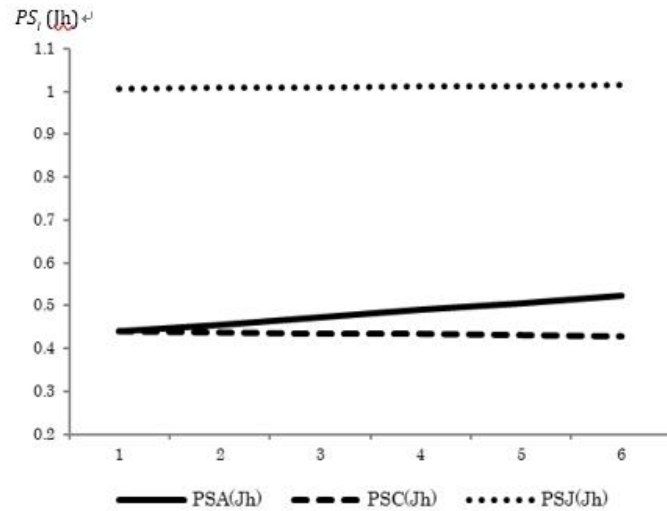
Figure 6. Effects on political support function PS_i (Jh).

We examine the political support function of hub country J, PS_J(Jh), focusing on two points: First, the political support function in hub country J is larger than those of spoke countries A and C. Hub country J has eliminated its tariffs and thus collects no tariff revenue. The size of its consumer surplus also differs slightly from that of spoke countries A and C. The difference between hub country J and spork countries A and C is in the size of firms' profits in domestic and overseas markets. Large firm's profits bring about an increase in the political support function in hub country J, the magnitude of which depends on the assumption of three countries participating in the trade regime and the symmetrical nature of the size of their economies.

Second, an FTA effect is present. When political pressure in spoke country A, η_A, increases, the political support function in hub country J, PS_J(Jh), increases because there is a trade diversion effect when imports from country C into country A's market are substituted for those from country J. As the optimal tariff rate in country A increases, the price of imports from country C increases, reducing exports from firms in country C to the market in country A, thus reducing the profits from exports of those firms. On the other hand, because hub country J has agreed to an FTA with spork country A, exports from firms in country J to the market of country A rise, thus increasing their export profits.

3.4. Buffer effects of trade agreements

Table 1 summarizes the effects of increases in political pressure ($\Delta\eta_A$, $\Delta\eta_C$) under the three trade regimes, <φ>, <AJ>, and <Jh>, on the political support functions in the three countries, A, J, and C (ΔPS_A, ΔPS_J, ΔPS_C). We examine the relationship between trade regimes and political support functions based on Table 1 and the discussion above. Here, we pay particular attention to the domestic pressure effect to suppress external pressure and the FTA effect.

Table 1. The relationship between trade regimes and political support functions.

	<φ>	<AJ>		<Jh>
	$\Delta\eta_A$	① $\Delta\eta_A$	② $\Delta\eta_C$	$\Delta\eta_A$
ΔPS_A	+	+	−	+
ΔPS_J	−	+	−	+
ΔPS_C	−	−	+	−

Notes: + denotes a positive correlation and - denotes a negative correlation.

First, domestic protectionist political pressure has a suppressive effect on external pressure (Result 1). Domestic political pressure suppresses the negative impacts brought by an increase in political pressure (in optimal tariff rates) on trading partner countries. When political pressure in trading partner countries increases, countries with greater domestic political pressure can maintain a greater political support function than countries with less political pressure. Under trade regime <φ>, when the political pressure in country A increases, the political support function in country C, $PS_{C1}(\varphi)$, which has strong domestic political pressure, becomes larger than the political support function of country J, $PS_{J0}(\varphi)$, which has less domestic political pressure (see Figure 2).

Second, the agreement of an FTA has the effect of suppressing external pressure resulting from political pressures among trading partner countries (Result 2). When the political pressure increases, the political support function of non-FTA countries decreases. However, political support functions in FTA-signatory countries increase. Under trade regime <φ>, when domestic political pressure in country A increases, the political support functions of the non-FTA countries J and C, $PS_i(\varphi)$ (i = J, C), both decrease (see Figures 1 and 2). Under trade regime <AJ>, by contrast, when political pressure within country A is increased, the political support function of the non-FTA country C, $PS_C(AJ)$, decreases, while the political support function of the FTA-signatory country J, $PS_J(AJ)$, increases (see Figures 3 and 4).

This FTA effect is particularly pronounced in the hub country under trade regime <Jh>. The political support function for hub country J, $PS_J(Jh)$, which has agreed FTAs with both countries A and C, is sufficiently larger than the political support functions of spoke countries A and C, $PS_i(Jh)$ (i = A, C). Even as political pressures increase in spoke countries A and C, the political support function of hub country J, $PS_J(Jh)$, increases, and exceeds the political support functions of spoke countries A and C (see Figure 6).

Thus, an FTA can mitigate the negative impacts of increased political pressure in trading partner countries. When political pressure in trading partner countries increases, the more FTAs a country has signed, the better able it is to reduce the shock. Under the trading regime <φ>, as political pressure in trading partner country A increases, the political support functions of the other two countries, J and C, decrease. Under trade regime <AJ>, increased political pressure in FTA-signatory country A causes an increase in the political support function of partner FTA-signatory country J. Moreover, under the trade regime <Jh>, hub country J can maintain a sufficiently large political support function even as political pressure in spoke countries A and C increases.

4. US–China trade war and policy implications for Japan

We examine the US-China trade war and its policy implications for Japan. In the context of the US-China trade war, let us consider protectionist political pressure within Japan and the significance of Japan's agreement with the FTAs. Protectionist political pressure within Japan has the effect of suppressing external pressure to mitigate the negative impacts of the US-China trade war. Furthermore, an agreement on a US-Japan FTA and/or a Japan-China FTA has the FTA effect that avoids the negative impacts of the imposition of US tariffs and increases the political support function.

4.1. The US–China trade war and the US–Japan Trade Agreement

On March 22, 2018, US President Trump signed Section 301 of the US Trade Act into law, triggering the start of the US–China trade war. Section 301 underpins countermeasures available to the US against unfair trade practices by foreign countries. The US decided to impose punitive tariffs on China in response to its infringement of intellectual property rights. In July of the same year, an additional 25% tariff was imposed on the imports of 818 items, worth US$36 billion. Subsequently, in August of the same year, additional tariffs of 25% were imposed on 279 items, worth US$16 billion, and in September, an additional tariff of 10% was imposed on 5,749 items, worth

US$200 billion. Moreover, on March 23, Section 232 of the Trade Expansion Act (National Security Clause), used to respond to security threats, was invoked, and additional tariffs of 25% were imposed on imports of steel products from countries including Japan and China, and additional tariffs of 10% on imported aluminum products (USTR 2019a).

As a response to the triggering of Section 301 of the US Trade Act, in July 2018, China imposed retaliatory tariffs of 25% on 545 import items from the US worth US$34 billion. In August, 25% tariffs were imposed on a further 333 items, worth US$16 billion, and in September, retaliatory tariffs of 5–10% were imposed, worth US$60 billion. China also imposed retaliatory tariffs of 10–25% on 256 items in April 2018 in response to the invocation of section 232 of the Trade Expansion Act (MOFCOM 2018a, 2018b, 2018c).

Against this backdrop, Japan agreed to the US–Japan Trade Agreement in September 2019 (MOFA 2019), which came into effect in January 2020. This agreement was signed to compensate for the US withdrawal from the Trans–Pacific Partnership Agreement (TPP). The TPP was agreed on in February 2016 by 12 countries, including the US, but in January 2017, President Trump signed an executive order withdrawing the US from the TPP. The focus of US–Japanese negotiations was on Japanese agricultural imports and US tariffs on imports of automobiles and automobile parts. The agreement restricted opening Japanese agricultural markets to the scope of the TPP and excluded the elimination or reduction in tariffs on rice. It was agreed that US import tariffs on automobiles and automobile parts would be discussed on an ongoing basis.

4.2. Backdrop to US punitive tariffs

The reasons behind the US's imposition of punitive tariffs include their growing trade deficit, China's violations of US intellectual property rights, and US security threats (Liu and Woo 2018; Chong and Li 2019). First, in FY2018, the US trade deficit was US$878.7 billion, of which, the trade deficit with China accounted for 48% at US$419.2 billion (White House 2019). The causes of the trade deficit include the wage gap between the US and China, and the Chinese government policy of undervaluing the yuan against the US dollar. Increased imports from China and the US trade deficit led to job cuts and wage stagnation in the US (Autor et al. 2013, 2016, 2020). China's large trade surplus was, to the US, a beggar-thy-neighbor policy, which required regulation (Rodrik 2017). The US demanded that its trade deficit with China be reduced by US$200 billion over two years.

Second, the basis for the US's invocation of Section 301 of the Trade Act was unfair trade practices by China—the US accused China of violating its intellectual property rights (White House 2018c; USTR 2019b). The issue for the US government was technological transfer—through joint ventures—coerced by the Chinese government when US companies entered the Chinese market, and including Chinese government-led acquisitions of US companies with the aim of acquiring US technology. Behind this backdrop of the infringement of intellectual property rights sits the "Made in China 2025" plan promoted by the Chinese government (Liu 2018). This plan, announced in May 2015, is an industrial policy aimed at upgrading its manufacturing industry by designating 10 priority fields and 23 items, including next-generation information technology and new energy vehicles. This is the cornerstone of China's long-term strategy to become the world's leading manufacturing powerhouse by 2049, the hundredth anniversary of the People's Republic of China's founding. The goal of the first phase is to join the ranks of the world's manufacturing powerhouses by 2025.

Third, Section 232 of the Trade Expansion Act was enacted, and additional tariffs were imposed on imports of steel and aluminum products in response to the claim that this increase in imports constituted a threat to US national security (White House 2018a, 2018b). The increase in imports has led to a decline in the capacity operation rate in the domestic industry, resulting in worsening business conditions and increased unemployment. This downturn in the US domestic industry and increased unemployment was in part due to excess production capacity and lower prices on international markets, particularly led by China. The US government is aiming to keep its

domestic operation rate at 80% through the imposition of additional tariffs on steel and aluminum products.

Unilateral punitive tariffs imposed by the US have been criticized not only by the Chinese government, but also from the perspective of international rules, and the impact of those tariffs on the US economy. Brewster (2019) has criticized these unilateral punitive tariffs as weakening the multilateralism of World Trade Organization rules. Irwin (2017) and Yu and Zhang (2019) point out that punitive tariffs increase the prices of consumer goods, and the employment-increasing effects of tariffs under industrial linkages are small. Adopting a macroeconomic perspective, Sachs (2017) highlights the importance of improving the balance of trade by increasing savings within the US, rather than through punitive tariffs.

4.3. Policy Implications for Japan

In the US–China trade war, protectionist political pressure within Japan and Japan's FTA have the following implications. First, protectionist political pressure within Japan has the effect of suppressing external pressure. The greater the domestic political pressure against the imposition of tariffs by the US and China, the more Japan can contain the negative impacts of the tariff war. As revealed in Section 3, regardless of the trade regime, domestic political pressure within Japan mitigates the negative impacts of US and Chinese tariff rate increases. When the US or China raises tariff rates, countries with greater domestic political pressure can maintain a larger political support function than countries with less political pressure. Where there is no FTA between Japan, the US, and China, and the US raises tariffs, China, which has greater domestic political pressure, will have a larger political support function than Japan, which has less domestic political pressure. However, Japan will find it difficult to impose sufficient retaliatory tariffs against the US due to the security reasons of the Japan-US alliance.

Second, Japan can mitigate the decline in its political support function through the Japan–US trade agreement. When the US raises its tariff rate, the political support function of non-FTA countries will decrease, while those of FTA-signatory countries will increase. In the absence of an FTA between Japan, the US, and China, both Japan and China's political support functions decrease when the US raises tariffs. By contrast, when an FTA is signed between Japan and the US, an increase in US tariffs causes the Chinese political support function to decrease, while the Japanese political support function increases. This is due to the trade diversion effects in the US market. Furthermore, in the case of significant domestic political pressure, as well as in the case of agreeing an FTA, a suppression effect of external pressure may be expected. However, the Trump administration, which took office in 2025, is preparing to unilaterally impose tariffs and reciprocal tariffs on FTA partners. In such cases, even if an FTA is agreed, it will be difficult to fully enjoy the benefits of the FTA.

Third, Japan would be able to further mitigate the decline in its political support function if it were able to agree to an FTA with China. Agreeing an FTA with China could mitigate the impacts of rising political pressure from trading partners. When the political pressure from a trading partner country increases, countries with more FTAs can enjoy the effect of agreeing FTAs that mitigate the shock (the hub effect of FTAs). Despite the challenges of such an agreement, if a Regional Comprehensive Economic Partnership (RCEP) that included China could be agreed upon, it would be possible to mitigate the negative impacts of the tariff war between the US and China. In November 2012, negotiations for the RCEP formally began among 16 countries, including the 10 countries of ASEAN plus the six countries of Japan, China, South Korea, Australia, New Zealand, and India. India is not actively participating in the RCEP; in November 2020, 15 countries, including Japan and China, but excluding India, have signed onto the RCEP. However, in FTAs with developing countries, the elimination of tariffs is not always sufficient, and non-tariff barriers constrain the effectiveness of trade.

5. Conclusion

We examined the effects of domestic political pressure and FTAs in trade wars on the political support functions of several countries under different trade regimes, using a three-country political economy model of Cournot-type oligopolistic competition.

The main conclusions of this paper are as follows. First, domestic protectionist political pressure has the effect of suppressing external pressure. Regardless of the form the trade regime takes, increased domestic political pressure will mitigate the negative impacts of the protectionist tariff rate increases imposed by trading partner countries. When protectionist political pressure increases among trading partner countries, countries with greater domestic political pressure can maintain larger political support functions than countries with less domestic political pressure. Under trade regime <φ>, when US protectionist political pressure increases, China, which has greater domestic political pressure, presents a larger political support function than Japan, which has less domestic political pressure.

Second, there is an FTA effect; that is, the agreement of an FTA has had the effect of mitigating the negative impacts of US tariff rate rises. When the US raises its tariff rates, the political support functions of non-FTA countries will decrease; however, it can cause an increase in the political support functions of FTA-signatory countries. Under trade regime <φ>, when the US tariff rate increases, the political support functions for both Japan and China decrease. In trade regime <AJ> by contrast, when the US tariff rate is increased, the political support functions of non-FTA countries will decrease, while that of Japan, which is signatory to an FTA with the US, will increase.

Preferential trade agreements, such as FTAs, discriminate against those outside of the agreement from within through trade reduction and trade diversion. Domestic political pressure also discriminates against foreign countries using protectionism. Both the effect of domestic pressure suppressing external pressure and the FTA effect increase the home country's political support function by discriminating against foreign and external countries.

Funding Statement

Acknowledgments

Conflict of interest

The author claims that the manuscript is completely original. The author also declares no conflict of interest.

Author contributions

The author was solely responsible for all aspects of the research, including conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing – original draft, and writing – review & editing.

References

Autor, D., Dorn, D., and Hanson G. (2013). The China Syndrome: Local Labor Market Effects of Import Competition in the United States. *American Economic Review*, 103, 2121–2168. https://doi.org/10.1257/aer.103.6.2121

Autor, D., Dorn, D., and Hanson, G. (2016). The China Shock: Learning from Labor-Market Adjustment to Large Changes in Trade. *Annual Review of Economics*, 8, 205–240. https://doi.org/10.1146/annurev-economics-080315-015041

Autor, D., Dorn, D., Hanson, G., and Majlesi, K. (2020). Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure. *American Economic Review*, 110, 3139–3183. https://doi.org/10.1257/aer.20170011

Bagwell, K., and Staiger, R. (1999). Regionalism and Multilateral Tariff Cooperation. In John Piggott and Alan Woodland eds., International Trade Policy and the Pacific Rim, 157–185. London: Macmillan.

Baldwin, R. (1987). Politically Realistic Objective Functions and Trade Policy. *Economics Letters*, 24, 287–290. https://doi.org/10.1016/0165-1765(87)90132-7

Bond, E., Riezman, R., and Syropoulos, C. (2004). A Strategic and Welfare Theoretic Analysis of Free Trade Areas. *Journal of International Economics*, 64, 1–27. https://doi.org/10.1016/S0022-1996(03)00078-3

Brander, J., and Spencer, B. (1984). Trade Protection and Imperfect Competition. In Monopolistic Competition and International Trade, edited by Henryk Kierzkowski, 194–206. Oxford: Clarendon Press.

Brewster, R. (2019). Analyzing the Trump Administration's International Trade Strategy. *Fordham International Law Journal*, 42, 1419–1430. https://heinonline.org/HOL/Page?handle=hein.journals/frdint42&div=47&g_sent=1&casa_token=&collection=journals

Chong, T., and Li, X. (2019). Understanding the China–US Trade War: Causes, Economic Impact, and the Worst-case Scenario. *Economic and Political Studies*, 7, 185–202. https://doi.org/10.1080/20954816.2019.1595328

Dong, Y., and Whalley, J. (2012). Gains and Losses from Potential Bilateral US–China Trade Retaliation. *Economic Modelling*, 29, 2226–2236. https://doi.org/10.1016/j.econmod.2012.07.001

Gorman, M. (1958). Tariffs, Retaliation and the Elasticity of Demand for Imports. *Review of Economic Studies*, 25, 133–162. https://doi.org/10.2307/2295983

Grossman G., and Helpman, E. (1995). Trade Wars and Trade Talks. *Journal of Political Economy*, 103, 675–708. https://www.jstor.org/stable/2138578

Hamilton, B., and Whalley, J. (1983). Optimal Tariff Calculations in Alternative Trade Models and Some Possible Implications for Current World Trading Arrangements. *Journal of International Economics*, 15, 323–348. https://doi.org/10.1016/S0022-1996(83)80009-9

Horwell, D. (1966). Optimum Tariffs and Tariff Policy. *Review of Economic Studies*, 33, 147–158. https://doi.org/10.2307/2974438

Irwin, D. (2017). The False Promise of Protectionism: Why Trump's Trade Policy Could Backfire. *Foreign Affairs*, 96(3), 45–56. https://www.jstor.org/stable/44823730

Ishiguro, K. (2017). TPP Negotiations and Political Economy Reforms in Japan's Executive Policy Making: A Two-Level Game Analysis. *International Relations of the Asia-Pacific*, 17, 171–201. https://doi.org/10.1093/irap/lcw010

Johnson, H. (1953–1954). Optimum Tariffs and Retaliation. *Review of Economic Studies*, 21, 142–53. https://doi.org/10.2307/2296006

Kennan, J., and Riezman, R. (1988). Do Big Countries Win Tariff Wars? *International Economic Review*, 29, 81–85. https://doi.org/10.1142/9789814390125_0004

Kennan, J., and Riezman, R. (1990). Optimal Tariff Equilibria with Customs Unions. *Canadian Journal of Economics*, 23, 70–83. https://doi.org/10.2307/135520

Krugman, P. (2016). And the Trade War Came. New York Times December 26, 2016. https://globaltraderelations.net/images/Article.Krugman.Trade_War_Came_NYT_12.26.16.pdf

Kuga, K. (1973). Tariff Retaliation and Policy Equilibrium. *Journal of International Economics*, 3, 351–66. https://doi.org/10.1016/0022-1996(73)90027-5

Li, C. (2017). How Would Bilateral Trade Retaliation Affect China? *Computational Economics*, 49, 456–79. https://doi.org/10.1007/s10614-016-9571-6

Li, C., He, C., and Lin, C. (2018). Economic Impacts of the Possible China–US Trade War. *Emerging Markets Finance & Trade*, 54, 1557–1577. https://doi.org/10.1080/1540496X.2018.1446131

Liu, K. (2018). Chinese Manufacturing in the Shadow of the China–US Trade War. *Economic Affairs*, 38, 307–324. https://doi.org/10.1111/ecaf.12308

Liu, T., and Woo, W. (2018). Understanding the U.S.–China Trade War. *China Economic Journal*, 11, 319–340. https://doi.org/10.1080/17538963.2018.1516256

Loridas, K. (2011). United States–China Trade War: Signs of Protectionism in a Globalized Economy? *Suffolk Transnational Law Review*, 34, 404–427. https://heinonline.org/HOL/Page?handle=hein.journals/sujtnlr34&id=407&collection=journals&index=

Mansfield, E., and Milner, E. (2012). Votes, Vetoes, and the Political Economy of International Trade. Princeton: Princeton University Press.

Mayer, W. (1981). Theoretical Considerations on Negotiated Tariff Adjustments. *Oxford Economic Papers*, 33, 135–153. https://doi.org/10.1093/oxfordjournals.oep.a041494

Milner, H., and Rosendorff, P. (1997). Democratic Politics and International Trade Negotiations: Elections and Divided Government as Constraints on Trade Liberalization. *Journal of Conflict Resolution*, 41, 117–146. https://doi.org/10.1177/0022002797041001

MOFA. (2019). Trade Agreement Between Japan and the United States of America. https://www.mofa.go.jp/mofaj/files/000527401.pdf (Accessed: September 9, 2024)

MOFCOM. (2018a). Imposing Additional Tariff on Several Imports of Products Originating in the U.S. http://english.mofcom.gov.cn/article/policyrelease/announcement/201804/20180402734699.shtml (Accessed: September 9, 2024)

MOFCOM. (2018b). China Decides to Impose Additional Tariffs on 60 Bln USD of U.S. Products. http://english.mofcom.gov.cn/article/counselorsreport/europereport/201808/20180802772636.shtml (Accessed: September 9, 2024)

MOFCOM. (2018c). China's Additional Tariffs on $16 Billion of U.S. Goods. http://english.mofcom.gov.cn/article/counselorsreport/americaandoceanreport/201808/20180802775808.shtml (Accessed: September 9, 2024)

Ornelas, E. (2005). Trade Creating Free Trade Areas and the Undermining of Multilateralism. *European Economic Review*, 49, 1717–1735. https://doi.org/10.1016/j.euroecorev.2004.03.010

Otani, Y. (1980). Strategic Equilibrium of Tariffs and General Equilibrium. *Econometrica*, 48, 643–662. https://doi.org/10.2307/1913128

Perroni, C., and Whalley, J. (1996). How Severe is Global Retaliation Risk under Increasing Regionalism. *American Economic Review, Papers and Proceedings*, 86, 57–61. https://www.jstor.org/stable/2118096

Richardson, M. (1993). Endogenous Protection and Trade Diversion. *Journal of International Economics*, 34, 309–324. https://doi.org/10.1016/0022-1996(93)90052-Y

Riezman, R. (1982). Tariff Retaliation from a Strategic Viewpoint. *Southern Economic Journal*, 48, 583–593. https://doi.org/10.2307/1058652

Rodrik, D. (2017). Straight Talk on Trade: Ideas for a Sane World Economy. Princeton: Princeton University Press.

Rosendorff, P. (1996). Endogenous Trade Restrictions and Domestic Political Pressure. In The Political Economy of Trade Policy: Papers in Honor of Jagdish Bhagwati, edited by Robert Feenstra, Gene Grossman and Douglas Irwin, 245-263. Cambridge: MIT Press.

Sachs, J. (2017). Will Economic Illiteracy Trigger a Trade War? Project/Syndicate April 20, 2017. https://www.jeffsachs.org/newspaper-articles/fyfet75zz86delnjab5sfc4zxgkatd

Saggi, K. (2006). Preferential Trade Agreements and Multilateral Tariff Cooperation. *International Economic Review*, 47, 29–57. https://doi.org/10.1111/j.1468-2354.2006.00371.x

Saggi, K., and Yildiz, H. (2009). Optimal Tariffs of Preferential Trade Agreements and the Tariff Complementarity Effects. *Indian Growth and Development Review*, 2, 5–17. https://doi.org/10.1108/17538250910953435

Saggi, K., and Yildiz, H. (2010). Bilateralism, Multilateralism, and the Quest of Global Free Trade. *Journal of International Economics*, 81, 26–37. https://doi.org/10.1016/j.jinteco.2010.01.004

Saggi, K., and Yildiz, H. (2011). Bilateral Trade Agreements and the Feasibility of Multilateral Free Trade. *Review of International Economics*, 19, 356–73. https://doi.org/10.1111/j.1467-9396.2011.00952.x

Scitovsky, T. (1942). A Reconsideration of the Theory of Tariffs. *Review of Economic Studies*, 9, 89–110. https://doi.org/10.2307/2967663

Syropoulos, C. (2002). Optimum Tariffs and Retaliation Revisited: How Country Size Matters. *Review of Economic Studies*, 69, 707–727. https://doi.org/10.1111/1467-937X.t01-1-00028

Thursby, M., and Jensen, R. (1983). A Conjectural Variation Approach to Strategic Tariff Equilibria. *Journal of International Economics*, 14, 145–161. https://doi.org/10.1016/0022-1996(83)90026-0

USTR. (2019a). The 2019 Trade Policy Agenda and 2018 Annual Report of the President of the United States on the Trade Agreements Program. https://ustr.gov/sites/default/files/2019_Trade_Policy_Agenda_and_2018_Annual_Report.pdf (Accessed: September 8, 2024)

USTR. (2019b). 2019 Special 301 Report. https://ustr.gov/sites/default/files/2019_Special_301_Report.pdf (Accessed: September 8, 2024)

White House. (2018a). Presidential Proclamation on Adjusting Imports of Steel into the United States. https://www.whitehouse.gov/presidential-actions/presidential-proclamation-adjusting-imports-steel-united-states/ (Accessed: September 8, 2024)

White House. (2018b). Presidential Proclamation Adjusting Imports of Aluminum into the United States.

https://www.whitehouse.gov/presidential-actions/presidential-proclamation-adjusting-imports-aluminum-united-states-2/   (Accessed: September 8, 2024)

White House. (2018c). How China's Economic Aggression Threatens the Technologies and Intellectual Property of the United States and the World. https://www.whitehouse.gov/wp-content/uploads/2018/06/FINAL-China-Technology- Report-6.18.18-PDF.pdf (Accessed: September 8, 2024)

White House. (2019). The United States Reciprocal Trade Act: Estimated Job & Trade Deficit Effects. https://www.whitehouse.gov/wp-content/uploads/2019/05/RTA-Report-Final-TMP.pdf   (Accessed: September 8, 2024)

Yildiz, H. (2014). Hub and Spoke Trade Agreements under Oligopoly with Asymmetric Costs. *Journal of International Trade and Economic Development*, 23, 97–110. https://doi.org/10.1080/09638199.2012.665470

Yu, M., and Zhang, R. (2019). Understanding the Recent Sino–U.S. Trade Conflict. *China Economic Journal*, 12, 160–74. https://doi.org/10.1080/17538963.2019.1605678