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Shake Hands or Shake Apart?

International Relationship of Japan with Global Blocs

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ABSTRACT

Despite the world-wide spread of economic blocs following the Great Depression, Japan sought to find trade partners outside of its own bloc and to maintain a relationship with some foreign blocs, in particular maintaining a connection with the British Commonwealth and the Sterling bloc. The 1930s bloc economies did not isolate Japan. Also, in the early period of the cold war after World War II, capitalist blocs did not significantly isolate Japan. Econometric analysis of Japan's trade and world trade over the period from 1890 to 1955 based on a development of a gravity equation illustrates these statements.

JEL Classification: F10, F15, N70.

Keywords: Trade/ Currency Blocs; Bloc Economy; Trade Diversion; Gravity equation; GATT.

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1 INTRODUCTION

The current world economy has seen globalisation and the growth of a tight international relationship through regional economic integration and regional trade agreements. As discussion of globalisation continues, historical perspectives have also been incorporated into the debate. Two waves of globalisation can be identified, the first wave (1820-1914) and the second wave (1960- current). The two waves are similar in terms of common increases in trade flows but also can be characterised by substantially different economic and political aspects (Bairoch and Kozul-Wright, 1996; Baldwin and Martin, 1999). In addition the current wave of globalisation has some features in common with the inter-war economies (1915-1960) such as trade diversion and creation effects through the economic integration and currency unions experienced in recent decades as well as in the 1930s trade and currency blocs. However compared with the large number of studies of current economic integration, there are relatively few econometric analyses of the impact of the 1930s bloc economies on world trade. For this reason this paper aims to provide some evidence of the impact of the inter-war bloc economies on trade, using the gravity model while taking into account the connection of the bloc economies in the 1930s with the first wave of globalisation and the post-war period. In particular, our study focuses on the relations of the Japanese economic bloc with the world economy in order to highlight closed and exclusive features of the 1930's bloc economy regarding world trade as Japan was one of the most closed blocs in the 1930s (Kindleberger, 1973). By using historical data sets and econometric analysis we study world-wide trade bloc formation in the 1930s and the Japanese international relationship with the world economy from the beginnings of open Japanese trade in the 1890's, over the period before the second wave of globalisation, the 1950s.

With the onset of the Great Depression world trade contracted steadily, countries formed bloc economies worldwide and protectionism and regionalism became widespread. Eichengreen and Irwin (1995) studied the bloc economies of the 1930s by applying the gravity equation. Although Eichengreen and Irwin's econometric analysis was conducted exclusively over only a few periods before and after the Great Depression due to restrictions regarding data availability, they pointed out that Commonwealth countries already had tight connections before 1932. Hence their study seems to suggest that we need to investigate longer time periods including the first wave of globalisation and the post-war period when we consider the conventional 1930s-bloc economy study. Another unexamined issue in the literature is interwar Japan, as suggested by Kindleberger (1973) in his quantitative analysis, the interwar Japanese bloc (Japan, Korea and Taiwan) was the most closed in the world however almost all previous econometric analyses including Eichengreen and Irwin (1995) exclude Japanese intra-bloc trade due to data availability. For these reasons we focus on the Japanese bloc formation and its relationships with other world-wide blocs in the evolving pattern of world trade over the longer period lasting from 1890 to 1955. Using a gravity-model and bilateral world trade data sets combined with the Japanese colonial trade data we estimate: 1) whether a substantial trade creation effect can be observed resulting from the formation of the Japanese Empire (the annexation of Korea and Taiwan) and other 1930s trade and currency blocs, 2) whether Japanese foreign trade with any other major blocs declined or increased and 3) how Japan's defeat in World War II and the collapse of its Empire affected Japanese foreign trade and its economic relationship with capitalist and communist countries.

As a result of our analysis we reach a number of conclusions: 1) Japan had a tight relationship with Korea and Taiwan since the 1910s (much earlier than the Depression). 2) Likewise, the Commonwealth and Reichsmark blocs exhibited quite deep relations across member countries

before the 1930s, on the other hand, the gold bloc and foreign exchange control countries experienced significant trade creation in the middle of the 1930s. 3) Trade diversion effects with Japan are observed to be significant in relation to the Reichsmark bloc and foreign exchange control countries. In the 1930s however keeping a tight relationship with Korea and Taiwan, Japan sought to maintain some relationship with the British Commonwealth and the Sterling area. 4) The Communist bloc has had a substantial trade creation effect across members and trade diversion with Japan.

The remainder of this paper is structured as follows: Section 2 reviews the literature, a brief history of Japanese international relations is presented in Section 3 and some stylised facts are reported in Section 4; econometric methodology and the estimation results are presented in Section 5. Section 6 presents a discussion of these findings and the conclusions are established in Section 7.

2 LITERATURE REVIEW

Eichengreen and Irwin (1995) studied the impact of bloc economies in the 1930s on world trade by applying border effect analysis in the gravity model à la McCallum (1995). One of their aims was to estimate the effect of trade bloc formation after the Depression and thus their estimation was concentrated on three periods just before and after the Depressions, i.e. 1928, 1935 and 1938. They found significant trade-creating effects in the British Commonwealth and Reichsmark blocs owing to increased levels of protectionism however, they observed that trade-diversion effects were not significant. With regard to currency blocs the Sterling area and exchange control members did not experience significant trade-creating effects furthermore,

exchange control members exhibited significant trade-diversion effects while the Gold bloc was characterised as experiencing slightly increased trade with non-bloc members due to their indiscriminate use of trade restriction. Overall substantial and significant trade-creating effects were found within trade blocs whilst neither substantial trade-creation nor diversion was observed in any currency bloc except the case of trade diversion in exchange control members. Consecutively a few more papers investigated the bloc economy in world trade via econometric analysis. Estevadeordal, et al. (2002) and Ritschl and Wolf (2002) estimated world-wide inter-war bloc economies using the gravity equations. Interestingly these previous studies paid attention to the linkage of the period before the Great Depression and World War I (the period of the first wave of globalisation) while Estevadeordal, et al. (2002) conducted gravity model estimation for trade of 1913.

Turning attention from the world wide bloc formation to inter-war Japan, Okubo (2007) estimated that the bloc border effect on trade bloc formation within the Japanese Empire from 1915 to 1938 and found a sizeable and increased border effect due to the increased intra-empire trade together with the increased migration from the Japanese mainland to the Japanese colonies. He used only foreign trade and intra-empire trade data from Japan's bloc member countries (Japanese, Korean and Taiwanese) over the period from 1915 to 1938 rather than using world-wide bilateral trade data sets. At this point it may be useful to note that this paper, which also mainly investigates the Japanese trade, has some substantial differences from Okubo (2007). The focus in this paper is on Japan's international relationship with other world wide blocs. Thus this paper uses world-wide bilateral trade data as well as Japanese trade data over a much longer period—from the dawn of Japan in the 1890s, and so incorporates the formation and development of the Empire, the end of the Empire in 1945 and the beginning of the cold war in the 1950s. The

central focus of this paper is on trade bloc formation as well as trade diversion across major world-wide blocs.

3 JAPANESE HISTORY FROM THE 1850S TO THE 1950S[2]

A series of incidents related to foreign pressure in the 1850s and 1860s led to Tokugawa Shogun resigning the throne and marked the end of a 200-year long period of economic autarchy in the Edo period. Subsequently Japan opened ports, initiated trade with foreign countries and cultivated international relationships.[3] Japan was enforced to ratify a Treaty of Amity and Commerce with the United States in 1858 and later with the Netherlands, Russia, Britain and France. These were unequal treaties, for instance extraterritoriality was enforced and tariff rates were subject to the foreign Great Powers' control. To exclude unequal treaties, a modernised Japanese government was established under the emperor introducing a modern European style of administrative, economic, educational and military systems. The government promoted industrialisation and the development of manufacturing. In 1889 the Constitution was proclaimed and the Japanese Empire was formed in the constitutional sense. Japan sought to catch up with the Great Powers in Europe and was eager to acquire foreign territory in Asia. Japan acquired Formosa (Taiwan) in 1895 and China abandoned its suzerainty over Korea as a result of conditions of the treaty ending the first Sino-Japanese war with China (Qing Dynasty). With an increased potential menace in East Asia from Russia and France Japan militarily allied itself with

[2] For more information on conventional discussion of Japanese history, see for example, Dolan and Worden (1992).
[3] In the Edo period foreign trade was prohibited except on an exceptional basis with China and the Netherlands..

Britain in 1902 (the Anglo-Japanese Alliance).[4] Japan then sought to expand of its power in East Asia which led to the conflict with Russia in 1904 (Russo-Japanese War). As a consequence of the Japanese victory over Russia in 1905 Japan received South Sakhalin and leased Port Arthur from Russia. Furthermore Russia recognised Korea as belonging to the Japanese sphere of influence. Japan further expanded more its power in East Asia before finally annexing Korea in 1910. These incidents boosted the Japanese position in international relations. The establishment of Japanese sovereignty annihilated unfair treaties. Since the opening of trade in the 1860s Japan had had no authority over its own tariff rates which were subject to the Big Powers' control but Japan had fully recovered the authority to decide its own tariff rates by 1911.

The Anglo-Japanese Alliance led Japan to join World War I side of the British and its victory further increased Japanese influence. In the peace conference at Versailles in 1919 Japan was internationally recognised as one of the big powers in the international order. In the course of the big powers' competition for hegemony the Washington Conference of 1921 and 1922 sought to coordinate the their interests in the Pacific Area through several treaties, Japan agreed with the United States, Britain and France in taking a neutral attitude toward China and thus maintaining the status quo in the Pacific Area.

The Great Depression and the economic crises of 1928-1932 seriously damaged the Japanese economy, mainland Japan had sought to develop a tight relationship with Korea and Formosa and to increase exclusive protection in international trade from the rest of the world. Likewise the British Commonwealth established a bloc economy at the Imperial Economic Conference at Ottawa in 1932 by ratification of reciprocal trade agreements (Macdougall and Hutt, 1954). Furthermore the formation of currency and trade blocs tended to confine trade flows between

[4] This led to the end of Britain's "splendid isolation". The alliance was renewed in 1905 and 1911 and then became void in 1921.

bloc members, for example, the Reichsmark bloc contained the countries pegged to the Reichsmark in 1937 and 1938 and was initiated by Germany. Nineteen countries and regions including most of the British Commonwealth members pegged to sterling in the 1930s. In the same period Gold standard countries were unified by France while Germany formed a foreign exchange control bloc with some European countries. By contrast the United States had sought to ratify the Reciprocal Trade Agreements Act of 1938 and reduce tariff rates, with the aim of creating heavy trade linkages across ratifying countries. In 1937 Japan sparked the war with China and then finally entered into conflict with the United States, Britain and the Netherlands in 1941 (World War II).[5] Japanese military forces were almost annihilated by the European and US military. The Japanese mainland was seriously damaged with many casualties and cities left in ruins. In August of 1945 Japan surrendered and following the ceasefire Japan lost all of its army and overseas territories such as Korea and Taiwan.

Before the end of World War II the Allied powers had sought to create a new world order. Consequently, the United Nations was founded and the Bretton Woods Agreements (1944) created along with the IMF and IBRD and GATT was signed by 23 countries in 1948 with the aim of preventing the creation of bloc economies and liberalising international trade. Simultaneously the USSR created a communist bloc against capitalism leading to the cold war which spread in then form of outright conflicts into East Asia. The People's Republic of China was formed in 1949 after domestic conflicts between nationalist and communist parties and Korea was split into two nations after the Korean War (1950-1953). Another war caused disruption in Vietnam (Indochina War, 1946-1954).

[5] In 1940 Japan signed the Tripartite Pact with Germany and Italy, forming the Axis Powers against the Allied powers in World War II.

Meanwhile in Japan the defeat in World War II heralded the end of the period of the Japanese Empire and heralded a democratic Japanese nation under the occupation of the Allies (mainly the United States) until 1952. The new Constitution was effected in 1947 and Japan signed a peace treaty with the capitalist countries at San Francisco in 1951 which recognised Japan as an independent country in international affairs.[6] Following this Japan restored diplomatic relations with Taiwan in 1952 and with South Korea in 1965.

4 STYLISED FACTS OF JAPANESE TRADE

4.1 Foreign Trade in Early Period

After opening itself to foreign trade in 1858 Japan mainly exported silk, green tea and coal. In particular, silk was the biggest export product in the early period. As seen in Table 1, these kinds of primary products accounted for more than 60-80 % of total exports in the 1880s and 1890s but afterwards steadily declined to a level of around 20 % in the 1930s. Cotton textiles increasingly became the main Japanese export products from the early years of the twentieth century, in all textile products accounted for 30-40% of exports and cotton textiles in particular, accounted for 10- 20% of total exports. After World War I heavy industries such as chemistry, metal and machinery steadily started to export.[7] In terms of imports Japan increasingly imported raw materials for textile industries which corresponded to the surge in textile exports. Cotton was the biggest import product over the years before World War II, i.e. it represented 20-30% of total

[6] The Constitution declared the abandonment of military forces and committed the country to avoid warfare.
[7] From the 1960s heavy industry products like automobile, metal, chemistry and machinery played a dominant role in exports but the light industries were the main export industries over our estimation period. See Yamazawa (1984).

imports. Also, raw coal mining materials increased in import as heavy industries developed in the 1930s.[8]

As seen in Figure 1 tariff rates were bound to the low fixed rates until the recovery of autonomy over tariff rates in 1899. The tariff rates steadily increased from the 1910s through the early 1930s. More importantly levied tariff rates were differentiated across products due to government policies. At the product level tariff rates on agricultural products like rice and sugar and raw materials for textiles like cotton and wool increased greatly from the late 1920s to 1930s (Table 2).[9]

4.2 Japanese Empire and Colonial Trade

Together with Japanese foreign imports, colonial trade also played an important role in supplying agricultural and primary products to the Japanese mainland. Colonial trade produced trade diversions for many agricultural products after the annexation. For instance rice and sugar from foreign trade imports were replaced by imports from the colonies; levels of foreign imports of these goods had fallen to almost zero by the 1930s (Mizoguchi and Umemura, 1988). Japan imported rice and sugar from Taiwan thanks to the development of its sugar industry and imported rice and beans from Korea. Japan was dependent on its colonies for supplies of food and raw materials. In return Japan exported manufacturing products to them. The foreign trade of Korea and Taiwan was much smaller in size than that of mainland Japan and the destinations of

[8] Primary products including raw materials and food accounted for 40-60% in total imports, and in particular raw materials accounted for 30-40% of total imports from the 1900s to the 1930s. See Yamazawa (1984).
[9] Note that average tariff rates in Table 2 are derived as tariff revenue divided by value of imports. So we cannot take into account trade diversion and there is the possibility of underestimating the average tariff rates. For instance, there are no imports of artificial silk in 1893 and 1903. This might be due to prohibitively high rates of tariffs.

trade were limited to neighbouring countries like China, which was related to the Japanese strategy for aggression in Asia.[10]

The Japanese mainland's trading partners were first limited to European and American countries and China due to its proximity, but the trading partners became more diversified in the 1930s. As Yamamoto (1985a) showed, Japanese trade increased with Asia and Oceania in the 1930s (from 47.90% of total imports in 1930 to 64.88% in 1939) despite the formation of bloc economies.

4.3 Post-war Japanese Trade

The post-war period for the Japanese economy started with a scarcity of food and raw materials, the collapse of production and the ruin of cities due to the defeat of the war. Japan re-opened trade in 1948 however foreign trade in the 1940s and 1950s was limited in the sense that the United States controlled Japanese trade as part of its continued military occupation and some Asian countries were embroiled in war, conflicts and political turmoil.[11] Owing to a serious lack of food and diminished production in the years following the war, in the main Japanese trade accounted for imports rather than exports with the most significant imports being food (around 30%) and raw materials (around 20%).[12] Relationships with trade partners were extremely biased the first partner, the United States, was definitely dominant (43% in total imports and 21% of total exports in 1950). Other limited trade partners during this period were Australia, Thailand, Indonesia and China. These biases largely stemmed from the fact that Japan was militarily

[10] Matsumoto (1996) typified this trade structure as a "satellite" trade system in the Japanese Empire in which mainland Japan produced industrial products as a hub and colonies supplied raw materials spoke to the hub, rather than a "network" trading system, in which all member countries trade with one another. Mainland Japan engaged in external trade and its colonies played the role of supplying raw materials to the mainland.

[11] For example, Japan prohibited trade with China in 1950 due to objections regarding China's military intervention in Korea. Korea drastically increased its imports from Japan due to the Korean War in 1953 but prohibited trade with Japan in 1955.

[12] Food imports accounted for 47.9% of total imports in 1948, 33.4% in 1950 and 25.2% in 1955. Crude materials accounted for 24.2% in 1948, 42.0% in 1950 and 51.1% in 1955

occupied and both Japan's politics and its economy were controlled by the United States until 1952.

Although Japan's joining GATT was objected to by some European countries, Japan was allowed to join albeit with some limitations and discriminatory treatment by European countries in September 1955. However, Japan still concentrated on the recovery from the collapse of production resulting from the war and thus foreign trade was restricted and controlled by the Japanese government until the late 1950s which maintained that the first aim of trade was to satisfy domestic demand. After 1960 Japan experienced economic growth and gradually shifted to a positive attitude towards multi-national negotiation for free trade.

5 ECONOMETRIC ANALYSIS

We now use a gravity model analysis to study trade creation/diversion using trade data sets combining a world-wide bilateral trade data set (COW) and the Japanese trade data set due to Mizoguchi and Umemura (1988).[13]

5.1 Gravity Estimations

We start with cross country estimation of the gravity equation at each year by ordinary least square (OLS). The first estimation seeks to investigate the Japanese colonial linkage before World War II. We investigate whether Japan had significantly tight economic linkages and can be said to have formed an economic bloc with Korea and Taiwan over the interwar period, whether trade creation occurred through the annexation of Korea in 1910 and whether Korea and Taiwan substantially strengthened economic ties with Japan after the Depression and weakened them

[13] See Data Appendix 1-2 about the components of trade partners and the definition of variables.

after World War II. To conduct this analysis we utilise the dummy, *JPN*, which takes the value of unity in the occurrence trade across Japan, Korea and Taiwan and zero otherwise. We expect the *JPN* dummy parameters to be significantly positive during the colonial period and become insignificant after the war in line with the analysis presented above.

One of the recent advances in the estimation of the gravity equation is the recognition of "multilateral resistance" as proposed by Anderson and Wincoop (2003).[14] They suggested that measuring the border effect should take account of multilateral resistance (price index) in order to better reflect trade theory in the formulation of the gravity equation:

$$(1)\ X_{ij} = \left(Y_i Y_j\right)\left(\frac{t_{ij}}{P_i P_j}\right)^{1-\sigma} \quad ; t_{ij} = b d_{ij}^{\rho}$$

Where trade (*X*), GDPs(*Y*s) and distance (*d*) appear in the same manner as in the traditional model and the novelty is the price index, *P* (multilateral resistance).[15] Bilateral trade is influenced by the relative trade resistance, i.e. $\left(t_{ij} / P_i P_j\right)$; *b* is the border dummy: in our context this corresponds to the *JPN* dummy. A small country has a higher level of multilateral resistance (price index) and vice versa, this is because the small country is more likely to be directly affected by increased trade barriers in foreign countries. It follows that the higher multilateral resistance in small countries when compared with large countries decreases the relative trade resistance and thus their bilateral trade decreases less. With respect to the dummy variable this gravity equation raises the border effect in a relatively large country with lower multilateral resistance but lowers the border dummy in a relatively small country, compared with the standard border effect analysis of McCallum (1995).

[14] In other current advances Anderson and Wincoop (2004) have studied the measurement of trade costs. Santos Silva and Tenreyro (2006) used Monte Carlo simulation to overcome the problem of inconsistent coefficients inherent in log linear estimations.

[15] σ is the elasticity of substitution between varieties.

Turning to our discussion, since neither the price index nor GDP data sets are available in all countries over our sample periods we replace them by country dummies as in Rose and Wincoop (2000), Baldwin and Taglioni (2006); Martin et al. (2007) generalised Anderson and Wincoop's (2003) methodology resulting in the following estimated equation:

$$(2)\quad TRADE_{ij} = \alpha_0 + \alpha_1 DIST_{ij} + \alpha_2 JPN_{ij} + \sum^{k} \alpha_k C_k + \varepsilon_{ij}$$

where all variables are expressed in logarithms. *Trade* refers to bilateral trade (exports plus imports) between countries *i* and *j*. *DIST* refers to geographical distance between two countries. The Japanese bloc dummy, *JPN*, takes a value of one for trade with Korea and Taiwan, and otherwise takes a value of zero. Since Korea was annexed in 1910 and became independent of Japan in 1945 and Taiwan was returned to China in 1945, the Japanese bloc dummies should capture the impact both before and after the period of Japanese empire colonisation. C_k denotes a country dummy, if country *k* is either an exporter or an importer (either *i* or *j*), C_k takes value of unity.

From considering the results in Table 3 we can see that some *JPN* dummies in the 1910s and the 1920s as well as the 1930s are significantly positive and exhibit large coefficient values. From this we can see that before the Depression there already existed tight connections between Japan and its colonies. The coefficients of the *JPN* dummies are typically ranged between 3 and 6, which indicate that Japanese intra-Empire trade is 20 to 400 times as large as Japanese foreign

trade.[16] After World War II the *JPN* dummy is insignificantly negative in 1950 and so provides evidence that the colonial linkage has disappeared.[17]

A further important result from the analysis is the elasticity of distance. In the first wave of globalisation before 1914, the elasticity of distance is fairly low (around from 0.3 to 0.4). By contrast the interwar periods exhibit higher values of the elasticity (around 0.5).[18] The evolution in the values corresponds with tariff rates over the world (Estevadeordal, et al. 2002, Figure II(b)) and in Japan (Figure 1). As Estevadeordal, et al. (2002) mentioned, the first wave of globalisation witnessed a drastic decline of trade costs due to stable and low tariff rates.

5.2 The 1930s World-wide bloc Economies and Japan

To investigate the Japanese relationship with other trade and currency blocs in the 1930s our strategy is to adopt an econometric specification based on Eichengreen and Irwin (1995). After the Great Depression of the 1930s several closed bloc economies such as currency blocs and trade blocs were formed. Many previous studies show that blocs are exclusive and closed due to protectionism, which as a result shrink world trade (Kindleberger, 1973). The 1930s world-wide blocs referred to in this paper are the Commonwealth countries, the Reichsmark bloc, the US Reciprocal Trade Agreement countries (US bloc) as trade blocs, and the Sterling bloc, the Gold bloc, and foreign exchange control countries as currency blocs.

[16] The trade variable is expressed in logarithmic form, and thus for instance exp(3)=20.08554 means Japanese intra-empire trade is 20.08554 times as large as other trades.
[17] The *JPN* dummy of 1955 becomes significantly positive again, although Japan had not recover diplomatic relationship with South Korea at this point.
[18] According to Disdier and Head (2007), a mean of distance elasticity in major previous gravity equation analyses is 0.9. In an interwar gravity equation study, the elasticities of distance in Eichengreen and Irwin (1995) are around from 0.5 to 0.7 in 1928, 1935 and 1938 in OLS estimations.

5.2.1 Trade and Currency bloc formations

To investigate whether the formation of exclusive economic blocs in the 1930s had a trade-creation effect or not, we estimate trade and currency blocs in each year by OLS taking into account multilateral resistance à la Anderson and Wincoop (2003):

$$(3)\quad TRADE_{ij} = \alpha_0 + \alpha_1 DIS_{ij} + \alpha_2 JPN + \sum^{k} \alpha_k BLOC_{ij} + \sum^{k} \alpha_k C_k + \varepsilon_{ijt}$$

where $BLOC \in$ (*Common Wealth*, *Sterling*, *Gold, Exchange, US, Reichsmark*) denote trade and currency bloc dummies. If bilateral trade is engaged in between bloc members the bloc dummy takes the value of unity. If the coefficients of the dummies rise over time and are significantly positive then this indicates a trade-creation effect.

Table 4 reports estimation results of the above equation. The results show that the British Commonwealth, the Reichsmark bloc and the Japanese bloc estimates are significantly positive both in the 1920s and 1930s. Compared with the other blocs, the Japanese Empire bloc still encountered substantially higher border effects from early periods (ranged around 3 to 6 in coefficients of *JPN*). The US dummies became significant in 1935 and 1938 although their coefficients remain relatively small (0.49 and 0.37 respectively). Even after World War II the Commonwealth keeps high bloc dummy parameter estimates, while Japan observed a negative but insignificant dummy parameter in 1950.

Table 5 reports results for the currency blocs. We see from the results that there were trade creation effects in the 1930s in the Gold bloc and foreign exchange control areas, although the Sterling bloc exhibited consistently significant and positive coefficients for almost all of the

period before World War II. Compared with trade blocs, currency blocs have a weak impact on trade creation and might incorporate other different factors than trade creation. Almost all coefficients of the currency bloc dummies in the 1930s are between 0.5 and1, while the 1930s trade bloc dummies (Commonwealth and Reichsmark blocs) are approximately ranged from 1 to 2.

From the evidence presented in Tables 3 to 5 we can conclude that the Japanese bloc had closed features, in which Japanese trade with Korea and Taiwan is from 20 to 400 times as large as Japanese foreign trade. In contrast the Commonwealth (Reichsmark) countries have internal trade approximately 4 to 7 (3 to 4) times as large as their foreign trade. The US bloc had a weaker trade creation effect, i.e. around 1.5 times. Concurrently currency blocs have weaker trade creation effects than trade blocs. Exchange rate control countries have internal trade 1.5 times as large as their foreign trade and similarly gold bloc countries exhibit a comparative rate of 1.8. This all provides further evidence that, as Kindleberger (1973) pointed out, the Japanese inter-war bloc economy was the closest from the viewpoint of trade creation effect through bloc formation. The extremely high Japanese bloc parameter estimates contrast with the current national border effect: McCallum's Canadian-US border (22 times) and Okubo's (2004) post-war Japanese national border (around 10 times). Also it is higher than any current currency union (for example around 2 to 3 times as per Nitsch, (2002).

There are several possible reasons for the higher Japanese bloc border effect prior to World War II. 1) As is discussed in Section 3 above, Japanese intra-empire trade was typically colonial trade: Korea provided mainland Japan with raw materials for textile industries and agricultural products such as rice and beans. Taiwan specialised in sugar production, while mainland Japan largely depended on Formosa for sugar supply. 2) A substantially increased Japanese migration to Korea and Formosa boosted the colonial trade. Okubo (2007) found that Japanese migration

contributed a 52% increase of the border effect. 3) The central Japanese government controlled intra-empire trade due with the colonies and foreign trade due to political and diplomatic reasons. 4) The trade values in Japanese intra-empire trade might be over-stated in terms of US dollars due to the overvaluation of the Japanese yen particularly in the 1920s (Okura and Teranishi, 1994).

5.2.2 Japanese Relation with World-wide Blocs

Next, we estimate trade diversion effects of the world–wide blocs with the Japanese bloc. To measure trade diversion we introduce *JPN-BLOC* dummy variables. The dummies take unity when the world wide bloc member trade with Japanese bloc members and zero otherwise. If the coefficients of the *JPN-BLOC* dummies decline over time and become significantly negative, this would indicate a trade-diversion effect, inversely if the dummy parameter estimates are positive then we can infer that Japan kept a tight relation with another bloc.

$$(4)\quad TRADE_{ij} = \alpha_0+\alpha_1 DIS_{ij}+ \alpha_6 JPN_{ij} + \sum^{k} \alpha_k JPN\text{-}BLOC_{ij} + \sum^{k} \alpha_k BLOC_{ij} + \sum^{k} \alpha_k C_k + \varepsilon_{ijt}$$

Table 6 reports the result for interaction with trade blocs. Japan maintained a tight connection with the Commonwealth bloc throughout the 1920s and 1930s, though the magnitude of the coefficient appears to have slightly declined during the middle of the 1930s. Japanese trade with Commonwealth countries was 2.5 time to 7 times as large as other trades. The values are substantially high and are close to the level of the current national border effect (interregional trade) and trade creation effect by current currency unions. This means that the connection with the Commonwealth was quite strong in spite of Japan being an outsider to the bloc. By contrast, a

slight trade diversion effect is observed in the Japanese trade with Reichsmark bloc during the 1930s. It seems that Japanese the military alliances with Germany (1936 and 1937) did not substantially influence trade; nor was the alliance based on a trade partnership. Results relating to currency blocs are presented in Table 7 and show that Japan maintained a tight connection with the Sterling bloc during the 1930s. By contrast, Japanese trade with the foreign exchange control bloc experienced trade diversion in the 1930s. To summarise, although some blocs had a trade diversion with the Japanese bloc or there was no significant effect, it can be seen that Japan continually maintained tight relationships with Commonwealth countries and Sterling area. Hence we can say that Japan was not isolated from the world despite of the Japanese bloc having fairly high bloc border and substantial trade creation effects.

5.3 The Cold War and GATT

Finally we investigate the new international regime emerging after the world war. After the end of bloc economies the United States formed a capitalistic and democratic world while the USSR built a communist world. In terms of significant events regarding international trade, GATT was signed in 1947 mainly incorporating capitalist countries with the aim of fighting protectionism and promoting free trade. Japan was positioned in the capitalist world and thus it seemed logical to expect a negative relationship with the communist countries. It is worth noting that Japan was not recognised as internationally independent nation until the San Francisco Peace Treaty of 1951 and as a result was not a GATT member. Thus, as Gowa and Kim (2006) found, the benefit from GATT was largely biased to its membership and we speculate Japan did not sufficiently enjoy it. Now we estimate:

$$(5)\ TRADE_{ij} = \alpha_0+\alpha_1 DIS_{ij}+ \alpha_2 JPN_{ij} + \alpha_3 COM_{ij} + \alpha_4 GATT_{ij} + \sum^{k} \alpha_k C_k +\varepsilon_{ij}$$

where *COM* represents dummies for trade with communist countries and the *GATT* dummy takes the value unity for the trade with the founding members of GATT. The upper panel of Table 8 reports the results of this estimation. Interestingly the *COM* dummies in 1950 and 1955 are significant and positive and the values of coefficients drastically increase after the war, which means that the communist bloc has a bloc border and has significantly sizeable trade creation effect which is of the order of 10 to 20 times as large as other world trade flows. The values are material but remain less than the Japanese interwar bloc border effect. The *GATT* dummies are also significant but do not substantially increase following the war. It is not apparent that *GATT* has a substantial trade-creation effect: trade within GATT member countries is around two times as large (the coefficients of the GATT are around 0.6-0.7) as other trades. The magnitude is less than the impact of APEC, where Frankel (1997) found a corresponding effect of 3.3.

Next, we add two dummies to the above estimation to measure trade-diversion effect resulting from the alignment of countries along GATT and communist country lines.

$$(6)\ TRADE_{ij} = \alpha_0+\alpha_1 DIS_{ij}+ \alpha_2 JPN_{ij} + \alpha_3 COM_{ij} + \alpha_4 GATT_{ij} + \alpha_5 JPNCOM_{ij} +$$
$$\alpha_6 JPNGATT_{ij}+ \sum^{k} \alpha_k C_k +\varepsilon_{ij}$$

where *JPNCOM* and *JPNGATT* takes the value of unity when Japan trades with a member of communist countries and GATT founding countries, respectively. Results concerning trade diversion effect with Japan can be found in the bottom panel of Table 8, all values of *JPNGATT*

dummy parameter estimates are insignificant while *JPNCOM* estimates are significantly negative. This indicates that trade diversion effects are not so clear in GATT while Japan experienced trade-diversion resulting from the communist bloc formation.

6 DISCUSSION

In this section we review our results in the context of current economic integration. It is difficult to make a direct comparison between interwar bloc economies in the period of Empire and current capitalist economies. We have to recognise the different political and economic regimes with different basic factors and instruments; for instance, the presence or absence of multi-lateral negotiation tables through GATT/WTO, many international organisations represents a significant difference as does the high mobility of capital and labour. Taking account of these inherent limitations, we briefly compare and contrast our results with those of previous studies on the current phase of economic integration.

Japan kept and tightened its relationship with Korea and Taiwan over time, the Japanese bloc border is much higher than that of any other inter-war trade and currency bloc. Also Japanese trade blocs, as well as Commonwealth and Reichsmark blocs, created deep linkages across member countries in the 1920s, much earlier than the Depression. From the results presented above we cannot infer a clear aftermath of the Great Depression for these trade blocs. On the other hand, currency blocs and the US bloc have demonstrated significant trade-creation effects following the Depression or during the 1930s (see Tables 4 and 5), whilst we do not observe substantial trade diversion effects with Japan through the formation of world-wide bloc economies except in the case of a few blocs (see Tables 6 and 7). Our results concerning the Japanese bloc are parallel to those in Eichengreen and Irwin (1995) who suggested that

substantially significant trade-creating effects were found in trade blocs but that substantial trade-diversion was not observed and that currency bloc has weaker trade-creation effects.

In the current context our results on currency blocs have a similar magnitude to that of the trade-creation to the current currency unions observed by Rose (2000) and Nitsch (2002). Also the Japanese bloc exhibit similar results to NAFTA's experience, in which the trade diversion effect is weak or negligible, regardless of any trade-creation being observed (Krueger 1999; 2000; Soloaga and Winters, 2002, Gould, 1998). Turning to the post-war economy, Japan was in recovery from the defeat of the war and its economy was controlled by the government. Also Japan was not allowed to join GATT despite several times starting negotiations for trade liberalisation. However despite this Japan was situated in the capitalist country camp during the cold war and as a result GATT did not have a substantial trade diversion effect. This is in contrast with the features exhibited by the Japanese economy during the 1990s, though the political situation was of course very different from the current level of economic integration. The 1990s exhibited many regional economic integrations and bilateral and regional trade agreements. Wall (2002) saw that Japan in the 1980s and 1990s was isolated from world trade in the sense that the current economic integration boom has significantly reduced Japan's trade with the member countries of established trading blocs.

Finally though it is not an easy task to draw implications for the current phase of economic integration our results suggest that the interwar blocs had similar or different features to the current economic integration with respect to trade creation and diversion. What our results regarding the Japanese bloc indicate is that a huge trade creation effect through trade blocs does not always cause a huge trade diversion and does not always mean that trade bloc formation result in discriminatory trade with non-bloc members.

7 CONCLUSION

This paper establishes evidence concerning the Japanese economic relationship regarding international trade from 1890 to 1955. Having tightened its relationship with Korea and Taiwan, Japan sought to create a closer relation with the Commonwealth countries and the Sterling bloc area. We did not always observe substantial trade-diversion due to the formation of world-wide bloc economies in the 1930s. Similarly the post-war capitalist blocs did not seek to divert Japanese trade, although the communist bloc did. We can conclude that Japan was not isolated from world-wide trade and currency blocs.

Finally we have to note some limitations of our analysis. The industrial structure changed over our estimation period both in Japan and across the countries forming economic blocs. The change influenced the composition of exports and imports over time. To investigate the impact of trade agreements and trade policies rigorously we would need product level analysis. The future extension of this investigation is the econometric analysis of product cycles, the linkage of imports, the substitution of imports for domestic production through Japanese industrial policies, and exports. The other possible extension is a product level analysis on the 1930s' Japanese trade policies such as dumping to compare to that of the current economy.

APPENDIX: FURTHER INVESTIGATION FOR MEASURING BORDER EFFECTS

Section 5 investigated bloc border effects relating to the Japanese Empire as well as other world-wide trade and currency blocs in the manner of Rose (2000) and Eichengreen and Irwin

(1995). Following their studies we used bilateral trade, the summation of exports and imports, as the dependent variable in the gravity equation, however as Baldwin and Taglioni (2006) pointed out this methodology may result in some degree of bias in the estimation and thus should be prevented by the use of the technique which they refer to as "silver medal error". When exports and imports are substantially unbalanced the estimation bias is significant. In the context of this paper if exports and imports are largely unbalanced in intra-empire trade, then our estimation method in Section 5 will overestimate bloc dummy parameters, and the inverse is also true. Trades in our sample are consistently unbalanced and thus this bias is not negligible. The trade in the early periods was largely unbalanced in terms of North-South trade as well as intra-empire trade. It can be noted that Japanese colonial trade had a huge imbalance and a large variance from the 1910s to the 1930s (see Figure A). Korea and Taiwan in this period were suppliers of agricultural products and raw materials to mainland Japan while the process of Japanese migration to Korea and the other economic developments resulted in dramatically increased exports from Japan to Korea (Okubo, 2007). As can be seen in Figure A Japanese exports to Korea first outweighed imports during the 1920s, a trend which continued into the 1930s. Meanwhile imports from Taiwan during this period did not experience a drastic increase, regardless of the substantial supply of agricultural products to mainland Japan.

Here we re-perform our estimations using export and import data as separate dependent variables and using exporter and importer dummies in place of country dummies.

$$(7)\quad TR_{ij} = \alpha_0+\alpha_1 DIS_{ij}+ \alpha_2 JPN+\sum^{k} \alpha_k BLOC_{ij} + \sum^{k} \alpha_k EX_k + \sum^{k} \alpha_k IM_k +\varepsilon_{ijt}$$

where TR_{ij} denotes the logarithm of the trade flow from country i to j and EX_k and IM_k are respectively country dummies for the exporting and importing countries respectively. When i=k

($i \neq k$), a dummy of EX_k takes unity (zero). Likewise, when $j=k$ ($j \neq k$), a dummy of IM_k takes unity (zero).

Tables A-1 and A-2 report the results from the estimation proposed above. Many of the bloc dummy coefficients are lower than those presented in Section 5. The lowering of the coefficients seems to be largely driven by unbalanced colonial trade, despite the fact that trades were unbalanced all over the world. Many of the border dummies in particular, *JPN* dummies become insignificant in this reformulation. As discussed in Section 4, Japanese colonial trade was active but exports and imports between Japan and Korea/Taiwan had high levels of variance and were very unbalanced (Figure A): Japanese trade with Korea was large and growing rapidly over the time considered while trade with Taiwan not as substantial. To provide a rough comparison exports to Korea were around two to three times as large as exports to Taiwan during the 1930s. These contrasting values of Japanese intra-empire trade flows make *JPN* dummies less likely to be significant thus we should note that the results on the border effects for blocs in Section 5 may include some bias due to unbalanced trade flows and will lose some significant results when utilizing our improved methodology. Despite this the results in this appendix still show most of the coefficients of bloc borders have high values which is consistent with our interpretation of the results.

DATA APPENDIX 1 SOURCES OF DATA

Definitions and data source of each of the variables used in the regression analysis.

TRADE (Unit: current US dollars)

The variable TRADE is the logarithm of the summation of exports and imports. The data sets are taken from the COW data sets (http://www.correlatesofwar.org/datasets.htm) for world trade and from Mizoguchi and Umemura (1988) for Japanese intra-empire trade. Japan-Taiwan and Japan-Korea trade data before and after colonisation are taken from *Dainihon Gaikoku Boueki Nenpyou* (Ministry of Finance, Japan) for each year and *Nihon Chouki Toukei Souran* (Management and Coordination Agency Japan, 1988). The current Japanese yen values in the Japanese trade data are converted to current dollars using the average yen-dollar exchange rates in each year (Management and Coordination Agency Japan, 1988).

DIST (Unit: km)

The variable *DIST* is the logarithm of geographical distance between capitals of the trading partners. The data sets are taken from CEPII (http://www.cepii.fr/anglaisgraph/bdd/distances.htm).

DATA APPENDIX 2 COMPONENTS OF THE COUNTRIES IN EACH BLOC IN OUR SAMPLE

Japanese Empire Bloc: Japan, Korea and Taiwan.

The British Commonwealth: Great Britain, Australia, Canada, Ireland, and New Zealand.

The Sterling Area: Australia, Denmark, India, Ireland, New Zealand, Norway, Portugal, Sweden, and Great Britain.

The Gold Bloc: Belgium, France, Italy, the Netherlands, Poland, and Switzerland.

Exchange Control Members: Austria, Czechoslovakia, Denmark, Finland, Germany, Italy, the Netherlands, Norway, Poland, Spain, and Sweden.

The Reichsmark Bloc: Austria, Bulgaria, Germany, Czechoslovakia, Hungary and Romania.

The US Bloc: US Cuba, Belgium, Haiti, Honduras, Nicaragua, Columbia, Castalia, Salvador, Sweden, Brazil, Canada, Netherlands, France, Czechoslovakia, Netherland India, Finland, Switzerland. Note that the member countries are the ones which ratified Reciprocal Trade Agreement Acts of 1938 with the United States.

GATT founding members: Australia, Belgium, Britain, Canada, France, the Netherlands, Norway, New Zealand, and the United States.

Communist Bloc: Bulgaria, China, Czechoslovakia, East Germany, Hungary, Poland and USSR and Yugoslavia.

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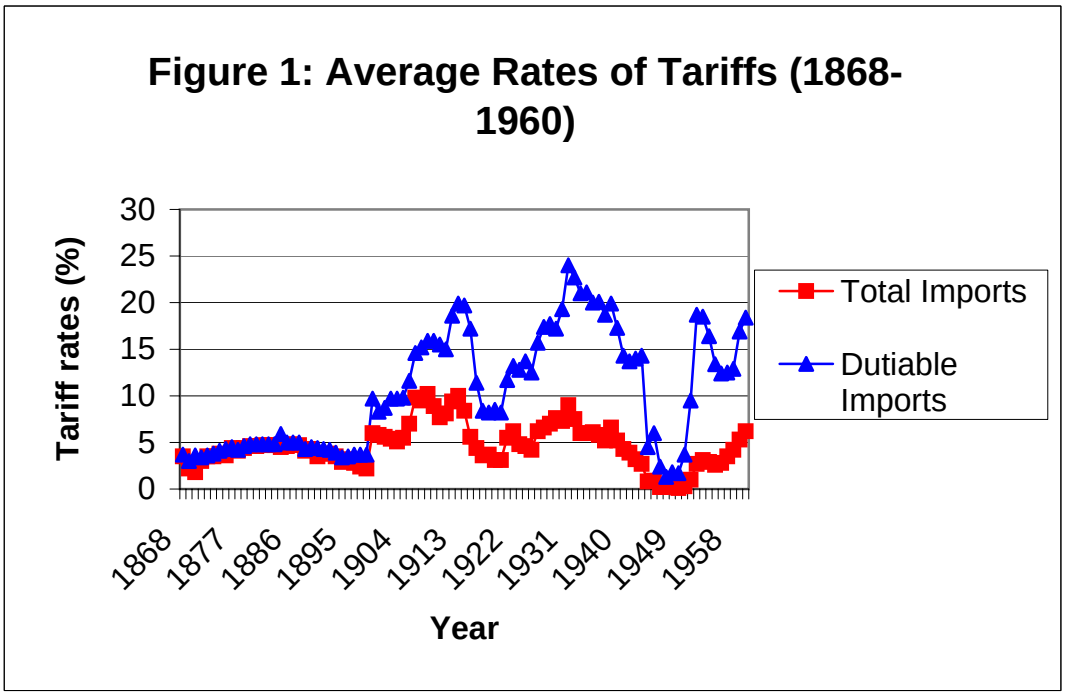

Source: Yamazawa and Yamamoto (1974).

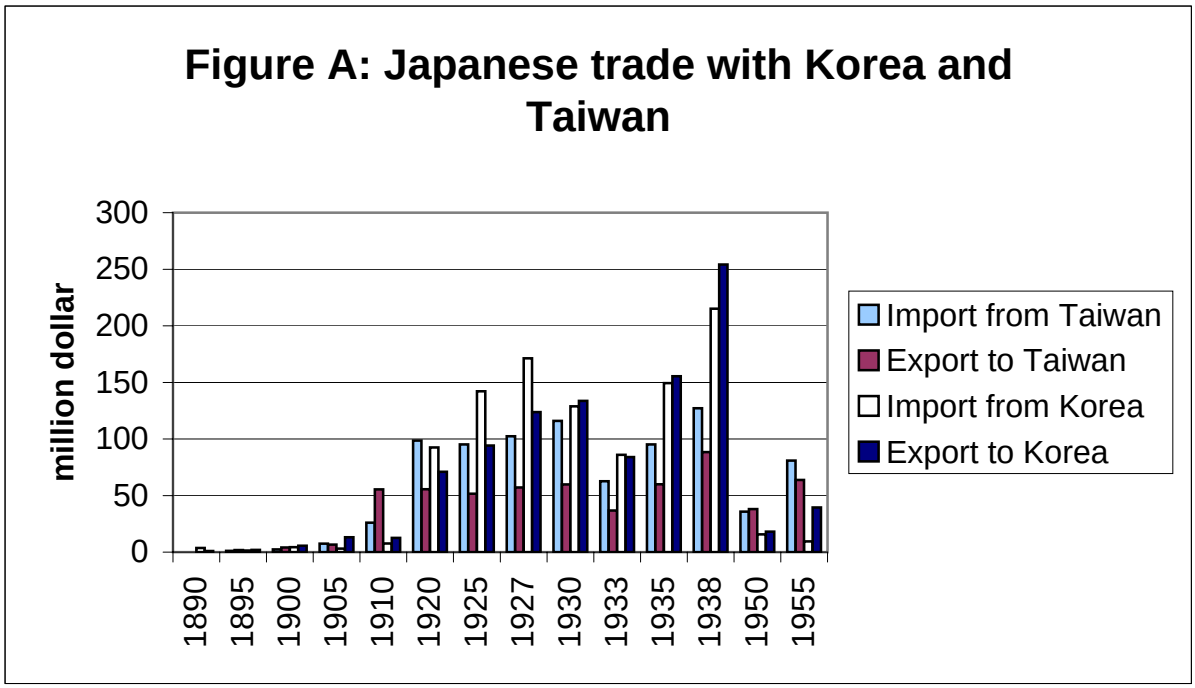
Figure A: Japanese trade with Korea and Taiwan
million dollar
300
250
200
150
100
50
0
1890
1895
1900
1905
1910
1920
1925
1927
1930
1933
1935
1938
1950
1955
Import from Taiwan
Export to Taiwan
Import from Korea
Export to Korea

Table 1: The Components of Imports and Exports Products (%)

		Exports							Imports			
		Primary products			Manufacturing Products				Primary products			Manufacturing Products
Periods			Silk	Copper		Textile products	Chemistry, Metal, Machinery			Food	Raw Materials	
1882-1891		74.9	36.8	5.1	25.1	8.8	7.2		18.7	5	13.7	81.3
1887-1896		65.5	34.1	5.1	34.5	14.8	8.3		28.2	7.1	21.1	71.8
1892-1901		55.1	29.3	4.8	44.9	23.3	8.2		36.5	9.9	26.6	63.6
1897-1906		47.7	26.2	4.9	52.3	27.4	9		43.1	13.8	29.3	56.9
1902-1911		45.2	26.2	4.9	54.8	27.7	12.6		46.2	12.5	32.7	54.8
1907-1916		41.8	24.6	4.9	58.2	28.9	12.5		50	10.3	39.7	50
1912-1921		34.2	22.6	2.6	65.8	33.8	16.7		52.6	12.5	40.1	47.4
1917-1926		36.5	28.4	0.8	63.5	35.2	14.3		54.3	16.1	38.2	45.7
1922-1931		38.5	31.7	0	61.5	34.1	12.8		56.6	18.8	37.8	43.4
1927-1936		27.2	20.5	0	52.8	36.3	19.7		61	19	42	39
1930-1939		19.9	13.1	0	80.1	35	26.5		58	17.5	40.5	42
1951-1955		4.7			95.3	39.5	39.9		85.6	25	60.6	14.4
1956-1960		4.5			95.5	32	45.1		76.7	13.2	63.5	23.3
1961-1965		3.5			96.5	21.3	58.6		72.3	13.5	58.8	27.7

Source: Yamazawa (1984)

Units are percentage in total exports or imports.

Table 2: Average Tariff Rates (%)

	1893	1903	1913	1918	1924	1928	1933	1938
Rice	0	0	18.72	9.92	0.72	13.98	41.24	28.2
Wheat	0	4.22	17.49	8.8	2.9	17.09	9.38	11.47
Flours, Meals, and Starches	0	9.26	28.43	15.6	17.93	27.48	36.41	17.13
Sugar	3.38	5.05	44.35	34.56	14.5	13.27	1.9	6.64
Wool	5.01	0	0	0	0	0.17	0.01	0
Cotton Ginned	2.45	0	0	0	0	0	0	0
Cotton Yarns	4.28	5.79	8.33	3.37	1.19	3.77	3.02	0.04
Woolen Yarns	3.21	7.49	7.3	4.27	2.01	7.37	14.36	5.94
Artificial Silk			35.16	12.82	21.55	53.85	60.85	32.62
Cotton Fabrics	5.26	7.12	10.87	3.59	3.18	14.23	0.81	
Woolen Fabrics	3.01	9.39	16.43	6.78	4.9	12.68	12.95	12.48
Natural Rubber	6.45	4.7	0	0	0	0	0	0
Shoes	4.84	19.95	36.67	27.41	7.52	48.87	50	75
Pig Iron	4.17	4.2	3.53	0.54	2.63	3.77	15.23	
Iron and Steel (Bar, Rod, Shap	3.73	6.56	13.22	3.16	5.16	18	24.13	
Iron and Steel (plates)	3.33	6.63	9.62	1.78	1.27	16.87	23.51	
Total imports	3.51	5.17	10.09	3.76	4.65	7.06	6.03	6.6

Note: Average Tariff rates (%)= (Tariff Revenue)/(Imports)
Note: blank represents no imports
Source: Yamazawa and Yamamoto (1974).

Table 3: Japanese Interwar Bloc

Year	1890		1895		1900		1905		1910		1920	
Dist	-0.3835	*-3.31* **	-0.2439	*-2.42* **	-0.2656	*-2.55* **	-0.2919	*-2.52* **	-0.4208	*-4.98* **	-0.4820	-6.7 **
JPN	3.7085	*2.86* **	1.5657	*1.42*	1.9321	*1.26*	2.2590	*1.15*	3.1198	*2.18* **	5.2940	2.92 **
R-squared	0.5910		0.5989		0.6244		0.5622		0.737		0.7202	
F	7.56		7.94		9.09		8.24		16.67		20.67	
Observations	160		159		181		232		247		406	

Year	1925		1927		1930		1933		1935		1938	
Dist	-0.3903	*-6.97* **	-0.497307	*-9.19* **	-0.4709	*-5.34* **	-0.462704	*-9.3* **	-0.3606	*-8.88* **	-0.3683	-9.41 **
JPN	4.3834	*2.82* **	4.110545	*2.77* **	5.9371	*3.74* **	3.352503	*2.82* **	2.8423	*3.19* **	2.7842	2.96 **
R-squared	0.6755		0.6855		0.6455		0.7118		0.6909		0.7563	
F	17.83		24.18		11.59		28.41		22.29		37.89	
Observations	470		639		286		678		563		726	

Year	1950		1955	
Dist	-0.6628	*-11.39* **	-0.4703	*-9.75* **
JPN	-0.0763	*-0.05*	2.8897	*2.04* **
R-squared	0.6455		0.6186	
F	24.54		27.93	
Observations	893		1180	

Note: Italic figures are t-values. ** statistically significant at 5% level. * statistically significant at 10% level.
Note: Blanks indicate missing variables in data sets.

Table 4: Trade Blocs

Year	1890		1895		1900		1905		1910		1920	
Dist	-0.3829	*-3.24* **	-0.224702	*-2.2* **	-0.240743	*-2.29* **	-0.26673	*-2.25* **	-0.406097	-4.71 **	-0.461316	-6.56 **
Commonwealth											1.906388	*3.77* **
US	0.44114	*-0.89*	0.710962	*-1.72* *	0.821871	*-1.85* *	0.604886	*1.2*	0.360482	0.99	0.517198	1.56
Reichmark	0.93562	*0.75*	0.301317	*0.29*	0.49156	*0.44*	0.205871	*0.15*	0.062292	0.09	1.771464	3.31 **
JPN	3.65218	*2.81* **	1.505933	*1.37*	1.908447	*1.25*	2.276465	*1.16*	3.123219	2.18 **	5.174819	2.96 **
R-squared	0.589		0.6024		0.6287		0.561		0.7357		0.7385	
F	7.16		7.65		8.82		7.87		15.89		21.43	
Observations	160		159		181		232		247		406	

Year	1925		1927		1930		1933		1935		1938	
Dist	-0.3518	*-6.34* **	-0.473501	*-8.87* **	-0.423309	*-4.89* **	-0.437538	*-8.94* **	-0.31502	*-8.13* **	-0.334998	*-8.72* **
Commonwealth	1.42078	*3.48* **	1.744562	*4.4* **	1.684776	*3.11* **	1.998784	*5.11* **	2.14562	*6.74* **	1.720263	*5.52* **
US	0.59734	*2.34* **	0.10887	*0.43*	0.260966	*0.77*	0.130701	*0.57*	0.491736	2.68 **	0.374512	2.15 **
Reichmark	1.35758	3.54 **	1.571207	*4.08* **	1.495203	*2.96* **	1.289812	*3.58* **	1.297297	*4.92* **	1.165041	*4.19* **
JPN	3.89015	2.58 **	4.085036	*2.83* **	6.277459	*4.08* **	3.281786	*2.84* **	2.780741	*3.34* **	2.944432	*3.24* **
R-squared	0.6951		0.7027		0.6682		0.7279		0.7303		0.7731	
F	18.52		24.93		12.04		29.3		25.54		39.6	
Observations	470		639		286		678		563		726	

Year	1950		1955	
Dist	-0.657	*-11.35* **	-0.459904	*-9.66* **
Commonwealth	1.5914	*4.27* **	2.094354	*5.57* **
US	0.02214	*0.09*	0.063144	*0.27*
Reichmark			1.47421	*3.65* **
JPN	-0.0771	*-0.05*	2.852819	*2.05* **
R-squared	0.6524		0.6325	
F	24.58		28.42	
Observations	893		1180	

Note: Italic figures are t-values. ** statistically significant at 5% level. * statistically significant at 10% level.
Note: Blanks indicate missing variables in data sets.

Table 5: Currency Blocs

Year	1890		1895		1900		1905		1910		1920	
Dist	-0.4332	*-3.63* **	-0.262067	*-2.43* **	-0.243187	*-2.16* **	-0.280262	*-2.25* **	-0.398092	*-4.46* **	-0.400229	*-5.06* **
Sterling	1.88564	*2.87* **	1.061807	*1.82* *	0.571753	*0.96*	1.403867	*2.31* **	1.210709	*2.82* **	0.971838	*2.64* **
Gold	-0.1482	*0.3*	0.049896	*0.12*	0.346878	*0.75*	0.240436	*0.43*	0.260113	*0.63*	1.045524	*2.2* **
Exchange	-0.5952	*-1.34*	-0.196851	*-0.47*	0.124053	*0.3*	-0.044104	*-0.1*	0.014953	*0.05*	0.433485	*1.33*
JPN	2.7817	*1.74* *	4.967607	*3.39*	1.877565	*1.22*	2.250826	*1.16*	3.398185	*3.02* **	4.128402	*2.31* **
R-squared	0.6137		0.6012		0.6207		0.5683		0.7441		0.728	
F	7.65		7.44		8.36		7.91		16.22		20.36	
Observations	160		159		181		232		247		406	

Year	1925		1927		1930		1933		1935		1938	
Dist	-0.3833	*-6.61* **	-0.48879	*-8.63* **	-0.460216	*-5.11* **	-0.44442	*-8.56* **	-0.330294	*-7.98* **	-0.323265	*-7.96* **
Sterling	1.00158	*3.03* **	0.628457	*2.07* **	0.569763	*1.43*	0.607031	*2.13* **	0.897405	3.99 **	0.626499	*2.79* **
Gold	0.45423	*1.32*	0.344031	*0.96*	-0.025014	*-0.04*	0.519199	*1.54*	0.666551	2.67 **	0.604223	*2.31* **
Exchange	-0.1346	*-0.54*	-0.052263	*-0.21*	-0.199507	*-0.51*	0.05217	*0.23*	0.155677	*0.92*	0.413872	*2.42* **
JPN	4.82024	*3.14* **	4.098682	*2.77* **	6.285208	*3.95* **	2.369541	*1.47*	3.611868	3.06 **	2.796221	*3.01* **
R-squared	0.6822		0.6869		0.6446		0.7138		0.7038		0.762	
F	17.51		23.22		10.94		27.38		22.54		37.28	
Observations	470		639		286		678		563		726	

Year	1950		1955	
Dist	-0.6256	*-10.6* **	-0.436781	*-8.93* **
Sterling	0.78631	*3.22* **	1.148861	*4.74* **
Gold	0.31933	*0.84*	-0.006392	*-0.02*
Exchange	0.38842	*1.56* *	0.434771	*2.12* **
JPN	-0.081	*-0.05*	2.754956	*1.96* **
R-squared	0.6498		0.6265	
F	23.99		27.73	
Observations	893		1180	

Note: Italic figures are t-values. ** statistically significant at 5% level. * statistically significant at 10% level.
Note: Blanks indicate missing variables in data sets.

Table 6: Trade Blocs and Japan

Year	1890		1895		1900		1905		1910		1920	
Dist	-0.374282	*-3.15* **	-0.222587	*-2.16* **	-0.237061	*-2.23* **	-0.263736	*-2.21* **	-0.404523	*-4.65* **	-0.461658	*-6.57* **
Commonwealth											2.083288	*4.04* **
US	0.443632	*0.88*	0.743415	*1.76* *	-0.414557	*-1.83* *	0.650813	*1.28*	0.359558	*0.97*	0.502379	*1.51*
Reichmark	0.974352	*0.77*	0.312457	*0.29*	0.479812	*0.43*	0.198096	*0.14*	0.060014	*0.09*	1.7554	*3.28* **
JPN	2.101059	*1.23*	2.078284	*1.61*	1.621113	*1.03*	2.681571	*1.32*	3.154415	*2.14* **	5.247997	*2.97* **
JPN-CW	1.736249	*1.39*	0.777215	*0.73*	0.883773	*0.77*	0.714766	*0.48*	0.424747	*0.39*	1.024869	*1.56*
JPN-US	0.378428	*0.48*	0.432599	*0.65*	0.144206	*0.21*	1.201254	*1.04*	0.023376	*0.04*	-0.438626	*-0.63*
JPN-Reich	1.318317	*1.06*	0.577715	*0.54*	-0.033816	*-0.03*	0.042803	*0.03*	-0.039844	*-0.04*	-1.07057	*-0.85*
R-squared	0.5877		0.5953		0.6223		0.5568		0.7319		0.7392	
F	6.67		6.96		8.06		7.31		14.71		20.46	
Observations	160		159		181		232		247		406	

Year	1925		1927		1930		1933		1935		1938	
Dist	-0.351558	*-6.35* **	-0.469924	*-8.87* **	-0.41887	*-4.83* **	-0.43381	*-8.99* **	-0.314031	*-8.15* **	-0.334001	*-8.71* **
Commonwea	1.543505	*3.72* **	1.938948	*4.87* **	1.691503	*3.12* **	2.209662	*5.68* **	2.275243	*7.12* **	1.787595	*5.7* **
US	0.646572	*2.51* **	0.138175	*0.54*	0.21659	*0.63*	0.129978	*0.57*	0.467403	2.54 **	0.375724	*2.13* **
Reichmark	1.362026	*3.56* **	1.574652	*4.12* **	1.445218	*2.85* **	1.192282	*3.34* **	1.285385	*4.89* **	1.132613	*4.07* **
JPN	4.659449	*2.78* **	5.594828	*3.39* **	6.038178	*3.9* **	3.518345	*2.99* **	2.299915	2.67 **	2.998234	*2.98* **
JPN-CW	0.958104	*1.71* *	1.929222	*3.34* **			1.954591	*3.61* **	1.094256	*2.75* **	0.657682	*1.53*
JPN-US	0.741884	*1.34*	0.430171	*0.81*	-0.797654	*-0.87*	0.008231	*0.02*	-0.290975	*-0.88*	0.036403	*0.12*
JPN-Reich	0.363777	*0.33*	0.3052	*0.36*	-0.489851	*-0.54*	-1.344315	*-2.28* **	-0.10298	*-0.21*	-0.868032	*-1.64* *
R-squared	0.6962		0.7072		0.6678		0.7356		0.7334		0.774	
F	17.79		24.35		11.61		29.12		24.79		38.06	
Observations	470		639		286		678		563		726	

Year	1950			1955		
Dist	-0.655649	*-11.35*	**	-0.464576	*-9.77*	**
Commonwea	1.613366	*4.33*	**	2.140619	*5.69*	**
US	-0.008585	*-0.03*		0.135358	*0.57*	
Reichmark				1.430195	*3.55*	**
JPN	0.084021	*0.08*		3.08895	*2.18*	**
JPN-CW	0.48762	*0.62*		0.679761	*1.3*	
JPN-US	-0.470818	*-0.82*		0.852377	*2.02*	**
JPN-Reich	-2.714283	*-1.99*	*	-1.115479	*-1.63*	
R-squared	0.654			0.6346		
F	23.78			27.6		
Observations	893			1180		

Note: Italic figures are t-values. ** statistically significant at 5% level. * statistically significant at 10% level.
Note: Blanks indicate missing variables in data sets.
Note: JPN-CW, JPN-US, and JPN-Reich stand for Japan-Commonwealth dummy, Japan-US bloc dummy, and Japan-Reichsmark dummy, respectively.

Table 7: Currency Blocs and Japan

Year	1890		1895		1900		1905		1910		1920	
Dist	-0.4107	*-3.49* **	-0.250718	*-2.3* **	-0.228644	*-2.04* **	-0.303864	*-2.5* **	-0.390629	*-4.38* **	-0.400605	*-5.1* **
Sterling	1.96255	3.03 **	1.095814	*1.87* *	0.833887	*1.36*	1.498514	*2.51* **	1.30317	*3.01* **	1.054832	*2.83* **
Gold	-0.3096	-0.62	-0.040709	*-0.09*	0.243415	*0.52*	0.184669	*0.34*	0.171552	*0.41*	0.970754	*2.04* **
Exchange	-0.7392	*-1.68* *	-0.248262	*-0.59*	0.057982	*0.14*	-0.267293	*-0.61*	-0.033	*-0.1*	0.391288	*1.2*
JPN	2.63702	*1.79* *	4.624404	*3.06*	1.65919	*1.05*	0.962901	*0.48*	2.58899	*1.79* *	4.045654	*2.23* **
JPN-Sterling	1.0592	*0.89*	0.307255	*0.29*	1.141803	*1.16*	-0.027042	*-0.02*	0.586412	*0.65*	0.708593	*1.05*
JPN-Gold	-0.7009	*-0.97*	-0.531638	*-0.83*	-0.39896	*-0.59*	0.069912	*0.06*	-0.610256	*-0.94*	-0.573848	*-0.8*
JPN-Ex	-1.3103	*-1.67* *	-0.509774	*-0.73*	-0.699052	*-0.93*	-3.481383	*-3.42* **	-0.75435	*-1.07*	-1.030213	*-1.3*
R-squared	0.6261		0.598		0.6237		0.5915		0.7459		0.7292	
F	7.49		6.87		7.94		8.12		15.45		19.49	
Observations	160		159		181		232		247		406	

Year	1925		1927		1930		1933		1935		1938	
Dist	-0.3894	*-6.74* **	-0.489891	*-8.69* **	-0.466176	*-5.15* **	-0.447687	*-8.69* **	-0.329296	*-8.04* **	-0.329142	*-8.13* **
Sterling	1.02355	*-3.07* **	0.720264	*2.36* **	0.541464	*1.34*	0.725214	*2.55* **	0.997171	*4.44* **	0.671221	*2.99* **
Gold	0.41277	*-1.2*	0.320418	*0.9*	-0.028236	*-0.05*	0.449473	*1.34*	0.604068	*2.44* **	0.549361	*2.11* **
Exchange	-0.2165	*-0.87*	-0.12545	*-0.51*	-0.285204	*-0.72*	-0.042975	*-0.19*	0.090279	*0.53*	0.332558	*1.93* *
JPN	4.39436	*2.83* **	5.395049	*3.18* **	5.388226	*3.3* **	2.946655	*2.4* **	3.479818	*2.96* **	2.341378	*2.46* **
JPN-Sterling	0.07332	*0.13*	1.198128	*2.25* **	0.520451	*0.47*	1.255968	*2.65* **	0.895162	*2.41* **	0.448668	*1.17*
JPN-Gold	-0.6581	*-1.04*	0.078572	*0.13*	-0.550332	*-0.61*	-0.515247	*-0.99*	-0.453482	*-1.09*	-0.562477	*-1.28*
JPN-Ex	-1.3305	*-2.37* **	-1.418125	*-2.75* **	-1.42449	*-1.57* *	-1.236061	*-2.98* **	-0.831821	*-2.5* **	-1.015039	*-2.92* **
R-squared	0.6854		0.6916		0.6443		0.7204		0.711		0.7656	
F	16.96		22.67		10.39		27.04		22.27		36.35	
Observations	470		639		286		678		563		726	

Year	1950			1955		
Dist	-0.6397	*-10.89*	**	-0.447892	*-9.15*	**
Sterling	0.80152	*3.3*	**	1.121841	*4.61*	**
Gold	0.26396	*0.7*		-0.048527	*-0.13*	
Exchange	0.27662	*1.12*		0.349989	*1.69*	
JPN	3.24494	*1.99*	**	1.656892	*1.14*	
JPN-Sterling	0.73817	*1.2*		-0.412648	*-0.96*	
JPN-Gold	-0.865	*-1.17*		-0.418885	*-0.75*	
JPN-Ex	-2.6512	*-4.35*	**	-1.044576	*-2.53*	**
R-squared	0.6592			0.6288		
F	24.01			26.94		
Observations	893			1180		

Note: Italic figures are t-values. ** statistically significant at 5% level. * sttistically significant at 10% level.
Note: Blanks indicate no variables in data sets.
Note: JPN-Sterling, JPN-Gold, and JPN-Ex stand for Japan-Sterling bloc dummy, Japan-Gold bloc dummy, and Japan-Exchange control dummy, respectively.

Table 8: GATT and Communist Countries

Year	1938			1950			1955		
Dist	-0.357145	*-9.11*	**	-0.655323	*-11.25*	**	-0.444312	*-9.52*	**
GATT	0.665868	*3.11*	**	0.58513	*1.83*	**	0.710806	*2.39*	**
COM	0.012347	*0.04*		2.781476	*1.66*	*	2.950942	*8.71*	**
JPN	3.831366	*2.99*	**	-0.077265	*-0.05*		2.869505	*2.09*	**
R-squared	0.7591			0.6465			0.6446		
F	37.27			24.3			30.29		
Observations	726			893			1180		

Year	1938			1950			1955		
Dist	-0.3568	*-9.08*	**	-0.659446	*-11.34*	**	-0.446507	*-9.57*	**
GATT	0.6752	*3.12*	**	0.558341	*1.75*	*	0.719964	*2.42*	**
COM	0.009481	*0.03*		2.440862	*1.43*		2.861077	*8.38*	**
JPN	3.855506	*3*	**	-0.076753	*-0.05*		2.794742	*2.02*	**
JPN-GATT	0.104507	*0.3*		-0.837729	*-1.45*		0.041015	*0.09*	
JPN-COM	-0.03377	*-0.06*		-2.347329	*-2.05*	**	-1.23036	*-1.95*	*
R-squared	0.7584			0.648			0.6452		
F	36.02			23.81			29.59		
Observations	726			893			1180		

Note: Italic figures are t-values. ** statistically significant at 5% level. * statistically significant at 10% level.
Note: Blanks indicate missing variables in data sets.

Table A-1: Trade Blocs

Year	1890		1895		1900		1905		1910		1920	
Dist	-0.609	-6.83 **	-0.493	-6.09 **	-0.609	-6.88 **	-0.607	-6.58 **	-0.541	-7.29 **	-0.777	-12.65 **
Commonw	(dropped)		(dropped)		(dropped)		(dropped)		(dropped)		2.2982	4.29 **
US	-0.023	-0.07	-0.036	-0.12	0.0721	0.21	0.2773	0.78	0.1244	0.44	0.3175	1.31
Reichmark	0.3909	0.58	1.1532	1.97 **	1.6513	2.51 **	0.6166	0.83	0.7423	1.61	1.6711	3.8 **
JPN	1.5599	0.79	-0.78	-0.46	3.0003	1.46	1.5214	0.66	5.1321	2.79 **	0.1672	0.08
R-squared	0.6646		0.641		0.6399		0.6238		0.7233		0.7308	
F	6.49		6.39		7.01		7.97		12.16		18.22	
Observatio	334		326		372		477		504		857	

Year	1925		1927		1930		1933		1935		1938	
Dist	-0.697	-11.32 **	-0.684	-12.34 **	-0.63	-9.57 **	-0.661	-14.82 **	-0.475	-14.09 **	-0.483	-13.58 **
Commonw	1.2734	2.77 **	2.0973	4.74 **	1.9385	3.52 **	2.9521	7.97 **	1.9234	7.3 **	1.7659	5.61 **
US	0.8228	3.61 **	0.5581	2.57 **	0.4385	1.77 *	0.4526	2.58 **	0.4397	3.47 **	0.574	4.14 **
Reichmark	1.7747	4.04 **	1.5522	4.16 **	1.2598	3.25 **	1.1879	3.77 **	1.1477	5.42 **	0.8865	3.51 **
JPN	2.592	1.19	4.8017	2.1 **	4.9642	2.53 **	0.7536	0.39	2.8292	2.14 **	2.5188	1.55
R-squared	0.6556		0.6493		0.6956		0.7198		0.7061		0.7088	
F	13.78		18.11		12.99		26.71		23.49		29.32	
Observatio	973		1316		716		1414		1305		1619	

Note: Italic figures are t-values. ** statistically significant at 5% level. * statistically significant at 10% level.
Note: Blanks indicate missing variables in data sets.

Table A-2: Currency Blocs

Year	1890		1895		1900		1905		1910		1920	
Dist	-0.5594	-6.28 **	-0.4712	-5.62 **	-0.6036	-6.48 **	-0.5597	-5.84 **	-0.5087	-6.62 **	-0.7535	-11.11 **
Sterling	1.9791	3.61 **	1.1086	2.2 **	0.8796	1.45	1.6139	2.97 **	1.47	3.53 **	1.1345	3.19 **
Gold	-0.2459	-0.6	0.057	0.15	0.1466	0.33	0.1494	0.32	0.149	0.4	0.0915	0.21
Exchange	1.1275	3	0.5877	1.8 *	0.0908	0.24	0.5588	1.5	0.236	0.8	0.3746	1.34
JPN	2.9921	1.6	-0.7676	-0.45	3.0066	1.45	1.5302	0.67	1.8476	1.01	0.2398	0.11
R-squared	0.6734		0.6463		0.6348		0.6328		0.7299		0.7225	
F	7.22		6.42		6.75		8.16		12.4		17.48	
Observations	334		326		372		477		504		857	

Year	1925		1927		1930		1933		1935		1938	
Dist	-0.7238	-10.99 **	-0.7395	-12.33 **	-0.6702	-9.45 **	-0.7004	-14.33 **	-0.4849	-13.24 **	-0.4696	-12.22 **
Sterling	1.0408	2.9 **	0.9096	2.84 **	0.9137	2.54 **	1.0265	3.81 **	0.8345	4.45 **	0.7178	3.31 **
Gold	-0.2707	-0.76	-0.3757	-1.06	-0.4027	-1.01	-0.2053	-0.68	0.2781	1.36	0.2559	1.05
Exchange	0.1653	0.66	-0.3095	-1.28	-0.2244	-0.75	-0.2313	-1.14	0.1549	1.15	0.3072	1.95 *
JPN	2.5587	1.16	5.2761	2.27 **	4.8396	2.43 **	0.6968	0.35	2.8049	2.06 **	2.59	1.57
R-squared	0.6443		0.6385		0.6862		0.7049		0.6881		0.6999	
F	13.11		17.27		12.42		24.83		21.57		28.1	
Observations	973		1316		716		1414		1305		1619	

Note: Italic figures are t-values. ** statistically significant at 5% level. * statistically significant at 10% level.
Note: Blanks indicate missing variables in data sets.