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POLITICS FIRST?

Do changes in bilateral political relations affect imports from South Korea to Japan?

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Abstract

Have Japan's imports of South Korean products changed in response to changes in the levels of political tension between the two countries, and have this affected the success of attempts made by South Korean firms to enter the Japanese market? The absence of transnational South Korean firms such as Hyundai, Kia and LG on the Japanese market, a geographically and psychically proximate market to the South Korean market, suggests that factors other than those put forth by established international trade models such as the Gravity model and market entry models such as the Uppsala model have affected South Korean imports to Japan. Pollins (1989) argues that firms take bilateral political tension between countries into account when managing risk, and that governments and consumers are likely to react negatively to heightened political tension, including boycotts and decreased demand for goods from the other country. By using a multiple regression analysis we have examined how and if Japan's imports from South Korea have been affected by changes in political tension between Japan and South Korea, both on an aggregated level and on an industry level. The results of our research indicate that changes in political tension did not have a negative effect on Japan's imports from South Korea during the period 1999-2012 that Pollins suggested that it would, neither on the aggregated level nor in industry level.

1. Introduction

According to international trade models such as the Gravity model of trade and internationalization models such as the Uppsala model, trade between countries increases with the economic size of the countries, as well as with geographical and cultural proximity (Head & Mayer, 2013). From a Western perspective, Japan and South Korea have similar business cultures, and Western firms face similar problems when trying to enter respective countries markets (Gesteland & Seyk, 2002), which indicates a cultural proximity between Japan and South Korea. Together with the geographical proximity, and the economic sizes of Japan and South Korea[1], this suggests that there should be a large amount of trade between Japan and South Korea, compared to the amount of trade which could be expected to exist between Sweden and South Korea based on the same criteria[2]. Based on this, we expected to see more products from South Korean brands, such as Samsung, Hyundai, Kia, and LG, in our daily lives in Japan than we were used to seeing in Sweden. Despite this, during the two years[3] we were exchange students in Japan, we saw almost none of the big international brands from South Korea in Japan, which made us wonder about the amount of trade taking place between Japan and South Korea, and what the reason for us not seeing the South Korean brands in Japan we expected to see could be.

During one of our classes in international business in Japan, students were asked to answer whether they would consider purchasing goods from South Korea if those goods were less expensive than a similar Japanese good, and nine out of ten answered that they would not. At the same time, news about the South Korean president visiting the disputed Takeshima/Dokdo islands upset the Japanese people around us, leading us to wonder whether the apparent disapproval of South Korean products expressed by the students could be more widespread and influenced by political disputes between Japan and South Korea, and if this could be one of the reasons for us not seeing South Korean products to the extent we were expecting to in Japan.

[1] Measured in GDP in current USD, Japan is the world's third largest economy, and South Korea is the fifteenth largest economy (The World Bank Group, 2013.)

[2] Measured in GDP in current USD, Sweden is the world's 21st largest economy (The World Bank Group, 2013)

[3] In 2007-2008 and 2011-2012.

1.1 Problem Background

The basic Gravity model explains bilateral trade as depending on geographical distance and the size of the economies involved; the closer two economies are to each other, and the larger those economies are, the more international trade would be expected to take place between the economies (Head & Mayer, 2013). Large economies such as Japan and South Korea which are also geographically close to each other would therefore be expected to have a larger amount of bilateral trade than would two smaller, more geographically distant, economies such as Sweden and Nigeria. Other models seeking to explain firms' choices of export markets and entry modes, such as the Uppsala model, have proposed the idea that when internationalizing, firms have a tendency to use markets which are psychically close to their home economy as "stepping stones" to more psychically distant markets (Johansson & Vahlne, 1977). In literature about market entry into Asian markets from a Western perspective, there appear to be a tendency to view the Japanese and the South Korean markets as being culturally similar. Both countries, for example, have cultures where relation-building and hierarchies are of great importance, and firms tend to face the same problems when attempting to enter these two markets (Gesteland & Seyk, 2002). Furthermore, according to research on Swedish firms trying to enter the Japanese market, a major problem is the language barrier; the generally lower level of English knowledge among Japanese businessmen slows down various business processes (Eriksson & Östlund, 2012). In South Korea, on the other hand, it is common to have Japanese speaking employees, and when the need for translation between Japanese and South Korean arises, the linguistic similarity between the languages and the shared characteristic of being high-context languages which place great importance on indirectness should help smooth the business processes (Gesteland & Seyk, 2002). This indicates that the psychic distance, which is commonly defined as "the perceived difference between two countries" (Håkanson & Ambos, 2010), between Japan and South Korea is relatively small, and that the Japanese market therefore would be an early step in the internationalization process of South Korean firms, as suggested by Johanson and Vahlne (2009).

1.2 Problem Discussion

If the models mentioned in the problem background are accurate in the case of Japan and South Korea, substantial bilateral trade between Japan and South Korea could be expected. However, observed trade flows between Japan and South Korea comprise only 67% of the trade flows predicted to exist by the gravity model, indicating the presence of significant

trade barriers and unexhausted trade potential (Sohn, 2005). Moreover, if firms can be expected to first seek to establish themselves in markets which are psychically proximate to their home market before attempting to enter markets which are more psychically distant, we might expect South Korean firms such as Hyundai, Samsung, Kia, and LG to have established themselves on the Japanese market before moving on to other, more psychically distant markets. However, Hyundai was forced out of the Japanese market in 2009 (Kim, 2009) and Samsung was forced out of the TV market in 2007 (Yonhap News Agency, 2011). South Korean internet based companies, such as SK Communications, also believed that, due to the cultural similarities, they would be successful in Japan, but instead failed (Kim, 2009). This suggests that something, other than the economic size, and cultural and geographical proximity, affects the presence of South Korean firms and products in Japan. Our experiences in Japan regarding the attitude towards South Korea among the public lead us to wonder whether one factor affecting the presence of South Korean firms and products, or more specifically, Japan's imports of South Korean products, could be bilateral political tension between Japan and South Korea. Pollins (1989), and Gowa and Mansfield (2004), claim that political tension affects bilateral trade; economic actors will follow changes in political tension because it might affect their profits, an idea which Davis and Meunier (2011) call the "*hypothesis of politics first*".

1.3 Purpose

The purpose of this thesis to examine whether changes in bilateral political tension have affected trade, with a focus on whether heightened political tension have affected trade negatively or not. Additionally, we want to examine whether there are other factors, besides political tension, which have affected firms who originated from one country and are active in the other country.

1.4 Research Questions

Main Question

Have Japan's imports of South Korean products changed in response to changes in the levels of political tension between the two countries, and have this affected the success of attempts made by South Korean firms to enter the Japanese market?

Sub-Questions

(1) *Have changes in the levels of political tension affected individual industries differently than the overall import?*

(2) *Are there other factors which could have influenced the sales of companies importing and selling South Korean goods in Japan?*

1.5 Limitations

Our focus in this thesis is why we don't see South Korean commodities in Japan; hence we will only examine Japan's imports from South Korea and exclude Japan's exports to South Korea. By examining how different levels of political tension have affected Japan's exports, we might have obtained a broader view of how political disputes have affected the trade relations; our focus, however, will be on how the Japanese market reacts to the political tension.

In addition to examining Japan's total imports from South Korea, we will also examine Japan's imports from South Korea in four separate industries, which will allow us compare how changes in the levels of political tension have affected Japan's total imports from South Korea to how the same changes in political tension have affected individual industries. The decision to limit ourselves to examining four industries, apart from total imports, was made due to the time constraints of this thesis.

Furthermore, examining Japan's relations to other countries, for example its relation with China[4], with which it shares a similar past as the one it shares with South Korea, would have allowed us to provide a wider understanding of how the Japanese market has reacted to political disputes and how political tension affects bilateral trade. Due to the previously mentioned time constraints, however, we have chosen to limit our research to the relation between Japan and South Korea.

In accordance with sub-question number 2 of our research question, we will examine whether there are any other factors except for political tension which have influenced sales of imported South Korean goods in Japan. We will, however, not examine these factors closer in order to not detract focus from our main research question and because of time constraints imposed on this thesis.

[4] We will in this thesis use China when referring to the People's Republic of China. When referring to the Republic of China, Taiwan will be used.

1.6 Disposition of the thesis

First, in *chapter two*, a background describing the development of bilateral relations between Japan and South Korea will be provided in order to create an understanding of the issues which exist between the two countries.

This will be followed by *chapter three*, where we will introduce the theoretical framework through which we will analyze our research results. Theories of international trade and the internationalization process of firms will be briefly introduced before moving on to theories regarding the impact of political tension on trade and firms, which will comprise the main focus. Chapter three will be followed by *chapter four*, in which we will introduce the research methodology used in this thesis.

In *chapter five* we will describe the development of the model which will be used in the regression analyses to test whether political tension affects Japan's imports from South Korea.
Chapter six and *seven* will present the findings of our research. In chapter six we will present the results of the multiple regression analyses, i.e. the findings of our quantitative examination, followed by chapter seven in which we will present the findings of our qualitative research, providing information on what more than political tension could have affected the *sales of companies importing and selling South Korean goods in Japan* in each of the chosen industries, which will be used to answer our second sub-question.

In *chapter eight*, an analysis of our research results and findings will be performed, where we will discuss if the theories in the theoretical framework are applicable to Japan and South Korea during the examined period, which factors other than political tension may have affected firms importing and selling South Korean products in Japan. This will be followed by *chapter nine*, in which we summarize our analysis and provide suggestions for future research.

Lastly, after the reference list, we will provide an *appendix* where output tables of the different regression analyses will be placed.

2. Background

In April 2012, the South Korean spokesperson Deputy Minister for Public Relations Cho Byung-Jae[5], compared the bilateral relations between South Korea and Japan to Sisyphus, a man in Greek mythology who was forced to roll a boulder up a hill only to have it roll back down every time he was close to the top (Kang & Bang 2012). As the previous example suggests, the bilateral relations between Japan and South Korea have fluctuated between periods of different levels of political tension, alternating between improving and worsening, after the end of the Second World War (Hook, 2005).

Japan's Imperial War started with the annexation of the Korean peninsula in 1910 (Townsend, 2011), which was followed by Japan occupying China and Taiwan, in addition to several other territories in Asia. During the Imperial War, Japanese troops killed millions of Asian people, forced approximately 200,000 women into sex slavery to become so called "comfort women", and compelled South Korean and Chinese people to work for the large Japanese firms (Barnard, 2003). A feeling of the Japanese government having failed to admit to, and apologizes for, Japan's aggressiveness during the war has given rise to anti-Japan feelings inside of South Korea, as well as in China and other nations around Asia (Hook, 2005). However, due to the development after the end of the Second World War, Japanese people often fail to understand this grudge towards them, creating the conception among Japanese people that South Korean and Chinese people overreact, which in turn has supported an anti-South Korea sentiment in Japan (Oi, 2013).

Unlike Germany, Japan did not collapse when the Second World War ended in 1945, and the emperor remained the head of state until 1947, continuing to be a symbol for the Japanese people even after the war. The emperor was believed to have played an active part in the Second World War, but was not stood trial for having committed any war crimes (Barnard, 2003). After the Second World War, the U.S. aimed to gain allies that could stand between North Korea, China and the Soviet Union, and therefore wanted Japan to have a fast economic recovery (Hook, 2005). As a result, punishing war criminals was not a priority, and the people who had powerful positions during the Second World War and had potentially committed war crimes during that period, were soon back in power again after the war. One example of this would be the Japanese Prime Minister who was, before becoming prime

[5] In this thesis we will, when mentioning South Korean or Japanese people, follow the South Korean and Japanese convention of placing surnames before the given names.

minister, charged with, but not tried as, a class-A war criminal. It is argued that because of this, Japan has never morally understood the responsibility of its past (Barnard, 2003).

After the Second World War, the Japanese government has focused on creating a nationalist sentiment inside the county (Barnard, 2003). This trend is still strong, where a recent example is Prime Minister Abe who, in 2006, helped create a law regarding patriotism as a goal for Japan's education (Cassegård & Nordeborg, 2012). Setting patriotism as a goal for education is possible due to all textbooks used for education in school up until high school having to be officially approved before they are allowed to be used (Barnard, 2003). It is argued that this is a way of using education as a form of social control, and that, as a result of this control, none of the textbooks used in education in Japan gives a full, or even close to true, picture of what actually happened during the Second World War (Oi, 2013). Groups opposing Japan's use of these controversial history textbooks do not only exist outside of Japan, but also inside the country. In Japan, the Teacher Association is against the system where textbooks have to be approved by the Japanese government before being allowed to be used in schools, and the false view of Japan's actions during the Imperial War these controversial textbooks teaches. On the other hand, there are also groups, including high officials and journalists, who are continuing to justify the Japan's Imperial War and argue that some of the events which occurred during it never took place, such as the Rape of Nanking when somewhere between 250,000 and 300,000 Chinese people were killed and over 20,000 women are believed to have been raped by the Japanese army. Furthermore, the former Japanese Prime Minister Hashimoto, at the time Minister of Trade and Industry, indicated in a speech in 1994 that the Japan's Imperial War was fought to liberate fellow Asian countries from European imperialist (Barnard, 2003).

Japan has, for example in the Murayama statement in 1995, admitted to committing wrongdoings and, as a nation, taken responsibility for its aggressions during the Imperial War, and in 2010, Prime Minister Kan personally apologized to South Korea. The apology the Murayama statement comprised is, however, not seen as enough by its Asian neighbours, because of how it was worded (Barnard, 2003), and occasional denial of Japan's past and acts that show a different attitude by Japanese high officials such as when the Japanese Prime Minister Koizumi continuously visited the Yasukuni shrine between 2001-2006 and the government's approval of the previously mentioned controversial textbooks in which Japan's colonization of South Korea is justified (Cha, 2001a, 2001b) has undermined Japan's apologies.

As of today, much of the bad relations between Japan and South are due to mistrust from South Korea directed towards Japan. From South Korea's point of view, Japan has failed to acknowledge and deliver a proper apology for its wrongdoings during its colonization of not only the Korean Peninsula, but of China, Taiwan and other parts of Asia as well, resulting in South Korea continuing to insist that Japan should revise its view of history and its involvement in the Second World War (Togo, 2012). A survey conducted by The Genro NPO and East Asia Institute (2013) indicated that in 2013, 37.3 % of the Japanese people had a unfavorable or a relatively unfavorable impression of South Korea, due to reasons such as "criticism of Japan on historical issues" (55.8 %) followed by "continued opposition on the issue of Takeshima" (50.1 %). Altogether, of those with an unfavorable or a relatively unfavorable view of South Korea, over 60% of the reasons for those opinions were related to politics.

Those who answered that they had a favorable or relatively favorable view of South Korea amounted to 31.1 %, and out of those, 52.4 % included "interest in South Korean culture, such as dramas and music" as one of the reasons for their opinion. The interest in South Korean pop-culture, starting with TV dramas such as "The Winter Sonata" and have led to middle aged- women developing an interest in all "things Korean", including South Korean food and alcohol like soju and makkoli (Kang, 2005b). Music groups such as Girls Generation, Kara and Tohoshinki spread the popularity to younger generation. The interest of South Korean culture has been known as the Korean wave or the Hallyu wave (Yang, 2012).

3. Theoretical Framework

In this chapter we will present the theories regarding international trade, firms' international expansion, and the impact of varying levels of political tension on international trade which we will use when analyzing our qualitative and quantitative empirical findings.

3.1 The Gravity Model

The gravity model, introduced by Jan Tinbergen (1962), was named after Newton's law of gravity because of its similarity with the same, describing how the sizes of different economies and the distance between them affect trade flows, and has therefore been used as a method of predicting the size of bilateral trade (Krugman & Obstfeld, 2009). The model suggests that imports and exports flow more between big clusters and countries with higher Gross Domestic Products (GDPs) than between small clusters or countries with lower GDPs,

and that trade between nearby countries is larger than trade between countries far off from each other. The term "far off" can, however, be perceived as ambiguous, and could, as a consequence, therefore encompass both the meaning of geographical distance, including transportation costs, and the meaning of tariffs and non-tariff barriers. In addition, the term can also describe non-economic distance created by cultural, religious, and linguistic disparities (van Bergeijk & Brakman, 2010).

The growth of trade associated with geographical proximity is believed to be due to lower transportation costs and the closer contact which is a common consequence of geographical proximity. Furthermore, a decrease or removal of tariffs and non-tariff barriers, as in the case of Free Trade Agreements (FTAs), also has a positive effect on international trade. Although the gravity model has been shown to be empirically accurate (Krugman & Obstfeld, 2009), and is useful in describing patterns in trade, it has been criticized for not being based on a sound theoretical foundation (van Bergeijk & Brakman, 2010). For example Leamer and Levinsohn (1995) argues that the Gravity model is strictly descriptive and thereby only provides a picture of the situation without giving a reason of why. Even if the model is not based on a sound theoretical foundation as Leamer and Levinsohn suggest, it has still been useful in describing patterns of trade.

3.2 The Uppsala Model

The Uppsala model was founded by Jan Johanson and Jan-Erik Vahlne in the research Institute of Uppsala University in 1977. It was not intended to describe patterns of trade but rather to explain how firms enter new markets, and by researching patterns of the expansion of Swedish firms abroad, Johanson and Vahlne discovered that firms would enter markets by first using intermediaries and later, as sales grow, use their own sales-organization, after which they would begin to manufacture in the new market to overcome trade barriers. Another pattern of expansion which was discerned was that firms started expanding by entering markets that was psychically proximate to their home market. Johanson and Vahlne define psychic distance as things which make it difficult to understand a foreign market (Johanson &Vahlne, 2009), and base it on theories of liability of foreignness, according to which firms need to have a firm-specific advantage, such as, for example, a strong brand-name, in order to succeed in a foreign market (Zaheer, 1995).

3.3 Theories Regarding Political Tension and its Effects on International Trade

From Adam Smith to contemporary liberals, it has been argued that free trade encourages peace, on the premises that higher levels of political tensions have a negative impact on economic interaction, and that, consequently, private actors who would benefit from trade will lobby their governments to minimize the risk of conflicts occurring. Moreover, it is also believed that transnational trade encourages deeper ties between nations, which promote peace. From these arguments, Davis and Meunier (2011), derive the "*hypothesis of economics first*", which in essence states that private actors, based on the belief that higher levels of political tension negatively impact economic relations, will lobby their governments to discourage conflicts, leading to lower levels of political tension.

Davis and Meunier also derive a "*hypothesis of politics first*" from arguments put forth by Pollins (1989), and Gowa and Mansfield (2004), stating that private actors will adapt their actions to changes in politics because of the impact said changes may have on profits. According to Pollins, the main argument for this is that firms take political tension into account when managing risk because consumers are more likely to support firms from countries towards which they feel friendly and avoid supporting firms from countries towards which they feel hostile, where this hostility could, in severe cases, take the form of boycotts. The empirical research Pollins performed, where he added political tension as a variable to a model based on the Gravity model, suggested that trade is affected negatively by strained political relations. Gowa and Mansfield (2004), on the other hand, point at security externalities as their main argument, claiming that countries have incentives to distort trade when political tension arises, as well as incentives to support trade with countries which are considered to be allies; if a country is trading with another country with which it has a political dispute, and that trade provides the other country with a stronger position in negotiations between the two countries, governments will create policies which encourages firms to shift their trade to other countries and away from the country with which the political disputes are occurring. Kastner (2007) also claims that there are incentives for governments to distort trade. As an example, Kastner explains that Taiwan has incentives to restrain trade with China and create incentives for Taiwanese firms to trade with other countries instead as a consequence of China being a much more important trading partner to Taiwan than the other way around, placing China in a stronger position than Taiwan in negotiations between the two countries. By restraining trade with China in this situation, Taiwan could reduce its vulnerability towards China and obtain a stronger position in negotiations. Despite this,

Kastner shows that trade is rapidly growing between China and Taiwan. Therefore, Kastner (2007) argues that if firms, whose support the government needs, have strong economic incentives to trade with the other country, the cost of restraining trade would be larger than the gains acquired from doing so. Hence, the cost of less domestic political support would work as a tradeoff, decreasing incentives for policy makers to create policies which restrain trade. On the other hand, countries where political leaders do not depend on support of those with economic interest in the other country are more likely to distort trade. Davis and Meunier (2011) also point out that according to world trade rules[6], political sanctions are allowed in case of national security but not over small political differences. Violating these rules could affect the confidence investors have in a specific country, engendering difficulties for governments to devise policies which distort trade.

Aside from their hypotheses of economics first and politics first, Davis and Meunier (2011) also examined how political tension affected trade between Japan and China, and the U.S. and France during the period 1990-2006 with the aim of measuring if political disputes affected the level of economic interaction between the two pairs of countries. For Japan and China, they examined the political tension regarding the Japanese Prime Minister Koizumi's visits to the Yasukuni shrine, and for the U.S. and France, it was arguments regarding the Iraq War. In the case of China and Japan, Davis and Meunier found the slightly surprising result of a positive association between political tension and economic interdependence. They examined the aggregated trade as well as iconic industries such as the car industry for Japan and the wine industry for France, and found that neither of them had suffered from the political tension. Davis and Meunier argue that sunk costs associated with entering new markets and changing their patterns of trade lead firms to be reluctant to react according to political tension. Davis and Meunier also points out, as a response to Pollins (1989), that even consumers face sunk costs while researching markets and an emotional cost in the case of brand loyalty (Kotler, 2002, cited in Davis & Meunier, 2011). In addition, they argue that consumers may not participate in boycotts, even if they support them, if they believe that they as individuals cannot make a difference, or believe that they can free-ride on the boycott. Their hypothesis was therefore that economics and politics are separated and that political tension will not affect economic interactions, which their research results also indicated (Davis & Meunier, 2011).

[6] GATT Article XXI

4. Research Methodology

4.1 Research Approach

For different types of question, different methods can be used to arrive at an answer. The two main approaches are the quantitative and the qualitative approach. There are several arguments for using a quantitative approach, for example reliability, representatively, and reproducibility, while the main arguments for a qualitative approach would be understanding, validation and variation (Starrin, Larsson, Dahlgren & Styrborn, 1991). In order to answer our main research question "*Have Japan's imports of South Korean products changed in response to changes in the levels of political tension between the two countries, and have this affected the success of attempts made by South Korean firms to enter the Japanese market?"* as well as our first sub question "*Have changes in the levels of political tension affected individual industries differently than the overall import?"* we will use a quantitative approach. A quantitative approach was chosen because we wanted to test the effect of political tension on Japan's imports from South Korea and obtain a reliable result which, to the greatest extent possible, would not be affected by our own individual opinions. In order to achieve this, we will perform a multiple liner regression analysis using dummy variables to represent and measure the effect of different levels of political tension.

Our second sub-question *"Is there something else that appears to have affected the companies importing and selling South Korean goods in Japan?"* will be answered through a qualitative approach. A qualitative approach was chosen to obtain a wider perspective of Japan's and South Korea's political relations and to examine what alternative factors might have affected Japan's imports from South Korea. The qualitative research will be performed by examining secondary data sources, including articles with analyses of factors believed to have affected sales of South Koran products in Japan and interviews with representatives from South Korean firms in Japan. The information in this part will be presented as a background for the individual industries we have chosen to examine and will function as a method to examine what may have affected Japan's imports from South Korea in addition to changes in political tension.

4.2 Choice of Industries

To answer our first sub-question, the same model which will be used for Japan's total imports from South Korea will also be used to examine the effects of political tension on imports in four separate industries; this will be done by using imports in the different industries as the

dependent variable in multiple regression analyses. The four industries are: The mineral fuels industry, the telephone industry, the beverages industry, and the passenger car industry. Below a short motivation for choosing each industry is provided.

The value of the imports of commodities will be used for all industries, except for the passenger car industry where the number of units of newly registered cars will be used. The choice to use units of newly registered cars in the passenger car industry is based on the nature of this industry; goals set by firms such as Hyundai are expressed in units of passenger cars, and we believe that measuring sales in units in this industry provides a clearer image of changes in it.

The Mineral Fuels Industry

The mineral fuels industry comprises the largest share of Japan's imports from South Korea (United Nations (UN), 2010), and was included in the comparison of the effect of political tension on different industries because of the importance this industry's large share of imports indicates. We will however not examine this industry closer.

The Telephone Industry

One reason for choosing to include the telephone industry in our research is that this industry appears to be an industry where brands are important, which might make it more sensitive to changes in the level of political tension. In addition, we also wanted to examine an industry with established South Korean firms such as Samsung and LG, firms which are active in the telephone industry. The telephone industry is also a part the electronics industry, the industry comprising the second largest share of Japan's total imports from South Korea after the mineral fuels industry (DOTS, 2013).

The Passenger Car Industry

Imports in the passenger car industry mainly consists of passenger cars from one firm, Hyundai, since other Korean car makers such as Kia, Ssangyong[7], and Daewoo have not made any serious attempts to enter the Japanese car market (Japan Automobile Import Association, 2012), which may result in changes in this industry being closely linked to

[7] Ssangyong, was originally a South Korean firm but is today mainly owned by the Indian firm Mahindra & Mahindra (SsangYong Sverige, 2012), however due to its South Korean origin, we made the choice of including this firm as well. Ssangyong cars is a very small part of the newly register passengers cars, around 15 unit each year (Japan Automobile Import Association, 2000-2012) and therefore including or excluding this brand is not likely to effect the results. We therefore did not invest further if the image inside Japan of this brand as South Korean, and included it due to its South Korean origins.

decisions made by Hyundai. However, the near absence of established firms such as Hyundai and Kia on the Japanese market was one of the reasons for why we became interested in researching whether political tension has had any effect on Japan's imports from South Korea, and we therefore wish to include it.

The Beverages Industry

The beverages industry mainly comprises alcoholic beverages (Statistics Bureau, 2011). If changes in the level of political tension affects imports, this industry might be expected to be affected more by political tension than, for example, the passenger car industry, since beverages are easy to substitute.

4.3 Period and Intervals

We have chosen to examine data from the second quarter of 1999 to the last quarter of 2012. The second quarter of 1999 was chosen as a starting point due to that being the quarter when one of our major sources was first published, and the last quarter of 2012 was chosen as an ending point due to that being the most recent quarter we were able to obtain data from.
We have chosen to look at the data in quarterly intervals rather than annual or monthly intervals for several reasons. Changes in political relations, and therefore changes in levels of political tension, do in general not happen overnight and take time to unfold, making it difficult to limit a change in political relations to a time period as short as a month. Annual intervals, however, we believe to be too insensitive for our purpose since we suspect the impact of any specific changes in the political relations, i.e. changes in the level of political tensions, will affect trade between Japan and Korea over a shorter period than a whole year. If this is true, annual data will make it difficult to separate changes in trade due to changes in the level of political tension from changes in trade caused by other factors during the year. Additionally, one of our major sources, articles concerning the bilateral relations between Japan and South Korea found in the online journal Comparative Connections, was during a majority of our selected period published quarterly.

4.4 Software Program

To perform the multiple regression analysis we have used the software program IBM SPSS Statistics.

4.5 Multiple Regression Analysis

Because we want to examine how several variables are related to Japan's imports from South Korea, we have chosen to perform a multiple regression analysis.

A regression analysis attempts to study the dependence of one variable, called the dependent variable, on others, called the independent variables (Gujarati & Porter, 2009). Stated differently, it tries to explain changes in the dependent variable by looking at changes in the independent variables (Studenmund, 2006). When this is done using only one independent variable to explain the dependent variable, it is called a simple linear regression, while it is called a multiple regression when using multiple independent variables (Anderson, Sweeney & Williams, 2011).

The basic multiple regression models are as follows (Studenmund, 2006):

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_K X_{Ki} + \epsilon_i \quad \textbf{(4-1)}$$

Where: Y = Dependent variable, X = Independent variable, ϵ = the error term for the ith observation, i = indicates the observation number, K = Number of independent variables, β = Regression coefficients

The error term in the model indicates the variability in Y that cannot be explained by the relationship between Y and X (Anderson, Sweeney & Williams, 2011).

The regression coefficients should be interpreted as the impact a one unit increase in an independent variable has on the dependent variable, holding all other variables constant, allowing the impact of one independent variable on the dependent variable to be isolated from the impact of other independent variables on the dependent variable (Studenmund, 2006). It is, however, important to remember that a regression analysis cannot establish whether a causal relationship exists or not between the dependent and an independent variable (Gujarati & Porter, 2009).

<u>Dummy Variables and the Ranking System</u>

Dummy variables can be used in regression analyses to quantify essentially qualitative variables, for example nationality, or, in our case, levels of political tension. The dummy variable then commonly take on either a 0 or a 1, where 1 is used to indicate the presence of a particular attribute, and 0 indicates the absence of the same attribute. When using dummy variables, it is important to not fall into the so called dummy variable trap, which means that

the inclusion of dummy variables for all the qualitative categories when the model includes an intercept will lead to perfect collinearity in the model, making it impossible to estimate it. To avoid this, one category is left out of the model, i.e. it is not represented by a dummy variable. This category is the benchmark category, with which the estimated coefficients of the other dummy variables are compared when interpreted; the coefficients of the dummy variables in the model indicate the change in the dependent variable compared to the benchmark category (Gujarati & Porter, 2009).

To examine whether Japan's imports from South Korea have changed in response to changes in the level of political tension, we will design a ranking system, where a period with low political tension has been designated with a 3, and a period with a high level of political tension has been designated with a 1. A period with an intermediate level of political tension has been designated with a 2.

Dummy variables will be used to represent periods with different rankings. For periods with ranking 1, the dummy variable representing periods with a high level of political tension takes on the value 1; otherwise it takes on the value 0. The same will be done with periods with ranking 3. Ranking 2 will be our benchmark ranking, which means that any impact of the dummy variable representing a period with ranking 1, or ranking 3, should be interpreted in comparison to periods with ranking 2 (Wooldridge, 2006).

Estimation method

The Ordinary Least Squares (OLS) estimation method estimates the regression coefficients so as to minimize the sum of squared residuals (Wooldridge, 2006). We chose the OLS method of estimation, rather than, for example Maximum Likelihood Estimation (MLE), because of it, according to Studenmund (2006), being the standard estimation technique in regression analysis, and for its ease of use.

Multicollinearity

The multicollinearity in a model is severe when there is a linear functional relationship between two or more independent variables that is strong enough to have a significant impact on the estimation of the regression coefficients. This will lead OLS to have difficulties separating the effect on the dependent variable of one independent variable from the effect on the dependent variable of another independent variable. Severe multicollinearity will also cause the standard errors of the coefficients to increase, which will in turn result in lower t-

statistics, increasing the risk of not rejecting a null hypothesis even when it should have been. (Studenmund, 2006)

It is therefore necessary to establish a limit for when multicollinearity is to be considered to be severe. According to Studenmund (2006), a Variance Inflation Factor (hereafter referred to as VIF) above 5 indicates severe multicollinearity, while Gujarati and Porter (2009), writes that the upper limit for the VIF is 10. Based on this, we have chosen to use a VIF of 10 as the upper limit for an acceptable level of multicollinearity. Any variable with a VIF above 10 was therefore excluded from our model.

Heteroskedasticity

One of the assumptions that should be met in order for OLS to be considered the best estimator for regression models is that "the observations of the error term are drawn from a distribution that has a constant variance". This is called homoscedasticity, and the violation of this assumption is called heteroskedasticity. Heteroskedasticity can contribute to OLS misestimating the variables' coefficients, although it on average overestimates just as much as it underestimates, resulting in unbiased coefficients. Heteroskedasticity also contributes to biased standard errors of the coefficients, which in turn affects the test statistics, and may create a degree of unreliability in the hypothesis tests (Studenmund, 2006).

According to Gujarati and Porter (2009), a log transformation of the variables in the model often reduces heteroskedasticity because the log transformation lessens the variance of the values of the variables. We have therefore chosen to take the natural logarithms of the variables, except for in the case of Japan's capacity utilization rate which is already expressed in percentage terms, and the two dummy variables.

To test for heteroskedasticity, we used an F-test to see whether we could reject the null hypothesis of homoscedasticity or not.

Autocorrelation

Autocorrelation is common in time series data and means that the error term of one period depends on the value of error terns in other periods. The presence of autocorrelation raises the likelihood of OLS misestimating the true coefficients than otherwise, although, because overestimates are equally likely to occur as underestimates, the estimated coefficients are, overall, still unbiased. Autocorrelation also contributes to the estimation of the standard errors to be biased, which would result in the creation of a degree of unreliability in the

hypothesis testing and the potential of rejecting the null hypothesis even when it should not be (Studenmund, 2006).

Including a lagged dependent variable as an independent variable, as we have done, is however a method for decreasing the degree of autocorrelation in the model as the inclusion of a lagged dependent variable as an independent variable can control for historical influences creating correlation between the current and previous periods which otherwise would have been absorbed by the error term and contributed to the autocorrelation (Gujarati, 2009).
Autocorrelation was tested for using the Durbin-Watson d test.

Level of Significance

Studenmund (2006), recommends beginning researchers to use the 5% level of significance. Gujarati and Porter (2009) do not recommend a specific level of significance, but states that econometricians generally choose a level of significance of 1, 5, or 10%, and we have therefore chosen to follow the advice of Studenmund.

Elasticity

We are interested in if and how much increased or decreased political tension between Japan and South Korea affect Japan's imports from South Korea. When taking the natural logarithm of the different values of trade, the estimated coefficients measure the elasticity, i.e. they show the percentage change in the dependent variable as a result of a 1% increase in a specific independent variable, holding all other independent variables constant (Studenmund, 2006), allowing us to examine the relative changes rather than absolute ones. All variables used in the basic model have been log transformed with the exception of the dummy variables, and the variable depicting Japan's capacity utilization rate as that variable already is in percentage form and the log transformed dependent variable results in the coefficient of Japan's capacity utilization rate measuring the elasticity.

Overall Goodness of Fit and Significance

When measuring and comparing the goodness of fit of our different estimated equations we used the adjusted R^2, due to the tendency of R^2 to inflate with the number of independent variables in the model (Studenmund, 2006). The F-test was used to establish whether the model was overall significant or not.

4.6 Data Collection

The data for the variables used in the multiple regression analyses was collected from the statistical database of the Organization for Economic Co-operation and Development (OECD) (2010, 2013a, 2013b, 2013c), the World Development Indicators database (The World Bank, 2013), Japan's Statistics Bureau (2011), the Ministry of Finance Japan's time series data over Japan's trade statistics (Ministry of Finance Japan, 2013), and the Korean Statistical Information Service (Statistics Korea, 2010). In cases were only monthly data were available it was aggregated into quarterly data. Annual data has been used once in the case of population data, which was used to calculate Japan's GDP per capita.

Data for the qualitative part of our research was obtained from volumes 1-14 of the publication Comparative Connections[8], including reports on recent events, meetings and speeches made by politicians and media from both sides as well as analyses, and has been used as a basis for determining the level of political tension during a specific quarter. Other sources, for example Cassegård and Nordeborg (2012), Togo (2012), Hook (2005), and Davis and Meunier (2011), have also been taken into account when determining the level of political tension. To be able to create a quarterly ranking system, quarterly reports have been necessary; hence the publication Comparative Connections has been the main source.

5. The Research Model and its Operationalization

5.1 Variables

Japan's total imports from South Korea and the imports from South Korea in the four selected industries will be used as dependent variables in five separate regression analyses. The variables listed as independent in table 1 will be in all regression analyses. The table also shows the abbreviations used for the different variables in the equations.

Variable Name	Function	Definition
CUR	Independent	Japan's capacity utilization rate
IM_{t-1}	Independent	Lagged version of Japan's total imports from South Korea
SKEX	Independent	South Korea's total exports minus its exports to Japan
t	Independent	Time variable
GDPcap	Independent	Japan's GDP per capita
IM	Dependent	Japan's Total Imports from South Korea
IMmf	Dependent	Japan's Imports of Mineral Fuels from South Korea (HS code: 27)

[8] See Cha (1999-2004), Kang (2005a), Kang and Lee (2005-2011), and Kang and Bang (2011-2013).

IMbev	Dependent	Japan's Imports of Beverages from South Korea (HS code: 22)
IMtel	Dependent	Japan's Imports of Telephones from South Korea (HS code: 8517)
IMcars	Dependent	Japan's Imports of Cars from South Korea (Newly Registered)
$Dummy_{pol1}$	Independent	Political tensions dummy. Period with high level of political tension (bad period)
$Dummy_{pol3}$	Independent	Political tensions dummy. Period with low level of political tension (good period)

Table 1 Description of variables

5.1.1 Dependent Variables

The dependent variables in the regression analyses will be Japan's total imports from South Korea, and Japan's imports from South Korea in the mineral fuels industry, the telephone industry, the beverages industry, and the passenger car industry respectively.

Japan's total imports from South Korea were compiled from monthly data using the Ministry of Finance Japan's trade statistics (Ministry of Finance Japan, 2013b). In the beverages industry (HS code 22)[9], the mineral fuels industry (HS code 27), and the telephone industry (HS code 8517), we researched the value of imports within that particular industry, using data from the Portal Site of Official Statistics of Japan[10], and then compiled the data into quarterly data from 1999-2012, and deflated them using a GDP-deflator for Japan with 2005 as the base year. In the passenger car industry, the number of newly registered passenger cars was used[11].

Depending on the industry, different levels of commodity groupings have been used to examine them. The mineral fuels and the beverages industries have been based on the 2 digit HS- code level. When examining the telephone industry, the 4 digit code level has been used, and for the passenger car industry, the number of newly registered passenger cars has been used.

[9] Japan uses a 9-digit commodity classification system in customs declarations where the first 6 digits are harmonized with the International Convention on the Harmonized Commodity Description and Coding System while the last 3 digits are domestic codes (Ministry of Finance Japan, 2013a). Since the values of imports which we are looking at are based on customs declarations which in turn are based on the Harmonized System codes (the Harmonized System will henceforth be referred to with the abbreviation HS, and Harmonized System codes will be referred to as HS codes), we have chosen to base our disaggregated level analysis on the HS classification of commodity groups and individual commodities.

[10] See Statistics Bureau (2011).

[11] See Japan Automobile Importers Association (2012).

5.2 Independent variables

5.2.1 Choice of independent variables for the basic model

When choosing which variables to include in our model as independent variables, we were inspired by the gravity model and a report by Kepaptsoglou, Karlaftis and Tsamboulas (2010) where they collected empirical research on international trade from 1999-2009 and listed the variables commonly used in research regarding international trade. After considering the theory behind the different variables and the effect the variables had on the degree of multicollinearity in the model, the statistical significance of the variables, and the adjusted R^2, we arrived at a basic model with Japan's capacity utilization rate, Japan's GDP per capita, Korea's total exports minus its exports to Japan, and a lagged version of Japan's total imports from South Korea as the independent variables. To this basic model we then added the dummy variables representing different levels of political tension.

Gross Domestic Product per Capita

We chose to use the GDP per capita as an independent variable to control for changes in purchasing power and economic development in our model. The measure GDP per capita is a common proxy for a country's purchasing power and economic development, controlling for the possibility of two countries having a similar GDP and yet having different levels of purchasing power and economic development because of differently sized populations (Kepaptsoglou, Karlaftis & Tsamboulas, 2010) An increase in purchasing power may lead to increased imports, implying that an increase in GDP per capita is associated with an increase in imports, and that a decrease in the GDP per capita results in a decrease in imports (Huchet-Bourdon & Korinek, 2011). To control for the different rates of inflation in Japan and Korea we have deflated the countries' GDP's and GDP per capita ratios with each respective country's GDP-deflator, and then used the real exchange rate to account for differences in the purchasing power of the two countries:

$$\text{Real GDP per Capita} = (\text{GDP} / \text{GDP-deflator}) / \text{Population} \quad \textbf{(5-1)}$$

The data for Japan's GDP, GDP-deflator, and total population was obtained from the OECD (2010, 2013b).

Japan's Capacity Utilization Rate

The capacity utilization rate is an economic indicator approximately coincident with the changes in the business cycle (Taylor & Woodford, 1999; Sgherri, 2005). Moreover, it was

used by the Economic and Social Research Institute (ESRI) in Japan as a coincident indicator of the Japanese business cycle for the majority of the period we examined (ESRI, Cabinet Office, Government Of Japan, 2013; Suzuki, 2002), and was therefore included in the model as a coincident economic indicator to control for fluctuations in the business cycle.
Data for Japan's capacity utilization rate was obtained from Trading Economics (2012). From the monthly data available on Trading Economics, we used the average of three months to obtain quarterly data.

Korea's Total Exports minus its Exports to Japan

This variable was included in order to control for changes in Japan's imports from South Korea caused by changes in the propensity of South Korea to export, either to Japan or overall, the reasoning being that imports from South Korea to Japan can change based on factors which have nothing or very little to do with Japan's propensity to import from South Korea. If South Korea's exports, for example, increases overall due to a government initiative to promote South Korean exports, exports to Japan might increase as well without this being connected to Japan's demand for South Korean products. South Korea's export to Japan was excluded in this variable to minimize the influence of Japan's propensity to import from South Korea.

The data for this variable was obtained from the OECD (2013c).

Lagged Version of the Dependent Variable Japan's Imports from Korea

In a time series there is a large likelihood of the impact of an independent variable on the dependent variable not being instantaneous or of it being spread out over several time periods. This lapse of time in the dependent variable's response to the independent variable is called a lag (Hill, Griffiths & Lim, 2008; Gujarati & Porter, 2009). According to Gujarati and Porter (2009), there are three main reasons for why lags occur. One is for psychological reasons, for example the force of habit or uncertainty regarding the future. Another is for technological reasons, for example the lag created by the time it takes firms to replace labour with capital. The third is for institutional reasons, such as contractual obligations, which could prevent firms from switching suppliers or canceling orders. In addition, the value of the dependent variable itself from earlier periods can affect the value of the current period's dependent variable, for example in the case of income where the level of income an earlier time period is likely to be related to the level of income during the current time period (Hill, Griffiths & Lim, 2008), or in the case of trade where past trade patterns have been found to

be potentially have a large, positive, effect on current trade patterns (Eichengreen & Irwin, 1996). Depending on the variable, the influence from earlier periods might also decrease with the length of the lag. The effects from different time periods of both independent and the dependent variable can be simplified and accounted for by lagging the dependent variable by one time period (t-1) and using the resulting variable as an independent variable (Studenmund, 2006). To control for historical effects from previous periods of Korean imports to Japan on Korean imports to Japan during the current period, we have chosen to include a lagged version of the dependent variable, which we have lagged with one time period (t-1). This lagged version of the dependent variable also controls for historical effects other than historical trade patterns such as the ones mentioned above regarding reasons for why lags occur. Adding the lagged value of the dependent variable as an independent variable also contributes to a decrease in the autocorrelation in the model, since the correlation between the previous and the current period otherwise would have been absorbed by the error term (Gujarati & Porter, 2009).

The data for this variable was obtained from Japan's trade statistics provided by the Ministry of Finance Japan (2013b).

Time Variable

The time variable was included to account for overall trends in trade.

5.2.2 Dummy Variables

There are several databases which measure political tension, including the COPAB (Conflict and Peace Data Bank 1948-1978) and the King Lowe database with over a million international dyadic events. However, no such database covering the period of our study was found. Hence, we created our own method for measuring different levels of political tension. There are no clear dividing lines between different levels of political tension between two countries since the different levels of political tensions do not comprise a scale with clearly marked levels but rather a continuum where one level of political tensions cannot be readily distinguished from a slightly higher level of political tensions. To be able to incorporate political tension into our model however, we transformed our research of changes in political tension between Japan and South Korea a ranking system, where periods were assigned a 1, a 2, or a 3, indicating the average level of political tension during specific periods. This ranking system is based on qualitative empirical observations, mainly using the quarterly reports

found in the publication Comparative Connections[12], reporting on the latest news and presenting events from both Japan and South Korea which have affected bilateral relations. Ranking 1 represents a period with relatively low political tension, ranking 2 represents a period with an intermediate level of political tension, and ranking 3 represents a period with relatively high political tension. Our research suggested that there is no period during our selected period with no political tension, and therefore a ranking representing a period with no political tension was not included, and ranking 1 represents a period with a low level of political tension rather than a period with no political tension. Ranking 2, representing a period with an, in relation to ranking 1 and 3, intermediate level of political tension have been used as a benchmark period to which changes in political tension have been measured and compared.

What are Low and High Political Tension? Japan's Aim to Have Forward Oriented Bilateral Relations

There are several indicators for when a period could be classified as a period with high political tension or as a period with low political tension. Indicators of periods with low levels of political tension include political interactions such as meetings, agreements to focus on "future oriented" relations and negotiations regarding the establishment of a Free Trade Agreement between Japan and South Korea. Examples of indicators of a period with a high level of political tension are negotiation breakdowns, and canceled or postponed meetings. We have also chosen to view disputes regarding the Takeshima/Dokdo islands, the comfort women, the history textbooks, and the right of Japanese politicians to visit the Yasukuni shrine as indicators of periods with high levels of political tension.

An example of a period with high levels of political tension is when Prime Minister Koizumi visited the Yasukuni shrine in the third quarter in 2001, which is also the quarter after the approval of the controversial textbook. During these two quarters, most diplomatic relations, including joint military trainings, as well as meetings on political levels faced a total breakdown. In addition to the dispute regarding the Japanese history textbook, another dispute based on South Korea purchasing fishing rights from Russia to fish in waters claimed by Japan further strained the political relations between Japan and South Korea (Cha, 2001a, 2001b).

[12] See Cha (1999-2004), Kang (2005a), Kang and Lee (2005-2011), and Kang and Bang (2011-2013).

To contrast the above mentioned period with a high level of political tension with that of a period with low levels of political tension, during the period following directly after the period above, political disputes were temporarily solved by the apology issued by Prime Minister Koizumi, and focus was put on "forward looking relations". The co-hosting of the FIFA world cup helped politicians to focus on diplomatic relations rather than on historically oriented relations. The issue regarding South Korea purchasing fishing right from Russia to waters claimed by Japan was also temporally resolved as Japan purchased the fishing rights from Russia (Cha, 2002).

5.2.3 Expected Signs of Coefficients

Based on the literature used when deciding what variables to include in the basic model, as well as the theories presented in the theoretical framework chapter, we expect the signs of all independent variables to be positive, except for the dummy variable representing a period of high political tension, which, if the theories of Pollins (1989), and Gowa and Mansfield (2004) are correct should be negative.

Expected sign of coefficients in the multiple regression analyses

Variables	Expected sign (+/-)	Comments
Japan's GDP per capita	+	As purchasing power increases, consumption is expected to increase
Japan's Capacity Utilization Rate	+	An upswing in the economy is expected to lead to a higher income and more consumption
Lagged Version Japan's Total Imports from South Korea	+	Past trade can potentially have a positive effect on present trade
South Korea's Total Exports minus its Exports to Japan	+	If South Korea increases overall exports, exports to Japan are expected to increase as well.
Time Variable	+	Japan's imports from South Korea appear to experience an upward sloping trend.
Period of High Political Tension	-	A higher level of political tension will have a negative effect on imports, compared to the benchmark period of an intermediate level of political tension.
Period of Low Political Tensions	+	A lower level of political tension will have a positive effect on imports, compared to the benchmark period of an intermediate level of political tension.

Table 2 Expected sign of coefficients in the multiple regression analyses

5.3 Development of Model

5.3.1 Basic Model: with Time Variable

The basic model with a time variable is a multiple linear regression model with all variables log transformed except for Japan's capacity utilization rate:

$$\ln IM = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \beta_5 \ln t + \epsilon$$

(5-2)

There is an indication of heteroskedasticity in the model, which can cause the OLS estimation of the standard terms to be. According to Studenmund (2006), the bias caused by heteroskedasticity can result in the test statistics of the model becoming unreliable. Our awareness of the presence of the heteroskedasticity in the model is what prompted us to log transform most of the variables in it which we believe have minimized the heteroskedasticity in the model as log transformation minimizes the variance of the variables, allowing us to, while being aware of possible inaccuracy of the test statistics, still draw valuable conclusions based on the model.

Testing for heteroskedasticity
H_0: The error term has a constant variance. F-test on the 5% level.

Observed Value	Critical Value	Decision
186.235	2.404	Reject

Table 3 Testing for heteroskedasticity

The multicollinearity present in the equation is below our specified upper limit as measured by the VIFs, although South Korea's total exports minus its exports to Japan has a rather large VIF at 8.431.

Testing of degree of multicollinearity
H0: VIF > 10. (Unacceptable level of multicollinearity if VIF > 10)

Variable	VIF	Decision
GDPcap	2.553	Reject
CUR	1.474	Reject
IM_{t-1}	4.169	Reject
SKEX	8.431	Reject
t	5.619	Reject

Table 4 Testing of degree of multicollinearity

There is an indication of autocorrelation in the equation, which could result in OLS misestimating the standard errors and affecting the t-values, thus creating uncertainty regarding the significance test.

Testing for positive autocorrelation in the model
H0: $\rho \leq 0$ (no positive autocorrelation). Durbin-Watson one-sided d test at 5% level of significance.

Observed Value	Significance Points	Decision
1.062	d_L: 1.768 d_U: 1.841	Reject

Table 5 Testing for positive autocorrelation in the model

Through an F-test the overall fit of the model has been shown to be statistically significant at a 5% level of significance, where the overall fit of the equation is relatively high.

Overall fit of equation	
R2	0.950
Adjusted R2	0.945

Table 6 Overall fit of equation

Testing of overall significance
F-test of overall significance, 5% level of significance. H0: $\beta_1 = \beta_2 = \cdots = \beta_K = 0$ (all slope coefficients equal zero simultaneously)

Observed F-Value	Critical-F-Value	Decision
186.235	2.404	Reject

Table 7 Testing of overall significance

The coefficients of all variables in the model have been shown to be statistically significantly different from zero at a 5% level of significance through a two-tail t-test of significance. Although all variables were shown to be statistically significant by the t-test, the strength of that statistical significance varies between the different variables, and as the Durbin-Watson d test indicated autocorrelation in the model, some doubt regarding the true strength of that statistical significance exists.

Test of significance
Two-tail test of significance. H0: $\beta=0$ (no linear relationship exists between the independent variable and the dependent variable)

Variable	Observed t-Value	Critical t-Value	Decision
GDPcap	4.517	2.001	Reject
CUR	2.196	2.001	Reject
IM_{t-1}	8.060	2.001	Reject
SKEX	4.931	2.001	Reject
t	-2.742	2.001	Reject

Table 8 Test of significance

The time variable was included to control for overall trends in Japan's imports from South Korea, and was expected to be positive (table 2). However, the estimated coefficient of the time variable had a negative sign, indicating that Japan's total imports from South Korea is exhibiting a downwards loping trend. Examining the development of Japan's imports from South Korea (using constant prices) visually in a graph with an added trend line, however, seems to indicate that Japan's total imports from South Korea has an upward sloping trend and that the time variable's coefficient should be positive, indicating that Japan's imports

from South Korea is on average increasing as time moves forward, which is the opposite of what the negative sign of the time variable's coefficient is indicating.

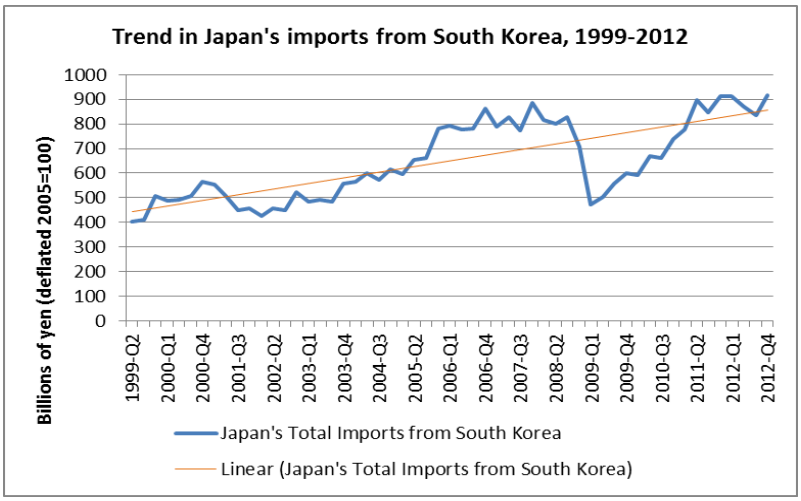

Figure 1 Trend in Japan's imports from South Korea, 1999-2012
Source: Ministry of Finance Japan (2013)

The sign of the time variable's coefficient not being in agreement with the empirical findings of the development of Japan's imports from South Korea over time we believe might indicate a misspecification of the model and the possibility that the time variable rather than helping explain Japan's total imports from South Korea is interfering with the analysis of the other variables. Below is therefore a test run of the model excluding the time variable.

5.3.2 Basic Model: Without Time Variable

The basic model without the time variable:

$$\ln IM = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \epsilon \quad \textbf{(5-3)}$$

The F-test indicates that there is heteroskedasticity in the model.

Testing for heteroskedasticity H_0: The error term has a constant variance. F-test on the 5% level.		
Observed Value	Critical Value	Decision
204.272	2.557	Reject

Table 9 Testing for heteroskedasticity

The VIFs of the variables in the model without the time variable indicates lower levels of multicollinearity than the model version where the time variable was included, which could potentially mean that the estimated coefficients are closer to the true coefficients in this version of the model as compared to the version of the model with the time variable included. In the presence of multicollinearity, the risk of obtaining an estimated coefficient with an unexpected sign increases (Studenmund, 2006), which, as the model version with the time

variable included has higher levels of multicollinearity, could be at least part of the reason for why the time variable had a negative sign in the model in which it was included despite the trend of Japan's imports from South Korea appearing to be positive.

Testing of degree of multicollinearity
H0: VIF > 10. (Unacceptable level of multicollinearity if VIF > 10)

Variable	VIF	Decision
GDPcap	2.544	Reject
CUR	1.272	Reject
IM_{t-1}	4.051	Reject
SKEX	5.368	Reject

Table 10 Testing of degree of multicollinearity

The hypothesis test of autocorrelation indicates that there is autocorrelation present in the model. There does not appear to be a large difference in the autocorrelation in this equation and the one where we included the time variable.

Testing for positive autocorrelation
H0: $\rho \leq 0$ (no positive autocorrelation). Durbin-Watsin one-sided d test at 5% level of significance.

Observed Value	Significance Points	Decision
1.020	d_L: 1.742 d_U: 1.816	Reject

Table 11 Testing for positive autocorrelation in model

The overall fit of the equation is relatively high as it is close to 1, and that fit is overall statistically significant at the 5% level of significance.

Overall fit of equation

R2	0.942
Adjusted R2	0.938

Table 12 Overall fit of equation

Test of overall significance
F-test of overall significance. H0: $\beta_1 = \beta_2 = \cdots = \beta_K = 0$ (all slope coefficients equal zero simultaneously)

Observed Value	Critical Value	Decision
204.272	2.557	Reject

Table 13 Test of overall significance

All variables in the model are statistically significant at the 5% level of significance. Although, as mentioned earlier, the autocorrelation and heteroskedasticity present in the model is potentially affecting the t-statistics, and could lead to the t-statistics being too low or too high.

Test of significance
Two-tail test of significance. H0: β=0 (no linear relationship exists between the independent variable and the dependent variable)

Variable	Observed Value	Critical Value	Decision
GDPcap	4.104	2.001	Reject
CUR	3.252	2.001	Reject
IM_{t-1}	7.249	2.001	Reject
SKEX	3.864	2.001	Reject

Table 14 Test of significance

While the adjusted R^2 is slightly lower when excluding the time variable from the model, because of the strong empirical observation of an upwards sloping trend in Japan's total imports from South Korea, and the potential of the time variable interfering with the accuracy of the regression analysis we have made the decision to exclude the time variable from our basic model. Therefore, when referring to the basic model in this thesis, we are referring to the model with Japan's total imports from South Korea as the dependent variable, and Japan's GDP per capita, Japan's capacity utilization rate, South Korea's total exports minus its exports to Japan, and Japan's total imports from South Korea lagged with one time period as the independent variables.

6. Regression Analysis Results

6.1 Total Imports

With the basic model established as the equation below:

$$\ln IM = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \epsilon \quad \textbf{(6-1)}$$

we add the dummies representing different levels of political tension to it, creating the following equation:

$$\ln IM = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon \quad \textbf{(6-2)}$$

The resulting equation will be used to examine whether changes in the level of political tension between Japan and South Korea affect Japan's total imports from South Korea.
The F-test indicates that there is heteroskedasticity present in the equation. In our equations, this means that a variable that is not actually statistically significant could still be mistaken for it, or, if OLS is overestimating the standard errors that the t-value of a variable could be too low, resulting in variables that are statistically significant to be mistaken for being statistically insignificant.

Testing for heteroskedasticity
H_0: The error term has a constant variance. F-test on the 5% level.

Observed Value	Critical Value	Decision
167.007	2.295	Reject

Table 15 Testing for heteroskedasticity

There are indications of multicollinearity being present in the equation, but at lower levels.

Testing of degree of multicollinearity
H0: VIF > 10. (Severe level of multicollionearity if VIF > 10)

Variable	VIF	Decision
GDPcap	2.636	Reject
CUR	1.378	Reject
IM_{t-1}	5.214	Reject
SKEX	5.556	Reject
$Dummy_{pol1}$	1.412	Reject
$Dummy_{pol3}$	1.486	Reject

Table 16 Testing of degree of multicollinearity

There are indications of positive autocorrelation in the equation, i.e. the error terms appear to be correlated, although less autocorrelation than both the basic model with and without the time variable. With autocorrelation present in the equation, similar problems as to when there is heteroskedasticity present in the equation can arise, contributing to unreliability in the hypothesis tests.

Testing for positive autocorrelation in
H0: $\rho \leq 0$ (no positive autocorrelation). Durbin-Watsin one-sided d test at 5% level of significance.

Observed Value	Significance Points	Decision
1.161	d_L: 1.783 d_U: 1.857	Reject

Table 17 Testing for positive autocorrelation

The equation has a high degree of overall fit, meaning that the estimated regression equation fits the sample data well and that it explains the different values of Japan's total imports from South Korea over time better than simply looking at the mean of those values over the same time period. The overall fit of the equation is also statistically significant at the 5% level of significance.

Overall fit of equation

R^2	0.954
Adjusted R^2	0.949

Table 18 Overall fit of equation

Testing of overall significance F-test of overall significance. H0: $\beta_1 = \beta_2 = \cdots = \beta_K = 0$ (all slope coefficients equal zero simultaneously)		
Observed Value	Critical Value	Decision
167.007	2.295	Reject

Table 19 Testing of overall significance

6.1.1 Variables

All variables have relatively high observed t-values, excluding the dummy variable representing low levels of political tension, resulting in a relatively large difference between the observed values and the critical value.

Test of significance Two-tail test of significance. H0: β=0 (no linear relationship exists between the independent variable and the dependent variable)			
Variable	Observed Value	Critical Value	Decision
GDPcap	4.239	2.011	Reject
CUR	4.254	2.011	Reject
IM_{t-1}	5.983	2.011	Reject
SKEX	4.732	2.011	Reject
$Dummy_{pol1}$	3.509	2.011	Reject
$Dummy_{pol3}$	0.6	2.011	Do not reject

Table 20 Test of significance

Japan's GDP per Capita

Japan's GDP per capita has been shown to be statistically significant at the 5% level of significance, indicating that the purchasing power of the Japan's population and the economic development of Japan are significant in explaining Japan's total imports from South Korea. The regression analysis results also indicates that if the purchasing power of Japan's population increases by 1%, Japan's total imports from South Korea will increase by 1.133 %.

Japan's Capacity Utilization Rate

The capacity utilization rate is a procyclical economic indicator, meaning that an increase in the capacity utilization indicates growth in the economy as a whole. The estimated coefficient of Japan's capacity utilization rate therefore indicates that Japan's total imports from South Korea increase by 0.005% if the economy grows by 1%. Although this variable is statistically significant, it is more difficult to say whether it is economically significant since a 1% increase only corresponds to a 0.005% change in Japan's total imports from South Korea.

Lagged Version of Japan's Total Imports from South Korea

The estimated coefficient of this variable, which is statistically significant at the 5% level of significance and the variable with the highest t-value in the equation, indicates that if Japan's total imports from South Korea increased by 1% during the previous period, that increase will give rise to a 0,411% increase in Japan's total imports from South Korea during the current period, which in turn indicates that Japan's total imports from South Korea today is influenced by its past total imports from South Korea.

South Korea's Total Exports minus its Exports to Japan

South Korea's total exports minus its exports to Japan are statistically significant at the 5% level of significance, and its estimated coefficient is 0.200. This indicates that a 1% increase in South Korea's total exports minus its exports to Japan, i.e. its propensity to export, corresponds to a 0.2% increase in Japan's total imports from South Korea, holding all other variables constant, which in turn means that if South Korea's overall exports increase, for whatever reason, Japan's total imports from South Korea will increase as well.

Dummy Variable Representing High Levels of Political Tension

The dummy representing a period with high levels of political tension is statistically significant, indicating that there is a difference between periods with high levels of political tension between Japan and South Korea and periods when the political tension is at intermediate levels of political tension (as compared to the higher and lower levels of political tension represented by ranking 1 and 3). The estimated coefficient of the dummy variable representing higher levels of political tension has a positive sign, the opposite of the expected sign for this coefficient, and indicates that the median of Japan's total imports from South Korea during periods with high political tension is 7.788% higher than the median of Japan's total imports from South Korea during periods when the political tension between the two countries are at intermediate levels.

Dummy Variable Representing Low Levels of Political Tension

This variable has a positive sign, which is in comport with our expectation for which sign the estimated coefficient of this variable would have, but as it is not statistically significant, we therefore cannot reject the hypothesis of no difference between periods represented by the benchmark dummy and periods with lower levels of political tension. Therefore, it is not possible to draw any conclusions regarding the impact of the change from a period with an intermediate level of political tension to a period with lower levels of political tension.

6.2 Basic Model with Political Tensions Dummies Applied to Individual Industries

Apart from looking at Japan's total imports from South Korea, we also wanted to see if the impact of changes in the political tension between Japan and South Korea affect individual industries differently, and have therefore chosen certain industries to examine closer.
We will exchange the dependent variable which was previously Japan's total imports from South Korea for Japan's imports from South Korea in the different industries we have chosen to examine closer. In this section, we will only be examining the dummy variables closer as those are the variables which can help answer our research questions.

All equations of the different industries have multicollinearity present in them, but as it is below our chosen level for when to consider the multicollinearity to be severe, and the variable with the highest multicollinearity has a VIF that is almost half of the limit VIF, we do not consider this to be a problem. The VIFs of the variables are the same for all equations:

Testing of degree of multicollinearity
H0: VIF > 10. (Unacceptable level of multicollinearity if VIF > 10)

Variable	VIF	Decision
GDPcap	2.636	Reject
CUR	1.378	Reject
IM_{t-1}	5.214	Reject
SKEX	5.556	Reject
$Dummy_{pol1}$	1.412	Reject
$Dummy_{pol3}$	1.486	Reject

Table 21 Testing of degree of multicollinearity

6.2.1 The Mineral Fuels Industry

Using the same independent variables as in the basic model, including the dummies, and Japan's imports of mineral fuels as the dependent variable we obtain the following equation:

$$\ln IMmf = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon \quad \textbf{(7-3)}$$

The equation using Japan's imports of mineral fuels from South Korea shows signs of heteroskedasticity, indicating that the estimated coefficients and the standard errors could be misestimated.

Testing for heteroskedasticity
H_0: The error term has a constant variance. F-test on the 5% level.

Observed Value	Critical Value	Decision
6.606	2.295	Reject

Table 22 Testing for heteroskedasticity

There is an indication of autocorrelation being present in the equation, but there is less autocorrelation indicated in this equation than in the basic model with the political tensions dummies added.

Testing for positive autocorrelation H0: $\rho \leq 0$ (no positive autocorrelation). Durbin-Watson one-sided d test at 5% level of significance.		
Observed Value	Significance Points	Decision
1.403	d_L: 1.783 d_U: 1.857	Reject

Table 23 Testing for positive autocorrelation

The low R^2 and adjusted R^2 values indicate that the estimated regression equation does not fit the sample data well, which can be interpreted as the same variables which explained Japan's total imports from South Korea relatively well[13] do not explain Japan's mineral fuels imports from South Korea as well. Despite being relatively low, the overall fit of the equation is statistically significant at the 5% level of significance.

Overall fit of equation	
R^2	0.452
Adjusted R^2	0.384

Testing of overall significance F-test of overall significance. H0: $\beta_1 = \beta_2 = \cdots = \beta_K = 0$ (all slope coefficients equal zero simultaneously)		
Observed Value	Critical Value	Decision
6.606	2.295	Reject

Table 24 Overall fit of equation and Testing of overall significance

[13] The equation using the same independent variables but had Japan's total imports from South Korea as the dependent variable had an adjusted R^2 of 0.949.

6.2.1.1 Variables

The t-test of significance only indicates that two variables, South Korea's total exports minus its exports to Japan, and Japan's total imports from South Korea lagged with one period, are statistically significant at the 5% level of significance in this equation. Because of the heteroskedasticity and autocorrelation present in the equation, it can be difficult to judge whether variables with t-values which are close to the critical t-value are really statistically significant or not.

Test of significance
Two-tail test of significance. H0: $\beta=0$ (no linear relationship exists between the independent variable and the dependent variable)

Variable	Observed Value	Critical Value	Decision
GDPcap	1.759	2.011	Do not reject
CUR	-1.649	2.011	Do not reject
IM_{t-1}	3.091	2.011	Reject
SKEX	-2.072	2.011	Reject
$Dummy_{pol1}$	1.662	2.011	Do not reject
$Dummy_{pol3}$	-0.192	2.011	Do not reject

Table 25 Test of significance

Dummy Variables Representing Lower and Higher Levels of Political Tension

The t-test of significance indicates that none of the dummies is statistically significant, which suggests that there is no statistical difference between different levels of political tension and their impact on Japan's imports from South Korea in the mineral fuels industry. Because of the autocorrelation and heteroskedasticity in the equation, there could be doubts regarding whether the decisions to reject or not reject the null hypothesis is correct. Although we are not able to reject the null hypothesis, and therefore not able to say whether there is a significant difference between different levels of political tension, the signs of the dummy variables' estimated coefficients are interesting as the dummy representing lower levels of political tension has a negative sign, and the dummy representing higher levels of political tension has a positive sign, which are the opposite signs of the signs we expected the dummies to have.

6.2.2 The Telephone Industry

Using Japan's imports of telephones from South Korea as the dependent variable, we obtain the following equation:

$$\ln IMtel = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon \quad \textbf{(6-4)}$$

As in the other equations, there are indications of heteroskedasticity in this equation, lessening the reliability of the different hypothesis tests performed.

Testing for heteroskedasticity H_0: The error term has a constant variance. F-test on the 5% level.		
Observed Value	Critical Value	Decision
37.968	2.295	Reject

Table 26 Testing for heteroskedasticity

In addition, as in the other equations, this equation has indications of autocorrelation as well.

Testing for positive autocorrelation H0: $\rho \leq 0$ (no positive autocorrelation). Durbin-Watson one-sided d test at 5% level of significance.		
Observed Value	Significance Points	Decision
0.892	d_L: 1.783 d_U: 1.857	Reject

Table 27 Testing for positive autocorrelation

This equation has a relatively good overall fit, meaning that the independent variables of the equation explains Japan's imports of telephones from South Korea relatively well, and the F-test shows that the overall fit of the equation is statistically significant as well.

Overall fit of equation	
R2	0.826
Adjusted R2	0.804

Testing of overall significance F-test of overall significance. H0: $\beta_1 = \beta_2 = \cdots = \beta_K = 0$ (all slope coefficients equal zero simultaneously)		
Observed Value	Critical Value	Decision
37.968	2.295	Reject

Table 28 Overall fit of equation and Testing of overall significance

6.2.2.1 Variables

There are only two statistically significant variables when using Japan's imports of telephones from South Korea as the dependent variable: Japan's capacity utilization rate, and South Korea's total exports minus its exports to Japan. As mentioned earlier, the heteroskedasticity and autocorrelation in the equation creates unreliability in the hypothesis tests, indicating that the decisions to reject or not reject the null hypothesis might be incorrectly made.

Test of significance
Two-tail test of significance. H0: $\beta=0$ (no linear relationship exists between the independent variable and the dependent variable)

Variable	Observed Value	Critical Value	Decision
GDPcap	0.776	2.011	Do not reject
CUR	-5.255	2.011	Reject
IM_{t-1}	0.718	2.011	Do not reject
SKEX	4.861	2.011	Reject
$Dummy_{pol1}$	0.225	2.011	Do not reject
$Dummy_{pol3}$	0.298	2.011	Do not reject

Table 29 Test of significance

Dummy Variables Representing Lower and Higher Levels of Political Tension

None of the dummies is statistically significant, not making it possible for us to say that there is a significant difference between the different levels of political tension. Although the dummies are not statistically significant, looking at the signs of the dummies is interesting as the signs in this industry are the opposite of what we expected, the same as in the equation with Japan's imports of mineral fuels as the dependent variable.

6.2.3 The Passenger Car Industry

With Japan's imports of passenger cars from South Korea as the dependent variable, we have the following equation:

$$\ln IMcars = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon \quad \textbf{(6-5)}$$

As in the other equations, this equation shows signs of heteroskedasticity.

Testing for heteroskedasticity
H_0: The error term has a constant variance. F-test on the 5% level.

Observed Value	Critical Value	Decision
6.124	2.295	Reject

Table 30 Test for heteroskedasticity

The Durbin-Watson test also indicates that there is autocorrelation present in the equation as well.

Testing for positive autocorrelation
H0: $\rho \leq 0$ (no positive autocorrelation). Durbin-Watsin one-sided d test at 5% level of significance.

Observed Value	Significance Points	Decision
0.822	d_L: 1.783 d_U: 1.857	Reject

Table 31 Test for positive autocorrelation

The overall fit of the equation is relatively low, indicating that the independent variables do not explain the dependent variable well. The overall fit of the equation is however statistically significant.

Overall fit of equation	
R2	0.434
Adjusted R2	0.363

Testing of overall significance
F-test of overall significance. H0: $\beta_1 = \beta_2 = \cdots = \beta_K = 0$ (all slope coefficients equal zero simultaneously)

Observed Value	Critical Value	Decision
6.124	2.295	Reject

Table 32 Overall fit of equation and Testing of overall significance

6.2.3.1 Variables

In this equation, three of the independent variables are indicated to be statistically significant; Japan's capacity utilization, and the two dummy variables.

Test of significance
Two-tail test of significance. H0: β=0 (no linear relationship exists between the independent avriable and the dependent variable)

Variable	Observed Value	Critical Value	Decision
GDPcap	0.692	2.011	Do not reject
CUR	2.635	2.011	Reject
IM_{t-1}	-0.627	2.011	Do not reject
SKEX	-1.424	2.011	Do not reject
$Dummy_{pol1}$	-2.786	2.011	Reject
$Dummy_{pol3}$	-3.063	2.011	Reject

Table 33 Test of Significance

Dummy Variable Representing High Levels of Political Tension

This variable is statistically significant, which means that there is a significant difference between high levels of political tension and intermediate levels of political tension. The estimated coefficient of this variable indicates that the median of Japan's imports of cars from South Korea during periods of high levels of political tension is 74% lower than during periods with the benchmark level of political tension. The sign of the estimated coefficient for this variable is negative, which is in comport with our expectations for this variable, and indicates that higher levels of political tensions leads to the median of Japan's imports of cars from South Korea being lower than it would be during a period with intermediate levels of political tension.

Dummy Variable Representing Low Levels of Political Tension

This variable is statistically significant as well, indicating that there is a significant difference between periods with high levels of political tension and periods with benchmark, intermediate levels of political tension, which suggests that the median of Japan's imports of passenger cars from South Korea is 73.23% lower during a period with high levels of political tension than the median of Japan's imports of passenger cars from South Korea during a period with intermediate, benchmark levels of political tension. The sign of the dummy variable representing high levels of political tension is the expected negative sign, but the sign of the estimated coefficient of the dummy variable representing low levels of political tension is also negative, the opposite of the sign we expected this coefficient to have.

6.2.4 The Beverages Industry

Using the independent variables of the basic model and the dummies representing different levels of political tension with Japan's imports of beverages from South Korea, we obtain the following equation:

$$\ln IMbev = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon \quad \textbf{(6-6)}$$

This equation shows signs of heteroskedasticity, indicating that coefficients and standard errors might be misestimated.

Testing for heteroskedasticity H_0: The error term has a constant variance. F-test on the 5% level.		
Observed Value	Critical Value	Decision
29.757	2.295	Reject

Table 34 Testing for heteroskedasticity

This equation has indications of autocorrelation being present.

Testing for positive autocorrelation H0: $\rho \leq 0$ (no positive autocorrelation). Durbin-Watson one-sided d test at 5% level of significance.		
Observed Value	Significance Points	Decision
1.496	d_L: 1.783 d_U: 1.857	Reject

Table 35 Testing for positive autocorrelation

The overall fit of the equation is relatively good, which means that it explains the independent variable Japan's imports of beverages from South Korea relatively well. The F-test also indicates that the equation is overall statistically significant, and that all coefficients in the equation therefore do not equal zero at the same time.

Overall fit of equation	
R2	0.788
Adjusted R2	0.762

Testing of overall significance
F-test of overall significance. H0: $\beta_1 = \beta_2 = \cdots = \beta_K = 0$ (all slope coefficients equal zero simultaneously)

Observed Value	Critical Value	Decision
29.757	2.295	Reject

Table 36 Overall fit of equation and Testing of overall significance

6.2.4.1 Variables

Three of the variables in this equation are statistically significant: Japan's capacity utilization rate, and the two dummies representing different levels of political tension. The heteroskedasticity and autocorrelation in the equation could lend doubt to whether the decision to reject the null hypothesis was correct or not.

Test of significance
Two-tail test of significance. H0: β=0 (no linear relationship exists between the independent variable and the dependent variable)

Variable	Observed Value	Critical Value	Decision
GDPcap	1.807	2.011	Do not reject
CUR	-3.425	2.011	Reject
IM_{t-1}	-0.984	2.011	Do not reject
SKEX	4.466	2.011	Reject
$Dummy_{pol1}$	3.936	2.011	Reject
$Dummy_{pol3}$	0.692	2.011	Do not reject

Table 37 Test of significance

<u>Dummy Variable representing High Levels of Political Tension</u>

The dummy variable representing high levels of political tension is statistically significant, indicating that it is significantly different from the intermediate, benchmark levels of political tension. Taking the antilog of the variable's estimated coefficient reveals that the median of Japan's imports of beverages from South Korea during periods with high levels of political tension is indicated to be 32.45% higher than the median of Japan's imports of beverages from South Korea during intermediate, benchmark levels of political tension. We expected this variable to have a negative sign, based on the theory that strained political relations have a negative impact of trade, but the variable, despite representing periods with high levels of political tension between Japan and South Korea, appear to have a positive impact on Japan's imports of beverages from South Korea.

Dummy Variable representing Low Levels of Political Tension

This variable is not statistically significant and it is therefore not possible to say that it is significantly different from the intermediate, benchmark levels of political tension. It does however have a positive sign, which is in comport with our expected sign for this variable.

7 Development of Imports

7.1 Total Imports

Japan's overall import, as visible from the graph below (figure 2), has grown most of the period (1999-2012), except during the financial crisis (2008-2009). Japan's total imports have increased from 1999 to 2012, both in constant prices and as percent of the country's GDP, showing an upward sloping trend indicating that Japan's imports are growing faster than its own production. The graph also indicates that Japan's imports from South Korea follow this general trend in Japan of increasing imports (OECD, 2010).

In 2011, South Korea was the sixth largest origin of imports for Japan, accounting for 4.7% of total commodity imports. The industry with the largest share of Japan's imports from South Korea the same year was the mineral fuels industry, which accounted for 20.7% of total imports from South Korea, followed by transistors, valves etc., which accounted for 8.1%, telecommunications equipment and parts, n.e.s., which accounted for 7.2% (UN, 2010).

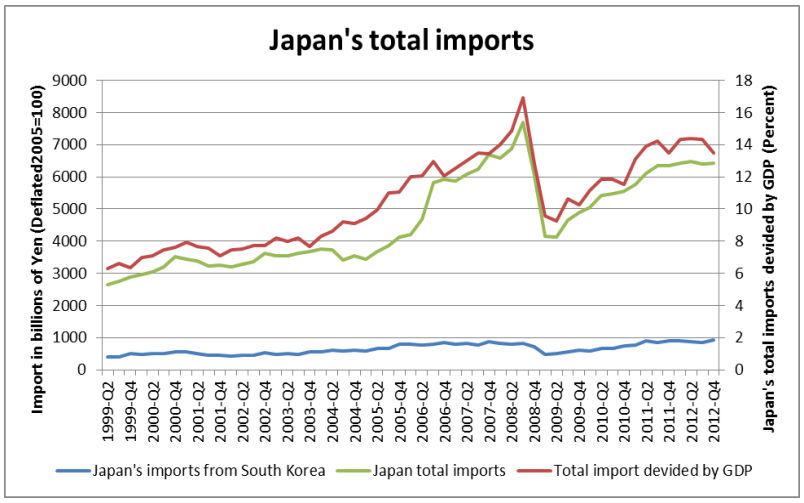

Figure 2 Japan's Total Imports from South Korea

Sources: OECD (2010), OECD (2013c), and Ministry of Finance Japan (2013b).

7.1.1 Japan's trade surplus with Korea

For both Japan and South Korea, the other country is an important trading partner, although the reliance on trade with the other country differs between the two. As a share of total commodity imports for the countries, Japan was clearly more important to South Korea as a source of imports in both 2011 and 1990 than South Korea was to Japan. When looking at the importance of the two countries as destinations of exports for the other country, the same clear difference in importance does not exist when comparing exports in 1990 and 2011. In 1990, a clear difference in importance of the other country as a destination of exports can be seen with South Korea being the destination of only 6.1% of Japan's commodity exports, and Japan being the destination of 19.4% of South Korea's commodity exports, but this clear difference in importance has disappeared in 2011, indicating that in 2011 South Korea was only slightly more important to Japan as a destination for commodity exports than Japan was to South Korea. The differences in the importance of the other country as a destination for exports and as a source of imports hint at the trade surplus Japan has with South Korea, and has had for at least the last twenty years (DOTS, 2013; UN, 2010).

The situation with Japan having a long established trade surplus with Korea has impacted relations between the two countries. South Korea has during the last decades tried to decrease its trade deficit against Japan, first by restricting imports of certain products from Japan, and more recently by encouraging the development of technology within key manufacturing areas, employing strategies such as the creation of industrial parks to attract Japanese companies manufacturing products within key areas, and by encouraging South Korean companies to export to Japan (Mukoyama, 2012).

7.2 The Mineral Fuels Industry

This industry includes mineral fuels, mineral oil and products of their distillation, bituminous substances, and mineral waxes (Ministry of Finance Japan, 2013a).

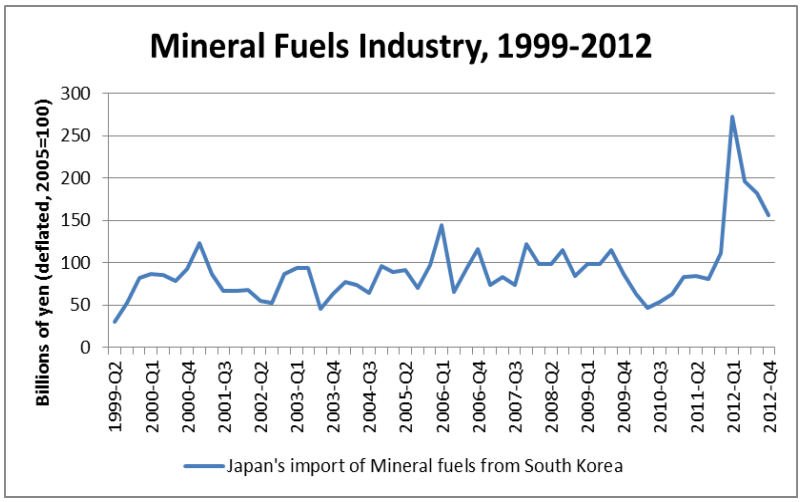

Figure 3 Mineral Fuels Industry
Source: Statistics Bureau (2011)

The graph (figure 3) indicates that the development of this industry over time is close to the development of the overall import from South Korea (figure 2), except for during 2012 when the imports from South Korea in this industry have decreased rapidly. A reason for why this industry appears to follow the overall imports from South Korea is likely that this industry is one of the major industries and that changes in this industry also affect the overall trade. In 2011, this industry represented 20, 7 % of Japan's total imports from South Korea (UN, 2010).

7.3 The Telephone industry

The telephone industry includes telephone sets, including telephones for cellular networks or other wireless networks, and other apparatus for transmission or reception for voice, image or data, including apparatus for communication in wired or wireless networks (such as local or wide area networks) (Ministry of Finance Japan, 2013a).

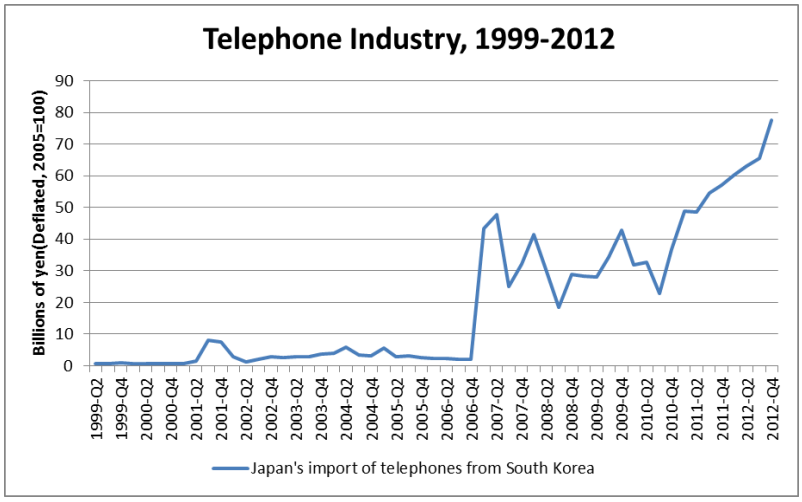

Figure 4 Telephone Industry
Source: Statistics Bureau (2011)

South Korean firms such as Samsung and LG have been highly competitive in the global market. In 2009, Samsung had the second largest global market share, followed by LG who had the third largest global market share in this industry. At the same time, they were not even in the top five in Japan as all top positions were held by domestic producers, led by Sharp and Panasonic. Among the foreign firms in Japan, the firm with the largest market share was Ericsson, which due to its joint-venture with Sony had the sixth largest market share overall in Japan (Nihon Keizai Shinbunsh, 2009). However, as the graph (figure 4) indicates, after the financial crisis in 2008-2009, the value of telephone imports from South Korea has increased rapidly.

Samsung entered the Japanese mobile telephone market in 2006, supplying handsets to the mobile phone provider Docomo, and in June 2011 Samsung Galaxy S II was the most sold mobile phone in Japan according to BCN, Inc., and even outnumbered the sales of the Iphone. According to James Chung, a Samsung spokesperson in Seoul, the majority of the firm's customers in Japan is women in their 20s and 30s, and Chung believes that it is the interest for South Korean stars which has become reflected in their purchases (Yasu & Shiraki, 2011).

7.4 The Passenger Car Industry

This graph shows the development of the overall number of newly registered passenger cars[14] from abroad and the units of newly registered South Korean passenger cars during the period 1999-2012.

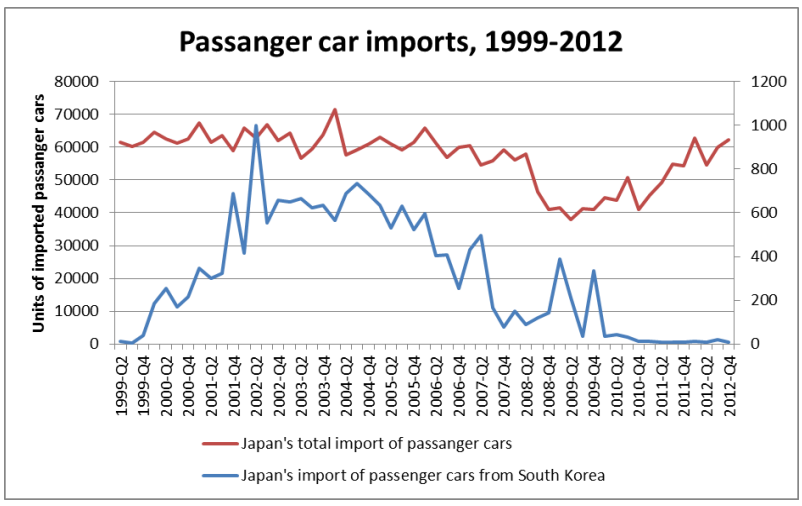

Figure 5 Passenger Car Industry
Source: Japan Automobile Importers Association (2012)

[14] Reimported Japanese cars manufactured abroad are included.

Japan has the largest market for vehicles in Asia, and the second largest market in the world. Foreign passenger cars, especially European cars, have been gaining popularity in Japan. The firm with the highest number of imported units between April 2012 and March 2013 was Volkswagen (57,622 units), followed by Mercedes-Benz (42,830 units), BMW (41,635 units) Audi (25,188 units), BMW mini (15,903 units), and Volvo (13,823 units). Altogether, there were 243,733 newly registered imported passenger cars during this period, of which 43 cars were from South Korea (Hyundai 38, Kia 3, and Ssangyong 2) (Japan Automobile Importers Association, 2012).

However, even if foreign cars are gaining popularity in Japan, the dominance of the many domestic brands such Toyota, Honda, Nissan, Suzuki, Mazda and Subaru is still controlling most of the market. One of the major reasons for why foreign car makers have trouble entering the Japanese market may be that Japan has the world's highest tax on imported cars, as high as 2 to 45 times that of Western nations; in addition, a consumer's tax is levied separately upon vehicle purchases (Japan Automobile Importers Association, 2012).

As indicated in the graph above (figure 5), South Korean cars only answer for a very small part of the newly registered cars. In 1999 and 2000, the imported passenger cars from South Korea were mainly Daewoo cars, while after the entry of Hyundai in 2001, almost all of the imported passenger cars from South Korea were Hyundai cars. Kia and Ssangyong only had around 3-10 newly registered cars each year during the period and Daewoo has gradually disappeared (Japan Automobile Importers Association, 2012). With the entry of Hyundai, the number of imported Korean cars went up slightly and but after only one year sales started to decline again. In 2009, Hyundai made the decision to leave the Japanese market due to poor sales results (Kim, 2009), selling only about 15,000 vehicles from 2001 to 2009 (Japan Automobile Importers Association, 2012). According to the official statement from the company when exiting the Japanese market, the firm would focus on more promising markets such as the Chinese, North American and European markets (Kim, 2009).

As mentioned above, most of the newly registered passenger cars in Japan were from BMW, Mercedes-Benz, and Volkswagen, i.e. famous brands with a high recognition level. Hyundai, on the other hand, entered Japan with a strategy of cheap cars and has suffered from an image of "cheap and of bad quality". Although Hyundai has managed to become the seventh largest car maker in the world (J-cast, 2006), raising the perceived quality of Hyundai cars in Japan appear to have been difficult, and one of the reasons for Hyundai's failure in Japan is

believed to be due to the poor brand image the company has in Japan, which has made Japanese people reluctant to purchase South Korean cars (Kim, 2009).

7.5 The Beverages Industry

The beverages industry includes alcoholic beverages as well as mineral water and vinegar (Ministry of Finance Japan, 2013a). In this commodity group, alcoholic beverages by far comprise the largest share (Statistics Bureau, 2011). As indicated by the graph (figure 6), the beverages industry appears to have regular seasonal variations.

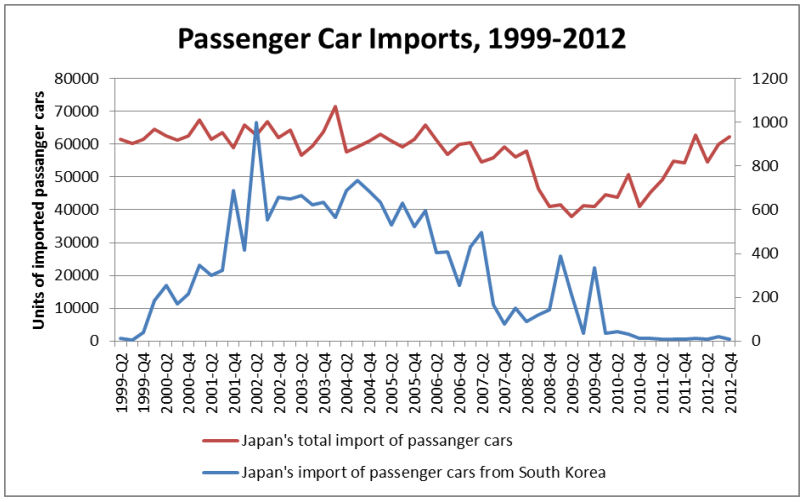

Figure 6 Beverages Industry
Source: Statistics Bureau (2011)

Although not apparent from the graph (figure 6), the market for alcoholic beverages in Japan has declined due to a growing health awareness and a slow economy (Culliney, 2011; Lee, 2012). These circumstances make it difficult to say if the decline in Japan's imports from South Korea in the beverages is due to changes in bilateral relations or if it is simply because the market itself has grown smaller. A spokesperson for the Japanese unit of Hite-Jinro, the largest producer of distilled liquor soju and beer in South Korea, admits that they had a decline in sales in Japan during August 2012, which was the first time since the establishment in 1988 such a decline was observed. The spokesperson also claims that some of the reasons for the decline in sales might be due to the strained relation between Japan and South Korea. However, "the main reason behind our falling revenue is that Japanese consumers do not drink as much alcohol as they used to due to the public's growing health awareness and the prolonged economic slump" (Lee, 2012).

8. Analysis

The gravity model suggests that geographically proximate countries trade more than geographically distant countries and that a positive relationship between trade and economic size exists (van Bergeijk & Brakman, 2010; Krugman & Obstfeld, 2009). In regarding to Japan and South Korea, this indicates that a substantial amount of trade should exist between the two countries. Additionally, according to the Uppsala model, firms have a propensity to use psychically proximate markets as "stepping stones" to more psychically distant markets (Johanson & Vahlne, 2009), suggesting that South Korean firms which have entered psychically distant markets should have entered a psychically proximate market, such as the Japanese market, first, before entering more psychically distant markets. Regarding Japan and South Korea, while both countries are important trade partners to the other country(DOTS, 2013; UN, 2010) there is also a substantial amount of unexhausted trade potential compared to the amount of trade the gravity model predicts which suggests significant barriers to trade (Sohn, 2005). The Uppsala model also suggests that established international South Korean firms, for example Samsung, Hyundai, and LG, would enter psychically proximate markets, such as Japan, before psychically distant markets, for example the U.S. Despite this, Samsung and LG have only begun entering the Japanese market recently. However, the Uppsala model was based on the internationalization process of Swedish firms to other European markets, and may therefore, as the results appear to indicate, not be applicable in the case of South Korea and Japan.

The results from the regression analysis suggests that during the selected period, from 1999 to 2012, Japan's imports from South Korea was not negatively affected by a higher level of political tension, which does not support the theories put forth by Pollins (1989) and Gowa and Mansfield (2004). Conversely, the regression analysis results indicate that a higher level of political tension had a positive impact on Japan's total imports from South Korea and its imports in the beverages industry, which supports the findings of Davis and Meunier (2011) regarding Japan and China. Furthermore, the results did not indicate that either a higher or lower level of political tension had an impact on Japan's imports from South Korea in the mineral fuels and telephone industries. The only industry, including Japan's total imports from South Korea, in which a higher level of political tension was negatively associated with imports, was in the passenger car industry, that is, the results of the regression analysis suggest that a higher level of political tension negatively affected Japan's imports of passenger cars from South Korea. In addition, the results also suggest that a lower level of

political tension had a negative impact on the imports of passenger cars. In regard to the passenger car industry, one firm, Hyundai, comprised the majority of Japan's imports from South Korea, closely linking the results from this industry to the performance of an individual firm, Hyundai.

Excluding the passenger car industry, the results indicated no association (at a 5% significance level) between imports and a lower level of political tension. These results, in combination with the indicated positive effect of a higher level of political tension on total imports as well as on imports in the beverages industry, and the indicated negative effect of both a higher and a lower level of political tension on imports in the passenger car industry, lead us to reject the theory that political tension negatively affects imports from South Korea. Kastner (2007) argued that in countries where firms have a strong position, and thereby possess the ability to affect politicians and additionally have strong economic incentives to do so, policymakers face a tradeoff between creating policies restricting trade and losing support domestically Davis and Meunier, on the other hand, showed that in the case of Japan and China, only minimal lobbying existed, and that the lobbying which existed had almost no effect on policymakers (Davis & Meunier, 2011). Many of the events creating tension between Japan and South Korea were the same as those creating tension between Japan and China in the research done by Davis and Meunier and therefore, Davis and Meunier shows that lobbying does not appear to be the reason that trade was not affected by the tension. Davis and Meunier (2011) argue that sunk costs may be a factor that make the influence of political tension less severe, since sunk costs associated with market research and the creation of business relations can create incentives for firms to not react to political tension, and that consumers also can face sunk costs in the form of, for example, market research and emotional costs due to brand loyalty. These sunk costs could make consumers, as well as firms, less likely to react to political tension between Japan and South Korea.

There appear to exist several factors, excluding political tension, which have affected Japan's imports from South Korea, both in total imports and imports in specific industries. One such factor could be the apparent general upward-sloping trend of Japan's total imports and imports growing faster than production (OECD, 2013). This trend might reflect a need or demand in Japan for products domestic firms cannot fulfill, which could lead to an increase in imports from all sources.

Another factor which could have affected Japan's imports from South Korea is the Korean Wave or the Hallyu wave. According to our qualitative research, despite the on-going tension between 2004 and 2006, the cultural and economic relations were still on the good side (Kang & Lee, 2006; Cassegård & Nordeborg, 2012) which appears to have helped create a positive view of South Korea in Japan, and business leaders from major firms including LG, Samsung, and Hyundai, believe that their sales have or will benefit from the upswing of South Korea's image in Japan. The ongoing cultural exchange between Japan and Korea and South Korean TV dramas becoming popular in Japan may have helped counterbalance the existing political tension during the researched period, which is supported by James Shung, a spokesperson for Samsung, claiming that the interest in Korean pop idols in Japan is reflected in the demand of the firm's products (Yasu & Shiraki, 2011).

Moreover, both Lee, the president of LG's Japan unit (Yasu & Shiraki, 2011), and Park, the President of Hyundai's Japan unit (J-Cast Business News, 2006), claim that Japan is a difficult market to enter because of the high demand of quality, and Kim (2009) suggests that one reason for Hyundai's failure in Japan was due to the low brand value of the firm in Japan. This also relates to statements made by Swedish firms, for example a statement made by the CEO of Astra Tech, Peter Selley, that Swedish firms were helped by the reputation of good quality of Swedish firms (Eriksson & Östlund, 2012).

Reputed firms like Samsung, LG and Hyundai have been forced out of the Japanese market, but for example Samsung have been able to re-enter the telephone market with new strategies and are planning to re-enter the TV-market again in 2013, which it was forced out of in 2007 (Yonhap News Agency, 2011). The South Korean firms, of which several are relatively late arrivals to the Japanese market compared to many of the Western firms, may therefore not have had enough time to build a strong brand value linked to quality in Japan; this factor, rather than political tension, might be a reason for the trouble South Korean firms appear to experience on the Japanese market. Not only South Korean firms have faced difficulties entering the Japanese market, of which some, such as Samsung and Hyundai, have attempted to enter once and was subsequently forced out. Well established firms such as IKEA have also attempted to enter the Japanese market without success and are now making a second attempt (Wijers-Hasegawa, 2006).

9. Conclusion

The results of the quantitative research, that is, the results of the regression analysis, indicate that, during the selected period, political tension have not affected Japan's imports from South Korea. The background for our research was a hypothesis which was similar to that of Pollins, that is, trade is negatively affected by political tension. However, our research does not appear to suggest any proof of that hypothesis, leading us to, in the case of Japan's import from South Korea during the period from 1999 to 2012, reject this theory.

From our qualitative research, we found that Japan is a market that is difficult to enter due to the high demand of quality, which rather than the political tension may have been a reason for the absence of South Korean brands in Japan. We also found that South Korean firms believe that the cultural exchange and the popularity of South Korean idols in Japan have helped raise the image of South Korea inside Japan, and therefore contributed to the promotion of purchases of South Korean products in Japan.

Suggestion for future research

In our research we examined whether changes in political tension have affected Japan's imports from South Korea during the period from 1999 to 2012, and our results suggest that political tension did not negatively affect imports during this period. However, in the aftermath of the recent political disputes during 2012, including the visit to the Takeshima/Dokdo islands by the former South Korean president Lee Myung-Bak, the public opinion in Japan regarding South Korea has worsened along with heightened political tension, and Japan-South Korea analysts believe that these political disputes will affect future bilateral trade (Lee, 2012). It would have been interesting to investigate whether this will indeed hold true, but as our data only covers the period 1999-2012, and our aim with the research was not to try to predict the future, we are not able draw any conclusions regarding the effects on imports from political tension after the year 2012. Our qualitative part of the research also indicated that the cultural exchange may have been a factor affecting imports. A suggestion for future research is therefore to examine whether the Hallyu wave has had a significant impact on Japan's imports from South Korea.

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Appendix

Regression Analysis Results

Basic Model: With Time Variable

$\ln IM = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \beta_5 lnt + \epsilon$

Descriptive Statistics

	Mean	Std. Deviation	N
Japan's total imports from South Korea	20,2599	,24968	55
Japan's GDP per capita	6,8832	,04682	55
Lagged version of Japan's total imports from South Korea	20,2426	,25590	55
Japan's capacity utilization rate	,9320	,08449	55
South Korea's total exports minus its exports to Japan	28,4678	,43050	55
Time variable	3,0605	,89538	55

Correlations

		Japan's total imports from South Korea	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
Pearson Correlation	Japan's total imports from South Korea	1,000	,809	,925	,268
	Japan's GDP per capita	,809	1,000	,668	,241
	Lagged version of Japan's total imports from South Korea	,925	,668	1,000	,179
	Japan's capacity utilization rate	,268	,241	,179	1,000
	South Korea's total exports minus its exports to Japan	,891	,742	,850	,005
	Time variable	,736	,639	,765	-,151
Sig. (1-tailed)	Japan's total imports from South Korea	.	,000	,000	,024
	Japan's GDP per capita	,000	.	,000	,038
	Lagged version of Japan's total imports from South Korea	,000	,000	.	,095
	Japan's capacity utilization rate	,024	,038	,095	.
	South Korea's total exports minus its exports to Japan	,000	,000	,000	,487
	Time variable	,000	,000	,000	,136
N	Japan's total imports from South Korea	55	55	55	55
	Japan's GDP per capita	55	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55	55
	Japan's capacity utilization rate	55	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55	55
	Time variable	55	55	55	55

Correlations

		South Korea's total exports minus its exports to Japan	Time variable
Pearson Correlation	Japan's total imports from South Korea	,891	,736
	Japan's GDP per capita	,742	,639
	Lagged version of Japan's total imports from South Korea	,850	,765
	Japan's capacity utilization rate	,005	-,151
	South Korea's total exports minus its exports to Japan	1,000	,890
	Time variable	,890	1,000
Sig. (1-tailed)	Japan's total imports from South Korea	,000	,000
	Japan's GDP per capita	,000	,000
	Lagged version of Japan's total imports from South Korea	,000	,000

N	Japan's capacity utilization rate	,487	,136
	South Korea's total exports minus its exports to Japan	.	,000
	Time variable	,000	.
	Japan's total imports from South Korea	55	55
	Japan's GDP per capita	55	55
	Lagged version of Japan's total imports from South Korea	55	55
	Japan's capacity utilization rate	55	55
	South Korea's total exports minus its exports to Japan	55	55
	Time variable	55	55

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,975[a]	,950	,945	,05860	1,062

a. Predictors: (Constant), Time variable, Japan's capacity utilization rate, Japan's GDP per capita, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan
b. Dependent Variable: Japan's total imports from South Korea

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,198	5	,640	186,235	,000[b]
	Residual	,168	49	,003		
	Total	3,366	54			

a. Dependent Variable: Japan's total imports from South Korea
b. Predictors: (Constant), Time variable, Japan's capacity utilization rate, Japan's GDP per capita, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-6,193	1,788		-3,464	,001		
	Japan's GDP per capita	1,230	,272	,231	4,517	,000	,392	2,553
	Lagged version of Japan's total imports from South Korea	,513	,064	,526	8,060	,000	,240	4,169
	Japan's capacity utilization rate	,252	,115	,085	2,196	,033	,678	1,474
	South Korea's total exports minus its exports to Japan	,265	,054	,457	4,931	,000	,119	8,431
	Time variable	-,058	,021	-,208	-2,742	,008	,178	5,619

a. Dependent Variable: Japan's total imports from South Korea

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
1	1	5,929	1,000	,00	,00	,00	,00
	2	,065	9,548	,00	,00	,00	,01
	3	,006	32,144	,00	,00	,00	,72
	4	3,507E-005	411,173	,09	,12	,62	,07
	5	2,117E-005	529,204	,14	,00	,29	,00
	6	1,043E-005	753,860	,77	,88	,09	,20

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions	
		South Korea's total exports minus its exports to Japan	Time variable
1	1	,00	,00

2	,00	,18
3	,00	,02
4	,02	,31
5	,86	,42
6	,11	,07

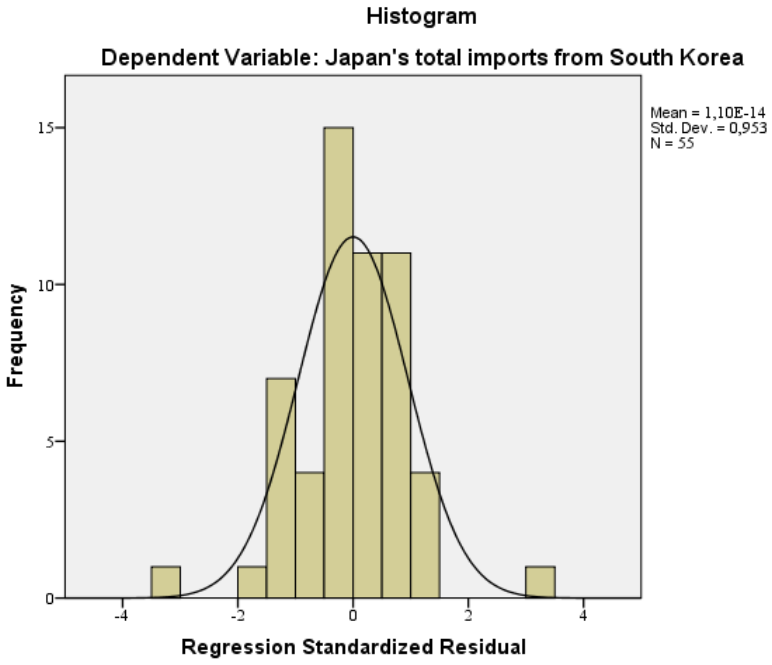
a. Dependent Variable: Japan's total imports from South Korea

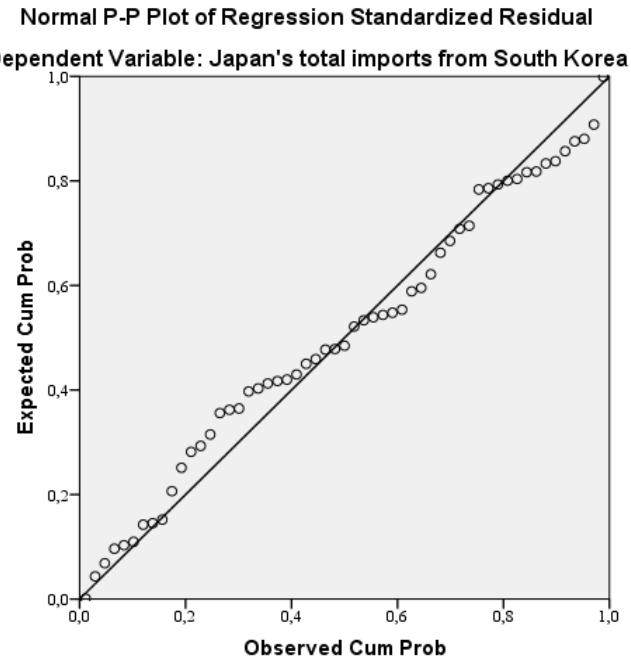
Residuals Statistics[a]

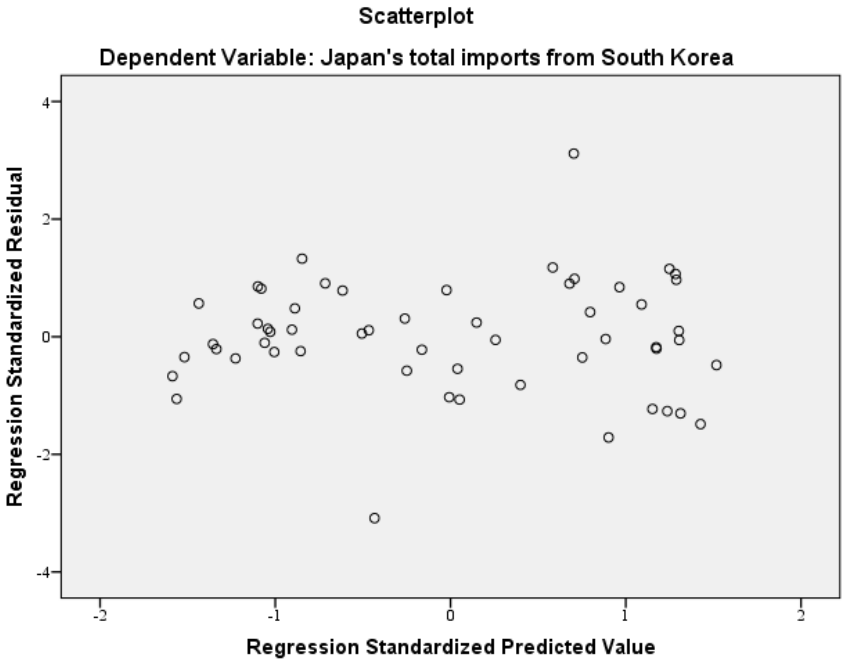
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	19,8737	20,6291	20,2599	,24336	55
Residual	-,18078	,18260	,00000	,05583	55
Std. Predicted Value	-1,587	1,517	,000	1,000	55
Std. Residual	-3,085	3,116	,000	,953	55

a. Dependent Variable: Japan's total imports from South Korea

Charts




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Japan's total imports from South Korea
Expected Cum Prob
Observed Cum Prob
0,0
0,2
0,4
0,6
0,8
1,0


Scatterplot
Dependent Variable: Japan's total imports from South Korea
Regression Standardized Residual
Regression Standardized Predicted Value
4
2
0
-2
-4
-2
-1
0
1
2

Basic Model: Without Time Variable

$\ln IM = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \epsilon$

Descriptive Statistics

	Mean	Std. Deviation	N
Japan's total imports from South Korea	20,2599	,24968	55
Japan's GDP per capita	6,8832	,04682	55
Lagged version of Japan's total imports from South Korea	20,2426	,25590	55
Japan's capacity utilization rate	,9320	,08449	55
South Korea's total exports minus its exports to Japan	28,4678	,43050	55

Correlations

		Japan's total imports from South Korea	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
Pearson Correlation	Japan's total imports from South Korea	1,000	,809	,925	,268
	Japan's GDP per capita	,809	1,000	,668	,241
	Lagged version of Japan's total imports from South Korea	,925	,668	1,000	,179
	Japan's capacity utilization rate	,268	,241	,179	1,000
	South Korea's total exports minus its exports to Japan	,891	,742	,850	,005
Sig. (1-tailed)	Japan's total imports from South Korea	.	,000	,000	,024
	Japan's GDP per capita	,000	.	,000	,038
	Lagged version of Japan's total imports from South Korea	,000	,000	.	,095
	Japan's capacity utilization rate	,024	,038	,095	.
	South Korea's total exports minus its exports to Japan	,000	,000	,000	,487
N	Japan's total imports from South Korea	55	55	55	55
	Japan's GDP per capita	55	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55	55
	Japan's capacity utilization rate	55	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55	55

Correlations

		South Korea's total exports minus its exports to Japan
Pearson Correlation	Japan's total imports from South Korea	,891
	Japan's GDP per capita	,742
	Lagged version of Japan's total imports from South Korea	,850
	Japan's capacity utilization rate	,005
	South Korea's total exports minus its exports to Japan	1,000
Sig. (1-tailed)	Japan's total imports from South Korea	,000
	Japan's GDP per capita	,000
	Lagged version of Japan's total imports from South Korea	,000
	Japan's capacity utilization rate	,487
	South Korea's total exports minus its exports to Japan	.
N	Japan's total imports from South Korea	55

	Japan's GDP per capita	55
	Lagged version of Japan's total imports from South Korea	55
	Japan's capacity utilization rate	55
	South Korea's total exports minus its exports to Japan	55

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,971[a]	,942	,938	,06231	1,020

a. Predictors: (Constant), South Korea's total exports minus its exports to Japan, Japan's capacity utilization rate, Japan's GDP per capita, Lagged version of Japan's total imports from South Korea
b. Dependent Variable: Japan's total imports from South Korea

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,172	4	,793	204,272	,000[b]
	Residual	,194	50	,004		
	Total	3,366	54			

a. Dependent Variable: Japan's total imports from South Korea
b. Predictors: (Constant), South Korea's total exports minus its exports to Japan, Japan's capacity utilization rate, Japan's GDP per capita, Lagged version of Japan's total imports from South Korea

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-3,051	1,459		-2,091	,042		
	Japan's GDP per capita	1,186	,289	,222	4,104	,000	,393	2,544
	Lagged version of Japan's total imports from South Korea	,483	,067	,495	7,249	,000	,247	4,051
	Japan's capacity utilization rate	,368	,113	,125	3,252	,002	,786	1,272
	South Korea's total exports minus its exports to Japan	,176	,046	,304	3,864	,000	,186	5,368

a. Dependent Variable: Japan's total imports from South Korea

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
1	1	4,994	1,000	,00	,00	,00	,00
	2	,006	28,096	,00	,00	,00	,80
	3	,000	194,011	,11	,01	,03	,00
	4	2,714E-005	428,962	,01	,08	,87	,04
	5	1,093E-005	676,026	,88	,91	,10	,16

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions
		South Korea's total exports minus its exports to Japan
1	1	,00
	2	,00
	3	,11
	4	,40
	5	,49

a. Dependent Variable: Japan's total imports from South Korea

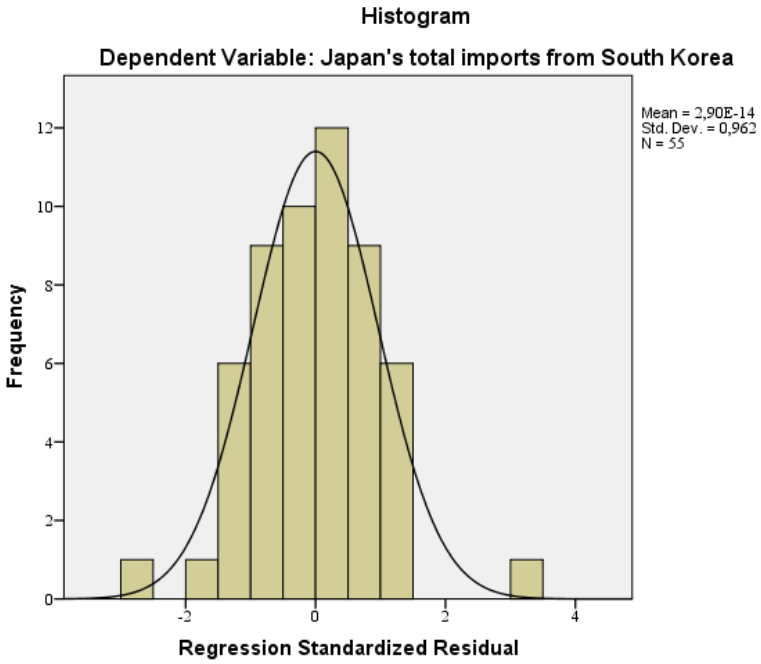
Residuals Statistics[a]

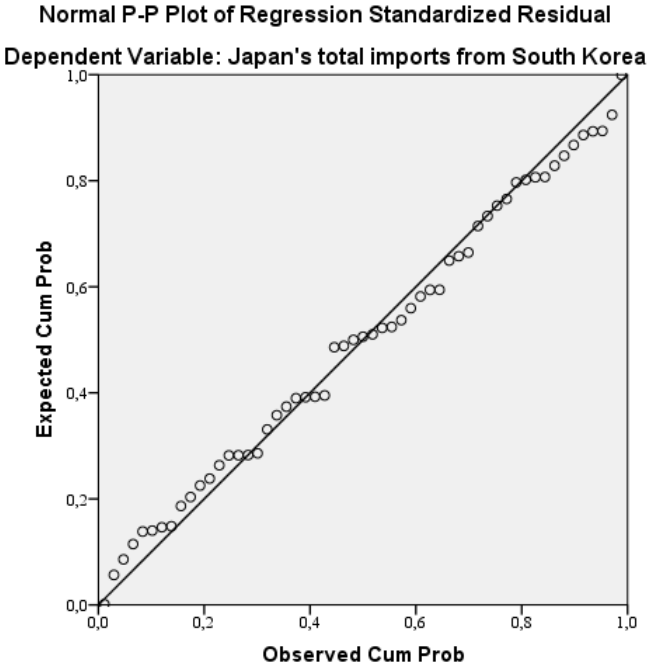
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	19,7787	20,6179	20,2599	,24238	55
Residual	-,18571	,20331	,00000	,05996	55

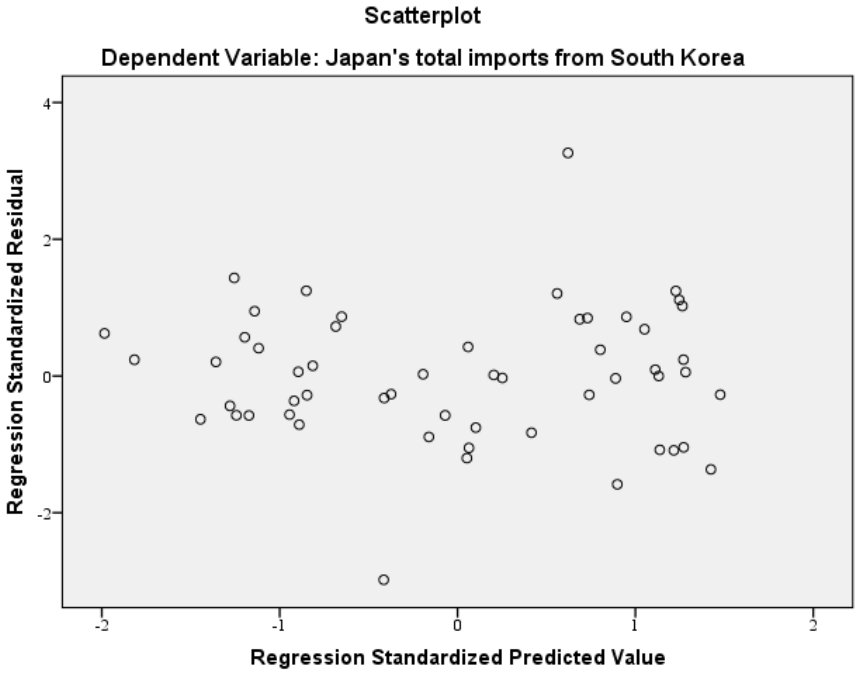
Std. Predicted Value	-1,985	1,477	,000	1,000	55
Std. Residual	-2,981	3,263	,000	,962	55

a. Dependent Variable: Japan's total imports from South Korea

Charts







Basic Model with Dummy Variables for Political Tension: Total Imports

$lnIM = \beta_0 + \beta_1 lnGDPcap + \beta_2 CUR + \beta_3 lnIM_{t-1} + \beta_4 lnSKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon$

Descriptive Statistics

	Mean	Std. Deviation	N
Japan's total imports from South Korea	20,2599	,24968	55
Japan's GDP per capita	6,8832	,04682	55
Lagged version of Japan's total imports from South Korea	20,2426	,25590	55
Japan's capacity utilization rate	,9320	,08449	55
South Korea's total exports minus its exports to Japan	28,4678	,43050	55
Dummy: High levels of political tension	,24	,429	55
Dummy: Low levels of political tension	,40	,494	55

Correlations

		Japan's total imports from South Korea	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
Pearson Correlation	Japan's total imports from South Korea	1,000	,809	,925	,268
	Japan's GDP per capita	,809	1,000	,668	,241
	Lagged version of Japan's total imports from South Korea	,925	,668	1,000	,179
	Japan's capacity utilization rate	,268	,241	,179	1,000
	South Korea's total exports minus its exports to Japan	,891	,742	,850	,005
	Dummy: High levels of political tension	,399	,187	,390	-,127
	Dummy: Low levels of political tension	-,296	-,075	-,403	,102
Sig. (1-tailed)	Japan's total imports from South Korea	.	,000	,000	,024
	Japan's GDP per capita	,000	.	,000	,038
	Lagged version of Japan's total imports from South Korea	,000	,000	.	,095

	Japan's capacity utilization rate	,024	,038	,095	.
	South Korea's total exports minus its exports to Japan	,000	,000	,000	,487
	Dummy: High levels of political tension	,001	,086	,002	,177
	Dummy: Low levels of political tension	,014	,294	,001	,230
	Japan's total imports from South Korea	55	55	55	55
	Japan's GDP per capita	55	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55	55
N	Japan's capacity utilization rate	55	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55	55
	Dummy: High levels of political tension	55	55	55	55
	Dummy: Low levels of political tension	55	55	55	55

Correlations

		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
Pearson Correlation	Japan's total imports from South Korea	,891	,399	-,296
	Japan's GDP per capita	,742	,187	-,075
	Lagged version of Japan's total imports from South Korea	,850	,390	-,403
	Japan's capacity utilization rate	,005	-,127	,102
	South Korea's total exports minus its exports to Japan	1,000	,278	-,262
	Dummy: High levels of political tension	,278	1,000	-,454
	Dummy: Low levels of political tension	-,262	-,454	1,000
Sig. (1-tailed)	Japan's total imports from South Korea	,000	,001	,014
	Japan's GDP per capita	,000	,086	,294
	Lagged version of Japan's total imports from South Korea	,000	,002	,001
	Japan's capacity utilization rate	,487	,177	,230
	South Korea's total exports minus its exports to Japan	.	,020	,026
	Dummy: High levels of political tension	,020	.	,000
	Dummy: Low levels of political tension	,026	,000	.
N	Japan's total imports from South Korea	55	55	55
	Japan's GDP per capita	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55
	Japan's capacity utilization rate	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55
	Dummy: High levels of political tension	55	55	55
	Dummy: Low levels of political tension	55	55	55

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,977[a]	,954	,949	,05662	1,161

a. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan
b. Dependent Variable: Japan's total imports from South Korea

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,213	6	,535	167,007	,000[b]
	Residual	,154	48	,003		
	Total	3,366	54			

a. Dependent Variable: Japan's total imports from South Korea
b. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1,993	1,360		-1,465	,149		
	Japan's GDP per capita	1,133	,267	,212	4,239	,000	,379	2,636
	Lagged version of Japan's total imports from South Korea	,411	,069	,422	5,983	,000	,192	5,214
	Japan's capacity utilization rate	,455	,107	,154	4,254	,000	,726	1,378
	South Korea's total exports minus its exports to Japan	,200	,042	,344	4,732	,000	,180	5,556
	Dummy: High levels of political tension	,075	,021	,129	3,509	,001	,708	1,412
	Dummy: Low levels of political tension	,011	,019	,023	,600	,551	,673	1,486

a. Dependent Variable: Japan's total imports from South Korea

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
1	1	5,673	1,000	,00	,00	,00	,00
	2	1,000	2,382	,00	,00	,00	,00
	3	,321	4,207	,00	,00	,00	,00
	4	,006	30,404	,00	,00	,00	,76
	5	,000	224,179	,13	,01	,02	,00
	6	2,230E-005	504,323	,00	,12	,88	,07
	7	1,063E-005	730,547	,87	,87	,11	,17

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions		
		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
1	1	,00	,00	,01
	2	,00	,34	,15
	3	,00	,55	,69
	4	,00	,02	,00
	5	,15	,04	,04
	6	,35	,03	,10
	7	,50	,03	,00

a. Dependent Variable: Japan's total imports from South Korea

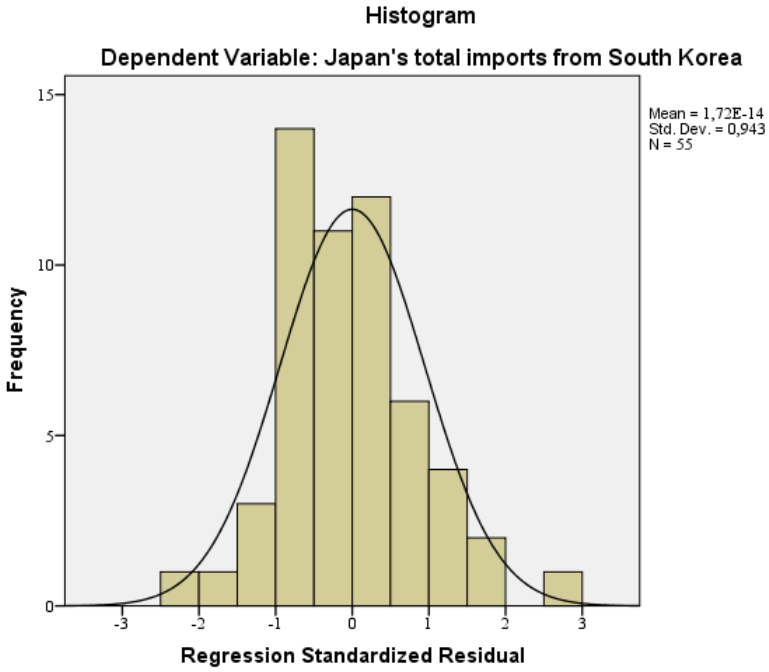
Residuals Statistics[a]

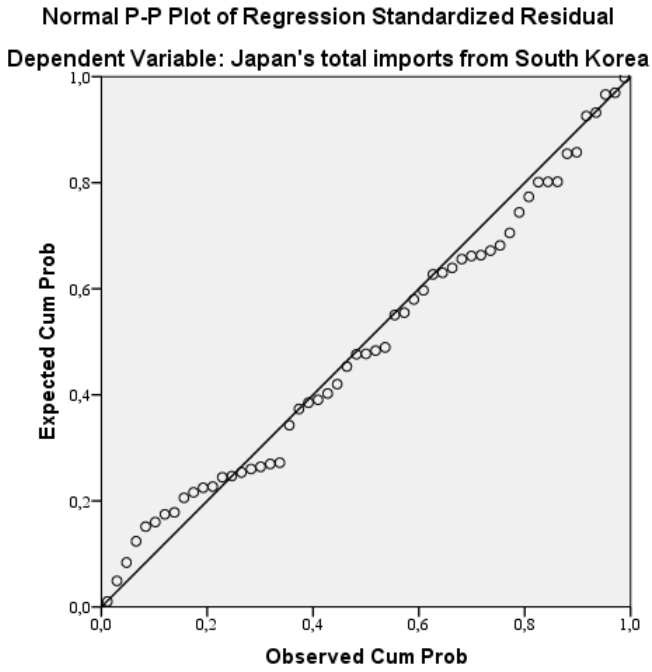
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	19,7948	20,6075	20,2599	,24391	55

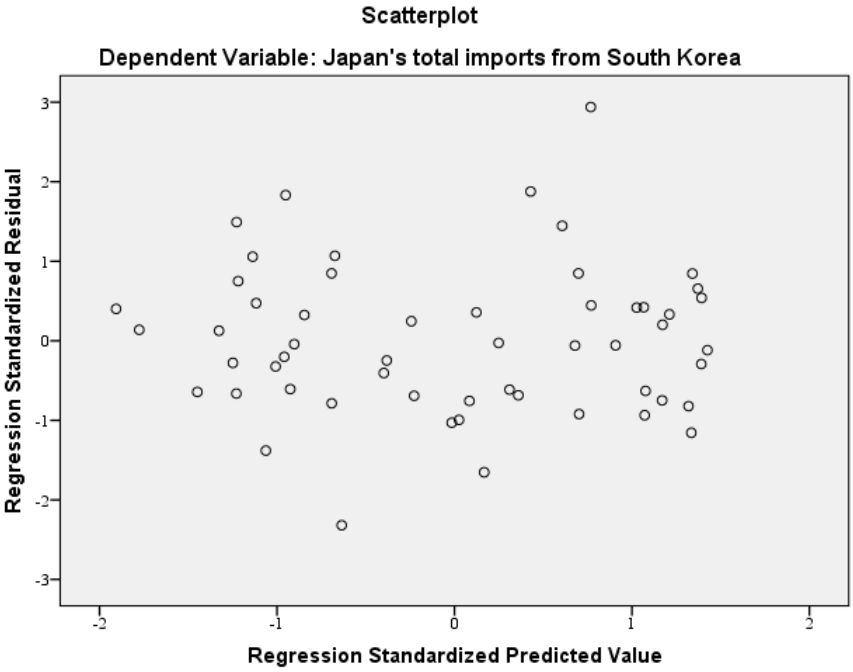
Residual	-,13131	,16643	,00000	,05338	55
Std. Predicted Value	-1,907	1,425	,000	1,000	55
Std. Residual	-2,319	2,939	,000	,943	55

a. Dependent Variable: Japan's total imports from South Korea

Charts







Basic Model with Dummy Variables for Political Tension: Imports in the Beverages Industry

$$\ln IMbev = \beta_0 + \beta_1 \ln GDPcap + \beta_2 CUR + \beta_3 \ln IM_{t-1} + \beta_4 \ln SKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
Japan's imports from South Korea in the beverages industry	15,2511	,38785	55
Japan's GDP per capita	6,8832	,04682	55
Lagged version of Japan's total imports from South Korea	20,2426	,25590	55
Japan's capacity utilization rate	,9320	,08449	55
South Korea's total exports minus its exports to Japan	28,4678	,43050	55
Dummy: High levels of political tension	,24	,429	55
Dummy: Low levels of political tension	,40	,494	55

Correlations

		Japan's imports from South Korea in the beverages industry	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
Pearson Correlation	Japan's imports from South Korea in the beverages industry	1,000	,604	,626	-,278
	Japan's GDP per capita	,604	1,000	,668	,241
	Lagged version of Japan's total imports from South Korea	,626	,668	1,000	,179
	Japan's capacity utilization rate	-,278	,241	,179	1,000

	South Korea's total exports minus its exports to Japan	,788	,742	,850	,005
	Dummy: High levels of political tension	,492	,187	,390	-,127
	Dummy: Low levels of political tension	-,250	-,075	-,403	,102
	Japan's imports from South Korea in the beverages industry	.	,000	,000	,020
	Japan's GDP per capita	,000	.	,000	,038
	Lagged version of Japan's total imports from South Korea	,000	,000	.	,095
Sig. (1-tailed)	Japan's capacity utilization rate	,020	,038	,095	.
	South Korea's total exports minus its exports to Japan	,000	,000	,000	,487
	Dummy: High levels of political tension	,000	,086	,002	,177
	Dummy: Low levels of political tension	,033	,294	,001	,230
	Japan's imports from South Korea in the beverages industry	55	55	55	55
	Japan's GDP per capita	55	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55	55
N	Japan's capacity utilization rate	55	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55	55
	Dummy: High levels of political tension	55	55	55	55
	Dummy: Low levels of political tension	55	55	55	55

Correlations

		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
Pearson Correlation	Japan's imports from South Korea in the beverages industry	,788	,492	-,250
	Japan's GDP per capita	,742	,187	-,075
	Lagged version of Japan's total imports from South Korea	,850	,390	-,403
	Japan's capacity utilization rate	,005	-,127	,102
	South Korea's total exports minus its exports to Japan	1,000	,278	-,262
	Dummy: High levels of political tension	,278	1,000	-,454
	Dummy: Low levels of political tension	-,262	-,454	1,000
Sig. (1-tailed)	Japan's imports from South Korea in the beverages industry	,000	,000	,033
	Japan's GDP per capita	,000	,086	,294
	Lagged version of Japan's total imports from South Korea	,000	,002	,001
	Japan's capacity utilization rate	,487	,177	,230
	South Korea's total exports minus its exports to Japan	.	,020	,026
	Dummy: High levels of political tension	,020	.	,000
	Dummy: Low levels of political tension	,026	,000	.
N	Japan's imports from South Korea in the beverages industry	55	55	55
	Japan's GDP per capita	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55
	Japan's capacity utilization rate	55	55	55

South Korea's total exports minus its exports to Japan	55	55	55
Dummy: High levels of political tension	55	55	55
Dummy: Low levels of political tension	55	55	55

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,888[a]	,788	,762	,18936	1,496

a. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan
b. Dependent Variable: Japan's imports from South Korea in the beverages industry

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,402	6	1,067	29,757	,000[b]
	Residual	1,721	48	,036		
	Total	8,123	54			

a. Dependent Variable: Japan's imports from South Korea in the beverages industry
b. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-8,160	4,549		-1,794	,079		
	Japan's GDP per capita	1,614	,894	,195	1,807	,077	,379	2,636
	Lagged version of Japan's total imports from South Korea	-,226	,230	-,149	-,984	,330	,192	5,214
	Japan's capacity utilization rate	-1,226	,358	-,267	-3,425	,001	,726	1,378
	South Korea's total exports minus its exports to Japan	,630	,141	,699	4,466	,000	,180	5,556
	Dummy: High levels of political tension	,281	,071	,311	3,936	,000	,708	1,412
	Dummy: Low levels of political tension	,044	,064	,056	,692	,492	,673	1,486

a. Dependent Variable: Japan's imports from South Korea in the beverages industry

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
1	1	5,673	1,000	,00	,00	,00	,00
	2	1,000	2,382	,00	,00	,00	,00
	3	,321	4,207	,00	,00	,00	,00
	4	,006	30,404	,00	,00	,00	,76
	5	,000	224,179	,13	,01	,02	,00
	6	2,230E-005	504,323	,00	,12	,88	,07
	7	1,063E-005	730,547	,87	,87	,11	,17

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions		
		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
1	1	,00	,00	,01
	2	,00	,34	,15

3	,00	,55	,69
4	,00	,02	,00
5	,15	,04	,04
6	,35	,03	,10
7	,50	,03	,00

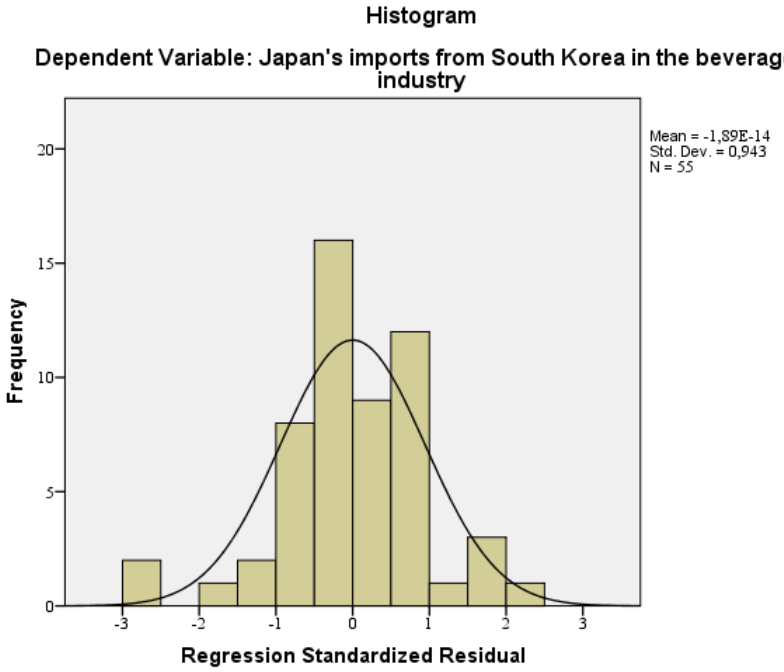
a. Dependent Variable: Japan's imports from South Korea in the beverages industry

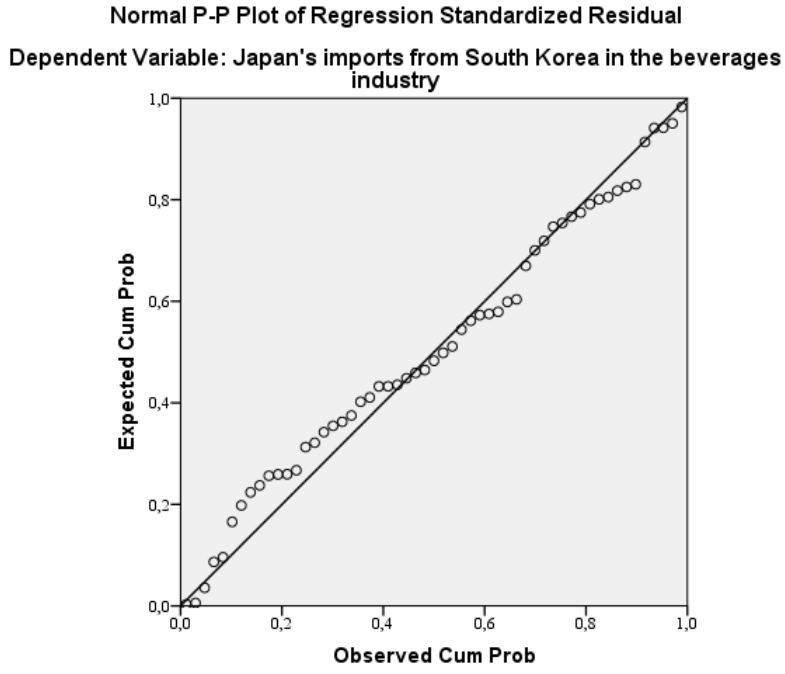
Residuals Statistics[a]

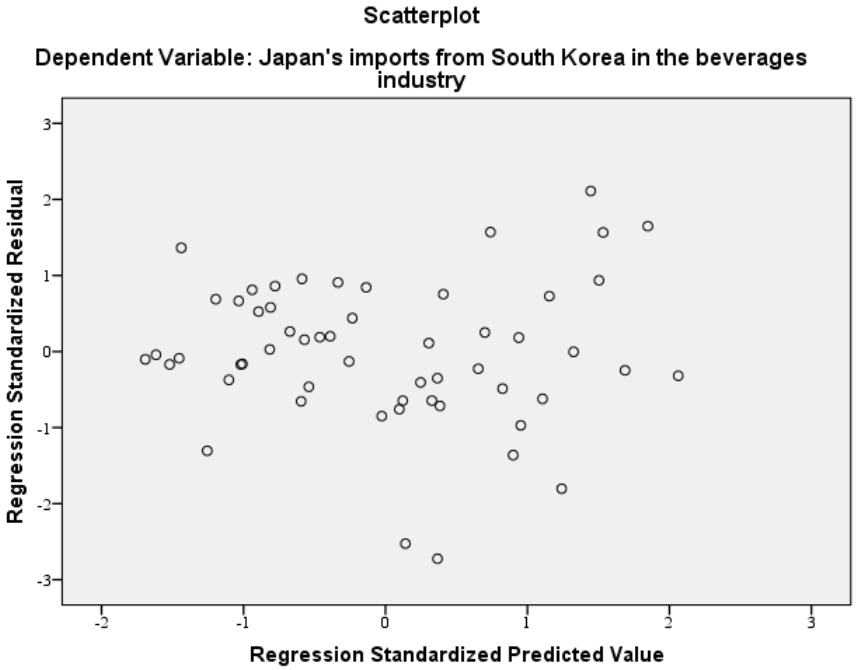
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	14,6685	15,9613	15,2511	,34432	55
Residual	-,51588	,39965	,00000	,17853	55
Std. Predicted Value	-1,692	2,062	,000	1,000	55
Std. Residual	-2,724	2,111	,000	,943	55

a. Dependent Variable: Japan's imports from South Korea in the beverages industry

Charts







Basic Model with Dummy Variables for Political Tension: Imports in the Passenger Car Industry

$$lnIMcars = \beta_0 + \beta_1 lnGDPcap + \beta_2 CUR + \beta_3 lnIM_{t-1} + \beta_4 lnSKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
Japan's imports from South Korea in the passenger car industry	4,9733	1,60598	55
Japan's GDP per capita	6,8832	,04682	55
Lagged version of Japan's total imports from South Korea	20,2426	,25590	55
Japan's capacity utilization rate	,9320	,08449	55
South Korea's total exports minus its exports to Japan	28,4678	,43050	55
Dummy: High levels of political tension	,24	,429	55
Dummy: Low levels of political tension	,40	,494	55

Correlations

		Japan's imports from South Korea in the passenger car industry	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
Pearson Correlation	Japan's imports from South Korea in the passenger car industry	1,000	-,209	-,301	,340
	Japan's GDP per capita	-,209	1,000	,668	,241
	Lagged version of Japan's total imports from South Korea	-,301	,668	1,000	,179
	Japan's capacity utilization rate	,340	,241	,179	1,000
	South Korea's total exports minus its exports to Japan	-,399	,742	,850	,005

	Dummy: High levels of political tension	-,357	,187	,390	-,127
	Dummy: Low levels of political tension	-,059	-,075	-,403	,102
	Japan's imports from South Korea in the passenger car industry	.	,063	,013	,005
	Japan's GDP per capita	,063	.	,000	,038
	Lagged version of Japan's total imports from South Korea	,013	,000	.	,095
Sig. (1-tailed)	Japan's capacity utilization rate	,005	,038	,095	.
	South Korea's total exports minus its exports to Japan	,001	,000	,000	,487
	Dummy: High levels of political tension	,004	,086	,002	,177
	Dummy: Low levels of political tension	,335	,294	,001	,230
	Japan's imports from South Korea in the passenger car industry	55	55	55	55
	Japan's GDP per capita	55	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55	55
N	Japan's capacity utilization rate	55	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55	55
	Dummy: High levels of political tension	55	55	55	55
	Dummy: Low levels of political tension	55	55	55	55

Correlations

		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
Pearson Correlation	Japan's imports from South Korea in the passenger car industry	-,399	-,357	-,059
	Japan's GDP per capita	,742	,187	-,075
	Lagged version of Japan's total imports from South Korea	,850	,390	-,403
	Japan's capacity utilization rate	,005	-,127	,102
	South Korea's total exports minus its exports to Japan	1,000	,278	-,262
	Dummy: High levels of political tension	,278	1,000	-,454
	Dummy: Low levels of political tension	-,262	-,454	1,000
Sig. (1-tailed)	Japan's imports from South Korea in the passenger car industry	,001	,004	,335
	Japan's GDP per capita	,000	,086	,294
	Lagged version of Japan's total imports from South Korea	,000	,002	,001
	Japan's capacity utilization rate	,487	,177	,230
	South Korea's total exports minus its exports to Japan	.	,020	,026
	Dummy: High levels of political tension	,020	.	,000
	Dummy: Low levels of political tension	,026	,000	.
N	Japan's imports from South Korea in the passenger car industry	55	55	55
	Japan's GDP per capita	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55
	Japan's capacity utilization rate	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55
	Dummy: High levels of political tension	55	55	55

Dummy: Low levels of political tension	55	55	55

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,658[a]	,434	,363	1,28201	,822

a. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan
b. Dependent Variable: Japan's imports from South Korea in the passenger car industry

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60,386	6	10,064	6,124	,000[b]
	Residual	78,890	48	1,644		
	Total	139,276	54			

a. Dependent Variable: Japan's imports from South Korea in the passenger car industry
b. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	29,570	30,801		,960	,342		
	Japan's GDP per capita	4,184	6,050	,122	,692	,493	,379	2,636
	Lagged version of Japan's total imports from South Korea	-,976	1,557	-,156	-,627	,533	,192	5,214
	Japan's capacity utilization rate	6,387	2,424	,336	2,635	,011	,726	1,378
	South Korea's total exports minus its exports to Japan	-1,361	,955	-,365	-1,424	,161	,180	5,556
	Dummy: High levels of political tension	-1,347	,483	-,360	-2,786	,008	,708	1,412
	Dummy: Low levels of political tension	-1,318	,430	-,406	-3,063	,004	,673	1,486

a. Dependent Variable: Japan's imports from South Korea in the passenger car industry

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
1	1	5,673	1,000	,00	,00	,00	,00
	2	1,000	2,382	,00	,00	,00	,00
	3	,321	4,207	,00	,00	,00	,00
	4	,006	30,404	,00	,00	,00	,76
	5	,000	224,179	,13	,01	,02	,00
	6	2,230E-005	504,323	,00	,12	,88	,07
	7	1,063E-005	730,547	,87	,87	,11	,17

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions		
		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
1	1	,00	,00	,01
	2	,00	,34	,15
	3	,00	,55	,69
	4	,00	,02	,00
	5	,15	,04	,04
	6	,35	,03	,10
	7	,50	,03	,00

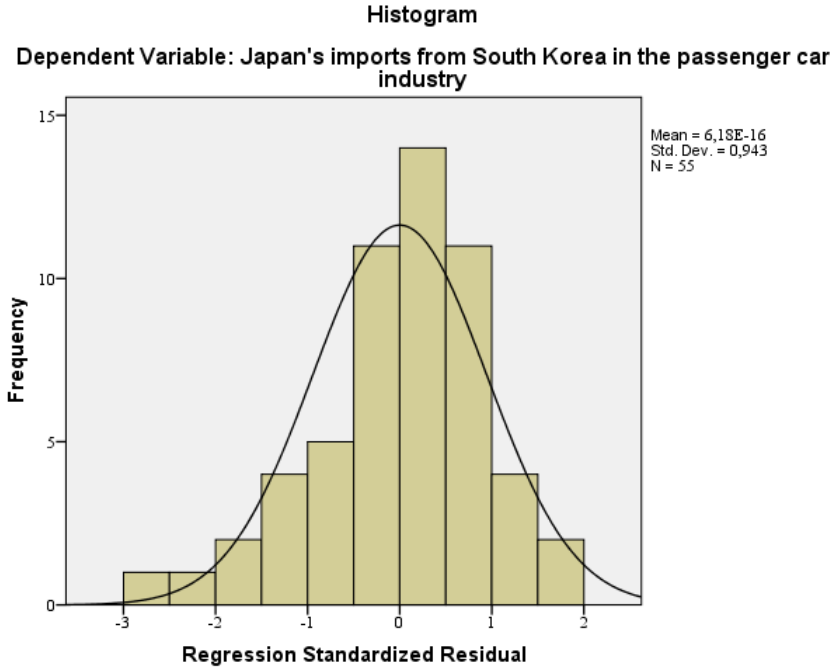
a. Dependent Variable: Japan's imports from South Korea in the passenger car industry

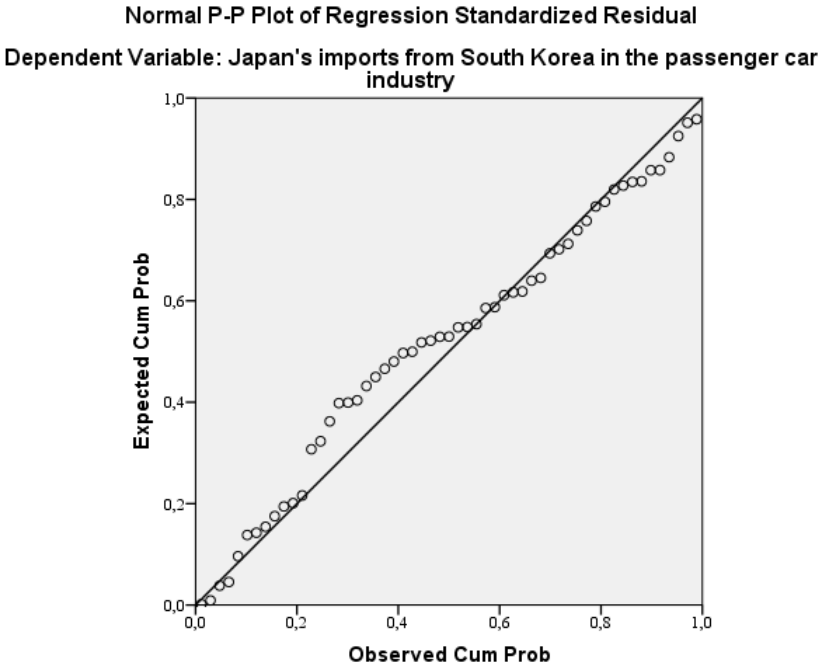
Residuals Statistics[a]

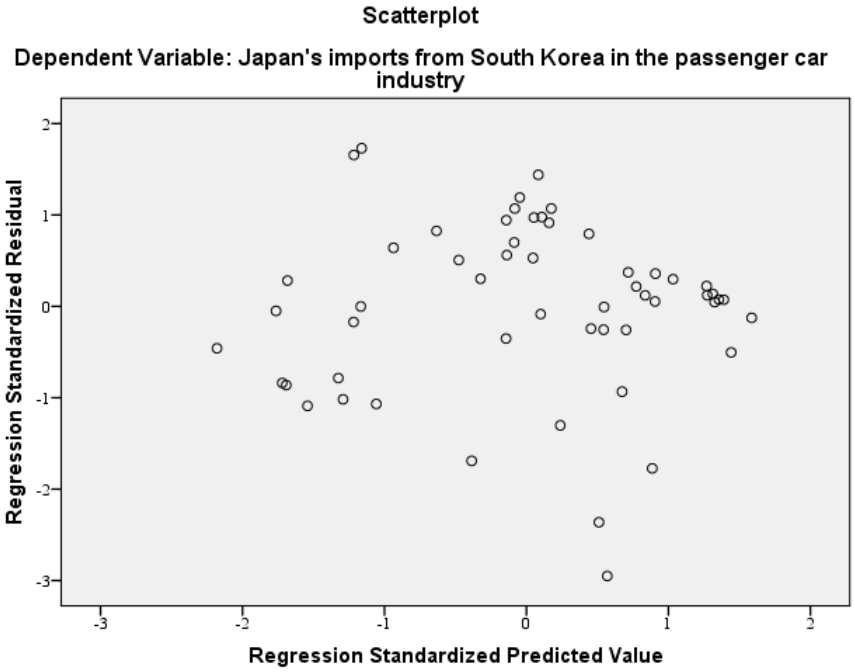
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,6682	6,6509	4,9733	1,05748	55
Residual	-3,78307	2,21785	,00000	1,20869	55
Std. Predicted Value	-2,180	1,586	,000	1,000	55
Std. Residual	-2,951	1,730	,000	,943	55

a. Dependent Variable: Japan's imports from South Korea in the passenger car industry

Charts







Basic Model with Dummy Variables for Political Tension: Imports in the Mineral Fuels Industry

$$lnIMmf = \beta_0 + \beta_1 lnGDPcap + \beta_2 CUR + \beta_3 lnIM_{t-1} + \beta_4 lnSKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
Japan's imports from South Korea in the mineral fuels industry	18,2594	,37045	55
Japan's GDP per capita	6,8832	,04682	55
Lagged version of Japan's total imports from South Korea	20,2426	,25590	55
Japan's capacity utilization rate	,9320	,08449	55
South Korea's total exports minus its exports to Japan	28,4678	,43050	55
Dummy: High levels of political tension	,24	,429	55
Dummy: Low levels of political tension	,40	,494	55

Correlations

		Japan's imports from South Korea in the mineral fuels industry	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
Pearson Correlation	Japan's imports from South Korea in the mineral fuels industry	1,000	,413	,570	-,030
	Japan's GDP per capita	,413	1,000	,668	,241
	Lagged version of Japan's total imports from South Korea	,570	,668	1,000	,179
	Japan's capacity utilization rate	-,030	,241	,179	1,000

	South Korea's total exports minus its exports to Japan	,410	,742	,850	,005
	Dummy: High levels of political tension	,455	,187	,390	-,127
	Dummy: Low levels of political tension	-,331	-,075	-,403	,102
	Japan's imports from South Korea in the mineral fuels industry	.	,001	,000	,415
	Japan's GDP per capita	,001	.	,000	,038
	Lagged version of Japan's total imports from South Korea	,000	,000	.	,095
Sig. (1-tailed)	Japan's capacity utilization rate	,415	,038	,095	.
	South Korea's total exports minus its exports to Japan	,001	,000	,000	,487
	Dummy: High levels of political tension	,000	,086	,002	,177
	Dummy: Low levels of political tension	,007	,294	,001	,230
	Japan's imports from South Korea in the mineral fuels industry	55	55	55	55
	Japan's GDP per capita	55	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55	55
N	Japan's capacity utilization rate	55	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55	55
	Dummy: High levels of political tension	55	55	55	55
	Dummy: Low levels of political tension	55	55	55	55

Correlations

		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
	Japan's imports from South Korea in the mineral fuels industry	,410	,455	-,331
	Japan's GDP per capita	,742	,187	-,075
	Lagged version of Japan's total imports from South Korea	,850	,390	-,403
Pearson Correlation	Japan's capacity utilization rate	,005	-,127	,102
	South Korea's total exports minus its exports to Japan	1,000	,278	-,262
	Dummy: High levels of political tension	,278	1,000	-,454
	Dummy: Low levels of political tension	-,262	-,454	1,000
	Japan's imports from South Korea in the mineral fuels industry	,001	,000	,007
	Japan's GDP per capita	,000	,086	,294
	Lagged version of Japan's total imports from South Korea	,000	,002	,001
Sig. (1-tailed)	Japan's capacity utilization rate	,487	,177	,230
	South Korea's total exports minus its exports to Japan	.	,020	,026
	Dummy: High levels of political tension	,020	.	,000
	Dummy: Low levels of political tension	,026	,000	.
	Japan's imports from South Korea in the mineral fuels industry	55	55	55
	Japan's GDP per capita	55	55	55
N	Lagged version of Japan's total imports from South Korea	55	55	55
	Japan's capacity utilization rate	55	55	55

South Korea's total exports minus its exports to Japan	55	55	55
Dummy: High levels of political tension	55	55	55
Dummy: Low levels of political tension	55	55	55

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,673[a]	,452	,384	,29080	1,403

a. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan
b. Dependent Variable: Japan's imports from South Korea in the mineral fuels industry

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,352	6	,559	6,606	,000[b]
	Residual	4,059	48	,085		
	Total	7,411	54			

a. Dependent Variable: Japan's imports from South Korea in the mineral fuels industry
b. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-6,859	6,987		-,982	,331		
	Japan's GDP per capita	2,413	1,372	,305	1,759	,085	,379	2,636
	Lagged version of Japan's total imports from South Korea	1,091	,353	,754	3,091	,003	,192	5,214
	Japan's capacity utilization rate	-,907	,550	-,207	-1,649	,106	,726	1,378
	South Korea's total exports minus its exports to Japan	-,449	,217	-,522	-2,072	,044	,180	5,556
	Dummy: High levels of political tension	,182	,110	,211	1,662	,103	,708	1,412
	Dummy: Low levels of political tension	-,019	,098	-,025	-,192	,849	,673	1,486

a. Dependent Variable: Japan's imports from South Korea in the mineral fuels industry

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
1	1	5,673	1,000	,00	,00	,00	,00
	2	1,000	2,382	,00	,00	,00	,00
	3	,321	4,207	,00	,00	,00	,00
	4	,006	30,404	,00	,00	,00	,76
	5	,000	224,179	,13	,01	,02	,00
	6	2,230E-005	504,323	,00	,12	,88	,07
	7	1,063E-005	730,547	,87	,87	,11	,17

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions		
		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
1	1	,00	,00	,01
	2	,00	,34	,15
	3	,00	,55	,69

4	,00	,02	,00
5	,15	,04	,04
6	,35	,03	,10
7	,50	,03	,00

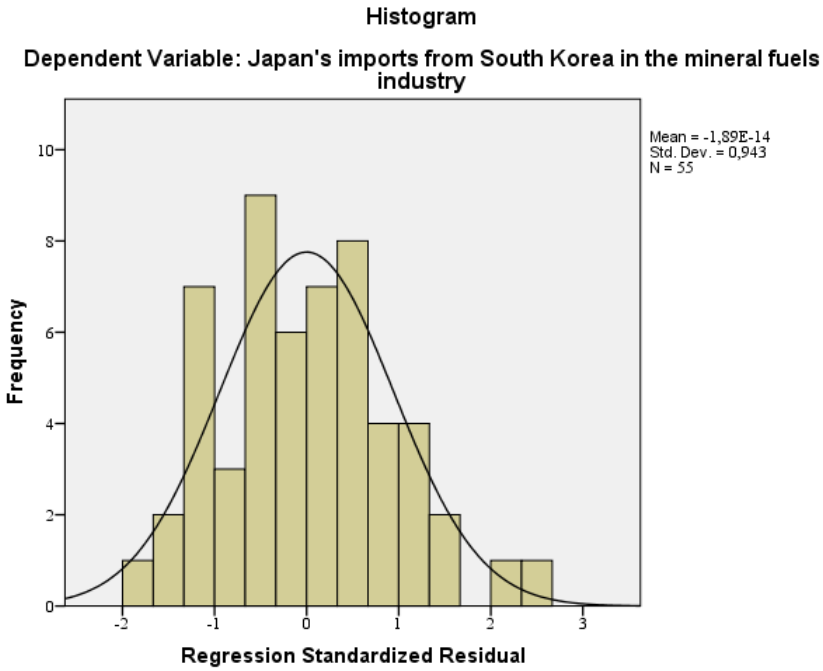
a. Dependent Variable: Japan's imports from South Korea in the mineral fuels industry

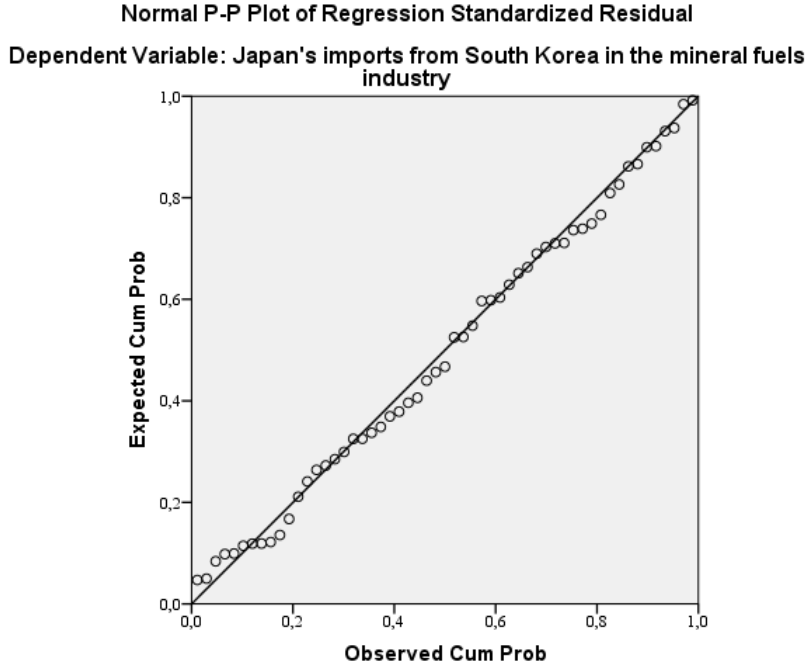
Residuals Statistics[a]

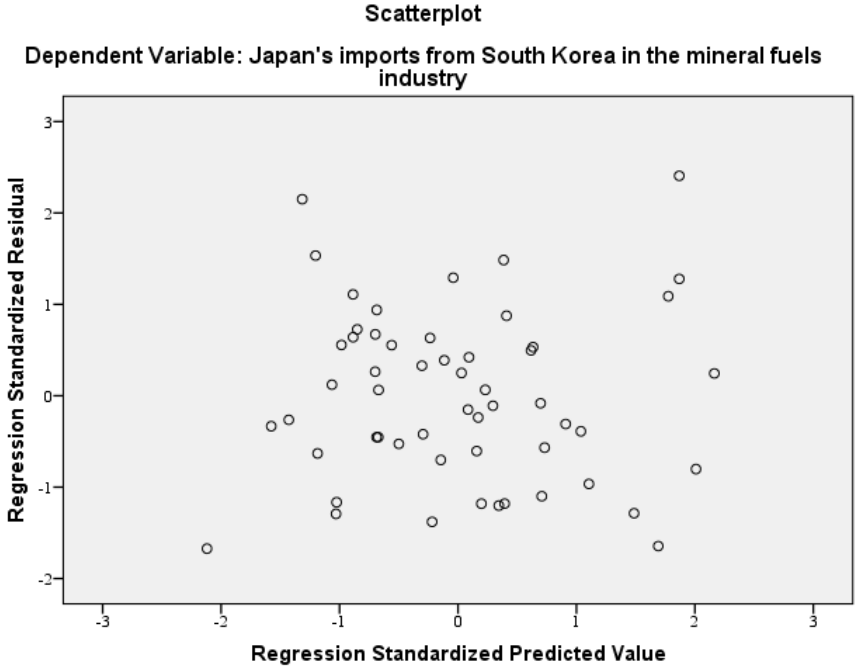
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	17,7314	18,7986	18,2594	,24913	55
Residual	-,48641	,69985	,00000	,27417	55
Std. Predicted Value	-2,119	2,164	,000	1,000	55
Std. Residual	-1,673	2,407	,000	,943	55

a. Dependent Variable: Japan's imports from South Korea in the mineral fuels industry

Charts







Basic Model with Dummy Variables for Political Tension: Imports in the Telephone Industry

$lnIMtel = \beta_0 + \beta_1 lnGDPcap + \beta_2 CUR + \beta_3 lnIM_{t-1} + \beta_4 lnSKEX + \beta_6 Dummy_{pol1} + \beta_7 Dummy_{pol3} + \epsilon$

Descriptive Statistics

	Mean	Std. Deviation	N
Japan's imports from South Korea in the telephone industry	15,8091	1,61793	55
Japan's GDP per capita	6,8832	,04682	55
Lagged version of Japan's total imports from South Korea	20,2426	,25590	55
Japan's capacity utilization rate	,9320	,08449	55
South Korea's total exports minus its exports to Japan	28,4678	,43050	55
Dummy: High levels of political tension	,24	,429	55
Dummy: Low levels of political tension	,40	,494	55

Correlations

		Japan's imports from South Korea in the telephone industry	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
Pearson Correlation	Japan's imports from South Korea in the telephone industry	1,000	,569	,684	-,337
	Japan's GDP per capita	,569	1,000	,668	,241
	Lagged version of Japan's total imports from South Korea	,684	,668	1,000	,179
	Japan's capacity utilization rate	-,337	,241	,179	1,000
	South Korea's total exports minus its exports to Japan	,839	,742	,850	,005
	Dummy: High levels of political tension	,318	,187	,390	-,127

	Dummy: Low levels of political tension	-,293	-,075	-,403	,102
	Japan's imports from South Korea in the telephone industry	.	,000	,000	,006
	Japan's GDP per capita	,000	.	,000	,038
	Lagged version of Japan's total imports from South Korea	,000	,000	.	,095
Sig. (1-tailed)	Japan's capacity utilization rate	,006	,038	,095	.
	South Korea's total exports minus its exports to Japan	,000	,000	,000	,487
	Dummy: High levels of political tension	,009	,086	,002	,177
	Dummy: Low levels of political tension	,015	,294	,001	,230
	Japan's imports from South Korea in the telephone industry	55	55	55	55
	Japan's GDP per capita	55	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55	55
N	Japan's capacity utilization rate	55	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55	55
	Dummy: High levels of political tension	55	55	55	55
	Dummy: Low levels of political tension	55	55	55	55

Correlations

		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
	Japan's imports from South Korea in the telephone industry	,839	,318	-,293
	Japan's GDP per capita	,742	,187	-,075
	Lagged version of Japan's total imports from South Korea	,850	,390	-,403
Pearson Correlation	Japan's capacity utilization rate	,005	-,127	,102
	South Korea's total exports minus its exports to Japan	1,000	,278	-,262
	Dummy: High levels of political tension	,278	1,000	-,454
	Dummy: Low levels of political tension	-,262	-,454	1,000
	Japan's imports from South Korea in the telephone industry	,000	,009	,015
	Japan's GDP per capita	,000	,086	,294
	Lagged version of Japan's total imports from South Korea	,000	,002	,001
Sig. (1-tailed)	Japan's capacity utilization rate	,487	,177	,230
	South Korea's total exports minus its exports to Japan	.	,020	,026
	Dummy: High levels of political tension	,020	.	,000
	Dummy: Low levels of political tension	,026	,000	.
	Japan's imports from South Korea in the telephone industry	55	55	55
	Japan's GDP per capita	55	55	55
	Lagged version of Japan's total imports from South Korea	55	55	55
N	Japan's capacity utilization rate	55	55	55
	South Korea's total exports minus its exports to Japan	55	55	55
	Dummy: High levels of political tension	55	55	55

Dummy: Low levels of political tension	55	55	55

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,909[a]	,826	,804	,71590	,892

a. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan
b. Dependent Variable: Japan's imports from South Korea in the telephone industry

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	116,755	6	19,459	37,968	,000[b]
	Residual	24,601	48	,513		
	Total	141,356	54			

a. Dependent Variable: Japan's imports from South Korea in the telephone industry
b. Predictors: (Constant), Dummy: Low levels of political tension, Japan's GDP per capita, Japan's capacity utilization rate, Dummy: High levels of political tension, Lagged version of Japan's total imports from South Korea, South Korea's total exports minus its exports to Japan

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-82,050	17,200		-4,770	,000		
	Japan's GDP per capita	2,622	3,378	,076	,776	,441	,379	2,636
	Lagged version of Japan's total imports from South Korea	,624	,869	,099	,718	,476	,192	5,214
	Japan's capacity utilization rate	-7,113	1,354	-,371	-5,255	,000	,726	1,378
	South Korea's total exports minus its exports to Japan	2,593	,533	,690	4,861	,000	,180	5,556
	Dummy: High levels of political tension	,061	,270	,016	,225	,823	,708	1,412
	Dummy: Low levels of political tension	-,072	,240	-,022	-,298	,767	,673	1,486

a. Dependent Variable: Japan's imports from South Korea in the telephone industry

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Japan's GDP per capita	Lagged version of Japan's total imports from South Korea	Japan's capacity utilization rate
1	1	5,673	1,000	,00	,00	,00	,00
	2	1,000	2,382	,00	,00	,00	,00
	3	,321	4,207	,00	,00	,00	,00
	4	,006	30,404	,00	,00	,00	,76
	5	,000	224,179	,13	,01	,02	,00
	6	2,230E-005	504,323	,00	,12	,88	,07
	7	1,063E-005	730,547	,87	,87	,11	,17

Collinearity Diagnostics[a]

Model	Dimension	Variance Proportions		
		South Korea's total exports minus its exports to Japan	Dummy: High levels of political tension	Dummy: Low levels of political tension
1	1	,00	,00	,01
	2	,00	,34	,15
	3	,00	,55	,69
	4	,00	,02	,00
	5	,15	,04	,04
	6	,35	,03	,10
	7	,50	,03	,00

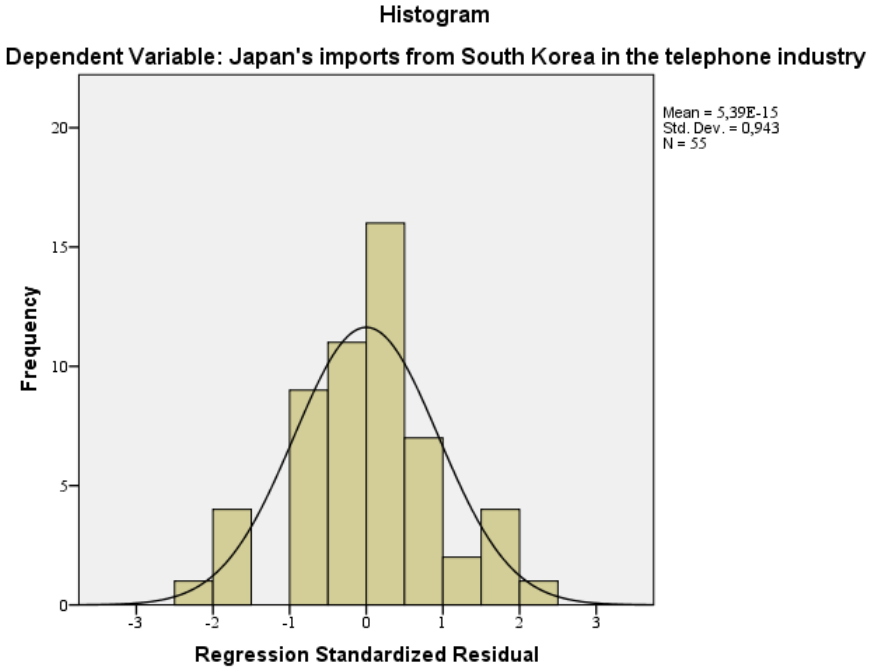
a. Dependent Variable: Japan's imports from South Korea in the telephone industry

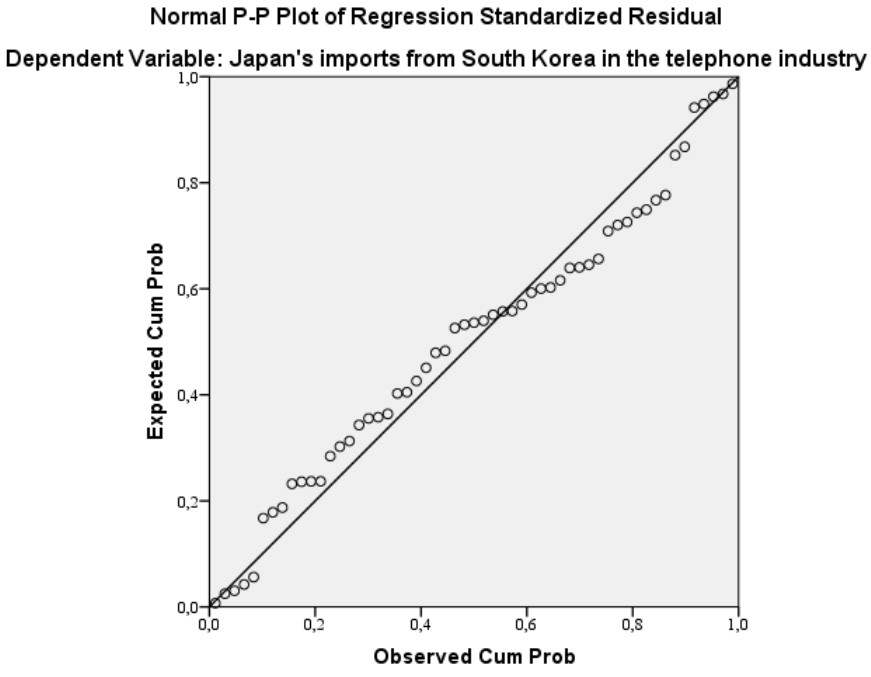
Residuals Statistics[a]

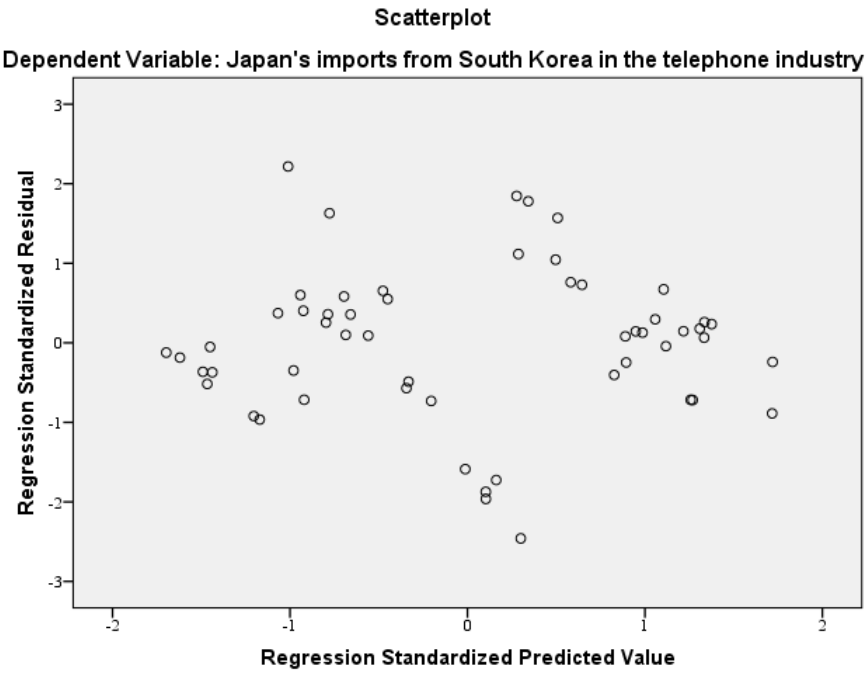
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	13,3131	18,3374	15,8091	1,47042	55
Residual	-1,76046	1,58693	,00000	,67496	55
Std. Predicted Value	-1,697	1,719	,000	1,000	55
Std. Residual	-2,459	2,217	,000	,943	55

a. Dependent Variable: Japan's imports from South Korea in the telephone industry

Charts






Scatterplot
Dependent Variable: Japan's imports from South Korea in the telephone industry
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-3
-2
-1
0
1
2