RIETI Discussion Paper Series 20-E-091

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https://www.rieti.go.jp/en/

RIETI Discussion Paper Series 20-E-091

December 2020

New Assessment of Economic Integration in East Asia: Application of Industry-Specific G-PPP Model*

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Abstract

It is well known that intra-industry trade and cross-border production network have promoted economic growth and regional integration in East Asia. However, regional supply and production chains may have been differently formed across industries, reflecting different degree and scope of regional economic linkages at an industry level. The contribution of this paper is three-fold. First, to assess industry-level differences, this study adopts the Generalized Purchasing Power Parity (G-PPP) model using *industry-specific* producer prices. Second, the momentum threshold autoregressive (M-TAR) model is employed to allow for possible nonlinearity arising from dynamic nature of regional economic growth and development. Third, Granger causality test is also conducted to assess whether regional economies have autonomously integrated. The empirical results reveal that economic integration has progressed more autonomously in the electrical industry as well as transport equipment industry, as China and ASEAN countries have grown as the final destination market for finished products in these two industries.

Keywords: generalized purchasing power parity (G-PPP); industry-specific producer prices; momentum threshold autoregressive (M-TAR) model; regional economic integration; co-integration

JEL classification: F31; F33; F36

*This study is conducted as a part of the Project "Exchange Rates and International Currency" undertaken at the Research Institute of Economy, Trade and Industry (RIETI). It was supported financially by the Japan Society for the Promotion of Science (JSPS) KAKENHI, Grant Numbers JP17KT0032 and JP19H01504. The authors would like to thank Eiji Ogawa, Willem Thorbecke, Taiyo Yoshimi, Nagendra Shrestha, and Discussion Paper seminar participants at RIETI.

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1. Introduction

After the 1997–98 Asian currency crisis, the East Asian countries were able to get back on track for rapid economic growth as in the early 1990s, partly because huge currency devaluation stimulated exports of crisis-hit countries.[1] While the exchange rate depreciation has a positive effect on exports,[2] a large difference between pre- and post-crisis periods is that the main driving force of rapid economic growth shifted from the local governments' industrial policies (including the exchange rate policy) to active operations of multinational enterprises in the manufacturing sectors. It is well known that growing intra-regional trade in East Asia along supply chains and production network have been driven by multinational enterprises of Japan and other advanced countries, which has contributed to the regional economic development and growth and, hence, deepened regional economic integration (Huh and Park, 2018; Thorbecke, 2017; and ADB, 2019).

East Asia differs from Europe in the lack of political cooperation and institutional arrangements in the region. Indeed, the ASEAN Economic Community (AEC) was established in 2015, which is considered a key milestone for regional economic integration. The ASEAN countries have promoted regional economic growth and development by signing free trade agreement (FTA) and/or economic partnership agreement (EPA) with China, Japan, and Korea.[3] However, the AEC is a loosely organized economic community, unlike the European economic and monetary union that can be considered "*de jure* integration". Thus, the East Asian region still lags far behind the European Union or Euro area for lack of regional political cooperation and institutional arrangements.

A natural question is whether East Asian countries have formed and deepened "*de facto* integration" through regional trade and investment. As is well known, China plays a central role in global supply chains, which is likely to have promoted *de facto* regional integration in East Asia with China at the core. If *de facto* integration has progressed, another question is whether its scope or area differs across industries. It is natural that the scope of production and supply chains differs across industries, depending on industry characteristics. For example, production fragmentation and supply chains can spread across regional countries in the case of the electronics industry, likely due to the relatively low transportation costs for shipping parts and components (Kimura and Obashi, 2011). In contrast, the automobile industry tends to form industry clusters in a country that has the final destination market for

[1] For the effect of currency devaluation on exports of crisis-hit countries, see Ito (2007). Among crisis-hit countries, only Indonesia could not accelerate exports even though the rupiah depreciated dramatically in nominal terms. See Ito and Sato (2008) for further details.
[2] Exchange rate depreciation (appreciation) can have a *short-run* negative (positive) effect on exports due to the J-curve effect. However, recent studies such as Ahmed *et al*. (2017) and Sato *et al*. (2020) empirically revealed that real exchange rate depreciation (appreciation) has positive (negative) effect on real exports.
[3] See, for example, Thorbecke (2017, 2018) for examining economic integration in East Asia and ASEAN focusing on electronics industry.

finished automobiles. Thus, economic integration process can be different across industries and the degree of regional integration needs to be assessed at an industry level.

To investigate these issues, this paper employs the Generalized Purchasing Power Parity (G-PPP) model that was originally developed by Enders and Hurn (1994) and modified by Kawasaki and Ogawa (2006) and Kawasaki (2012). Moreover, we use the *industry-specific* real effective exchange rates of the major manufacturing industries to extend the G-PPP analysis to an industry-level analysis.

To evaluate the progress and viability of regional integration, previous studies attempted to analyze the degree of real output co-movements and/or symmetry in fundamental economic shocks among candidate countries, mainly using vector-autoregressive (VAR) model. Sato *et al*. (2011) and Dungey and Vehbi (2015) used the structural VAR technique to assess which shock (i.e., global or regional shock) has larger influences on regional economies in East Asia. Dees *et al*. (2007), Pesaran *et al*. (2007), Fielding *et al*. (2012), and Ong and Sato (2018) employed a global VAR model to evaluate global inter-linkages between domestic and foreign variables. Lee and Azali (2012) and Hirata *et al*. (2013) applied a dynamic factor model to the question of regional economic integration in East Asia. Huh and Park (2018, 2019) proposed a composite index to measure the degree of regional integration constructed by the principal component analysis with various macroeconomic variables and indicated that Asia is much less integrated than European Union. These studies, however, tend to use the aggregated macroeconomic variables at a country-level and fail to consider possible differences in the scope and degree of economic integration across industries.

A major advantage of the G-PPP model over the above approach is to detect the presence of multilateral long-term relationship among countries or within some geographical area. In other words, we can detect some economic linkages across countries, which implies not only historical, geographical or political reasons but also a consequence of real economic activities by sharing a common productivity growth through supply chains across regional countries.

In the context of East Asia, it is necessary to conduct an *industry*-level analysis of economic linkages. As discussed in the literature of global value chains, the degree and scope of production linkages are likely to differ across industries and are conditional on where a country is located along production chains, upstream or downstream.[4] Previous studies that used the G-PPP model for a country-level analysis fail to capture such industry-specific production linkages that have developed in East Asia.

The major contribution of this paper is threefold. First, we apply the G-PPP model to an industry-level analysis by using the *industry-specific* producer price index (PPI) data, collected by Sato *et al*. (2013, 2020), which enables us to construct the intra-industry real exchange rates by abstracting the partial blocks of the intra-industry real effective exchange rates for East Asian countries. To our

[4] See, for instance, Wang *et al*. (2013) and Patel *et al*. (2014).

knowledge, this paper is the first study that conducts the industry-level G-PPP analysis. Second, we employ the co-integration test with momentum threshold autoregressive (M-TAR) model to investigate whether the scope of economic integration has expanded in East Asia based on the generalized version of the law of one price (LOP). Nonlinear estimation method is especially relevant in the context of East Asia, in that regional countries have experienced not only rapid economic growth and development but also severe economic turmoil arising from external shocks such as global financial crisis. Third, Granger causality test is also conducted under error-correction framework to assess whether regional economies have autonomously integrated.

The empirical results suggest that economic integration has progressed widely in the East Asian region, but integration patterns differ across machinery industries. As for the general machinery industry, a number of sub-groups of countries are found to meet the G-PPP hypothesis, where Singapore, Malaysia, and China play a central role in regional economic integration. According to the Granger causality test, however, regional economic linkages in the general machinery industry are significantly affected by the outside economies, indicating that integration process is less autonomous. In contrast, economic integration has progressed more autonomously in the electrical industry and transport equipment industry. The automobile industry has also developed not only in ASEAN countries centered on Thailand but also in China that has a large market. By decomposing the electrical industry into three sub-industries, we found that China plays a central role in regional integration of the communication equipment industry main products of which include semi-conductors and other electronic parts and components. While export products in the electrical industry tend to be invoiced in US dollars and final shipping destination for finished products is the United States and European countries, our Granger causality test suggests that East Asian production is less affected by business cycles in the United States and Europe and, hence, regional production and supply chains have developed and become more autonomous in the electrical industry.

The remainder of the paper is structured as follows. Section 2 elaborates the G-PPP model and explain how to use the industry-specific data of real effective exchange rates. Section 3 explains how to apply the M-TAR model to the unit-root test. Section 4 presents the empirical results of the non-linear unit root test and the Granger causality test. Finally, Section 5 concludes this study.

2. The G-PPP Model and Its Application

In this section, we elaborate the G-PPP model and how to use the industry-specific price data among major trading countries under the G-PPP framework. As Enders and Hurn (1994) argued, the G-PPP model takes into account not only changes in relative prices between two countries but also those in relative prices among trading partners. Even though the model is extended from two-country

to multi-country model, the key concept of the G-PPP model still follows the standard theory: the purchasing powers are evaluated in the price of tradable goods between countries.

Suppose that the products of sector *i* in country *j* can be easily exported to other markets in foreign countries. While the products are shipped from country *j* to *n* trading partners (1, 2,…, *m*,…, *n*), importers or consumers in countries from 1 to *m* could find the opportunities of arbitrage transactions because sector *i* in other countries could also export the same products to countries from 1 to *m*. When the imported products are sold at each of domestic markets in the countries from 1 to *m*, the prices of goods are arbitraged among the countries from 1 to *m* and determined under the condition of the perfect competitive market. On the other hand, the market prices in the countries from *m*+1 to *n* are independently determined respectively.

The real effective exchange rate of country *j* deflated by the price of goods exported to *n*−1 trade partner countries can be expressed as follows

$$\begin{aligned} ree_j^i = &\left(\beta_{j,1}^i re_{j,1}^i + \beta_{j,2}^i re_{j,2}^i + \cdots + \beta_{j,m}^i re_{j,m}^i\right) \\ &+\left(\beta_{j,m+1}^i re_{j,m+1}^i + \beta_{j,m+2}^i re_{j,m+2}^i + \cdots + \beta_{j,n}^i re_{j,n}^i\right) \end{aligned} \tag{1}$$

where $re_{j,k}$ is real exchange rate between country *k* and country *j* : ($k \neq j$) in logarithm. Then, $\beta_{j,k}$ is the trade weight of country *j* with the countries from 1 to *n* $\left(\sum_{k=1,k\neq j}^{n} \beta_{j,k} = 1\right)$.

Given $re_{j,k} = re_{j,n} - re_{k,n}$, Equation (1) can be written as follows:

$$\begin{aligned} ree_j^i = &\left(\beta_{j,1}^i re_{\mathrm{US},1}^i + \beta_{j,2}^i re_{\mathrm{US},2}^i + \cdots + \beta_{j,m}^i re_{\mathrm{US},m}^i\right) \\ &+\left(\beta_{j,m+1}^i re_{\mathrm{US},m+1}^i + \beta_{j,m+2}^i re_{\mathrm{US},m+2}^i + \cdots + \beta_{j,n}^i re_{\mathrm{US},n}^i\right) \end{aligned} \tag{2}$$

The real effective exchange rate of *m* + 1 countries can be expressed in a vector as follows:

$$REER^i = \mathbf{ree}^i = \mathbf{F}_1 \cdot \mathbf{re}_1^i + \mathbf{F}_2 \cdot \mathbf{re}_2^i = \mathbf{F} \cdot \mathbf{re}_{\mathrm{US}}^i \tag{3}$$

where **F** is a matrix, which defines the trade weights, and **re** is the real exchange rate of country *k vis-à-vis* the US dollar.

$$\mathbf{F} = \left(\mathbf{F}_1, \mathbf{F}_2\right)'$$

$$\underset{(m\times m)}{\mathbf{F}_1} = \begin{bmatrix} 0 & \beta_{1,2} & \cdots & \beta_{1,m-1} & \beta_{1,m} \\ \beta_{2,1} & 0 & \cdots & \beta_{2,m-1} & \beta_{2,m} \\ \vdots & \vdots & \ddots & \vdots & \vdots \\ \beta_{m-1,1} & \beta_{m-1,2} & \cdots & 0 & \beta_{m-1,m} \\ \beta_{m,1} & \beta_{m,2} & \cdots & \beta_{m,m-1} & 0 \end{bmatrix}, \quad \underset{(m\times(n-m))}{\mathbf{F}_2} = \begin{bmatrix} \beta_{1,m+1} & \beta_{1,m+2} & \cdots & \beta_{1,n} \\ \beta_{2,m+1} & \beta_{2,m+2} & \cdots & \beta_{2,n} \\ \vdots & \vdots & \ddots & \vdots \\ \beta_{m-1,m+1} & \beta_{m-1,m+2} & \cdots & \beta_{m-1,n} \\ \beta_{m,m+1} & \beta_{m,m+2} & \cdots & \beta_{m,n} \end{bmatrix}$$

and

$$\mathbf{re}_{\mathrm{US}}^i = \left(\mathbf{re}_1^i, \mathbf{re}_2^i\right)', \mathbf{re}_1^i = \left(re_{\mathrm{US},1}^i, \ldots, re_{\mathrm{US},m}^i\right)', \mathbf{re}_2^i = \left(re_{\mathrm{US},m+1}^i, \ldots, re_{\mathrm{US},n}^i\right)' .$$

As Enders and Hurn (1994) suggested, the G-PPP would hold if non-stationary real exchange rates share common trends within a group of countries, which implies that certain blocks of real exchange

rates in the real effective exchange rates could share the same stochastic trends. Using the common trends representation developed in Stock and Watson (1983), the matrix of real effective exchange rates can be expressed by the sum of a stationary component and a non-stationary component. That is:

$$\mathbf{ree}_t^i = \mathbf{r\bar{e}e}_t^i + \mathbf{r\tilde{e}e}_t^i = \mathbf{F} \cdot \mathbf{re}_{\mathrm{US},t}^i \tag{4}$$

where $\mathbf{r\bar{e}e}$ represents a stationary component and $\mathbf{r\tilde{e}e}$ represents a non-stationary component, the subscript t denotes a variable at time t.

As the original concept of the PPP suggested, the nominal exchange rate between two countries would be equal to the relative PPP, hence, the real exchange rates are constant over time. If we can find a null matrix $\mathbf{Z}$ for which the rank condition satisfies $0 < \mathrm{rank}(\mathbf{Z}) < m$, then we can obtain $\mathbf{Z} \cdot \mathbf{re} = 0$ indicating that there exists at least one linear combination (cointegrating relationship) of the real exchange rates over the long run. Hence,

$$\mathbf{Z} \cdot \mathbf{F} \cdot \mathbf{re}_{\mathrm{US},t}^i = \mathbf{Z} \cdot \left(\mathbf{F}_1 \cdot \mathbf{re}_{1,t}^i + \mathbf{F}_2 \cdot \mathbf{re}_{2,t}^i \right) = 0 \tag{5}$$

Equation (5) defines the long run equilibrium for the real effective exchange rate as a linear combination of the bilateral real exchange rates. The G-PPP model assumes that there are common factors among the bilateral real exchange rates of countries exhibiting strong economic relationships, therefore, these countries with real exchange rates that share common trends could be interpreted as having a similar economic structure and sharing a common productivity growth.[5] While Equation (5) suggests the necessary condition for the G-PPP, the condition for the traditional PPP between the two countries, namely the LOP, is regarded as a sufficient condition for the existence of the common integrated market, which has significant implications for an assessment of economic integration.

3. Empirical Analysis for Detecting Economic Integration in East Asia

3.1. Empirical Method

The M-TAR model developed by Enders and Siklos (2001) is employed to investigate the property of real effective exchange rates.[6] We suppose there exists a cointegrated relationship among m real exchange rates *vis-à-vis* the US dollar, but (n–m) real exchange rates *vis-à-vis* the US dollar are not cointegrated. The long-term equilibrium shown in Equation (5) can be rewritten as follows:

[5] In the literature of monetary integration/union, this is typically considered as one of key preconditions for establishing an optimum currency area.

[6] Enders and Siklos (2001) developed the threshold autoregressive models: TAR and M-TAR, extended from the Engle-Granger type of cointegration test. These error-correction models encounter the presence of possible asymmetric adjustment toward the long-term equilibrium. This feature would be useful to consider the downward price rigidity or the asymmetric price transmission in the intra-industry trade, which affects the long-term determinant of real exchange rates.

$$\sum_{k=m+1}^{n} \xi_k^i re_{\mathrm{US},k,t}^i = \beta_1 \cdot re_{\mathrm{US},1,t}^i + \beta_2 \cdot re_{\mathrm{US},2,t}^i + \cdots + \beta_m \cdot re_{\mathrm{US},m,t}^i + \nu_t \tag{6}$$

where v_t is the disturbance term which is considered as serially correlated series. ξ denotes the trade weights of (n–m) trade partners with the group of countries from 1 to m.

The M-TAR model can also be given as follows:

$$\Delta \nu_t = I_t \rho_1 \nu_{t-1} + \left(1 - I_t\right) \rho_2 \nu_{t-1} + \sum_{h=1}^{p} \alpha_i \Delta \nu_{t-h} + \varepsilon_t \tag{7}$$

where ε_t is supposed as the white-noise process and I_t is the indicator function such that;

$$\rho_1 < 0, \rho_2 < 0, \quad I_t = \begin{cases} 1 & if \quad \Delta \nu_{t-1} \geq 0 \\ 0 & if \quad \Delta \nu_{t-1} < 0 \end{cases} .$$

Applying the ordinary least-squares (OLS) regression to Equation (6) to estimate the long-term equilibrium relationship, we obtain the series of the disturbance term. In conducting a cointegration test, if there exists a cointegrating vector, M-TAR model considers asymmetric adjustments of the long-term mean-reversion process (ρ_1, ρ_2). If the coefficient of error correction term could not reject the null hypothesis of unit root: $\rho_1 = \rho_2 = 0$, it suggests that ν_t contains a symmetric unit root, hence, there does not exist a cointegrating relationship. The M-TAR unit root test could detect whether the variables are cointegrated or not, with good power over the usual Engel-Granger type of cointegration test.[7]

3.2. Data

We use the monthly industry-specific export prices for 29 countries that are constructed by Sato *et al*. (2013, 2020). 29 sample countries include nine East Asian countries (Japan, China, Korea, Taiwan, Singapore, Malaysia, Indonesia, the Philippines, and Thailand) and their 20 trading partners (Australia, Belgium, Canada, Switzerland, Germany, Denmark, Spain, Finland, France, Greece, India, Ireland, Italy, Netherlands, Norway, New Zealand, Russia, Sweden, UK, and the United States).

The industry classification is based on the 2-digit level of the International Standard Industrial Classification Revision 3 (ISIC.R3) and we use 13 industries for empirical analysis. Following the classification of Sato *et al*. (2013, 2020), our empirical analysis covers three major manufacturing industries: General Machinery (29), Electrical Industry (30), and Transport Equipment (34-35), where

[7] Enders and Silkos (2001) compared the power test using the TAR and M-TAR with that of Engle and Grangers' with conducting a Monte Carlo experiment. As Enders and Silkos (2001) stated in Page 171, if the true model contains an asymmetric unit root, "*the power of the* $\Phi(M)$ *test for the M-TAR model correctly rejects the null hypothesis of no cointegration 26% more often than the Engel-Granger test at the 5% level and more than twice as often at 1% level*."

figures in parenthesis denote the classification code of ISIC.R3. We also investigate one more industry, Food (15-16), for comparison purpose.

To calculate the partial real effective exchange rates among the nine East Asian countries, Sato *et al*. (2013, 2020) re-organized the original trade data taken from the UN Comtrade to fit their classification in constructing the industry-specific real effective exchange rate (I-REER).[8] We also employ their trade data for our weight calculations, but only annual data is available from UN Comtrade. We thus use the annual trade data for the weight of monthly real effective exchange rates without any statistical conversions from annual to monthly frequency.

The monthly nominal exchange rates of sample countries *vis-à-vis* the US dollar are obtained from the IMF, *International Financial Statistics database on-line*. Our sample period ranges from January 2001 to December 2018.[9,10]

3.3. Combinations of Countries

We assume that all nine East Asian countries or a partial group in nine countries can build a common integrated market across their borders. We also assume that the number of countries across which a common market spreads ranges from at least five countries to a maximum of all nine East Asian countries ($5 \leq m \leq 9$, $n=29$). Hence, for each sector, we have 256 possible combinations, which is the sum of 126 combinations obtained from C(9, 5), 84 from C(9, 6), 36 from C(9, 7), nine from C(9, 8), and one from C(9, 9). In this paper, we put our code number into each combination. The first part: 13-0x denotes an industry code, which is based on ISIC.R3 classification. While we deal with four industries, the code for the food sector denotes 13-01 and the code for general machinery industry denotes 13-10. 13-11 and 13-13 stands for the electrical industry and the transport equipment industry, respectively. Our four-digit code after the industry code denotes combination of countries. 8xxx or 5xxx denote that eight or five countries are selected from all nine East Asian countries. We have 256 combinations of countries codes: 5001-5126, 6001-6084, 7001-7036, 8001-8009, and 9001, which are combined with the industry codes 13-01, 13-10, 13-11, and 13-13. Thus, 13-01-9001 denotes that all nine countries are expected to be included in the common integrated market, which is evaluated by the parity of producer prices in the food sector.

4. Empirical Results

[8] See the website of the Research Institute of Economy, Trade and Industry (RIETI) (https://www.rieti.go.jp/users/eeri/en/), where the dataset of the I-REERs are published for 25 countries including advanced countries such as the United States and European countries.
[9] Since the I-REERs are available from January 2001, our sample period starts from January 2001.
[10] As Thai trade data for 2018 was not available to obtain as of the end of July 2019, we use data in 2017 as proxy of data for 2018.

4.1. Empirical Results of Cointegration Tests

We estimated the M-TAR model for all possible combinations of East Asian countries and examined asymmetric adjustments of the long-term mean-reversion process.[11] In Appendix Tables A1.1–A1.4, we report the estimated results for combinations in which all coefficients indicate 1% significance level. Specifically, we present the estimated results for 65 combinations out of 256 possible combinations in the food industry (Appendix Table A1.1), 79 combinations in the general machinery industry (Appendix Table A1.2), 56 in the electrical industry (Appendix Table A1.3), and 81 in the transport equipment industry (Appendix Table A1.4), all coefficients of which are statistically significant.

For these 281 combinations out of 1024 possible combinations in four industries, the M-TAR unit root tests are executed, the results of which are summarized in Appendix Tables A2.1–A2.4. To detect the asymmetric adjustment process in the error correction model, namely the asymmetric cointegration, the tables include two of estimated coefficients of adjustment process with their significance level and the *F*-statistics for two null hypotheses: $\rho_1 = \rho_2 = 0$ and $\rho_1 = \rho_2$. Our primary purpose to employ the M-TAR test is to detect whether residual series in Equation (6) contain a unit root or not. While the variables are cointegrated if and only if $\rho_1 \neq 0$, $\rho_2 \neq 0$ and $\rho_1 \neq \rho_2$, we can regard the variables are not cointegrated if either $\rho_1 = 0$ or $\rho_2 = 0$ is suggested as the case of asymmetric unit root.

To assess the scope of economic integration at an industry level, we check how frequently each of East Asian countries is included in cointegrating relationship. As will be shown below, the number of cointegrating relationship we found differs across industries. For the food industry, 24 combinations out of 65 suggest that the estimated values of both ρ_1 and ρ_2 are significant as for appropriate *t*-statistics in Appendix Table A2.1. We can find the combination in which the G-PPP holds among all nine Asian countries (13-01-9001). Appendix Tables A2.2–A2.4 show that the variables are cointegrated in 16 combinations out of 79 in the general machinery, 12 out of 56 for the electrical industry, and 23 out of 81 for the transport equipment. Table 1 shows a summary of empirical results for the asymmetric unit root tests shown in Tables A2.1–A2.4. Let us summarize our findings as follows.

4.1.1 Food Industry

In the food industry, we found the largest number of cointegrating relationship in producer prices among East Asian countries, especially between China, Korea, Japan, Singapore, and Indonesia (Table 1). The food industry includes more homogeneous goods than other manufacturing sectors. Specifically, since food products may be traded as "commodities" between countries and the price of the products is

[11] All results of estimated OLS coefficients and M-TAR unit root test are not reported due to space limitation but are available upon request.

mainly determined by the spot and derivative transactions in the international commodity markets. Therefore, food products tend to be more integrated in terms of PPP, and G-PPP relationship can be easily found in the food industry across East Asian countries.

4.1.2 General Machinery Industry

In the general machinery industry, the third largest number of cointegrated combinations are detected. Interestingly, we found only one combination, 13-10-5005, that includes a group of "plus three" countries, China, Japan, and Korea, in the common integrated market (Table 1). Some of ASEAN countries are cointegrated with "plus two" countries: China and Japan, or China and Korea. However, Japan is less included into cointegration relationship in the general machinery sector than in the other three industries. In contrast, Malaysia and Singapore are included in more country groups that share cointegration relationships.

More interestingly, both Japan and Korea are included together in cointegrating relationship only in the above combination, 13-10-5005, which may be explained at least partly by the example of Japanese semiconductor production equipment sector. Japanese firms have strong export competitiveness in the robot industry and production equipment industry, both of which are categorized in the general machinery industry. Japanese firms export semiconductor production equipment to Korea, while Korean electronics firms have purchased such production equipment and produce semiconductors. Since we use producer prices to assess the validity of G-PPP relationship, it should be unlikely to find cointegrating relationship in the semiconductor production equipment sector between Japan and Korea.

The above example of Japanese semiconductor production equipment sector is only part of the story, and it is true that there are a variety of products in the general machinery industry. Thus, it is better to use more disaggregated PPI data for this G-PPP analysis, but it is extremely hard to obtain more disaggregated PPI data from not only East Asian countries but also major trading partner countries outside East Asia. Such weakness is more pronounced in the electrical industry, as will be discussed below.

4.1.3 Electrical Industry

The electrical industry has the fewest cases for cointegration than other industries (Table 1). It is well known that electrical parts and components, especially semiconductors, integrated circuits, etc., can be regarded as "commodities" because it is hard to add larger value to these commoditized products, which indicates that electrical companies tend to face severe market competition in East Asia. In addition, production fragmentation has also expanded rapidly in the electrical industry (Kimura and Obashi, 2011), which facilitated intra-regional transactions along production chains in East Asia and, hence, greater co-movements of producer prices across regional countries. Table 1 shows that cointegrating relationships in producer prices are found among several East Asian countries with Malaysia, Korea, and China at the core. Surprisingly, although Singapore and Taiwan are famous for

their electric machinery industries, the two countries have less cointegrating relationship with other East Asian countries.

We decompose the electrical industry into three sub-industries: (i) the office machinery, (ii) electrical machinery, and (iii) communication equipment.[12,13] Table 2 presents three interesting results. First, in the office machinery industry, cointegrating relationship is found in some of eight East Asian countries, where China, Malaysia, and Korea play a central role. In contrast, Japan does not have any cointegrating relationship with other countries, which may suggest that Japanese office machinery industry lost their comparative advantage after the global financial crisis (Thorbecke, 2019).

Second, in the electrical machinery industry, we found cointegrating relationship among six countries including Japan, Korea, Indonesia, Malaysia, Taiwan, and the Philippines, while the other three countries including China are not included in the cointegrating relationship. The electrical machinery industry comprises electric motors and transformers, electrical apparatus for switching or protecting electrical circuits, electric accumulators, etc., and Table 2 suggests that China has not yet built regional production chains in this industry. This result could not be obtained without using disaggregated data.

Third, China plays a central role in the communication equipment industry main products of which include semi-conductors, integrated circuits, other electronic parts and components, and televisions and video recording apparatus, etc. Specifically, cointegrating relationship in producer prices of communication equipment is found among East Asian countries centered on China, Indonesia, and Thailand. Taiwan shares a cointegrating relationship in eight out of 11 cases. In contrast, Japan, Malaysia, and Singapore share cointegrating relationship only in four out of 11 cases. More interestingly, Korea has only one cointegrating relationship with China, Indonesia, Thailand, and Taiwan, even though some Korean firms have a strong export competitiveness in the communication equipment industry. As shown in Sato *et al*. (2013), producer price of the electrical industry relative to trading partner country's prices declined far more substantially in Korea than in Japan and China from around 2006, which suggests that Korean electrical products have strong export price competitiveness as a source of Korean firms' market power. Thus, despite a large market share of Korean firms in the communication equipment industry, Korean industry-specific real exchange rates do not share common movements with corresponding real exchange rates of other East Asian countries.

4.1.4 Transport Equipment Industry

[12] The detailed results of estimated cointegrating relationship and the M-TAR unit-root tests are presented in Appendix Tables A1.5–A1.7 and A2.5–A2.7.
[13] The I-REER data for these three sub-industries are not published in the RIETI website but presented in Sato *et al*. (2013). We made effort to extend the I-REER series of the three sub-industries for our empirical analysis.

The number of cointegrating relationship in the transport equipment industry (23) is comparable to the corresponding number in the food industry (24). Although it is hard to detect a clear-cut pattern in combination of countries, all East Asian countries share long-run co-movements of real exchange rates through several different combinations of countries. As is well known, Japan and Korea have strong automobile companies in East Asia. In particular, Japanese automobile companies have actively built production subsidiaries in ASEAN countries and the automobile industry has markedly grown in the region centered on Thailand. Thus, the result of Table1 reflects that production and supply chains of the automobile industry have spread widely in East Asia.[14]

4.2. Error Correction Model and Granger Causality Test

For the combinations in which cointegrating relationship among the countries was found, we further conduct the Granger causality test under the error correcting mechanism.

Based on Equations (6) and (7), the error correction model with asymmetric adjustment process, developed by Enders and Silkos (2001), can be written as follows:

$$\begin{aligned}\Delta Y_t &= \alpha_{10} + \alpha_{11} I_t \cdot \hat{v}_{t-1} + \alpha_{12}\left(1 - I_t\right)\cdot \hat{v}_{t-1} + A_{11}(L)\Delta Y_{t-1} + A_{12}(L)\Delta X_{t-1} + \varepsilon_{1t} \\ \Delta X_t &= \alpha_{20} + \alpha_{21} I_t \cdot \hat{v}_{t-1} + \alpha_{22}\left(1 - I_t\right)\cdot \hat{v}_{t-1} + A_{21}(L)\Delta Y_{t-1} + A_{22}(L)\Delta X_{t-1} + \varepsilon_{2t}\end{aligned} \tag{8}$$

where $A(L)$ denotes a lag operator, $\alpha_{11} < 0,\ \alpha_{12} < 0,\ \alpha_{21} > 0,$ and $\alpha_{22} > 0$, and

$$Y_t = \sum_{k=m+1}^{n} \xi_k^i re_{\mathrm{US},k,t}^i,\ \ X_t = \beta_1 \cdot re_{\mathrm{US},1,t}^i + \beta_2 \cdot re_{\mathrm{US},2,t}^i + \cdots + \beta_m \cdot re_{\mathrm{US},m,t}^i = Y_t - v_t\ .$$

X_t denotes a linear combination of all or selected East Asian real exchange rates, and Y_t denotes the real exchange rates of the integrated market, which comprises the currencies of trading partners only and does not include Asian currencies.

We also employ the conventional type of error correction model for the Granger causality test for robustness check:

$$\begin{aligned}\Delta Y_t &= \alpha_0 + \alpha_1 \cdot \hat{v}_{t-1} + A_{11}(L)\Delta Y_{t-1} + A_{12}(L)\Delta X_{t-1} + \varepsilon_{1t} \\ \Delta X_t &= \alpha_0 + \alpha_2 \cdot \hat{v}_{t-1} + A_{21}(L)\Delta Y_{t-1} + A_{22}(L)\Delta X_{t-1} + \varepsilon_{2t}\end{aligned}\ , \tag{9}$$

where the signs of two coefficients for $\hat{v}$ are supposed as negative as well as those of Equation (8).[15]

[14] In Appendix Figures A1.1–A1.7, we drew a network map to visualize the features of our empirical results. A connected line between countries denote cointegration relationship and, hence, a thicker line suggests a stronger linkage between a pair of two countries.

[15] As shown in Appendix Tables A2.1–A2.7, the results of the M-TAR unit-root test reveal that there are a few cases of asymmetric cointegration, which suggests that the null hypothesis of symmetric adjustment cannot be rejected. Thus, we conduct the conventional Granger causality test for robustness check.

As for the first equation in a two-equation model with p lags of Equations (8) and (9), X_t does not Granger cause Y_t if and only if all of the coefficients of $A_{12}(L)$ are equal to zero. As for the second equation, Y_t does not Granger cause X_t if and only if all of coefficients of $A_{21}(L)$ are equal to zero.[16]

Table 3.1 shows the estimated coefficients of the error-correction model with the M-TAR adjustment and empirical results for the Granger causality test. For all sectors, we do not have any combinations that suggest X_t does Granger-cause the real effective exchange rates, Y_t , at the conventional significance level, while significant innovations of the error correcting mechanism are suggested as asymmetric adjustments. On the other hand, for the food industry and the general machinery industry, we have several cases which suggested Y_t does Granger-cause X_t at the conventional significance level. It means that the real exchange rates in the Asian region are cointegrated but also affected by the outside economies of the region for some combinations in the food and general machinery industries. For the electrical industry and the transport equipment industry, we cannot find the combinations which Y_t does Granger-cause X_t at the conventional significance level.

Table 3.2 shows the estimated coefficients of the error-correction model with symmetric adjustment and empirical results of the Granger causality test. Most results in Table 3-2 supports the empirical results shown in Table 3-1, while the coefficient of the error correcting mechanism in the first equation suggests insignificant and/or has an opposite sign against the theoretically expected sign.

Thus, most of the empirical results in Tables 3-1 and 3-2 suggest that, while the linkages across the East Asian countries in the food and general machinery industries are ascribed not only to the regional economies but also to the outside economies, the determinant of linkages in the electrical industry and the transport equipment industry is likely to be independent from the economies outside East Asia. This may suggest that regional integration has autonomously deepened through growing production and supply chains in the electrical industry and the transport equipment industry in East Asia.

As Ito *et al*. (2018) discussed, lots of export products in the electrical industry are invoiced in US dollars or Euro, and the US or European markets are final shipping destinations for the Japanese firms including Asia-based subsidiaries, while their exported products are assembled along their supply chains spreading across East Asian countries. This indicates that East Asian producer prices in these two industries tend to be affected by external demand such as business cycles in the US and Europe. However, our empirical results may reflect that production linkages along value chains in East Asia have deepened and become more autonomous in the electrical industry. In East Asia, the automobile industry has also developed not only in ASEAN countries centered on Thailand but also in China that

[16] For all cases, we confirmed the only one lag should be included in the error correction model based on the calculations of Schwarz-Bayesian information criterion (SBC).

has a large market. Thus, supply chains of the automobile industry in the region are likely to be more independent from the external demand from the United States and European countries. These findings suggest that regional economic integration has progressed significantly in these industries.

5. Conclusion

It is well known that intra-industry trade and cross-border production network have promoted economic growth and regional integration in East Asia. However, regional supply and production chains may have been differently formed across industries, reflecting different degree and scope of regional economic linkages at an industry level. To assess such differences, this study adopted the G-PPP model using *industry-specific* producer prices and investigated co-integrating relationship of the purchasing powers at an industry-level among East Asian countries using the M-TAR model. We also conducted Granger causality test under error-correction mechanism to make industry-level assessment as to whether East Asian region has become more autonomously integrated through growing regional production and supply chains.

The empirical results suggest that economic integration has progressed widely in the East Asian region, but integration patterns differ across machinery industries. As for the general machinery industry, we found that a number of sub-group of countries meet the G-PPP hypothesis, where Singapore, Malaysia, and China play a central role in regional economic integration. According to the Granger causality test, however, regional economic linkages in the general machinery industry are ascribed not only to the regional economies but also to the outside economies, which implies less autonomous integration. In contrast, economic integration has progressed more autonomously in the electrical industry and transport equipment industry. The automobile industry has also developed not only in ASEAN countries centered on Thailand but also in China that has a large market. Whereas clear-cut patterns of cointegration relationship are not found, regional production and supply chains in the transport equipment industry are likely to be more independent from the external demand from the United States and European countries.

By decomposing the electrical industry into three sub-industries, we found that China plays a central role in regional integration of the communication equipment industry main products of which include semi-conductors and other electronic parts and components, etc. As is often pointed out, export products in the electrical industry tend to be invoiced in US dollars and final shipping destination for finished products is the United States and European countries. However, our Granger causality test suggests that East Asian production is less affected by business cycles in the United States and Europe and, hence, regional production and supply chains have developed and become more autonomous in the electrical industry

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Table 1: Summary of M-TAR cointegration Tests

	China (CNY)	Japan (JPY)	Korea (KRW)	Taiwan (TWD)	Indonesia (IDR)	Malaysia (MYR)	The Philippines	Singapore (SGD)	Thailand (THB)
Food Sector									
13-01-9001	X	X	X	X	X	X	X	X	X
13-01-8006	X	X	X	-	X	X	X	X	X
13-01-8004	X	X	X	X	X	-	X	X	X
13-01-8003	X	X	X	X	X	X	-	X	X
13-01-8001	X	X	X	X	X	X	X	X	-
13-01-7014	X	X	X	-	X	-	X	X	X
13-01-7013	X	X	X	-	X	X	-	X	X
13-01-7011	X	X	X	-	X	X	X	X	-
13-01-7009	X	X	X	X	-	X	-	X	X
13-01-7004	X	X	X	X	X	-	X	X	-
13-01-7002	X	X	X	X	X	X	-	X	-
13-01-7001	X	X	X	X	X	X	X	-	-
13-01-6046	X	-	X	-	X	X	X	X	-
13-01-6020	X	X	X	-	-	-	X	X	-
13-01-6016	X	X	X	-	X	-	-	X	X
13-01-6014	X	X	X	-	X	-	X	X	-
13-01-6012	X	X	X	-	X	X	-	X	-
13-01-6006	X	X	X	X	-	X	-	X	-
13-01-6003	X	X	X	X	X	-	-	X	-
13-01-5067	X	-	-	-	X	X	X	-	X
13-01-5066	X	-	-	-	X	X	X	X	-
13-01-5013	X	X	X	-	-	-	X	X	-
13-01-5007	X	X	X	-	X	-	-	X	-
13-01-5001	X	X	X	X	X	-	-	-	-
Frequency	24	21	22	11	20	14	14	21	10
General Machinery									
13-10-7020	X	X	-	X	-	X	X	X	X
13-10-6083	-	-	X	-	X	X	X	X	X
13-10-6044	X	-	X	X	-	X	-	X	X
13-10-6034	X	X	-	-	X	-	X	X	X
13-10-6029	X	X	-	X	-	X	-	X	X
13-10-6027	X	X	-	X	-	X	X	X	-
13-10-5125	-	-	-	X	-	X	X	X	X
13-10-5118	-	-	X	-	X	X	-	X	X
13-10-5116	-	-	X	-	X	X	X	X	-
13-10-5101	-	X	-	-	X	X	X	X	-
13-10-5066	X	-	-	-	X	X	X	X	-
13-10-5062	X	-	-	X	-	X	X	X	-
13-10-5050	X	-	X	-	X	-	X	-	X
13-10-5041	X	-	X	X	-	X	-	X	-
13-10-5021	X	X	-	X	-	X	-	X	-
13-10-5005	X	X	X	X	-	-	-	-	X
Frequency	11	7	7	9	7	13	10	14	9
Electrical Industry									
13-11-8006	X	X	X	-	X	X	X	X	X
13-11-7013	X	X	X	-	X	X	-	X	X
13-11-7012	X	X	X	-	X	X	X	-	X
13-11-6036	X	-	X	X	X	X	X	-	-
13-11-6018	X	X	X	-	-	X	X	-	X
13-11-6013	X	X	X	-	X	X	-	-	X
13-11-6011	X	X	X	-	X	X	X	-	-
13-11-5125	-	-	-	X	-	X	X	X	X
13-11-5081	-	X	X	-	X	X	X	-	-
13-11-5040	X	-	X	X	-	X	X	-	-
13-11-5010	X	X	X	-	-	X	X	-	-
13-11-5009	X	X	X	-	X	X	-	-	-
Frequency	10	9	11	3	8	12	9	3	6
Transport Equipment									
13-13-8005	X	X	X	X	-	X	X	X	X
13-13-8004	X	X	X	X	X	-	X	X	X
13-13-7027	X	-	X	-	X	X	X	X	X
13-13-7023	X	-	X	X	X	X	X	-	X
13-13-7018	X	X	-	X	X	X	-	X	X
13-13-7016	X	X	-	X	X	X	X	X	-
13-13-7014	X	X	X	-	X	-	X	X	X
13-13-7009	X	X	X	X	-	X	-	X	X
13-13-7006	X	X	X	X	X	-	-	X	X
13-13-6065	-	X	X	X	-	X	-	X	X
13-13-6051	X	-	-	X	X	X	X	X	-
13-13-6047	X	-	X	-	X	X	X	-	X
13-13-6022	X	X	-	X	X	X	-	X	-
13-13-6007	X	X	X	X	-	X	-	-	X
13-13-5107	-	-	X	X	X	X	-	X	-
13-13-5092	-	X	-	X	X	X	-	X	-
13-13-5091	-	X	-	X	X	X	X	-	-
13-13-5077	-	X	X	X	-	X	-	-	X
13-13-5067	X	-	-	-	X	X	X	-	X
13-13-5063	X	-	-	X	-	X	X	-	X
13-13-5056	X	-	-	X	X	X	X	-	-
13-13-5033	X	X	-	-	-	X	X	-	X
13-13-5021	X	X	-	X	-	X	-	X	-
Frequency	18	15	12	18	15	20	13	14	15

Table 2: Summary of M-TAR cointegration Tests

	China (CNY)	Japan (JPY)	Korea (KRW)	Taiwan (TWD)	Indonesia (IDR)	Malaysia (MYR)	The Philippines	Singapore (SGD)	Thailand (THB)
Office Machinery (Office,Accounting and Computing Machinery)									
16-11-7024	X	-	X	X	X	X	-	X	X
16-11-6047	X	-	X	-	X	X	X	-	X
16-11-6042	X	-	X	X	-	X	X	X	-
16-11-6038	X	-	X	X	X	X	-	-	X
Frequency	4	0	4	3	3	4	2	2	3
Electrical Machinery (Electrical Machinery and Apparatus n.e.c.)									
16-12-6057	-	X	X	X	X	X	X	-	-
16-12-5081	-	X	X	-	X	X	X	-	-
16-12-5071	-	X	X	X	X	X	-	-	-
Frequency	0	3	3	2	3	3	2	0	0
Communication (Communication Equipment and Apparatus)									
16-13-6052	X	-	-	X	X	X	X	-	X
16-13-6025	X	X	-	X	X	-	X	-	X
16-13-6023	X	X	-	X	X	X	-	-	X
16-13-5069	X	-	-	-	X	-	X	X	X
16-13-5068	X	-	-	-	X	X	-	X	X
16-13-5060	X	-	-	X	X	-	X	-	X
16-13-5059	X	-	-	X	X	-	X	X	-
16-13-5058	X	-	-	X	X	X	-	-	X
16-13-5039	X	-	X	X	X	-	-	-	X
16-13-5031	X	X	-	-	X	-	-	X	X
16-13-5019	X	X	-	X	X	-	-	-	X
Frequency	11	4	1	8	11	4	5	4	10

Table 3.1: Estimation of Error Correction model (Asymmetric Adjustment) and Summary of Engel-Granger Causality test

										Coefficients of the Explanetories with t-statistics: dependent variable dL(Y)					Coefficients of the Explanetories with t-statistics: dependent variable dL(X)					Causality test ††	
	C	J	K	TW	I	M	P	S	TH	Constant	Z_plus	Z_minus	A(11)LY	A(12)LX	Constant	Z_plus	Z_minus	A(21)LY	A(22)LX	(LX→LY)	(LY→LX)
Food Sector																					
13-01-9001	X	X	X	X	X	X	X	X	X	-0.0005855	-0.0682279	-0.1516714 ***	0.14499264	0.05676123	-0.0001538	0.14846406 **	0.06693332	**0.21493799** ***	0.05120418		
										-0.55817	-1.10238	-2.73675	1.93421	0.74682	-0.15531	2.54016	1.27893	**3.03629**	0.71342		X
13-01-8006	X	X	X	-	X	X	X	X	X	-0.0004635	-0.05059	-0.1402484 **	0.13812835	0.06928713	-0.0002331	0.15046818 **	0.08204503	**0.21673488** ***	0.0584743		
										-0.44677	-0.77681	-2.4729	1.80009	0.89764	-0.23918	2.45945	1.53994	**3.00666**	0.80641		X
13-01-8004	X	X	X	X	X	-	X	X	X	-0.0008398	-0.0578337	-0.1821403 ***	0.11543854	0.05499863	-0.0002902	0.12959712 *	0.07328221	**0.16355889** **	0.05094184		
										-0.84631	-0.83579	-2.99256	1.49151	0.65428	-0.33007	2.11371	1.35885	**2.38499**	0.68395		X
13-01-8003	X	X	X	X	X	X	-	X	X	-0.0008129	-0.0649705	-0.1830222 ***	0.16718547 *	0.02303732	-0.0002989	0.18437493 ***	0.06067274	**0.22053339** ***	0.04951804		
										-0.78355	-1.05197	-2.98903	2.18987	0.31269	-0.29165	3.02189	1.00302	**2.92405**	0.68036		X
13-01-8001	X	X	X	X	X	X	X	X	-	-0.0004601	-0.0619106	-0.1533726 ***	0.13601763	0.06487306	-0.0003937	0.12923239 **	0.02501084	**0.18521796** ***	0.0622891		
										-0.43668	-1.09504	-2.75159	1.80122	0.80227	-0.40811	2.49646	0.49006	**2.6788**	0.8413		X
13-01-7014	X	X	X	-	X	-	X	X	X	-0.0006593	-0.0486045	-0.1683728 ***	0.10896927	0.06399984	-0.0003414	0.13701245 *	0.08249561	0.15802779 *	0.05313677		
										-0.67276	-0.66139	-2.69228	1.36855	0.74334	-0.39404	2.10881	1.49201	2.24483	0.69807		
13-01-7013	X	X	X	-	X	X	-	X	X	-0.0006676	-0.0580289	-0.1722147 ***	0.1614524 *	0.03317349	-0.0003462	0.1874651 ***	0.06475309	**0.2191719** ***	0.05222015		
										-0.65206	-0.8928	-2.72861	2.06676	0.43463	-0.34962	2.98219	1.06081	**2.90091**	0.70741		X
13-01-7011	X	X	X	-	X	X	X	X	-	-0.0003145	-0.0379143	-0.1372774 **	0.1271141	0.08067934	-0.0005274	0.1446098 ***	0.02933708	**0.18998608** ***	0.07983684		
										-0.30244	-0.6435	-2.4162	1.62919	0.97545	-0.56076	2.71353	0.57088	**2.6921**	1.06718		X
13-01-7009	X	X	X	X	-	X	-	X	X	-0.000468	-0.1029264 *	-0.0810335	0.18340304 **	-0.0478037	-0.0001918	0.11797335 *	0.12904861 *	0.06295286	0.03470038		
										-0.4659	-2.18088	-1.72783	2.53239	-0.79927	-0.15439	2.02103	2.22472	0.70279	0.46908		
13-01-7004	X	X	X	X	X	-	X	X	-	-0.0008804	-0.0455846	-0.2173768 ****	0.1275785	0.03887154	-0.0006764	0.13418387 **	0.00038488	0.14553196 *	0.05847803		
										-0.89224	-0.70074	-3.44216	1.62238	0.42009	-0.82158	2.4721	0.0073	2.21799	0.7574		
13-01-7002	X	X	X	X	X	X	-	X	-	-0.000554	-0.0801743	-0.1575593 ***	0.14548641	0.0390522	-0.000493	0.14856429 **	0.02756846	**0.18105587** **	0.05947492		
										-0.53345	-1.25556	-2.72987	1.88785	0.47525	-0.51525	2.52483	0.51836	**2.54962**	0.78547		X
13-01-7001	X	X	X	X	X	X	X	-	-	-0.0004825	-0.0428393	-0.1613193 ***	0.10768441	0.0796354	-0.0002103	0.12130878 *	-0.0379483	**0.18560076** **	0.06474153		
										-0.46658	-0.70897	-2.94082	1.30458	0.87037	-0.22543	2.22598	-0.76704	**2.49313**	0.78456		X
13-01-6046	X	-	X	-	X	X	X	X	-	-5.777E-05	-0.0452197	-0.0712918	0.07425829	0.15224465 *	0.00046602	0.11366196 *	0.09205295	0.04338063	0.23688382 ***		
										-0.05259	-0.8983	-1.36563	0.9431	2.01395	0.41751	2.22191	1.73519	0.54216	3.08362		
13-01-6020	X	X	X	-	-	-	X	X	-	-0.0007523	-0.0582811	-0.0787867	0.12432004	-0.011346	-0.0005067	0.15595639 ***	0.10925702	0.10036445	0.04166399		
										-0.7991	-1.37536	-1.84093	1.71215	-0.2074	-0.4056	2.77339	1.92376	1.0416	0.57391		
13-01-6016	X	X	X	-	X	-	-	X	X	-0.0007422	-0.0683288	-0.1843452 ***	0.12873563	0.03372838	-0.0004218	0.18596651 **	0.0653686	0.15740841 *	0.0528917		
										-0.77333	-0.85007	-2.77079	1.57905	0.38563	-0.4931	2.5954	1.1022	2.16593	0.67839		
13-01-6014	X	X	X	-	X	-	X	X	-	-0.0007206	-0.0434231	-0.2088948 ***	0.12515368	0.03906239	-0.0006595	0.12408321 *	0.01145263	0.14222653 *	0.05049348		
										-0.73766	-0.63473	-3.15876	1.53053	0.40585	-0.81353	2.18573	0.20869	2.096	0.6322		
13-01-6012	X	X	X	-	X	X	-	X	-	-0.0004377	-0.054538	-0.1546687 **	0.1405027	0.05846364	-0.0005638	0.15318957 ***	0.02540609	**0.18479725** **	0.07159966		
										-0.42746	-0.84464	-2.51829	1.75697	0.68095	-0.61368	2.64409	0.46101	**2.57542**	0.92942		X
13-01-6006	X	X	X	X	-	X	-	X	-	-0.0004067	-0.09003 *	-0.0956763 *	0.19132365 ***	-0.0602605	-0.000536	0.07368692	0.05768318	0.03061778	-0.0146839		
										-0.40068	-2.05914	-2.10234	2.60979	-0.91182	-0.45157	1.44145	1.08408	0.35721	-0.19003		
13-01-6003	X	X	X	X	X	-	-	X	-	-0.0009676	-0.0597696	-0.2424087 ****	0.14023445	0.02423562	-0.000745	0.1396786 **	-0.0083894	0.14410598 *	0.06117564		
										-0.99749	-0.82665	-3.48786	1.71185	0.24545	-0.94721	2.38274	-0.14888	2.16969	0.76419		
13-01-5067	X	-	-	-	X	X	X	-	X	-0.0001285	-0.0709257	-0.0787389	0.08793782	0.13830181	0.00058964	0.10989395	0.07166011	0.1132851	0.16865838 *		
										-0.11765	-1.18109	-1.5221	1.10693	1.67918	0.57702	1.95618	1.48077	1.52431	2.18894		
13-01-5066	X	-	-	-	X	X	X	X	-	-9.841E-05	-0.0481645	-0.0828521	0.05696657	0.14395631	0.00041646	0.10926886 *	0.08451675	0.02636508	0.23557293 ***		
										-0.08638	-0.87553	-1.43466	0.68519	1.74831	0.3705	2.0131	1.48324	0.3214	2.8996		
13-01-5013	X	X	X	-	-	-	X	X	-	-0.000886	-0.0424415	-0.0911405 **	0.14111539	-0.031645	-0.0009105	0.12261219 **	0.0576727	0.06644296	0.02202999		
										-0.95032	-1.02911	-2.28306	1.92857	-0.53258	-0.77793	2.36819	1.15076	0.7233	0.29533		
13-01-5007	X	X	X	-	X	-	-	X	-	-0.0008638	-0.0617435	-0.2459247 ****	0.14375109	0.02367459	-0.0007391	0.13645039 *	-0.0184534	0.14582604 *	0.057084		
										-0.90023	-0.81159	-3.36889	1.684	0.22765	-0.96099	2.2376	-0.31537	2.1312	0.68478		
13-01-5001	X	X	X	X	X	-	-	-	-	-0.0010436	-0.0307994	-0.2415171 ****	0.13665618	-0.0084321	-0.0006755	0.16739105 **	-0.1156221 *	0.17566428 *	0.03023161		
										-1.08458	-0.38401	-3.69731	1.45315	-0.07584	-0.83078	2.46981	-2.09467	2.21056	0.32177		
Frequency	24	21	22	11	20	14	14	21	10												

† **** denotes significance level at 0.1% , *** at 1%, *** at 2.5% and * at 5 % respectively.

††: X denotes the the vaiable are suggested as the Granger cause at least 1% siginificance level.

Table 3.1: Estimation of Error Correction model (Asymmetric Adjustment) and Summary of Engel-Granger Causality test Continued (1)

	C	J	K	TW	I	M	P	S	TH	Coefficients of the Explanetories with t-statistics: dependent variable dL(Y) Constant	Z_plus	Z_minus	A(11)LY	A(12)LX	Coefficients of the Explanetories with t-statistics: dependent variable dL(X) Constant	Z_plus	Z_minus	A(21)LY	A(22)LX	Causality test †† (LX→LY)	(LY→LX)
General Machinery																					
13-10-7020	X	X	-	X	-	X	X	X	X	-0.000136	-0.1066046	-0.1212396 **	0.15646223	-0.0960818	0.00012305	0.03091973	-0.0253753	0.15119546	-0.2087644 **		
										-0.12646	-1.58696	-2.41798	1.90312	-1.17547	0.11032	0.44389	-0.48806	1.77357	-2.46308		
13-10-6083	-	-	X	-	X	X	X	X	X	0.00082586	-0.1346233	-0.115149	0.21972152 **	-0.0212735	0.00122772 *	0.01547315	0.05041175	**0.27032294** ***	-0.0960919		X
										1.26974	-1.70394	-1.51527	2.26954	-0.20895	2.03072	0.2107	0.71369	**3.00396**	-1.01542		
13-10-6044	X	-	X	X	-	X	-	X	X	0.00027477	-0.1468229 ***	-0.0771361	0.23234325 ***	-0.1736649 *	0.00052558	-0.0374926	0.01020836	**0.25196245** **	-0.2157283 **		X
										0.28724	-2.78066	-1.50191	2.67501	-2.21474	0.47177	-0.60969	0.17067	**2.49081**	-2.36225		
13-10-6034	X	X	-	-	X	-	X	X	X	-0.0001137	-0.0812558	-0.0962869	0.07570623	0.02751209	0.00040024	0.00544283	0.03682552	0.13360012	-0.030306		
										-0.11086	-1.38751	-1.56338	0.83211	0.29061	0.40108	0.09554	0.61465	1.50951	-0.32908		
13-10-6029	X	X	-	X	-	X	-	X	X	0.00028935	-0.1226504 **	-0.0773231	0.17247062 *	-0.1293811	0.00024729	0.03044277	-0.0015367	0.19611841	-0.1926765 *		
										0.27084	-2.31841	-1.74855	2.11392	-1.9614	0.17622	0.43809	-0.02645	1.83	-2.22373		
13-10-6027	X	X	-	X	-	X	X	X	-	-0.0002132	-0.0696427	-0.1226225 **	0.15613059	-0.0902882	0.00030973	0.02890422	0.00579068	0.11770808	-0.1894204 *		
										-0.20896	-1.27022	-2.37342	1.89851	-1.15926	0.27988	0.48613	0.10335	1.31983	-2.24267		
13-10-5125	-	-	-	X	-	X	X	X	X	0.00067699	-0.0697631	-0.086725	0.11145099	-0.0043247	0.00079149	0.06090092	0.05279924	0.10202883	-0.0556493		
										0.80514	-1.05727	-1.2655	1.21679	-0.03622	1.29785	1.27255	1.06227	1.53584	-0.64267		
13-10-5118	-	-	X	-	X	X	-	X	X	0.00092558	-0.1305535	-0.1003208	0.20711435 *	-0.0226218	0.00118476	0.0310679	0.03783778	**0.26621512** ***	-0.0918187		X
										1.4149	-1.62827	-1.29663	2.0546	-0.2185	1.88822	0.40398	0.50988	**2.75337**	-0.92463		
13-10-5116	-	-	X	-	X	X	X	X	-	0.00103183	-0.1297501	-0.0385524	0.20412042 *	0.00638939	0.00145251 *	0.06420521	0.1344299	**0.24514813** ***	-0.075559		X
										1.55828	-1.75441	-0.51661	2.1636	0.06947	2.20907	0.87427	1.81411	**2.6168**	-0.8273		
13-10-5101	-	X	-	-	X	X	X	X	-	0.00078993	-0.0878006	-0.1172173	0.16397259	-0.0356537	0.00086278	0.11622686	-0.0023863	0.20212014 *	-0.1510723		
										0.99471	-1.12459	-1.29061	1.57705	-0.33802	1.11394	1.52637	-0.02694	1.99315	-1.46851		
13-10-5066	X	-	-	-	X	X	X	X	-	-0.0002903	-0.0644709	-0.201867 **	0.09695197	0.00935898	0.00036572	0.0247794	-0.0353995	0.12184938	-0.0523929		
										-0.27551	-0.94952	-2.48624	0.96076	0.08094	0.39205	0.41226	-0.49251	1.36402	-0.51186		
13-10-5062	X	-	-	X	-	X	X	X	-	-0.0001115	-0.0598322	-0.1524524 **	0.16012859	-0.085484	0.00035524	0.03232421	-0.0127301	0.13086446	-0.1391417		
										-0.10805	-1.06589	-2.42022	1.82438	-0.90048	0.36764	0.61502	-0.21584	1.59239	-1.56541		
13-10-5050	X	-	X	-	X	-	X	-	X	-5.31E-05	0.01359902	-0.1057822 *	0.06190559	0.06927634	3.0857E-05	0.11469629 *	-0.0007531	0.03127491	0.08877386		
										-0.05756	0.26869	-2.08317	0.69466	0.8184	0.03165	2.14371	-0.01403	0.33198	0.99206		
13-10-5041	X	-	X	X	-	X	-	X	-	0.00037203	-0.1537092 ***	-0.0383155	0.21674895 **	-0.1312105	0.0006516	-0.0258069	0.06242053	0.2002349	-0.189913 *		
										0.40277	-2.88969	-0.76699	2.53323	-1.76917	0.58599	-0.40301	1.03794	1.94395	-2.12708		
13-10-5021	X	X	-	X	-	X	-	X	-	0.0001675	-0.0981566	-0.0808608	0.17678427 *	-0.1191028	0.00061339	-0.0032674	0.04445759	0.17320675	-0.1909167 *		
										0.16558	-1.95476	-1.76892	2.13732	-1.79202	0.46462	-0.04986	0.74524	1.60462	-2.20113		
13-10-5005	X	X	X	X	-	-	-	-	X	-0.0002666	-0.0558993	-0.1668966 ****	0.16837917 *	-0.1358125 *	-6.067E-05	0.04823382	-0.0646936	0.12969716	-0.123457		
										-0.29256	-1.26295	-4.10816	2.15312	-1.99439	-0.0527	0.8626	-1.26049	1.31277	-1.43504		
Frequency	11	7	7	9	7	13	10	14	9												
Electrical Industry																					
13-11-8006	X	X	X	-	X	X	X	X	X	-0.000849	-0.087765	-0.1550909 ***	0.15194037	-0.1510499	0.0003417	-0.0005269	0.03726295	0.07265022	-0.0586344		
										-0.97652	-1.70557	-3.0477	1.91682	-1.76902	0.40807	-0.01063	0.76027	0.95159	-0.71297		
13-11-7013	X	X	X	-	X	X	-	X	X	-0.0005397	-0.1311784 **	-0.0950737 *	0.1226386	-0.1304573	0.00013895	0.01201326	0.03621213	0.02858341	-0.0433144		
										-0.63672	-2.54444	-2.03595	1.56248	-1.68208	0.15578	0.22142	0.73686	0.34604	-0.53069		
13-11-7012	X	X	X	-	X	X	X	-	X	-0.0005941	-0.0965112	-0.1533001 ***	0.17538266 *	-0.1454355	0.00044349	0.00775206	0.0037016	0.12257925	-0.0688581		
										-0.66753	-1.68173	-2.79208	2.03666	-1.53557	0.53271	0.1444	0.07207	1.52166	-0.77718		
13-11-6036	X	-	X	X	X	X	X	-	-	0.00021229	-0.0243597	0.01096842	0.09625893	-0.0239017	0.00033936	0.1401398 **	0.16866045 ***	0.07425262	0.03244969		
										0.23774	-0.45491	0.21066	1.14287	-0.33591	0.34028	2.3432	2.90026	0.78933	0.40831		
13-11-6018	X	X	X	-	-	X	X	-	X	-0.0007825	-0.108648	-0.1562429 ***	0.18443196 *	-0.1436775	0.00014687	-0.0046395	-0.0145673	0.15168614	-0.0841279		
										-0.87789	-1.93471	-2.6143	2.04565	-1.42468	0.17955	-0.09002	-0.26559	1.83324	-0.90896		
13-11-6013	X	X	X	-	X	X	-	-	X	-0.0003588	-0.1107803 *	-0.086301	0.14254849	-0.1130552	0.00036312	-0.0096015	0.02058748	0.05639435	-0.0111202		
										-0.40927	-2.04617	-1.75682	1.62447	-1.25498	0.41253	-0.17664	0.41744	0.64012	-0.12295		
13-11-6011	X	X	X	-	X	X	X	-	-	-0.0002661	-0.0667031	-0.1201122 *	0.16163659	-0.1118276	0.00062192	0.04207611	0.06257476	0.10963791	-0.0658005		
										-0.29793	-1.18504	-2.23125	1.90566	-1.30671	0.69373	0.74467	1.15798	1.28768	-0.76595		
13-11-5125	-	-	-	X	-	X	X	X	X	0.00092717	-0.0319121	0.01832267	0.06500093	0.01210406	0.00106315	0.10790061	0.14116277 **	0.02400481	0.15719507		
										1.08887	-0.52596	0.31975	0.69967	0.13711	1.25907	1.79333	2.48421	0.26056	1.79569		
13-11-5081	-	X	X	-	X	X	X	-	-	0.0010919	-0.1142312	-0.0918285	0.27150071 ***	-0.1147978	0.00145335	0.01267715	0.14213493	0.10924174	-0.0263799		
										1.56243	-1.8553	-1.49429	2.99972	-1.44181	1.76985	0.17522	1.96835	1.02717	-0.28196		
13-11-5040	X	-	X	X	-	X	X	-	-	0.00012111	-0.0429911	0.03210505	0.1020958	-0.0224945	0.00029499	0.09692478	0.19222646 ***	0.0867043	0.03388215		
										0.13583	-0.80021	0.58902	1.18214	-0.29974	0.3037	1.65602	3.23725	0.92153	0.41443		
13-11-5010	X	X	X	-	-	X	X	-	-	-0.0004479	-0.0791728	-0.1241414 *	0.16992868	-0.1098437	0.00038173	0.01599675	0.0479787	0.13723787	-0.0772568		
										-0.50105	-1.39545	-2.1829	1.91893	-1.19316	0.43678	0.28838	0.86291	1.58513	-0.85834		
13-11-5009	X	X	X	-	X	X	-	-	-	-8.259E-05	-0.0644326	-0.0616717	0.14200008	-0.0909289	0.00042627	0.04180388	0.06951549	0.06251459	-0.0364524		
										-0.0942	-1.2011	-1.3413	1.6469	-1.14779	0.44318	0.71036	1.37818	0.66092	-0.41944		
Frequency	10	9	11	3	8	12	9	3	6												

† **** denotes significance level at 0.1% , *** at 1%, ** at 2.5% and * at 5 % respectively.

††: X denotes the the vaiable are suggested as the Granger cause at least 1% siginificance level.

Table 3.1: Estimation of Error Correction model (Asymmetric Adjustment) and Summary of Engel-Granger Causality test Continued (2)

	C	J	K	TW	I	M	P	S	TH	Coefficients of the Explanetories with t-statistics: dependent variable dL(Y) Constant	Z_plus	Z_minus	A(11)LY	A(12)LX	Coefficients of the Explanetories with t-statistics: dependent variable dL(X) Constant	Z_plus	Z_minus	A(21)LY	A(22)LX	Causality test †† (LX→LY)	(LY→LX)
Transport Equipment																					
13-13-8005	X	X	X	X	-	X	X	X	X	-0.0005788	-0.0677285	-0.2259991 ****	0.19238702 **	-0.117266	0.00019306	0.0415737	0.03559775	0.09312724	-0.0881737		
										-0.62198	-1.14525	-3.45215	2.3711	-1.33887	0.21723	0.73611	0.56938	1.20184	-1.05414		
13-13-8004	X	X	X	X	X	-	X	X	X	-0.0005279	-0.0698295	-0.1956626 ***	0.11593296	-0.0173105	-4.275E-05	0.09178709	-0.042209	0.18462939 *	-0.0782704		
										-0.57359	-1.2087	-3.17328	1.3948	-0.21728	-0.04305	1.47228	-0.63436	2.05842	-0.91043		
13-13-7027	X	-	X	-	X	X	X	X	X	-0.000182	-0.0511846	-0.1201256	0.10266375	0.00281367	0.00052501	0.08853441	0.04686375	0.1004831	0.01132782		
										-0.16512	-0.85376	-1.88432	1.18816	0.03202	0.48922	1.51715	0.75523	1.19473	0.13242		
13-13-7023	X	-	X	X	X	X	X	-	X	-0.0001614	-0.0514231	-0.1412496 *	0.10487551	-0.0164354	0.00061495	0.08927624	0.02754732	0.09276875	-0.0316642		
										-0.14582	-0.81642	-2.04042	1.15449	-0.1787	0.56295	1.436	0.40315	1.03461	-0.3488		
13-13-7018	X	X	-	X	X	X	-	X	X	-0.000116	-0.0020878	-0.0632626	0.08976232	0.01774579	0.0003055	0.14698531 ***	0.08271107	0.09873883	0.13044229		
										-0.12576	-0.04455	-1.27773	1.11148	0.24482	0.31659	2.99814	1.59682	1.16868	1.72019		
13-13-7016	X	X	-	X	X	X	X	X	-	7.4345E-05	-0.0175118	-0.054133	0.08611244	0.04668405	-3.041E-05	0.13317009 ***	0.10502922 *	0.01674019	0.1499994 *		
										0.08273	-0.36232	-1.11126	1.11485	0.62857	-0.03441	2.80172	2.1924	0.22038	2.05365		
13-13-7014	X	X	X	-	X	-	X	X	X	-0.00045	-0.0214786	-0.1680948 ***	0.08979815	0.02162594	-0.0001642	0.14400629 **	-0.0282059	0.18332484 *	-0.0265023		
										-0.49129	-0.36854	-2.86573	1.06182	0.27551	-0.16403	2.26046	-0.4399	1.98309	-0.30887		
13-13-7009	X	X	X	X	-	X	-	X	X	-0.0005475	-0.0544308	-0.2082777 ****	0.18008488 *	-0.1003491	-0.0001913	0.10375073	-0.0126504	0.11252238	-0.0931019		
										-0.59722	-0.923	-3.41797	2.21164	-1.22855	-0.20322	1.7131	-0.20215	1.34559	-1.10987		
13-13-7006	X	X	X	X	X	-	-	X	X	-0.0006061	-0.0093779	-0.2437112 ****	0.12045676	-0.022218	-0.0002153	0.18377923 ***	-0.0875633	0.19696317 *	-0.0870966		
										-0.68305	-0.15645	-4.15413	1.47575	-0.29431	-0.21641	2.73394	-1.33091	2.15174	-1.02878		
13-13-6065	-	X	X	X	-	X	-	X	X	-0.0002169	-0.089363	-0.1804044 ***	0.17868988 *	-0.0646926	0.00023039	0.07101401	0.00548246	0.08491773	-0.1004278		
										-0.2625	-1.50349	-2.91288	2.19898	-0.79104	0.269	1.15244	0.08539	1.00798	-1.18449		
13-13-6051	X	-	-	X	X	X	X	X	-	0.00079103	-0.0380837	0.0074358	0.03612591	0.059786	0.00064368	0.11193724 *	0.13469836 ***	-0.0075195	0.10217747		
										0.73159	-0.76691	0.16424	0.45188	0.822	0.57027	2.15931	2.85007	-0.0901	1.34575		
13-13-6047	X	-	X	-	X	X	X	-	X	0.00014788	-0.0542974	-0.0861451	0.08955313	0.00297452	0.00071183	0.08759262	0.05807804	0.07581653	0.00846156		
										0.13443	-0.8256	-1.27274	0.94706	0.03141	0.65472	1.34754	0.86817	0.81123	0.09039		
13-13-6022	X	X	-	X	X	X	-	X	-	-2.679E-05	0.02226223	-0.0734642	0.08356796	0.0378145	-2.6E-05	0.16267055 ****	0.0670353	0.07760149	0.12270917		
										-0.03101	0.49121	-1.58858	1.06921	0.53969	-0.02854	3.40505	1.37516	0.94192	1.66144		
13-13-6007	X	X	X	X	-	X	-	-	X	-0.0004059	-0.0484023	-0.1799023 ***	0.17489037	-0.1029731	1.6807E-05	0.07398976	-0.0339225	0.15391916	-0.1621677		
										-0.44332	-0.81811	-2.92231	1.96457	-1.2067	0.0171	1.16519	-0.5134	1.61091	-1.77059		
13-13-5107	-	-	X	X	X	X	-	X	-	0.00086357	-0.049813	0.02988441	0.12595127	-0.0355049	0.00121554	0.02409763	0.10018974 *	0.13081292	-0.1835081 *		
										1.06808	-1.27686	0.75251	1.4603	-0.5037	1.24376	0.51102	2.08717	1.25474	-2.1538		
13-13-5092	-	X	-	X	X	X	-	X	-	0.00043757	0.00042176	-0.0254845	0.15303133	-0.0541124	0.00049396	0.12286245 **	0.08158402 *	-0.0145629	0.11902976		
										0.58773	0.00897	-0.65727	1.85406	-0.7212	0.62689	2.4697	1.98812	-0.16671	1.49895		
13-13-5091	-	X	-	X	X	X	X	-	-	0.00055768	-0.0069806	-0.0337846	0.14330014	-0.0494394	0.00053498	0.15716573 ***	0.10012779 *	-0.034824	0.06876502		
										0.72513	-0.13067	-0.73126	1.70775	-0.66194	0.64258	2.71762	2.00202	-0.38337	0.8505		
13-13-5077	-	X	X	X	-	X	-	-	X	-8.192E-05	-0.0926723	-0.1641316 **	0.16973815	-0.0655622	0.00043985	0.04667835	0.00028873	0.10168857	-0.1486131		
										-0.09883	-1.49855	-2.53716	1.95751	-0.76662	0.5058	0.71943	0.00425	1.11777	-1.65629		
13-13-5067	X	-	-	-	X	X	X	-	X	-0.0005424	-0.0578471	-0.1726782 ***	0.1110244	-0.0080875	0.00106405	0.14403491 **	0.01377482	0.03525516	0.06790141		
										-0.46117	-0.87198	-3.01169	1.33664	-0.09151	0.97932	2.3502	0.26006	0.45944	0.83163		
13-13-5063	X	-	-	X	-	X	X	-	X	0.00010012	-0.0784002	-0.0901049	0.14290971	-0.0360893	0.00081449	0.08755517	0.13577022 **	0.01851703	0.02945348		
										0.08547	-1.25978	-1.50466	1.75666	-0.42497	0.75733	1.53228	2.46931	0.2479	0.37775		
13-13-5056	X	-	-	X	X	X	X	-	-	0.00095611	-0.0308023	0.02454265	0.01087364	0.06472108	0.00088089	0.13037609 *	0.15815876 ***	-0.0428261	0.10177404		
										0.86677	-0.50588	0.44108	0.1217	0.7635	0.79996	2.14493	2.84737	-0.48014	1.20269		
13-13-5033	X	X	-	-	-	X	X	-	X	-0.0005758	-0.0575137	-0.1385457 **	0.17853209 *	-0.0830661	0.00057279	0.09130808	0.06619733	0.03072765	-0.0173826		
										-0.61231	-1.03349	-2.56079	2.24559	-1.03017	0.63564	1.71229	1.2769	0.40335	-0.22497		
13-13-5021	X	X	-	X	-	X	-	X	-	-5.962E-05	-0.0099742	-0.0404632	0.12524327	-0.0270686	-6.454E-05	0.12853326 ***	0.0952369 **	0.01391622	0.11046573		
										-0.06801	-0.22916	-1.04323	1.65603	-0.39226	-0.07115	2.85417	2.37315	0.17784	1.54714		
Frequency	18	15	12	18	15	20	13	14	15												

† **** denotes significance level at 0.1% , *** at 1%, *** at 2.5% and * at 5 % respectively.

††: X denotes the the vaiable are suggested as the Granger cause at least 1% siginificance level.

Table 3.2: Estimation of Error Correction model (Symmetric Adjustment) and Summary of Engel-Granger Causality test

	C	J	K	TW	I	M	P	S	TH	dL(Y) Constant	Z	A(11)LY	A(12)LX	dL(X) Constant	Z	A(21)LY	A(22)LX	Causality test †† (LX→LY)	(LY→LX)
Food Sector																			
13-01-9001	X	X	X	X	X	X	X	X	X	0.00000471	0.14639863 ****	0.02398473	0.15835015 *	-0.0003528	-0.1173278 ***	**0.30329314** ****	-0.044523		X
										0.0046	3.63899	0.33538	2.14756	-0.36248	-3.06607	**4.45859**	-0.63482		
13-01-8006	X	X	X	-	X	X	X	X	X	-6.647E-05	0.15838189 ****	0.01703691	0.16319679 *	-0.0002581	-0.1071172 ***	**0.3130757** ****	-0.0320733		X
										-0.06645	3.84707	0.23494	2.19588	-0.26913	-2.7136	**4.50269**	-0.45009		
13-01-8004	X	X	X	X	X	X	-	X	X	-0.0001033	0.17254058 ****	-0.0275048	0.16874104 *	-0.0004889	-0.1013417 **	**0.24661088** ****	-0.0348061		X
										-0.10769	3.90741	-0.37473	2.07336	-0.56818	-2.55927	**3.7467**	-0.47692		
13-01-8003	X	X	X	X	X	X	-	X	X	0.0000406	0.15145453 ****	0.02969306	0.13969454	-0.0005687	-0.1444062 ****	**0.31772958** ****	-0.0665395		X
										0.04025	3.57629	0.41046	1.94489	-0.5693	-3.4436	**4.43558**	-0.93556		
13-01-8001	X	X	X	X	X	X	X	X	-	-0.0002241	0.12149576 ***	0.028562	0.1564369 *	-0.000217	-0.0948006 ***	**0.25196267** ****	-0.024951		X
										-0.21614	3.10021	0.38842	1.97775	-0.22835	-2.63948	**3.73879**	-0.34419		
13-01-7014	X	X	X	-	X	-	X	X	X	-0.0001878	0.18407557 ****	-0.0331227	0.17118456 *	-0.0003908	-0.0912535 *	0.24590588 ****	-0.0283578		X
										-0.19944	4.0274	-0.441	2.06759	-0.45861	-2.20647	3.61827	-0.37852		
13-01-7013	X	X	X	-	X	X	-	X	X	-6.04E-07	0.16238455 ****	0.02414605	0.14545823	-0.0004438	-0.1310151 ***	**0.31905414** ****	-0.0560924		X
										-0.000611	3.71106	0.32789	1.96665	-0.45767	-3.05276	**4.41736**	-0.77323		
13-01-7011	X	X	X	-	X	X	X	X	-	-0.0003467	0.13596103 ****	0.01931418	0.16211838 *	-0.0001479	-0.0781534 *	**0.26247338** ****	-0.0008642		X
										-0.34218	3.40792	0.25734	2.01986	-0.15827	-2.12369	**3.79133**	-0.01167		
13-01-7009	X	X	X	X	-	X	-	X	X	-0.0005156	0.06861272 *	0.10289372	0.03286805	-0.0002725	-0.1671334 ****	**0.21301927** **	-0.1075972		X
										-0.52084	2.04922	1.41541	0.55036	-0.22855	-4.14432	**2.43286**	-1.49581		
13-01-7004	X	X	X	X	X	-	X	X	-	-0.0004024	0.15403083 ****	-0.0170699	0.14805746	-0.0004703	-0.0771384 *	**0.19822872** ***	-0.0211194		X
										-0.41558	3.44996	-0.223	1.62761	-0.58003	-2.06359	**3.09308**	-0.2773		
13-01-7002	X	X	X	X	X	X	-	X	-	-0.0002402	0.13193306 ***	0.02897825	0.14800245	-0.0003675	-0.1083912 ***	**0.25756459** ****	-0.0374147		X
										-0.23551	3.11803	0.38631	1.83972	-0.39127	-2.78181	**3.72872**	-0.50505		
13-01-7001	X	X	X	X	X	X	X	-	-	-2.606E-05	0.07824847	0.02830283	0.15699362	-0.0001579	-0.0792347 *	**0.2204119** ***	-0.0108216		X
										-0.0251	1.90844	0.34444	1.72857	-0.17036	-2.16529	**3.00547**	-0.1335		
13-01-6046	X	-	X	-	X	X	X	X	-	0.00047482	**0.0950656** ***	0.00050789	**0.22818574** ***	3.5812E-05	-0.0660116	0.12465893	0.15317035 *	#	
										0.44705	**2.62754**	0.00657	**3.05415**	0.03249	-1.75824	1.55434	1.97565		
13-01-6020	X	X	X	-	-	-	X	X	-	-0.0004992	0.0615934 *	0.06080115	0.05128502	-0.0008116	-0.1565428 ****	**0.22613896** **	-0.0928827		X
										-0.53875	2.04101	0.8495	0.94557	-0.66834	-3.95774	**2.41063**	-1.3066		
13-01-6016	X	X	X	-	X	-	-	X	X	-0.0001318	0.19767573 ****	-0.0307766	0.15932553	-0.0005333	-0.1060033 **	**0.24831113** ****	-0.0459317		X
										-0.14188	4.01461	-0.40121	1.89481	-0.62957	-2.3607	**3.54959**	-0.59899		
13-01-6014	X	X	X	-	X	-	X	X	-	-0.0004784	0.16427519 ****	-0.0193465	0.14873181	-0.0004025	-0.0655278	**0.19705364** ***	-0.0170987		X
										-0.50216	3.51974	-0.24402	1.57729	-0.50443	-1.67621	**2.96738**	-0.21649		
13-01-6012	X	X	X	-	X	X	-	X	-	-0.0003437	0.14708075 ****	0.01973471	0.15614467	-0.0002609	-0.0858852 *	**0.25902409** ****	-0.0140915		X
										-0.34444	3.38137	0.2563	1.87035	-0.28675	-2.16575	**3.68983**	-0.18514		
13-01-6006	X	X	X	X	-	X	-	X	-	-0.0007047	0.03315797	0.13434523	0.00641656	-8.402E-06	-0.1319044 ****	0.12782616	-0.1193434		
										-0.69996	1.03502	1.79071	0.0969	-0.00744	-3.66884	1.51822	-1.60586		
13-01-6003	X	X	X	X	X	-	-	X	-	-0.000468	0.1792657 ****	-0.0247655	0.15377726	-0.0005426	-0.0698012	**0.19336396** ***	-0.0124837		X
										-0.49256	3.63002	-0.3115	1.58387	-0.69923	-1.73075	**2.97813**	-0.15745		
13-01-5067	X	-	-	-	X	X	X	-	X	0.00075579	**0.11545324** ***	0.00071962	**0.22605683** ***	-3.747E-05	-0.0648447	**0.18453952** **	0.10002372	#	X
										0.7077	**2.96143**	0.00932	**2.80516**	-0.03682	-1.74546	**2.50812**	1.30252		
13-01-5066	X	-	-	-	X	X	X	X	-	0.00046158	**0.09900084** **	-0.0214884	**0.22671661** ***	4.4772E-05	-0.0623118	0.10171612	0.15532292	#	
										0.41822	**2.48301**	-0.26293	**2.77816**	0.04044	-1.55788	1.24064	1.89729		
13-01-5013	X	X	X	-	-	-	X	X	-	-0.0007331	0.03915943	0.08800337	0.02155597	-0.0008134	-0.1223712 ****	0.15846112	-0.0865127		
										-0.78912	1.34326	1.19548	0.36136	-0.71242	-3.41543	1.7515	-1.18005		
13-01-5007	X	X	X	-	X	-	-	X	-	-0.0005016	0.18588608 ****	-0.0234206	0.15386971	-0.000476	-0.0576529	**0.18892548** ***	-0.008098		X
										-0.53507	3.58258	-0.28244	1.50612	-0.62739	-1.37296	**2.81518**	-0.09794		
13-01-5001	X	X	X	X	X	-	-	-	-	-0.0001803	0.09171957	0.01837454	0.10200479	-0.000581	-0.0808226	**0.19210555** **	-0.0442711		X
										-0.18438	1.77285	0.19411	0.91002	-0.70866	-1.86303	**2.42015**	-0.47101		
Frequency	24	21	22	11	20	14	14	21	10										

†: **** denotes significance level at 0.1% , *** at 1%, *** at 2.5% and * at 5 % respectively.

††: X denotes the the vaiable are suggested as the Granger cause at least 1% siginificance level. # denotes coefficients are significant but have oposited sign.

Table 3.2: Estimation of Error Correction model (Symmetric Adjustment) and Summary of Engel-Granger Causality test Continued (1)

	C	J	K	TW	I	M	P	S	TH	dL(Y) Constant	**Z**	A(11)LY	**A(12)LX**	dL(X) Constant	Z	**A(21)LY**	A(22)LX	Causality test †† (LX→LY)	(LY→LX)
General Machinery																			
13-10-7020	X	X	-	X	-	X	X	X	X	-0.0003638	0.04627025	0.07403807	0.00585396	0.00056501	-0.1656567 ****	**0.23199275** ***	-0.2912588 ****		
										-0.35305	1.19303	0.90147	0.0732	0.5604	-4.36601	**2.88734**	-3.7227	X	
13-10-6083	-	-	X	-	X	X	X	X	X	0.00098558	0.11955574 **	0.09472978	0.08888166	0.00105138	-0.1098512 **	**0.33924878** ****	-0.1573534		
										1.56938	2.26019	1.00858	0.8983	1.82045	-2.2582	**3.9276**	-1.72931	X	
13-10-6044	X	-	X	X	-	X	-	X	X	-0.0001577	-0.0176413	0.18612325 *	-0.1047892	0.00062543	-0.181079 ****	**0.31369703** ***	-0.3038034 ****		
										-0.16711	-0.48256	2.11453	-1.33655	0.60954	-4.5546	**3.2771**	-3.56309	X	
13-10-6034	X	X	-	-	X	-	X	X	X	0.00001254	0.05689041	0.00914912	0.10664836	0.00021979	-0.0955439 **	0.18021026 *	-0.0875746		
										0.01266	1.37029	0.1015	1.13892	0.23234	-2.41015	2.09387	-0.97945		
13-10-6029	X	X	-	X	-	X	-	X	X	-0.0001896	-0.0139048	0.13101438	-0.0680266	0.00093083	-0.2133688 ****	**0.28262619** ***	-0.3172878 ****		
										-0.18464	-0.42098	1.59424	-1.04758	0.74937	-5.33891	**2.8423**	-4.03816	X	
13-10-6027	X	X	-	X	-	X	X	X	-	-0.000216	0.03395056	0.09416087	-0.012488	0.00055859	-0.1486455 ****	**0.20106542** **	-0.2692977 ****		
										-0.21631	0.91928	1.13845	-0.1624	0.54172	-3.89826	**2.35449**	-3.39185	X	
13-10-5125	-	-	-	X	-	X	X	X	X	0.00034648	0.18860813 ****	-0.0327704	0.06109142	0.00087535	0.01491528	0.12683641	-0.0702749		
										0.43494	4.13914	-0.37749	0.53238	1.45736	0.43412	1.93773	-0.81222		
13-10-5118	-	-	X	-	X	X	-	X	X	0.0009838	0.10062739	0.09821036	0.0793837	0.00108709	-0.1150119 **	**0.33539417** ****	-0.1568945		
										1.56757	1.87151	0.99969	0.78584	1.82931	-2.25904	**3.60552**	-1.64027	X	
13-10-5116	-	-	X	-	X	X	X	X	-	0.00116678	0.12451992 **	0.10598745	0.07644796	0.00106128	-0.1048291 *	**0.35029416** ****	-0.1605307		
										1.83731	2.43705	1.16363	0.86216	1.67356	-2.05459	**3.85134**	-1.813	X	
13-10-5101	-	X	-	-	X	X	X	X	-	0.00090157	0.1065724	0.06580167	0.05053803	0.00109164	-0.103731	0.27931776 ***	-0.2082194 *		
										1.21414	1.87463	0.64868	0.49522	1.50965	-1.87373	2.82759	-2.0952	X	
13-10-5066	X	-	-	-	X	X	X	X	-	0.00025713	0.08816223	-0.0080402	0.12962992	0.00053192	-0.0724797	0.15197754	-0.079005		
										0.25849	1.74101	-0.08011	1.13321	0.61329	-1.64163	1.73665	-0.79214		
13-10-5062	X	-	-	X	-	X	X	X	-	-0.0001393	0.06990802	0.06575961	0.01469545	0.00059907	-0.0980285 **	**0.1889814** **	-0.1927901 *		
										-0.13691	1.68641	0.74886	0.15625	0.64395	-2.58713	**2.35445**	-2.24263	X	
13-10-5050	X	-	X	-	X	-	X	-	X	0.00011235	0.04885947	0.02912608	0.10668025	0.00053138	-0.0698457	0.10890743	0.01610823		
										0.12404	1.36707	0.32793	1.26302	0.55677	-1.85472	1.16374	0.181		
13-10-5041	X	-	X	X	-	X	-	X	-	-7.873E-05	-0.0046417	0.16832485	-0.0686726	0.00057925	-0.172703 ****	**0.27436425** ***	-0.2780306 ***		
										-0.08591	-0.12776	1.94327	-0.92962	0.55627	-4.18315	**2.78738**	-3.31207	X	
13-10-5021	X	X	-	X	-	X	-	X	-	-9.069E-05	-0.0116509	0.13985698	-0.0664581	0.00087305	-0.2006018 ****	**0.25906529** **	-0.3036274 ****		
										-0.09114	-0.35019	1.68346	-1.01489	0.72068	-4.95231	**2.56131**	-3.80841	X	
13-10-5005	X	X	X	X	-	-	-	-	X	-0.000114	-0.0396492	0.15840566	-0.1088357	0.00042366	-0.1804794 ****	0.18649573 *	-0.2480694 ***		
										-0.12256	-1.29436	1.95901	-1.58715	0.39485	-5.10722	1.99926	-3.13585		
Frequency	11	7	7	9	7	13	10	14	9										
Electrical Industry																			
13-11-8006	X	X	X	-	X	X	X	X	X	-0.0001006	0.03724478	0.07500363	-0.0509267	-0.0002406	-0.1048644 ***	0.13075466	-0.1342939		
										-0.11464	0.99728	0.93148	-0.58649	-0.2981	-3.0522	1.76514	-1.68113		
13-11-7013	X	X	X	-	X	X	-	X	X	-0.0002999	0.02396701	0.06818568	-0.0499997	-0.0003107	-0.1240876 ****	0.09893162	-0.1335987		
										-0.35212	0.67647	0.85165	-0.63128	-0.36452	-3.49941	1.23462	-1.68533		
13-11-7012	X	X	X	-	X	X	X	-	X	0.00011298	0.03653803	0.09641818	-0.0461917	2.9706E-05	-0.0981535 ***	0.16643102 *	-0.1268591		
										0.12555	0.89421	1.10772	-0.48081	0.0367	-2.67012	2.12537	-1.46777		
13-11-6036	X	-	X	X	X	X	X	-	-	-6.857E-06	0.11461284 ***	0.02445533	0.02569699	0.00056425	-0.0650064	0.21271903 *	-0.0535461		
										-0.00805	3.139	0.30131	0.37142	0.56487	-1.51902	2.23609	-0.66032		
13-11-6018	X	X	X	-	-	X	X	-	X	-0.0001002	0.03230323	0.10425356	-0.0397517	-0.0001973	-0.0975417 ***	**0.18679759** **	-0.1332148		
										-0.11098	0.76668	1.14946	-0.3902	-0.24759	-2.62178	**2.33246**	-1.4809	X	
13-11-6013	X	X	X	-	X	X	-	-	X	-9.132E-05	0.01737918	0.09084121	-0.043958	-2.93E-05	-0.0994634 ***	0.11172553	-0.0822799		
										-0.10401	0.46997	1.02026	-0.48042	-0.03438	-2.77092	1.29271	-0.9264		
13-11-6011	X	X	X	-	X	X	X	-	-	7.5592E-05	0.04563566	0.10219905	-0.0480054	0.00035337	-0.083886 *	0.16680175 *	-0.1259717		
										0.08609	1.15131	1.19424	-0.55684	0.40828	-2.14709	1.97751	-1.48247		
13-11-5125	-	-	-	X	-	X	X	X	X	0.00097997	0.12555448 ***	-0.0108624	0.08004981	0.00079102	-0.0160469	0.11490409	0.09896769		
										1.21386	3.08941	-0.1205	0.92138	0.94674	-0.38152	1.23167	1.10068		
13-11-5081	-	X	X	-	X	X	X	-	-	0.00095401	-0.0080742	0.23540673 **	-0.0701612	0.0014449	-0.1733393 ****	0.22325795 *	-0.1451415		
										1.37894	-0.18049	2.54823	-0.87082	1.83273	-3.40024	2.12077	-1.58085		
13-11-5040	X	-	X	X	-	X	X	-	-	-0.000188	0.11275457 ***	0.03114218	0.02917247	0.00034806	-0.0564605	0.20882925 *	-0.0439419		
										-0.21976	3.00437	0.37248	0.39777	0.35728	-1.32078	2.19283	-0.52602		
13-11-5010	X	X	X	-	-	X	X	-	-	-0.0001293	0.03826602	0.11039749	-0.0419053	0.00010703	-0.0840722 *	0.18504172 *	-0.1315622		
										-0.14662	0.93583	1.2358	-0.45164	0.12698	-2.15114	2.16716	-1.4835		
13-11-5009	X	X	X	-	X	X	-	-	-	-0.0001051	0.02992245	0.09876591	-0.0468669	0.00036268	-0.0869154 **	0.1287231	-0.1030432		
										-0.12188	0.8498	1.14096	-0.59051	0.3882	-2.2783	1.3725	-1.19833		
Frequency	10	9	11	3	8	12	9	3	6										

†: **** denotes significance level at 0.1% , *** at 1%, ** at 2.5% and * at 5 % respectively.

††: X denotes the the vaiable are suggested as the Granger cause at least 1% siginificance level.

Table 3.2: Estimation of Error Correction model (Symmetric Adjustment) and Summary of Engel-Granger Causality test Continued (2)

	C	J	K	TW	I	M	P	S	TH	dL(Y) Constant	Z	A(11)LY	A(12)LX	dL(X) Constant	Z	A(21)LY	A(22)LX	Causality test †† (LX→LY)	(LY→LX)
Transport Equipment																			
13-13-8005	X	X	X	X	-	X	X	X	X	0.00000989	0.0839493	0.0704942	0.01289132	0.0001242	-0.1229573 ***	**0.17143667 **	-0.165991 *	X	
										0.01089	1.90721	0.85661	0.14671	0.14935	-3.04944	**2.27413**	-2.06221		
13-13-8004	X	X	X	X	X	-	X	X	X	0.00017113	0.03280395	0.04124752	0.06746539	-0.0001452	-0.1710222 ****	**0.22886271 ***	-0.1702733 *	X	
										0.18747	0.77686	0.49411	0.84758	-0.15579	-3.96582	**2.6845**	-2.09465		
13-13-7027	X	-	X	-	X	X	X	X	X	0.00052275	0.09310528 *	0.01462415	0.08481855	0.00033845	-0.0843973 *	0.1693865 *	-0.0586797		
										0.50462	2.18797	0.17201	0.97656	0.33629	-2.04146	2.05068	-0.69541		
13-13-7023	X	-	X	X	X	X	X	-	X	0.00063404	0.08414817	0.0143938	0.07061261	0.00042772	-0.0971368 *	0.15979944	-0.1001752		
										0.6028	1.83897	0.16043	0.77754	0.41581	-2.17068	1.82123	-1.12793		
13-13-7018	X	X	-	X	X	X	-	X	X	0.00063411	0.09726523 ***	0.01463182	0.07471935	-0.0002864	-0.0476594	0.18472166 *	0.06649663		
										0.7153	2.86416	0.18726	1.04418	-0.29739	-1.292	2.17635	0.85549		
13-13-7016	X	X	-	X	X	X	X	X	-	0.00012718	0.11863531 ****	-0.0100817	0.10632626	0.00016586	-0.0402701	0.11778788	0.08406512		
										0.15251	3.58288	-0.13487	1.47725	0.19185	-1.17311	1.51994	1.12659		
13-13-7014	X	X	X	-	X	-	X	X	X	0.00019112	0.04620123	0.02870369	0.08770342	-7.537E-05	-0.1447016 ***	**0.24184601 ***	-0.1199044	X	
										0.21179	1.11904	0.33989	1.1226	-0.07868	-3.30141	**2.69761**	-1.44571		
13-13-7009	X	X	X	X	-	X	-	X	X	0.0000586	0.05974831	0.08267313	0.00302615	-3.692E-05	-0.1422529 ****	**0.18994216 **	-0.1781674 *	X	
										0.06474	1.39375	0.99891	0.03676	-0.04152	-3.37545	**2.33452**	-2.2016		
13-13-7006	X	X	X	X	X	-	-	X	X	0.00020821	0.02939825	0.0433156	0.05876498	-0.0002566	-0.1921609 ****	**0.24398377 ***	-0.1913055 **	X	
										0.22995	0.68388	0.52042	0.77132	-0.2675	-4.21967	**2.7671**	-2.37029		
13-13-6065	-	X	X	X	-	X	-	X	X	0.00021865	0.05426547	0.08602797	0.0421633	0.00019751	-0.1548151 ****	0.1692642 *	-0.1829894 **		
										0.27086	1.26672	1.04248	0.51887	0.24783	-3.66048	2.07758	-2.28098		
13-13-6051	X	-	-	X	X	X	X	X	-	0.00052911	0.10989761 ****	-0.0425661	0.11121331	0.00062275	-0.0352955	0.09249881	0.04290931		
										0.52341	3.3944	-0.55189	1.58188	0.55987	-0.99077	1.08993	0.55468		
13-13-6047	X	-	X	-	X	X	X	-	X	0.00061498	0.09090022 *	0.00970572	0.07642228	0.0004901	-0.0776116	0.14834814	-0.0612661		
										0.59133	1.97682	0.10425	0.81848	0.47538	-1.70259	1.60737	-0.6619		
13-13-6022	X	X	-	X	X	X	X	-	-	0.00042985	0.10206043 ***	0.00495745	0.08412926	-9.52E-05	-0.049185	0.17637102 *	0.04967234		
										0.51649	3.20063	0.06536	1.2239	-0.10392	-1.40125	2.11239	0.65648		
13-13-6007	X	X	X	X	-	X	-	-	X	0.00012703	0.02364688	0.10976388	-0.0307583	-4.799E-05	-0.1520407 ****	**0.22255209 **	-0.2390148 ***	X	
										0.13938	0.55193	1.2177	-0.36044	-0.05128	-3.45619	**2.40461**	-2.72792		
13-13-5107	-	-	X	X	X	X	-	X	-	0.00075445	0.03455926	0.09615918	-0.0125502	0.00090993	-0.0621605	0.19903771	-0.2267138 ***		
										0.94316	1.25148	1.12023	-0.18079	0.94003	-1.86016	1.91616	-2.69879		
13-13-5092	-	X	-	X	X	X	-	X	-	0.00064532	0.06896939 **	0.09041566	-0.0144209	0.00041493	-0.0160706	0.05679558	0.07446351		
										0.90244	2.30582	1.10208	-0.19303	0.52969	-0.49046	0.63196	0.90989		
13-13-5091	-	X	-	X	X	X	X	-	-	0.00060926	0.08680133 **	0.06453739	0.00109377	0.00069186	-0.0438716	0.07197834	-0.0054129		
										0.82361	2.48462	0.77384	0.01479	0.83305	-1.11854	0.76874	-0.06518		
13-13-5077	-	X	X	X	-	X	-	-	X	0.00030508	0.03874436	0.08929478	0.02568495	0.00025967	-0.1604004 ****	0.18117005 *	-0.2237068 ***		
										0.37285	0.8693	1.01894	0.30354	0.31697	-3.59464	2.06491	-2.64066		
13-13-5067	X	-	-	-	X	X	X	-	X	0.00143442	0.10154534 **	-0.0191081	0.11508624	0.00028863	-0.0878936 *	0.080131	-0.0037373		
										1.23506	2.30197	-0.23475	1.29833	0.27126	-2.17484	1.07452	-0.04602		
13-13-5063	X	-	-	X	-	X	X	-	X	0.00047061	0.14555996 ****	0.00772571	0.05859051	0.00040619	-0.0629725	0.12600296	-0.0465857		
										0.42433	3.4505	0.09769	0.70815	0.38621	-1.57415	1.68024	-0.59376		
13-13-5056	X	-	-	X	X	X	X	-	-	0.00074413	0.13873012 ****	-0.0753155	0.12151135	0.00079378	-0.014236	0.0542546	0.04199792		
										0.72266	3.48845	-0.87545	1.48591	0.72996	-0.33897	0.59717	0.48632		
13-13-5033	X	X	-	-	-	X	X	-	X	0.00049457	0.09750569 **	0.04847379	0.02137127	-1.831E-05	-0.0881093 **	0.11579704	-0.0931122		
										0.54693	2.55455	0.62914	0.26809	-0.02125	-2.42268	1.57735	-1.22589		
13-13-5021	X	X	-	X	-	X	-	X	-	0.00017688	0.08948804 ***	0.04313787	0.01877719	-0.0001428	-0.0291898	0.10679639	0.06206323		
										0.21091	3.10848	0.58211	0.27643	-0.1567	-0.93285	1.32587	0.8406		
Frequency	18	15	12	18	15	20	13	14	15										

†: **** denotes significance level at 0.1% , *** at 1%, *** at 2.5% and * at 5 % respectively.

††: X denotes the the vaiable are suggested as the Granger cause at least 1% siginificance level.

Table 3.1: Estimation of Error Correction model (Asymmetric Adjustment) and Summary of Engel-Granger Causality test Continued (1)

	C	J	K	TW	I	M	P	S	TH	Coefficients of the Explanetories with t-statistics: dependent variable dL(Y) Constant	Z_plus	Z_minus	A(11)LY	A(12)LX	Coefficients of the Explanetories with t-statistics: dependent variable dL(X) Constant	Z_plus	Z_minus	A(21)LY	A(22)LX	Causality test †† (LX→LY)	(LY→LX)
General Machinery																					
13-10-7020	X	X	-	X	-	X	X	X	X	-0.000136	-0.1066046	-0.1212396 **	0.15646223	-0.0960818	0.00012305	0.03091973	-0.0253753	0.15119546	-0.2087644 **		
										-0.12646	-1.58696	-2.41798	1.90312	-1.17547	0.11032	0.44389	-0.48806	1.77357	-2.46308		
13-10-6083	-	-	X	-	X	X	X	X	X	0.00082586	-0.1346233	-0.115149	0.21972152 **	-0.0212735	0.00122772 *	0.01547315	0.05041175	**0.27032294** ***	-0.0960919		X
										1.26974	-1.70394	-1.51527	2.26954	-0.20895	2.03072	0.2107	0.71369	**3.00396**	-1.01542		
13-10-6044	X	-	X	X	-	X	-	X	X	0.00027477	-0.1468229 ***	-0.0771361	0.23234325 ***	-0.1736649 *	0.00052558	-0.0374926	0.01020836	**0.25196245** **	-0.2157283 **		X
										0.28724	-2.78066	-1.50191	2.67501	-2.21474	0.47177	-0.60969	0.17067	**2.49081**	-2.36225		
13-10-6034	X	X	-	-	X	-	X	X	X	-0.0001137	-0.0812558	-0.0962869	0.07570623	0.02751209	0.00040024	0.00544283	0.03682552	0.13360012	-0.030306		
										-0.11086	-1.38751	-1.56338	0.83211	0.29061	0.40108	0.09554	0.61465	1.50951	-0.32908		
13-10-6029	X	X	-	X	-	X	-	X	X	0.00028935	-0.1226504 **	-0.0773231	0.17247062 *	-0.1293811	0.00024729	0.03044277	-0.0015367	0.19611841	-0.1926765 *		
										0.27084	-2.31841	-1.74855	2.11392	-1.9614	0.17622	0.43809	-0.02645	1.83	-2.22373		
13-10-6027	X	X	-	X	-	X	X	X	-	-0.0002132	-0.0696427	-0.1226225 **	0.15613059	-0.0902882	0.00030973	0.02890422	0.00579068	0.11770808	-0.1894204 *		
										-0.20896	-1.27022	-2.37342	1.89851	-1.15926	0.27988	0.48613	0.10335	1.31983	-2.24267		
13-10-5125	-	-	-	X	-	X	X	X	X	0.00067699	-0.0697631	-0.086725	0.11145099	-0.0043247	0.00079149	0.06090092	0.05279924	0.10202883	-0.0556493		
										0.80514	-1.05727	-1.2655	1.21679	-0.03622	1.29785	1.27255	1.06227	1.53584	-0.64267		
13-10-5118	-	-	X	-	X	X	-	X	X	0.00092558	-0.1305535	-0.1003208	0.20711435 *	-0.0226218	0.00118476	0.0310679	0.03783778	**0.26621512** ***	-0.0918187		X
										1.4149	-1.62827	-1.29663	2.0546	-0.2185	1.88822	0.40398	0.50988	**2.75337**	-0.92463		
13-10-5116	-	-	X	-	X	X	X	X	-	0.00103183	-0.1297501	-0.0385524	0.20412042 *	0.00638939	0.00145251 *	0.06420521	0.1344299	**0.24514813** ***	-0.075559		X
										1.55828	-1.75441	-0.51661	2.1636	0.06947	2.20907	0.87427	1.81411	**2.6168**	-0.8273		
13-10-5101	-	X	-	-	X	X	X	X	-	0.00078993	-0.0878006	-0.1172173	0.16397259	-0.0356537	0.00086278	0.11622686	-0.0023863	0.20212014 *	-0.1510723		
										0.99471	-1.12459	-1.29061	1.57705	-0.33802	1.11394	1.52637	-0.02694	1.99315	-1.46851		
13-10-5066	X	-	-	-	X	X	X	X	-	-0.0002903	-0.0644709	-0.201867 **	0.09695197	0.00935898	0.00036572	0.0247794	-0.0353995	0.12184938	-0.0523929		
										-0.27551	-0.94952	-2.48624	0.96076	0.08094	0.39205	0.41226	-0.49251	1.36402	-0.51186		
13-10-5062	X	-	-	X	-	X	X	X	-	-0.0001115	-0.0598322	-0.1524524 **	0.16012859	-0.085484	0.00035524	0.03232421	-0.0127301	0.13086446	-0.1391417		
										-0.10805	-1.06589	-2.42022	1.82438	-0.90048	0.36764	0.61502	-0.21584	1.59239	-1.56541		
13-10-5050	X	-	X	-	X	-	X	-	X	-5.31E-05	0.01359902	-0.1057822 *	0.06190559	0.06927634	3.0857E-05	0.11469629 *	-0.0007531	0.03127491	0.08877386		
										-0.05756	0.26869	-2.08317	0.69466	0.8184	0.03165	2.14371	-0.01403	0.33198	0.99206		
13-10-5041	X	-	X	X	-	X	-	X	-	0.00037203	-0.1537092 ***	-0.0383155	0.21674895 **	-0.1312105	0.0006516	-0.0258069	0.06242053	0.2002349	-0.189913 *		
										0.40277	-2.88969	-0.76699	2.53323	-1.76917	0.58599	-0.40301	1.03794	1.94395	-2.12708		
13-10-5021	X	X	-	X	-	X	-	X	-	0.0001675	-0.0981566	-0.0808608	0.17678427 *	-0.1191028	0.00061339	-0.0032674	0.04445759	0.17320675	-0.1909167 *		
										0.16558	-1.95476	-1.76892	2.13732	-1.79202	0.46462	-0.04986	0.74524	1.60462	-2.20113		
13-10-5005	X	X	X	X	-	-	-	-	X	-0.0002666	-0.0558993	-0.1668966 ****	0.16837917 *	-0.1358125 *	-6.067E-05	0.04823382	-0.0646936	0.12969716	-0.123457		
										-0.29256	-1.26295	-4.10816	2.15312	-1.99439	-0.0527	0.8626	-1.26049	1.31277	-1.43504		
Frequency	11	7	7	9	7	13	10	14	9												
Electrical Industry																					
13-11-8006	X	X	X	-	X	X	X	X	X	-0.000849	-0.087765	-0.1550909 ***	0.15194037	-0.1510499	0.0003417	-0.0005269	0.03726295	0.07265022	-0.0586344		
										-0.97652	-1.70557	-3.0477	1.91682	-1.76902	0.40807	-0.01063	0.76027	0.95159	-0.71297		
13-11-7013	X	X	X	-	X	X	-	X	X	-0.0005397	-0.1311784 **	-0.0950737 *	0.1226386	-0.1304573	0.00013895	0.01201326	0.03621213	0.02858341	-0.0433144		
										-0.63672	-2.54444	-2.03595	1.56248	-1.68208	0.15578	0.22142	0.73686	0.34604	-0.53069		
13-11-7012	X	X	X	-	X	X	X	-	X	-0.0005941	-0.0965112	-0.1533001 ***	0.17538266 *	-0.1454355	0.00044349	0.00775206	0.0037016	0.12257925	-0.0688581		
										-0.66753	-1.68173	-2.79208	2.03666	-1.53557	0.53271	0.1444	0.07207	1.52166	-0.77718		
13-11-6036	X	-	X	X	X	X	X	-	-	0.00021229	-0.0243597	0.01096842	0.09625893	-0.0239017	0.00033936	0.1401398 **	0.16866045 ***	0.07425262	0.03244969		
										0.23774	-0.45491	0.21066	1.14287	-0.33591	0.34028	2.3432	2.90026	0.78933	0.40831		
13-11-6018	X	X	X	-	-	X	X	-	X	-0.0007825	-0.108648	-0.1562429 ***	0.18443196 *	-0.1436775	0.00014687	-0.0046395	-0.0145673	0.15168614	-0.0841279		
										-0.87789	-1.93471	-2.6143	2.04565	-1.42468	0.17955	-0.09002	-0.26559	1.83324	-0.90896		
13-11-6013	X	X	X	-	X	X	-	-	X	-0.0003588	-0.1107803 *	-0.086301	0.14254849	-0.1130552	0.00036312	-0.0096015	0.02058748	0.05639435	-0.0111202		
										-0.40927	-2.04617	-1.75682	1.62447	-1.25498	0.41253	-0.17664	0.41744	0.64012	-0.12295		
13-11-6011	X	X	X	-	X	X	X	-	-	-0.0002661	-0.0667031	-0.1201122 *	0.16163659	-0.1118276	0.00062192	0.04207611	0.06257476	0.10963791	-0.0658005		
										-0.29793	-1.18504	-2.23125	1.90566	-1.30671	0.69373	0.74467	1.15798	1.28768	-0.76595		
13-11-5125	-	-	-	X	-	X	X	X	X	0.00092717	-0.0319121	0.01832267	0.06500093	0.01210406	0.00106315	0.10790061	0.14116277 **	0.02400481	0.15719507		
										1.08887	-0.52596	0.31975	0.69967	0.13711	1.25907	1.79333	2.48421	0.26056	1.79569		
13-11-5081	-	X	X	-	X	X	X	-	-	0.0010919	-0.1142312	-0.0918285	0.27150071 ***	-0.1147978	0.00145335	0.01267715	0.14213493	0.10924174	-0.0263799		
										1.56243	-1.8553	-1.49429	2.99972	-1.44181	1.76985	0.17522	1.96835	1.02717	-0.28196		
13-11-5040	X	-	X	X	-	X	X	-	-	0.00012111	-0.0429911	0.03210505	0.1020958	-0.0224945	0.00029499	0.09692478	0.19222646 ***	0.0867043	0.03388215		
										0.13583	-0.80021	0.58902	1.18214	-0.29974	0.3037	1.65602	3.23725	0.92153	0.41443		
13-11-5010	X	X	X	-	-	X	X	-	-	-0.0004479	-0.0791728	-0.1241414 *	0.16992868	-0.1098437	0.00038173	0.01599675	0.0479787	0.13723787	-0.0772568		
										-0.50105	-1.39545	-2.1829	1.91893	-1.19316	0.43678	0.28838	0.86291	1.58513	-0.85834		
13-11-5009	X	X	X	-	X	X	-	-	-	-8.259E-05	-0.0644326	-0.0616717	0.14200008	-0.0909289	0.00042627	0.04180388	0.06951549	0.06251459	-0.0364524		
										-0.0942	-1.2011	-1.3413	1.6469	-1.14779	0.44318	0.71036	1.37818	0.66092	-0.41944		
Frequency	10	9	11	3	8	12	9	3	6												

† **** denotes significance level at 0.1% , *** at 1%, ** at 2.5% and * at 5 % respectively.

††: X denotes the the vaiable are suggested as the Granger cause at least 1% siginificance level.

Figure A1.1: The Linkages of Countries via cointegrating relationships (Food Sector)

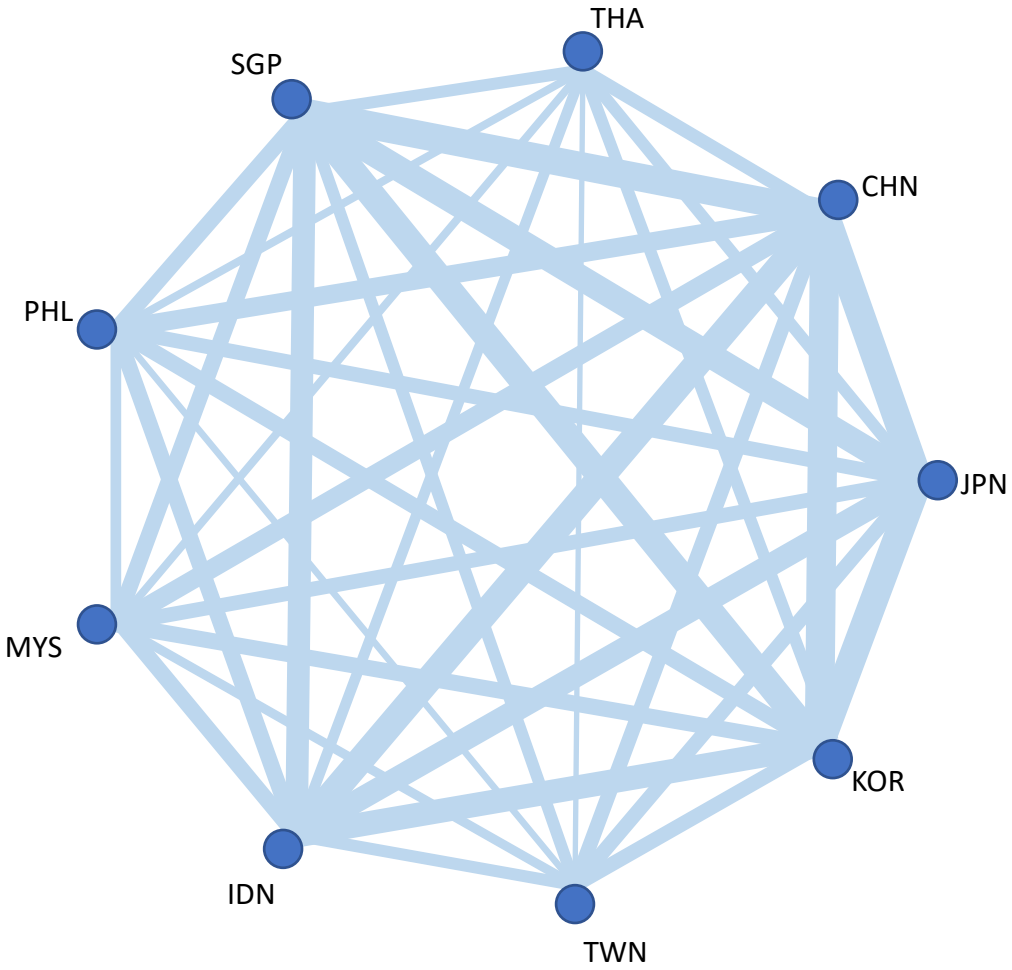

Figure A1.2: The Linkages of Countries via cointegrating relationships (General Machinery)

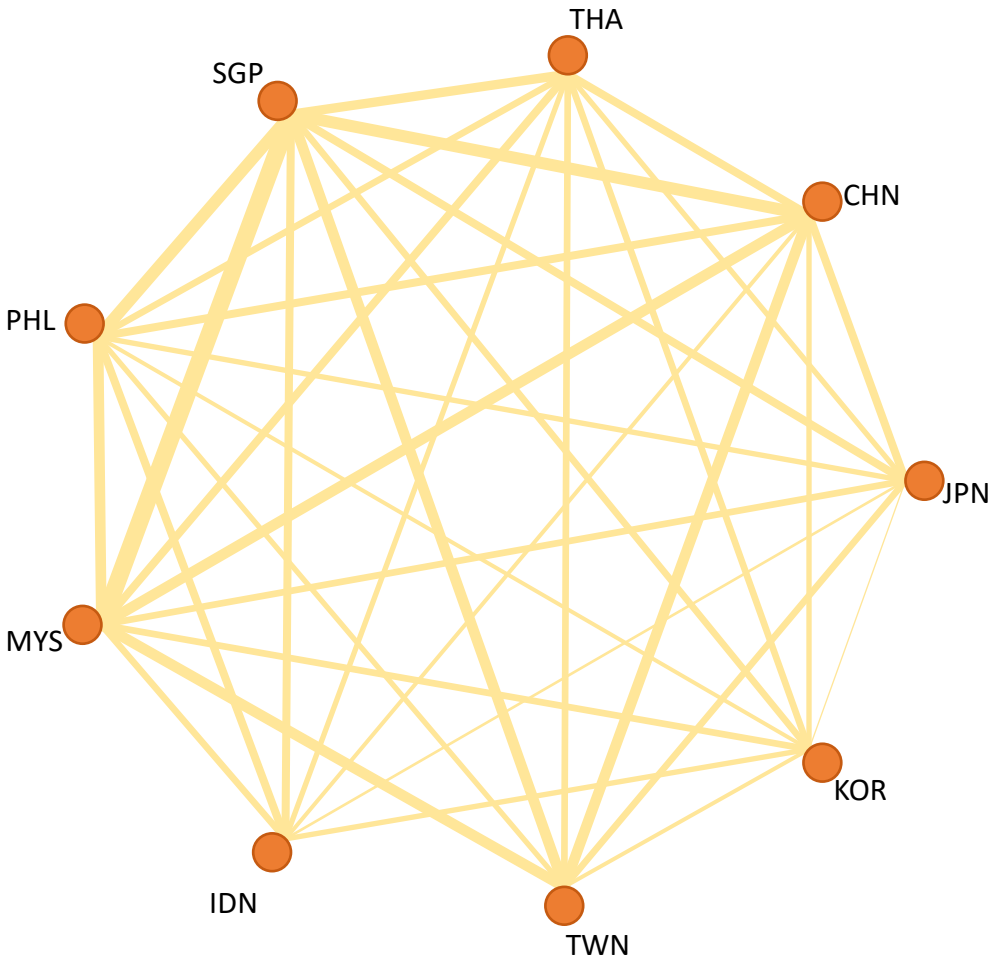

Figure A1.3: The Linkages of Countries via cointegrating relationships (Electrical Industry)

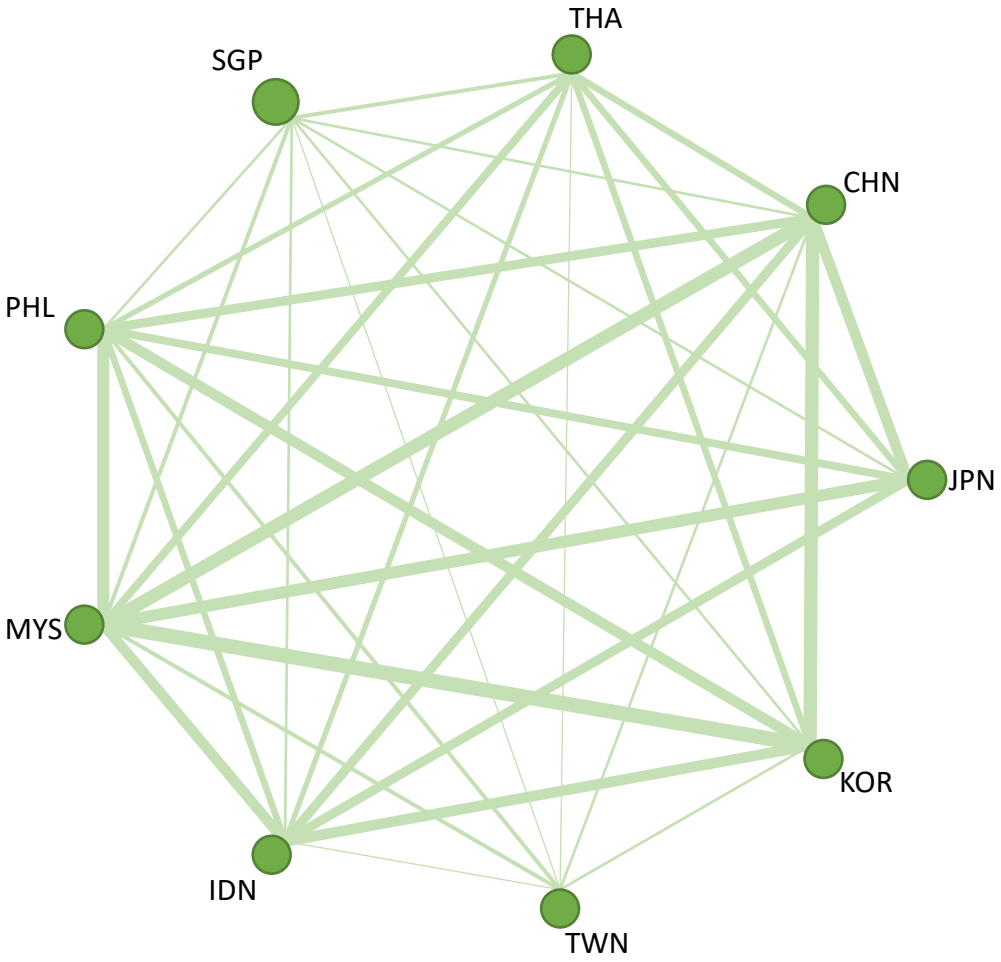

Figure A1.4: The Linkages of Countries via cointegrating relationships (Transport Equipment)

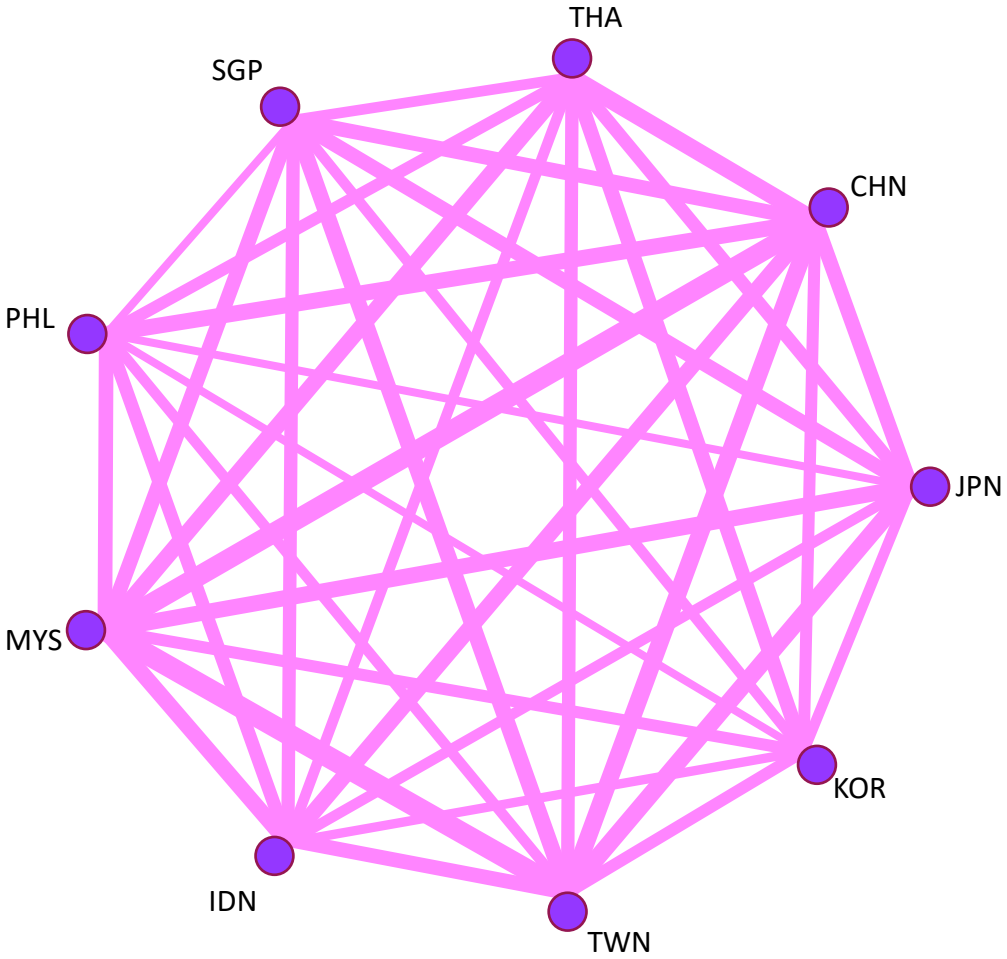

Figure A1.5: The Linkages of Countries via cointegrating relationships (Office Machinery)

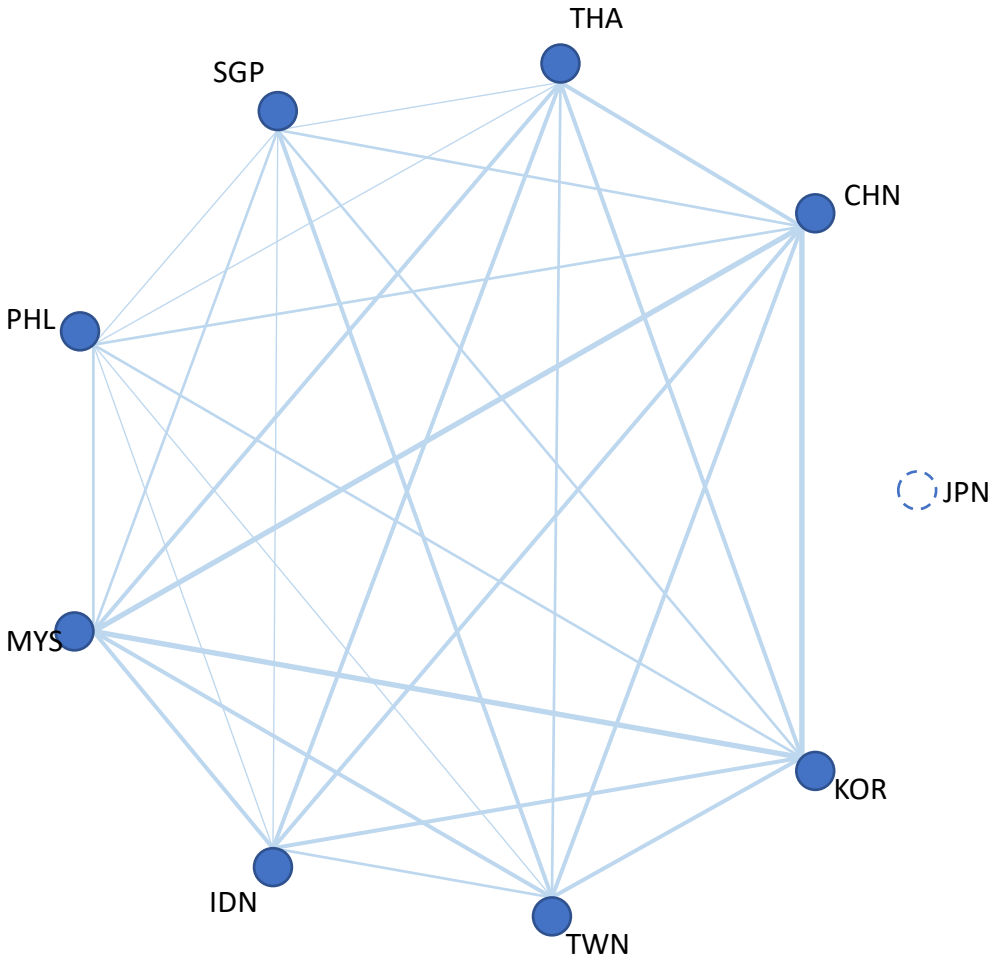

Figure A1.6: The Linkages of Countries via cointegrating relationships (Electrical Machinery)

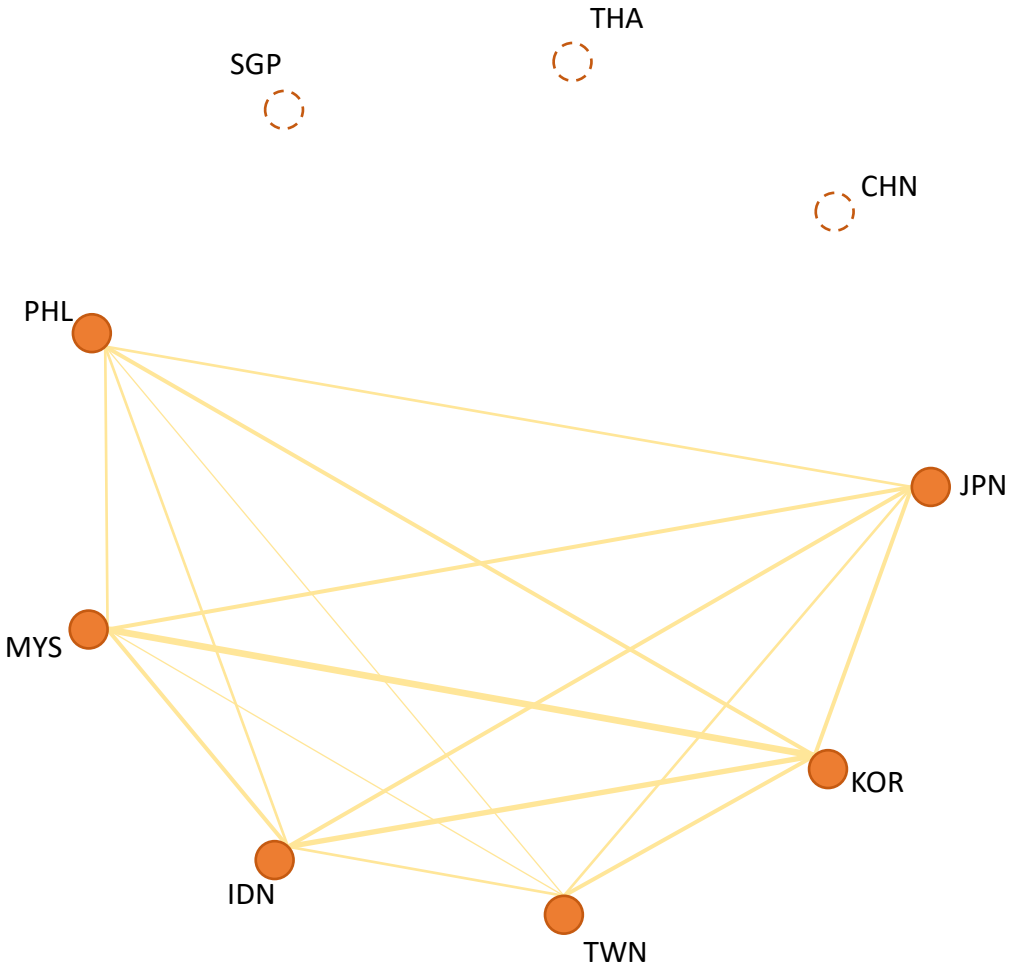

Figure A1.7: The Linkages of Countries via cointegrating relationships (Communication)

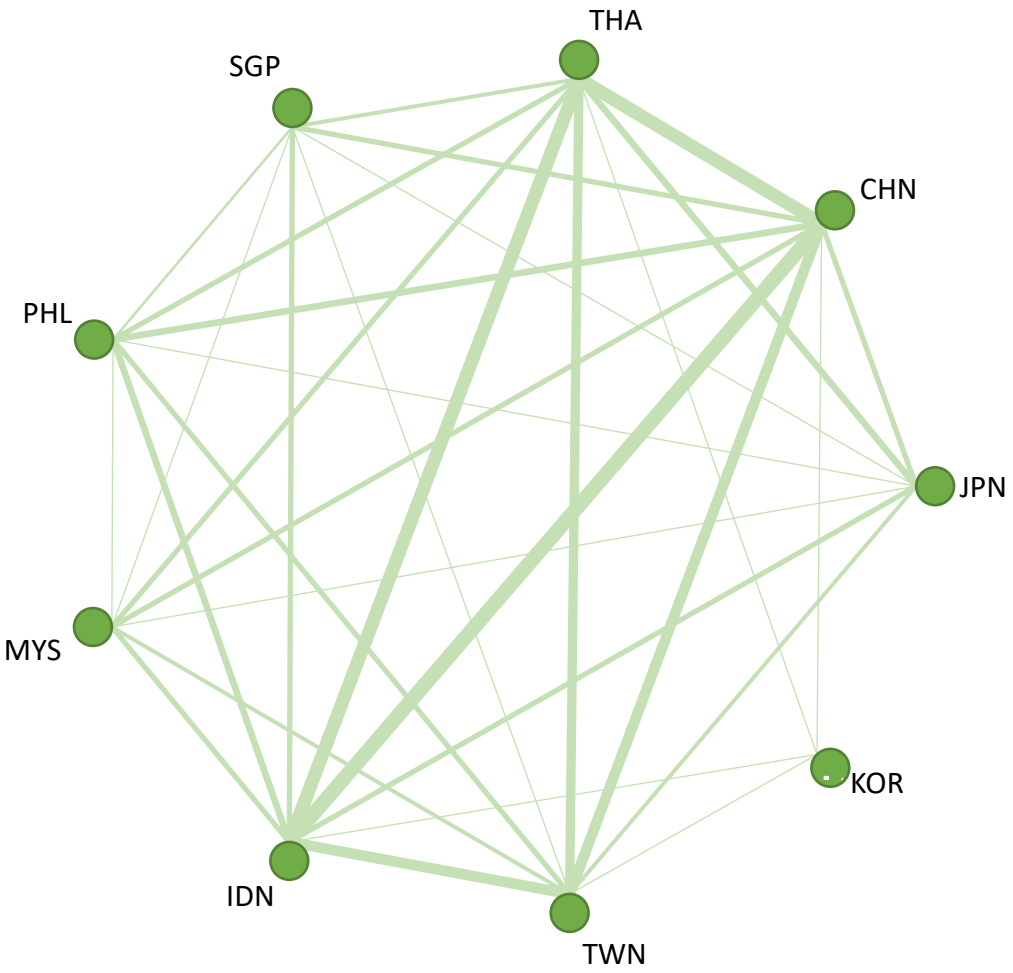

Table A1.1: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Food sector: 13-01)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-01-9001	207	0.846321411	0.205769902	0.395739286	-0.188483395	0.196354657	-0.092141657	-0.151626657	-0.614048004	0.182967749
	0.4504	(0.055582149)	(0.033708822)	(0.03462665)	(0.051573115)	(0.019330691)	(0.022396197)	(0.028407285)	(0.084298486)	(0.046512497)
13-01-8006	208	0.835205881	0.176261712	0.35042849		0.195867236	-0.114418238	-0.130299047	-0.638929121	0.195480157
	0.4514	(0.050334915)	(0.031496203)	(0.03131778)		(0.017535166)	(0.018523918)	(0.026493092)	(0.075940796)	(0.043171254)
13-01-8004	208	0.76744243	0.147205591	0.33721778	-0.14619268	0.185768838		-0.13216537	-0.494167585	0.125410855
	0.464	(0.047160841)	(0.026984759)	(0.02737835)	(0.038267127)	(0.013825782)		(0.023957645)	(0.071743887)	(0.039586165)
13-01-8003	208	0.771390315	0.251388721	0.440639377	-0.134875051	0.151450948	-0.103119998		-0.703210073	0.143193257
	0.4986	(0.051458664)	(0.023791982)	(0.025561856)	(0.04741614)	(0.01481645)	(0.020756048)		(0.065388575)	(0.043582997)
13-01-8001	208	0.767218304	0.179367175	0.405129952	-0.235188305	0.206225333	-0.097498879	-0.138780431	-0.429096967	
	0.3732	(0.057061091)	(0.035076139)	(0.035707048)	(0.052445795)	(0.019885834)	(0.023279113)	(0.029582819)	(0.079633374)	
13-01-7014	209	0.746066575	0.134731778	0.310404169		0.172976723		-0.116039929	-0.52153677	0.139280329
	0.4661	(0.042583636)	(0.025486177)	(0.025557544)		(0.013048434)		(0.022406541)	(0.061923705)	(0.035814518)
13-01-7013	209	0.752153386	0.218661915	0.395468451		0.15223424	-0.113223081		-0.685537781	0.150572873
	0.4948	(0.045634963)	(0.020365355)	(0.020105504)		(0.012018924)	(0.017225573)		(0.059686324)	(0.040124615)
13-01-7011	209	0.759133987	0.145920838	0.352280311		0.209035259	-0.127249191	-0.108618103	-0.46294611	
	0.3636	(0.052276437)	(0.032779814)	(0.032623201)		(0.017795226)	(0.018951594)	(0.027618409)	(0.073387642)	
13-01-7009	209	0.466498511	0.463455443	0.583502949	-0.437373058		0.132882403		-0.766180735	0.238991823
	0.4023	(0.062969747)	(0.018408568)	(0.023847677)	(0.05119692)		(0.016326051)		(0.07839174)	(0.053600814)
13-01-7004	209	0.66966834	0.108293484	0.3163823	-0.144260728	0.192036353		-0.097105861	-0.341889229	
	0.3952	(0.046528311)	(0.027044913)	(0.026999516)	(0.036744737)	(0.013714674)		(0.024016103)	(0.065311762)	
13-01-7002	209	0.692743044	0.201620074	0.417089851	-0.178192883	0.168047843	-0.102293637		-0.494095182	
	0.4108	(0.051301959)	(0.023974418)	(0.025517076)	(0.046708946)	(0.014648135)	(0.020948578)		(0.056211299)	
13-01-7001	209	0.574046532	0.081296608	0.277654417	-0.280346932	0.227616197	-0.090496255	-0.188764915		
	0.2828	(0.046277293)	(0.025655283)	(0.025932373)	(0.04825402)	(0.016224372)	(0.022148921)	(0.021854093)		
13-01-6052	210	0.862526043			0.111595826	0.334106502	-0.16953588	-0.312753924		0.179493861
	0.3068	(0.030970838)			(0.042254689)	(0.009667905)	(0.021936243)	(0.021838735)		(0.040565453)
13-01-6046	210	0.702505832		-0.065157949		0.360983509	-0.162349568	-0.360647864	0.330813532	
	0.2932	(0.060344778)		(0.024792319)		(0.01028508)	(0.021261696)	(0.022053039)	(0.05860916)	
13-01-6043	210	0.421962017		0.241064465	-0.383627219		0.260338447	-0.305778419		0.605947094
	0.0461	(0.076745547)		(0.059581549)	(0.114985493)		(0.050535736)	(0.059605598)		(0.113457871)
13-01-6032	210	0.737611355	-0.11281437			0.321503906	-0.153632813	-0.340134987		0.278361806
	0.2814	(0.049749386)	(0.023394344)			(0.012913797)	(0.021624182)	(0.022233433)		(0.041959253)
13-01-6031	210	0.631224836	-0.192037949			0.378286506	-0.188544954	-0.365884772	0.314235496	
	0.2589	(0.066971585)	(0.027433203)			(0.013442706)	(0.023359364)	(0.024589595)	(0.059307171)	
13-01-6028	210	-0.345083683	0.30481012		-0.27274354		0.157020198	-0.220205369		0.715240263
	0.0916	(0.062704392)	(0.036668766)		(0.088467127)		(0.041720812)	(0.048546955)		(0.080333808)
13-01-6027	210	-0.733072579	0.348207052		-0.396616308		0.177836735	-0.192657154	0.495475318	
	0.0614	(0.127439659)	(0.047238728)		(0.13619545)		(0.053703234)	(0.063378637)	(0.167929021)	
13-01-6021	210	0.843322271	-0.140447926		0.141204057	0.375322904	-0.224874232	-0.287471372		
	0.2689	(0.053501864)	(0.026917081)		(0.05028789)	(0.014054198)	(0.025804279)	(0.027027721)		
13-01-6020	210	0.363452166	0.459053402	0.542839454				0.193057709	-0.958334508	0.186184258
	0.3823	(0.061579341)	(0.019546101)	(0.025254634)				(0.019832773)	(0.069530035)	(0.052984047)
13-01-6019	210	0.541817253	0.419333122	0.489079238			0.104202163		-0.963474327	0.36287256
	0.361	(0.062172595)	(0.018872674)	(0.023092651)			(0.016571005)		(0.0693018)	(0.050437106)
13-01-6016	210	0.667786959	0.162465008	0.339414153		0.137605476		-0.540747519		0.096612042
	0.5093	(0.038021452)	(0.01476545)	(0.014904361)		(0.007061609)		(0.046373621)		(0.032784035)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.1: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Food sector: 13-01) Continued (1)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-01-6014	210	0.638382609	0.098287493	0.291752516		0.177516751		-0.078219331	-0.358529865	
	0.3914	(0.04211027)	(0.025321554)	(0.025141669)		(0.012794744)		(0.022234567)	(0.057772487)	
13-01-6012	210	0.680777467	0.15989377	0.359263656		0.174751926	-0.118500154		-0.477135479	
	0.3959	(0.046026468)	(0.020202272)	(0.020357469)		(0.011212709)	(0.017102831)		(0.052472159)	
13-01-6010	210	0.2949931	0.388277487	0.435577907	-0.280638868				-0.676098994	0.297581121
	0.1773	(0.08541051)	(0.0250301)	(0.032021457)	(0.068961316)				(0.106311197)	(0.071970794)
13-01-6006	210	0.288924568	0.426656746	0.578381981	-0.555509761		0.172242601		-0.439693328	
	0.2957	(0.064622682)	(0.019224177)	(0.022860198)	(0.049493837)		(0.016970732)		(0.071701864)	
13-01-6003	210	0.604278863	0.095098876	0.292533642	-0.104591356	0.172032902			-0.327662611	
	0.4246	(0.040662867)	(0.015444186)	(0.016038456)	(0.032236559)	(0.007246707)			(0.044291154)	
13-01-6001	210	0.367197359	0.122851079	0.304428334	-0.229924456	0.17918766	-0.113998165			
	0.2463	(0.03038501)	(0.022399975)	(0.023428044)	(0.046584276)	(0.014421163)	(0.020861557)			
13-01-5125	211				-0.373617005		0.255680508	-0.36588994	0.520010192	0.586503335
	0.0506				(0.121239295)		(0.047532824)	(0.054686398)	(0.082457167)	(0.097683342)
13-01-5124	211				-0.273172395	0.235627563		-0.29148537	1.085768343	-0.161210405
	0.1802				(0.055905762)	(0.009870003)		(0.022176639)	(0.04725476)	(0.058358986)
13-01-5122	211				0.584582574	0.119877857	-0.28006392	0.120141905		0.690499716
	0.05				(0.090129817)	(0.017794476)	(0.049110991)	(0.040032195)		(0.082594873)
13-01-5121	211				-0.252659546	0.247249759	-0.105017043	-0.280211125	1.037497249	
	0.1522				(0.06884575)	(0.010735599)	(0.030888006)	(0.031309788)	(0.042063178)	
13-01-5116	211			-0.227557752	0.29598647		-0.165308908	-0.2948346	1.03602785	
	0.1679			(0.029292956)	(0.01284165)		(0.026961458)	(0.02774369)	(0.03165482)	
13-01-5112	211			0.168445634	-0.641887871		0.287423696	-0.316039518	0.9038887	
	0.0559			(0.046793946)	(0.131552209)		(0.051382976)	(0.061695683)	(0.077719741)	
13-01-5109	211			-0.223933541	-0.185566875	0.264855887		-0.337124777	1.113068055	
	0.1858			(0.028958655)	(0.059408123)	(0.011052089)		(0.02582616)	(0.036070133)	
13-01-5108	211			-0.303335801	0.694815009	0.147756116	-0.262002726			0.939147472
	0.0633			(0.050647918)	(0.096612285)	(0.021441204)	(0.04497924)			(0.06542144)
13-01-5105	211		0.258916803				0.101572509	-0.138403043	-0.248720975	0.647716962
	0.096		(0.030620436)				(0.030799395)	(0.032569745)	(0.049584523)	(0.069325503)
13-01-5102	211		0.196765602			0.087446082	-0.108436801	-0.066463548		0.473714822
	0.0849		(0.020371787)			(0.009576252)	(0.030245273)	(0.024828311)		(0.054950808)
13-01-5098	211		0.217812978		-0.225443993		0.157212848	-0.201846162		0.570281713
	0.0917		(0.025041941)		(0.059623539)		(0.02394747)	(0.02324045)		(0.063967349)
13-01-5094	211		-0.073774269		-0.153998643	0.19679948		-0.157821178	0.697930065	
	0.1023		(0.025400426)		(0.052346701)	(0.009912855)		(0.022448148)	(0.052932527)	
13-01-5082	211		0.100963686	0.106692748		0.130238157	-0.091426863		0.377476814	
	0.0818		(0.02876911)	(0.026472813)		(0.015860109)	(0.024347448)		(0.043779333)	
13-01-5081	211		0.306547982	0.298658858		0.025386006	-0.083289123	0.124691971		
	0.1325		(0.013568234)	(0.022580419)		(0.008288119)	(0.023363808)	(0.018096327)		
13-01-5077	211		0.341804212	0.222783784		-0.261147267	0.076135462			0.275415065
	0.1446		(0.01774702)	(0.017293791)		(0.039141542)	(0.015433979)			(0.038435481)
13-01-5076	211		0.293650165	0.30110053	-0.549659606		0.172191423		0.219024792	
	0.1583		(0.018567132)	(0.018707264)	(0.047153218)		(0.016372069)		(0.024519199)	
13-01-5071	211		0.434337977	0.370575031	-0.464264713	-0.07169874	0.116731502			
	0.1592		(0.017719526)	(0.033104138)	(0.066766112)	(0.012577318)	(0.027380179)			

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.1: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Food sector: 13-01) Continued (2)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-01-5067	211	0.86749395				0.312371889	-0.134847293		-0.339694741	0.211212059
	0.3128	(0.02856416)				(0.009279837)	(0.01984765)		(0.01888461)	(0.038737558)
13-01-5066	211	0.656300694				0.340195061	-0.153183696	-0.345323645	0.31859718	
	0.2945	(0.052724337)				(0.008574744)	(0.019866948)	(0.019228226)	(0.047671877)	
13-01-5062	211	-0.530528114			-0.66244692		0.33157983	-0.428950957		1.207358954
	0.0522	(0.145049848)			(0.151278838)		(0.058507265)	(0.067874345)		(0.173519103)
13-01-5056	211	0.932828978			0.167427193	0.352416956	-0.19683011	-0.287228872		
	0.3063	(0.029688402)			(0.043935241)	(0.009064441)	(0.022594685)	(0.023028038)		
13-01-5053	211	0.264355248		0.178318786			0.199812743	-0.234231832		0.593998298
	0.0374	(0.055503566)		(0.054932083)			(0.046301459)	(0.053498512)		(0.109610149)
13-01-5049	211	0.664555082		-0.070480456		0.316583029		-0.37488335	0.347955856	
	0.2946	(0.055311257)		(0.022644012)		(0.008542811)		(0.018638868)	(0.053929842)	
13-01-5040	211	0.611386595		0.390916186	-0.379588288		0.250536928	-0.215090511		
	0.0395	(0.074925589)		(0.053965786)	(0.125032605)		(0.054943932)	(0.062562638)		
13-01-5033	211	-0.38998269	0.278974863				0.113154494	-0.160782056		0.648289224
	0.0769	(0.05002285)	(0.03457171)				(0.037157463)	(0.04068051)		(0.074841462)
13-01-5030	211	0.688274783	-0.111912934			0.272537812		-0.326645233		0.26555388
	0.2694	(0.044779852)	(0.020957617)			(0.010531697)		(0.018337606)		(0.037032699)
13-01-5029	211	0.531002277	-0.187941426			0.311971884		-0.333956854	0.322192455	
	0.2455	(0.05750183)	(0.023433689)			(0.010661853)		(0.01938565)	(0.050908707)	
13-01-5026	211	0.832109424	-0.116434789			0.340381561	-0.177199939	-0.309036644		
	0.2764	(0.051678665)	(0.025982271)			(0.013474313)	(0.023523256)	(0.024616067)		
13-01-5016	211	0.509587792	-0.081685447		0.299384635	0.32949142	-0.312586044			
	0.1817	(0.041533675)	(0.027543903)		(0.049787819)	(0.014699313)	(0.024168425)			
13-01-5015	211	0.3333915	0.348845919	0.372282122					-0.75852641	0.350196541
	0.1779	(0.076997561)	(0.023541415)	(0.028623692)					(0.086572266)	(0.062572611)
13-01-5013	211	0.167742778	0.421824478	0.518117045				0.258837148	-0.728080792	
	0.2957	(0.062600096)	(0.01963382)	(0.023678241)				(0.01926355)	(0.067764975)	
13-01-5011	211	0.370701776	0.387119891	0.488558488			0.144791079		-0.631727025	
	0.2073	(0.069145686)	(0.02100087)	(0.024486111)			(0.018470697)		(0.072180892)	
13-01-5009	211	0.378205399	0.069436944	0.233048051		0.198029565	-0.1450889			
	0.2285	(0.027762964)	(0.017685672)	(0.016501171)		(0.010499292)	(0.016739011)			
13-01-5007	211	0.569967908	0.077624938	0.262656361		0.163450583			-0.307209669	
	0.4164	(0.036454649)	(0.014106233)	(0.01417701)		(0.006343425)			(0.039521426)	
13-01-5003	211	-0.319426967	0.368641428	0.427387275	-0.310978794			0.202205657		
	0.1622	(0.029677356)	(0.020994732)	(0.024581278)	(0.054237276)			(0.022422412)		
13-01-5001	211	0.39471571	0.057136716	0.228755972	-0.155027023	0.168440986				
	0.302	(0.020251813)	(0.014025136)	(0.014248131)	(0.029774721)	(0.006950121)				

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.2: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of General Machinary sector: 13-10)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-10-8009	208		-0.058326836	0.081435004	-0.190296194	0.051485976	0.081188199	-0.096711063	0.29124232	0.140432679
	0.1968		(0.021223725)	(0.023548442)	(0.032845689)	(0.017755825)	(0.024968476)	(0.009977133)	(0.028151651)	(0.039276372)
13-10-7036	209			-0.092532111	-0.103495029	0.059646029	0.135716605	-0.076127879	0.357799315	0.145894492
	0.36			(0.013437511)	(0.024571469)	(0.01151933)	(0.01889622)	(0.00678558)	(0.016748741)	(0.029581178)
13-10-7033	209		0.063932247	0.230771003	-0.293729491		0.132120848	-0.086794831	0.058286645	0.234419842
	0.2431		(0.018968615)	(0.018255422)	(0.029624599)		(0.021258239)	(0.010401455)	(0.020204841)	(0.039605768)
13-10-7030	209		0.103658243	0.263119898	-0.29483662	-0.128111914	0.135981915			0.442436957
	0.2074		(0.022073007)	(0.023902227)	(0.042790536)	(0.01617061)	(0.032720901)			(0.040530282)
13-10-7026	209	-0.657976601		0.122855591	-0.342144937		0.307507905	-0.075758946	0.3292378	0.306477667
	0.2405	(0.059181482)		(0.024826936)	(0.040186591)		(0.026176893)	(0.013141449)	(0.038076107)	(0.052215959)
13-10-7020	209	-0.987487542	-0.252626305		-0.257369801		0.351669226	-0.141287296	0.576934833	0.343197202
	0.2949	(0.061373191)	(0.026752214)		(0.044458571)		(0.033095066)	(0.01426761)	(0.042795193)	(0.061085936)
13-10-7008	209	-0.128164644	0.098043138	0.369579191	-0.364696923		0.162802227	-0.162300939		0.337957581
	0.2128	(0.044038898)	(0.026600104)	(0.027745283)	(0.044830309)		(0.029086333)	(0.01623159)		(0.059929701)
13-10-7005	209	0.248834579	0.095426999	0.312913953	-0.194777137	0.130342539		-0.176100214		0.222005931
	0.2121	(0.058852343)	(0.026066158)	(0.027487311)	(0.049072057)	(0.019209561)		(0.015730405)		(0.06147926)
13-10-6083	210			-0.087032225		0.03328194	0.151630237	-0.183182186	0.319986501	0.127873597
	0.3542			(0.009625823)		(0.009371514)	(0.016913764)	(0.016022979)	(0.015649044)	(0.027317272)
13-10-6080	210			-0.062807483	-0.132013806	0.076075701	0.11082136		0.371091312	0.099684042
	0.3252			(0.01257096)	(0.023395703)	(0.011123914)	(0.019157169)		(0.016455719)	(0.029244593)
13-10-6077	210		-0.17307085			0.092410212	0.063583945	-0.092327834	0.395492433	0.089675078
	0.3177		(0.012924915)			(0.011306307)	(0.02053009)	(0.007234088)	(0.017844332)	(0.033761659)
13-10-6068	210		0.088259517	0.176197223		-0.090792564	0.095777197	-0.081741165		0.389960938
	0.1523		(0.0209662)	(0.017805017)		(0.012810468)	(0.029864456)	(0.011639408)		(0.038455122)
13-10-6064	210		0.102269184	0.245492962	-0.246184891		0.053793818	-0.069371022		0.400284866
	0.2348		(0.018528403)	(0.018657258)	(0.030138635)		(0.019747628)	(0.011040824)		(0.031819913)
13-10-6063	210		0.089980893	0.20969221	-0.25291419		0.202644075	-0.056283341	0.156884166	
	0.2249		(0.017752769)	(0.017702226)	(0.028818627)		(0.018672385)	(0.005979311)	(0.014727858)	
13-10-6061	210		0.110801035	0.205427598	-0.20118777	-0.051368688		-0.053087616		0.503018681
	0.1814		(0.02214062)	(0.02326049)	(0.04145508)	(0.011651437)		(0.009804202)		(0.038144598)
13-10-6059	210		0.140488375	0.311825644	-0.325827638	-0.120258705	0.109526293			0.371302682
	0.2193		(0.01919097)	(0.018220898)	(0.039642772)	(0.015983652)	(0.032502206)			(0.037104454)
13-10-6055	210	-0.851707868			-0.136990017		0.292015796	-0.06426507	0.44547005	0.242031953
	0.2409	(0.054843461)			(0.036783799)		(0.02771427)	(0.013246552)	(0.036251571)	(0.055084045)
13-10-6045	210	-0.575892023		0.096052154	-0.345959092			-0.174182384	0.147896242	0.747423765
	0.1772	(0.077886345)		(0.032666425)	(0.052837158)			(0.018360213)	(0.048041814)	(0.053063384)
13-10-6044	210	-0.87586614		0.164051914	-0.46865276		0.331581445		0.446950937	0.237325191
	0.2378	(0.055242691)		(0.026441795)	(0.039061517)		(0.028069874)		(0.03744889)	(0.056519748)
13-10-6043	210	-0.17448629		0.230836459	-0.336113453		0.236360565	-0.159019791	0.460411657	0.638655772
	0.1924	(0.046334665)		(0.026499895)	(0.047417229)		(0.029794668)	(0.014673375)	(0.029237406)	(0.046621136)
13-10-6042	210	-0.621954664		0.093357968	-0.322442799		0.430065737	-0.205263293		
	0.2577	(0.060151925)		(0.025252195)	(0.041055838)		(0.020638117)	(0.015191314)		
13-10-6037	210	-0.486990146		0.095618358	-0.300341796	0.141329138	0.207827012		0.527786141	
	0.2143	(0.067292193)		(0.025620629)	(0.043628208)	(0.026187988)	(0.041587935)		(0.027468453)	
13-10-6035	210	-0.83271224	-0.184656689				0.324026802	-0.112385084	0.438025531	0.290043233
	0.2274	(0.057722052)	(0.023384395)				(0.032364)	(0.014378467)	(0.035388563)	(0.060026245)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.2: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of General Machinary sector: 13-10) Continued (1)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-10-6034	210	-0.265045381	-0.192514854			0.225028134		-0.17377745	0.457774566	0.162608385
	0.2473	(0.056171543)	(0.020617482)			(0.017344697)		(0.013117942)	(0.031523043)	(0.055217514)
13-10-6031	210	-0.338478704	-0.195101511			0.178148686	0.153287546	-0.189588944	0.541531395	
	0.2782	(0.058872068)	(0.019292171)			(0.020502448)	(0.035191425)	(0.014336132)	(0.022319285)	
13-10-6030	210	-0.795172405	-0.099702124		-0.170846328			-0.205312983	0.305621103	0.646625248
	0.1842	(0.075034182)	(0.029854273)		(0.05483978)			(0.019150463)	(0.047194429)	(0.068157599)
13-10-6029	210	-1.393016631	-0.257984749		-0.40368873		0.397076476		0.804798024	0.23159831
	0.2778	(0.048347754)	(0.031162611)		(0.047892362)		(0.037755484)		(0.040283495)	(0.070118785)
13-10-6027	210	-0.890654252	-0.188540207		-0.218850459		0.44225021	-0.158228601	0.655146978	
	0.2752	(0.062221714)	(0.026195687)		(0.044903024)		(0.030089516)	(0.011730731)	(0.03767454)	
13-10-6022	210	-0.821919164	-0.221807461		-0.217568497	0.175371038	0.192036308		0.77752007	
	0.2354	(0.070908581)	(0.027432009)		(0.048297167)	(0.029516254)	(0.050698626)		(0.033946305)	
13-10-6018	210	-0.186544503	0.09093906	0.247016136			0.185559403	-0.193499052		0.26656722
	0.1593	(0.043503473)	(0.027369601)	(0.023487835)			(0.029790619)	(0.015179887)		(0.061469796)
13-10-6015	210	0.285074376	0.083754273	0.254221367		0.152992948		-0.185130053		0.150775986
	0.2103	(0.05454608)	(0.024197138)	(0.020996827)		(0.016022472)		(0.013618856)		(0.055943986)
13-10-6009	210	-0.202460783	0.13902187	0.334571012	-0.376147902		0.139319216	-0.145263493	0.324926498	0.440354899
	0.2112	(0.04542054)	(0.027403615)	(0.029456037)	(0.047469707)		(0.032754143)	(0.015701261)	(0.020224441)	(0.061337055)
13-10-6007	210	-0.210917882	0.200864219	0.509085237	-0.503942336					0.232697485
	0.225	(0.048190207)	(0.026514572)	(0.024200811)	(0.045901356)					(0.066257993)
13-10-6002	210	0.437614579	0.156088709	0.326424247	-0.130222189	0.168896941		-0.157589569		
	0.2422	(0.040383442)	(0.019106443)	(0.023802877)	(0.045012995)	(0.016657906)		(0.014881093)		
13-10-5125	211				-0.072695799		0.212929918	-0.121151713	0.156368225	0.274329697
	0.2757				(0.02537526)		(0.019457715)	(0.006740566)	(0.018555131)	(0.038680874)
13-10-5119	211			-0.120713343		0.106800646		-0.149756451		0.219084559
	0.2261			(0.01213472)		(0.009461001)		(0.017260218)		(0.034425415)
13-10-5118	211			-0.073829788		0.045860541	0.126310753		0.326481286	0.095008123
	0.3373			(0.009163763)		(0.007382933)	(0.016292189)		(0.014562175)	(0.025358297)
13-10-5116	211			-0.101226542		0.040420486	0.187028872	-0.034135867	0.393871148	
	0.3795			(0.00993447)		(0.009282962)	(0.01698542)	(0.007704403)	(0.007808052)	
13-10-5114	211			0.102910812	-0.363227517		0.241789767		0.150903826	0.281850867
	0.1971			(0.01261899)	(0.024793366)		(0.01987989)		(0.019508021)	(0.04018185)
13-10-5113	211			0.053684851	-0.181374104		0.128288479	-0.098010817		0.714661267
	0.1959			(0.01983794)	(0.035303838)		(0.022173089)	(0.011140829)		(0.021913676)
13-10-5108	211			0.124319588	-0.293574219	-0.112452044	0.205509149			0.768087987
	0.1645			(0.021925369)	(0.047937107)	(0.019122834)	(0.039549863)			(0.030175417)
13-10-5105	211		-0.099930889				0.170833065	-0.023508509	0.165639072	0.237647193
	0.2112		(0.018987889)				(0.026382247)	(0.005916662)	(0.021071167)	(0.049526393)
13-10-5104	211		-0.144472378			0.122893979		-0.166812821	0.367690484	0.139883402
	0.2691		(0.012748547)			(0.009764675)		(0.008378362)	(0.0180811)	(0.033003383)
13-10-5101	211		-0.148238435			0.085384714	0.101749242	-0.071383988	0.42864167	
	0.356		(0.011358127)			(0.009842624)	(0.017720936)	(0.007043111)	(0.009054313)	
13-10-5091	211		0.252531047		0.504597571	-0.123826724	0.213712423	-0.060383659		
	0.0904		(0.024584933)		(0.050521647)	(0.026533887)	(0.05533568)	(0.005987878)		
13-10-5090	211		0.138398863	0.176562909				-0.126012236	-0.067617033	0.324730062
	0.2091		(0.018530753)	(0.018204671)				(0.018263883)	(0.017883691)	(0.039102099)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.2: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of General Machinary sector: 13-10) Continued (2)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-10-5088	211		0.096230108	0.176101536			0.063994837	-0.088136957		0.314947955
	0.1805		(0.018056252)	(0.015397869)			(0.018939049)	(0.010224782)		(0.028909713)
13-10-5087	211		0.092756876	0.150327994			0.183650686	-0.082585714	0.111237299	
	0.1782		(0.01697684)	(0.015744148)			(0.018014055)	(0.009197721)	(0.012576338)	
13-10-5085	211		0.096980522	0.152498563		-0.03950037		-0.066628419		0.446870599
	0.1539		(0.020635105)	(0.017559983)		(0.00931604)		(0.008373757)		(0.035009451)
13-10-5079	211		0.125381939	0.228821393	-0.261797696			-0.063289894		0.404870641
	0.2507		(0.017898878)	(0.018804478)	(0.0298918)			(0.011369872)		(0.031690063)
13-10-5076	211		0.11034166	0.238914579	-0.266784953		0.168498315		0.138164556	
	0.2412		(0.015109534)	(0.011266774)	(0.024781129)		(0.017850255)		(0.012893957)	
13-10-5074	211		0.138339053	0.248804088	-0.232542752	-0.054273529				0.433011426
	0.1949		(0.018860932)	(0.016491733)	(0.036993858)	(0.011279436)				(0.033245966)
13-10-5071	211		0.286093754	0.339472877	-0.164803368	-0.204181599	0.271830029			
	0.2136		(0.015201838)	(0.020348896)	(0.045679989)	(0.016933509)	(0.035120736)			
13-10-5070	211	-0.740730199					0.295295537	-0.065540077	0.370977139	0.224809585
	0.2329	(0.050267965)					(0.025800717)	(0.01112331)	(0.030506377)	(0.051464609)
13-10-5066	211	-0.277405245				0.14358114	0.155044421	-0.15771361	0.443342137	
	0.2638	(0.052314752)				(0.017794496)	(0.030170344)	(0.01251986)	(0.016955662)	
13-10-5065	211	-0.739159388			-0.166013451			-0.135841634	0.251999554	0.670970997
	0.1884	(0.068544755)			(0.045881051)			(0.010396384)	(0.042696592)	(0.052804954)
13-10-5062	211	-0.776249312			-0.143328006		0.396373702	-0.186528691	0.529257416	
	0.2554	(0.053987342)			(0.036259645)		(0.020921265)	(0.017976277)	(0.025850479)	
13-10-5060	211	0.254878792			0.216226145	0.193203825		-0.12886956		0.507505447
	0.2195	(0.067254137)			(0.044980973)	(0.021537289)		(0.014198314)		(0.054823533)
13-10-5057	211	-0.63160348			-0.101511781	0.175118251	0.132348829		0.605037932	
	0.193	(0.060763521)			(0.038562232)	(0.025845133)	(0.040833757)		(0.021176952)	
13-10-5053	211	-0.21342431		0.124423057		0.189700662	0.258571741	-0.290337142		0.542546035
	0.1768	(0.043473716)		(0.020274363)		(0.01613554)	(0.028985981)	(0.01371833)		(0.045213267)
13-10-5050	211	0.331885573		0.124513922				-0.225301562		0.434742869
	0.2088	(0.056224829)		(0.018551606)				(0.01315745)		(0.042971715)
13-10-5046	211	0.77718139		0.221307891		0.217854362	0.14806138	-0.224175843		
	0.1822	(0.047300868)		(0.019505708)		(0.027060343)	(0.046201343)	(0.01460299)		
13-10-5045	211	-0.87845647		0.152397583	-0.528357949				0.297847928	0.703402026
	0.1557	(0.07203435)		(0.034615552)	(0.05029341)				(0.047830638)	(0.057843264)
13-10-5044	211	-0.292399521		0.159208494	-0.355627425			-0.21845911		0.87835023
	0.1854	(0.050581988)		(0.029560587)	(0.053697351)			(0.012284583)		(0.04158215)
13-10-5042	211	-0.341188155		0.385771033	-0.56949182		0.254176224			0.724474439
	0.1614	(0.05437872)		(0.02765059)	(0.052152891)		(0.036795634)			(0.056812919)
13-10-5041	211	-0.784323942		0.127200684	-0.418443773		0.426821145		0.524747722	
	0.2602	(0.053758759)		(0.025479368)	(0.037806471)		(0.021357305)		(0.027267834)	
13-10-5040	211	0.363889699		0.31285477	-0.240434157		0.506898749	-0.205947744		
	0.1446	(0.037070888)		(0.033498336)	(0.062112472)		(0.030835786)	(0.017197071)		
13-10-5033	211	-0.253842126	-0.100705074				0.125353966	-0.282612887	0.771878625	
	0.1909	(0.055398057)	(0.030295768)				(0.037969893)	(0.016593403)	(0.060544338)	
13-10-5032	211	-0.7576217	-0.137064321				0.405433384	-0.225591906	0.520594164	0.686107568
	0.2236	(0.057400824)	(0.022530741)				(0.028577145)	(0.019690348)	(0.026690027)	(0.059221358)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.2: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of General Machinary sector: 13-10) Continued (3)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-10-5030	211	0.127482864	-0.112212787					-0.157257736		
	0.1939	(0.074113924)	(0.028736626)					(0.013882442)		
13-10-5029	211	-0.141269289	-0.15674064			0.254862132		-0.145208367	0.490017443	
	0.2594	(0.051196052)	(0.018923986)			(0.01415668)		(0.011912097)	(0.022412041)	
13-10-5027	211	-0.668880675	-0.17644239			0.204040226	0.12275104		0.651747606	
	0.1935	(0.062973196)	(0.023738192)			(0.025034644)	(0.043363188)		(0.024402731)	
13-10-5021	211	-1.228770517	-0.203379445		-0.34485387	0.107124142	0.454406561		0.811474444	
	0.2755	(0.045174236)	(0.028713209)		(0.045181318)	(0.021910605)	(0.032776488)		(0.033542181)	
13-10-5016	211	0.378196254	0.241262456		0.497610746	0.403487935	-0.319285998			
	0.0775	(0.098087612)	(0.037145756)		(0.069534236)	(0.052958306)	(0.087231833)			
13-10-5014	211	-0.274708315	0.137406426	0.206060572				-0.279776616		0.380920812
	0.1556	(0.045075124)	(0.028652837)	(0.025117953)				(0.015871597)		(0.064032579)
13-10-5011	211	-0.571691544	0.139684511	0.261275063			0.273151948		0.184639937	
	0.1175	(0.098247177)	(0.042127623)	(0.044675214)			(0.037991288)		(0.070315444)	
13-10-5006	211	0.426621802	0.132750595	0.276691054		0.174367242		-0.184112767		
	0.2463	(0.037015095)	(0.016674576)	(0.014835296)		(0.013992296)		(0.016408746)		
13-10-5005	211	-0.269583516	0.228363405	0.464331815	-0.500291038			-0.155934953		0.33024455
	0.2228	(0.04759518)	(0.026038341)	(0.024507787)	(0.046560695)			(0.012105555)		(0.06471268)
13-10-5001	211	0.252488783	0.236870325	0.456189769	-0.308464802	0.134269174				
	0.2338	(0.040636104)	(0.018932904)	(0.020938721)	(0.04553426)	(0.018745063)				

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.3: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Electroc Machinary sector: 13-11)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-11-8006	208	-0.344991385	0.080271662	0.174263631		-0.077482059	0.395329214	-0.112277239	-0.167371086	0.183089911
	0.2476	(0.06751186)	(0.018288675)	(0.024163336)		(0.021819537)	(0.04031991)	(0.013528923)	(0.049584732)	(0.043732209)
13-11-7015	209	-0.264305089	0.08340214	0.167842051			0.308087658	-0.123799394	-0.133937827	0.164081512
	0.2236	(0.050182516)	(0.017522525)	(0.023432781)			(0.021669145)	(0.011632889)	(0.04694546)	(0.042491463)
13-11-7013	209	-0.476235515	0.094069412	0.214073146		-0.128353789	0.441266576		-0.268365757	0.267507521
	0.2541	(0.062398863)	(0.018005222)	(0.022517832)		(0.019669121)	(0.039530798)		(0.046627998)	(0.042138748)
13-11-7012	209	-0.334488124	0.04448606	0.134417994		-0.061993421	0.370860575	-0.120260134		0.133780479
	0.2321	(0.057136445)	(0.01480916)	(0.015252061)		(0.019877883)	(0.037587706)	(0.011676856)		(0.033677421)
13-11-6076	210		-0.081454085		0.194036307		0.237487379	-0.127720763	0.154218328	-0.109153858
	0.2501		(0.016470298)		(0.025343474)		(0.019346975)	(0.007754807)	(0.024576846)	(0.035962346)
13-11-6073	210		-0.075081854		0.296587322	-0.110267976	0.237128209	-0.052107704	0.151920404	0.154945828
	0.1769		(0.019551389)		(0.02638445)	(0.01207458)	(0.030295123)	(0.008284992)	(0.028579859)	(0.032383796)
13-11-6064	210		0.0489724	0.134898621	0.078171644		0.216779754	-0.035792532		0.103088419
	0.1414		(0.017667705)	(0.017371074)	(0.026719018)		(0.017931499)	(0.00759063)		(0.023218464)
13-11-6047	210	-0.337990601		0.139664783		-0.134125192	0.510767781	-0.123595372		0.167920282
	0.1999	(0.071692468)		(0.019163935)		(0.023552942)	(0.044081074)	(0.01464739)		(0.041812079)
13-11-6038	210	-0.654006567		0.061277807	0.155522985	-0.134290247	0.500840775			0.231644384
	0.226	(0.046090227)		(0.020619867)	(0.02754497)	(0.020216323)	(0.0392003)			(0.03770109)
13-11-6036	210	-0.197856507		0.056111261	0.213153467	-0.057573034	0.500675471	-0.155506019		
	0.3049	(0.059133725)		(0.018758923)	(0.02576397)	(0.02127602)	(0.033236967)	(0.012353296)		
13-11-6032	210	-0.33094007	0.057747616			-0.101129263	0.248043365	-0.146416982		0.274849507
	0.2021	(0.076936171)	(0.019932406)			(0.026515363)	(0.049643014)	(0.015446911)		(0.042140355)
13-11-6028	210	-0.29783609	-0.080966924	0.226372392	0.249101537		0.28629992	-0.164285334		0.21579322
	0.2778	(0.033602845)	(0.019329869)	(0.022627849)	(0.025305742)		(0.0220467)	(0.010528982)		(0.032620346)
13-11-6027	210	-0.44787579	-0.074091906		0.187571677		0.362972735	-0.172410878	-0.243559383	
	0.2816	(0.043079378)	(0.019322142)		(0.029316491)		(0.019012954)	(0.010053069)	(0.047272874)	
13-11-6019	210	-0.314500975	0.119888021				0.263941218			0.279227726
	0.179	(0.052568808)	(0.017188905)				(0.022418713)			(0.042388217)
13-11-6018	210	-0.262510161	0.050134593	0.138015888			0.303852473	-0.125823074		0.128949818
	0.221	(0.029709843)	(0.013439162)	(0.0145462)			(0.019712735)	(0.010205911)		(0.03225169)
13-11-6013	210	-0.596541029	0.041164118	0.142401829		-0.11767381	0.428068275			0.177792234
	0.1975	(0.043531329)	(0.01579968)	(0.016019711)		(0.019293581)	(0.038831016)			(0.035692575)
13-11-6011	210	-0.245656469	0.057289783	0.159645925		-0.06799924	0.438180278	-0.122837067		
	0.2459	(0.056682689)	(0.014827425)	(0.014367696)		(0.020044233)	(0.034480602)	(0.011734208)		
13-11-5125	211				0.274035823		0.272152715	-0.108349037	0.174331447	-0.122121811
	0.2539				(0.021466476)		(0.016926948)	(0.007540859)	(0.024555424)	(0.036072285)
13-11-5124	211				0.2299247	0.092851469		-0.053628462	0.319558424	0.112430822
	0.1041				(0.026602399)	(0.010990959)		(0.00911316)	(0.036328871)	(0.040582332)
13-11-5122	211				0.376859792	-0.104787997	0.274520391	-0.042780283		0.164526124
	0.1951				(0.02061533)	(0.011899884)	(0.027113791)	(0.007946593)		(0.0321248)
13-11-5111	211			-0.154010815	0.28891961	0.092603417		-0.118024157	0.261914691	0.171034004
	0.0887			(0.01792426)	(0.030990785)	(0.011763884)		(0.010498789)	(0.034366063)	(0.042598496)
13-11-5109	211			-0.233953777	0.277586639	0.127012404			0.486366269	
	0.1718			(0.019672257)	(0.028823642)	(0.009836717)			(0.019330768)	
13-11-5098	211		-0.064939143		0.337535341		0.127004038	-0.057718037	0.216904765	
	0.1218		(0.020111971)		(0.024892661)		(0.022726532)	(0.008148582)	(0.028102469)	

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.3: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Electroc Machinary sector: 13-11) Continued (1)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-11-5097	211		-0.074892666		0.194137836		0.204327549	-0.109586861	0.132021592	
	0.2179		(0.01578607)		(0.023815813)		(0.015537492)	(0.006886024)	(0.015015426)	
13-11-5093	211		-0.075079412		0.277912496	-0.11559142	0.228388201			0.151642219
	0.1706		(0.01861344)		(0.025778082)	(0.011293169)	(0.026682604)			(0.031588978)
13-11-5091	211		-0.064515897		0.316332972	-0.154638311	0.362583729	-0.04885513		
	0.2102		(0.020824653)		(0.027730752)	(0.010778787)	(0.023064302)	(0.008742331)		
13-11-5087	211		0.091194519	0.132389754			0.21212569	-0.048601135	0.04749913	
	0.1588		(0.01214587)	(0.014247)			(0.012208116)	(0.007592442)	(0.014562304)	
13-11-5085	211		0.155444	0.101697985		-0.029587986		0.049691989		0.344054353
	0.1092		(0.014911014)	(0.016035997)		(0.007693667)		(0.008739166)		(0.025106783)
13-11-5082	211		0.065315537	0.099524102		-0.082401361	0.244838136		0.069088145	
	0.1763		(0.010631041)	(0.011525815)		(0.01072743)	(0.021504405)		(0.019177441)	
13-11-5081	211		0.100635432	0.189243576		-0.148711972	0.343304615	0.018274226		
	0.3079		(0.01035512)	(0.010039988)		(0.00632668)	(0.014604458)	(0.005896879)		
13-11-5067	211	-0.354568802				-0.18258445	0.40191414	-0.153490439		0.31857353
	0.1738	(0.088724323)				(0.028737044)	(0.053609785)	(0.017791783)		(0.047763746)
13-11-5066	211	-0.55437353				-0.086554655	0.391825126	-0.166703757	0.331984199	
	0.169	(0.078146546)				(0.026678067)	(0.043271902)	(0.014834115)	(0.029624927)	
13-11-5063	211	-0.257554176			0.284475288	-0.136661461	0.303860866	-0.160343332		0.180807551
	0.2864	(0.031689388)			(0.01778119)	(0.021039558)	(0.018173219)	(0.009706024)		(0.030782772)
13-11-5062	211	-0.392150011			0.23616047		0.372614272	-0.166594874	0.129805408	0.287168198
	0.2955	(0.040623119)			(0.023224554)		(0.014435589)	(0.009205284)	(0.026862159)	(0.03663288)
13-11-5060	211	0.149137624			0.272672904	0.148071331		-0.173811807		0.360431133
	0.2125	(0.049209607)			(0.022607436)	(0.012385695)		(0.012470856)		(0.032234554)
13-11-5059	211	0.181982027			0.214981303	0.220442028		-0.213488318	0.242686216	
	0.1883	(0.05838782)			(0.031249394)	(0.011975043)		(0.012815102)	(0.034238042)	
13-11-5058	211	-0.69777975			0.258443253	-0.136661461	0.421491063			0.287168198
	0.2039	(0.04587197)			(0.023863464)	(0.021039558)	(0.039664593)			(0.036632880)
13-11-5057	211	-0.849976552			0.218356774	-0.146313142	0.536376187		0.159756102	
	0.2178	(0.054037405)			(0.031044213)	(0.022129072)	(0.037136885)		(0.03545153)	
13-11-5050	211	0.230465746		0.070150896		0.10913027		-0.159565339		0.454680832
	0.1077	(0.06717089)		(0.022640191)		(0.016355462)		(0.016740978)		(0.042667658)
13-11-5048	211	-0.610780708		0.145253922	0.126915648	-0.18934766	0.565158041			0.21734139
	0.2082	(0.051156499)		(0.019130019)	(0.035460939)	(0.021056144)	(0.042622676)			(0.042062341)
13-11-5047	211	-0.763070363		0.113839172		-0.196586664	0.650066421		0.12088283	
	0.2121	(0.069328178)		(0.027660601)		(0.023433592)	(0.04233333)		(0.045243523)	
13-11-5046	211	-0.242301905		0.171165216		-0.149186233	0.608520434	-0.129040863		
	0.2365	(0.071826405)		(0.018066909)		(0.023686135)	(0.038216266)	(0.014797318)		
13-11-5044	211	-0.359013903		-0.12908998				-0.099435611		0.612262182
	0.1232	(0.05124733)		(0.026892833)				(0.016111754)		(0.038563733)
13-11-5040	211	-0.13275214		0.058099893	0.216479373		0.437828478	-0.1602855		
	0.2888	(0.027176045)		(0.01814885)	(0.022843827)		(0.015364405)	(0.010058966)		
13-11-5036	211	-0.570062872		0.10988063	0.151408247	-0.165607718	0.647933279			
	0.2649	(0.049026858)		(0.020629236)	(0.029547695)	(0.020826645)	(0.033531005)			
13-11-5034	211	-0.725548723	0.064118426			0.13501335			0.212659986	0.187626197
	0.0969	(0.051630445)	(0.021917688)			(0.026958201)			(0.043787193)	(0.055347449)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.3: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Electroc Machinary sector: 13-11) Continued (2)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-11-5033	211	-0.159972382	0.074427062				0.113418751	-0.16318879		0.281716145
	0.1947	(0.040824307)	(0.018507557)				(0.021841466)	(0.013567763)		(0.041063185)
13-11-5028	211	-0.696010216	0.057865603			-0.180210742	0.323155807			0.343950009
	0.1714	(0.055800419)	(0.020960401)			(0.024818832)	(0.051009957)			(0.043283113)
13-11-5023	211	-0.408716976	0.165777833		-0.227669713			-0.102451786	0.250960564	
	0.1319	(0.075005859)	(0.027080054)		(0.040375343)			(0.01702112)	(0.049135497)	
13-11-5013	211	-0.466545697	0.115021787	-0.147627102				-0.11092102	0.221355294	
	0.1122	(0.092887221)	(0.032299097)	(0.038068637)				(0.020686648)	(0.070918163)	
13-11-5012	211	-0.430415744	0.067523592	0.160410181			0.265607891			0.197284419
	0.1316	(0.023320027)	(0.014452063)	(0.015547055)			(0.0215912)			(0.035148951)
13-11-5010	211	-0.160700829	0.06425022	0.163300241			0.359830458	-0.129690419		
	0.2304	(0.024624914)	(0.013291196)	(0.013533215)			(0.015761399)	(0.010109293)		
13-11-5009	211	-0.51098279	0.057796583	0.176832066		-0.131035169	0.522671419	-0.168231454		0.39862587
	0.2158	(0.044459846)	(0.016084209)	(0.01510569)		(0.019582478)	(0.035093517)	(0.014808546)		(0.037416188)
13-11-5008	211	-0.197341788	0.093204155	0.088100116		0.085070248				
	0.1103	(0.040864174)	(0.017377193)	(0.018980589)		(0.012825217)				
13-11-5006	211	0.429001574	0.140786058	0.13319231		0.183652401				
	0.1682	(0.046464008)	(0.017528732)	(0.019415461)		(0.012883301)				
13-11-5001	211	0.162261363	0.234953044	0.219446063	-0.179657728	0.135976095				
	0.0985	(0.038598976)	(0.026578594)	(0.028194811)	(0.051101803)	(0.01573866)				

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.4: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Transport Equipment sector: 13-13)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-13-8005	208	-0.145147551	0.102459578	0.268902784	-0.228971113		0.281148966	-0.170284292	-0.174802373	0.374275811
	0.3502	(0.02850335)	(0.02932539)	(0.024631024)	(0.050295675)		(0.030187984)	(0.030759236)	(0.046746496)	(0.037847328)
13-13-8004	208	0.215836781	0.120461124	0.2841525	-0.222608328	0.193439998		-0.11440713	-0.185357097	0.404974429
	0.3391	(0.057229075)	(0.03015346)	(0.024523171)	(0.052841555)	(0.022742566)		(0.031267745)	(0.050923119)	(0.03795239)
13-13-7036	209			0.225739991	-0.332891603	-0.042548064	0.307991469	-0.27103541	0.171071114	0.394540112
	0.2692			(0.026595554)	(0.060147035)	(0.014742637)	(0.039291678)	(0.025272537)	(0.038468662)	(0.037749335)
13-13-7033	209		0.104597133	0.271311643	-0.281171871		0.273682117	-0.123662757	-0.112759686	0.237122036
	0.3483		(0.026608276)	(0.022426064)	(0.045626657)		(0.024897967)	(0.026983397)	(0.040076505)	(0.029265873)
13-13-7028	209	0.364590644			0.334616125	0.19271991	0.339741593	-0.487983958	-0.247154208	0.454020864
	0.3366	(0.076082992)			(0.047572988)	(0.033958759)	(0.044983764)	(0.027334368)	(0.047997871)	(0.046590538)
13-13-7027	209	0.208725512		0.164427064		0.146695617	0.236874593	-0.350032169	-0.16020969	0.495305074
	0.3061	(0.064527567)		(0.017840744)		(0.02799612)	(0.038927466)	(0.02558455)	(0.03657337)	(0.039260184)
13-13-7023	209	0.207562898		0.168665265	-0.140831279	0.138144367	0.233661094	-0.336645519		0.460417335
	0.3093	(0.05179975)		(0.022592486)	(0.045904419)	(0.024859538)	(0.036433636)	(0.024166336)		(0.037729186)
13-13-7018	209	0.224934805	0.159477308		0.52899152	0.19391891	0.285348355		-0.573066661	0.208271356
	0.263	(0.071648416)	(0.026582602)		(0.036626882)	(0.031211127)	(0.042099991)		(0.0509124)	(0.044830863)
13-13-7016	209	0.381238375	0.099484673		0.383917892	0.160325631	0.402618625	-0.186598661	-0.406082275	
	0.2881	(0.064664015)	(0.030372023)		(0.042797629)	(0.030498014)	(0.038585234)	(0.030051395)	(0.058336745)	
13-13-7015	209	-0.157358606	0.096383498	0.194190009			0.34572861	-0.166326429	-0.247238001	0.343359417
	0.3289	(0.028804329)	(0.029733597)	(0.017790702)			(0.024771691)	(0.031200377)	(0.043386545)	(0.03798798)
13-13-7014	209	0.285057066	0.117233695	0.215891857		0.240153627		-0.102231756	-0.266631333	0.382628817
	0.3261	(0.053626671)	(0.030378912)	(0.017980202)		(0.018202127)		(0.031442197)	(0.045826865)	(0.038077841)
13-13-7009	209	-0.162560962	0.197334891	0.331426732	-0.228280702		0.227754098		-0.259589364	0.29309041
	0.3473	(0.027926098)	(0.021253802)	(0.020955482)	(0.051148672)		(0.030225282)		(0.042670046)	(0.036010398)
13-13-7008	209	-0.155012823	0.061078688	0.254012883	-0.273740449		0.253283876	-0.188087724		0.359889066
	0.3223	(0.026007895)	(0.02162367)	(0.023819129)	(0.044599637)		(0.025370595)	(0.026756225)		(0.035376365)
13-13-7006	209	0.187806685	0.180166162	0.315495452	-0.202390584	0.176068139			-0.249961385	0.334513268
	0.3702	(0.055167983)	(0.020980393)	(0.020679883)	(0.051321436)	(0.022113029)			(0.043318029)	(0.033537477)
13-13-7005	209	0.1530626	0.080061306	0.271378536	-0.275619201	0.165485606		-0.13456905	0.389297578	
	0.3018	(0.045957875)	(0.022733429)	(0.023823154)	(0.045989218)	(0.018199386)		(0.026632911)	(0.035999635)	
13-13-6084	210				0.167480007	-0.12100617	0.45921969	-0.328436379	0.207072919	0.254238047
	0.2505				(0.04702178)	(0.017175121)	(0.041951085)	(0.027249919)	(0.040252796)	(0.044039123)
13-13-6082	210			0.241627339	-0.383879752		0.258441421	-0.259994621	0.151866077	0.35779954
	0.2883			(0.025334484)	(0.05558363)		(0.030001375)	(0.021561244)	(0.036640497)	(0.031880579)
13-13-6081	210			0.303277248	-0.518473953	0.040795538		-0.200518542	0.371212968	0.512158151
	0.2092			(0.027178023)	(0.061868301)	(0.013176605)		(0.027522591)	(0.034610602)	(0.038064487)
13-13-6078	210			0.203878326	-0.250334686	-0.123874858	0.473252007	-0.192986217	0.262926236	
	0.2333			(0.031471416)	(0.070761125)	(0.015445129)	(0.041987783)	(0.029575474)	(0.044447065)	
13-13-6071	210		0.098507445	0.177318268			0.361415164	-0.124125943	-0.212073336	0.190785275
	0.3132		(0.027800123)	(0.01657538)			(0.018757214)	(0.028176337)	(0.037143558)	(0.029790383)
13-13-6065	210		0.171369675	0.313362895	-0.276801767		0.231054403		-0.175468711	0.171965832
	0.3542		(0.017329528)	(0.018409942)	(0.045279084)		(0.024667804)		(0.032245586)	(0.023133158)
13-13-6064	210		0.087816083	0.252351476	-0.291371802		0.261270024	-0.124890537		0.213682724
	0.3383		(0.019018201)	(0.021321379)	(0.038547105)		(0.021564422)	(0.020824062)		(0.027718276)
13-13-6052	210	0.302975437			0.230987011	0.16424596	0.314991025	-0.416770753		0.366088788
	0.3366	(0.053785394)			(0.035630358)	(0.025885423)	(0.037145572)	(0.02222497)		(0.039257624)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.4: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Transport Equipment sector: 13-13) Continued (1)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-13-6051	210	0.540196322			0.374009215	0.179949469	0.453479263	-0.368555759	-0.186297881	
	0.2621	(0.07943276)			(0.05100279)	(0.03742955)	(0.047203016)	(0.029966876)	(0.052992781)	
13-13-6047	210	0.176293603		0.128636922		0.134894221	0.242096991	-0.321252071		0.427402168
	0.2885	(0.050274129)		(0.016531701)		(0.024333643)	(0.035471801)	(0.023708414)		(0.036067337)
13-13-6045	210	-0.296761739		0.362000899	-0.617571587			-0.295466863	0.314677765	0.638285953
	0.2505	(0.035180877)		(0.026856802)	(0.055981743)			(0.029829724)	(0.032797924)	(0.043263824)
13-13-6043	210	-0.11584992		0.175697284	-0.199713821		0.379487354	-0.329632692		0.46437685
	0.3338	(0.030900077)		(0.024098913)	(0.048826089)		(0.023587344)	(0.02568016)		(0.040158955)
13-13-6040	210	0.426957329		0.189138571	-0.171539257	0.28482144		-0.280906125		0.523373416
	0.2859	(0.045845315)		(0.023856088)	(0.049099609)	(0.016271554)		(0.025598716)		(0.038563202)
13-13-6029	210	-0.232430629	0.175933458		0.469421195	0.337025768	0.463029659		-0.486182583	0.215959298
	0.2184	(0.038970994)	(0.030018556)		(0.040471585)	(0.026076101)	(0.036662344)		(0.054918796)	(0.05072424)
13-13-6028	210	-0.152199523	-0.061927867		0.129954529		0.416457213	-0.342038472		0.363870527
	0.3095	(0.030305247)	(0.021081906)		(0.034991727)		(0.024484425)	(0.023813852)		(0.040704279)
13-13-6026	210	0.410104747	0.141759516		0.471759514				-0.460771232	0.301572445
	0.2438	(0.07281103)	(0.028801957)		(0.039441398)				(0.053920518)	(0.046042841)
13-13-6024	210	0.730751207	0.125973741		0.372555046	0.386717206		-0.13759449	-0.323235531	
	0.2259	(0.067827768)	(0.036830643)		(0.052123262)	(0.026971135)		(0.036301618)	(0.070756497)	
13-13-6022	210	0.342004948	0.185468555		0.513792722	0.182492331	0.339905501		-0.552086093	
	0.2686	(0.066254283)	(0.025411577)		(0.03571493)	(0.030913804)	(0.039452687)		(0.050139036)	
13-13-6019	210	-0.173588577	0.188611281	0.25510051			0.292923028		-0.329214185	0.263941704
	0.3151	(0.028085476)	(0.021464613)	(0.011858924)			(0.02455956)		(0.038317527)	(0.035904474)
13-13-6016	210	0.252595076	0.169267726	0.248654558		0.218251096			-0.314018088	0.31926677
	0.3529	(0.051066613)	(0.02094249)	(0.011584646)		(0.017509686)			(0.038009446)	(0.033476062)
13-13-6012	210	0.267226544	0.223522649	0.245293261		0.110438819	0.252547071		-0.374203759	
	0.3086	(0.054729346)	(0.021158187)	(0.012079211)		(0.025256848)	(0.033029892)		(0.040521312)	
13-13-6007	210	-0.213069241	0.142579083	0.344944105	-0.327860743		0.151540426			0.283303283
	0.2888	(0.023661644)	(0.017959203)	(0.019037354)	(0.045330234)		(0.02285776)			(0.035605724)
13-13-6003	210	0.473229058	0.22918944	0.301954791	-0.170007708	0.228165838			-0.243325104	
	0.2859	(0.056258693)	(0.024050161)	(0.024522447)	(0.060702362)	(0.025322647)			(0.051343517)	
13-13-5126	211					-0.155905127	0.393963267	-0.380859743	0.31361033	0.264505462
	0.2582					(0.016168158)	(0.041017694)	(0.021702282)	(0.035443987)	(0.042620932)
13-13-5122	211				0.336998259	-0.126777934	0.580860801	-0.154121621		0.292098253
	0.226				(0.044644989)	(0.01821154)	(0.038605429)	(0.027082595)		(0.045708497)
13-13-5121	211				0.183086942	-0.18718518	0.487010762	-0.202768378	0.284651856	
	0.3002				(0.042117763)	(0.01391129)	(0.033559346)	(0.024645109)	(0.035859906)	
13-13-5119	211			0.147880688		0.100942771	0.464373901	-0.150333934	0.237585311	0.506600383
	0.1209			(0.021377356)		(0.010858305)	(0.03248705)	(0.029547908)	(0.032771252)	(0.041517639)
13-13-5117	211			0.092658008		-0.051327636	0.498083593	-0.203750767	0.177431595	0.387131614
	0.2355			(0.018312286)		(0.014101825)	(0.037836839)	(0.025762357)	(0.03307174)	(0.035974278)
13-13-5116	211			0.123191646		-0.108162055		-0.175847227	0.407811779	0.400938828
	0.2206			(0.020243607)		(0.014137767)		(0.028764783)	(0.030810289)	(0.036409998)
13-13-5115	211			0.366838783	-0.756556549			-0.256803548		
	0.2544			(0.024684013)	(0.046575572)			(0.025152938)		
13-13-5112	211			0.213973593	-0.197120704		0.3128761	-0.105942745	0.277110194	
	0.1667			(0.031115607)	(0.065791394)		(0.035999375)	(0.02357196)	(0.043192265)	

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.4: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Transport Equipment sector: 13-13) Continued (2)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-13-5111	211			0.328734552	-0.411082481	0.057817982			0.291912209	0.414808903
	0.1851			(0.025576579)	(0.06053697)	(0.012013968)			(0.032510354)	(0.036391336)
13-13-5107	211			0.24592649	-0.209391577	-0.080378266	0.364865434		0.224441087	
	0.1675			(0.028663652)	(0.069604814)	(0.01225704)	(0.039170981)		(0.043189839)	
13-13-5104	211		-0.108285956			0.083969989		-0.279099979	0.286482798	0.484513995
	0.1198		(0.034115502)			(0.010400912)		(0.026572101)	(0.046107406)	(0.040014638)
13-13-5092	211		0.103609084		0.354912837	-0.031536581	0.404778724		-0.177155437	
	0.185		(0.02337171)		(0.032424218)	(0.010260299)	(0.030803056)		(0.037991481)	
13-13-5091	211		0.05422373		0.236641384	-0.059060843	0.444766518	-0.113064759		
	0.2541		(0.016933498)		(0.030691587)	(0.011652642)	(0.025876313)	(0.018917511)		
13-13-5089	211		0.165580695	0.220892748			0.317351114		-0.273432902	0.126082351
	0.3068		(0.018039586)	(0.010765138)			(0.018526099)		(0.026808695)	(0.022835818)
13-13-5083	211		0.091040526	0.193610181		0.029811993	0.201030416			0.165631663
	0.2244		(0.014565007)	(0.010002874)		(0.009062038)	(0.022644916)			(0.02846431)
13-13-5082	211		0.162138039	0.19920849		-0.046210927	0.345762136		-0.137369817	
	0.2698		(0.019391997)	(0.011078828)		(0.008461903)	(0.025259291)		(0.031203403)	
13-13-5077	211		0.142075049	0.318642611	-0.345015014		0.190861352			0.128632402
	0.3313		(0.015260791)	(0.01437463)	(0.034936404)		(0.019627512)			(0.020644402)
13-13-5074	211		0.16823623	0.277943314	-0.294695702	0.05394281				0.372117547
	0.2729		(0.017310491)	(0.018361122)	(0.044076793)	(0.00990951)				(0.023027799)
13-13-5071	211		0.164099302	0.244103496	-0.193969776	-0.05461003	0.302073473			
	0.3005		(0.015617345)	(0.016848175)	(0.040499001)	(0.007618923)	(0.016832817)			
13-13-5067	211	0.334364091				0.127430027	0.314738897	-0.484389511		0.430873274
	0.3243	(0.059111016)				(0.028543646)	(0.041194475)	(0.020931126)		(0.041914425)
13-13-5064	211	-0.4135235			0.506893871		0.427305865		-0.177570049	0.334207886
	0.1322	(0.045243855)			(0.051268682)		(0.046595349)		(0.057215963)	(0.062205353)
13-13-5063	211	-0.121157455			0.128007417		0.486088058	-0.395817142		0.37784473
	0.3614	(0.033467559)			(0.039617869)		(0.024336625)	(0.024741813)		(0.043807794)
13-13-5061	211	0.4090947			0.571521731	0.379677457			-0.253655287	0.401113614
	0.2759	(0.088197324)			(0.048226115)	(0.032050809)			(0.056409658)	(0.054733626)
13-13-5060	211	0.585156775			0.214511164	0.362274883		-0.345937575		0.454333929
	0.1517	(0.049887934)			(0.040205956)	(0.017113156)		(0.024936823)		(0.042001339)
13-13-5057	211	0.387669969			0.601547117	0.213084146	0.350816877		-0.274576177	
	0.2753	(0.084710876)			(0.04519395)	(0.039471655)	(0.050491162)		(0.054888344)	
13-13-5056	211	0.479254463			0.287871936	0.161785463	0.405017928	-0.304276565		
	0.1172	(0.053860574)			(0.037302835)	(0.028089762)	(0.03829923)	(0.023984658)		
13-13-5055	211	-0.464859577		0.179259302	-0.50370382	0.289827245		-0.244658836	0.234013202	0.649521147
	0.3122	(0.036833343)		(0.024661454)	(0.059872606)	(0.01543841)		(0.035109813)	(0.037876837)	(0.051148409)
13-13-5053	211	-0.157583965		0.115949868			0.393781302	-0.312357453	0.252455823	0.419301389
	0.2612	(0.02829656)		(0.017743607)			(0.022211104)	(0.025428821)	(0.035045089)	(0.038776035)
13-13-5050	211	0.399931882		0.139257023				-0.263632267		0.48878479
	0.2027	(0.045310726)		(0.017799338)				(0.025367326)		(0.037523515)
13-13-5046	211	0.430805707		0.134541445		0.139290967	0.37102316	-0.261938376		
	0.1837	(0.056783591)		(0.020495967)		(0.030502529)	(0.042466214)	(0.0296473)		
13-13-5045	211	-0.392699588		0.428634599					-0.318030953	0.5321835
	0.1289	(0.033921207)		(0.026242843)					(0.067837693)	(0.04600868)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.4: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Transport Equipment sector: 13-13) Continued (3)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
13-13-5044	211	-0.251524387		0.302224382	-0.45511738			-0.221137666		0.872546853
	0.1197	(0.046117088)		(0.035180165)	(0.071689718)			(0.038896514)		(0.0490154)
13-13-5042	211	-0.26110419		0.285386341	-0.161613707		0.294425049			0.39823321
	0.1589	(0.032180949)		(0.025381849)	(0.058246142)		(0.027603548)			(0.047749764)
13-13-5034	211	-0.258709165	0.198299436				0.293704185			0.316960701
	0.2347	(0.049364241)	(0.037951305)				(0.0435298)			(0.063352153)
13-13-5033	211	-0.101756307	-0.056231513				0.390636699	-0.377850481		0.395142266
	0.3198	(0.028391431)	(0.021389743)				(0.02464127)	(0.021395639)		(0.04010305)
13-13-5021	211	-0.089948289	0.203089952		0.458742854		0.51295138		-0.473874865	
	0.2413	(0.026876534)	(0.028526593)		(0.039247226)		(0.032507647)		(0.053792955)	
13-13-5018	211	0.654728543	0.183454053		0.466504504	0.371356089			-0.432818376	
	0.1888	(0.064353058)	(0.029103289)		(0.040798662)	(0.025926725)			(0.056318077)	
13-13-5012	211	-0.280426151	0.095743935	0.236666114			0.215163529			0.249570332
	0.283	(0.022687365)	(0.017937058)	(0.012519489)			(0.022021346)			(0.037910214)
13-13-5007	211	0.513846651	0.217094969	0.245134438		0.259676663			-0.29441458	
	0.3101	(0.050909906)	(0.023644883)	(0.013448566)		(0.019708059)			(0.044475552)	
13-13-5005	211	-0.219336358	0.209404837	0.386799722	-0.475113492					0.392248588
	0.2321	(0.026084069)	(0.017396153)	(0.019703846)	(0.045065907)					(0.035445423)
13-13-5003	211	-0.090101172	0.350560325	0.465793814	-0.536390921			0.112626804		
	0.2614	(0.032200156)	(0.018437619)	(0.02694027)	(0.056591916)			(0.029811919)		
13-13-5002	211	-0.054801846	0.174477126	0.321868393	-0.277902182		0.234302442			
	0.2265	(0.017486031)	(0.019179548)	(0.020901451)	(0.049446929)		(0.022591185)			
13-13-5001	211	0.312557388	0.181437238	0.313602937	-0.265711298	0.168641525				
	0.2321	(0.030317136)	(0.020459506)	(0.021531311)	(0.051583871)	(0.017728531)				

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.5: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Office Machineary: 16-11)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
16-11-7032	209		0.125111289	0.082793577	-0.112978805	0.156736812		-0.110332104	0.142029558	0.132671823
	0.2582		(0.012491931)	(0.022422354)	(0.042566145)	(0.010978064)		(0.0211112)	(0.044195044)	(0.031019571)
16-11-7024	209	-0.261123595		0.210228066	-0.141277598	-0.123578148	0.512880404		-0.125816212	0.182342308
	0.2988	(0.059491343)		(0.013640761)	(0.04181825)	(0.010273573)	(0.026209176)		(0.039057306)	(0.028112186)
16-11-6071	210		-0.082791999	0.133145858			0.36727269	-0.104540113	-0.117149945	0.09512195
	0.3154		(0.010359492)	(0.012457809)			(0.013894278)	(0.012027665)	(0.019132518)	(0.019219121)
16-11-6070	210		0.099721638	0.061710121		0.149444358		-0.101527144	0.129463819	0.111517066
	0.14		(0.01121431)	(0.019864673)		(0.009708519)		(0.018452574)	(0.035350321)	(0.026017245)
16-11-6066	210		0.125469268	0.449883981	-0.245093517			0.16727803	-0.449929933	0.52908856
	0.1955		(0.020631765)	(0.020097861)	(0.069579197)			(0.022568708)	(0.055067667)	(0.037335631)
16-11-6050	210	-0.218454647		0.075336862			0.414221269	-0.174052361	0.048994908	0.066823489
	0.3008	(0.046433418)		(0.014128732)			(0.021251241)	(0.012199417)	(0.017261273)	(0.023692657)
16-11-6048	210	-0.194003689		0.213083065		-0.124711308	0.483232172		-0.204028709	0.191965472
	0.2878	(0.052606274)		(0.01304449)		(0.009947288)	(0.024884201)		(0.026539315)	(0.026235603)
16-11-6047	210	-0.194532203		0.107291693		-0.06680386	0.427983167	-0.120880889		0.110805399
	0.3082	(0.045395514)		(0.013430689)		(0.006147059)	(0.020988933)	(0.01159094)		(0.021176432)
16-11-6044	210	-0.451972127		0.173666765	-0.214715512		0.417715031		0.111909124	0.104927707
	0.1653	(0.065828996)		(0.015251382)	(0.048873034)		(0.029638232)		(0.03652965)	(0.032377216)
16-11-6043	210	-0.184117208		0.076478598	0.080137907		0.361898749	-0.169213881		0.115547837
	0.2654	(0.053144151)		(0.014461602)	(0.024914461)		(0.022006498)	(0.013161154)		(0.023100215)
16-11-6042	210	-0.157068719		0.052664618	-0.105808364		0.425126451	-0.173721878	0.128409842	
	0.3088	(0.050755932)		(0.013684443)	(0.038620116)		(0.023017755)	(0.01317374)	(0.026087781)	
16-11-6038	210	-0.276115862		0.184333467	-0.178564291	-0.108301856	0.474224969			0.151688154
	0.2867	(0.052446776)		(0.011930289)	(0.027246609)	(0.007633148)	(0.024667382)			(0.023483935)
16-11-6020	210	0.467983696	0.096557842	0.221115405				-0.058918237	-0.114313727	0.14017725
	0.2015	(0.033008526)	(0.01126373)	(0.012526202)				(0.014147634)	(0.021594017)	(0.02648878)
16-11-6016	210	0.427282847	0.113010374	0.23283655		-0.025367081			-0.142973598	0.180496206
	0.2019	(0.042650154)	(0.010996298)	(0.012629604)		(0.009617769)			(0.02683386)	(0.026617718)
16-11-5120	211			0.047436841			0.429038171	-0.165932058	0.136595088	-0.076424555
	0.234			(0.016296846)			(0.015883819)	(0.014011357)	(0.019363483)	(0.023419491)
16-11-5116	211			0.058647128		-0.068829348	0.456788195	-0.125898722	0.108156556	
	0.1868			(0.016027598)		(0.012829726)	(0.023347806)	(0.019344236)	(0.034587401)	
16-11-5103	211		0.059931587			0.060247647	0.237228198		0.109442866	-0.137766738
	0.0911		(0.016381486)			(0.013535244)	(0.031177693)		(0.029595581)	(0.021316568)
16-11-5096	211		0.192457942		-0.194952326	0.193233288			0.287483505	-0.121707812
	0.1069		(0.014267251)		(0.052904905)	(0.007292635)			(0.048516364)	(0.029998152)
16-11-5095	211		0.144518259		0.220781075	0.127765202		-0.100602064		0.127137316
	0.0849		(0.015202705)		(0.03961282)	(0.006426877)		(0.015586396)		(0.02572775)
16-11-5094	211		0.124373867		-0.134883881	0.21581071		-0.170007987	0.364164528	
	0.2081		(0.01263513)		(0.033581275)	(0.0053502)		(0.011735406)	(0.031329103)	
16-11-5090	211		0.095739336	0.418030014				0.159086785	-0.534853391	0.549886884
	0.1992		(0.019722443)	(0.019252193)				(0.021385109)	(0.030640204)	(0.024916202)
16-11-5089	211		-0.053221266	0.19615149			0.306598223		-0.204353798	0.149279443
	0.2544		(0.009199575)	(0.00918058)			(0.011308194)		(0.017540102)	(0.019376576)
16-11-5088	211		-0.05934025	0.122635752			0.25824229	-0.047772191		0.080152889
	0.266		(0.006605601)	(0.009658579)			(0.008418112)	(0.009113253)		(0.014794087)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.5: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Office Machineary: 16-11) Continued

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
16-11-5087	211 0.3284		-0.125293272 (0.010406121)	0.078246873 (0.010910436)			0.455789192 (0.008916357)	-0.127752973 (0.013112965)	-0.071448663 (0.019269512)	
16-11-5085	211 0.124		0.100935414 (0.010744364)	0.149863131 (0.014724291)		0.045271713 (0.004840357)		0.044511853 (0.013757011)		0.197531411 (0.020170161)
16-11-5083	211 0.2542		-0.023417653 (0.008879495)	0.108423535 (0.006887711)		-0.041244331 (0.006018332)	0.232463358 (0.015800254)			0.117343447 (0.01345964)
16-11-5079	211 0.1647		0.070825957 (0.017458861)	0.374369872 (0.017270888)	-0.429302623 (0.034993989)			0.162045127 (0.019489031)		0.340540848 (0.028806213)
16-11-5077	211 0.2741		-0.054118458 (0.007415495)	0.16140862 (0.007825578)	-0.062626901 (0.017555253)		0.278488741 (0.009031194)			0.104040462 (0.015340391)
16-11-5076	211 0.1915		-0.070651794 (0.011682902)	0.166055338 (0.010075475)	-0.160470651 (0.03615762)		0.421715788 (0.010065748)		-0.115390166 (0.028601199)	
16-11-5073	211 0.324		0.127944147 (0.013442167)	0.093673782 (0.01174243)	-0.259801924 (0.040583436)	0.172227393 (0.005282441)			0.201171005 (0.032717272)	
16-11-5069	211 0.1625	0.311771278 (0.070391722)				0.137219031 (0.013084399)		-0.333922344 (0.017316968)	0.417437474 (0.039840936)	-0.18080197 (0.040598712)
16-11-5059	211 0.1586	0.338054333 (0.06707602)			0.210626365 (0.064430653)	0.123486269 (0.013213203)		-0.345608188 (0.016667228)	0.252652511 (0.056421388)	
16-11-5057	211 0.2232	-0.805567696 (0.061351551)			-0.301338938 (0.059348778)	-0.055589716 (0.014470001)	0.723296233 (0.032405219)		0.138962707 (0.050816591)	
16-11-5053	211 0.2454	-0.293581174 (0.045469289)		0.089008801 (0.014051665)			0.366091335 (0.021749199)	-0.144568492 (0.012118998)		0.111598215 (0.022846424)
16-11-5052	211 0.3044	-0.105494809 (0.039048312)		0.051091486 (0.013162386)			0.401425966 (0.021299229)	-0.176237867 (0.01206393)	0.07435786 (0.016222148)	
16-11-5048	211 0.2068	-0.196557552 (0.052219354)		0.17438033 (0.012350001)		-0.083288253 (0.006837649)	0.417001238 (0.024160783)			0.133425042 (0.024340842)
16-11-5041	211 0.1568	-0.336306008 (0.062196644)		0.144665405 (0.014230391)	-0.258056243 (0.04719441)		0.413580381 (0.029789487)		0.167820068 (0.03351943)	
16-11-5029	211 0.2209	0.278179293 (0.035690269)	0.106546594 (0.012899046)			0.107082679 (0.008723438)		-0.218127598 (0.012991179)	0.211363695 (0.029431683)	
16-11-5023	211 0.1953	0.857119381 (0.04011624)	0.108439647 (0.018662537)		0.237590401 (0.061543925)			-0.245475533 (0.018830223)	-0.17480082 (0.043782862)	
16-11-5017	211 0.2293	0.481604596 (0.038555249)	0.107517862 (0.013079518)		0.216403987 (0.034079876)	0.058543973 (0.007186038)		-0.200746951 (0.013361618)		
16-11-5015	211 0.1931	0.40881186 (0.028199284)	0.10315421 (0.010688396)	0.236599184 (0.009959871)					-0.133044804 (0.020178234)	0.168373406 (0.025993275)
16-11-5014	211 0.1901	0.450842996 (0.024473899)	0.073938266 (0.009185989)	0.187305062 (0.011399823)				-0.063488089 (0.012222726)		0.115249793 (0.022771272)
16-11-5013	211 0.1793	0.639704052 (0.018601854)	0.080857307 (0.011841841)	0.178067963 (0.011840665)				-0.073435676 (0.014716644)	-0.056423636 (0.021283848)	
16-11-5005	211 0.1815	0.39211605 (0.027721555)	0.090690398 (0.009935499)	0.218113211 (0.00954437)	-0.067404181 (0.024859117)					0.146760245 (0.023589697)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.6: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Office Machineary: 16-12)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
16-12-6080	210			-0.162059337	0.327444397	0.079631776	0.157035733		0.481071136	-0.183890969
	0.1773			(0.027178844)	(0.038533417)	(0.021493404)	(0.039261573)		(0.040700551)	(0.06694891)
16-12-6073	210		0.081159461		0.304409538	-0.111983424	0.225409396	-0.086522629		0.305096374
	0.1		(0.022370537)		(0.040149964)	(0.018991993)	(0.040334764)	(0.015217511)		(0.040134261)
16-12-6057	210		0.251953153	0.251039579	-0.156205497	-0.220156402	0.42379651	-0.038292121		
	0.2758		(0.013085577)	(0.019844824)	(0.034008111)	(0.011120401)	(0.025412044)	(0.011746355)		
16-12-6050	210	-0.255980241		0.145432683			0.422808369	-0.211980904	0.404734568	-0.267710102
	0.1163	(0.079425327)		(0.035083909)			(0.033717958)	(0.020634673)	(0.063514561)	(0.09319797)
16-12-6036	210	0.838672307		0.162843857	0.222889355	0.134673573	0.247266535	-0.27167325		
	0.1142	(0.094128285)		(0.040775228)	(0.06209324)	(0.048623305)	(0.078059467)	(0.023308642)		
16-12-6035	210	-0.480532859	0.131974621				0.235013362	-0.185906184	0.300836539	-0.231020727
	0.1639	(0.06054056)	(0.025332583)				(0.031440467)	(0.017513587)	(0.054369017)	(0.077558013)
16-12-6028	210	-0.236656455	0.080316591		0.334691171		0.199237714	-0.215612709		0.335383916
	0.1736	(0.044511899)	(0.024083404)		(0.041442131)		(0.0258124)	(0.016102723)		(0.041429905)
16-12-6018	210	-0.136422681	0.191819238	0.24709968			0.234395638	-0.15406725		0.098436368
	0.2402	(0.032041427)	(0.014250047)	(0.01689363)			(0.018119858)	(0.011611218)		(0.028768499)
16-12-6015	210	0.189560636	0.145908491	0.164459287		0.141859907		-0.145182382		0.201815211
	0.2176	(0.046282728)	(0.016324768)	(0.017797918)		(0.012324704)		(0.012631338)		(0.029725578)
16-12-6014	210	0.145052492	0.109133979	0.10613377		0.183020864		-0.142422307	0.12856318	
	0.1901	(0.050225715)	(0.019012296)	(0.019733967)		(0.012277955)		(0.012609109)	(0.024404485)	
16-12-6009	210	-0.286677939	0.270097987	0.205648588	-0.179839244			-0.132959584		0.233043861
	0.1526	(0.045724031)	(0.025651871)	(0.033010674)	(0.056845997)			(0.017985289)		(0.047626213)
16-12-6002	210	0.356147759	0.237271685	0.24753473	-0.251058098	0.148023924		-0.134707627		
	0.2328	(0.044446347)	(0.018979938)	(0.023912673)	(0.03955948)	(0.013741778)		(0.01458257)		
16-12-5122	211				0.582142223	-0.136351036	0.290379245	-0.077079936		0.574287506
	0.149				(0.037701158)	(0.022239828)	(0.045992685)	(0.017683206)		(0.037501544)
16-12-5112	211			-0.094584337	0.367985322		0.336042146	-0.127704018	0.297689537	
	0.1678			(0.02573544)	(0.037423142)		(0.020504381)	(0.013360886)	(0.008815039)	
16-12-5109	211			-0.256109292	0.340638817	0.169361224		-0.053185992	0.491440879	
	0.1567			(0.025526042)	(0.037126959)	(0.011413539)		(0.01393758)	(0.009340687)	
16-12-5107	211			-0.161440187	0.340166977	0.057871495	0.142184381		0.399389587	
	0.1669			(0.024862574)	(0.032568012)	(0.019071361)	(0.035740463)		(0.017706458)	
16-12-5106	211			0.141060711	0.482647252	-0.474518392	1.033159323	-0.121896845		
	0.1919			(0.047884104)	(0.069336176)	(0.019457432)	(0.037039614)	(0.027380824)		
16-12-5105	211		0.103188749				0.246976678	-0.110698788	0.23637502	-0.298339883
	0.1265		(0.022422865)				(0.027714109)	(0.013026764)	(0.038806699)	(0.06712723)
16-12-5102	211		0.199102279			-0.109712249	0.135329137	-0.047775204		0.189032337
	0.0822		(0.020542674)			(0.021791436)	(0.044989068)	(0.017156793)		(0.044702376)
16-12-5098	211		0.085520782		0.284044525		0.140054139	-0.076058079		0.322939458
	0.0824		(0.021599934)		(0.038842265)		(0.023264606)	(0.011074963)		(0.031089292)
16-12-5093	211		0.077507962		0.280917128	-0.086358177	0.160631348			0.317431463
	0.0825		(0.020967514)		(0.037335307)	(0.013520951)	(0.033329763)			(0.037847459)
16-12-5091	211		0.196667406		0.20602596	-0.212536765	0.392106631	-0.087756105		
	0.1282		(0.019670959)		(0.043033303)	(0.0167906)	(0.038367825)	(0.016742765)		
16-12-5089	211		0.147932693	0.122646565			0.264060654		0.103553245	-0.129110612
	0.1281		(0.015660271)	(0.015328373)			(0.020139816)		(0.024503403)	(0.047419936)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.6: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Office Machineary: 16-12) Continued (1)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
16-12-5087	211 0.1221		0.156034111 (0.01552661)	0.125400837 (0.016603243)			0.244283611 (0.016233548)	-0.03823187 (0.009967715)	0.070216581 (0.012871651)	
16-12-5081	211 0.2622		0.22256272 (0.010750868)	0.208249908 (0.016242548)		-0.223804893 (0.010618001)	0.427242821 (0.023053976)	-0.038507512 (0.010718557)		
16-12-5080	211 0.0952		0.269381025 (0.024809179)	0.116382986 (0.027037315)	-0.152844062 (0.052234228)				-0.134002059 (0.033689337)	0.309468943 (0.068946991)
16-12-5075	211 0.1469		0.346890157 (0.011655237)	0.245478295 (0.024483171)	-0.234066018 (0.041019912)		0.158977675 (0.021662249)	0.056195203 (0.01015204)		
16-12-5072	211 0.1361		0.431699082 (0.012485134)	0.229106767 (0.031481815)	-0.387106735 (0.050117448)	-0.052456958 (0.012189747)		0.07955048 (0.016265699)		
16-12-5071	211 0.2915		0.236588504 (0.011907521)	0.231419098 (0.01772425)	-0.138232054 (0.030062669)	-0.231619001 (0.007370426)	0.417390646 (0.020985573)			
16-12-5070	211 0.1529	-0.471442182 (0.074176985)					0.374968343 (0.034796589)	-0.217853047 (0.020864352)	0.591978525 (0.057483948)	-0.451169136 (0.092180384)
16-12-5067	211 0.1536	0.769648169 (0.094478401)				0.347099089 (0.044876937)	-0.323213347 (0.073343901)	-0.210512686 (0.022665783)		0.468084304 (0.053028359)
16-12-5066	211 0.1572	0.26584003 (0.084561467)				0.325620057 (0.034802028)	-0.20663251 (0.054984932)	-0.175146706 (0.017643805)	0.380392295 (0.0256447)	
16-12-5062	211 0.1892	-0.392972801 (0.053303339)			0.416522577 (0.034406545)		0.362409445 (0.021868427)	-0.220370965 (0.015319711)	0.325572015 (0.023145819)	
16-12-5060	211 0.1972	0.341592062 (0.053604021)			0.41314029 (0.034111025)	0.195650801 (0.014694879)		-0.20395475 (0.015563055)		0.491547284 (0.036094876)
16-12-5059	211 0.2118	0.127979488 (0.048669039)			0.259347095 (0.027854818)	0.246724714 (0.011205666)		-0.175412753 (0.012820136)	0.336146028 (0.019013447)	
16-12-5053	211 0.0809	0.176905249 (0.057426771)		0.26086981 (0.032684484)			0.329589794 (0.034163058)	-0.211505935 (0.021964519)		0.310274126 (0.052806755)
16-12-5052	211 0.0874	-0.195869534 (0.073136551)		0.153449172 (0.03246478)			0.3718689 (0.028077764)	-0.195220682 (0.019834798)	0.273506426 (0.032709085)	
16-12-5050	211 0.1186	0.606324846 (0.064061131)		0.155084613 (0.028249818)		0.227393671 (0.018067163)		-0.182935281 (0.019650051)		0.371380046 (0.044479084)
16-12-5042	211 0.0842	-0.31614817 (0.054817739)		0.152801194 (0.040252778)	0.328597859 (0.060107983)		0.337378677 (0.034777127)			0.52151848 (0.054811224)
16-12-5040	211 0.1186	0.463098241 (0.030981727)		0.18742743 (0.039276349)	0.271864418 (0.058824133)		0.468138474 (0.030609539)	-0.26683697 (0.022311311)		
16-12-5033	211 0.1448	-0.218915076 (0.051490422)	0.204643904 (0.023056228)				0.117669559 (0.028370428)	-0.18240824 (0.018479038)		0.19880296 (0.045813459)
16-12-5032	211 0.1422	-0.429759297 (0.056244019)	0.143696757 (0.023347375)				0.189970989 (0.024146104)	-0.16848199 (0.016548601)	0.185729344 (0.028930168)	
16-12-5024	211 0.1454	-0.349479899 (0.048794168)	0.156678783 (0.025683289)		0.181857654 (0.044886548)			-0.176860499 (0.018227621)		0.402972723 (0.04620846)
16-12-5022	211 0.0692	-0.55936642 (0.039324542)	0.150449934 (0.027792749)		0.256203162 (0.049496995)		0.16441046 (0.030858808)			0.377829089 (0.049579749)
16-12-5021	211 0.0838	-0.735622319 (0.048328596)	0.102286811 (0.027222649)		0.195129024 (0.04333553)		0.264427575 (0.027798728)		0.253167195 (0.030608747)	
16-12-5019	211 0.082	-0.159801752 (0.055439838)	0.102681858 (0.026336733)		0.203159028 (0.043684506)	0.134607879 (0.017648688)				0.399555318 (0.044141274)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.6: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Office Machineary: 16-12) Continued (2)

Code of combination	*D.F.* *D.W.*	Explanatories †								
		China (CNY)	**Japan (JPY)**	**Korea (KRW)**	**Taiwan (TWD)**	**Indonesia (IDR)**	**Malaysia (MYR)**	**The Philippines (PHP)**	**Singapore (SGD)**	**Thailand (THB)**
16-12-5015	211	-0.20967846	0.30965287	0.254322288					-0.36473463	0.582615089
	0.2021	(0.058899203)	(0.021323709)	(0.027616751)					(0.052516435)	(0.063332227)
16-12-5014	211	-0.305632614	0.232154223	0.15138753				-0.133806461		0.267050847
	0.1353	(0.043192516)	(0.019732118)	(0.023229306)				(0.016579518)		(0.038184734)
16-12-5012	211	-0.338726582	0.213963082	0.264498616			0.22892314			0.133486245
	0.1409	(0.028754587)	(0.016124596)	(0.019230912)			(0.021072791)			(0.033250491)
16-12-5006	211	0.396423151	0.187772413	0.169934449		0.160038724		-0.146848815		
	0.1932	(0.042712012)	(0.016902712)	(0.019427762)		(0.013286377)		(0.013831855)		
16-12-5005	211	-0.413847397	0.311892605	0.257244138	-0.278950141					0.208047915
	0.1291	(0.040367783)	(0.02470653)	(0.031751304)	(0.055806327)					(0.049232526)
16-12-5003	211	-0.120469499	0.360543835	0.280482991	-0.366021756			-0.112515272		
	0.1798	(0.037786253)	(0.020086421)	(0.030264701)	(0.04832642)			(0.018511237)		
16-12-5002	211	-0.203330558	0.288344091	0.346941398	-0.277244873		0.235795122			
	0.191	(0.019902149)	(0.016454597)	(0.021556905)	(0.037209953)		(0.020804237)			
16-12-5001	211	0.191986601	0.276525897	0.293239586	-0.339189536	0.13999106				
	0.1802	(0.040026597)	(0.018826275)	(0.023703589)	(0.039938825)	(0.014695089)				

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.7: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Communication: 16-13)

Code of combination	*D.F.* *D.W.*	China (CNY)	Japan (JPY)	Korea (KRW)	Taiwan (TWD)	Explanatories † Indonesia (IDR)	Malaysia (MYR)	The Philippines (PHP)	Singapore (SGD)	Thailand (THB)
16-13-8005	208	-0.374772251	-0.082025897	0.140290908	0.169117523		0.369366944	-0.167313768	-0.154891789	0.381868058
	0.1654	(0.060097092)	(0.030376784)	(0.031081694)	(0.054040062)		(0.033875633)	(0.019893206)	(0.04457382)	(0.102605295)
16-13-7026	209	-0.139050448		0.121383855	0.212867928		0.405926315	-0.124085354	-0.151028406	0.304805375
	0.1729	(0.051490849)		(0.027762019)	(0.038689534)		(0.032200948)	(0.018860797)	(0.039887423)	(0.097091958)
16-13-7025	209	0.341136937		-0.055628067	0.239857539	0.210928875		-0.094106974	0.078254447	0.280077626
	0.2684	(0.040408884)		(0.015835496)	(0.025882284)	(0.00972724)		(0.012380591)	(0.02904683)	(0.060764602)
16-13-7019	209	0.314817655	-0.171586095		0.315838279	0.197054285		-0.13410663	0.088254774	0.265468334
	0.2838	(0.047178171)	(0.01878141)		(0.028857058)	(0.010482707)		(0.012153629)	(0.032753209)	(0.065350813)
16-13-7017	209	0.408308195	-0.141148278		0.190028837	0.190723249	-0.13139304	-0.123464697		0.649369921
	0.2732	(0.058064653)	(0.021393184)		(0.031443402)	(0.017218557)	(0.036353434)	(0.014390481)		(0.04883424)
16-13-7004	209	0.185386872	-0.145995254	-0.050501934	0.317791249	0.23040324		-0.165375274	0.243568404	
	0.2857	(0.049108018)	(0.020892192)	(0.018944704)	(0.034809236)	(0.008507645)		(0.011365885)	(0.016473447)	
16-13-6079	210			0.147925239	0.213616605	-0.150996411	0.334426898	0.06167		0.245607801
	0.1906			(0.025851314)	(0.030850757)	(0.011054498)	(0.041031245)	(0.015225138)		(0.059481745)
16-13-6071	210		0.05621495	0.206723527			0.212634394	-0.058919391	-0.181723162	0.269884081
	0.135		(0.012040841)	(0.017873398)			(0.023475627)	(0.013935326)	(0.024409046)	(0.067423863)
16-13-6059	210		0.048622663	0.171482339	-0.0817144	-0.050933302	0.167070296			0.186896618
	0.1828		(0.014121932)	(0.017019163)	(0.026189352)	(0.008660027)	(0.027365608)			(0.035411538)
16-13-6057	210		0.054843326	0.240988184	-0.075993378	-0.075200856	0.302907271	-0.050387116		
	0.2547		(0.014664035)	(0.015461883)	(0.02649192)	(0.007921108)	(0.018199342)	(0.009411995)		
16-13-6056	210	0.857926446				0.247964581	-0.243331773	-0.110203996	-0.155151064	0.831274236
	0.2168	(0.06391432)				(0.025416206)	(0.046033009)	(0.019780461)	(0.04519135)	(0.092588709)
16-13-6052	210	0.485612463			0.175733112	0.187503739	-0.095715468	-0.104432801		0.578988367
	0.2613	(0.051206984)			(0.024679895)	(0.015879793)	(0.033042026)	(0.012750107)		(0.045612399)
16-13-6044	210	-0.140656312		0.133507339	0.164212937		0.361695308		-0.213624002	0.520298679
	0.1734	(0.050236639)		(0.025671243)	(0.036560094)		(0.030568374)		(0.033947119)	(0.077163647)
16-13-6043	210	-0.155884844		0.138731728	0.134343088		0.384148856	-0.118046649		0.22172032
	0.1798	(0.034395133)		(0.024943433)	(0.031844651)		(0.027768407)	(0.014790574)		(0.052112136)
16-13-6039	210	0.343570349		-0.059390987	0.28280497	0.233441481		-0.124156618	0.211016746	
	0.2779	(0.041105967)		(0.016083261)	(0.024055887)	(0.00787125)		(0.01028622)	(0.013546379)	
16-13-6036	210	0.2552318		0.141663704	0.129206071	0.054799421	0.379067794	-0.138290656		
	0.2066	(0.063386406)		(0.024538543)	(0.031650796)	(0.017848155)	(0.031285462)	(0.013734222)		
16-13-6025	210	0.341852306	-0.143736947		0.155513991	0.145083578		-0.096563656		0.596594621
	0.2691	(0.048558185)	(0.018416217)		(0.024890231)	(0.009199404)		(0.011606894)		(0.032704906)
16-13-6024	210	0.327035371	-0.174938533		0.356783856	0.219849425		-0.157570798	0.218249532	
	0.2995	(0.047177739)	(0.018685868)		(0.026138829)	(0.008155665)		(0.010139573)	(0.015880523)	
16-13-6023	210	0.412394113	-0.176629092		0.206343386	0.201822911	-0.186716817			0.789088041
	0.2627	(0.0587303)	(0.0206027)		(0.031364597)	(0.016674862)	(0.033650584)			(0.039495734)
16-13-6022	210	0.43195176	-0.28104845		0.562897723	0.293189073	-0.154805269		0.305588372	
	0.1887	(0.072087109)	(0.025265729)		(0.034896466)	(0.02255864)	(0.042332936)		(0.027617494)	
16-13-6021	210	0.417295336	-0.109572827		0.268904825	0.100963904	0.204643524	-0.236970483		
	0.1867	(0.078028497)	(0.028648177)		(0.041360001)	(0.021767674)	(0.03685473)	(0.01535161)		
16-13-6015	210	0.194265168	-0.047424847	0.055356383		0.162380213		-0.090228671		0.590260756
	0.2337	(0.049979076)	(0.016087209)	(0.014694916)		(0.009466932)		(0.012536036)		(0.032784204)
16-13-6007	210	-0.382805059	-0.147766817	0.179503824	0.133864809		0.314289224			0.458139095
	0.1428	(0.050442386)	(0.025682444)	(0.028145867)	(0.043327039)		(0.030259744)			(0.054102013)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.7: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Communication: 16-13) Continued (1)

Code of combination	*D.F.* *D.W.*	China (CNY)	Japan (JPY)	Korea (KRW)	Taiwan (TWD)	Explanatories † Indonesia (IDR)	Malaysia (MYR)	The Philippines (PHP)	Singapore (SGD)	Thailand (THB)
16-13-5123	211				0.52399319	-0.053336327	0.103668438		0.245855712	-0.215614781
	0.1143				(0.029665314)	(0.017406989)	(0.035571011)		(0.040158215)	(0.071101318)
16-13-5117	211			0.281670559		-0.194502719	0.392631453	0.085200472		0.284278984
	0.165			(0.025503119)		(0.012528989)	(0.049066705)	(0.018419332)		(0.072262314)
16-13-5105	211		0.138394949				-0.139824223	-0.091301156	-0.195428041	0.644305013
	0.166		(0.018015862)				(0.026138098)	(0.020880369)	(0.037199378)	(0.095274681)
16-13-5104	211		0.135649782			-0.058818946		-0.0598831	-0.12493439	0.475242745
	0.1722		(0.017796359)			(0.010385827)		(0.016880859)	(0.038385095)	(0.082408335)
16-13-5097	211		-0.07821637		0.380502317		0.069100764	-0.115708157	0.088964421	
	0.1121		(0.022081349)		(0.034363752)		(0.017160369)	(0.013081382)	(0.019092244)	
16-13-5089	211		0.056017546	0.190266737			0.193935453		-0.170942204	0.258567212
	0.1251		(0.011044424)	(0.016708369)			(0.02211197)		(0.020865265)	(0.053785549)
16-13-5088	211		0.038609054	0.196231352			0.166536014	-0.036029964		0.200298712
	0.1843		(0.008003297)	(0.013025958)			(0.016032809)	(0.009130657)		(0.031274185)
16-13-5087	211		0.065990414	0.232265388			0.270568406	-0.083609828	-0.081661128	
	0.1557		(0.011304078)	(0.015349289)			(0.015558521)	(0.010828804)	(0.014388739)	
16-13-5084	211		0.126463044	0.123673038		0.071393464		-0.04144179	0.113864124	
	0.1429		(0.011551066)	(0.012866064)		(0.005990999)		(0.010252189)	(0.012817752)	
16-13-5083	211		0.069316956	0.163773719		-0.055633778	0.16268058			0.161293372
	0.2074		(0.009529007)	(0.012225013)		(0.00739474)	(0.023689774)			(0.030728612)
16-13-5081	211		0.072221102	0.235060399		-0.077330928	0.287205419	-0.039278045		
	0.2881		(0.009929234)	(0.011152962)		(0.006727241)	(0.015563068)	(0.008161558)		
16-13-5078	211		-0.102692771	-0.106229741	0.174081432			-0.134406435	0.125832043	
	0.0847		(0.029960781)	(0.028564455)	(0.057980233)			(0.01804235)	(0.025775309)	
16-13-5075	211		0.076924538	0.240219404	-0.082524448		0.260512709	-0.064754348		
	0.1987		(0.009987218)	(0.016396334)	(0.027664629)		(0.013298246)	(0.010033841)		
16-13-5072	211		0.252304485	0.148657003	-0.205051322	0.036105618		-0.057323518		
	0.1289		(0.019514684)	(0.026095473)	(0.045184661)	(0.009388632)		(0.016112805)		
16-13-5071	211		0.055611029	0.228302576	-0.091167845	-0.081230825	0.298535702			
	0.2423		(0.014218186)	(0.013469487)	(0.026355661)	(0.007879166)	(0.017921576)			
16-13-5070	211	0.354426723					0.141546488	-0.135383348	-0.414930065	1.01827516
	0.1585	(0.054671578)					(0.034604841)	(0.024356924)	(0.048427622)	(0.112854157)
16-13-5069	211	0.686437348				0.154268199		-0.09695636	-0.166768947	0.695110518
	0.1948	(0.053061298)				(0.013509651)		(0.015928541)	(0.03754664)	(0.080090599)
16-13-5068	211	0.807677801				0.239242735	-0.263162125		-0.202351155	0.989288949
	0.2333	(0.062308099)				(0.024535893)	(0.041100601)		(0.040633554)	(0.065013577)
16-13-5067	211	0.728548293				0.226550359	-0.21818509	-0.105813832		0.714217701
	0.2384	(0.054223678)				(0.01859959)	(0.036938056)	(0.015492289)		(0.052825797)
16-13-5066	211	0.946659075				0.281785796	-0.154494301	-0.229078108	0.156952164	
	0.1608	(0.07172083)				(0.028534856)	(0.05187193)	(0.016318594)	(0.034777147)	
16-13-5060	211	0.427211023			0.125734871	0.151722543		-0.069455725		0.560634397
	0.2707	(0.039850463)			(0.019892455)	(0.008510738)		(0.009375856)		(0.028471459)
16-13-5059	211	0.406914692			0.294983553	0.221622892		-0.132493788	0.186729309	
	0.2749	(0.041509802)			(0.020376586)	(0.007733014)		(0.008673885)	(0.013672323)	
16-13-5058	211	0.456649596			0.158295726	0.198267706	-0.149604371			0.689758824
	0.2563	(0.051443684)			(0.024782603)	(0.014633629)	(0.027850174)			(0.036097572)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A1.7: OLS Estimation for Real Effectivel Exchange rates (deflated by the exporting price of Communication: 16-13) Continued (2)

Code of combination	*D.F.* *D.W.*	China (CNY)	Japan (JPY)	Korea (KRW)	Taiwan (TWD)	Explanatories † Indonesia (IDR)	Malaysia (MYR)	The Philippines (PHP)	Singapore (SGD)	Thailand (THB)
16-13-5057	211	0.423163251			0.415020715	0.294060132	-0.15730229		0.235934929	
	0.1517	(0.065983805)			(0.028725541)	(0.021125553)	(0.038868709)		(0.026150502)	
16-13-5056	211	0.511328709			0.266689536	0.101177796	0.219036006	-0.201863374		
	0.1872	(0.067461698)			(0.031025599)	(0.019527295)	(0.031050565)	(0.013253201)		
16-13-5049	211	0.624975297		0.068946664		0.245500917		-0.117827095	0.168383237	
	0.1376	(0.054716278)		(0.0198657)		(0.011534601)		(0.015135093)	(0.019709673)	
16-13-5046	211	0.364754725		0.216244736		0.057307264	0.384256804	-0.132105342		
	0.1772	(0.067283578)		(0.023133833)		(0.01955667)	(0.034234312)	(0.015024482)		
16-13-5045	211	-0.207363912		-0.130477744	0.131726884				-0.238028408	1.070753989
	0.1498	(0.061626012)		(0.024263895)	(0.045213619)				(0.041145193)	(0.071659868)
16-13-5043	211	-0.565907513		-0.172088009	0.355333045			-0.193967396	0.251054152	
	0.0724	(0.073640438)		(0.037859137)	(0.057923135)			(0.024235143)	(0.03251042)	
16-13-5042	211	-0.230268294		0.164087545	0.109594774		0.352964344			0.329517234
	0.1656	(0.02864834)		(0.022769942)	(0.031500025)		(0.027356533)			(0.048184699)
16-13-5039	211	0.36167448		-0.037334412	0.0678739	0.154121321				0.611123224
	0.2807	(0.036484738)		(0.013083185)	(0.022807835)	(0.008259176)				(0.025359374)
16-13-5031	211	0.390177079	-0.060271115			0.116247028			-0.290770369	0.978025156
	0.2212	(0.066204319)	(0.020951786)			(0.013155407)			(0.031479405)	(0.059539499)
16-13-5030	211	0.374689199	-0.056826809			0.139077531		-0.145709073		0.543327513
	0.2224	(0.057209084)	(0.018768378)			(0.010821998)		(0.011962918)		(0.038237225)
16-13-5028	211	0.542148477	-0.079284206			0.262765485	-0.36379691			0.91962339
	0.2731	(0.066669942)	(0.020557696)			(0.017737902)	(0.031242319)			(0.041716294)
16-13-5024	211	-0.350900213	-0.133091808		0.130526747			-0.088633966		0.802157495
	0.1223	(0.051182296)	(0.029437232)		(0.039673349)			(0.018543811)		(0.04777149)
16-13-5022	211	-0.170049656	-0.261627328		0.391109644		0.162208801			0.65053775
	0.1247	(0.057186629)	(0.026534092)		(0.038772779)		(0.028876093)			(0.05249939)
16-13-5021	211	-0.205089891	-0.340750307		0.71230931		0.345537841		0.112625833	
	0.1173	(0.078783943)	(0.033975441)		(0.045416268)		(0.030098872)		(0.033733477)	
16-13-5019	211	0.317494961	-0.174659781		0.179126966	0.136040156				0.663449797
	0.2545	(0.048007965)	(0.015895644)		(0.021496411)	(0.009089426)				(0.028244213)
16-13-5018	211	0.340886758	-0.255259667		0.472572933	0.226906556			0.260197294	
	0.2047	(0.055751742)	(0.019761573)		(0.026237222)	(0.009515127)			(0.018226476)	
16-13-5016	211	0.549821638	-0.230270919		0.464132368	0.123697436	0.206416695			
	0.0837	(0.098260456)	(0.034354487)		(0.047861211)	(0.027555452)	(0.047096078)			
16-13-5012	211	-0.407733219	-0.075547832	0.268289555			0.326137878			0.402507804
	0.1196	(0.052744409)	(0.021963488)	(0.023199308)			(0.032157789)			(0.057291267)
16-13-5008	211	0.163629934	-0.066335121	0.068961245		0.154503403				0.64323792
	0.2176	(0.04934497)	(0.015382512)	(0.011932859)		(0.00939106)				(0.029645882)

†: All coefficients of explanetories are significant at 1% Significance level, Standard Error is shown in the parenthesis.

Table A2.1: M-TAR Unit Root test for Residuals from Cointegration Estimation (Food Sector: 13-01)

Country	Coeeficients	(with S.E., t statistics, and Significance level)					F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)			
13-01-9001	$\rho(1)$	-0.2194827	0.0659708	-3.32697	0.0010341	***	F(2,213)=	13.53847	2.92E-06	****
	$\rho(2)$	-0.2299346	0.0574689	-4.00103	8.702E-05	****	F(1,213)=	0.014271	0.9050221	
13-01-8006	$\rho(1)$	-0.2089103	0.0669238	-3.12161	0.0020481	***	F(2,213)=	13.53376	2.93E-06	****
	$\rho(2)$	-0.2372328	0.0569984	-4.1621	4.577E-05	****	F(1,213)=	0.103805	0.7476268	
13-01-8004	$\rho(1)$	-0.1908913	0.0678575	-2.81312	0.0053653	*	F(2,213)=	14.29205	0.0000015	****
	$\rho(2)$	-0.2614498	0.057506	-4.54648	9.15E-06	****	F(1,213)=	0.629268	0.4285067	
13-01-8003	$\rho(1)$	-0.2481646	0.0662015	-3.74863	0.0002291	****	F(2,213)=	15.11473	7.3E-07	****
	$\rho(2)$	-0.2498627	0.0621225	-4.0221	0.0000801	****	F(1,213)=	0.00035	0.9850942	
13-01-8001	$\rho(1)$	-0.187715	0.0567558	-3.30741	0.0011052	***	F(2,213)=	10.99743	2.849E-05	****
	$\rho(2)$	-0.1870936	0.0562681	-3.32504	0.0010409	***	F(1,213)=	6.045E-05	0.9938039	
13-01-7014	$\rho(1)$	-0.1927923	0.0689556	-2.79589	0.0056489	*	F(2,213)=	14.28172	1.51E-06	****
	$\rho(2)$	-0.25989	0.0570582	-4.55483	8.82E-06	****	F(1,213)=	0.562025	0.4542727	
13-01-7013	$\rho(1)$	-0.220192	0.0761066	-2.89321	0.0042254	**	F(2,205)=	8.69336	0.0002378	****
	$\rho(2)$	-0.2467686	0.0688835	-3.58241	0.0004253	****	F(1,205)=	0.086658	0.768767	
13-01-7011	$\rho(1)$	-0.1816614	0.0567948	-3.19856	0.0015917	***	F(2,213)=	10.38773	4.958E-05	****
	$\rho(2)$	-0.1793049	0.0552173	-3.24726	0.0013536	***	F(1,213)=	0.000885	0.9762951	
13-01-7009	$\rho(1)$	-0.2938599	0.0665043	-4.41866	1.601E-05	****	F(2,207)=	15.33126	6.2E-07	****
	$\rho(2)$	-0.2616908	0.0638431	-4.09896	5.959E-05	****	F(1,207)=	0.149462	0.6994473	
13-01-7004	$\rho(1)$	-0.1726174	0.0591584	-2.91788	0.0039022	**	F(2,213)=	11.78298	1.401E-05	****
	$\rho(2)$	-0.2210347	0.0569724	-3.87968	0.0001394	****	F(1,213)=	0.347521	0.5561447	
13-01-7002	$\rho(1)$	-0.2230769	0.0621882	-3.58712	0.0004147	****	F(2,213)=	12.19253	0.0000097	****
	$\rho(2)$	-0.1908068	0.0562229	-3.39376	0.000822	****	F(1,213)=	0.148165	0.7006797	
13-01-7001	$\rho(1)$	-0.1572715	0.0518447	-3.03351	0.0027177	**	F(2,213)=	8.4206	0.0003022	****
	$\rho(2)$	-0.1320863	0.0477903	-2.76387	0.0062123	*	F(1,213)=	0.127579	0.7213096	
13-01-6052	$\rho(1)$	-0.1124808	0.0585178	-1.92216	0.0559195		F(2,213)=	8.84736	0.0002037	****
	$\rho(2)$	-0.1756895	0.046955	-3.74166	0.0002351	****	F(1,213)=	0.709766	0.4004665	
13-01-6046	$\rho(1)$	-0.1641248	0.0525045	-3.12592	0.0020246	***	F(2,209)=	10.03727	6.882E-05	****
	$\rho(2)$	-0.1831759	0.0532918	-3.43722	0.0007091	****	F(1,209)=	0.070158	0.7913674	
13-01-6043	$\rho(1)$	-0.0270311	0.0210594	-1.28357	0.2007284		F(2,207)=	1.41444	0.2454018	
	$\rho(2)$	-0.023914	0.0214693	-1.11387	0.2666282		F(1,207)=	0.010976	0.9166624	
13-01-6032	$\rho(1)$	-0.0994368	0.0526764	-1.88769	0.0604267		F(2,213)=	8.56023	0.0002656	****
	$\rho(2)$	-0.172435	0.046832	-3.68199	0.0002933	****	F(1,213)=	1.072605	0.3015321	
13-01-6031	$\rho(1)$	-0.1140823	0.0455772	-2.50305	0.0130637		F(2,213)=	7.30085	0.0008575	****
	$\rho(2)$	-0.1459772	0.0505586	-2.88729	0.0042864	**	F(1,213)=	0.219552	0.6398609	
13-01-6028	$\rho(1)$	-0.0270117	0.0295311	-0.91469	0.3614109		F(2,209)=	3.92604	0.0211929	
	$\rho(2)$	-0.0809277	0.0301516	-2.68403	0.0078572	*	F(1,209)=	1.701944	0.1934686	
13-01-6027	$\rho(1)$	-0.0314246	0.0233045	-1.34844	0.1789775		F(2,209)=	2.72205	0.0680715	
	$\rho(2)$	-0.0475411	0.0244978	-1.94062	0.0536492		F(1,209)=	0.233632	0.6293494	
13-01-6021	$\rho(1)$	-0.0839546	0.0468596	-1.79162	0.0746136		F(2,213)=	8.08631	0.0004122	****
	$\rho(2)$	-0.1835365	0.050977	-3.60038	0.0003953	****	F(1,213)=	2.068329	0.1518539	
13-01-6020	$\rho(1)$	-0.202884	0.0638994	-3.17505	0.001729	***	F(2,205)=	7.74559	0.0005717	****
	$\rho(2)$	-0.1802374	0.062784	-2.87076	0.0045246	**	F(1,205)=	0.078326	0.7798605	
13-01-6019	$\rho(1)$	-0.1630369	0.0640298	-2.54627	0.0116226		F(2,205)=	8.18877	0.000379	****
	$\rho(2)$	-0.23262	0.0645107	-3.60591	0.0003907	****	F(1,205)=	0.739786	0.3907342	
13-01-6016	$\rho(1)$	-0.2535424	0.0734799	-3.4505	0.0006746	****	F(2,213)=	15.46509	5.4E-07	****
	$\rho(2)$	-0.2548116	0.0584205	-4.36168	0.0000201	****	F(1,213)=	0.000183	0.9892255	
13-01-6014	$\rho(1)$	-0.1632297	0.0588765	-2.77241	0.0060574	*	F(2,213)=	11.66521	1.558E-05	****
	$\rho(2)$	-0.2244031	0.0567352	-3.95527	0.0001041	****	F(1,213)=	0.55976	0.4551821	
13-01-6012	$\rho(1)$	-0.2042808	0.0595535	-3.43021	0.0007242	****	F(2,213)=	11.49452	1.817E-05	****
	$\rho(2)$	-0.190231	0.0567848	-3.35004	0.0009557	****	F(1,213)=	0.029153	0.8645882	
13-01-6010	$\rho(1)$	-0.0612393	0.0387601	-1.57996	0.1156001		F(2,213)=	5.15706	0.0064991	*
	$\rho(2)$	-0.1166313	0.041713	-2.79604	0.0056463	*	F(1,213)=	0.946321	0.331761	
13-01-6006	$\rho(1)$	-0.2015976	0.0536271	-3.75925	0.0002217	****	F(2,207)=	11.57316	0.0000172	****
	$\rho(2)$	-0.1976764	0.0570525	-3.46481	0.0006449	****	F(1,207)=	0.002881	0.9572455	
13-01-6003	$\rho(1)$	-0.1890872	0.0615253	-3.07333	0.0023935	***	F(2,213)=	12.79883	5.64E-06	****
	$\rho(2)$	-0.2345613	0.0583631	-4.019	8.108E-05	****	F(1,213)=	0.287542	0.5923594	
13-01-6001	$\rho(1)$	-0.1805399	0.0508204	-3.55251	0.0004698	****	F(2,213)=	8.1101	0.0004032	****
	$\rho(2)$	-0.0815148	0.0429627	-1.89734	0.059136		F(1,213)=	2.214283	0.1382175	
13-01-5125	$\rho(1)$	-0.0270965	0.0228116	-1.18784	0.2362585		F(2,207)=	0.9746	0.3790673	
	$\rho(2)$	-0.0181142	0.0229707	-0.78858	0.4312612		F(1,207)=	0.080774	0.7765351	
13-01-5124	$\rho(1)$	-0.1389994	0.0441093	-3.15125	0.0018643	***	F(2,209)=	7.05864	0.0010804	***
	$\rho(2)$	-0.0848846	0.0389517	-2.17923	0.0304325		F(1,209)=	0.883184	0.348416	
13-01-5122	$\rho(1)$	-0.0454219	0.0214037	-2.12215	0.0350025		F(2,209)=	3.52858	0.0311072	
	$\rho(2)$	-0.0356102	0.0221463	-1.60795	0.1093548		F(1,209)=	0.101968	0.7498001	
13-01-5121	$\rho(1)$	-0.0882612	0.0426171	-2.07103	0.0395843		F(2,209)=	5.61751	0.004204	**
	$\rho(2)$	-0.0938053	0.0345586	-2.71438	0.0071947	*	F(1,209)=	0.010615	0.918037	
13-01-5116	$\rho(1)$	-0.0810221	0.0419049	-1.93348	0.0545411		F(2,207)=	3.69044	0.0266178	
	$\rho(2)$	-0.0726523	0.0354093	-2.05178	0.0414495		F(1,207)=	0.025188	0.8740548	
13-01-5112	$\rho(1)$	-0.0490815	0.0238055	-2.06177	0.0404436		F(2,213)=	2.15359	0.1185872	
	$\rho(2)$	0.0052334	0.0220575	0.23726	0.8126835		F(1,213)=	2.800987	0.0956742	

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level

Table A2.1: M-TAR Unit Root test for Residuals from Cointegration Estimation (Food Sector: 13-01) continued.

Country	Coeeficients	(with S.E., t statistics, and Significance level)					F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)		
13-01-5109	$\rho(1)$	-0.109883	0.0443373	-2.47835	0.0139991		F(2,207)=	4.43711	0.0129763
	$\rho(2)$	-0.0706997	0.0380744	-1.85689	0.0647481		F(1,207)=	0.490608	0.4844427
13-01-5108	$\rho(1)$	-0.0348174	0.0252227	-1.3804	0.1689379		F(2,209)=	3.40512	0.0350558
	$\rho(2)$	-0.0548403	0.0246261	-2.22692	0.0270196		F(1,209)=	0.325547	0.5689062
13-01-5105	$\rho(1)$	-0.0369911	0.0311866	-1.18612	0.2369212		F(2,209)=	3.55114	0.030436
	$\rho(2)$	-0.0745025	0.0306385	-2.43166	0.0158721		F(1,209)=	0.766591	0.3822787
13-01-5102	$\rho(1)$	-0.0463768	0.0280118	-1.65561	0.0992724		F(2,213)=	2.29543	0.1032042
	$\rho(2)$	-0.0382834	0.028148	-1.36008	0.1752436		F(1,213)=	0.041537	0.8386991
13-01-5098	$\rho(1)$	-0.0344524	0.0294196	-1.17107	0.2429033		F(2,209)=	3.45689	0.0333418
	$\rho(2)$	-0.0734733	0.0305633	-2.40397	0.0170907		F(1,209)=	0.885429	0.3478054
13-01-5094	$\rho(1)$	-0.0753389	0.0307394	-2.45089	0.0150564		F(2,213)=	3.37542	0.0360434
	$\rho(2)$	-0.026175	0.0303464	-0.86254	0.3893606		F(1,213)=	1.295465	0.2563219
13-01-5082	$\rho(1)$	-0.0683836	0.0284113	-2.40692	0.0169832		F(2,203)=	2.9382	0.0552173
	$\rho(2)$	-0.009979	0.0280557	-0.35568	0.7224458		F(1,203)=	2.201201	0.1394542
13-01-5081	$\rho(1)$	-0.1061567	0.0337504	-3.14535	0.0018958	***	F(2,213)=	5.13953	0.0066087 *
	$\rho(2)$	-0.0219531	0.0353419	-0.62116	0.5351568		F(1,213)=	2.968949	0.0863282
13-01-5077	$\rho(1)$	-0.0214218	0.0408124	-0.52489	0.6002192		F(2,209)=	5.74033	0.0037417 **
	$\rho(2)$	-0.118637	0.035225	-3.36798	0.0009014	****	F(1,209)=	3.406372	0.0663596
13-01-5076	$\rho(1)$	-0.1369232	0.0451709	-3.03123	0.0027772	**	F(2,189)=	5.13397	0.0067422 *
	$\rho(2)$	-0.1144864	0.0519276	-2.20473	0.0286798		F(1,189)=	0.180602	0.6713395
13-01-5071	$\rho(1)$	-0.05784	0.0371755	-1.55586	0.1212537		F(2,209)=	6.74411	0.0014511 ***
	$\rho(2)$	-0.1431465	0.0423847	-3.37731	0.0008729	****	F(1,209)=	2.368628	0.1253085
13-01-5067	$\rho(1)$	-0.1730661	0.0578845	-2.98985	0.0031195	**	F(2,213)=	8.93535	0.0001878 ****
	$\rho(2)$	-0.1434233	0.0479907	-2.98856	0.0031321	**	F(1,213)=	0.155419	0.6938045
13-01-5066	$\rho(1)$	-0.1620501	0.0523214	-3.0972	0.0022217	***	F(2,209)=	10.11287	6.423E-05 ****
	$\rho(2)$	-0.1872175	0.0536815	-3.48756	0.0005942	****	F(1,209)=	0.122024	0.7272012
13-01-5062	$\rho(1)$	-0.0412136	0.0238464	-1.72829	0.0853847		F(2,213)=	1.54109	0.216525
	$\rho(2)$	0.0064704	0.0209725		0.30852		F(1,213)=	2.25461	0.134698
13-01-5056	$\rho(1)$	-0.1214469	0.056318	-2.15645	0.0321904		F(2,209)=	9.66473	9.673E-05 ****
	$\rho(2)$	-0.2100839	0.0524123	-4.0083	8.507E-05	****	F(1,209)=	1.456911	0.2287866
13-01-5053	$\rho(1)$	-0.0234336	0.0195909	-1.19615	0.2330075		F(2,207)=	0.95737	0.3855934
	$\rho(2)$	-0.013777	0.0190251	-0.72415	0.4697908		F(1,207)=	0.12811	0.7207649
13-01-5049	$\rho(1)$	-0.1468178	0.0564938	-2.59883	0.0100205		F(2,209)=	10.45701	4.696E-05 ****
	$\rho(2)$	-0.1950218	0.0494042	-3.94748	0.0001079	****	F(1,209)=	0.445716	0.5051128
13-01-5040	$\rho(1)$	-0.0315677	0.0191312	-1.65006	0.1005571		F(2,193)=	2.66995	0.0718137
	$\rho(2)$	-0.0317145	0.0184199	-1.72175	0.0867162		F(1,193)=	0.0000327	0.9954446
13-01-5033	$\rho(1)$	-0.0143678	0.0274511	-0.5234	0.6012533		F(2,209)=	3.57857	0.0296391
	$\rho(2)$	-0.0719376	0.0272277	-2.64208	0.0088633	*	F(1,209)=	2.307445	0.1302668
13-01-5030	$\rho(1)$	-0.0681616	0.051915	-1.31295	0.1906133		F(2,213)=	9.20762	0.0001461 ****
	$\rho(2)$	-0.1850297	0.0452892	-4.08551	6.227E-05	****	F(1,213)=	2.877655	0.0912777
13-01-5029	$\rho(1)$	-0.0799702	0.0460395	-1.73699	0.0838344		F(2,213)=	7.81079	0.0005327 ****
	$\rho(2)$	-0.1662253	0.0468204	-3.55027	0.0004736	****	F(1,213)=	1.725486	0.1904016
13-01-5026	$\rho(1)$	-0.0781426	0.0504985	-1.54742	0.1232454		F(2,213)=	8.71786	0.0002296 ****
	$\rho(2)$	-0.1869409	0.0482018	-3.8783	0.0001402	****	F(1,213)=	2.428856	0.1206043
13-01-5016	$\rho(1)$	-0.079337	0.0407787	-1.94555	0.0530248		F(2,213)=	4.88342	0.00844 *
	$\rho(2)$	-0.0989394	0.0404536	-2.44575	0.0152666		F(1,213)=	0.116462	0.7332406
13-01-5015	$\rho(1)$	-0.047621	0.0429446	-1.1089	0.2687746		F(2,205)=	1.81337	0.1657105
	$\rho(2)$	-0.0707298	0.0432102	-1.63688	0.1031904		F(1,205)=	0.157247	0.6921161
13-01-5013	$\rho(1)$	-0.1569264	0.0516316	-3.03935	0.0026678	**	F(2,213)=	8.51584	0.0002767 ****
	$\rho(2)$	-0.1391401	0.0498392	-2.79178	0.0057185	*	F(1,213)=	0.06143	0.804488
13-01-5011	$\rho(1)$	-0.1212904	0.0397462	-3.05163	0.0025655	**	F(2,213)=	5.59806	0.0042711 **
	$\rho(2)$	-0.0659149	0.0480262	-1.37248	0.1713577		F(1,213)=	0.789046	0.3753907
13-01-5009	$\rho(1)$	-0.1465678	0.0492715	-2.9747	0.0032712	**	F(2,213)=	6.7109	0.0014915 ***
	$\rho(2)$	-0.0891138	0.0416721	-2.13845	0.0336187		F(1,213)=	0.792691	0.3742922
13-01-5007	$\rho(1)$	-0.1873867	0.0608552	-3.07922	0.0023486	***	F(2,213)=	12.53793	7.12E-06 ****
	$\rho(2)$	-0.2289437	0.0579757	-3.94896	0.0001067	****	F(1,213)=	0.244458	0.6215144
13-01-5003	$\rho(1)$	-0.1268443	0.0379983	-3.33816	0.0009953	****	F(2,213)=	5.86145	0.0033265 **
	$\rho(2)$	-0.029107	0.0382333	-0.7613	0.4473203		F(1,213)=	3.287583	0.0712133
13-01-5001	$\rho(1)$	-0.1824599	0.0575631	-3.16974	0.0017503	***	F(2,213)=	8.92109	0.0001903 ****
	$\rho(2)$	-0.1301858	0.0466291	-2.79194	0.0057158	*	F(1,213)=	0.49794	0.4811776

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level

Table A2.2: M-TAR Unit Root testFor ResidualsFrom Cointegration Estimation (General Machinery: 13-10)

Country	Coeeficients	(with S.E., t statistics, and Significance level)					F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)			
13-10-8009	$\rho(1)$	-0.0829131	0.04505155	-1.8404	0.06714051		F(2,207)=	5.6006	0.00427777	**
	$\rho(2)$	-0.1274049	0.04325276	-2.94559	0.00359239	**	F(1,207)=	0.556098	0.45668282	
13-10-7036	$\rho(1)$	-0.3052544	0.06951612	-4.39113	0.00001822	****	F(2,201)=	10.36719	0.00005188	****
	$\rho(2)$	-0.1702297	0.06631011	-2.56718	0.0109798		F(1,201)=	2.925278	0.08874517	
13-10-7033	$\rho(1)$	-0.0942467	0.05263868	-1.79045	0.07484358		F(2,207)=	9.82041	0.00008422	****
	$\rho(2)$	-0.2070957	0.04871749	-4.25095	0.0000322	****	F(1,207)=	2.84053	0.09342072	
13-10-7030	$\rho(1)$	-0.0594631	0.04477552	-1.32803	0.1855905		F(2,213)=	4.39926	0.01342247	
	$\rho(2)$	-0.1155201	0.04355416	-2.65233	0.00859549	*	F(1,213)=	0.805365	0.37050726	
13-10-7026	$\rho(1)$	-0.1450469	0.05636665	-2.57328	0.01079432		F(2,201)=	9.49475	0.00011476	****
	$\rho(2)$	-0.2226496	0.05435921	-4.09589	0.00006094	****	F(1,201)=	1.362743	0.24444571	
13-10-7020	$\rho(1)$	-0.240783	0.06861364	-3.50926	0.0005545	****	F(2,201)=	8.67398	0.00024362	****
	$\rho(2)$	-0.2020814	0.06212502	-3.25282	0.00134027	***	F(1,201)=	0.257104	0.61267262	
13-10-7008	$\rho(1)$	-0.0771806	0.04941058	-1.56203	0.11980925		F(2,207)=	7.55912	0.00067836	****
	$\rho(2)$	-0.1642696	0.04454624	-3.68762	0.00028922	****	F(1,207)=	1.883574	0.17141369	
13-10-7005	$\rho(1)$	-0.0904297	0.04649168	-1.94507	0.05312064		F(2,207)=	5.68439	0.00395103	**
	$\rho(2)$	-0.1268599	0.04412702	-2.87488	0.00446403	**	F(1,207)=	0.345458	0.55733625	
13-10-6083	$\rho(1)$	-0.24768	0.06971845	-3.55258	0.0004753	****	F(2,201)=	9.93639	0.00007672	****
	$\rho(2)$	-0.2481835	0.0667139	-3.72012	0.00025834	****	F(1,201)=	4.0742E-05	0.99491353	
13-10-6080	$\rho(1)$	-0.1983731	0.06048902	-3.27949	0.00122186	***	F(2,205)=	6.34917	0.00211164	***
	$\rho(2)$	-0.1156288	0.0583964	-1.98007	0.04903374		F(1,205)=	1.189867	0.27663684	
13-10-6077	$\rho(1)$	-0.3053653	0.06086024	-5.01748	0.00000115	****	F(2,201)=	13.29234	0.00000379	****
	$\rho(2)$	-0.1384449	0.05787195	-2.39226	0.01766599		F(1,201)=	5.247666	0.02301344	
13-10-6068	$\rho(1)$	-0.0332239	0.03911405	-0.84941	0.39660618		F(2,213)=	2.63176	0.07429043	
	$\rho(2)$	-0.0795214	0.03731291	-2.1312	0.03421835		F(1,213)=	0.733518	0.39270778	
13-10-6064	$\rho(1)$	-0.046509	0.04775737	-0.97386	0.33123101		F(2,213)=	6.11097	0.00262657	**
	$\rho(2)$	-0.152705	0.04548027	-3.35761	0.00093116	****	F(1,213)=	2.593015	0.1088168	
13-10-6063	$\rho(1)$	-0.1744948	0.04417412	-3.95016	0.00010708	****	F(2,207)=	8.96707	0.00018416	****
	$\rho(2)$	-0.1040389	0.05408435	-1.92364	0.05577116		F(1,207)=	1.131685	0.2886557	
13-10-6061	$\rho(1)$	-0.0356401	0.04456619	-0.79971	0.42476876		F(2,213)=	4.00879	0.01954215	
	$\rho(2)$	-0.1048882	0.03861502	-2.71625	0.00714491	*	F(1,213)=	1.379043	0.24157544	
13-10-6059	$\rho(1)$	-0.062132	0.04356855	-1.42607	0.15531071		F(2,213)=	5.2682	0.00584572	*
	$\rho(2)$	-0.1363411	0.04675715	-2.91594	0.00392561	**	F(1,213)=	1.348283	0.24687821	
13-10-6055	$\rho(1)$	-0.1171718	0.05794328	-2.02218	0.04446991		F(2,203)=	5.45345	0.00493211	**
	$\rho(2)$	-0.1606851	0.05322377	-3.01905	0.00286094	**	F(1,203)=	0.401614	0.52697032	
13-10-6045	$\rho(1)$	-0.0730982	0.04576745	-1.59717	0.11178424		F(2,203)=	4.73618	0.00976448	*
	$\rho(2)$	-0.1254067	0.04348869	-2.88366	0.00435454	**	F(1,203)=	0.844612	0.3591717	
13-10-6044	$\rho(1)$	-0.1857862	0.05197555	-3.57449	0.00043847	****	F(2,203)=	8.94867	0.00018859	****
	$\rho(2)$	-0.1600105	0.05267983	-3.03742	0.00269939	**	F(1,203)=	0.158435	0.69102023	
13-10-6043	$\rho(1)$	-0.0884578	0.04601872	-1.92221	0.05595184		F(2,207)=	6.27319	0.00226443	***
	$\rho(2)$	-0.1366513	0.04349962	-3.14144	0.00192739	***	F(1,207)=	0.63868	0.42510519	
13-10-6042	$\rho(1)$	-0.1761858	0.05097823	-3.4561	0.00066492	****	F(2,207)=	8.29712	0.00034179	****
	$\rho(2)$	-0.140299	0.05436769	-2.58056	0.01055559		F(1,207)=	0.265771	0.60673301	
13-10-6037	$\rho(1)$	-0.1893767	0.0448052	-4.22667	0.00003557	****	F(2,207)=	9.19983	0.00014869	****
	$\rho(2)$	-0.0482233	0.04559727	-1.05759	0.29147437		F(1,207)=	5.286156	0.02249326	
13-10-6035	$\rho(1)$	-0.1163714	0.05549917	-2.09681	0.03724865		F(2,203)=	3.10299	0.04705207	
	$\rho(2)$	-0.0977543	0.05308794	-1.84137	0.06702713		F(1,203)=	0.079213	0.77865286	
13-10-6034	$\rho(1)$	-0.1354942	0.04973969	-2.72407	0.00699954	*	F(2,207)=	7.09222	0.00104914	***
	$\rho(2)$	-0.1398379	0.04936916	-2.8325	0.00507499	*	F(1,207)=	0.004216	0.94829	
13-10-6031	$\rho(1)$	-0.1883905	0.05485014	-3.43464	0.00072065	****	F(2,201)=	7.06831	0.00107998	***
	$\rho(2)$	-0.1275698	0.05737646	-2.22338	0.02730357		F(1,201)=	0.744969	0.38910243	
13-10-6030	$\rho(1)$	-0.0630583	0.0491731	-1.28237	0.20117387		F(2,203)=	4.65795	0.01052253	
	$\rho(2)$	-0.1304056	0.04399286	-2.96425	0.00339724	**	F(1,203)=	1.287192	0.25790392	
13-10-6029	$\rho(1)$	-0.1944569	0.05975223	-3.25439	0.00133123	***	F(2,203)=	7.27971	0.00088449	****
	$\rho(2)$	-0.161384	0.05934832	-2.71927	0.0071094	*	F(1,203)=	0.203343	0.65251757	
13-10-6027	$\rho(1)$	-0.1953827	0.06026784	-3.24191	0.00138997	***	F(2,201)=	9.52333	0.00011181	****
	$\rho(2)$	-0.2308242	0.06106714	-3.77984	0.00020681	****	F(1,201)=	0.24682	0.61986643	
13-10-6022	$\rho(1)$	-0.1795733	0.05029653	-3.57029	0.00044608	****	F(2,201)=	6.68519	0.00154576	***
	$\rho(2)$	-0.0727752	0.05073239	-1.43449	0.15298597		F(1,201)=	2.740278	0.09940822	
13-10-6018	$\rho(1)$	-0.0362122	0.0392924	-0.92161	0.35777585		F(2,213)=	3.26048	0.04029357	
	$\rho(2)$	-0.091416	0.03838571	-2.38151	0.01812215		F(1,213)=	1.009977	0.31604873	
13-10-6015	$\rho(1)$	-0.1035004	0.04627477	-2.23665	0.02637596		F(2,207)=	4.57037	0.01142059	
	$\rho(2)$	-0.0962824	0.04430792	-2.17303	0.03091348		F(1,207)=	0.013559	0.90741513	
13-10-6009	$\rho(1)$	-0.040296	0.04505443	-0.89439	0.37212504		F(2,213)=	5.76639	0.00364027	**
	$\rho(2)$	-0.1415698	0.04321284	-3.2761	0.00122865	***	F(1,213)=	2.631693	0.10622915	
13-10-6007	$\rho(1)$	-0.1730967	0.04218017	-4.10375	0.00005846	****	F(2,207)=	8.7949	0.00021581	****
	$\rho(2)$	-0.0601513	0.05597156	-1.07468	0.28377114		F(1,207)=	2.731625	0.09989502	
13-10-6002	$\rho(1)$	-0.1859416	0.04733989	-3.9278	0.00011581	****	F(2,213)=	8.68613	0.00023638	****
	$\rho(2)$	-0.0622295	0.0446246	-1.39451	0.16461601		F(1,213)=	3.616059	0.05857387	
13-10-5125	$\rho(1)$	-0.1304966	0.04945961	-2.63845	0.00894362	*	F(2,213)=	6.91682	0.00122909	***
	$\rho(2)$	-0.1320606	0.0503761	-2.62149	0.00938591	*	F(1,213)=	0.000491	0.98234599	

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level

Table A2.2: M-TAR Unit Root testFor ResidualsFrom Cointegration Estimation (General Machinery: 13-10) Continued (1)

Country	Coeeficients	(with S.E., t statistics, and Significance level)				F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)		
13-10-5119	$\rho(1)$	-0.1161079	0.05367843	-2.16303	0.03170782	F(2,203)=	5.22232	0.0061432 *
	$\rho(2)$	-0.1242027	0.04609534	-2.69447	0.00764039 *	F(1,203)=	0.015328	0.90159126
13-10-5118	$\rho(1)$	-0.2348139	0.06649936	-3.53107	0.00051319 ****	F(2,201)=	8.5902	0.00026316 ****
	$\rho(2)$	-0.1991264	0.06361453	-3.1302	0.00200695 ***	F(1,201)=	0.214762	0.64356173
13-10-5116	$\rho(1)$	-0.2615105	0.0685495	-3.81492	0.00018125 ****	F(2,201)=	10.3706	0.00005172 ****
	$\rho(2)$	-0.2406897	0.06850372	-3.51353	0.00054618 ****	F(1,201)=	0.06582	0.79778529
13-10-5114	$\rho(1)$	-0.1198655	0.04339879	-2.76196	0.00626248 *	F(2,207)=	5.98697	0.00296697 **
	$\rho(2)$	-0.1071548	0.04630033	-2.31434	0.02162981	F(1,207)=	0.043884	0.8342764
13-10-5113	$\rho(1)$	-0.1196773	0.04431467	-2.70062	0.00748291 *	F(2,211)=	5.30915	0.00562865 *
	$\rho(2)$	-0.0810733	0.04255385	-1.90519	0.05811472	F(1,211)=	0.407259	0.52405594
13-10-5108	$\rho(1)$	-0.1225337	0.04002753	-3.06124	0.00249071 ***	F(2,211)=	5.24879	0.00596168 *
	$\rho(2)$	-0.0442651	0.03921868	-1.12867	0.26031745	F(1,211)=	1.994798	0.15931331
13-10-5105	$\rho(1)$	-0.1144972	0.04610758	-2.48326	0.01382873	F(2,203)=	7.69713	0.0005996 ****
	$\rho(2)$	-0.1741864	0.05102836	-3.41352	0.00077414 ****	F(1,203)=	0.905421	0.34246371
13-10-5104	$\rho(1)$	-0.2151011	0.05382611	-3.99622	0.00009031 ****	F(2,201)=	9.06271	0.00017044 ****
	$\rho(2)$	-0.1206232	0.05437133	-2.21851	0.02763934	F(1,201)=	1.893784	0.17030695
13-10-5101	$\rho(1)$	-0.2821491	0.06163298	-4.57789	0.00000822 ****	F(2,201)=	12.23962	0.00000964 ****
	$\rho(2)$	-0.2020787	0.06675585	-3.02713	0.00279207 **	F(1,201)=	1.056996	0.30513687
13-10-5091	$\rho(1)$	-0.0274976	0.028701	-0.95807	0.33912313	F(2,211)=	3.30668	0.03854541
	$\rho(2)$	-0.069799	0.02922875	-2.38803	0.0178208	F(1,211)=	1.068037	0.30257221
13-10-5090	$\rho(1)$	-0.0273785	0.04878862	-0.56117	0.57529725	F(2,205)=	3.24413	0.04101387
	$\rho(2)$	-0.1222011	0.04802791	-2.54438	0.01168367	F(1,205)=	2.322727	0.12903748
13-10-5088	$\rho(1)$	-0.0306111	0.04294946	-0.71272	0.47679631	F(2,213)=	3.77355	0.02452074
	$\rho(2)$	-0.1061562	0.04001163	-2.65313	0.00857572 *	F(1,213)=	1.65634	0.19949502
13-10-5087	$\rho(1)$	-0.1166025	0.03724233	-3.13091	0.00198716 ***	F(2,213)=	5.04003	0.00726707 *
	$\rho(2)$	-0.023737	0.04506585	-0.52672	0.59893738	F(1,213)=	2.523171	0.11366801
13-10-5085	$\rho(1)$	-0.0398356	0.04201469	-0.94813	0.34413536	F(2,213)=	2.66466	0.07194368
	$\rho(2)$	-0.0745105	0.03539956	-2.10484	0.03647725	F(1,213)=	0.398345	0.52862188
13-10-5079	$\rho(1)$	-0.072545	0.05596038	-1.29636	0.19630794	F(2,205)=	4.53343	0.0118428
	$\rho(2)$	-0.1471217	0.05042094	-2.91787	0.00391752 **	F(1,205)=	1.215054	0.27162597
13-10-5076	$\rho(1)$	-0.1828289	0.04443246	-4.11476	0.00005594 ****	F(2,207)=	9.74525	0.00009021 ****
	$\rho(2)$	-0.1176457	0.05739492	-2.04976	0.04164883	F(1,207)=	0.904355	0.3427256
13-10-5074	$\rho(1)$	-0.0584246	0.04486542	-1.30222	0.19424831	F(2,213)=	4.14239	0.01718254
	$\rho(2)$	-0.1047012	0.04078884	-2.56691	0.01094653	F(1,213)=	0.582469	0.44619079
13-10-5071	$\rho(1)$	-0.1162229	0.05005411	-2.32195	0.02130151	F(2,189)=	2.94297	0.05512921
	$\rho(2)$	-0.0760941	0.055163	-1.37944	0.16938856	F(1,189)=	0.417179	0.5191315
13-10-5070	$\rho(1)$	-0.1107683	0.05599163	-1.9783	0.04924722	F(2,203)=	4.13709	0.01733551
	$\rho(2)$	-0.1373551	0.0542597	-2.53144	0.01211724	F(1,203)=	0.157208	0.69215671
13-10-5066	$\rho(1)$	-0.1408407	0.05151687	-2.73388	0.00681803 *	F(2,201)=	7.50728	0.00071723 ****
	$\rho(2)$	-0.1940669	0.05885331	-3.29747	0.00115362 ***	F(1,201)=	0.598472	0.44007049
13-10-5065	$\rho(1)$	-0.0677077	0.04975609	-1.36079	0.17508817	F(2,203)=	3.96138	0.02052675
	$\rho(2)$	-0.1205523	0.04492259	-2.68356	0.00788539 *	F(1,203)=	0.772714	0.380418
13-10-5062	$\rho(1)$	-0.1554908	0.05286668	-2.94119	0.00364928 **	F(2,203)=	7.42723	0.00077082 ****
	$\rho(2)$	-0.1921731	0.06086237	-3.1575	0.00183379 ***	F(1,203)=	0.276829	0.59936171
13-10-5060	$\rho(1)$	-0.0766095	0.04358089	-1.75787	0.08020605	F(2,213)=	6.08476	0.00269249 **
	$\rho(2)$	-0.136441	0.04528099	-3.01321	0.00289821 **	F(1,213)=	0.906358	0.34216153
13-10-5057	$\rho(1)$	-0.1587462	0.04789151	-3.3147	0.0010865 ***	F(2,203)=	5.69663	0.00391667 **
	$\rho(2)$	-0.045904	0.0425362	-1.07917	0.28179075	F(1,203)=	3.58437	0.05974804
13-10-5053	$\rho(1)$	-0.0547557	0.04089199	-1.33903	0.18198702	F(2,213)=	3.35757	0.03667232
	$\rho(2)$	-0.0910518	0.04104043	-2.21859	0.02757032	F(1,213)=	0.392497	0.53166067
13-10-5050	$\rho(1)$	-0.1201669	0.04397211	-2.7328	0.00682304 *	F(2,207)=	7.60035	0.0006528 ****
	$\rho(2)$	-0.1369992	0.04603524	-2.97596	0.00326829 **	F(1,207)=	0.07551	0.78375148
13-10-5046	$\rho(1)$	-0.0893034	0.03751415	-2.38053	0.01816933	F(2,213)=	5.34558	0.00543038 *
	$\rho(2)$	-0.098536	0.04396021	-2.24148	0.02602613	F(1,213)=	0.025523	0.87322297
13-10-5045	$\rho(1)$	-0.0738605	0.04316997	-1.71092	0.08865372	F(2,199)=	2.81567	0.06225175
	$\rho(2)$	-0.0849296	0.04259998	-1.99365	0.0475557	F(1,199)=	0.04325	0.83546826
13-10-5044	$\rho(1)$	-0.0702847	0.04789954	-1.46733	0.14383262	F(2,203)=	4.91157	0.00825915 *
	$\rho(2)$	-0.1312098	0.04378859	-2.99644	0.00307199 **	F(1,203)=	1.085012	0.29881802
13-10-5042	$\rho(1)$	-0.1467504	0.03971928	-3.69469	0.00028178 ****	F(2,207)=	7.2569	0.00089939 ****
	$\rho(2)$	-0.0459528	0.04036945	-1.13831	0.25630809	F(1,207)=	3.359465	0.06825616
13-10-5041	$\rho(1)$	-0.1724093	0.0523169	-3.29548	0.00115594 ***	F(2,207)=	9.02522	0.00017457 ****
	$\rho(2)$	-0.1610711	0.05260196	-3.06207	0.00248976 ***	F(1,207)=	0.026588	0.87063235
13-10-5040	$\rho(1)$	-0.0748526	0.03545634	-2.11112	0.03592809	F(2,213)=	4.41962	0.01316257
	$\rho(2)$	-0.0773014	0.03692583	-2.09342	0.03749489	F(1,213)=	0.002288	0.9618923
13-10-5033	$\rho(1)$	-0.0352238	0.04259031	-0.82704	0.40914103	F(2,213)=	5.38616	0.00522454 *
	$\rho(2)$	-0.13087	0.04120314	-3.17621	0.00171344 ***	F(1,213)=	2.605111	0.10800012
13-10-5032	$\rho(1)$	-0.0911217	0.0428815	-2.12497	0.03474173	F(2,213)=	4.377	0.01371246
	$\rho(2)$	-0.1026102	0.04984057	-2.05877	0.0407331	F(1,213)=	0.030532	0.86145542
13-10-5030	$\rho(1)$	-0.0501405	0.04438747	-1.12961	0.25994786	F(2,207)=	8.49987	0.00028334 ****
	$\rho(2)$	-0.1712604	0.04245914	-4.03353	0.00007726 ****	F(1,207)=	4.174568	0.04230208

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level

Table A2.2: M-TAR Unit Root testFor ResidualsFrom Cointegration Estimation (General Machinery: 13-10) Continued (2)

Country	Coeeficients	(with S.E., t statistics, and Significance level)				F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)			
13-10-5029	$\rho(1)$	-0.1541337	0.04971072	-3.10061	0.00220007 ***	F(2,207)=	7.55691	0.00067977	****
	$\rho(2)$	-0.1346003	0.05204131	-2.58641	0.01038361	F(1,207)=	0.080085	0.77746475	
13-10-5027	$\rho(1)$	-0.1536493	0.0449248	-3.42015	0.00075519 ****	F(2,205)=	5.84871	0.00338658	**
	$\rho(2)$	-0.0149972	0.04264661	-0.35166	0.72545256	F(1,205)=	5.593581	0.01895984	
13-10-5021	$\rho(1)$	-0.1581945	0.05857916	-2.70053	0.00750761 *	F(2,203)=	8.30084	0.00034263	****
	$\rho(2)$	-0.213044	0.05879417	-3.62356	0.00036725 ****	F(1,203)=	0.580022	0.44718751	
13-10-5016	$\rho(1)$	-0.030427	0.02479749	-1.22702	0.22116952	F(2,213)=	2.4197	0.09139001	
	$\rho(2)$	-0.0530819	0.02907206	-1.82587	0.06926934	F(1,213)=	0.351514	0.55388656	
13-10-5014	$\rho(1)$	-0.0047567	0.03933961	-0.12091	0.90387263	F(2,213)=	4.05997	0.01860181	
	$\rho(2)$	-0.106772	0.03750354	-2.84698	0.00484524 **	F(1,213)=	3.522915	0.06189304	
13-10-5011	$\rho(1)$	-0.1009355	0.03472631	-2.9066	0.00405156 **	F(2,207)=	4.22416	0.01591911	
	$\rho(2)$	-0.0022718	0.03561088	-0.0638	0.94919443	F(1,207)=	4.023818	0.04616375	
13-10-5006	$\rho(1)$	-0.1615831	0.04682482	-3.4508	0.00067385 ****	F(2,213)=	7.56476	0.00067004	****
	$\rho(2)$	-0.083152	0.04632804	-1.79485	0.07409482	F(1,213)=	1.417757	0.23509827	
13-10-5005	$\rho(1)$	-0.1386982	0.04875059	-2.84506	0.00488642 **	F(2,207)=	7.27885	0.00088114	****
	$\rho(2)$	-0.1299632	0.04690676	-2.77067	0.00610325 *	F(1,207)=	0.018186	0.89285697	
13-10-5001	$\rho(1)$	-0.2166489	0.0424411	-5.1047	0.00000075 ****	F(2,207)=	13.44387	0.00000324	****
	$\rho(2)$	0.03346257	0.04964541	0.67403	0.50104332	F(1,207)=	15.365647	0.00012039	****

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level

Table A2.3: M-TAR Unit Root test for Residuals from Cointegration Estimation (Electrical Industry: 13-11)

Country	Coeeficients	(with S.E., t statistics, and Significance level)					F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)			
13-11-8006	$\rho(1)$	-0.139413	0.05255382	-2.65277	0.0086025	*	F(2,207)=	10.1561	0.00006201	****
	$\rho(2)$	-0.1943655	0.04972506	-3.9088	0.00012566	****	F(1,207)=	0.646671	0.42222808	
13-11-7015	$\rho(1)$	-0.1074186	0.04675085	-2.29768	0.02257923		F(2,207)=	9.66348	0.00009721	****
	$\rho(2)$	-0.1951337	0.04964323	-3.93072	0.00011546	****	F(1,207)=	1.808945	0.18010656	
13-11-7013	$\rho(1)$	-0.1889366	0.05360411	-3.52467	0.00052189	****	F(2,207)=	10.41719	0.0000489	****
	$\rho(2)$	-0.1671992	0.04997865	-3.34541	0.00097548	****	F(1,207)=	0.10151	0.75034569	
13-11-7012	$\rho(1)$	-0.1505841	0.05207768	-2.89153	0.00424297	**	F(2,207)=	8.27094	0.00035017	****
	$\rho(2)$	-0.1501266	0.04794397	-3.13129	0.00199206	***	F(1,207)=	0.0000463	0.99457611	
13-11-6076	$\rho(1)$	-0.1638172	0.04876919	-3.35903	0.00092662	****	F(2,213)=	7.32325	0.00083972	****
	$\rho(2)$	-0.0839068	0.04575169	-1.83396	0.0680551		F(1,213)=	1.428036	0.23341413	
13-11-6073	$\rho(1)$	-0.1067329	0.04217433	-2.53076	0.01210406		F(2,213)=	4.74311	0.00965266	*
	$\rho(2)$	-0.067097	0.03822282	-1.75542	0.08062554		F(1,213)=	0.48493	0.48695674	
13-11-6064	$\rho(1)$	-0.0733533	0.0358822	-2.04428	0.04215601		F(2,213)=	2.85016	0.06004324	
	$\rho(2)$	-0.0456364	0.03700099	-1.23338	0.2187918		F(1,213)=	0.289175	0.59131087	
13-11-6047	$\rho(1)$	-0.1343437	0.0445592	-3.01495	0.00288232	**	F(2,213)=	5.91662	0.00315705	**
	$\rho(2)$	-0.0674869	0.04074555	-1.6563	0.09913337		F(1,213)=	1.22605	0.2694255	
13-11-6038	$\rho(1)$	-0.1367104	0.05022054	-2.7222	0.00702193	*	F(2,213)=	5.28392	0.00575882	*
	$\rho(2)$	-0.0750311	0.04222519	-1.77693	0.07700736		F(1,213)=	0.883687	0.34825873	
13-11-6036	$\rho(1)$	-0.1591456	0.05130299	-3.10207	0.00218192	***	F(2,213)=	9.16439	0.00015204	****
	$\rho(2)$	-0.1536258	0.05206634	-2.95058	0.00352664	**	F(1,213)=	0.005703	0.93987586	
13-11-6032	$\rho(1)$	-0.1128211	0.04464406	-2.52712	0.01222619		F(2,213)=	5.19089	0.00629279	*
	$\rho(2)$	-0.0823389	0.04119303	-1.99886	0.04689518		F(1,213)=	0.251808	0.61632291	
13-11-6028	$\rho(1)$	-0.1280421	0.05128846	-2.49651	0.01330011		F(2,213)=	6.8172	0.00134966	***
	$\rho(2)$	-0.1331711	0.04894858	-2.72063	0.00705415	*	F(1,213)=	0.005234	0.94239621	
13-11-6027	$\rho(1)$	-0.1565955	0.05001019	-3.13127	0.00198484	***	F(2,213)=	7.72466	0.00057717	****
	$\rho(2)$	-0.1194561	0.05028025	-2.37581	0.01839719		F(1,213)=	0.274269	0.60102656	
13-11-6019	$\rho(1)$	-0.092258	0.04350662	-2.12055	0.03516158		F(2,205)=	4.25846	0.01541556	
	$\rho(2)$	-0.096825	0.04252115	-2.2771	0.02381221		F(1,205)=	0.006532	0.93566239	
13-11-6018	$\rho(1)$	-0.1454432	0.04791776	-3.03527	0.00271157	**	F(2,207)=	7.81434	0.00053492	****
	$\rho(2)$	-0.1364292	0.04895614	-2.78676	0.00581879	*	F(1,207)=	0.018959	0.89061892	
13-11-6013	$\rho(1)$	-0.1350649	0.04792888	-2.81803	0.00530037	*	F(2,207)=	7.26463	0.00089292	****
	$\rho(2)$	-0.1263449	0.04399587	-2.87174	0.0045068	**	F(1,207)=	0.02027	0.88692272	
13-11-6011	$\rho(1)$	-0.1458773	0.05106242	-2.85684	0.00471533	**	F(2,207)=	8.90537	0.00019492	****
	$\rho(2)$	-0.1710485	0.05078671	-3.36798	0.00090287	****	F(1,207)=	0.135233	0.71344267	
13-11-5125	$\rho(1)$	-0.1430572	0.05047449	-2.83425	0.00503947	*	F(2,211)=	7.7576	0.00056108	****
	$\rho(2)$	-0.131855	0.04651697	-2.83456	0.00503478	*	F(1,211)=	0.027615	0.86817668	
13-11-5124	$\rho(1)$	-0.0893349	0.03058565	-2.92081	0.0038745	**	F(2,209)=	5.40461	0.00514622	*
	$\rho(2)$	-0.051544	0.03204877	-1.6083	0.10927929		F(1,209)=	0.753411	0.38639386	
13-11-5122	$\rho(1)$	-0.0985037	0.04479776	-2.19885	0.02897504		F(2,211)=	6.74238	0.00145073	***
	$\rho(2)$	-0.1202748	0.04012094	-2.99781	0.00304556	**	F(1,211)=	0.134574	0.71410344	
13-11-5111	$\rho(1)$	-0.0667976	0.02925897	-2.28298	0.02343751		F(2,209)=	5.0022	0.00755032	*
	$\rho(2)$	-0.0656424	0.02916717	-2.25056	0.02545492		F(1,209)=	0.000804	0.97740931	
13-11-5109	$\rho(1)$	-0.0941571	0.04159111	-2.26388	0.02460846		F(2,209)=	6.56723	0.00171365	***
	$\rho(2)$	-0.1171794	0.03980657	-2.94372	0.00360965	**	F(1,209)=	0.168658	0.68172788	
13-11-5098	$\rho(1)$	-0.0893308	0.0335738	-2.66073	0.00839661	*	F(2,211)=	4.64204	0.01064338	
	$\rho(2)$	-0.0513593	0.03355515	-1.53059	0.12736751		F(1,211)=	0.651182	0.42059897	
13-11-5097	$\rho(1)$	-0.144047	0.04731513	-3.04442	0.0026251	**	F(2,213)=	6.12885	0.00258253	**
	$\rho(2)$	-0.0722447	0.04178562	-1.72894	0.08526915		F(1,213)=	1.29382	0.25662312	
13-11-5093	$\rho(1)$	-0.1049832	0.04178811	-2.51227	0.01273707		F(2,213)=	4.56986	0.01139558	
	$\rho(2)$	-0.0628046	0.03734537	-1.68172	0.09408779		F(1,213)=	0.566403	0.4525228	
13-11-5091	$\rho(1)$	-0.10214	0.04266629	-2.39393	0.01753607		F(2,213)=	6.03351	0.00282629	**
	$\rho(2)$	-0.1104928	0.0438957	-2.51717	0.01256668		F(1,213)=	0.018619	0.89159332	
13-11-5087	$\rho(1)$	-0.0891855	0.03994053	-2.23296	0.02659206		F(2,213)=	3.98002	0.02009157	
	$\rho(2)$	-0.0637246	0.03695227	-1.72451	0.0860662		F(1,213)=	0.218953	0.64031722	
13-11-5085	$\rho(1)$	-0.0472256	0.03217038	-1.46798	0.14358394		F(2,213)=	2.01321	0.13609333	
	$\rho(2)$	-0.0437145	0.03195494	-1.36801	0.17275195		F(1,213)=	0.005996	0.93835253	
13-11-5082	$\rho(1)$	-0.0912132	0.04351016	-2.09637	0.037253		F(2,209)=	6.59841	0.00166412	***
	$\rho(2)$	-0.124659	0.04129552	-3.01871	0.00285438	**	F(1,209)=	0.318886	0.57288336	
13-11-5081	$\rho(1)$	-0.1569429	0.05464184	-2.87221	0.00450042	**	F(2,207)=	10.72504	0.00003699	****
	$\rho(2)$	-0.2360856	0.05900263	-4.00127	0.00008772	****	F(1,207)=	1.126607	0.28973695	
13-11-5067	$\rho(1)$	-0.1066054	0.04605535	-2.31472	0.02158063		F(2,213)=	4.53823	0.01174647	
	$\rho(2)$	-0.0684699	0.03550702	-1.92835	0.05514135		F(1,213)=	0.430037	0.5126785	
13-11-5066	$\rho(1)$	-0.1272169	0.04437524	-2.86685	0.00456206	**	F(2,213)=	5.177	0.00637667	*
	$\rho(2)$	-0.051886	0.0355083	-1.46123	0.14542475		F(1,213)=	1.75689	0.18643284	
13-11-5063	$\rho(1)$	-0.149987	0.05305116	-2.82721	0.00514296	*	F(2,213)=	7.13722	0.00099952	****
	$\rho(2)$	-0.1222379	0.0487732	-2.50625	0.0129496		F(1,213)=	0.148271	0.70057716	
13-11-5062	$\rho(1)$	-0.2104238	0.0544881	-3.86183	0.00014929	****	F(2,213)=	9.2112	0.00014563	****
	$\rho(2)$	-0.0903081	0.04821197	-1.87315	0.06241791		F(1,213)=	2.725644	0.10022192	
13-11-5060	$\rho(1)$	-0.0549671	0.0442448	-1.24234	0.2154771		F(2,213)=	6.84673	0.00131273	***
	$\rho(2)$	-0.1506219	0.04321146	-3.48569	0.00059595	****	F(1,213)=	2.392218	0.12342496	

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level

Table A2.3: M-TAR Unit Root test for Residuals from Cointegration Estimation (Electrical Industry: 13-11) Continued.

Country	Coeeficients	(with S.E., t statistics, and Significance level)				F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)		
13-11-5059	$\rho(1)$	-0.0530023	0.04097065	-1.29367	0.19718203	F(2,213)=	5.5841	0.00432807 **
	$\rho(2)$	-0.1276913	0.04144022	-3.08134	0.00233267 ***	F(1,213)=	1.642707	0.20134789
13-11-5058	$\rho(1)$	-0.1156067	0.05099108	-2.2672	0.02439165	F(2,211)=	5.46565	0.00484998 **
	$\rho(2)$	-0.0984648	0.03985085	-2.47083	0.01427224	F(1,211)=	0.07218	0.78845169
13-11-5057	$\rho(1)$	-0.0966928	0.0477022	-2.02701	0.04390744	F(2,213)=	5.12609	0.00669397 *
	$\rho(2)$	-0.1045234	0.04217049	-2.47859	0.01396691	F(1,213)=	0.015126	0.90223324
13-11-5050	$\rho(1)$	-0.0426897	0.03579003	-1.19278	0.23431989	F(2,207)=	3.39375	0.03546202
	$\rho(2)$	-0.070455	0.03029732	-2.32545	0.02101617	F(1,207)=	0.353321	0.55288813
13-11-5048	$\rho(1)$	-0.1136738	0.05053933	-2.24921	0.0255219	F(2,213)=	5.06416	0.00710157 *
	$\rho(2)$	-0.0879258	0.03905173	-2.25152	0.02537313	F(1,213)=	0.162519	0.68725181
13-11-5047	$\rho(1)$	-0.1361396	0.04850296	-2.80683	0.00546726 *	F(2,213)=	6.18649	0.00244557 ***
	$\rho(2)$	-0.085208	0.04019116	-2.12007	0.03515749	F(1,213)=	0.653759	0.41967412
13-11-5046	$\rho(1)$	-0.1538878	0.04723221	-3.25811	0.00130527 ***	F(2,213)=	8.0953	0.00040876 ****
	$\rho(2)$	-0.104297	0.04417104	-2.36121	0.01911781	F(1,213)=	0.588062	0.44401861
13-11-5044	$\rho(1)$	-0.0685363	0.03582538	-1.91307	0.05708057	F(2,213)=	2.26351	0.10648045
	$\rho(2)$	-0.0305542	0.03281042	-0.93124	0.35278587	F(1,213)=	0.611293	0.43516962
13-11-5042	$\rho(1)$	-0.0776329	0.03734178	-2.07898	0.03886322	F(2,205)=	3.17369	0.04391274
	$\rho(2)$	-0.0633891	0.03836075	-1.65245	0.09997431	F(1,205)=	0.079973	0.7776187
13-11-5040	$\rho(1)$	-0.1366693	0.04924049	-2.77555	0.00600126 *	F(2,213)=	8.4291	0.00029987 ****
	$\rho(2)$	-0.1564382	0.05170404	-3.02565	0.00278636 **	F(1,213)=	0.076661	0.78214292
13-11-5036	$\rho(1)$	-0.1471108	0.0503133	-2.9239	0.00383051 **	F(2,213)=	7.56784	0.00066812 ****
	$\rho(2)$	-0.120694	0.04702815	-2.56642	0.01096144	F(1,213)=	0.14713	0.70167567
13-11-5034	$\rho(1)$	-0.0297667	0.03029487	-0.98257	0.32694681	F(2,211)=	2.3859	0.09448465
	$\rho(2)$	-0.0615574	0.03175049	-1.93879	0.05386099	F(1,211)=	0.518423	0.4723119
13-11-5033	$\rho(1)$	-0.0737722	0.04514237	-1.63421	0.10369163	F(2,213)=	5.08817	0.00694063 *
	$\rho(2)$	-0.1080027	0.03942204	-2.73965	0.00667191 *	F(1,213)=	0.326212	0.56850033
13-11-5028	$\rho(1)$	-0.0743498	0.04414572	-1.68419	0.09362361	F(2,211)=	5.30266	0.00566356 *
	$\rho(2)$	-0.106204	0.03876115	-2.73996	0.00667092 *	F(1,211)=	0.286212	0.59322184
13-11-5023	$\rho(1)$	-0.0601373	0.03530343	-1.70344	0.08994409	F(2,213)=	3.59137	0.02924225
	$\rho(2)$	-0.0713674	0.03449262	-2.06906	0.03974712	F(1,213)=	0.05177	0.82023001
13-11-5013	$\rho(1)$	-0.0566569	0.03276552	-1.72916	0.08522886	F(2,213)=	2.85106	0.0599907
	$\rho(2)$	-0.0525464	0.0319072	-1.64685	0.10106327	F(1,213)=	0.008078	0.92846887
13-11-5012	$\rho(1)$	-0.067068	0.0394439	-1.70034	0.09058387	F(2,205)=	2.90116	0.05721954
	$\rho(2)$	-0.0664148	0.0351829	-1.8877	0.06047887	F(1,205)=	0.000172	0.98954676
13-11-5010	$\rho(1)$	-0.1288316	0.04820075	-2.67281	0.0081213 *	F(2,207)=	8.42424	0.00030386 ****
	$\rho(2)$	-0.1657593	0.04967457	-3.33691	0.00100425 ***	F(1,207)=	0.311883	0.57713028
13-11-5009	$\rho(1)$	-0.1321236	0.04997241	-2.64393	0.00882261 *	F(2,207)=	7.28629	0.00087503 ****
	$\rho(2)$	-0.1355806	0.04523957	-2.99695	0.00306031 **	F(1,207)=	0.002911	0.95702433
13-11-5008	$\rho(1)$	-0.0110772	0.03379051	-0.32782	0.74338005	F(2,207)=	3.61165	0.02872278
	$\rho(2)$	-0.0853007	0.03180669	-2.68185	0.00791251 *	F(1,207)=	2.711733	0.10113002
13-11-5006	$\rho(1)$	-0.0317743	0.04049314	-0.78468	0.43353569	F(2,207)=	8.1362	0.00039674 ****
	$\rho(2)$	-0.1581119	0.03960222	-3.9925	0.00009078 ****	F(1,207)=	5.25012	0.02295161
13-11-5001	$\rho(1)$	-0.0483345	0.02774364	-1.74218	0.08291972	F(2,213)=	2.49452	0.08494444
	$\rho(2)$	-0.0465765	0.03332128	-1.3978	0.16362728	F(1,213)=	0.001644	0.96769582

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level

Table A2.4: M-TAR Unit Root test for Residuals from Cointegration Estimation (Transport Equipment: 13-13)

Country	Coefficients	(with S.E., t statistics, and Significance level)				F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)			
13-13-8005	$\rho(1)$	-0.1621631	0.05819939	-2.78634	0.00582618 *	F(2,207)=	13.23686	0.00000389	****
	$\rho(2)$	-0.2941989	0.06268552	-4.69325	0.00000489 ****	F(1,207)=	2.799873	0.09578229	
13-13-8004	$\rho(1)$	-0.1744045	0.05319071	-3.27885	0.00121732 ***	F(2,213)=	9.42655	0.00011947	****
	$\rho(2)$	-0.158159	0.05556381	-2.84644	0.00485324 **	F(1,213)=	0.044607	0.83293117	
13-13-7036	$\rho(1)$	-0.1067188	0.05132835	-2.07914	0.03881327	F(2,211)=	3.90957	0.02151781	
	$\rho(2)$	-0.1009882	0.05177039	-1.95069	0.05241751	F(1,211)=	0.006433	0.93614703	
13-13-7033	$\rho(1)$	-0.1318894	0.0549298	-2.40105	0.0172072	F(2,213)=	9.36462	0.00012646	****
	$\rho(2)$	-0.2023561	0.05620095	-3.60058	0.00039502 ****	F(1,213)=	0.804029	0.37090377	
13-13-7028	$\rho(1)$	-0.2078459	0.05308764	-3.91515	0.00012162 ****	F(2,213)=	10.307	0.00005337	****
	$\rho(2)$	-0.1251674	0.05444313	-2.29905	0.02247166	F(1,213)=	1.182172	0.278143	
13-13-7027	$\rho(1)$	-0.144851	0.05148742	-2.81333	0.00536192 *	F(2,213)=	8.29508	0.00033955	****
	$\rho(2)$	-0.1541762	0.05234485	-2.94539	0.0035839 **	F(1,213)=	0.016131	0.8990551	
13-13-7023	$\rho(1)$	-0.1465715	0.05130395	-2.85693	0.00470156 **	F(2,213)=	8.28645	0.00034228	****
	$\rho(2)$	-0.154417	0.05324446	-2.90015	0.00412085 **	F(1,213)=	0.011259	0.91559779	
13-13-7018	$\rho(1)$	-0.1424289	0.04740289	-3.00465	0.00297758 **	F(2,213)=	8.69346	0.00023479	****
	$\rho(2)$	-0.1393207	0.04818788	-2.8912	0.00423546 **	F(1,213)=	0.002114	0.96336709	
13-13-7016	$\rho(1)$	-0.1495556	0.05118227	-2.92202	0.00385639 **	F(2,211)=	9.00111	0.0001773	****
	$\rho(2)$	-0.1631965	0.05130248	-3.18106	0.00168846 ***	F(1,211)=	0.036776	0.8481069	
13-13-7015	$\rho(1)$	-0.1042913	0.05275263	-1.97699	0.04933306	F(2,213)=	9.79607	0.00008512	****
	$\rho(2)$	-0.2163769	0.05463703	-3.96026	0.00010208 ****	F(1,213)=	2.178066	0.14146702	
13-13-7014	$\rho(1)$	-0.1775578	0.05341289	-3.32425	0.00104371 ***	F(2,213)=	9.37199	0.00012561	****
	$\rho(2)$	-0.1470458	0.05301453	-2.77369	0.0060344 *	F(1,213)=	0.164383	0.68555948	
13-13-7009	$\rho(1)$	-0.2047758	0.05914379	-3.46234	0.00065053 ****	F(2,207)=	11.57709	0.00001714	****
	$\rho(2)$	-0.2263695	0.059815	-3.78449	0.00020167 ****	F(1,207)=	0.076361	0.78256657	
13-13-7008	$\rho(1)$	-0.1285749	0.05460595	-2.3546	0.01947886	F(2,207)=	12.23518	0.0000095	****
	$\rho(2)$	-0.2878641	0.06208089	-4.63692	0.00000626 ****	F(1,207)=	4.309387	0.03913791	
13-13-7006	$\rho(1)$	-0.2060117	0.05741748	-3.58796	0.00041348 ****	F(2,213)=	10.88173	0.00003164	****
	$\rho(2)$	-0.1648184	0.05527833	-2.98161	0.00320113 **	F(1,213)=	0.267123	0.60580444	
13-13-7005	$\rho(1)$	-0.1691847	0.05245549	-3.2253	0.00146253 ***	F(2,207)=	7.62376	0.00063872	****
	$\rho(2)$	-0.1398936	0.05548895	-2.52111	0.01245242	F(1,207)=	0.163985	0.68593176	
13-13-6084	$\rho(1)$	-0.1310575	0.05260529	-2.49134	0.01348961	F(2,213)=	5.78269	0.00358442	**
	$\rho(2)$	-0.1026939	0.04436274	-2.31487	0.02157251	F(1,213)=	0.169891	0.6806235	
13-13-6082	$\rho(1)$	-0.0959258	0.05338282	-1.79694	0.07377492	F(2,211)=	4.8336	0.00886058	*
	$\rho(2)$	-0.1390225	0.05332272	-2.60719	0.00978044 *	F(1,211)=	0.339834	0.56054748	
13-13-6081	$\rho(1)$	-0.0873075	0.0495857	-1.76074	0.07973127	F(2,211)=	2.07297	0.12836679	
	$\rho(2)$	-0.0466603	0.0426705	-1.0935	0.27541951	F(1,211)=	0.402277	0.52660247	
13-13-6078	$\rho(1)$	-0.1039043	0.04470744	-2.32409	0.02107186	F(2,211)=	4.51117	0.01206575	
	$\rho(2)$	-0.0974961	0.04930191	-1.97753	0.04928327	F(1,211)=	0.009581	0.92211683	
13-13-6071	$\rho(1)$	-0.1331137	0.05494161	-2.42282	0.01623645	F(2,213)=	8.10245	0.00040605	****
	$\rho(2)$	-0.1637034	0.05092203	-3.21478	0.00150836 ***	F(1,213)=	0.166748	0.68342843	
13-13-6065	$\rho(1)$	-0.2073153	0.0607086	-3.41492	0.00076767 ****	F(2,207)=	10.71498	0.00003732	****
	$\rho(2)$	-0.2181191	0.06116582	-3.56603	0.00045014 ****	F(1,207)=	0.018227	0.8927369	
13-13-6064	$\rho(1)$	-0.1088811	0.05235753	-2.07957	0.03876189	F(2,213)=	9.57256	0.00010448	****
	$\rho(2)$	-0.2218841	0.05763611	-3.84974	0.00015634 ****	F(1,213)=	2.106081	0.14818577	
13-13-6052	$\rho(1)$	-0.2110691	0.05274147	-4.00196	0.00008671 ****	F(2,213)=	10.34183	0.0000517	****
	$\rho(2)$	-0.1186926	0.05493609	-2.16056	0.0318457	F(1,213)=	1.471372	0.22647288	
13-13-6051	$\rho(1)$	-0.1385445	0.04951009	-2.79831	0.00560827 *	F(2,213)=	7.48958	0.00071878	****
	$\rho(2)$	-0.1245778	0.04659396	-2.67369	0.00808368 *	F(1,213)=	0.042202	0.8374314	
13-13-6047	$\rho(1)$	-0.1456941	0.05084322	-2.86556	0.00457995 **	F(2,213)=	7.56425	0.00067036	****
	$\rho(2)$	-0.1327341	0.05046854	-2.63004	0.00916068 *	F(1,213)=	0.032728	0.85661111	
13-13-6045	$\rho(1)$	-0.1201144	0.05108209	-2.3514	0.01964244	F(2,207)=	4.66002	0.01048132	
	$\rho(2)$	-0.1205027	0.05382171	-2.23892	0.02622501	F(1,207)=	3.1511E-05	0.99552655	
13-13-6043	$\rho(1)$	-0.132667	0.05761497	-2.30265	0.02226422	F(2,213)=	8.83518	0.00020597	****
	$\rho(2)$	-0.1817114	0.0516689	-3.51684	0.00053362 ****	F(1,213)=	0.401617	0.52693549	
13-13-6040	$\rho(1)$	-0.1739912	0.05121929	-3.39699	0.00081693 ****	F(2,207)=	7.75304	0.0005663	****
	$\rho(2)$	-0.1244592	0.05373303	-2.31625	0.02152325	F(1,207)=	0.493747	0.48305	
13-13-6029	$\rho(1)$	-0.1010265	0.04662564	-2.16676	0.03137365	F(2,211)=	9.46362	0.00011588	****
	$\rho(2)$	-0.1634989	0.04291567	-3.80977	0.00018243 ****	F(1,211)=	0.989064	0.32111048	
13-13-6028	$\rho(1)$	-0.1327549	0.05528615	-2.40123	0.01720726	F(2,211)=	9.10772	0.00016072	****
	$\rho(2)$	-0.1903382	0.05259597	-3.61887	0.00037039 ****	F(1,211)=	0.592396	0.44235472	
13-13-6026	$\rho(1)$	-0.1647507	0.04698278	-3.50662	0.00055337 ****	F(2,213)=	8.9358	0.0001877	****
	$\rho(2)$	-0.1062454	0.04499647	-2.36119	0.01911853	F(1,213)=	0.808795	0.36949219	
13-13-6024	$\rho(1)$	-0.1171832	0.04450573	-2.63299	0.00908391 *	F(2,213)=	6.41352	0.00197374	***
	$\rho(2)$	-0.1092719	0.04500789	-2.42784	0.01601965	F(1,213)=	0.015622	0.90065193	
13-13-6022	$\rho(1)$	-0.1325708	0.04827487	-2.74617	0.00654537 *	F(2,213)=	7.90988	0.0004857	****
	$\rho(2)$	-0.1404307	0.04880796	-2.87721	0.00442035 **	F(1,213)=	0.013109	0.90895454	
13-13-6019	$\rho(1)$	-0.1134018	0.05957387	-1.90355	0.05835625	F(2,207)=	11.84921	0.00001342	****
	$\rho(2)$	-0.2542714	0.05430865	-4.68197	0.00000514 ****	F(1,207)=	3.483848	0.06338462	
13-13-6016	$\rho(1)$	-0.2255531	0.05516406	-4.08877	0.00006147 ****	F(2,213)=	11.25837	0.0000225	****
	$\rho(2)$	-0.1313264	0.05453643	-2.40805	0.01688981	F(1,213)=	1.475525	0.22582087	

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level

Table A2.4: M-TAR Unit Root test for Residuals from Cointegration Estimation (Transport Equipment: 13-13) Continued (1).

Country	Coefficients	(with S.E., t statistics, and Significance level)					F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)			
13-13-6012	$\rho(1)$	-0.1194161	0.05167357	-2.31097	0.02179112		F(2,213)=	9.4029	0.00012209	****
	$\rho(2)$	-0.1892297	0.05156827	-3.6695	0.00030715	****	F(1,213)=	0.914531	0.33999929	
13-13-6007	$\rho(1)$	-0.1561073	0.05318124	-2.93538	0.00370776	**	F(2,207)=	8.05429	0.00042805	****
	$\rho(2)$	-0.1671907	0.05478665	-3.05167	0.00257379	**	F(1,207)=	0.023758	0.8776526	
13-13-6003	$\rho(1)$	-0.1685386	0.04704312	-3.58264	0.0004215	****	F(2,213)=	8.58655	0.00025919	****
	$\rho(2)$	-0.1108376	0.05321732	-2.08274	0.03846919		F(1,213)=	0.659923	0.41749425	
13-13-5126	$\rho(1)$	-0.1214175	0.05561227	-2.18329	0.03010736		F(2,213)=	5.7292	0.00377103	**
	$\rho(2)$	-0.113696	0.04395196	-2.58682	0.01035207		F(1,213)=	0.011866	0.91335863	
13-13-5122	$\rho(1)$	-0.0856467	0.04658233	-1.83861	0.06736517		F(2,213)=	6.41404	0.00197278	***
	$\rho(2)$	-0.1334844	0.043428	-3.07369	0.00239063	***	F(1,213)=	0.564226	0.45339165	
13-13-5121	$\rho(1)$	-0.1737708	0.05424632	-3.20337	0.00156657	***	F(2,213)=	8.24023	0.00035728	****
	$\rho(2)$	-0.1224484	0.04910166	-2.49377	0.01340009		F(1,213)=	0.492	0.48380224	
13-13-5119	$\rho(1)$	-0.0721915	0.03678272	-1.96265	0.05098918		F(2,213)=	2.16005	0.11783929	
	$\rho(2)$	-0.0219575	0.03209291	-0.68419	0.49460093		F(1,213)=	1.058972	0.30461698	
13-13-5117	$\rho(1)$	-0.1230654	0.04587771	-2.68247	0.00788148	*	F(2,213)=	5.57096	0.00438245	**
	$\rho(2)$	-0.0932546	0.04694346	-1.98653	0.04825633		F(1,213)=	0.206266	0.65017262	
13-13-5116	$\rho(1)$	-0.1167692	0.04387106	-2.66164	0.00836885	*	F(2,213)=	5.55308	0.00445757	**
	$\rho(2)$	-0.0914469	0.04559928	-2.00545	0.04618085		F(1,213)=	0.160146	0.68942322	
13-13-5115	$\rho(1)$	-0.0972363	0.04972901	-1.95532	0.05186535		F(2,211)=	2.95246	0.0543723	
	$\rho(2)$	-0.0799004	0.05220398	-1.53054	0.12738044		F(1,211)=	0.060577	0.80582632	
13-13-5112	$\rho(1)$	-0.0707005	0.03819146	-1.85121	0.06553662		F(2,211)=	2.94479	0.0547794	
	$\rho(2)$	-0.0661279	0.0413179	-1.60046	0.11099165		F(1,211)=	0.006718	0.93475167	
13-13-5111	$\rho(1)$	-0.1306291	0.04373302	-2.98697	0.00315103	**	F(2,211)=	4.48847	0.01233131	
	$\rho(2)$	-0.0132516	0.04067883	-0.32576	0.74492814		F(1,211)=	3.983734	0.04722745	
13-13-5107	$\rho(1)$	-0.1229836	0.04593202	-2.67751	0.0080006	*	F(2,211)=	7.54882	0.00068166	****
	$\rho(2)$	-0.1068398	0.03722277	-2.87028	0.00451864	**	F(1,211)=	0.076096	0.78292875	
13-13-5104	$\rho(1)$	-0.0315245	0.03449344	-0.91393	0.36178874		F(2,213)=	1.92235	0.14879144	
	$\rho(2)$	-0.0579306	0.03339371	-1.73478	0.08422722		F(1,213)=	0.302517	0.58288532	
13-13-5092	$\rho(1)$	-0.0737989	0.03936486	-1.87474	0.0622101		F(2,211)=	3.01691	0.05106906	
	$\rho(2)$	-0.0648284	0.03982703	-1.62775	0.10507033		F(1,211)=	0.026235	0.87148392	
13-13-5091	$\rho(1)$	-0.1629968	0.05199812	-3.13467	0.00196542	***	F(2,211)=	8.81056	0.00021136	****
	$\rho(2)$	-0.1298626	0.0448966	-2.89248	0.0042227	**	F(1,211)=	0.240363	0.62445316	
13-13-5089	$\rho(1)$	-0.0840392	0.05455	-1.54059	0.12490079		F(2,213)=	9.5483	0.00010683	****
	$\rho(2)$	-0.2018507	0.04935951	-4.0894	0.00006131	****	F(1,213)=	2.564556	0.11076522	
13-13-5083	$\rho(1)$	-0.0895705	0.04529561	-1.97747	0.04927852		F(2,213)=	5.48769	0.0047435	**
	$\rho(2)$	-0.1205313	0.04534651	-2.65801	0.00845672	*	F(1,213)=	0.233343	0.62955249	
13-13-5082	$\rho(1)$	-0.1356235	0.04738279	-2.86229	0.00462558	**	F(2,213)=	7.26649	0.00088553	****
	$\rho(2)$	-0.1273877	0.05059107	-2.51799	0.01253829		F(1,213)=	0.014117	0.90553251	
13-13-5077	$\rho(1)$	-0.1851433	0.05789651	-3.19783	0.00160189	***	F(2,207)=	9.40843	0.00012279	****
	$\rho(2)$	-0.198125	0.05975432	-3.31566	0.00107956	***	F(1,207)=	0.027909	0.86748509	
13-13-5074	$\rho(1)$	-0.162093	0.05094508	-3.18172	0.00168266	***	F(2,213)=	6.70922	0.0014939	***
	$\rho(2)$	-0.089151	0.04911252	-1.81524	0.07089364		F(1,213)=	1.062528	0.3038084	
13-13-5071	$\rho(1)$	-0.1257936	0.04896267	-2.56917	0.01087734		F(2,213)=	8.35745	0.00032047	****
	$\rho(2)$	-0.1727128	0.05430727	-3.18029	0.00169061	***	F(1,213)=	0.411738	0.52177864	
13-13-5067	$\rho(1)$	-0.1907099	0.06087491	-3.13282	0.0019749	***	F(2,213)=	9.58261	0.00010352	****
	$\rho(2)$	-0.1450868	0.04744672	-3.05789	0.00251469	**	F(1,213)=	0.349419	0.55506923	
13-13-5064	$\rho(1)$	-0.0417499	0.0339936	-1.22817	0.22075112		F(2,211)=	8.27024	0.00034843	****
	$\rho(2)$	-0.1404261	0.03630937	-3.86749	0.00014647	****	F(1,211)=	3.90564	0.04942711	
13-13-5063	$\rho(1)$	-0.170409	0.05937873	-2.86987	0.00452435	**	F(2,211)=	10.94741	0.00002995	****
	$\rho(2)$	-0.2147731	0.05632219	-3.81329	0.00018002	****	F(1,211)=	0.306738	0.58027508	
13-13-5061	$\rho(1)$	-0.1314573	0.03675889	-3.5762	0.00043141	****	F(2,213)=	7.73586	0.00057118	****
	$\rho(2)$	-0.0639185	0.03902639	-1.63783	0.1029343		F(1,213)=	1.587007	0.20913288	
13-13-5060	$\rho(1)$	-0.1509199	0.04875346	-3.09557	0.00222818	***	F(2,213)=	7.99985	0.0004467	****
	$\rho(2)$	-0.1256074	0.04958443	-2.5332	0.01202238		F(1,213)=	0.132503	0.71621191	
13-13-5057	$\rho(1)$	-0.0849422	0.03791388	-2.2404	0.02609746		F(2,213)=	4.71299	0.00993506	*
	$\rho(2)$	-0.07578	0.03609965	-2.09919	0.03697807		F(1,213)=	0.03063	0.86123418	
13-13-5056	$\rho(1)$	-0.1482394	0.05068518	-2.92471	0.00382091	**	F(2,213)=	7.94596	0.00046966	****
	$\rho(2)$	-0.128983	0.04761497	-2.70887	0.00730026	*	F(1,213)=	0.076674	0.78212505	
13-13-5055	$\rho(1)$	-0.035453	0.03304162	-1.07298	0.28449406		F(2,213)=	1.01536	0.3640199	
	$\rho(2)$	-0.0330119	0.03520225	-0.93778	0.34942109		F(1,213)=	0.002557	0.95972151	
13-13-5053	$\rho(1)$	-0.1362842	0.05473534	-2.48988	0.01354357		F(2,213)=	7.81146	0.00053232	****
	$\rho(2)$	-0.1573747	0.0512661	-3.06976	0.00242096	***	F(1,213)=	0.079088	0.77880949	
13-13-5050	$\rho(1)$	-0.1471933	0.04736919	-3.10736	0.00214492	***	F(2,213)=	7.15038	0.00098727	****
	$\rho(2)$	-0.105755	0.04906887	-2.15524	0.03226488		F(1,213)=	0.369148	0.54411619	
13-13-5046	$\rho(1)$	-0.0957078	0.04267806	-2.24255	0.02595587		F(2,213)=	6.01883	0.00286582	**
	$\rho(2)$	-0.1117399	0.04220774	-2.64738	0.00871822	*	F(1,213)=	0.07134	0.78965439	
13-13-5045	$\rho(1)$	-0.1176202	0.04451922	-2.64201	0.00887112	*	F(2,207)=	3.85342	0.0227447	
	$\rho(2)$	-0.0432056	0.04142595	-1.04296	0.29818304		F(1,207)=	1.614961	0.20522216	
13-13-5044	$\rho(1)$	-0.0566765	0.03711857	-1.5269	0.1283264		F(2,205)=	1.54479	0.21583072	
	$\rho(2)$	-0.037552	0.03672073	-1.02264	0.3076844		F(1,205)=	0.149481	0.6994329	

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level

Table A2.4: M-TAR Unit Root test for Residuals from Cointegration Estimation (Transport Equipment: 13-13) Continued (2).

Country	Coefficients	(with S.E., t statistics, and Significance level)				F statistics (with Siginificance level) Upper: H: ρ(1)=ρ(2)=0 lower raw, H: ρ(1)=ρ(2)		
13-13-5042	$\rho(1)$	-0.0451252	0.0379091	-1.19035	0.23527075	F(2,207)=	5.77758	0.00361709 **
	$\rho(2)$	-0.1368103	0.04217824	-3.24362	0.00137593 ***	F(1,207)=	2.761874	0.09804871
13-13-5034	$\rho(1)$	-0.0466116	0.035431	-1.31556	0.18976359	F(2,209)=	6.84623	0.00131844 ***
	$\rho(2)$	-0.1217196	0.03659984	-3.32569	0.00104176 ***	F(1,209)=	1.994035	0.1594068
13-13-5033	$\rho(1)$	-0.1590558	0.05751884	-2.76528	0.00619132 *	F(2,211)=	9.39128	0.00012384 ****
	$\rho(2)$	-0.1797945	0.05328788	-3.37402	0.00088143 ****	F(1,211)=	0.07091	0.79027672
13-13-5021	$\rho(1)$	-0.1391789	0.04936791	-2.81922	0.00527241 *	F(2,211)=	8.73401	0.00022684 ****
	$\rho(2)$	-0.1372546	0.04340434	-3.16223	0.0017962 ***	F(1,211)=	0.000881	0.9763468
13-13-5018	$\rho(1)$	-0.1565746	0.04685932	-3.34138	0.00098443 ****	F(2,213)=	7.73076	0.0005739 ****
	$\rho(2)$	-0.09372	0.04521309	-2.07285	0.03938943	F(1,213)=	0.931766	0.33549921
13-13-5012	$\rho(1)$	-0.0522822	0.04012465	-1.303	0.19398314	F(2,213)=	5.69234	0.00390529 **
	$\rho(2)$	-0.1340101	0.04305718	-3.11237	0.00211041 ***	F(1,213)=	1.928295	0.16639543
13-13-5007	$\rho(1)$	-0.1380678	0.04916478	-2.80827	0.00544831 *	F(2,211)=	5.75155	0.00369695 **
	$\rho(2)$	-0.1034517	0.05167132	-2.00211	0.04655314	F(1,211)=	0.24438	0.62157484
13-13-5005	$\rho(1)$	-0.1726159	0.0539261	-3.20097	0.00157904 ***	F(2,213)=	7.60593	0.00064477 ****
	$\rho(2)$	-0.1163331	0.05220537	-2.22837	0.02690085	F(1,213)=	0.562314	0.45415668
13-13-5003	$\rho(1)$	-0.1737015	0.04532896	-3.83202	0.00016726 ****	F(2,213)=	8.24423	0.00035596 ****
	$\rho(2)$	-0.0685828	0.05106066	-1.34316	0.18064828	F(1,213)=	2.37026	0.12515066
13-13-5002	$\rho(1)$	-0.1256756	0.04193012	-2.99726	0.00304761 **	F(2,213)=	6.30422	0.00218819 ***
	$\rho(2)$	-0.0926115	0.04864296	-1.9039	0.0582707	F(1,213)=	0.265074	0.60718932
13-13-5001	$\rho(1)$	-0.134986	0.04333303	-3.11508	0.00209446 ***	F(2,211)=	5.47192	0.00482118 **
	$\rho(2)$	-0.058271	0.04868751	-1.19684	0.23271349	F(1,211)=	1.423289	0.23420251

†: *:1%, **:0.5%, ***:0.25%, ****:0.1% Significance level