PERSISTENCY AND SUSTAINABILITY OF INDONESIA’S CURRENT ACCOUNT DEFICIT

Tuti Eka Asmarani

Abstract

This paper is motivated by the current account deficit in Indonesia’s, notably since 2011Q4. The aim of this paper is to test if this deficit is persistent and sustainable. Using stationary and Autoregressive Distributed Lag (ARDL) approach, the result shows the Indonesian current account deficit is persistent for the period of 2011Q4-2014Q1, and is considered to be unsustainable. These two findings call the government to optimize the policy on supporting the export performance, and transport services in particular.

Keywords: Current account deficit, random walk, intertemporal budget constraint, unit root, ARDL

JEL Classification: C22, F32, F41

1 Author is graduated from Postgraduate Program, Department of Economic, University of Indonesia, and is a lecturer at University of Gunadarma (tutiekasmarani@gmail.com).
I. INTRODUCTION

Current account balance is one important indicator in determining a country’s macroeconomic performance on the external side, which is also a reflection of the internal economy, such as exports and imports in the real sector, as well as revenues and expenditures in the fiscal sector (government). When the current account balance is positive (surplus) it means that the country lends its excess savings abroad, so that the stock of net assets increased. When the current account balance is negative (deficit), this implies the country has underfunded savings for domestic investment, so it must borrow from other countries.

Deficit / surplus of the current account balance can lead to gains and losses in the long-term and short-term. The current account surplus in the short-term is a benefit, because the state will earn revenue in the form of interest on the loan from the investment abroad, but it is a disadvantage in the long-term, because the stock of domestic savings would be reduced as a result of their investment abroad, particularly if on a large scale. As a result, the country’s development can become impaired. A deficit is beneficial in the short-term, as the loan / foreign debt can be used to finance domestic investment, but it is detrimental in the long-term because the current account deficit could lead to a serious economic crisis (Polat, 2011).

From Figure 1, it can be seen that Indonesia experienced a current account deficit for twelve quarters after the economic crisis of 1997. Among other things, in the 2004 first quarter, the current account deficit was due to an increase in oil import activities accompanied by an increase in the domestic oil prices (Balance of Payments Indonesia, 2004). In 2005, Indonesia again experienced a current account deficit in the third quarter. This was caused by the high acceleration of growth in non-oil imports (raw materials and capital goods) due to an increase...
in domestic demand (Bank Indonesia report to Parliament Q3, 2005). After some recovery time lapsed, a current account deficit was experienced in the second quarter of 2008. The deficit occurred due to a significant decrease in the trade balance. Inevitably, this deficit continued until the third and fourth quarter of 2008. Bottom ranking in the current account was caused by the global crisis in the United States that resulted in global uncertainty (Balance of Payments Indonesia Quarter I-IV 2008).

Another current account deficit occurred in Indonesia in the fourth quarter of 2011. This current account deficit lasted until Q4 2012. Sluggish export performance due to falling global demand became the drivers of this deficit. Bank Indonesia predicted a current account deficit the second quarter of 2013 valued at US $ 9 billion. However, this prediction was missed because the current account deficit in the second quarter of 2013 reached up to US $ 9.8 billion.

The BI misprediction was due to growth in export performance which turned out to be lower than previously thought. This was evidenced by the decline in exports of passenger transport services due to the many national travelers who traveled for vacation abroad, and the rising freight transportation services caused by an increase import activity (Balance of

<table>
<thead>
<tr>
<th>Economic Activities</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Current Account</td>
<td>2,947</td>
<td>273</td>
<td>766</td>
</tr>
<tr>
<td>A. Goods</td>
<td>9,264</td>
<td>9,223</td>
<td>9,700</td>
</tr>
<tr>
<td>- Export</td>
<td>45,901</td>
<td>51,810</td>
<td>52,376</td>
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<tr>
<td>1. Non-oil</td>
<td>8,899</td>
<td>10,622</td>
<td>9,291</td>
</tr>
<tr>
<td>a. Export</td>
<td>37,092</td>
<td>42,307</td>
<td>42,168</td>
</tr>
<tr>
<td>2. Oil</td>
<td>-3,214</td>
<td>-5,751</td>
<td>-4,312</td>
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<tr>
<td>a. Export</td>
<td>4,855</td>
<td>4,845</td>
<td>4,929</td>
</tr>
<tr>
<td>b. Import</td>
<td>-8,069</td>
<td>-10,596</td>
<td>-9,242</td>
</tr>
<tr>
<td>a. Export</td>
<td>12,968</td>
<td>4,658</td>
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<tr>
<td>B. Services</td>
<td>-1,822</td>
<td>-3,133</td>
<td>-2,562</td>
</tr>
<tr>
<td>1. Export</td>
<td>4,482</td>
<td>4,528</td>
<td>5,389</td>
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<tr>
<td>2. Import</td>
<td>-6,304</td>
<td>-7,661</td>
<td>-7,951</td>
</tr>
<tr>
<td>C. Income</td>
<td>-5,525</td>
<td>-6,776</td>
<td>-7,416</td>
</tr>
<tr>
<td>1. Receipts</td>
<td>580</td>
<td>637</td>
<td>659</td>
</tr>
<tr>
<td>2. Payments</td>
<td>-6,105</td>
<td>-7,412</td>
<td>-8,075</td>
</tr>
<tr>
<td>D. Transfers</td>
<td>1,029</td>
<td>960</td>
<td>1,045</td>
</tr>
<tr>
<td>1. Receipts</td>
<td>1,830</td>
<td>1,841</td>
<td>1,908</td>
</tr>
<tr>
<td>2. Payments</td>
<td>-800</td>
<td>-881</td>
<td>-863</td>
</tr>
</tbody>
</table>

Source: SEKI, Bank Indonesia
Payments Indonesia, 2012-2013). In addition, Indonesian imports, mainly oil and gas had not yet experienced a significant decline, although the price of fuel oil (BBM) had increased (Balance online, 2013). This condition is reflected in table 1.

From Table 1, the merchandise trade balance in oil commodities experienced a deficit with an increasing trend over the period 2011-2013. However, due to the large amount of exports of non-oil and gas commodities, the deficit in the trade balance could still be overcome. However, with a decline in export activity in the gas commodity, a merchandise trade balance deficit in the second quarter of 2013 was unavoidable.

The Asian Development Bank (ADB) also estimated the Indonesian current account deficit would last throughout 2014. The Deputy Country Director of ADB’s Indonesia Resident Mission, Edimon Ginting, saw the current account deficit because of the weakening of the global economy (Business News, 2013). If the current account deficit persisted and there was no intervention from the government, it was feared it would lead to a crisis, as happened in Chile and Mexico (early 1980), the United Kingdom and Norway (end 1980), Mexico and Argentina (mid 1990), the countries of East Asia (late 1990), and Turkey (early 1994 and early 2001). Therefore, many countries want a non-persistent the current account deficit (mean-reverting), because when a country experiences a deficit that is persistent, it will create a rebalancing, in which the country is continuously importing while other countries supply the needs of its imports. Naturally, this will lead to inequality in the welfare of the world community. Besides not wanting a non-persistent current account deficit, many countries also want an account balance under sustainable conditions.

Mean-reverting is a condition in which the current account deficit does not last long. That is, these deficits will eventually return to long-term equilibrium. If the deficit is not returned to long-term balance due to a shock, then the event is called a random walk phenomenon. Lau et al. (2006) found that the current account balances in the Asia-5 (Indonesia, Korea, Malaysia, Philippines and Thailand) for the period 1976Q1-2001Q4 were mean-reverting. The sustainability of the current account refers to the willingness and capability to finance a range of activities, such as imports and foreign debt interest payments, through export activity. Thus, the current account of a country can be said to be sustainable if revenue from exports is able to finance imports and liability payments for foreign debt interest. Or in other words, the sustainability of the current account of a country is a reflection of the cointegration relationship between exports and imports and foreign debt interest (imports plus). That is, exports and imports plus move together toward a long-term balance point, so that the current account balance is created. This could occur because of the implementation of macro-economic policies that are effective in the long-term. Therefore, it can be concluded that a current account deficit is only a short-term phenomenon that will eventually return to a long-term balance (Perera and Verma, 2008).

The Cointegration approach that explains the relationship between exports and imports plus, is often called intertemporal budget constraint (Husted, 1992). This approach allows a
country to borrow and lend funds to the international market in maximizing satisfaction based on the budget constraint. This means that if a country wants to apply for foreign loans, then the country should consider the condition of the rest of the loan at the moment, where net borrowing abroad from a country should be equal to the present value of the overall current account in the future, or in other words, the loan must be equal on par with the current account in the future as assessed at the current time.

Currently there is no research specifically addressing the sustainability of the current account in Indonesia using the model *intertemporal budget constraint*. Baharumshah, Lau and Fountas (2002) conducted a study on the sustainability of the current account deficit in the four ASEAN countries, namely Indonesia, Malaysia, Philippines and Thailand. As a result, all countries except Malaysia have not had a sustainable current account. The reason, in the study period 1961-1999, there was the the Asian crisis that hit most of the ASEAN countries. The crisis that occurred in 1997 and 1998 led to sluggish domestic economies in the ASEAN countries, so that the external imbalances were unavoidable.

In line with the research that was done by Rahman (2011), the sustainability of the current accounts in Malaysia (1960-2007) and Indonesia (1960-2008) found that the current account in Indonesia was still in a state of unsustainable until 2008. According to him, after the 1997/1998 crisis, Malaysia was better able to manage the balance of the trade deficit compared to Indonesia.

Therefore, in this research will discuss the persistence and sustainability of the current account balance in Indonesia during the start of the current account deficit from 2004Q1 to 2014Q1. The persistence of the current account will be explained through the *unit root test*, while sustainability will be explained through the *intertemporal budget constraint approach* by identifying the cointegration relationship between exports and imports plus her. There are several methods that can be used to explain the cointegration relationship. Among them, are the Engle-Granger method, Johansen method, and *Autoregressive Distributed Lag* (ARDL) method.

The Engle-Granger method describes a long-term relationship using an *estimation residual*. If the residual is stationary, then the export and import plus have cointegration relationship. However, before the residual is estimated, the exports and imports plus variable must first have the same stationarity. Stationarity can take the form *level* or I (0) and the *first difference* or I (1). Just as the Engle-Granger method, Johansen method also requires that all variables have the same degree of stationary prior to the cointegration test. As for the method of *Autoregressive Distributed Lag* (ARDL), this method allows the cointegration of a number of variables that have a different degree of stationarity, making it is more efficient in the testing. In addition, the ARDL method is a method that is not only able to explain the long-term relationship, but also able to take into account the short-term dynamics, making it very suitable for use in small-sized samples. This method has been used by Hassan et al. (2012) to analyze the sustainability of
the current account in the Iranian state. Using this method, Iran’s current account deficit was found to be in a sustainable condition.

If it is found that Indonesia has a current account deficit that is non-persistent, and it is an unsustainable current account, this research would provide clarity / confirmation of previous researchers. Hopefully, this study can answer the challenges ahead regarding the ability of Indonesia’s current account balance in maintaining an external balance in the midst of the global economic climate of uncertainty.

The second section of this paper presents the theory and review of the relevant literature. The third section outlines the data and processing methods of testing. The more technical explanations of the model and methodology are presented in the appendix. The fourth section reviews the results of data processing and analysis, while the conclusions and policy implications are outlined in the fifth and concluding section of this paper.

II. THEORY

2.1. The Persistence of The Current Account

The persistence of the current account deficit is a condition where the current account deficit takes place continuously. This can be shown by the following equation:

\[ E(CA_t) = CA_{t-1} \]  

Equation (1) explains that the expected current account in the current period (t) is a reflection of the current account in the previous period (t-1). In forecasting, there are random factors that can change at any time. The random factor is called the error. Error / error in forecasting can be calculated by the following equation:

\[ \varepsilon_t = CA_t - E(CA_t) \] 
\[ \varepsilon_t = CA_t - CA_{t-1} \] 
\[ CA_t = CA_{t-1} + \varepsilon_t \]

Equation (4) shows the phenomenon of random walk in which the value of the current account at the current time (t) is equal to the value of the current account in the previous period (t-1) plus a random factor (Clower dan Ito, 2005).
2.2. Sustainability of the Current Account

This research will apply intertemporal budget constraint models that explain the relationship of exports and imports plus for the long-term balance (Husted, 1992). To simplify the discussion, the assumption built is that the economy is open and has a relatively small size, where there is only one type of goods produced and exported. It is also assumed that there is no government intervention, that the state can borrow from and lend funds to the international market, and that the interest rate used is the world interest rate. The last assumption used is that agents are rational and maximize satisfaction all the time with a certain budget constraints (budget constraint).

The budget constraint equation in period t is as follows:

\[ C_t = Y_t + B_t - I_t - (1 + r_t)B_{t-1} \]  

(5)

where \( C_t \) is the current consumption, \( Y_t \) is revenue, \( B_t \) is net loans (debts), \( I_t \) is an investment, and \( (1 + r_t)B_{t-1} \) is net lending for the previous period. As is already known that the identity equation is \( Y_t = C_t + I_t + X - M \), where \( X-M \) is the Current Account (CA), or \( Y_t - C_t - I_t = X_t - M_t = CA_t \). Then:

\[ B_t = \sum_{i=1}^{\infty} \mu_i CA_{t+i} + \lim_{n \to \infty} \mu_n B_{t+n} \]  

(6)

where \( \lim_{n \to \infty} \mu_n B_{t+n} = 0 \)

Equation (6) shows that net lending abroad (\( B_t \)) in a country’s economy in period t is the present value (PV) of the overall current account in the future, or in other words, the loan must be on equal par with the current account in the future as assessed at the current time. If \( B_t > PV_t \), then the country will be back into debt to pay the remaining foreign debt. However, if \( B_t < PV_t \), then the country returns to debt to increase domestic investment because of the perceived debt in the previous period brings many benefits.

The concept of intertemporal budget constraint above are used in describing sustainability/sustainability of the current account balance which is reflected through the cointegration relationship between exports and imports plus, which is shown by the following equation:

\[ X_t = \alpha + MM_t + \varepsilon_t \]  

(7)

Equation (7) shows that the export in the period t (\( X_t \)) has a cointegration relationship with imports plus (imports are added with accrued interest) in the period t. That is, if the exports and imports plus are cointegrated, then they will move together towards long-term balance (Jain and Sami, 2012).
2.3. Literature Review

Research on the persistence of the current account is still rarely performed. Lau et al. (2006) conducted a study of the current account balance in the Asia-5 (Indonesia, Korea, Malaysia, Philippines and Thailand) for the period 1976Q1-2001Q4 and found that the current account deficit in the Asia-5 to be mean-reverting/non-persistent. In contrast with Lau et al. (2006), and Clower and Ito (2012) found that the current account deficit in the developed and developing countries to be experiencing persistence. The study was conducted in the period 1960Q1-2010Q4 in 71 countries, including Indonesia. Research on the sustainability of the current account balance through the identification of the cointegration relationship between exports and imports plus was done in various countries. Utkulu (1998) and Celik (2011) conducted a study on the sustainability of the current account of the Turkish state. Konya (2009) examined a similar case in countries Czech Republic, Hungary and Slovenia. Another case with Perera and Verma (2008) which analyzed the sustainability of the current account in the country of Sri Lanka, Yin and Hamori (2011) in the country of China, as well as Hassan et al. (2012) which analyzed the sustainability of the current account in the country of Iran.

All researchers sought to identify cointegration in explaining the relationship of exports and imports plus in the long-run, however each researcher modified their analysis. Utkulu (1998), and Celik (2011) used the method of Engle-Grenger in explaining this relationship. The Engle-Grenger method used a single equation engineering approach (single-equation approach) that had only one cointegration result. While Perera et al. (2008), Konya (2009), and Baharumshah, Lau and Fountas (2002) analyzed the sustainability of the current account balance using the Johansen Test. This method allows more than one cointegration result. If there is cointegration more than one, then the method of Engle-Granger can be misleading. However, in testing with Johansen Test, sometimes the results contained ambiguity, because of the different grades the Trace Statistic and Max-Eigen for showing the relationship cointegration. In addition, the weakness of the Engle-Granger and Johansen methods is the requirement that the data series should have a same degree of stationarity, namely at the level I (0) or I (1), and both methods do not take into account the dynamics of the short-term to the long-term balance. In another case, the Hassan et al. (2012) study analyzed the sustainability of the current account balance using the Autoregressive Distributed Lag (ARDL) method. The ARDL method allows the cointegration of a number of variables that have a different degree of stationarity, so it is more efficient in testing and more consistent in showing a cointegration relationship, for their long-term and short-term coefficient(s). Additionally, ARDL is well matched for a small sample. Therefore, in this study ARDL method will be used which is considered the state-of-art from the previous studies.
III. METHODOLOGY

3.1. The Persistence of the Current Account

1) Unit Root Test Augmented Dickey Fuller (ADF)

This test examines the stationary data that will be used to test the persistence of the current account. To facilitate an understanding of the root unit, consider the following model:

\[ \text{CA}_t = \text{CA}_{t-1} + \epsilon_t \]  

(8)

Change the equation (8) into the empirical econometric equation that contains the unit root as follows:

\[ \text{CA}_t = \beta_1 + \rho \text{CA}_{t-1} + \epsilon_t \]  

(9)

If \( \rho = 1 \) then the model becomes a random walk without trend. Hence, from this appears a problem with variants \( \text{CA}_t \), so that \( \text{CA}_t \) has a data “unit root” or not stationary, that is because stationary data have value \( \rho \) with the magnitude \(-1<\rho<1\). If the equation (9) above minuses \( \text{CA}_{t-1} \) on the right and the left, then the equation becomes:

\[ \Delta \text{CA}_t = \beta_1 + (\rho-1) \text{CA}_{t-1} + \epsilon_t \]  

Or it can be written by:

\[ \Delta \text{CA}_t = \beta_1 + \phi \text{CA}_{t-1} + \epsilon_t \]  

(10)

If adding the trend to the equation (10), the equation becomes as follows:

\[ \Delta \text{CA}_t = \beta_1 + \beta_2 t + \phi \text{CA}_{t-1} + \epsilon_t \]  

(11)

Equation (11) assumes that \( \epsilon_t \) is not correlated with the dependent variable. In anticipation of such a correlation, Dickey Fuller developed the test by adding a lag on the dependent variable. This test is called the Augmented Dickey Fuller (ADF), shown as follows:

\[ \Delta \text{CA}_t = \beta_1 + \beta_2 t + \phi \text{CA}_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta \text{CA}_{t-i} + \epsilon_t \]  

(12)

If translated, then the formulation is,

\[ \Delta \text{CA}_t = \beta_1 + \beta_2 t + \phi \text{CA}_{t-1} + \alpha_1 \Delta \text{CA}_{t-1} + \alpha_2 \Delta \text{CA}_{t-2} + \ldots + \alpha_m \Delta \text{CA}_{t-m} + \epsilon_t \]
If the hypothesis $\varphi = 0$ cannot be denied, then $\rho = 1$, means the data $CAt$ contains a unit root or is not stationary. But if the hypothesis can be rejected, it means that the data $CAt$ does not contain a unit root or is stationary. Acceptance or rejection of a hypothesis needs to be tested individually through the $t$ test as follows:

$$ t = \frac{\hat{\varphi}}{se(\hat{\varphi})} $$  

$\hat{\varphi}$ an estimate of the $\varphi$ and $se(\hat{\varphi})$ is the standard deviation of the estimated sampling (standard error). If the value of t-statistic is greater compared with the critical value, it can be concluded that the data does not contain a unit root or is stationary (and vice-versa).

2) Philips-Perron Test

Gujarati (2003) stated that Phillips and Perron test can anticipate the existence of serial correlation in the error term without having to add lag difference terms, as was done previously in equation (12). This test is only tightening the $t$ test to increase the power of stationarity of the data. This can be illustrated as follows:

$$ \Delta CA_t = \beta_1 + \varphi CA_{t-1} + \varepsilon_t $$  

By adding the trend to the equation (14), the equation becomes as follows:

$$ \Delta CA_t = \beta_1 + \beta_2 t + \varphi CA_{t-1} + \varepsilon_t $$  

In the ADF, coefficient $\varphi$ is tested with $t$ in equation (15), whereas in the Phillips-Perron coefficients $\varphi$ tested with the following $t$:

$$ \tilde{t} = t \left( \frac{\gamma_0}{f_0} \right)^{1/2} - \frac{T(f_0 - \gamma_0)(se(\hat{\varphi}))}{2 f_0^{1/2} s} $$

where $\gamma_0 = (T-k)s^2 / T$. $\gamma_0$ is a consistent estimate, $T$ is number of observations, $k$ the number of regressors, and $s$ is the standard error of the regression. $f_0$ an estimator of the residual spectrum at zero frequency. $f_0$ used in this study is based on Bartlett Kernel with Newey-West as its optimal bandwidth, and choice $f_0$ already available on the application Eview 6.0.
where $z_t$ is a vector of $X_t$ and $MM_t$; constants $\mu = [\mu_X, \mu_{MM}]$; and $\lambda_i$ is a matrix of parameters in the VAR lag $i$. Based on the equation (16), then a Vector Error Correction Model (VECM) can be developed as follows:

$$z_t = \mu + \alpha t + \sum_{i=1}^{p} \lambda_i z_{t-i} + \varepsilon_t$$ (16)

Following Pesaran et al. (2001), $X_t$ must be in the form of a first difference variable or I (1), whereas regressor $MM_t$ can be either level I (0) or first difference I (1), so that the model of this study is as follows:

$$z_t = \mu + \alpha t + \lambda^T z_{t-1} + \sum_{i=1}^{p-1} \gamma_i \Delta z_{t-i} + \varepsilon_t$$ (17)

Coefficient $\beta_1$ dan $\beta_2$ represents the long-term dynamics of the model, while the coefficient $\beta_3$ dan $\beta_4$ represents a short-term relationship from the model. From the equation above, we can make a hypothesis as follows:

$H_0$: $\beta_1 = 0$ dan $\beta_2 = 0$

$H_1$: $\beta_1 \neq 0$ atau $\beta_2 \neq 0$

If the hypothesis $H_0$: $\beta_1 = 0$ and $\beta_2 = 0$ cannot be denied, it means that there is no relationship between exports and imports plus in the long-term. Meanwhile, if the hypothesis can be rejected, it means that there is a long-term relationship between the variables exports and imports plus. Which hypotheses are met will depend on the final results of the F test statistics compared with the critical values shown in the table CI (iii) and CI (v) in Pesaran et
al. (2001). Referring to Pesaran and Pesaran (2001), the critical value of the lower limit (lower bound critical value) assumes that the independent variable is cointegrated on the order of zero or I(0). While the critical value of the upper limit (upper bound critical value) assumes that the independent variable is cointegrated in order one or I(1). Therefore, as the F statistic is greater than the critical value (either the lower or upper), it can be concluded that there is a long-term relationship between exports and imports plus. However, if the F statistic gained in value is between the lower and upper, then the results are inconclusive (Fuso and Magnus, 2006).

IV. RESULTS AND ANALYSIS

4.1. The Persistence of the Current Account

As was explained earlier, the persistence of the current account deficit can be illustrated by the phenomenon of random walk, where the deficit is strongly influenced by the deficit at an earlier time and a random factor / error term. This phenomenon can be captured through the stationary test Augmented Dickey Fuller (ADF) and Philip-Perron. The current account that follows the random walk pattern will generate data that are not stationary or contain a unit root. Non-stationarity is called persistence. In contrast, the current account that does not follow the pattern of a random walk or so-called mean-reverting, will produce stationary data. The stationary data has the probability to be controlled for stability at any time if exposed to shock, so it does not cause permanent or persistent impact (Lau et. Al., 2006). The ADF stationarity test and Philip-Perron test for the Indonesian current account 2004Q1-2014Q1 period is shown in the following table:

<table>
<thead>
<tr>
<th>Period</th>
<th>ADF Test With Intercept</th>
<th>ADF Test With intercept and trend</th>
<th>PP Test With intercept</th>
<th>PP Test With intercept and trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004Q1-2014Q1</td>
<td>-1.7769</td>
<td>-3.0130</td>
<td>-1.7769</td>
<td>-3.0130</td>
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<td></td>
<td>[0.3862]</td>
<td>[0.1414]</td>
<td>[0.3862]</td>
<td>[0.1414]</td>
</tr>
</tbody>
</table>

* ** *** Significant at α = 1%, 5%, dan 10%
Source: Results of Data Processing

<table>
<thead>
<tr>
<th>Period</th>
<th>ADF Test With Intercept</th>
<th>ADF Test With intercept and trend</th>
<th>PP Test With intercept</th>
<th>PP Test With intercept and trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004Q1-2007Q4</td>
<td>-3.4565**</td>
<td>-3.7928***</td>
<td>3.439**</td>
<td>3.7701**</td>
</tr>
<tr>
<td></td>
<td>[0.0254]</td>
<td>[0.0474]</td>
<td>[0.0262]</td>
<td>[0.0492]</td>
</tr>
<tr>
<td>2008Q1-2014Q1</td>
<td>-1.5642</td>
<td>-2.1743</td>
<td>-1.5445</td>
<td>-2.2194</td>
</tr>
<tr>
<td></td>
<td>[0.4848]</td>
<td>[0.4814]</td>
<td>[0.4945]</td>
<td>[0.4584]</td>
</tr>
</tbody>
</table>

* ** *** Significant at α = 1%, 5%, dan 10%
Source: Results of Data Processing
Based on the above stationary test, it can be concluded that Indonesia experienced a deficit in the current account due to global imbalances that penetrated into the domestic economy, as is evident by the patterns formed by the stationary test as follows:

<table>
<thead>
<tr>
<th>Period</th>
<th>ADF Test</th>
<th>PP Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With Intercept</td>
<td>With intercept and trend</td>
</tr>
<tr>
<td></td>
<td>[0.0130]</td>
<td>[0.0559]</td>
</tr>
<tr>
<td>2010Q1-2014Q1</td>
<td>-1.4923</td>
<td>-1.8649</td>
</tr>
<tr>
<td></td>
<td>[0.5115]</td>
<td>[0.6254]</td>
</tr>
</tbody>
</table>

* ** *** Significant at α = 1%, 5%, dan 10%
Source: Results of Data Processing

Persistency and Sustainability of Indonesia’s Current Account Deficit

The global imbalances stemmed from the crisis experienced by the United States (US) in 2008. As one of the superpowers, this crisis did not only affect the condition of the American economy, but also the economy in other countries, including Indonesia. The influence of the crisis was transmitted through two routes, namely the financial channel and the trade lanes. From the financial channel, institutions or financial institutions that have assets in insolvent companies were directly affected. In addition, due to the crisis, many foreign companies pulled their funds out of Indonesia in the stock market, due to liquidity problems in the country.
Concerning trade, the demand for American imports from Indonesia decreased because of sluggish US consumer purchasing power due to the crisis (Listiarso, 2013).

The crisis experienced by the United States happened because of their bad loans to the subprime housing that started in 2007. Ultimately, large financial institutions, credit providers, Lehman Brothers, went bankrupt in 2008, which then had a domino effect throughout the world, including Indonesia. This caused a current account deficit Indonesia in 2008. However, the current account deficit of that year was not a persistent condition due to the recovery in 2009 (Indonesia Economic Outlook, 2009).

In 2009, the American economy showed improved performance as a reflection of the effectiveness of policies for the economic rescue package of US 838 billion made by the government and the Federal Reserve. The recovery of the US economy had implications for the increasing the flow of investments into the domestic capital market and increased demand for American imports from Indonesia. Thus, the current account was back in surplus by 2009 to the third quarter of 2011 (Balance of Payments Indonesia Quarter IV, 2011).

It was not long after recovery that Indonesia once again was affected by the crisis in Europe at the end of 2011. Just as the US crisis, the transmission effect of the European crisis was felt by Indonesia through two channels, namely the trade and financial channels. For trade, the weak purchasing power of the people of Europe reduced the demand for goods, so that Indonesia’s exports also dropped. While the impact felt through the financial channel was a distrust of global investors to invest in European countries due to the large ratio of debt to GDP of these countries, which caused these global investors to look for safe places to put their funds. Indonesia was included as one of the objectives of the global investors. As for the investments, a lot were made in the form of portfolio investments. This capital inflow led to a strengthening of the rupiah, bringing many dollars into Indonesia. Strengthening of the rupiah led to a decline in exports as the domestic commodity prices were considered expensive by the overseas markets. This caused a persistent current account deficit experienced by Indonesia in the first quarter of 2014.

4.2. Sustainability of the Current Account

The initial procedure used the Autoregressive Distributed Lag (ARDL) method to determine the optimal lag using the Schwarz Information Criterion (SIC). Based on the SIC, the optimal lag that can be used in this research was the lag 1. However, Pindyck and Rubinfeld (1991) suggested to run the model with several different lags and ensure that the results obtained were not sensitive to the length of lag. Thus, in this study, four lags were used to test the sensitivity of the results. After getting the optimal lag, then the cointegration test of Autoregressive Distributed Lag (ARDL) was done. The results are as follows:
Persistency and Sustainability of Indonesia’s Current Account Deficit

Based on bound testing at level I (0) and the first difference or I (1), it was concluded that the exports and imports have no cointegration relationship. Or in other words, both these variables do not have a mutual balance in the long-term. The absence of a relationship in the long-term between exports and import plus and the current account shows Indonesia in a state of unsustainability, for both goods and services. That is, Indonesia is not able to finance imports and foreign debt interest through export activities, which creates a deficit in the current account. This unsustainable condition occurred in 3 (three) years, i.e., in the fourth quarter 2011 to the first quarter of 2014. A deeper, unsustainable condition occurred in the service sector.

Table 5
Test Autoregressive Distributed Lag

<table>
<thead>
<tr>
<th>Component</th>
<th>Lag</th>
<th>F_{III}</th>
<th>Conclusion</th>
<th>F_{IV}</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods &amp; Services</td>
<td>1*</td>
<td>2.08</td>
<td>Not Cointegrated</td>
<td>6.97</td>
<td>Inconclusive</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1.13</td>
<td>Not Cointegrated</td>
<td>5.82</td>
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</tr>
<tr>
<td></td>
<td>3</td>
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<td>2.91</td>
<td>Not Cointegrated</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1.57</td>
<td>Not Cointegrated</td>
<td>4.98</td>
<td>Not Cointegrated</td>
</tr>
<tr>
<td>Goods</td>
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<td>Not Cointegrated</td>
<td>5.92</td>
<td>Inconclusive</td>
</tr>
<tr>
<td></td>
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<td>5.45</td>
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<tr>
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<tr>
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<td>4.48</td>
<td>Not Cointegrated</td>
</tr>
<tr>
<td>Services</td>
<td>1*</td>
<td>1.06</td>
<td>Not Cointegrated</td>
<td>2.31</td>
<td>Not Cointegrated</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.58</td>
<td>Not Cointegrated</td>
<td>2.42</td>
<td>Not Cointegrated</td>
</tr>
<tr>
<td></td>
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<td>Not Cointegrated</td>
<td>1.10</td>
<td>Not Cointegrated</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1.04</td>
<td>Not Cointegrated</td>
<td>4.00</td>
<td>Not Cointegrated</td>
</tr>
</tbody>
</table>

Source: Data Processing Results
Notes: (1) the mark * is an optimal lag suggested by SIC (2) F_{III} that represents the F statistics of the model with an unrestricted intercept and no trend. F_{IV} represents the statistics of the model with an unrestricted intercept and unrestricted trend.

Figure 2. Services Deficit Balance Indonesia According to Husted period 2004Q1-2014Q1
The transport services had the largest deficit of the services sector, particularly for the transportation of goods due to high domestic oil imports, as seen in the following figure:

Bank Indonesia sought to reduce the deficit in the current account to maintain its main policy instrument, the BI Rate -- if the BI Rate is increased, then the interest rate differential of domestic and foreign interest rates would also widen. This is what will encourage foreign investors to invest in financial instruments in Indonesia, because the investors will get a higher rate of return, which would increase capital inflow. However, an increase in capital inflow would increase the supply of dollars in Indonesia. This would cause the exchange rate to strengthen / appreciate. The appreciation of the exchange rate would result in lower prices of imported goods, and exported goods abroad would become more expensive or less competitive, so it will encourage imports and reduce exports. A fall in exports leads to reduced domestic production, so that the prices of goods would increase and economic growth would slow down. This is a fact that must be faced in the future and cause vulnerability in the current account. The results of this study are consistent with the two previous researchers, namely Baharumshah, Lau & Fountas (2002) and Rahman (2011), that stated, the Indonesian current account is in unsustainable conditions. This condition is vulnerable to shocks created by the turbulence of the world economy into the domestic market (as examined by Baharumshah et al. for the Asian crisis of 1997/1998, Rahman for the American crisis of 2008, and this study for the European post-crisis, 2011).
V. CONCLUSION

This paper tested the existence and sustainability of the current account deficit in Indonesia. These results showed persistent deficits on the period 2011Q4-2014Q1, due to the influence of the European crisis that occurred in the fourth quarter of 2011. The transmission effects of the European crisis was felt by Indonesia through two channels, namely the trade and financial channels. The impact of the crisis on the trade lanes were not perceived directly, because Indonesia is not a major trading partner for the countries in Europe that were experiencing pressure. However, transmission through the financial channel was in the form of portfolio investments that caused the current account deficit bringing about the strengthening of the rupiah.

The second conclusion of this paper is that the current account in Indonesia is in an unsustainable condition. The condition is caused due to an unsustainable current account deficit which occurred in the fourth quarter of 2011 to the first quarter of 2014. The deficit was mostly contributed by the deficit in the balance of services, particularly transportation services for the amount of oil imports. The results of this study are consistent with the two previous researchers, namely Baharumshah, Lau & Fountas (2002) and Rahman (2011) which stated that the current account in Indonesia is in an unsustainable condition. This condition is vulnerable to shocks created by the turbulence of the world economy into the domestic market (as examined by Baharumshah et al. for the Asian crisis of 1997/1998, Rahman for the American crisis of 2008, and this study for the European post-crisis, 2011). Referring to the results above, it is necessary to optimize the four policy packages that have been launched by the government in August 2013, particularly a package of measures to encourage exports for addressing the current account deficit. In addition, policy for repairing the account deficit for services, especially the goods transportation services, with the provision of adequate transport facilities for import-export activities.

This study only uses the period 2004Q1 to 2014Q1 due to the limited availability of data. Therefore, it is suggested that future studies use data for a longer period in order to see the level of persistence and sustainability in the period before 2004. In addition, these conditions should be compared to other ASEAN countries.
REFERENCES


APPENDIX

The Concept of Inter-temporal Budget Constrain (Husted, 1992)

The equation of the budget constraint on period $t$ is:

$$C_t = Y_t + B_t - I_t - (1 + r_t) B_{t-1}$$

For $C_t$ is current consumption at period $t$; $Y_t$ is income, $B_t$ is net loan (borrowing - lending), $I_t$ is investment, and $(1 + r_t) B_{t-1}$ is net loan on previous.

As indicated on identity equation $Y_t = C_t + I_t + X - M$, for $X-M$ is Current Account (CA), hence $Y_t - C_t - I_t = X_t - M_t = CA_t$.

$$-B_t = Y_t - C_t - I_t - (1 + r_t) B_{t-1}$$

$$B_t = -CA_t + (1 + r_t) B_{t-1}$$

$$B_{t+1} = -CA_{t+1} + (1 + r_{t+1}) B_t$$

$$B_{t+2} = -CA_{t+2} + (1 + r_{t+2}) B_{t+1}$$

$$= -CA_{t+2} + (1 + r_{t+2}) [-CA_{t+1} + (1 + r_{t+1}) B_t]$$

$$= -CA_{t+2} - (1 + r_{t+2}) CA_{t+1} + (1 + r_{t+2}) (1 + r_{t+1}) B_t$$

$$B_t = \frac{CA_{t+1}}{(1+r_{t+1})} + \frac{CA_{t+2}}{(1+r_{t+2})(1+r_{t+1})} + \frac{B_{t+2}}{(1+r_{t+2})(1+r_{t+1})}$$

$$B_t = \frac{1}{(1 + r_{t+(i-1)})} CA_{t+(i-1)} + \frac{1}{(1 + r_{t+i})(1 + r_{t+(i-1)})} CA_{t+i}$$

$$+ \frac{1}{(1 + r_{t+n})(1 + r_{t+(n-1)})} B_{t+n}$$

If $i-1 = j$, and $n-1 = p$, then:

$$B_t = \frac{1}{(1+r_{t+j})} CA_{t+(i-1)} + \frac{1}{(1+r_{t+i})(1+r_{t+j})} CA_{t+i} + \frac{1}{(1+r_{t+n})(1+r_{t+p})} B_{t+n}$$
If $\mu_i = \prod_{j=1}^{i} \frac{1}{1+r_{t+j}}$ and $\mu_n = \prod_{p=1}^{n} \frac{1}{1+r_{t+p}}$ then:

$$B_t = \sum_{i=1}^{\infty} \mu_i \ CA_{t+i} + \sum_{n=1}^{\infty} \mu_n \ B_{t+n}$$

$$B_t = \sum_{i=1}^{\infty} \mu_i \ CA_{t+i} + \lim_{n \to \infty} \mu_n \ B_{t+n}$$

For $\lim_{n \to \infty} \mu_n \ B_{t+n} = 0$

**The Sustainability for Current Account**

$$C_t = Y_t + B_t - I_t - (1 + r) \ B_{t-1}$$

$$-B_t + (1 + r) \ B_{t-1} = Y_t - C_t - I_t$$

$$-B_t + (1 + r) \ B_{t-1} = X_t - M_t$$

$$(1 + r) \ B_{t-1} + M_t = X_t + B_t$$

With simple manipulation, we get:

$$B_{t-1} + r_t B_{t-1} + r B_{t-1} - r B_{t-1} + M_t = X_t + B_t$$

$$(1 + r) B_{t-1} + (r_t - r) B_{t-1} + M_t = X_t + B_t$$

Where $(r_t - r) B_{t-1} + M_t = Z_t$

$$Z_t - X_t + (1 + r) B_{t-1} = B_t$$

$$Z_{t+1} - X_{t+1} + (1 + r) B_t = B_{t+1}$$

$$Z_{t+1} - X_{t+1} + (1 + r) [Z_t - X_t + (1 + r) B_{t-1}] = B_{t+1}$$

$$Z_{t+1} - X_{t+1} + (1 + r) (Z_t - X_t) + (1 + r)^2 B_{t-1} = B_{t+1}$$

The above equations are equal to the followings:

$$(1+r)^{1-1} (Z_{t+1} - X_{t+1}) + (1+r)^{1-0} (Z_{t+0} - X_{t+0}) + (1+r)^{2} B_{t-1} = B_{t+1}$$

$$\sum_{j=0}^{n} (1+r)^{n-j} (Z_{t+j} - X_{t+j}) + (1+r)^{n+1} B_{t-1} = B_{t+n} ; n=1 \text{ dan } j=0$$

$$B_{t-1} = \frac{B_{t+n}}{(1+r)^{n+1}} + \sum_{j=0}^{n} \frac{(1+r)^{n-j} X_{t+j} - Z_{t+j}}{(1+r)^{n+1}}$$

$$B_{t-1} = \frac{1}{1+r^{n+1}} B_{t+n} + \sum_{j=0}^{n} (1+r)^{-j-1} X_{t+j} - Z_{t+j}$$

If $\mu = \frac{1}{(1+r)}$ then: $B_{t-1} = \mu^{n+1} B_{t+1} + \sum_{j=0}^{n} \mu^{j+1} X_{t+j} - Z_{t+j}$
Get the limit of $B_{t+1}$:

$$B_{t-1} = \lim_{n \to \infty} \mu^{n+1} B_{t+n} + \Sigma_{j=0}^{n} \mu^{j+1} X_{t+j} - Z_{t+j}$$

We can rearrange the above equations to:

$$B_{t-1} = \Sigma_{j=0}^{n} \mu^{j+1} X_{t+j} - Z_{t+j} + \lim_{n \to \infty} \mu^{n+1} B_{t+n}$$

$$= \mu (X_t - Z_t) + \mu^2 (X_{t+1} - Z_{t+1}) + \mu^3 (X_{t+2} - Z_{t+2}) + \ldots + \lim_{n \to \infty} \mu^{n+1} B_{t+n}$$

$$= \mu (X_t - Z_t) + \mu \Sigma_{j=1}^{\infty} \mu^j (\Delta X_{t+j} - \Delta Z_{t+j}) + \mu \left[ \Sigma_{j=0}^{\infty} \mu^{j+1} (X_{t+j} - Z_{t+j}) + \lim_{n \to \infty} \mu^{n+1} B_{t+n} \right]$$

$$= \mu (X_t - Z_t) + \Sigma_{j=1}^{\infty} \mu^j (\Delta X_{t+j} - \Delta Z_{t+j}) + \mu B_{t-1} - \mu \left[ \lim_{n \to \infty} \mu^{n+1} B_{t+n} \right] + \lim_{n \to \infty} \mu^{n+1} B_{t+n}$$

$$= \mu (X_t - Z_t) + \Sigma_{j=1}^{\infty} \mu^j (\Delta X_{t+j} - \Delta Z_{t+j}) + \mu B_{t-1} + (1- \mu) \lim_{n \to \infty} \mu^{n+1} B_{t+n}$$

Now we get:

$$\frac{1-\mu}{\mu} B_{t-1} = X_t - Z_t + \Sigma_{j=1}^{\infty} \mu^j (\Delta X_{t+j} - \Delta Z_{t+j}) + \frac{1-\mu}{\mu} \lim_{n \to \infty} \mu^{n+1} B_{t+n}$$

If $r = \frac{1-\mu}{\mu}$, then:

$$Z_t + r B_{t-1} = X_t + \Sigma_{j=1}^{\infty} \mu^j (\Delta X_{t+j} - \Delta Z_{t+j}) + r \lim_{n \to \infty} \mu^{n+1} B_{t+n}$$

Assume $X_t$ and $Z_t$ follows a random walk with:

$$X_t = \alpha_1 + X_{t-1} + \epsilon_{1t} \text{ and } Z_t = \alpha_2 + Z_{t-1} + \epsilon_{2t} ;$$

$$Z_t + r B_{t-1} = X_t + \Sigma_{j=1}^{\infty} \mu^j [\alpha_1 - \alpha_2 + \epsilon_{1t+j} - \epsilon_{2t+j}] + r \lim_{n \to \infty} \mu^{n+1} B_{t+n}$$

$$= X_t + \alpha_1 - \alpha_2 + \Sigma_{j=1}^{\infty} \mu^j [\epsilon_{1t+j} - \epsilon_{2t+j}] + r \lim_{n \to \infty} \mu^{n+1} B_{t+n}$$

Since: $(r_t - r) B_{t+1} + M_t = Z_t$

$$r_t B_{t-1} - r B_{t-1} + M_t + r B_{t-1} = X_t + \alpha_1 - \alpha_2 + \Sigma_{j=1}^{\infty} \mu^j [\epsilon_{1t+j} - \epsilon_{2t+j}] + r \lim_{n \to \infty} \mu^{n+1} B_{t+n}$$
Let \( \lim_{n \to \infty} \mu^{n+1} B_{t+n} = 0 \), \( \alpha = \alpha_1 - \alpha_2 \) and \( \varepsilon_t = \sum_{j=1}^{\infty} \mu^j [\varepsilon_{t+j} - \varepsilon_{t+j}] \), and \( MM_t = r_t B_{t-1} + M_t \),

then:

\[
X_t = \alpha + MM_t + \varepsilon_t
\]