THE CAUSAL RELATIONSHIP BETWEEN INTERNATIONAL RESERVES AND TOURIST ARRIVALS: THE CASE IN INDONESIA

Siti Nur Iraeni

Haryo Kuncoro

Karuniana Dianta A Sebayang

ABSTRACT

In the last decade, tourism has emerged as one of the major industries in Indonesia. The tourism industry contribute US$ 8,6 billion dolar of international reserves in 2011 indicated by 7,64 million of tourist arrivals (National Tourism Satellite, Ministry of Tourism and Economic). The objective of this paper is to investigate the relationship of international reserves and tourist arrivals in Indonesia. To test the hypotheses, we use a monthly time series data in the case of Indonesia over the period 2004 until 2016. We use a Vector Autoregressive model (VAR) to analyze the dynamic interaction between international reserves and tourist arrivals. Based on the cyclical component generated by Hodrick-Presscott (HP) filtering procedure, we found acyclical relationship between international reserves and tourist arrivals. Then, using Granger causality test, we obtained that causality running from international reserves to tourist arrivals. Those imply that in the long term, tourist arrivals can stabilize international reserves and could be an alternative tool to maintain international reserves.

Keywords: Tourist arrivals; International Reserves; Cyclicality

I. Introduction

In the last three decades, tourism has expanded and diversified into one of the largest sectors of the economy with the fastest growth in the world. Based on the United Nations World Tourism Organization (UNWTO) Highlights, since the last fourth decades tourism has experienced diversification and expansion with the fastest growth in the world. Foreign tourist arrivals show continuous growth from 1980 with 277 million tourist arrivals to 435 million tourist arrivals in 1990, then in 2000 with 674 million tourist arrivals to 1.235 million tourist arrivals in 2016. Based this fact, UNWTO expected the amount of foreign tourist arrivals worldwide is increasing on average of 3,3 percent per annum in the period 2010 – 2030, so that in 2030 tourist arrivals will achieve a total amount of 1.8 billion people (UNWTO, 2017).

The rapid growth of foreign tourist arrivals also occurred within the scope of tourism in the region of Asia Pacific. In 2004 tourist arrivals in the region of Asia Pacific was able to contribute 20 percent of the world tourist arrivals or equivalent to 152.5 million tourist arrivals. However, Southeast Asia experienced the highest growth, with more than 30 percent followed by Far East Asia (29,6 percent), South Asia (16,7 percent) and Oceania (12,5 percent) (Nirwandar, 2014).

This condition is not different from Indonesia. In the last decade, tourism has emerged as one of the major industries in Indonesia. The tourism sector is currently the most reliable source of state revenues after petroleum and natural gas sectors. In this regard, the development effort of the tourism sector continues to be improved. As stated in the GBHN, developing and utilizing national tourism resources and its potentials is a reliable activity to increase foreign exchange earnings, expand the business state and employment opportunities especially for local people, encourage regional development, and introduce the nation's cultural landscape. According to the World Trade Organization (WTO), the distribution of international tourist markets, particularly in the Asia Pacific region, including Indonesia, becomes a tourist destination that will have the highest growth rate compared to other countries in Asia Pacific.

The number of tourist arrivals has grown almost thrice in the past 10 years. Recorded in 2006 the number of foreign tourist arrivals showed the number of 4.871.351 foreign tourists from all entrances in Indonesia. In 2016, the number of foreign tourist arrivals increased to as many as 11.519.275 foreign tourists (Ministry of Tourism, 2016). Based on these facts it can be projected that the arrival of foreign tourists to Indonesia on average grew by 9 - 10 percent per year. In the same year, tourism was also absorbed 12 million workforces or 10,6 percent of the national workforces (Ministry of Tourism, 2015). Based on these data the tourism sector in 2019 is projected to contribute 15 percent to gross domestic product, 280 trillion of foreign exchange countries and able to absorb 13 million workers (Fitriani, 2017). Central Bureau of Statistics (BPS) recorded the growth of tourism Indonesia reached 5.16% exceeds the global tourism growth of 4%. The average expenditure of tourist arrival is about US $ 1,130 per visit. Meanwhile, in Indonesia the average expenditure of tourist arrival US $ 147.22 per day with the average length of stay 5 days. On the total visits of tourist arrival, the country is estimated to receive foreign exchange of about USD 9.1 billion.

Associated with the rapid growth in international tourism above, the influx of tourist arrivals remains an important issue for researchers and policymakers around the world. From the researcher's perspective, the rapid growth in tourist arrivals is attractive because tourism tends to be relatively stable and often counter-cyclical as an external funding source for developing countries. From the policy-maker's perspective, tourist arrivals are a large flow of financial resources especially for developing countries.

As a result, the tourism sector becomes a more reliable macroeconomic instrument that is within the control of policy makers. Therefore, international tourism acts as a significant macroeconomic stabilization in developing countries that provides ongoing support to the balance of payments and reduces reliance on external assistance.

Various studies have emerged that are devoted to analyzing the fluctuations of tourism inflows in relation to the balance of payments (Belloumi, 2010; Lorde, Lowe, and Francis, 2010; Malik et al., 2010; Cheng, Kim, and Thompson, 2013), Geyikdagi and Geyikdagi (1997) argue that tourism plays a role to stabilize the flow of foreign exchange earnings. There appears to be no clear consensus between the research results on this issue.

Based on these facts, this study will try to investigate further how dynamic interaction between cyclical components of tourist arrivals and international reserves with the study case in Indonesia, and test whether tourist arrivals can be a stabilize to the international reserves in the long-term. This study is structured as follows. Section 2 discusses the literature review and empirical research evidence. The methodology and data are shown in Section 3. Section 4 presents the results of empirical tests. And the last part gives the research conclusions.

II. Literature Review

The theoretical definition of tourism was firstly formalized by UNWTO, which means tourism is a phenomenon of social, cultural, and economic that required the shifting of people either to come or go from their normal environment as individuals or business purposes. Then, tourism has implications for the economic, natural environment, and local people at the country's destination, also the tourists themselves. The various impacts of required production factors to produce goods and services by visitors and stakeholders involved in the tourism sector leads to the need for an overall approach in the development of tourist destinations, tourism management and monitoring of tourism activities (UNWTO, 2007).

The tourist arrivals are contributing to the number of foreign exchange owned by a country. With the growth of foreign tourist arrivals so will increase late of stay and able to increase the spending of foreign tourists where they lived. When the number of tourist who spend foreign earnings within the country the higher will enable the number of foreign exchange. This is in line with the opinions of Asikha Aktar dkk (2014), who say that the success of tourism is measured by the increasing number of tourist arrival and foreign exchange.

The development of the balance of payments theory begins with the trade balance concept of the classical school, the first one represented by Thomas Mun. Thomas Mun, one of the leaders of Merkantilis, argued that one of the principles of the trade balance is to be a surplus so that the flow of gold comes in. Thus the state's wealth becomes increasing. David Hume denies the above income by stating that the government does not need to regulate international trade. Because automatically with the flow mechanism of gold, tbhe international trade balance will be balanced again. Furthermore, the classical economist, led by Adam Smith, followed the idea of David Hume. The balance of payments will automatically achieve balance through market mechanisms. Unlike the classics, Keynes does not belie ve there is a market mechanism. Keynes argues that the balance of payments does not automatically reach a balance but requires government intervention. This Keynesian thought, then developed by later economists who focused on balance of payments theory (Nopirin, 1998).

Basically in the balance of payments theory can be distinguished approach based on: Elasticity Approach, Absorption Approach, and policy mix of monetary and fiscal (policy mix) and Monetary approach (Nopirin, 1998).

Djiwandono (1990) states that the balance of payments imbalance requires adjustments concerning the use of foreign exchange. In relation to this, the monetary approach focuses on changes in international reserves, and defines the balance of payments as a net change of international reserves from central banks.

Furthermore, neoclassical states, the flow of international tourists depends on consumer income, the relative price of goods / services in the destination country compared with the country of origin, the prices of goods / services related (substitution and complementary), transportation costs, distance, tourism in the country neighbors, qualitative factors in the country of origin or destination, and other demand shifter (Rosello, Aguilo, and Riera, 2005). International reserves are defined as the total sum of foreign currency reserves, securities, currencies and deposits, reserve positions in the IMF, Special Drawing Rights, monetary gold and other reserve assets. Validation of causal relationships between the tourist arrival with international reserves also becomes a very important thing because it can see which are the tools and targets and provide useful implications for decision-making in order to determine the relevant policy.

Several studies are discussing the issue between the tourist arrival and international reserves. For example, Novi Dwi Purwanti, Retno Mustika Dewi (2014: 2) who concluded that 2010 the number of tourist arrivals will bring acceptance for the area he visited. For tourist arrival who come from abroad will bring in international reserves. Next, Sahat Marulitua Togatorop and Nyoman Djinar Setiawina (2017), evidence from Indonesia period 1994-2013 using multiple linear regression equipped with classic assumption test and standardized coefficient beta method, the tourist arrivals have a positive impact to international reserves in the period 1994-2013.

Later on, Sultan Ahmad, Sameena Bano and Dilshad Ahmad Ansari (2016) for India case in the period 2000-2014, the result shows that the foreign tourist arrivals become important part of India economy condition, and foreign exchange reserves contribute to increase of tourist arrivals. Furthermore, Kadir and Karim (2009) estimated the demand of US and UK tourists to Malaysia with time series regression and found that price increases reduced the interest of tourist arrival for a holiday to

Malaysia. Price travel to other countries (Singapore, Thailand and Philippines) significantly affect the decision of the tourists for a vacation to Malaysia. The financial crisis in Asia reduced the interest of tourist arrival visiting Malaysia. This means that when economic conditions are less good will discourage tourists to come to the country.

Some notes derived by those studies are: first, research is focused on to regional income that become the central purpose of tourist arrivals like balik, lombok, etc. Second, yet there are the direction of casuality clear between the tourist arrivals and international reserves.

III. Methodology

The brief literature review above shows the potential of some interesting hypotheses about the possible direct link between tourist arrivals and international reserves. This paper is an attempt to investigate whether tourism in the country contributes to the stabilization of the economy especially in international reserves with a focus on Indonesia's monthly data. Given the arrival of international monthly tourism having cyclical patterns related to economic conditions in the country of visitors, this study would prefer to take into account cyclical rather than volatility.

Short cycle fluctuations run in waves between 1 and 12 years. This is generally covered in time series data aside from long-term trends. The aggregate economic and financial time series data fluctuates cycles that are generally different in terms of synchronicity, persistence, and duration (Eeckels, Filis, and Leon, 2006). As noted by Chang and McAleer (2012) the choice of appropriate data frequency or spatial aggregation will lead to strong findings as they are generally independent of the level of aggregation used.

To identify data that follows the business cycle and analyze the mutual movement between the set of variables, each data series must be eliminated. The de-trending process allows for the separation of fluctuations (cyclic components) around the trend of each data series, and allows also to examine the statistical properties of co-movement with other variables to be examined in terms of their respective trends (Lucas 1977; Kydland and Prescott, 1990).

In line with the above definition, the cyclical component of all variables, tc is seasonally adjusted from the yt series $\in$ {TA, RESV} where TA is a tourist flow, RESV is an international reserve (all in natural logarithms). The de-trending process of each y_t series to separate its trend components (growth), τ_t, from cyclic components, ct:

$$Ct = yt - \Box t \qquad (1)$$

The de-trending approach that we adopt to estimate the unknown trend y_t of each series is the Hodrick-Prescott (HP) Filter. This method is widely used in macroeconomics to get the long-term trend trend component forecasts of series data series. This method was first used (circulated in the early 1980s and published in 1997) by Hodrick and Prescott to analyze the postwar cycles of US business. Technically, the HP filter method is a two-sided linear filter that calculates the smoothing series s of y by minimizing the variance y about s, given a certain value that limits the difference of the second degree s. That is, the HP filter chooses to minimize:

$$\sum_{t=1}^{T} (y_t - s_t)^2 + \lambda \sum_{t=2}^{T-1} \big((s_{t+1} - s_t) - (s_t - s_{t-1})\big)^2 \qquad (2)$$

The series σ trend controled by $\Box$ parameter. The bigger the λ, the smoother the σ series. If λ = ∞ *s* series will approach linear trend. The λ value in the Eviews program is set at 14,400 data for monthly data.

The remains cyclical component (ct) should be stationary with an average of zero. To check it, a standard unit root test will be applied. The stationary data series represents an international reserve component to identify the characteristics of travelers' cycles by calculating the contemporary and asynchronous cross-correlation between them. Contemporary positive (negative) correlations are taken to imply that travelers are pro-cyclical (counter-cyclical) with international reserves.

In general, variables are said to be counter-cyclical with cyclical component movement (read: international reserves), if contemporary cross correlation (cross correlation at time t = 0) is positive (negative) in statistically significant sense (Kydland and Prescott, 1990; Pallage and Robe, 2001; Alper, 2002). The pro-cyclicality (counter-cyclicality) of tourists in this context refers to the trend of tourism acceptance to move above the trend, each time the corresponding international reserves is above (below) each trend. In the absence of such a trend, tourism and international resserves said to be a-cycles.

In calculated asynchronous correlations between the components of the cycle of relevant variables and tourism, the latter variables are diverted by one to four quarters or one to twelve months in both directions. The resulting cross-correlation coefficients allow to identify possible phase shifts by looking at the beginning or end of the highest correlations that appear compared to the contemporary period (Pallage and Robe, 2001). If the largest correlation (in absolute value) is significant between a particular series and the real output occurs when the series is shifted backward (forward), then the variable is said to cycle forward (backwards). If, for example, the largest significant correlation coefficient between travelers and a pro-cyclical series is obtained if the series is shifted backward (forwards) as much as p periods, then the series is understood to have a tendency to reach its peak around p period before (after) the peak of the series of tourism. In such cases, the series is said to lead (or follow) the tourism cycle.

To evaluate the statistical significance of the calculated correlation coefficient, the null hypothesis is that the unknown population correlation, ρ, equal to zero is tested against the two-sided alternate ρ ≠ 0, using the correlation coefficient, r, calculated from the relevant sample. In deciding whether to reject or not reject the null hypothesis, the critical t-value is determined by:

$$t - test = r.\sqrt{\frac{n-2}{1-r^2}}$$ (3)

Then, the amount of observations on each sample is *n*. Afterwards, to reject the null hypothesis with the provision that the coefficient of correlation should falls outside the boundary range [-2 / √ (n + 2), +2 / √ (n + 2)] i.e will be considered statistically significant.

Building a relationship between the cycle components of a data series provides a partial idea of cyclical behavior. First, simple correlation of bi-variety statistics can eliminate the possibility of controlling other additional variables. Second, the correlation does not provide information about causality between variables. Because researchers are interested in researching the dynamic interaction between tourism, and international reserves, researchers will use an autoregressive vector model (VAR) for empirical analysis.

The VAR model has certain advantages that in the VAR model, the dependent variable is expressed as a self-function and the lag values of each and all variables are allowed to influence each other (Enders, 2004). This research takes the general form of VAR for the p-order model as follows:

$$y_t = \alpha a + \alpha a_p \Sigma y_{t-p} + \beta a_p \Sigma x_{t-p} + \varepsilon a_t$$ (4a)
$$x_t = \alpha b + \alpha b_p \Sigma x_{t-p} + \beta b_p \Sigma y_{t-p} + \varepsilon b_t$$ (4b)

Based on (4), y and x are each performed for travelers and international reserves to respond to the impact of business cycles in the countries visited.

Measurement of the response of each variable after the shock to other variables in the system is to estimate the variance and impulse response decomposition. This method is an alternative method for analyzing mutual movement among variables.

The assumptions held in the VAR method are first that the innovations in the contemporary tourist revenue cycle component of the country are correlated with other variable innovations. This means that the shocks are exogenous. Second, tourists are related to the business cycle of destination countries and international reserves. Third, the flow of tourists is a function of the business cycle of the destination country. This argument is consistent with evidence that tourism responds to changing economic conditions in the destination country. Regarding international reserves, it is assumed that economic conditions affect both. Finally, the flow of tourist arrival determines international reserves.

IV. Experiments

This study uses several indicators as follows: International reserves are presented in millions of US dollars in current prices. The sample periods selected for this study were from 2004 (M1) through 2012 (M12) using monthly data with a total of each observation totaling 36 and 108 sample points. The data comes from the electronic payment balance published electronically by the Central Bank of Indonesia (www.bi.go.id), the Central Bureau of Statistics (www.bps.go.id), and the Ministry of Tourism (www.kemenpar.go.id). Then the calculate the results, we used econometric program Eviews 8.

Table 1 presents the basic statistics that include the mean, median, and extreme values (maximum and minimum) for the variables of interest. The median value is quite close to the average of each, the mean value of TA is greater than its median value, and otherwise the median IR is greater than its mean value. The median proximity to the initial average values indicates that these variables are normally distributed.

To view normally distributed data or not, it is located in Jarque-Bera which can be seen based on its probability value. The IR and TA variables have values smaller than 0.05 (the probability critical value). Thus, data is normally distributed. The symmetric distribution of the two variables is confirmed by the moderate slope value. Skewness measures a symmetrical or normal distribution whose value is estimated to be zero. The slope value for the low (IR) variable of 0 indicates that the series is skewed to the left. In contrast, the slope value for (TA) greater than 0 indicates that the corresponding series is tilted to the right; tail (back) over the thicker distribution of the lower tail.

In addition, to measure peakedness (flat peak) distribution flatness using kurtosis with an expected value of more than 3.0. However, in both variables (IR) and (TA) both yield values less than 3.0. This implies that the distribution of data tiles is lower than the normal curve or called platikurtik, which means the data spreads flatly in its class.

Tabel 1. Descriptive Statistic of Tourist Arrivals and International Reserves

	TA	IR
Mean	607268.7	77363.33
Median	593828.5	78688.41

Maximum	1035612.	124637.8
Minimum	326796.0	30318.31
Std. Dev.	166443.0	31190.40
Skewness	0.4114	-0.1091
Kurtosis	2.2403	1.3424
Jarque-Bera	8.1525	18.1687
Probability	0.0169	0.0011
Sum	94733911	12068680
Sum Sq. Dev.	4.29E+12	1.51E+11
Observations	156	156

Figure 1 shows the filter results using the Hodrick-Prescott (HP) Filter method with statistical filtering technique that uses the growing trend of tourist arrival to Indonesia. It seems tourist arrivals experience a decrease below the trend in early 2004 which is still due in the post-crisis recovery period of 1998, but entering the middle of 2004 until the end of 2008, foreign tourist arrivals rose to 6.323.730 people or grew 1,4 percent (Ministry of Tourism, 2015). It should be noted that in the mid-2008 until mid-2009 the tourist arrival shows sharply decreased. It could happen considered in that year there was a global financial crisis which made the economy in some countries became sluggish and seems affects the declined number of foreign tourist arrivals to Indonesia. Furthermore, tourist arrivals continued to increase from 2012 to 2016. In 2016, it was also recorded that there were as many as 11.519.275 foreign tourists who came to Indonesia (Ministry of Tourism, 2016). As overall, it can be concluded that the fluctuation of foreign tourist arrivals to Indonesia is quite stable and tend to increase year to year.

Figure 1. The Fluctuation of Tourist Arrivals

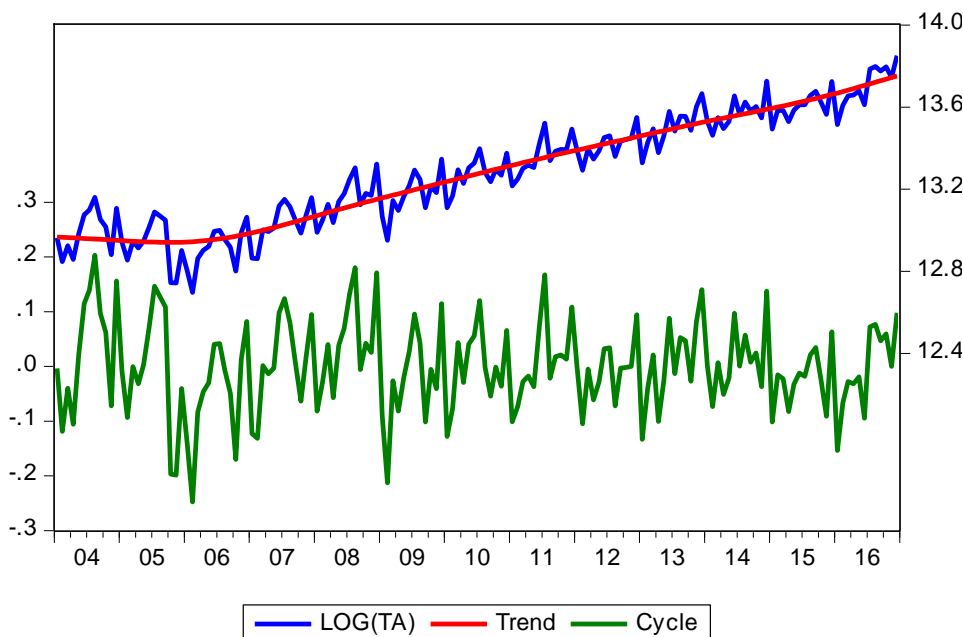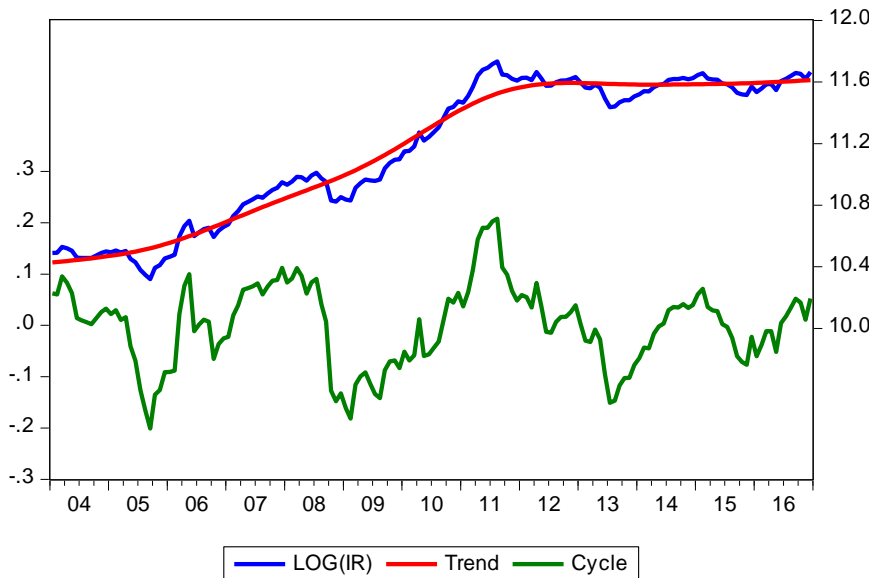Hodrick-Prescott Filter (lambda=14400)

Figure 2 shows the trend of Indonesia's international reserves that fluctuated from 2004 to 2016. However, compared to Figure 1, the trend in Indonesia's international reserves did not show the sharp fluctuation movement as seen in the growth trend of foreign tourist arrivals. In 2005 Indonesia's international reserves experienced a negative growth of minus 4.39 percent or amounted to US $ 34,734 million. This is due to the fact that the high world oil price that had penetrated the US $ 68 / barrel level, the impact on the swelling of oil imports. The need for foreign exchange to pay off foreign debt is also quite large. After that increase up to 2007.

Meanwhile, the largest decrease in international reserves occurred in 2008 of US $ 51,639 million with growth of minus 9.28 percent. The decline was triggered by the global financial crisis that plagued Indonesia's trading partners, which led to a decrease in the performance of the balance of payments. The declining performance of the balance of payments caused international reserves in Indonesia to decline in that year.

After that in 2009 Indonesia's international reserves began to develop until 2012. The largest increase in international reserves occurred in 2010 amounted to US $ 96,207 million with 45.54 percent growth. The decline in foreign reserves in Indonesia occurred again in 2012 to 2013 from US $ 112,781 million to US $ 105,149 million. This is due to the government's foreign debt repayment and the payment of import demand in that year, especially oil and gas imports. After that, Indonesia's international
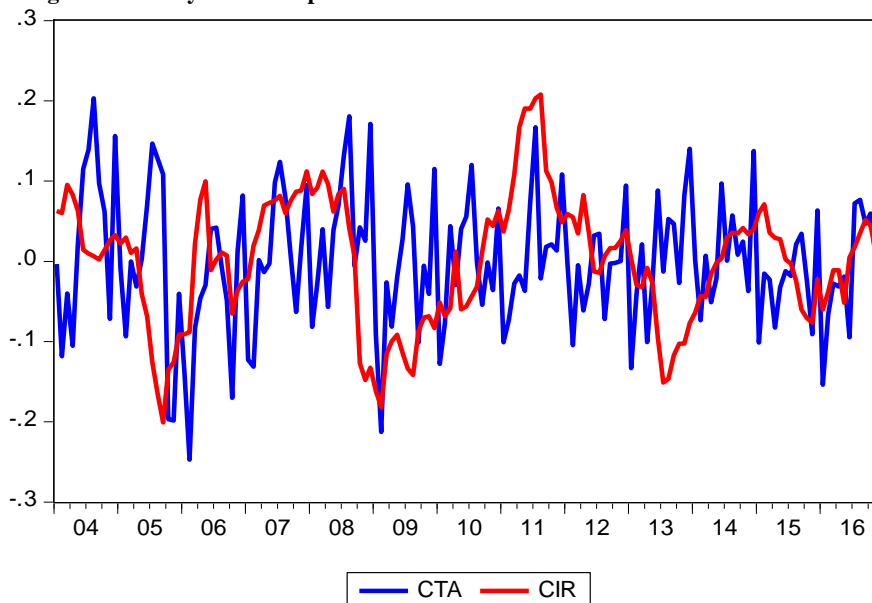
reserves will again develop in 2014. Then, by the end of 2014 to 2015, Indonesia's international reserves declined from US $ 111,159 million to US $ 105,103 million, due to the weakening of the rupiah. And furthermore the position of Indonesia's foreign reserves until 2016 continues to grow.

Figure 2. The Fluctuation of International Reserves

Hodrick-Prescott Filter (lambda=14400)

Furthermore, we focus on the cyclical component of two variables interest. Based on Figure 3 shows that de-trending of Cyclical Components of Tourist Arrivals (CTA) and International Reserves (CIR) move enharmonically. Suppose we see in early 2005, when the arrival of tourist arrival to appreciate, the international reserves show the opposite situation. Different conditions appear in mid-2011, when international reserves appreciate, and tourist arrivals also show an increase, although not as sharp as the increase in international reserves. Overall, we can expect that there is an uncertain relationship between the arrivals of tourist arrival with international reserves, there is a time to move in tune, there is a time to move in reverse.

Figure 3. The Cyclical Components of Tourist Arrivals and International Reserves

Based on table 2 illustrated below, shows the relationship between tourist arrivals and international reserves is acyclic. This is proven by t-test smaller than t-table, at some time the data is in tandem or pro, but sometimes the data is opposite or counter, causing an uncertain direction.

Table 2 : Coefficient of Correlation Variabel CTA and CIR

	CTA	CIR
CTA	1.000000	0.088292 (1.095646)
CIR	0.088292 (1.095646)	1.000000

(figure in the brackets is t-test)

Before performing the VAR test, we must determine the length of the optimum lag first. Determination of length of lag to know duration of one variable response period to its past variable and to other endogenous variable. While the lead is useful to see how long the response of a variable to the variable in the future. However, because in the VAR calculation this study uses lag, then that will be used to analyze in the next VAR method is the optimum lag. Based on Table 3, it shows lag 3 as the optimum lag marked with the symbol (*) and confirmed by t-count with alpha significance 0.05. This means the arrival of tourist arrival today is correlated with the arrival of tourist arrival in the previous 3 months. Hence with that for the next VAR estimate, this study uses lag 3.

Table 3. Lag Optimum

I	Lag (i-)	Lead (i+)
0	0.0883	0.0883***
1	0.1570	0.0049
2	0.2460	-0.0785
3	0.2953***	-0.0835
4	0.2585	-0.0249
5	0.1961	-0.0661
6	0.1381	-0.0721
7	0.1254	-0.0503
8	0.0768	-0.0133
9	-0.0319	0.0082
10	-0.0715	-0.0055
11	-0.0468	-0.0838
12	-0.0228	-0.0853

To know how the causal relationship of tourist arrivals and international reserves, tested causality by using granger causality test. The test of causality is aimed to see which of the tools and which are the target.

Based on the causality test in table 4, it shows that the international reserves become the cause or tool to stimulate the arrival of tourist arrival. This is confirmed by a smaller F-Statistic Probability value than the alpha level of 0.05 (0.0114 <0.05). Which means international reserves affect the arrival of tourist arrival. When international reserves are safe then tourist arrival will come, not the arrival of tourist arrival who make international reserves secure. This is in line with a study conducted by Mosh Ashika Aktar et al (2014) which says the success of tourism is measured by the increasing number of tourist arrivals and foreign exchange earnings.

Table 4. Granger Causality Test between Cyclical Components of TA and IR

Null Hypothesis:	Obs	F-Statistic	Prob.
CTA does not Granger Cause CIR	153	2.02024	0.1136
CIR does not Granger Casue CTA		3.81720	0.0114

Next to look at the behavior of a variable in response to a shock (shock) using the Impulse Response Function. In this study, Impulse Response analysis is used to see the response of changes in international reserves to shock changes in foreign tourist arrivals and international reserves shown in Figure 4.
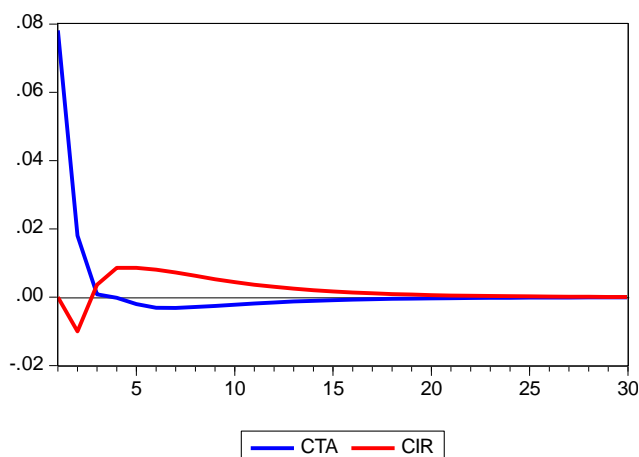
From the test, it can be seen that the decreasing international reserves make foreign tourist arrivals decrease until reaching the peak in the second month, but after that the foreign exchange reserve creeps up and meets the arrival of tourist arrival at the zero point (convergent) in the third month. The increase of international reserves triggered the return of tourist arrival arriving until the two variables met at zero point.

Furthermore, when the reserve position is at the peak of the increase in the second month, the arrival of tourist arrival actually decreased, this is caused by other variables that affect the arrival of tourist arrival. When international reserves depreciate, foreign tourist arrivals appreciate until they meet at zero.
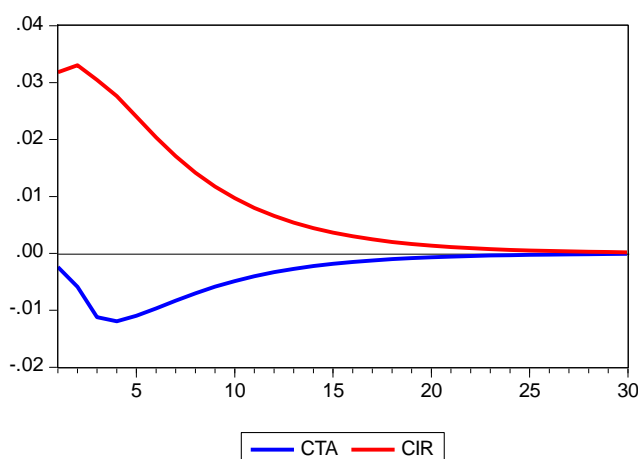
Thus, function impulse response prove that the tourist arrivals stimulating increasing international reserves. This phenomenon is very clearly visible because response of the tourist arrivals more quickly than international reserves response against the tourist arrivals.

Figure 4. Impulse Response Function

Response of CTA to Cholesky
One S.D. Innovations

Response of CIR to Cholesky
One S.D. Innovations

Conclusion

Based on the results of the above discussion, can be drawn some conclusions in this study. Fisrt, from cyclical component generated by Hodrick-Presscott (HP) filtering procedure, we found tourist arrivals is acyclical against to international reserves, component cyclical of tourist arrivals and international reserves move irregularly and it also this is proven by t-test smaller than t-table at coefficient of correlation. Next, using the test of Granger Causality, we found that causality running from international reserves to tourist arrivals, it's only valid for short-term, which means that tourists will comes when international reserves safe, that was IMF (2012) said that foreign exchange reserves is a reflection of high or low risk a country (in line with Sultan, Sameena, and Dilshad: 2016). But in the long term, tourist arrivals are able to maintain the stabilization of international reserves, this matters in line with Asikha Aktar, dkk (2016) that there is a long-term relationship between tourist arrivals and international reserves. By looking at the results of the test causalities which shows international reserves affect the tourist arrival. The government should be able to increase the national income in order to increase international reserves with various policies in terms of fiscal and monetary. In addition, to establish adequate international reserves, the government must maintain the stability of the exchange rate in order not to fluctuate too much. So that with good economic conditions will stimulate the tourist arrival to Indonesia.

References

[1]   **Asikha, A, Nazmus, and Sanjoy. (2014). Relationship between Tourist Arrival and Foreign Exchange Earnings: The Case for Bangladesh,** *Mediterranean Journal of Social Sciences MCSER Publisihing*, **Rome-Italy, Vol. 5**

[2]   Enders, W. (2004) *Applied Econometric Time Series*, Second edition, New York: John Wiley & Son.

[3]   Fitriani, Eva. (2017). 2019: Pariwisata Sumbang PDB Terbesar. *Investor Dialy Indonesia.* *http://id.beritasatu.com/home/2019-pariwisata-sumbang-pdb-terbesar/162269* . (Accessed Dec 20th 2017).

[4]   Geyikdagi, Y.G. and N.V. Geyikdagi. (1997). Tourism as a Stabilizer of Foreign Receipts: An Application to the Mediterranean Countries, *Economia Internazionale*, 50(4): 511-17.

[5]   Hodrick, R.J. and E.C. Prescott. (1997). Post-war U.S. Business Cycles: An Empirical Investigation, *Journal of Money, Credit and Banking*, 29: 1-16.

[6]   Johansen, S. (1988). Statistical Analysis of Cointegrating Vectors, *Journal of Economic Dynamics and Control*, 12: 231–54.

[7]   Johansen, S. (1991). Estimation and Hypothesis testing of Cointegrating Vectors in Gaussian Vector Autoregressive Models, *Econometrica*, 59: 1551–80.

[8]   Kuncoro, H. (1997). Reorientation of Indonesian Economic Development Strategy toward Globalization Era, *Buletin Ekonomi*, 1(2): 28-34.

[9]   Kuncoro, H. (2013). Are Worker Remittances Sustainable Inflows?, the Case of Indonesia, *Indonesian Journal of Economy and Business*", forthcoming.

[10]   Kydland, F.E. and E. Prescott. (1990). Business Cycles, Real Facts, and a Monetary Myth, *Federal Reserve Bank of Minneapolis Quarterly Review*, 14(2): 3-18.

[11] Lucas, R.E. (1977). Understanding Business Cycles, in K. Brunner and A.H. Meltzer, (eds.), *Stabilization of the Domestic and International Economy*, Amsterdam: North Holland.

[12] Ministry of Tourism. (2015). *Laporan Akuntabilitas Kinerja Kementerian Pariwisata Tahun 2015.* Jakarta: Kementerian Pariwisata, 52-54.

[13]   Ministry of Tourism. (2016). *Data Kunjungan Wisatawan Mancanegara Bulan Desember Tahun 2016.* Viewed 15092017, www.kemenpar.go.id.

[14]   Neupane H.S., C.L. Shrestha, and T.P. Upadhyaya. (2012). Modeling Monthly International Tourist Arrivals and Its Risk in Nepal, *NRB Economic Review*, 4(1): 28-47.

[15]   Nirwandar,   Sapta.   *Pembangunan   Sektor   Pariwisata   di   Era   Otonomi*   Daerah (online)**.**www.kemepar.go.id/usefiles/file/440__1257PEMBANGUNANSEKTORPARIWISATA1.pdf   accessed   on Sept 22th 2017.

[16]   Pallage, S. and M.A. Robe. (2001). Foreign Aid and the Business Cycle, *Review of International Economics*, 9(4): 641-72.

[17] Rizieq, R. (2006). Analysis the factors that influence international reserves Indonesia, *Jurnal Equilibirum*

[18] Sultan, A, Sameena, and Dilshad. (2016). Tourism: a Prospective Source of Forex, *EPRA International Journal of Economic and Business Review Vol. 4*

[19]   Sahat, M.T, and Nyoman, D.S. The Influence of Foreign Debt, Export, and Foreign Tourist Arrivals to Foreign Exchange Reserves, *E-Journal Building Economic Udayana University*

[20]   Salman, A.K.. (2003). Estimating Tourism Demand through Cointegration Analysis: Swedish Data, *Current Issues in Tourism*: 323-38.

[21] Smeral, E. (2004). Long-term Forecasts for International Tourism, *Tourism Economics*, 10: 145-66.

[22]   Song, H. and G. Li. (2008). Tourism Demand Modeling and Forecasting, *Tourism Research. School of Management, University of Surrey,* http://epubs.surrey.ac.uk/1085/1/fulltext.pdf.

[23]   Togatorop, S.M and Nyoman D.S. The influence of foreign debt, net exports and expenditure foreign tourist to international reserves in Indonesia of 2003-2009, *E-Jurnal EP Unud*, 6 [6]: 1004-1032

[24]   UNWTO. (2007). *UNWTO Annual Report 2007.* UNWTO: Madrid.

[25]   UNWTO. (2012). *UNWTO Tourism Highlights 2012 Edition***, UNWTO, Madrid.**

[26]   UNWTO. (2015). *UNWTO Tourism Highlights 2015 Edition***. UNWTO: Madrid.**

[27]   UNWTO. (2017). *UNWTO Tourism Highlights 2017 Edition***. UNWTO: Madrid.**

[28]   Werthner, H. and S. Klein. (1999). ICT and the Changing Landscape of Global Tourism Distribution, *Electronic Markets*, 9(4): 256–62.

[29]   Witt, S.F. and H. Song. (2000). Forecasting Future Tourism Flows, in S. Medlik and A. Lockwood, (eds), *Tourism and Hospitality in the 21st Century*, Butterworth-Heinemann, Oxford: 106-18.

[30] Wulandari, Y. (2012). Determinants of Foreign Tourist Arrivals in Indonesia, *Unpublished Graduate Theses*, Gadjah Mada University, Yogyakarta.

Siti Nur Iraeni
Faculty of Economics
State University of Jakarta, Jakarta, Indonesia
Email: sniraeni@gmail.com

Haryo Kuncoro
Faculty of Economics
State University of Jakarta, Jakarta, Indonesia
Email: har_kun@feunj.ac.id

Karuniana Dianta A Sebayang
Faculty of Economics
State University of Jakarta, Jakarta, Indonesia
Email: Dianta.sebayang@gmail.com,