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The Influence of Central Bank Interest Rate, Real Exchange Rate, Economic Growth and Foreign Direct Investment on Current Account in G7 Countries

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ABSTRACT
This study aims to determine and analyze the effect of the central bank's real interest rate on the G7 current account balance, the effect of the real exchange rate on the G7 current account balance, the effect of the output value on the G7 current account balance, the influence of the central bank's real interest rate, the exchange rate real and joint output to the G7 current account balance. The types and sources of data that the authors use in this study are based on the nature of the data used is quantitative data because the data obtained are in the form of figures that represent the central bank's real interest rates, exchange rates, outputs and the current account balance of the G7 countries, also based on time Data collected is time series data that is data collected from time to time from 2008-2017, and based on how to obtain it, the data used in this study are data sourced from the World Bank and OECD. Thus the data used is classified as secondary data. Based on the results of the processed data by panel regression analysis, a discussion of the results of research between the real exchange rate, interest rates, economic growth and foreign direct investment on the current account balance in the G-7 countries together or partially obtained the following conclusions: Real exchange rates, interest rates, economic growth and foreign direct investment together have a significant effect on $\alpha = 0.05$ on the current account balance in G-7 countries. The real exchange rate has a negative and not significant effect at $\alpha = 0.05$ on the current account balance in G-7 countries. Interest rates have a negative and significant effect at $\alpha = 0.05$ on the current account balance in G-7 countries. Economic growth has a positive and not significant effect on $\alpha = 0.05$ on the G-7 current account balance. Foreign direct investment has a positive and not significant effect at $\alpha = 0.05$ on the G-7 current account balance.

Keywords: *central bank interest rate, Real exchange rate and economic growth, current account*

1. INTRODUCTION

Globalization in the economic field has led to the development of economic systems towards more openness between countries. The open economy has a financial impact, which is to divert international trade between countries in the world. International trade can have a significant influence on a country's economy. In the current globalization and free trade, countries cannot be separated from relations with other countries. The existence of interconnectedness and dependence and competition between countries makes a country unable to escape from other countries' economic competition.

The current account balance is one of the indicators of microeconomics that is often used as a reference in assessing a country's external economic stability. One reason is that the current account balance reflects the strength of a nation's international competitiveness and the extent to which the nation utilizes the resources it has. The current account balance is the difference or

difference between exports and imports. If imports are higher than exports, then the current account deficit will occur. Conversely, if exports are higher than imports, there will be a surplus (Krugman & Obstfeld, 2009).

In the current era of globalization, the country's territorial boundaries are no longer an obstacle for each country to establish cooperative relations, especially in international trade. International trade activities, namely exports, which are activities to sell goods or services abroad and imports, which constitute buying goods or services from abroad. A country's exports and imports are recorded in the current account which is part of the balance of payment component. Current account is so important for a country because the current account describes the situation or state of the economy in a country. In addition, the current account deficit can cause a crisis in the country concerned. Therefore it is very important for economists to pay attention to the development of the current account and the factors that influence it (Comunale, 2017).

In 2009 the decline in foreign direct investment flows did not show any effect on the current account balance where the decline in foreign direct investment continued to cause a decrease in the current account surplus. Similar conditions also occurred in Japan in 2012, France in 2013 and Italy in 2015. This phenomenon contrasts with previous research showing that a decrease in foreign investment directly led to a current account surplus (Cavdar & Aydin, 2015).

This study aims to determine and analyze the effect of the central bank's real interest rate on the G7 current account, the real exchange rate of the G7 current account, the output value of the G7 current account, and the central bank's real interest rate, the real exchange rate and joint output to the G7 current account. According to Krugman & Obstfeld (2009) explains that when interest rates in a country rise it will trigger an increase in prices so that the current account balance will also increase and vice versa. According to Keynes's theory, the interest rate is determined by the demand and supply of money. Community decisions regarding the form of components of their wealth will determine the high interest rate (Nopirin, 2000). The interest rate according to (Sadiku et al., 2015) is the price of the use of investment funds (loanable funds). The interest rate is one indicator in determining whether someone will invest or save.

F-test is used to test the hypothesis of the regression coefficient (slope) completely / simultaneously. The facilitation test does not have the effect of the independent variable on the dependent variable fully-the same. The hypotheses in the F-test are:

$$H0: \alpha 1 = \alpha 2 = \alpha 3 = ... = 0$$

$$Ha: \alpha 1 \neq \alpha 2 \neq \alpha 3 \neq ... \neq 0$$

The test criteria is if the value of F-observation> F-table or F-statistical probability $<\alpha$ = 0.05 then the decision is reject H0. By rejecting H0, it means that there is at least one independent variable that is clearly opposed to the dependent variable.

After conducting the overall regression coefficient test, the next step is to request a partial regression coefficient using the t-test. The hypothesis of the t-test is:

$$H0: \alpha i = 0$$

$$Ha: \alpha i \neq 0$$

The decision in this test is done by comparing t-statistic values with t-tables or by looking at the probability values of t-statistics. If the t-statistic value> t-table or if the probability value t $<\alpha$ = 0.05, then the decision is reject H0, thus the conclusion is that the independent variable partially significantly influences the dependent variable.

According to Mankiw (2012) the exchange rate is divided into real exchange rate (real exchange rate) and nominal exchange rate (nominal exchange rate). Nominal exchange rate (nominal exchange rate) is the value someone uses when exchanging a country's currency with another country's currency. While the real value (real exchange rate) is the value someone uses when exchanging goods and services from one country with goods and services from other

countries. The exchange rate is based on two concepts: first, the nominal concept is a concept to measure differences in currency prices which states how many currencies of a country are needed to obtain a number of currencies from other countries. The second is the real concept used to measure the competitiveness of a country's export commodities in the international market (Herrmann & Winkler, 2009).

2. METHOD

This research aims to determine and analyze the effect of the central bank's real interest rate on the G7 current account balance, the effect of the real exchange rate on the G7 current account balance, the effect of the output value on the G7 current account balance, the influence of the central bank's real interest rate, the exchange rate real and joint output to the G7 current account balance. This research is classified as descriptive and associative research. Descriptive aims to describe events or events, while associative research to find the presence or absence of influence between independent variables and dependent variables, where the data used in the form of data in the form of numbers. Associative aims to see the relationship between the free variable real interest rates, the real exchange rate and output, with the dependent variable, the current account balance.

Types and sources of data that the authors use in this study are as follows:

1. Based on the nature of the data used is quantitative data because the data obtained in the form of figures that describe the real interest rates of the central bank, the exchange rate, output and the current account balance of the G7 countries.
2. Based on the time data collected is time series data that is data collected from time to time from 2008-2017.
3. Based on how to obtain it, the data used in this study are data sourced from the World Bank and OECD. Thus the data used is classified as secondary data.

In analyzing and searching for the desired problem solving, the technique used in this research is literature study and documentation. Where the data obtained from documents contained in the World Bank and OECD. In analyzing the data, the author uses descriptive analysis, which aims to describe each variable in the form of presenting data into a frequency distribution table and then analyzing the percentage of the mean, standard deviation, and coefficient of variation and providing interpretation of the analysis. (Akhirmen, 2005: 71)

$$\text{Mean} = \frac{x_1 + x_2 + ... + x_n}{N} = \frac{\sum x_i}{N} \qquad (1)$$

Where :

N = amount of data

i = Data 1,2,…..,n

$\sum$ = Sum

$$\text{Standard deviation} = \sqrt{\frac{N\left(\sum x_i{}^2\right) - \left(\sum x_i\right)^2}{N(N)}} \qquad (2)$$

Where :

X_i = Individual data -1,2,…..n

N = amount of data

$$\text{Variation coeffitient} = \frac{\sigma}{\mu} x100\% \qquad (3)$$

Chow test is a test to determine the fixed effect or Common Effect model that is most appropriate to be used in estimating panel data. Hausman Test is a test used to determine the best method between fixed effects or random effects or tests used to choose the best model whether fixed effect model (FEM) or random effect model (REM). If H0 is accepted, the Random Effect Model (REM) is more efficient, whereas if H0 is rejected, the Fixed Effect Model is more appropriate than the Random Effect Model. To find out whether the Random Effect model is better than the Common Effect (OLS) method, the Lagrange Multiplier (LM) test is used. The

Random Effect significance test was developed by Breusch Pagan. The Pagan Bruesch method for testing the significance of the Random Effect is based on the residual value of the Common Effect method.

3. RESULTS AND DISCUSSION

3.1 Description of Current Account Balance Conditions in G-7 Countries

The current account deficit is a matter of concern in the discussion of economic recovery in each country. The current account balance is the broadest measuring tool for international trade activities which includes transactions in goods, services, factor income and money transfers. If a country experiences a current account deficit, this will have an impact on the health of the country's economy, because the country is a borrower from other countries in the world to obtain financial flows to finance the deficit. Table 4.1 shows the condition of the G-7 current account in the years 2007-2018.

Table 1 Description of Current Account Balance Conditions in G-7 countries

Year	Canada	France	Germany	Italy	Japan	United Kingdom	United States
2007	0,75	-0,33	6,86	-1,39	4,69	-3,59	-4,92
2008	0,21	-0,97	5,68	-2,80	2,82	-4,24	-4,63
2009	-2,97	-0,82	5,88	-1,85	2,78	-3,53	-2,58
2010	-3,60	-0,83	5,74	-3,43	3,88	-3,39	-2,88
2011	-2,78	-1,03	6,17	-3,00	2,10	-1,95	-2,87
2012	-3,60	-1,23	7,10	-0,35	0,97	-3,77	-2,64
2013	-3,23	-0,87	6,54	1,00	0,90	-5,16	-2,08
2014	-2,40	-1,31	7,14	1,87	0,75	-4,92	-2,08
2015	-3,57	-0,37	8,52	1,33	3,11	-4,91	-2,24
2016	-3,21	-0,49	8,40	2,54	4,00	-5,27	-2,29
2017	-2,82	-0,64	8,02	2,65	4,15	-3,33	-2,26
2018	-2,65	-0,68	7,29	2,44	3,51	-3,85	-2,40
Mean	**-2,49**	**-0,80**	**6,94**	**-0,08**	**2,81**	**-3,99**	**-2,82**
STD	**1,44**	**0,31**	**0,99**	**2,33**	**1,36**	**0,96**	**0,95**
KV	**-58,03**	**-39,01**	**14,32**	**-2842,37**	**48,35**	**-24,09**	**-33,80**

Source : World Bank (2019)

Based on the standard deviation, the positive dispersion value of the current account in Canada is -1.04%. From table 1 it can be observed that in 2007 and 2008 the current account balance in Canada experienced optimal conditions. While the negative dispersion value of the current account in Canada is -3.93%, which means there is a decrease in the current account balance in Canada by -3.93%.

3.2 Description of Real Exchange Rate in G-7 Country

Canada experienced the highest exchange rate conditions in 2011 which amounted to 101.56

while the lowest conditions occurred in 2009 with an exchange rate index value of 91.58. The average condition of the real exchange rate from 2007 to 2018 was 92.29 which means that Canada experienced an exchange rate condition of 92.29 annually. The standard deviation of 7.95 indicates the degree of deviation from each individual is 7.95 from the concentration of data.

Based on the standard deviation value, the positive dispersion value of the real exchange rate in Canada is 100.24 From table 2 it can be observed that in 2011 the real exchange rate in Canada experienced optimal conditions. While the negative dispersion value of the real exchange rate in Canada is 84.43, which means the worst condition of the real exchange rate in Canada is 84.43. From table 2 it can be observed that in 2015-2018 the real exchange rate in Canada experienced the worst conditions. The coefficient of variation is 8.62 which means that the level of variation or diversity of each real exchange rate data is 8.62 from the average value.

France experienced the highest exchange rate conditions in 2009 at 104.54 while the lowest conditions occurred in 2015 with an exchange rate index of 92.03. The average condition of the real exchange rate from 2007 to 2018 was 98.04, which means France experienced an exchange rate condition of 92.29 annually. The standard deviation of 7.95 indicates the degree of deviation from each individual is 7.95 from the concentration of data.

Table 2 Description of Real Exchange Rate in G-& countries

Year	Canada	France	Germany	Italy	Japan	United Kingdom	United States
2007	98,59	103,88	105,77	103,08	82,47	128,27	104,89
2008	95,99	104,49	105,89	103,94	88,62	111,77	100,45
2009	91,58	104,54	106,47	105,07	99,54	100,31	104,70
2010	100,00	100,00	100,00	100,00	100,00	100,00	100,00
2011	101,56	99,21	98,90	99,87	101,14	99,83	95,01
2012	101,07	96,02	95,24	97,76	99,88	103,40	97,37
2013	97,48	97,30	97,58	99,48	79,64	102,05	97,53
2014	91,48	97,33	98,23	99,33	74,58	108,71	99,17
2015	83,12	92,03	92,51	93,86	69,40	113,73	109,85
2016	81,52	92,91	93,99	94,57	78,82	102,36	114,32
2017	82,74	93,36	94,78	95,26	75,01	97,07	114,05
2018	82,29	95,38	97,00	96,78	74,36	98,83	112,96
Mean	**92,29**	**98,04**	**98,86**	**99,08**	**85,29**	**105,53**	**104,19**
STD	**7,95**	**4,47**	**4,82**	**3,65**	**11,94**	**8,88**	**7,02**
KV	**8,62**	**4,56**	**4,87**	**3,68**	**14,00**	**8,41**	**6,73**

Source: World Bank (2019)

3.3 Description of Interest Rate Conditions in G-7 Country

Interest rates are closely related to conditions in the real sector, especially in investment conditions. The interest rate shows the rate of return as well as investment risk, so that fluctuations in interest rates have an impact on capital inflows in a country. This condition has an impact on changes in the current account balance. Table 3 shows the condition of interest rates in G-7 countries.

Canada showed the highest interest rate in 2007 at 4.27% while the lowest condition was in 2016 at 1.25%. The average Canadian interest rate from 2007-2018 is 2.53%, which shows that the average Canadian interest rate is 2.53% per year. While the standard deviation is 0.91%.

Table 3 The description of interest rate in G-7 countries

Year	Canada	France	Germany	Italy	Japan	United Kingdom	United States
2007	4,27	4,3	4,22	4,49	1,67	5,01	4,63
2008	3,6	4,23	3,98	4,68	1,47	4,59	3,67
2009	3,23	3,65	3,22	4,31	1,33	3,65	3,26
2010	3,24	3,12	2,74	4,04	1,15	3,62	3,21
2011	2,78	3,32	2,61	5,42	1,1	3,14	2,79
2012	1,87	2,54	1,5	5,49	0,84	1,92	1,8
2013	2,26	2,2	1,57	4,32	0,69	2,39	2,35
2014	2,23	1,67	1,16	2,89	0,52	2,57	2,54
2015	1,52	0,84	0,5	1,71	0,35	1,9	2,14
2016	1,25	0,47	0,09	1,49	-0,07	1,31	1,84
2017	1,78	0,81	0,32	2,11	0,05	1,24	2,33
2018	2,28	0,78	0,4	2,61	0,07	1,46	2,91
Mean	**2,53**	**2,33**	**1,86**	**3,63**	**0,76**	**2,73**	**2,79**
STD	**0,91**	**1,41**	**1,46**	**1,41**	**0,59**	**2,54**	**2,64**
KV	**36,03**	**60,38**	**78,52**	**38,76**	**77,22**	**2,37**	**2,55**

Source : World Bank (2019)

3.4 Description of Economic Growth Conditions in G-7 Country

Economic growth describes the economic conditions in a country and explains how stretching the economy, especially in the real sector. Economic conditions have an impact on changes in current account balance conditions. Table 1.4 shows the conditions of economic growth in G-7 countries. Canada showed the highest rate of economic growth in 2011 at 3.11%. While the lowest condition occurred in 2009 which was -2.95%. The average Canadian economic growth in 2007-2018 was 1.66%. While the standard deviation is 1.68%.

Table 4 Description of Economic Growth Conditions in G-7 Country

Year	Canada	France	Germany	Italy	Japan	United Kingdom	United States
2007	2,06	2,42	3,26	1,47	1,65	2,55	1,88
2008	1,00	0,25	1,08	-1,05	-1,09	-0,35	-0,14
2009	-2,95	-2,87	-5,62	-5,48	-5,42	-4,25	-2,54
2010	3,08	1,95	4,08	1,69	4,19	1,71	2,56
2011	3,14	2,19	3,66	0,58	-0,12	1,64	1,55
2012	1,75	0,31	0,49	-2,82	1,50	1,45	2,25
2013	2,32	0,58	0,49	-1,73	2,00	2,05	1,84
2014	2,86	0,96	2,18	0,11	0,37	2,95	2,45
2015	0,67	1,11	1,74	0,92	1,22	2,35	2,88
2016	1,10	1,10	2,24	1,12	0,61	1,79	1,57
2017	2,99	2,26	2,16	1,68	1,93	1,82	2,22
2018	1,88	1,72	1,43	0,86	0,79	1,40	2,86
Mean	1,66	1,00	1,43	-0,22	0,64	1,26	1,62
STD	1,68	1,44	2,50	2,19	2,31	1,15	1,59
KV	101,24	143,80	174,56	-992,12	362,48	1,28	1,74

Source : World Bank (2019)

3.5 Description of Foreign Direct Investment in G-7 Country

Foreign direct investment is a matter of concern in maintaining the stability of the current account balance, because foreign direct investment activities require the destination country of investment to pay profits to the country of origin and consequently will trigger capital outflows. Table 1.5 shows the condition of foreign direct investment in the G-7 countries in 2007-2018. Canada shows the number of foreign direct investment with the highest conditions in 2007 at the level of 8.22%. While the lowest conditions occurred in 2009 which amounted to 1.53%. The average Canadian foreign direct investment in 2007-2018 was 3.22%. While the standard deviation is 1.84%.

Table 5 Description of Foreign Direct Investment in G-7 Country

Year	Canada	France	Germany	Italy	Japan	United Kingdom	United States

2007	8,22	3,15	23,04	2,99	0,48	6,79	2,40
2008	4,53	2,33	22,79	-0,40	0,49	8,73	2,32
2009	1,53	0,68	9,23	0,76	0,23	0,61	1,11

Table cont...

2010	1,84	1,47	3,23	0,47	0,13	2,72	1,76
2011	2,14	1,54	6,38	1,51	-0,01	1,03	1,70
2012	2,71	1,23	8,13	0,00	0,01	1,75	1,55
2013	3,64	1,12	21,59	0,92	0,21	1,98	1,72
2014	3,56	0,20	10,52	0,79	0,41	1,94	1,44
2015	3,86	1,76	7,59	0,73	0,12	1,57	2,79
2016	2,23	1,33	9,07	1,37	0,83	10,00	2,64
2017	1,69	1,45	8,94	0,47	0,42	4,60	1,82
2018	2,65	2,15	13,48	1,49	0,52	2,08	1,26
Mean	**3,22**	**1,54**	**12,00**	**0,93**	**0,32**	**3,65**	**1,88**
STD	**1,84**	**0,77**	**6,76**	**0,87**	**0,25**	**3,16**	**0,54**
KV	**57,21**	**50,05**	**56,36**	**93,57**	**77,72**	**2,92**	**1,68**

Source : World Bank (2019)

4. CONCLUSIONS

Based on the results of the processed data by panel regression analysis, a discussion of the results of research between the real exchange rate, interest rates, economic growth and foreign direct investment on the current account balance in the G-7 countries together or partially obtained the following conclusions:

1. Real exchange rates, interest rates, economic growth and foreign direct investment together have a significant effect on $\alpha = 0.05$ on the current account balance in G-7 countries.
2. Real exchange rates have a negative and not significant effect at $\alpha = 0.05$ on the current account balance in G-7 countries.
3. Interest rates have a negative and significant effect on $\alpha = 0.05$ on the current account balance in G-7 countries.
4. Economic growth has a positive and insignificant effect on $\alpha = 0.05$ on the G-7 current account balance.
5. Foreign direct investment has a positive and not significant effect at $\alpha = 0.05$ on the G-7 current account balance.

The balance in the current account is a policy objective that must be achieved in order to obtain ideal and stable economic conditions. To achieve these conditions, the right policies need to be taken.

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