THE IMPACT OF SPORT MEGA EVENT ON JAPAN ECONOMY

BY

BEH CHIU LUAN
CHEE YAN QI
CHONG KAI LING
NG NAO YIN
YONG CHUNG HEN

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DECLARATION

We hereby declare that:

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(2) No portion of this FYP has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the FYP.

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Name of Student:	Student ID:	Signature:
1. BEH CHIU LUAN	1502572	_____
2. CHEE YAN QI	1503179	_____
3. CHONG KAI LING	1503573	_____
4. NG NAO YIN	1501559	_____
5. YONG CHUNG HEN	1503712	_____

Date: 05/04/2019

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller
ARDL	Autoregressive Distributed Lag Model
ARMA	Autoregressive-moving-average Model
BFGS	Broyden-Fletcher-Goldfarb-Shanno
CBA	Cost-Benefit Analysis
DID	Differences in differences
ECM	Error Correction Model
EGLS	Estimated Generalized Least Squares
ER	Exchange Rate
EVIEWS	Econometric Views
FDI	Foreign Direct Investment
FIFA	Federation of International Football Associations
GDP	Gross Domestic Product
G7	Seven Industrialized Countries
IO	Input Output
IR	Inflation Rate
LM	Lagrange Multiplier
MENA	Middle East and North Africa
MNC	Multinational Corporation
OLS	Ordinary Least Square
RESET	Regression Equation Specification Error Test
SE	Sport Event
SPSS	Statistical Package for the Social Sciences
UR	Unemployment Rate
US	United States
VAR	Vector Autoregressive

VIF	Variance Inflation Factor
WAEMU	West Africa Economic and Monetary Union

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PREFACE

This research project is submitted as a partial fulfilment of the requirement for the graduate student of Bachelor of Business Administration (HONS) Banking and Finance in Universiti Tunku Abdul Rahman (UTAR). This research paper is supervised by Mr Koh Chin Min. The research is titled "The Impact of Sport Mega Event on Japan Economy". The final year project is completed solely by the authors based on others' researches and resources quoted as in references. The idea of this subject was come from the FIFA World Cup in year 2018. It became one of the reasons why the authors wish to engage in the subject of the research study. The independent variables chosen are sport event, unemployment rate, foreign direct investment, inflation rate and exchange rate. The main focus of this research project is on the mediation effect of unemployment rate on the sport event and Gross Domestic Product (GDP) and how sport event can bring impact to Japan economy. The study would like to generate a substantial contribution to public to have better understanding on the impact of macroeconomic variables on GDP in Japan.

ABSTRACT

The objective of the research is to study the mediation effect of unemployment rate on the sport event and Gross Domestic Product (GDP) to the hosting countries of the sport event which was Japan. Besides, this research also to examine how the sport event may bring significance effect to the economy growth in Japan. Multiple linear regression model was applied in the research to examine the relationship between explanatory variables (sport event, unemployment rate, foreign direct investment, inflation rate and exchange rate) and explained variable (GDP of Japan). Time series data from year 1980 to year 2016 with quarterly was applied which consist of 148 observations. Since the FIFA World Cup in year 2002 was discussed, the data was collected more than ten years before and after the event. SPSS Modeler was applied to conduct the test of mediation effect. The analysis results show that unemployment rate is a full mediator on the relationship between sport event and GDP but there are no direct effects between the sport events and GDP. Furthermore, the limitation and recommendation of the research was discussed in Chapter 5 in order to give advices for future researchers which related to this research.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

This chapter will discuss the background of research, problem statement, research objectives, research question, and significance of study. First, the topic of research will introduce in the background part. Second, the problems to be investigated will state in the problem statement. Next, research questions and objectives will be presenting as well. After that, last part will be explaining the significance of study.

1.1 Research Background

There were some mega events that unite the world especially sport event. Examples of sport event were Olympics games, FIFA World Cup, Winter Olympics, Asian Games, Commonwealth Games, and others. When these events showcase in a place, the hosting location gained benefits of extra infrastructure, job opportunity, and public awareness. Sport event was occurrences of specific duration that attract numbers of visitor and tourist. There have large impacts on the build environment and residents together with high cost and large mediated reach (Müller, 2015).

Nowadays, FIFA World Cup has becoming one of the popular world's sport events. There were investigations and studies that indicated the relationship of FIFA World Cup and the economies of the hosting countries. FIFA World Cup was often assumed highly profitable by potential host countries where the

economic growth in these host countries was lower than expectation. There was no noticeable short-term economic growth such as tourism, employment, accommodation and others sectors. Meanwhile, there were arguments mentioned that the sport event will generate economics profits and contribute to the hosting countries in long term (Liu, 2013).

FIFA World Cup was brought impact on hosting countries. There were outlooks and results on economic impacts accompanied by the FIFA World Cup in France on 1998, Germany on 2006, and South Africa on 2010. Results showed that FIFA World Cup was giving positive impacts to tourism, income, and opportunity of employment on the short run period in France and Germany. While based on speculative prediction basis, South Africa has positive economic impact of FIFA World Cup (Allmers & Maennig, 2009). Furthermore, FIFA World Cup and Summer Olympics Games were generating the economic growth effect to the hosting countries. The results showed that FIFA World Cup gives positive impact on economy but just in lower rate. Meanwhile, Olympics Games found to have positive impact on economy than FIFA World Cup where Olympics Games brings greater gross domestic growth rate to the host country (Sterken, 2006). FIFA World Cup influenced the economic growth effect in US and evidence stated that FIFA World Cup brings negative effect to economy of US (Baade & Matheson, 2004).

On the other hand, there consists of pre-event and post-event influences of World Cup 2002 based on the perceptions of local residents at South Korea. The study focused on both perspectives such as societal and economic benefits. The respondents have significant difference viewpoint in these two time periods because the outcomes and results were not conforming to their expectation on the beginning (Kim, Gursoy & Lee, 2006). The emerged of disparities in perception may change the behavior of hosting event in the times ahead (Fredline & Faulkner, 2002b). In another research, there was the indicative measure of economic impact contributed in output (sales), income, and value added for South Korea which is US$1.35 billion, US$307 million, and US$713 million respectively (Lee & Taylor,

2005). In different views, response was subject to change when go through of time as the exchange relation between the sport event and the individual are developed in dynamic way (Waitt, 2003). Besides, there was five dimension of positive impact and three dimension of negative impact in the factor analysis. Factor analysis exhibited positive impacts of enhancing the image of hosted nation and negative impacts of excessive spending for the preparation of sport event (Kim & Petrick, 2005).

As sport event was brought impact on the economic growth of hosting countries, thus, this research not only to determine the direct relationship among the macroeconomic variables but also refines to figure out the mediation analysis among macroeconomic variables.

1.2 Problem Statement

In 1990s, with regards to the exhaustion of the famous economic bubble that existed on 1980s, Japan was incurred sustainable depression on its economy. This sustainable depression was followed by a serious financial crisis within the period. All the financial institutions in Japan exposed to the significant declines in economics profits as bad loans kept increasing and stock prices fall straight down at high speed. Japan government in the end let those big financial institutions such as Yamaichi Securities, Hokkaido Takushoku Bank, and Japan Long-Term Based Credit Bank going to bankrupt after failed to keep those the firms out of debt. Besides, during the recession, Japan was faced the serious “excess” problems including the excess of employment, excess of debt, and excess of the equipment. These three serious problems showed that the Japan business model meet the dead end during that period (Abe, 2010).

Besides, Japan faced the economy problems after the period of hosting the FIFA World Cup. Sport event happenings brought an impact of raising the

visibility and exposure of the hosting country and also the participant countries to affect consumers in both sides. The number of tourists attracted by the FIFA World Cup was high and the tourist's purpose was to attend the games. This was a great chance for businessman to start, build and improve trading networks. This brought a significant development and economic growth for the Japan (Avsar & Unal, 2011). On another side, stadiums that constructed at extravagant cost were only used for three or four games. Some stadiums used infrequently for smaller events. The government bodies paid much more in order to maintain the stadiums than expect to earn (Struck, 2002). Most FIFA World Cup lost money in fact and mega hosting areas grew slower than normal after the event pass. As result, in 2002 Japan FIFA World Cup spoils, the costs were swollen because the sport facilities had been duplicated.

In 2002, the downturn in Japan was estimated to become worsen sharply. In November 2011, the unemployment rate in Japan reaching 5.5 percent. This is because Japan's economy was weak for some period and the loss of its export markets has pushed it deeper into downturn (BBC NEWS, 2001). There were some negative economic impacts on the local country after hosting FIFA World Cup 2002 where the stadium became an economic problem on local after the event and too much spending for preparation of the FIFA World Cup. Furthermore, the prices of goods increased after FIFA 2002 World Cup and only insurance industry made profit from the FIFA World Cup thus it cause the negative economic effects (Naudi, 2016).

The actual and estimated outcomes of the sport event were different and created divergences in the results on the basis of local economy, societal changes and culture difference in Japan (Whitson & Horne, 2006). There was a gap between the estimated forecast and actual impacts and needed further study. The consequences showed that recent studies always exaggerate the benefits, understate expenses or costs and sometimes misuse of multipliers. Besides, sport event was brought a perfect legacy value and the development of new

infrastructure that needed to incorporate into the host nation economy (Barclay, 2009).

Based on the past research, there were some ideas that contrast whether the sport event can improve or worsen the economy. Moreover, this research determines whether sport event will affect the economy directly or indirectly and aims to investigate the impact of sport event on the hosting countries.

1.3 Research Objectives

1.3.1 General Objective

The general objective of this research is to study the mediation effect of unemployment rate on the sport event and gross domestic product (GDP) to the hosting countries of the sport event which was Japan and on the economy period of year 1980 to year 2016. Besides, this research also examine how the sport event may bring significance effect to the economy growth in Japan.

1.3.2 Specific Objectives

I. To identify the mediation effect of unemployment rate on the sport event and gross domestic product (GDP) in Japan.
II. To identify the effects of sport event on gross domestic product (GDP) in Japan.
III. To identify the effects of unemployment rate on gross domestic product (GDP) in Japan.
IV. To identify the effects of foreign direct investment on gross domestic product (GDP) in Japan.
V. To identify the effects of inflation rate on the gross domestic product (GDP) in Japan.
VI. To identify the effects of exchange rate on gross domestic product (GDP) in Japan.

1.4 Research Questions

There are six research questions in this research:

I. Is there a mediation effect of unemployment rate on sport event and gross domestic product (GDP) in Japan?
II. Is there any effect of sport event on gross domestic product (GDP) in Japan?
III. Is there any effect of unemployment rate on gross domestic product (GDP) in Japan?
IV. Is there any effect of foreign direct investment on gross domestic product (GDP) in Japan?
V. Is there any effect of inflation rate on the gross domestic product (GDP) in Japan?

VI. Is there any effect of exchange rate on gross domestic product (GDP) in Japan?

1.5 Significance of the Research Study

There were only few studies about sport event bring impact to the economy by using the model of mediation. Generally, mediation known as applied general models and very useful in overcome the dispute where sport was commercialized (Mohamad & Kamarudin, 2015).

This research will contribute to the academic area as it provides students with some knowledge on understanding and the ways of applying the mediation as research model. Mediation model is the model that can give an accurate and precise outcome of the application of the data conducted for the research where students can obtain the most reliable outcome from it. As this research consists of the theoretical analysis and data evidence that reviewed from other researchers, students able on learning how the economy of the countries works when host a sport event by applying the mediation model. Besides, this research has running the test and providing the evidence where these evidences can aid both the students and teachers in the future studies. The research results can act as a guideline and reference to help the students and teachers on reducing the obstacles and hinders when conducting the future studies.

In some countries, tourism is the backbone of the economy. Tourism brings positive impacts to the local economy. Therefore, this research can enhance the interest of the tourism stakeholders to understand the economic impact of tourism so that can apply a new policy to overcome the problems. This research examines the economic impact results from sport event hence influence the tourism based industry and hostel industry may find it useful. Besides, finance

industry can predict and get ready for the economy fluctuation results from the sport event. This research can raise the awareness to the related industries about the economy situation.

Last but not least, FIFA World Cup is the internationally known sport event that this research attempt to study and understand the impact it bring on to the host country. Organizers, government, sponsoring bodies, and community associations will concern about the social goals and economic performance of hosting such sport event and thus utilize the result effectively. This research observes local resident's attitudes toward the effect bring by the FIFA World Cup and development of instruments to measure those attitudes. Besides, this research can be helpful to the Japanese government in establishing tourism policies to attract foreign tourists in the sport event. It is suggested to improve the image of the host nation as a tourism destination to boost the economies of the host country. It can be maintain a proper balance between the social benefits and investment cost. It maximizes the opportunity and provides long term planning and idea for them to successfully host the sport event.

1.6 Conclusion

In this chapter, this research had carried out the overview of sport event in hosting country and justified the variables to investigate the effect of gross domestic product (GDP). This chapter also determined research question and research objective. Moreover, problem statement was pointed out and significant of study had been discussed in this chapter. Following chapter will carry out literature review of past study based on related variables.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

Based on the research overview from the aforementioned chapter, the chapter had discussed about background, problem statement, research objectives, research question, and significance of the research study. The review of theories and literature will be discussed in this chapter. This literature review will present about evaluation of research based on prior study.

2.1 Review of the Relevant Theories

The analysis of theories in the past studies will be review based on the related topic. The review of the relevant theories will going to give a better understanding regarding to the topic.

2.1.1 Cost-benefit analysis theory

Cost-benefit analysis (CBA) theory refers as a comprehensive approach that used to determine both the strengths and weakness of the options and alternatives. It also said to compare and estimate the costs and benefits of the alternatives as to determine whether the decision made is correct and sound. CBA was established to evaluate the alternative uses of public spending come from the wide-economic perspective on tourist

promotion. CBA can be used to evaluate and examined the economic impact given by the sport event through the spending of the visitors. It applied CBA by putting the quantity of goods on x-axis and price on the y-axis and evaluates the gain and loss. CBA illustrates the difference between the economic impact and CBA where it effectively measures the advantages and benefit on hosting the event (Burgan & Mules, 2001).

2.1.2 Social exchange theory

Social exchange theory is about the behaviour of the people to predict the actual change of an event by forming perception based on the expected value of exchange before the event occur. There consisting the influences of sport event in earlier and after hosting an event based on the examination of the local residents' perceptions. It also stated the conscious disparity of comparison between the two time periods. Besides, it is initially establishing a "reference point" for reassess the future impacts of event. So, the results under the reference point will be regarded as losses and thus causing dissatisfactions and negative insights. While those exceed the expectation will be consider as gains and bring about positive perceptions. Ultimately, the residents can figure out a new reference point according the results of re-evaluation of the exchange and thus make decision for the sustainable support of future events (Kim et al., 2006).

2.1.3 Okun's Law

Okun's law was a theory of unemployment which reflects a numerical connection among a nation's unemployment percentage and

gross domestic product (GDP) of its economy which proposed by Arthur Melvin Okun in the year of 1962. The foremost objective of Okun's law was to tell people the relationship and linkage between unemployment rate and economic growth. Based on the "gap version" of Okun's law, it specified that for every 1 percentage upsurge in unemployment, there will be a 2 percentage decreases in country's GDP. Nevertheless, for every 1 percent reduction in unemployment rate, there will be a 3 percent upsurge in GDP (Misini, 2017).

2.2 Review of the Literature

Analysis of past studies related to the research topic also can be known as literature review. It discussed and analyzed the results that produced by previous expert researcher. This literature review will give a deeper understanding related to the topic.

2.2.1 Gross Domestic Product (GDP)

Gross domestic product (GDP) considered a measure of the total monetary value comes from the final goods and services which was the estimation of the national income and output that produced in a given country at a given period of time. GDP computes the measures for all the output generated for the country at the time. The process for evaluation also comprised the total amount of value added at every single stage of the final goods and service's production that produced in a country within a given period of time. Moreover, the research was justified some variables in order to investigate the effect of gross domestic product in Japan. The

figure below stated the flow of Japan's GDP started from year 1989 to 2017.

The formula of GDP

GDP = C + I + G + (X - M)

Where GDP = Gross domestic product

C = Private consumption

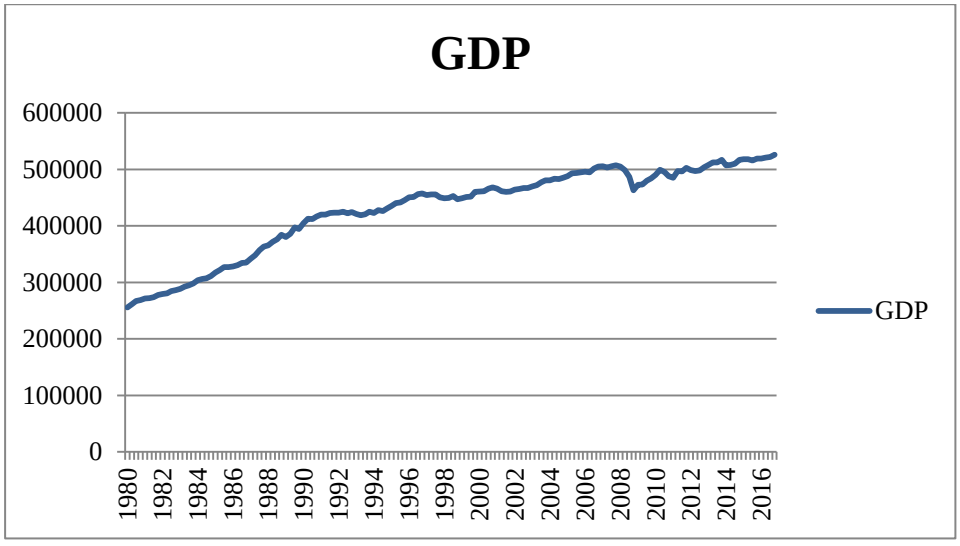
I = Gross investment

G = Government spending

X = Exports

M = Imports

Figure 2.1: Gross domestic product (GDP) growth in Japan (¥billions): 1980 - 2016 (Quarterly)



Source: Datastream

2.2.2 Sport Event (SE)

On positive side, sport event benefit the hosting country. A study by Horne & Manzenreiter (2004), pointed out that the gross domestic product (GDP) growth rate of World Cup held in Korea was higher than the pre-event growth rate. The post-event GDP growth rate was higher than eight times than the pre-event growth rate. The average growth rate before World Cup was 2.233% while the average for the growth rate after World Cup is 3.083%. According to Bohlmann & Heerden (2008), there were economic benefits which direct and indirect for the GDP growth of South Africa. The event created direct impact on labor which generates 130,000 jobs of constructions in stadia, hospitality and infrastructure. Besides that, the indirect benefits gained from improve perceptions could have long-lasting impact. Based on the research conducted by Kasimati & Dawson (2009), Olympic Games positively affect the economy of Greek. The games enhanced the economy activity by 1.3% (GDP) approximately. Furthermore, Oga (1998), studied that the relationship between sport industry in Japan and movement in general economy. The results showed that there is parallel growth between sport industry and the development of Japanese economy (GDP). Bruckner & Pappa (2015), conducted a research that the Olympic Games increase maximum by 2.6% for the following years. The research was studied investment, economy output, GDP per capita and others as the macroeconomic indicators. Findings showed that there is a significant positive effect in consumer price at 5 years before and exchange rate at 7 years before the hosting of the event. Besides, the bidding countries presented an insignificant and small effect on the sporting games.

It is also widely assumed that there will be a great opportunity for the host country of sport event. On the other side, hosting the sport event also resulted in loss and huge debt in Montreal. The unemployment issue became serious in year 1975 to year 1982, price of property declined, and

decreasing of gross domestic product (GDP) (Whitson & Horne, 2006). As Madden (2002), found out that their result show that there is negative impact in Australia's GDP growth when hosting Sydney Olympic 2000. Lertwachara & Cochran (2007), also found out that there is negative impact between the local community and the professional sports franchise. The local income with the present of sports franchise was lower that the absent of sport franchise. Allan, Dunlop & Swales (2007), conducted a paper that quantifies indirect and direct effect by using Input Output (IO) model. The paper observed the impact of regular season sporting events. Although activity increases in Glasgow innocently, there was negative effect to the rest of Scotland in private business, construction, GDP and others. This relationship was also supported by Nitsch & Wendland (2017), their result showed that negative impact in terms of city growth is found when being awarded the Summer Olympics. The research argued that the relative change in population size at a location is an advantageous indicator. Hosting countries did not gain in population size and fail to benefit from hosting a sport event.

2.2.3 Unemployment Rate (UR)

According to Mahadea (2003), there was presented a positive relationship among the unemployment rate and gross domestic product (GDP) in South Africa. The results showed that the unemployment-GDP ratio showing positive which means the higher unemployment rate brought the higher GDP. The reduction of labor force but with the higher labor force productivity has brought the output expansion of the South Africa.

Based on the investigation of Mohseni & Jouzaryan (2016), the investigation presented a significant and negative impact among short-term and long-term gross domestic product (GDP) and unemployment. From

period 1996 to 2012, Autoregressive Distributed Lag (ARDL) Model was used to explore the relationship. Based on the empirical results of Haririan, Huseyin & Karabulut (2010), for the country of Turkey, Israel, Jordan and Egypt, the results supported a negative relationship for GDP growth and unemployment by using Augmented Dickey Fuller (ADF) test for the period from 1975 to 2005. Abdul-khaliq, Soufan & Shihab (2014), found out a negative and also significant relationship between GDP and unemployment rate by applying unit root testes methodology and Pooled Estimated Generalized Least Square (EGLS), for the period 1994 to 2010 of Arab countries. Misini (2017), stated that there was a negative consequence of nominal GDP concerning unemployment. The researcher conducted analysis through simple linear regression for the period 2004 to 2014. Castells-Quintana & Royuela (2012), stated that, with the mounting of inequality on economic growth, will lead to a significant negative relationship between economic growth and unemployment by using of cross-sectional international data from 1980 to 1989 and Ordinary Least Square (OLS) estimation to output the results. According to Özel, Sezgin & Topkaya (2013), seven industrialized countries (G7) between the years of 2000 to 2011 were examined. For 2001 to 2007 sub-period, an upsurge in GDP caused a decline in unemployment. Doğru (2013), stated that there was a long-term negative relationship among real GDP and unemployment rate by used panel co-integration tests to obtain the results from the period 2000 to 2012 of annual time series data.

According to Sadiku, Ibraimi & Sadiku (2015), there was an evidence to verify that no relationship between the real gross domestic product (GDP) growth and unemployment rate by using quarterly time series from first quarter of year 2000 until the third quarter of year 2012. By using the Error Correction Model (ECM), there was no short-term relationship among these two variables. Furthermore, the Vector Autoregressive (VAR) models also prove that no long-term relationship among them. This is due to variation of unemployment rate is not a projecting variable of the variation of real GDP growth. The study of

Mosikari (2013), proposed that there is no linkage between GDP growth and unemployment rate in South Africa country. All variables in the system were consisted affinity to regress back to their equilibrium. An empirical analysis of Kreishan (2011), showed that no causation relationship among the GDP and unemployment rate. Physical unemployment caused by unemployed public who without the abilities and qualifications to do the accessible employments. Based on this case, economic growth are not able to reduce these kinds of unemployment by adapting Okun's law for the period of 1970 to 2008 for time series data. Khrais & Al-Wadi (2016), showed that their empirical study inspected no significant impact and influence between the annual gross GDP and unemployment rate for Middle East and North Africa (MENA) countries since the significance of F statistic was greater than significance level of 5 percent. There might be additional reason moving unemployment other than GDP. Simple linear regression was used in the research for the period of 1990 to 2016.

2.2.4 Foreign Direct Investment (FDI)

According to Sandalcilar & Altiner (2012), there was a positive relationship between the foreign direct investment (FDI) inflows and gross domestic product (GDP) in economic cooperation organization region from the period of 1995 to 2011. By applying the Holtz-Eakin, Newey and Rosen panel causality test, it observed that the FDI inflows give a strong positive relation to the GDP. Besides, Iqbal, Ahmad, Haider & Anwar (2014), supported that the FDI inflows give the positive impact on the GDP in Pakistan from 1982 to 2012 by doing the Pearson correlation and regression analysis. As a result, Pakistan's FDI presented a positive linkage with the GDP due to the establishment of the market-oriented policies that will strongly increase the positive relation between it.

Moreover, based on the studies of Encinas-Ferrer & Villegas-Zermeño (2015), the FDI inflows give positive impact on the gross GDP in China in 1995 to 2012 by using the causality test. The results examined that the China's GDP growth came from the increases in FDI. Furthermore, Mahapatra & Patra (2014), also supported that there was a positive relationship between the FDI inflows and GDP in India from 1990 to 2012 with the application of correlation analysis. In the studies of India, there was a result of strong positive correlation between the FDI and GDP. In addition, Nosheen (2013), indicated that FDI inflows have a positive relation with GDP in Pakistan during 1980 to 2010 where used the application of Augmented Dickey-Fuller test's and result showed GDP will keep growth when the rate of FDI is high. Haque, Patnaik & Hashmi (2016), also supported that there was a positive relationship between the FDI inflows and GDP for the Kuwait during 2000 to 2015. The results showed that there was a significant positive correlation between the FDI and GDP as well. Also, Ndiaye & Xu (2016), stated that there was a positive relation between FDI inflows and GDP in West African Economic and Monetary Union (WAEMU) during 1990 to 2012 by using the Haussmann test and Breusch Pagan test.

On the contrary, based on the studies of Saqib, Masnoon & Rafique (2013), there was a negative relationship between the foreign direct investment (FDI) inflows and gross domestic product (GDP) in Pakistan. By applying the Augmented Dickey Fuller (ADF) test, there was an indication of negative linkage of FDI with GDP hold in long run because domestic investment in Pakistan was consider useful and benefits the country economy as well therefore there was a limited dependency on any foreign investment. Besides, Abdullahi & Abdallah (2013), supported that FDI inflows give negative impact to the GDP in Pakistan from 1980 to 2009. With the Granger causality test, there was a result of the FDI negatively affect economic growth per capita GDP where it due to the MNC had received big concessions at the nation's detriment period.

Next, Rahaman & Chakraborty (2015), stated that there was a zero relationship between the foreign direct investment (FDI) inflows and gross domestic product (GDP) in Bangladesh from 1987 to 2011 by conducting the co-integration test. In the Bangladesh's case, there exist no relation between the FDI and GDP where this was results from Bangladesh's FDI inflows considered significantly low as compared to the neighbour South Asian countries.

2.2.5 Inflation Rate (IR)

According to the Bhat & Laskar (2016), it was exposed that the inflation rate was positively related to the gross domestic product (GDP) in India. The result of Behera (2014), defined that the inflation and GDP had high positive correlation existed in all its countries. The study of Bhusal & Silpakar (2011), disclosed that had significance relationship with the GDP and it was a positive relationship in Nepal. Based on the result of Hussain & Malik (2011), the study concluded that the relationship between the inflation rate and GDP growth was positive; it starts to slow the economic growth in Pakistan which suggested by the estimated threshold that 9 percent threshold level of inflation above. The Makuria (2013), stated that unbalanced and high rate of inflation affected the economic growth when there was a positive relationship among the two variables in long run in Ethiopia.

Based on the study of Enu, Obeng & Hagan (2013), it determined that the relationship between the gross domestic product (GDP) and the inflation rate in Ghana during the year 1980 to 2012 was a strong negative linear relationship. Anghel, Lilea & Mirea (2017), indicated that the GDP and inflation rate was strong correlation. Berument, Inanlik & Olgun (2008) stated that because of the fluctuation in the real exchange rate, the simple

linear regression between the inflation rate and GDP had an inverse influence. According to Li (2006), it showed that the low rate of inflation had a strong negative effect on economic growth, where the degree of negative effect on economic growth decreases as the inflation rate rises.

According to Munir & Mansur (2009), it showed that the inflation rate does not have relationship with the gross domestic product (GDP) and showed that there is no inverse relationship between inflation rate and GDP in Malaysia. In addition, based on Asari et al. (2011), the study mentioned that in long run situation there is no correlation relationship between inflation rate and GDP.

2.2.6 Exchange Rate (ER)

The fixed and flexible (pegged) exchange rate regimes which implied by the countries have different impact on their gross domestic product (GDP) growth. The studies of Broda (2004), showed sufficient evidence agree with the Friedman's predictions that floats exchange system regimes are smoother than in pegs regimes. Furthermore, the research emphasized on the prices to terms-of-trade shocks and also the real exchange rate and varied observed real gross domestic product (GDP). In addition, it also observed that the countries with flexible exchange rate regimes had greater real exchange rate changes after a negative shock, while there is lesser real GDP change after positive shocks. Another study was Kollmann (2001), stated the correlations between predicted variability of the nominal and real exchange rate is outstandingly greater compare with the standard real business cycle models with flexible prices and wages. It stated that domestic interest rate is anticipated to lower after go through the positive domestic money supply shock and cause the GDP to increase following with both of the nominal and real exchange rate

depreciation. Besides, nominal and real exchange rate depreciation also triggered by increases in domestic output efficiency and interest rate in the world. Besides, Baxter & Stockman (1989), and Flood & Rose (1995), found a negative relationship between the exchange rate flexibility and gross domestic product (GDP) output variability. According to the research of Aghion, Bacchetta, Ranciere & Rogoff (2009), it concerned that the volatility of real exchange rate be able to have an important effect on productivity growth. However, it needs to depend on country's level of financial development such as countries with thin capital markets and consider that volatility of exchange rate is in excess higher level which can restrain growth.

Based on Giovanni & Shambaugh (2008), research, pegged countries only respond to base rate they peg so the interest rates in base countries may had impacts on their economies and real gross domestic product (GDP) growth. It was because interest rates move in line with the base country interest rates. Besides, there was rise of volatility in GDP of pegged countries as losing monetary autonomy and enforced to follow the base country's monetary policy even it is not desirable for the domestic economy. While for floating countries, there had no relationship between annual real GDP growth and the exchange rate. The changes in the nominal exchange rate may uncover the countries to volatility but pegging also not means of eliminate volatility.

2.2.7 Sport Event (SE) and Unemployment Rate (UR)

According to Briedenhann (2011), the sport event and unemployment rate presented a negative relationship in some host countries by utilizing the questionnaire. The sport event as 2010 FIFA World Cup brought about the upgrade on the transport and sporting

infrastructure that improve the employment benefits thus decrease the unemployment rate. In addition, Feddersen & Maennig (2012), supported that there was a little negative significantly effect of 2006 FIFA World Cup on the unemployment rate of the hospital sector in short term period by using the estimator of "different in different" where during that period was the peak period in the sector of hospitality employment. Besides, Tien, Lo & Lin (2011), examined that there was a little significantly negative relation between the sport event as Olympic Games and unemployment rate in the host countries where the little significantly negative result only achieved in the short run period within some of the parameters by computing the panel regression model and event study model. Furthermore, Absalyamov (2015), also found that the sport event gave negative impacts on the unemployment rate in Russian by further researched the investment's volume, industrial production's growth, and rate of employment in Russian. Since the sport event motivated the individual activity's development, therefore the employment opportunities will increase. Additionally, Feddersen & Maennig (2013), stated that there was a negative relationship between sport event as Olympic Games and the unemployment rate. With the econometric model estimation, the significant negative effects of the employment were occurred in the period of Olympic Games within some sectors such as food services and accommodation, trade of retail, and entertainment activities. Also, Heijman & Jongenburger (2011), supported that the negative relation between sport event and unemployment as predicted that there was a lot of job opportunities will be distributed during the period of conducting FIFA World Cup 2018 by computing the scenario and sensitivity analysis. Hotchkiss, Moore & Rios-Avila (2015), stated that sport event as Summer Olympic Games Atlanta 1996 give negative impact on the unemployment rate by computing the post- and pre-Olympics analysis.

On the contrary, Hagn & Maennig (2009), stated that the sport event did not had any relation with unemployment rate in Germany. By used the fixed effect model, the estimation results showed that the World

Cup in 2006 did not give any impact on the unemployment rate in different cities within the host country because the unemployment trends and levels for a period before and after the Soccer World Cup showed no difference in the match venues and non-venues. Besides, Feddersen, Grötzinger & Maennig (2009), found that the World Cup 2006 did not affect the unemployment rate in Germany. With the method of DD estimation, the no relation effect was due to the completion of new stadiums was happened after the FIFA World Cup. Furthermore, by using the DID method, Jasmand & Maennig (2008), also examined that there was no relation between the sport event and unemployment rate where taking the 1972 Munich Olympics Games as a gap. Because of the high mobilization of the employees, thus the Munich Olympics Games does not significantly affect the unemployment.

2.3 Conclusion

Throughout the journals that found, the variables such as sport event, foreign direct investment, exchange rate, unemployment rate, and inflation rate were giving different impact to gross domestic product (GDP). There have three theories for this research which was cost-benefit analysis theory, social exchange theory, and Okun-law. Based on the literature reviews, there showed the indirect relationship between sport event and unemployment rate as well as the mediation effect. Therefore, this research will going to compute the analysis of the mediation effect of unemployment rate on the sport event and GDP in the next chapter which is research methodology.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

Research methodology is a procedure to study the research objectives by choosing the methods and models of the research. This chapter will provide the research design, sampling design, data collection method, and proposed data analysis tools for this research accordingly.

3.1 Research Design

The research of paper uses the quantitative study of causal relationship. Quantitative research is a method to collect numeric data through organized procedures and to answer predetermined questions or test hypothesis (Ary, Jacobs, Irvine & Walker, 2018). However, there are no statistical model can ascertain causality because mediation is a causal occurrence. The causality is set up by suitable research design and sound or theoretical dispute. The existence and significance of variables in a relationship can be proven through the statistics. This may assist in creating the soundness of the causal argument, but does not verify it (Hayes & Preacher, 2014).

3.2 Sampling Design

3.2.1 Target Population / Respondents

Target respondents and population is the complete group of public or things which the researcher wishes to conduct on the investigation findings. The target population needs to meet characteristic such as availability, geographical immediacy, accessibility at a certain time, or the willingness to contribute are involved for the persistence of the study. The target population of this research is the economy of Japan. When looking into the geographic element, the research was conducted by specifying only one country which is Japan.

3.2.2 Sampling Frame

A sampling frame is a particular list of all the objects in population. A sampling frame is a complete list of every person or the whole thing that researcher want to study. Compare to sampling frame, population is more general. Based on the population of this study, which is the economy of Japan, the sampling frame included gross domestic product (GDP), foreign direct investment (FDI), exchange rate, inflation rate and unemployment rate.

3.2.3 Sampling Technique

As all the collection and acquisition of data and sources from different areas were investigated, so there is practice in collecting all the possible data and sources within the acquisitions. Convenience sampling technique, also called haphazard sampling or accidental sampling would be applied for this sampling design where this technique was mainly focused on the availability of the sources of data. According to Etikan, Musa & Alkassim (2016), convenience sampling technique considered as the affordable and simple technique that purposely researches the subjects of the samples that are readily available and accessible to the researchers. The samples researched and selected were based on different criteria as the samples may be just occur to be located, administratively, or besides to the location of the researchers in conducting the data collection. In addition, Farrokhi & Mahmoudi-Hamidabad (2012), convenience sampling technique refers to a sampling technique that presenting in studies of second language acquisition. As an example, key data and sources acquisitions were arise and taken from the different areas that had considered and matched for the research analysis.

3.2.4 Sample Size of the Research

Total sample size of research is 148 with quarterly. Since this study conducted on secondary research, the target samples for this research defined to be large thus the sample size of research is computed quarterly. The large sample size would give convenience in conducting the research as there was a large and rich content available. According to Marshall, Cardon, Poddar & Fontenot (2013), large sample size allows the researchers able to receive and focus in reporting and analysing the large

and voluminous dataset. Also, researchers having the opportunity to conduct in-depth study compare to the small sample size research.

3.3 Data Collection Method

The data that used in this research was time series data. All variables were using secondary data to conduct this research and the data collected from the data platform which named Datastream.

3.3.1 Secondary Data

All the data that used for this research was mainly focused on secondary data. Secondary data was data that collected or readily available from other sources which is more accurate and time saving. Datastream was used to collect data for this study. This research used time series data start from year 1980 to year 2016 with quarterly, consequently 148 observations. Since the FIFA World Cup that this paper discussed is on year 2002, data were collected prior to the games and after the games to examine the before and after effect. Data are collected more than 10 years before and after the sport event.

Gross domestic product (GDP) consider as a tools that can be used to determine the economy of the hosting country which is Japan. This paper employed unemployment rate (%), foreign direct investment ($billlions), inflation rate (%), and exchange rate (%) that relevant to the GDP (¥billions). Besides that, this research also use sport event as dummy

variable to determine whether the sport event can bring positive or negative impact to the hosting country and discuss whether the unemployment give mediation effect on the sport event and GDP.

3.4 Proposed Data Analysis Tool

The research is using the SPSS Modeler for testing the mediation effect with OLS estimators. The SPSS Modeler can create precise predictive models rapidly and instinctively. Besides, the SPSS Modeler bring the function on visualize straight forwardly the data mining process, and define the patterns and trends in data. In order to test the mediation, Andrew Hayes is installing in SPSS Modeler. This process enables direct effect and indirect effect to be detected. This research also uses EViews to run the diagnostic checking, for example normality test, multicollinearity, heteroscedasticity, autocorrelation and model specification.

3.4.1 Proposed Theoretical / Conceptual Framework

Figure 3.1: The relationship of gross domestic product (GDP), sport event (SE), unemployment rate (UR), foreign direct investment (FDI), inflation rate (IR), and exchange rate (ER)

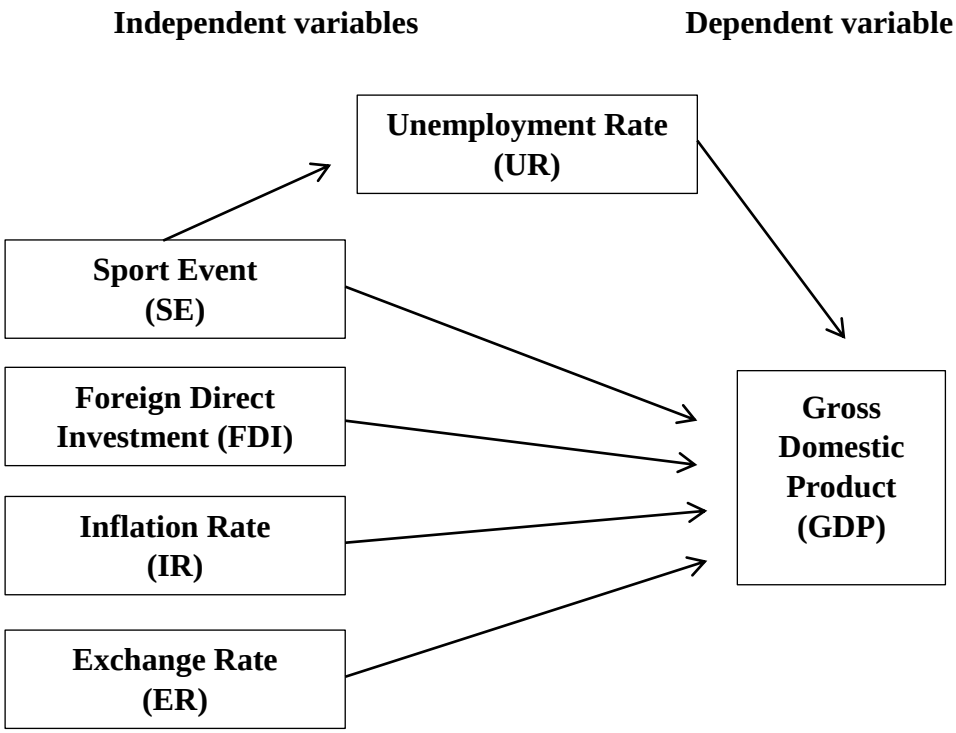


Figure 3.1 state that there are five independent variables including sport event (SE), unemployment rate (UR), foreign direct investment (FDI), inflation rate (IR), and exchange rate (ER) which give impact on the gross domestic product (GDP) while the research take the unemployment rate as a medium variable in order to study the mediation effect.

3.4.2 Proposed Empirical Model

$GDP = \beta_0 + \beta_1 SE + \beta_2 UR + \beta_3 FDI + \beta_4 IR + \beta_5 ER$ ———— Equation 1

Where GDP = Gross domestic product

SE = Sport event

UR = Unemployment rate

FDI = Foreign direct investment

IR = Inflation rate

ER = Exchange rate

Mediation effect is called indirect effect.

Mediation effect equation:

$GDP = \beta_0 + \beta_1 UR$ ———————— Equation 2

$UR = \beta_0 + \beta_1 SE$ ———————— Equation 3

This research defines the relationship between the independent variables and the dependent variable where gross domestic product (GDP) is the dependent variable and sport event, unemployment rate, foreign direct investment, inflation rate, and exchange rate are independent variables. The research studies the mediation effect between sport event and unemployment rate. This mediation effect means that the independent variable not only has relationship with the dependent variable, it also has an indirect effect to another variable.

3.4.3 Multiple Linear Regression Model

Multiple Linear Regression model has relationship between the variables which are independent. There are two types of multicollinearity which are perfect and imperfect correlation. The result of R2 is used to define the relationship between the dependent variable and independent variables. If the p-value of the model is less than significant level, it will be concluded that the independent variables have significant relationship with dependent variable. Otherwise, the H_0 will be accepted.

Significant level: 1%, 5%, 10%

$$Y = \beta_0 + \beta_1 X_1 + \beta 2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_t$$

$$\widehat{GDP_t} = \beta_0 + \beta_1 SE_t + \beta_2 UR_t + \beta_3 FDI_t + \beta_4 IR_t + \beta_5 ER_t + \varepsilon_t$$

Where,

$\widehat{GDP_t}$ = the natural logarithm form of GDP at year t.

SE_t = Sport event held at year t where 0 indicate no event in specific year and 1 indicate event occur in the specific year.

UR_t = Unemployment rate measured by percentage at year t.

FDI_t = Foreign direct investment at year t.

IR_t = Inflation rate measured by percentage change in consumer price index at year t.

ER_t = Exchange rate at year t.

E_t = Error term

3.4.4 T-test Statistics

T-test statistics refers as a procedure of statistical data analysis that purposely computes for hypothesis testing. Lucey (2002) said that t-test statistics determine the data collected with apply of the t-test and analyze the p-value. The null hypothesis will be rejected if the p-value is smaller than 0.01, 0.05, or 0.1, where the results is to conclude that whether there is a significant relationship between the dependent variable and independent variables.

Hypothesis for T-test Statistics

H_0: $\beta_1 = 0$ (β_1 is not significant)

H_1: $\beta_1 \neq 0$ (β_1 is significant)

Decision rule: Reject H_0 if the p-value smaller than all significance level. Otherwise, do not reject H_0.

If the p-value is smaller than significant level, there is significant relationship between the dependent variables and independent variables in model.

Significant level: 1%, 5%, 10%

3.4.5 Diagnostic Checking

3.4.5.1 Multicollinearity

Multicollinearity exists in a regression model when there are at least two highly correlated independent variables are measured simultaneously. As a result, there are various literature reviews discovered the adverse impact of multicollinearity in the regression analysis. Hence, the researchers are inspired to carry out the diagnostic test for multicollinearity and consider it as a main step in the regression analysis process (Vatcheva, Lee, McCormick & Rahbar, 2016). The standard error of coefficients will rise when the multicollinearity problem exist. It lead to the increases of standard errors which may makes the coefficients for some or all independent variables found to be significantly different from 0 and it means that variables that should be significant becomes statistically insignificant (Daoud, 2017). Besides, Variance inflation factor (VIF) can be applied to detect presence of multicollinearity between the variables with the formula in following: $VIF = 1/((1-R^2))$. If the Variance Inflation Factor is more than 10, the variable is consider highly collinear (O'brien, 2007)

Table 3.1 Rule of Thumb

$VIF = \infty$	Perfect multicollinearity problem
$VIF \geq 10$	Serious multicollinearity problem
$1 < VIF < 10$	No serious multicollinearity problem

3.4.5.2 Heteroscedasticity

Heteroscedasticity exists when the error term have non-constant variance across observation in the regression model. When the errors are heteroscedastic, it will lead to the results of OLS estimator remains unbiased but come to be inefficient. Therefore, the hypothesis testing results are incorrect if the common measures are still used in the regression model (Long & Ervin, 2000). Besides, White's test will be conducted to test whether the model consists heteroscedasticity problem. The formal hypothesis testing for White's Test is as follows (White, 1980):

Hypothesis for Heteroscedasticity

H_0: There is no heteroscedasticity in the model.

H_1: There is heteroscedasticity in the model.

Decision rule: Reject H_0 if the p-value smaller than all significance level. Otherwise, do not reject H_0.

If the p-value is slighter than the significant level, there is heteroscedasticity in the model.

Significant level: 1%, 5%, 10%

3.4.5.3 Autocorrelation

Autocorrelation discusses the connection among a series of observations between the cross-sectional data and the time series data. The autocorrelation occur due to the present of specification bias in a model which means the omitted of some significant variable in the model or the inappropriate functional form in the model. When there is a data

transformation problem, the problem will lead to the fault of model while converting the data into new data (Gujarati & Porter, 2009). In order to discover the problem of autocorrelation, Lagrange Multiplier (LM) test can be used. LM test only uses the restriction model to test under null hypothesis and does not use the unrestricted model to test it. LM test is applying the F test in order to test the hypothesis and the finding found out that the F test is not only a natural selection for this purpose but also give assistances to improve the limited sample performance relative to the asymptotic variant (Godfrey, 2007).

Hypothesis for Autocorrelation

H_0: There is no autocorrelation problem in the model.

H_1: There is autocorrelation problem in the model.

Decision rule: Reject H_0 if the p-value smaller than all significance level. Otherwise, do not reject H_0.

If the p-value is smaller than significant level, there is autocorrelation problem in the model.

Significant level: 1%, 5%, 10%

3.4.5.4 Model Specification

The role of model specification is to find out which of the independent variables should be involved in the regression equation or should be excluded from the regression equation (Allen, 1997). There are two types of the model specification errors. The first type of the model specification error is the underfitting a model which means that the model consist an omitted variables. Additionally, another type of model specification error is overfitting a model. Overfitting a model is defined as

the participating of unnecessary variables in the model. Researchers can use Ramsey test, which was known as regression specification error test (RESET) to discover the model specification errors. RESET is easy to apply and the test does not require declaring an alternative model (Gujarati & Porter, 2009).

Hypothesis for Model Specification

H_0: Model specification is correct.

H_1: Model specification is incorrect.

Decision rule: Reject H_0 if the p-value smaller than all significance level. Otherwise, do not reject H_0.

If the p-value is smaller than significant level, the model specification is incorrect.
Significant level: 1%, 5%, 10%

3.4.5.5 Normality Test

Normality test required a set of data which to test the statistical modeling is be normally distributed. Based on Das & Imon (2016), this is necessary and provides ideas about the pattern for the goodness of fit and distribution curve fitting graphical plots. Objective decision of normality was given by the existing testing methods however it does not define a clearer suggestion about the reason of rejecting a null hypothesis. Jarque-Bera test can be used to test the normality of the error term.

Hypothesis for error term

H_0: The error term is normally distributed.
H_1: The error term is not normally distributed.
Decision rule: Reject H_0 if the p-value is less than significant level. Otherwise, do not reject H_0.

If the p-value is smaller than significant level, the error term is normally distributed.

Significant level: 1%, 5%, 10%

3.6 Conclusion

This chapter presented the model and method used for the research. The research used secondary data to carry out the various tests. SPSS Modeler has been used to test the mediation effect and EViews was conducted to test diagnostic checking. In the following chapter will discuss and analyze about the results after running the empirical tests.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

This chapter will provide the analysis and further explain the empirical results of the model. The analysis and empirical results for parameters and overall model will be presented through descriptive statistics, mediating analysis, inferential analysis.

4.1 Descriptive Analysis

Table 4.1: Descriptive Analysis

	GDP	SE	UR	FDI	IR	ER
Mean	430039.1	0.135135	3.518986	1486.338	93.76892	133.6109
Median	453702.7	0.000000	3.370000	495.8500	96.95000	118.7300
Maximum	525940.5	1.000000	5.430000	14844.80	100.7000	259.2700
Minimum	255945.6	0.000000	1.970000	-13576.60	74.40000	77.32000
Std. Dev.	76239.20	0.343029	1.047832	3118.394	6.777352	47.39495
Skewness	-0.851701	2.134537	0.230828	0.487589	-1.201075	1.419997
Kurtosis	2.507158	5.556250	1.740824	9.087860	3.175565	3.850973
Jarque-Bera	19.39093	152.6831	11.09168	234.4136	35.77373	54.20327
Probability	0.000062	0.000000	0.003904	0.000000	0.000000	0.000000

4.1.1 Gross Domestic Product (GDP)

According to the table, it shows that the mean is ¥430039.1billions and median of the GDP is ¥453702.7billions. Besides, the maximum value of GDP is ¥525940.5billions and minimum value of GDP is ¥255945.6billions. The figure also shows the standard deviation of Japan gross domestic product is 76239.2%.

4.1.2 Unemployment Rate (UR)

The table also indicates that mean is 3.518986% and median of unemployment rate of Japan which is 3.37%. The maximum unemployment rate is 5.43% while minimum is 1.97%. Moreover, the standard deviation of the rate of unemployment is 1.047832%.

4.1.3 Foreign Direct Investment (FDI)

The mean is $1486.338billions and median of foreign direct investment (FDI) of Japan is $ 495.85billions. In addition, the highest amount of FDI is $14844.80billions and lowest amount is -$13576.6billions. The standard deviation of FDI is 3118.394%.

4.1.4 Inflation Rate (IR)

On the table shown above, the mean is 93.76892% and median of inflation rate is 96.95%. Thus, 100.7% become the maximum rate and 74.4% become the minimum rate. The result of standard deviation of inflation rate is 6.777352%.

4.1.5 Exchange Rate (ER)

The mean is 133.6109% and median of exchange rate of Japan is 118.73%. Furthermore, the maximum exchange rate of Japan is 259.27% and the minimum exchange rate is 77.32%. The standard deviation of exchange rate of Japan is 47.39495%.

4.2 Mediating Analysis

Table 4.2: Indirect effect of sport event (SE) on gross domestic product (GDP)

	Effect	Standard Error
Unemployment Rate (UR)	47595.3455	10654.2663

Table 4.3: Direct effect of sport event (SE) on gross domestic product (GDP)

	Effect	Standard Error
Unemployment Rate (UR)	8366.9642	13298.7638

Hypothesis:

H_0: Unemployment rate does not significantly mediates the relationship between sport event (independent variable) and gross domestic product (dependent variable).

H_1: Unemployment rate significantly mediates the relationship between sport event (independent variable) and gross domestic product (dependent variable).

Decision rule:

Significance level = 1%, 5%, 10%; Two-tail test

Critical value = ±1.65

Reject H_0 if the coefficient is greater than 1.65 or lower than -1.65. Otherwise, do not reject H_0.

In order to estimate the mediation effect, the boot strapping procedure of 5000 samples made by Andrew Hayes used. Based on the results of the test:

Indirect effect of sport event on gross domestic product

Effect size : 47595.3455

Standard Error : 10654.2663

Coefficient = Effect/Standard Error

= 47595.3455/10654.2663

= 4.4673**

Direct effect of sport event on gross domestic product

Effect size : 8366.9642

Standard Error : 13298.7638

Coefficient = Effect/Standard Error

= 8366.9642/13298.7638

= 0.6292

**Significant at 5% significance level

Conclusion:

Indirect effect

Reject H_0 since the coefficient greater than 1.65. Thus, there is sufficient evidence to conclude that unemployment rate significantly mediates the relationship between sport event (independent variable) and gross domestic product (dependent variable).

Direct effect

Reject H_0 since the coefficient is higher. Thus, there is sufficient evidence to conclude that sport event (independent variable) does not has impact on gross domestic product (dependent variable).

Therefore, the unemployment rate is a full mediator on the relationship between sport event (independent variable) and gross domestic product (dependent variable). According to Antón, Alonso & Rodríguez (2011), sport event bring impact to the economy of Japan where the sport event increases the job opportunity as well as increasing the employment rate. After that, it brings to the positive growth of gross domestic product (GDP) and the standard of living in Japan.

4.3 Inferential Analysis

Table 4.4 GDP is explained by SE, UR, FDI, IR, ER (Ordinary Least Squares)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-88078.82	66693.43	-1.320652	0.1887
SE	9607.509	6414.406	1.497802	0.1364
UR	7033.592	2398.383	2.932640	0.0039***
FDI	2.660745	0.657671	4.045709	0.0001***
IR	5991.272	620.9612	9.648384	0.0000***
ER	-551.4621	83.40859	-6.611575	0.0000***
R-square	0.912146			
Adjusted R-squared	0.909053			
F-statistic	294.8641			
Prob(F-stastitic)	0.000000			

$\widehat{GDP}_t = -88078.82 + 9607.509SE_t + 7033.592UR_t + 2.660745FDI_t + 5991.272IR_t - 551.4621ER_t$

se = (66693.43) (6414.406) (2398.383) (0.657671) (620.9612) (83.40859)

p-value = (0.1887) (0.1364) (0.0039) (0.0001) (0.0000) (0.0000)

***Significant at 1% significance level

4.3.1 Sport Event (SE)

When sport event is hosting, GDP will increase by ¥9607.509billions, on average, holding other variables constant**.**

Hypothesis:

H_0: $\beta_{SE} = 0$ (β_{SE} is not significant)

H_1: $\beta_{SE} \neq 0$ (β_{SE} is significant)

Decision rule:

Reject H_0 if the probability for t-test is less than 0.01. Otherwise, do not reject H_0.

Conclusion:

Do not reject H_0 since the probability for t-test is more than 0.01. Thus, there is sufficient evidence to conclude that sport event (SE) does not significantly affecting gross domestic product (GDP).

4.3.2 Unemployment Rate (UR)

For every 1% increase in UR, GDP will increase by ¥7033.592billions, on average, holding other variables constant.

Hypothesis:

H_0: $\beta_{UR} = 0$ (β_{UR} is not significant)

H_1: $\beta_{UR} \neq 0$ (β_{UR} is significant)

Decision rule:

Reject H_0 if the probability for t-test is less than 0.01. Otherwise, do not reject H_0.

Conclusion:

Reject H_0 since the probability for t-test is less than 0.01. Thus, there is sufficient evidence to conclude that unemployment rate (UR) significantly affecting gross domestic product (GDP).

4.3.3 Foreign Direct Investment (FDI)

For every 1% increase in FDI, GDP will increase by ¥2.660745billions, on average, holding other variables constant.

Hypothesis:

H_0: $\beta_{FDI} = 0$ (β_{FDI} is not significant)

H_1: $\beta_{FDI} \neq 0$ (β_{FDI} is significant)

Decision rule:

Reject H_0 if the probability for t-test is less than 0.01. Otherwise, do not reject H_0.

Conclusion:

Reject H_0 since the probability for t-test is less than 0.01. Thus, there is sufficient evidence to conclude that foreign direct investment (FDI) significantly affecting gross domestic product (GDP).

4.3.4 Inflation Rate (IR)

For every 1% increase in IR, GDP will increase by ¥5991.272billions, on average, holding other variables constant.

Hypothesis:

H_0: $\beta_{IR} = 0$ (β_{IR} is not significant)

H_1: $\beta_{IR} \neq 0$ (β_{IR} is significant)

Decision rule:

Reject H_0 if the probability for t-test is less than 0.01. Otherwise, do not reject H_0.

Conclusion:

Reject H_0 since the probability for t-test is less than 0.01. Thus, there is sufficient evidence to conclude that inflation rate (IR) significantly affecting gross domestic product (GDP).

4.3.5 Exchange Rate (ER)

For every 1% increase in ER, GDP will decrease by ¥551.4621billions, on average, holding other variables constant.

Hypothesis:

H_0: $\beta_{ER} = 0$ (β_{ER} is not significant)

H_1: $\beta_{ER} \neq 0$ (β_{ER} is significant)

Decision rule:

Reject H_0 if the probability for t-test is less than 0.01. Otherwise, do not reject H_0.

Conclusion:

Reject H_0 since the probability for t-test is less than 0.01. Thus, there is sufficient evidence to conclude that exchange rate (ER) significantly affecting gross domestic product (GDP).

R^2 = 0.912146

There are 91.21% of the variation in GDP can be explained by the variation in SE, UR, FDI, IR, and ER.

Adjusted R-squared = 0.909053

There are 90.91% of the variation in GDP can be explained by the variation in SE, UR, FDI, IR, and ER after the degree of freedom is taken into account.

4.3.6 Consistency with theory and expectations

Table 4.5 Comparison between expected sign and actual sign

Parameters	Coefficients	Expected Sign	Actual Sign
SE	β_{SE}	Positive	Positive
UR	β_{UR}	Negative	Positive
FDI	β_{FDI}	Positive	Positive
IR	β_{IR}	Positive	Positive
ER	β_{ER}	Negative	Negative

Based on the results run, the four independent variables namely foreign direct investment (FDI), inflation rate (IR), and exchange rate (ER) and unemployment rate (UR) are considered significantly affecting the dependent variables which is gross domestic product (GDP) while sport event (SE) is insignificantly affect the GDP. Besides, there are four parameters which are consistent on the actual sign and the expected sign namely, SE, FDI, IR, and ER while UR having the opposite sign with the research's expectation.

With the empirical results, sport event having the same actual sign with the expected sign which was the positive relationship with the gross domestic product (GDP). According to Horne & Manzenreiter (2004), the research pointed out that the GDP growth rate of World Cup held in Korea was higher than the pre-event growth rate. The post-event GDP growth rate was higher than eight times than the post-event growth rate. Besides, Oga (1998), had studied that the relationship between sport industry in Japan and movement in general economy. The results showed that there is parallel growth between sport industry and the development of Japanese economy (GDP).

Moreover, the only one which having the different sign of the expected sign and actual sign is unemployment rate (UR). The results shows that unemployment rate having the positive relationship with gross domestic product (GDP) which different with the expected sign of negative. This supported by Mahadea (2003), the study presented a positive relationship among the unemployment rate and gross domestic product (GDP) in South Africa. The results showed that the unemployment-GDP ratio showing positive which means the higher unemployment rate brought the higher GDP. The reduction of labor force but with the higher labor force productivity has brought the output expansion of the South Africa.

Foreign direct investment (FDI) having the same sign among the actual sign and expected sign which the FDI give positive impact on the gross domestic product (GDP). This supported by Sandalcilar & Altiner (2012), the research found that there was a positive relation between the FDI inflows and GDP in economic cooperation organization region from the period of 1995 to 2011. Nosheen (2013), also indicated that FDI inflows had a positive relation with GDP in Pakistan during 1980 to 2010 where used the application of Augmented Dickey-Fuller test's and result showed GDP will keep growth when the rate of FDI is high.

Inflation rate (IR) having the positive relationship with the gross domestic product (GDP), which same with the expected sign of the research. The study of Bhusal & Silpakar (2011), had disclosed that had significance relationship with the GDP and it was a positive relationship in Nepal. Other than that, based on the result of Hussain & Malik (2011), the study concluded that the relationship between the inflation rate and GDP growth was positive, it slowed the economic growth in Pakistan.

Lastly, exchange rate (ER) having the negative effect on the gross domestic product (GDP), which is also same with the expected sign. According to Baxter & Stockman (1989), and Flood & Rose (1995), the study found a negative relationship between the exchange rate flexibility and GDP output variability.

4.4 Diagnostic Checking

4.4.1 Multicollinearity

Table 4.6 Figures of variance inflation factor (VIF) among the independent variables

Variables	VIF
SE	1.346
UR	1.756
FDI	1.170
IR	4.925
ER	4.346

VIF = ∞	Perfect multicollinearity problem
VIF ≥ 10	Serious multicollinearity problem
1 < VIF < 10	No serious multicollinearity problem

Conclusion:

Since the variance inflation factor (VIF) for each independent variable is not greater than 10. Thus, there is no multicollinearity problem among the independent variables.

4.4.2 Heteroscedasticity Test

Table 4.7 Results of White Test

F-statistic	8.163272	**Prob. F(5,143)**	0.0000
Obs*R-squared	33.04311	**Prob. Chi-Square(5)**	0.0000***
Scaled explained SS	23.31484	**Prob. Chi-Square(5)**	0.0003

***Significant at 1% significance level

Hypothesis:

H_0: Heteroscedasticity problem does not exist.

H_1: Heteroscedasticity problem exist.

Decision rule:

Reject H_0 if the P-value is smaller than significant level of 0.01. Otherwise, do not reject H_0.

Conclusion:

Reject H_0 since the P-value (0.0000) is smaller than significant level of 0.01. Therefore, there is sufficient evidence to prove that heteroscedasticity problem exist in the model.

Heteroscedasticity exists with the non-constant value of error term across observation in the regression model. If the error term in the model is known to be heteroscedasticity, the problem making the estimators of the ordinary least squares (OLS) method inefficient. Yet, the ordinary least square estimators for the coefficients are still consistent and unbiased with the presence of heteroscedasticity.

4.4.3 Autocorrelation Test

Table 4.8 Results of Breusch-Godfrey Serial Correlation LM Test

F-statistic	573.9792	**Prob. F(2,141)**	0.0000
Obs*R-squared	118.8131	**Prob. Chi-Square(2)**	0.0000***

***Significant at 1% significance level

Hypothesis:

H_0: There is no autocorrelation problem.

H_1: There is an autocorrelation problem.

Decision rule:

Reject H_0 if P-value of Chi-squared is smaller than significant level of 0.01. Otherwise, do not reject H_0.

Conclusion:

Reject H_0 since the probability value of Chi-squared (0.0000) is less than significant level of 0.01. Therefore, there is sufficient evidence to conclude that there is an autocorrelation problem in the model.

In econometrics, Cochrane-Orcutt estimation is a procedure which supports in adjustment of a linear model for serial correlation in the error term. Therefore, the Cochrane-Orcutt method has been used in the research in order to diminish autocorrelation problem which violated the Ordinary Least Square (OLS) theory.

Table 4.9 Results of ARMA Maximum Likelihood (BFGS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	330124.2	123375.7	2.675763	0.0083
SE	231.9957	2037.151	0.113882	0.9095
UR	-5111.506	1966.599	-2.599161	0.0103
FDI	0.012168	0.166041	0.073284	0.9417
ER	915.4597	496.5805	1.843528	0.0674
IR	-26.65583	59.59988	-0.447246	0.6554
AR(1)	0.999263	0.005006	199.6217	0.0000
SIGMASQ	21408308	2137843.	10.01397	0.0000

Hypothesis:

H_0: There is no autocorrelation problem.

H_1: There is an autocorrelation problem.

Decision rule:

Reject H_0 if P-value is smaller than significant level of 0.05. Otherwise, do not reject H_0.

Conclusion:

Do not reject H_0 since the probability value (0.999263) is greater than significant level of 0.05. Therefore, there is sufficient evidence to conclude that there is no autocorrelation problem exists in the model.

4.4.4 Model Specification Test

Table 4.10 Results of Ramsey's RESET Test

	Value	df	Probability
t-statistic	1.303451	141	0.1945
F-statistic	1.698985	(1,141)	0.1945
Likelihood ratio	1.772673	1	0.1831

Hypothesis:

H_0: Model Specification is correct.

H_1: Model Specification is incorrect.

Decision rule:

Reject H_0 if the p-value is less than the significant level of 0.05. Otherwise, do not reject H_0.

Conclusion:

Do not reject H_0 since the p-value (0.1945) is higher than the significant level of 0.05. Thus, there is insufficient evidence to prove that the model specification is incorrect.

4.4.5 Normality Test

This research used Jarque-Bera test to identify the normality of error term in the model.

Table 4.11 Results of Jarque-Bera Test

Jarque-Bera	1.750798
Probability	0.416696

Hypothesis:

H_0: The error term is normally distributed.

H_1: The error term is not normally distributed.

Decision rule:

Reject H_0 if the p-value is less than significant level of 0.05. Otherwise, do not reject H_0.

Conclusion:

Do not reject H_0 since the p-value of 0.416696 is greater than the significant level of 0.05. This research concluded that does not have sufficient evidence to prove that the error term is not normally distributed at significant level at 0.05.

4.5 Conclusion

In this chapter, the mediation effect and diagnostic checking was run. The research showed the empirical results in table and figure form. This chapter interpreted the results accurately and clearly. The following chapter which is the last chapter will be clarifying about the summary of the whole research study.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

This chapter will present the summarization of the findings from the previous chapter. Next, some implications of the study will be analyzing and explaining in order to make a comparison of the findings with the previous study. Moreover, the limitations of the study and some recommendations for the future researchers to conduct the study also will be presenting in this chapter.

5.1 Discussions of Major Findings

Increasingly, countries or regions hosted the sport event such as FIFA World Cup and the winter and summer Olympic Games. Hosting of the sport event seems to be an opportunity for the bidding countries or cities to have the potential economic benefits. However, there are still many economic impact studies have been carried out to measure the consequence and influences from the sport event. Therefore, this study attempt to validate whether there are relationships between the gross domestic product (GDP) and the selected variables that are studies in the Japan. The selected variables consist of foreign direct investment, inflation rate, exchange rate, unemployment rate and also the sport event. Based on the result of the studies, the actual sign of the variables is consistent with the expected sign except the variable of unemployment rate. Besides, another concern of the research is there are mediation effect of unemployment rate on sport event and GDP in Japan. It shows that unemployment

rate is a full mediator on the relationship between sport event and GDP but there are no direct effects between the sport events and GDP according to the result.

On an overall basis, although the actual sign of unemployment rate is not same with the expected sign, but the result was consistent with the studies of Mahadea (2003) who found that positive relationship among the unemployment rate and gross domestic product (GDP) in South Africa. Besides, the outcomes of other variables are consistent with the studies of other researchers' work. For instance, foreign direct investment (FDI) have supported by the research of Sandalcilar & Altiner (2012) and Nosheen (2013) which conclude that positive relation between the FDI inflows and GDP. While the studies of Bhusal & Silpakar (2011) and Hussain & Malik (2011) showed that significance positive relationship between inflation rate and the GDP. In addition, the negative effect of exchange rate on the GDP also supported by the research of Baxter & Stockman (1989) and Flood & Rose (1995). Lastly, Oga (1998) found that there are parallel growth between sport industry and the development of Japanese economy (GDP) which consistent with the result.

Table 5.1: Summary of Diagnostic Checking results

Diagnostic Checking	P-value	Decision	Result
Multicollinearity	-	-	VIF for each independent variable less than 10. No serious multicollinearity problem.
Heteroscedasticity	0.0000	Reject H_0	Heteroscedasticity problem exist.
Autocorrelation	0.999263	Do not reject H_0	No autocorrelation problem.
Model Specification	0.0651	Do not reject H_0	Model specification is correct.
Normality Test	0.416696	Do not reject H_0	Error term is normally distributed.

5.2 Implications of the Study

In this research, there was forethought on future decision for potential positive changes on several level as well as policy makers and also investor. This research is examining the sport event that gives indirect effect to the gross domestic product.

For the growth of economy, policy makers are possible to establishing long term planning and idea to host sport event successfully. Moreover, understanding the factor that will affect the economy of the country was essential to the long term planning. If this issue is not supervised by government, it may create difficulties and hard to recover especially after sport event. Besides, sport event bring indirect effect to the gross domestic product of the country through employment rate. Through this research, policy holders are able to face the problem of unemployment after the sport event by policy such as monetary policy.

Tourism sector become the important area for economy. Tourism stakeholders able to launch a policy and be prepare to face uncertainty. During the period of sport event, the number of tourism is increasing and visit to the hosting country. If tourism stakeholder was not aware of this, it may face problem like lack of resources. By having a foresight on this situation, stakeholder was able to execute policy that improve efficiency and improve the economy of the country.

By studying this research, the result provided some knowledge to understand the effect of mediation on the research. The research are able to be a good example for students or other researchers to study the mediation model by conducting application of data research to get most reliable and accurate outcome. Other research can apply this research as a guideline and reference for them to help them conducting similar research related to mediation effect.

5.3 Limitations of the Study

By processing this research, sport event will bring short run effect and long run effect to the economic activities of the hosting countries. The research can be testing the short run and long run effect to the countries but the results will not become more effective in the long run effect. Thus, the objective of this

research is testing the mediation effect on unemployment rate affected by sport event and affect to economic activities. Additionally, the main issue of this research is concentrate on gross domestic product (GDP) connection with variables of sport event, unemployment rate, foreign direct investment, interest rate and exchange rate in Japan. However, there are still other macroeconomic factors that might affect GDP of Japan which the researchers do not take into consideration in this research. Those macroeconomic factors might be money supply, income, savings and so forth.

5.4 Recommendations for the Future Research

This research aims to test the mediation effect but not include testing of the short run and long run effect of the sport event. In order to improve the reliability of result, future researchers are encouraged to test the short run and long run effect with the mediation effect. The researchers should spend time on finding way to improve the relations of the mediator and other variables in the long run. It can undertake some of the goals of therapy and bring effort to improve the relations thus it will become more effective in the long run effect and bring the long run success in the mediation. Besides, by providing the more ideal research, future researchers are recommended to use other variables which bring the impact on gross domestic product (GDP) other than unemployment rate, foreign direct investment, inflation rate, exchange rate. The researchers can include other variables such as interest rate, the level of government debt, or the money supply to study the relationship between the gross domestic product and these variables. By using these new variables, the researchers able to obtain different results and conduct more in-depth study about the GDP.

5.5 Conclusion

Last but not least, this research has met the main objective where to determine the mediation effect of unemployment rate on sport event and gross domestic product (GDP). The result of the research has presented the mediation effect of unemployment rate. Besides, this research has determined out which independent variables are presenting significant relationship with GDP. With the results obtained, only sport event show insignificant relationship with GDP. Furthermore, the implication, limitations of the study and some recommendations suggested for future researchers to conduct depth study have presented in this research.

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APPENDICES

Appendix 1: Mediation Result from SPSS Modeler

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.3
*******************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
*
Model  : 4
    Y  : GDP
    X  : SE
    M  : UR

Sample
Size:  148

**************************************************************************
*
OUTCOME VARIABLE:
 UR

Model Summary
          R       R-sq        MSE     F(HC0)        df1        df2
p
      .3325      .1106      .9832    29.3833     1.0000
146.0000      .0000

Model
              coeff    se(HC0)          t          p       LLCI
ULCI
constant     3.3817      .0900    37.5696      .0000     3.2038
3.5596
SE           1.0158      .1874     5.4206      .0000      .6454
1.3861

Standardized coefficients
        coeff
SE      .9694

Covariance matrix of regression parameter estimates:
           constant         SE
constant      .0081     -.0081
SE           -.0081      .0351

**************************************************************************
*
OUTCOME VARIABLE:
 GDP

Model Summary
          R       R-sq        MSE     F(HC0)        df1        df2
p
      .6575      .4323 3345450125    62.4018     2.0000
145.0000      .0000

Model
              coeff    se(HC0)          t          p       LLCI
ULCI
constant 264023.167 17879.5479    14.7668      .0000 228684.931
299361.403
```

```
SE        8366.9642 13298.7638      .6292      .5302 -17917.529
34651.4574
UR       46855.9008  4343.9349    10.7865      .0000 38270.2813
55441.5204

Standardized coefficients
        coeff
SE      .1097
UR      .6440

Covariance matrix of regression parameter estimates:
           constant         SE         UR
constant  319678232 25796492.8  -75321819
SE       25796492.8  176857120  -11870949
UR        -75321819  -11870949 18869770.2

************************** TOTAL EFFECT MODEL
****************************
OUTCOME VARIABLE:
 GDP

Model Summary
          R       R-sq        MSE     F(HC0)        df1        df2
p
      .2518      .0634 5481190647    39.8444     1.0000
146.0000      .0000

Model
             coeff    se(HC0)          t          p       LLCI
ULCI
constant 422476.645  6935.3411    60.9165      .0000 408770.002
436183.289
SE       55962.3097  8865.6812     6.3122      .0000 38440.6433
73483.9761

Standardized coefficients
        coeff
SE      .7340

Covariance matrix of regression parameter estimates:
           constant         SE
constant 48098956.0  -48098956
SE        -48098956 78600302.8

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y
**************

Total effect of X on Y
     Effect    se(HC0)          t          p       LLCI       ULCI
c_ps
 55962.3097  8865.6812     6.3122      .0000 38440.6433
73483.9761      .7340

Direct effect of X on Y
     Effect    se(HC0)          t          p       LLCI       ULCI
c'_ps
  8366.9642 13298.7638      .6292      .5302 -17917.529
34651.4574      .1097

Indirect effect(s) of X on Y:
       Effect     BootSE   BootLLCI   BootULCI
UR 47595.3455 10654.2663 28998.7706 70070.0292

Partially standardized indirect effect(s) of X on Y:
       Effect     BootSE   BootLLCI   BootULCI
UR      .6243      .1305      .3926      .8920
```

```
************************ ANALYSIS NOTES AND ERRORS
************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: Standardized coefficients for dichotomous or multicategorical X are
in
      partially standardized form.

NOTE: A heteroscedasticity consistent standard error and covariance
matrix estimator was used.

------ END MATRIX -----
```

Appendix 2: Empirical Result of Multiple Linear Regression Model

Dependent Variable: GDP
Method: Least Squares
Date: 02/21/19 Time: 21:42
Sample: 1 148
Included observations: 148

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SE	9607.509	6414.406	1.497802	0.1364
UR	7033.592	2398.383	2.932640	0.0039
FDI	2.660745	0.657671	4.045709	0.0001
IR	5991.272	620.9612	9.648384	0.0000
ER	-551.4621	83.40859	-6.611575	0.0000
C	-88078.82	66693.43	-1.320652	0.1887

R-squared	0.912146	Mean dependent var	430039.1
Adjusted R-squared	0.909053	S.D. dependent var	76239.20
S.E. of regression	22991.82	Akaike info criterion	22.96336
Sum squared resid	7.51E+10	Schwarz criterion	23.08487
Log likelihood	-1693.289	Hannan-Quinn criter.	23.01273
F-statistic	294.8641	Durbin-Watson stat	0.279341
Prob(F-statistic)	0.000000		

Appendix 3: Coefficient Result of VIF analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(C)	-88078.820	66693.432		-1.321	.189					
	SE	9607.509	6414.406	.043	1.498	.136	.252	.125	.037	.743	1.346
	UR	7033.592	2398.383	.097	2.933	.004	.657	.239	.073	.569	1.756
	FDI	2.661	.658	.109	4.046	.000	.370	.321	.101	.855	1.170
	IR	5991.272	620.961	.533	9.648	.000	.930	.629	.240	.203	4.925
	ER	-551.462	83.409	-.343	-6.612	.000	-.881	-.485	-.164	.230	4.346

a. Dependent Variable: GDP

Appendix 4: Heteroscedasticity Test (White Test)

Heteroskedasticity Test: White
Null hypothesis: Homoskedasticity

F-statistic	8.163272	Prob. F(5,142)	0.0000
Obs*R-squared	33.04311	Prob. Chi-Square(5)	0.0000
Scaled explained SS	23.31484	Prob. Chi-Square(5)	0.0003

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 02/21/19 Time: 21:45
Sample: 1 148
Included observations: 148

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.91E+08	7.79E+08	-1.272057	0.2054
SE^2	2.73E+08	1.50E+08	1.817565	0.0712
UR^2	-14599985	7609466.	-1.918661	0.0570
FDI^2	3.903705	1.589682	2.455651	0.0153
IR^2	187113.1	80145.60	2.334665	0.0210
ER^2	-2079.122	5635.293	-0.368946	0.7127

R-squared	0.223264	Mean dependent var	5.07E+08
Adjusted R-squared	0.195914	S.D. dependent var	6.30E+08
S.E. of regression	5.65E+08	Akaike info criterion	43.18230
Sum squared resid	4.53E+19	Schwarz criterion	43.30381
Log likelihood	-3189.490	Hannan-Quinn criter.	43.23167
F-statistic	8.163272	Durbin-Watson stat	1.334516
Prob(F-statistic)	0.000001		

Appendix 5: Autocorrelation Test (Breusch-Godfrey Serial Correlation LM Test)

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 1 lag

F-statistic	573.9792	Prob. F(1,141)	0.0000
Obs*R-squared	118.8131	Prob. Chi-Square(1)	0.0000

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 02/21/19 Time: 21:46
Sample: 1 148
Included observations: 148
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SE	-7137.258	2874.085	-2.483315	0.0142
UR	2536.777	1074.080	2.361814	0.0196
FDI	-2.061739	0.305466	-6.749485	0.0000
IR	337.8292	277.0927	1.219192	0.2248
ER	32.74739	37.19647	0.880390	0.3801
C	-40655.77	29770.58	-1.365636	0.1742
RESID(-1)	0.949789	0.039644	23.95786	0.0000

R-squared	0.802791	Mean dependent var	-3.87E-11
Adjusted R-squared	0.794400	S.D. dependent var	22597.42
S.E. of regression	10246.39	Akaike info criterion	21.35338
Sum squared resid	1.48E+10	Schwarz criterion	21.49514
Log likelihood	-1573.150	Hannan-Quinn criter.	21.41098
F-statistic	95.66319	Durbin-Watson stat	2.051151
Prob(F-statistic)	0.000000		

Appendix 6: Autocorrelation Test (ARMA Maximum Likelihood (BFGS)

Dependent Variable: GDP
Method: ARMA Maximum Likelihood (BFGS)
Date: 02/21/19 Time: 21:58
Sample: 1 148
Included observations: 148
Convergence achieved after 11 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	330124.2	123375.7	2.675763	0.0083
SE	231.9957	2037.151	0.113882	0.9095
UR	-5111.506	1966.599	-2.599161	0.0103
FDI	0.012168	0.166041	0.073284	0.9417
IR	915.4597	496.5805	1.843528	0.0674
ER	-26.65583	59.59988	-0.447246	0.6554
AR(1)	0.999263	0.005006	199.6217	0.0000
SIGMASQ	21408308	2137843.	10.01397	0.0000

R-squared	0.996292	Mean dependent var	430039.1
Adjusted R-squared	0.996106	S.D. dependent var	76239.20
S.E. of regression	4757.272	Akaike info criterion	19.86933
Sum squared resid	3.17E+09	Schwarz criterion	20.03134
Log likelihood	-1462.331	Hannan-Quinn criter.	19.93516
F-statistic	5373.367	Durbin-Watson stat	1.640332
Prob(F-statistic)	0.000000		

Inverted AR Roots	1.00

Appendix 7: Model Specification Test (Ramsey RESET Test)

Ramsey RESET Test
Equation: UNTITLED
Specification: GDP SE UR FDI IR ER C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.303451	141	0.1945
F-statistic	1.698985	(1, 141)	0.1945
Likelihood ratio	1.772673	1	0.1831

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	8.94E+08	1	8.94E+08
Restricted SSR	7.51E+10	142	5.29E+08
Unrestricted SSR	7.42E+10	141	5.26E+08

LR test summary:

	Value
Restricted LogL	-1693.289
Unrestricted LogL	-1692.402

Unrestricted Test Equation:
Dependent Variable: GDP
Method: Least Squares
Date: 02/21/19 Time: 21:48
Sample: 1 148
Included observations: 148

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SE	3211.798	8063.454	0.398315	0.6910
UR	887.2882	5287.640	0.167804	0.8670
FDI	0.519043	1.769235	0.293372	0.7697
IR	2207.288	2968.401	0.743595	0.4584
ER	-240.0392	252.9951	-0.948790	0.3444
C	95220.29	155569.6	0.612075	0.5415
FITTED^2	8.18E-07	6.28E-07	1.303451	0.1945

R-squared	0.913192	Mean dependent var	430039.1
Adjusted R-squared	0.909498	S.D. dependent var	76239.20
S.E. of regression	22935.44	Akaike info criterion	22.96490
Sum squared resid	7.42E+10	Schwarz criterion	23.10666
Log likelihood	-1692.402	Hannan-Quinn criter.	23.02249
F-statistic	247.2128	Durbin-Watson stat	0.276864
Prob(F-statistic)	0.000000		

Appendix 8: Normality Test (Jarque-Bera Test)