

**AFFECTING FACTORS OF FOREIGN DIRECT INVESTMENT: EXPORT AND
GROSS DOMESTIC EXPENDITURE ON RESEARCH AND DEVELOPMENT IN
HUMAN CAPITAL CONCEPT
(A Study In Indonesia Period 2009-2016)**

**Shelvia
Sri Sulasmiyati**
Faculty of Administrative Science
University of Brawijaya
Malang, Indonesia
Email: jeonshelvia@gmail.com

ABSTRAK

Penelitian ini bertujuan untuk menghubungkan benang merah antara pertumbuhan ekonomi, investasi asing langsung, ekspor dan pengeluaran pemerintah dalam penelitian dan pengembangan dalam hubungannya dengan konsep *human capital*. Perbandingan berdasarkan data dari kegiatan ekonomi di Asia dan Indonesia bertujuan untuk melihat lebih jauh terhadap bukti yang lebih lengkap, perspektif yang lebih luas dan interpretasi yang lebih tepat. Pada penelitian ini menggunakan analisis regresi linear berganda dengan tehnik OLS. Data yang ada berfokus pada variabel ekspor, pengeluaran pemerintah dalam penelitian dan pengembangan dan investasi asing langsung termasuk berbagai ulasan dan bukti pendukung. Hasil dari penelitian diharapkan memiliki implementasi secara praktik terhadap kegiatan ekonomi dan pengembangan *human capital*. Ekspor sebagai substitusi dari produktivitas dan pengeluaran pemerintah dalam penelitian dan pengembangan sebagai substitusi dari progres ilmu dan teknologi di Indonesia akan dijabarkan dalam konsep *human capital*.

Kata kunci: Ekspor, investasi asing langsung, pengeluaran domestik dalam penelitian dan pengembangan, *human capital*

ABSTRACT

This study attempts to relate the linkage between economic growth, foreign direct investment (FDI), and between export and gross domestic expenditure on research and development (GERD) in representing human capital. The comparison based on the data of the economy activities in Asia and Indonesia is used to see further a more wide evidence, perspective and the exact interpretation of the test result. This study is using multiple regression analysis to find evidence to prove the hypothesis with Ordinary Least Square (OLS) techniques. The data is focusing to the relation of FDI, export and GERD variables in particular and including supportive reviews and evidence. The result of this study is expected to have the practical implementation to the economy and human capital enhancement activities. Export as substitution of productivity and GERD as substitution of science and technological progress in Indonesia explained in human capital concept.

Keywords: *Export, foreign direct investment, gross domestic expenditure on research and development, human capital*

A. BACKGROUND

To develop the economy of each country level has its own chance in this age of globalization. Signs of development of a country is shown in economic growth. In 2002-2008 Indonesia has shown remarkable progress in economic growth by 5.5% on average. Despite the fact that Indonesia's economic growth was under the Asian giant; China and India. The percentage value of Indonesia's economic growth is still proving the potential to rise after experiencing an economic crisis (Gopalan et al, 2016: 28). During the Global Financial Crisis (GFC) in 2009, Indonesia is considered able to maintain economic stability. But in 2012, Indonesia's economic growth began to decline until recent years. It was seen from the data of economic growth, investment growth significantly decreased since the financial crisis.

Economic growth is the focus of the government in an effort to boost investment growth. Where increased investment is believed to help get the stability of economic growth. As a long-term capital flows and are not susceptible to economic fluctuations in foreign direct investment (FDI), is expected to help the growth of sustainable investments a country as well as Indonesia. When compared to inflows of FDI were recorded among Asian countries, China has a competitive advantage. The flood of Chinese products in the market as it is now because it can produce products cheaper and with a great amount. Economic growth and open policy demonstrated by China have also attracted large FDI inflows into the country because of abundant cheap labor and huge domestic market (Yussof and Ismail, 2002: 90).

Compared with China, Indonesia also has an abundant amount of labor. According to Forbes (17.5), Indonesia is one of Asia's best to foreign investors because although the population of Indonesia is quite large but also has a low level of salaries, that the manufactured goods can be sold locally. Indonesia has the potential to receive higher amounts of FDI. In addition, Indonesia has the economic factors that determine which matters relating to markets, natural resources and human capital. The government should know exactly which factors are considered by FDI and important way to obtain the expected

investment. It became the first factor Indonesian government to make policy and plan appropriate actions to increase FDI.

Export as Substitution to represent productivity in Indonesia can be a good practical implementation to see whether by developing FDI can affect productivity in the long term. This is based on the World Bank study in view of its main development policy in 2014, productivity in Indonesia has potential, especially in manufacturing. Exports of goods to demonstrate knowledge workers to manufacture, distribute, and the technology used. Exports can represent human capital such as human capital productivity is generated by exports (Fafchamps, 2008: 1). Exports are expected to help attract foreign investors due to the reduction in the cost of training, transfer of knowledge and technology that is described by the quality and quantity of the goods (Agnieska, 2014: 225).

To identify these factors, research and development expenses (R & D) is an effective replacement indicator and can be used to measure progress in the country (Yussof and Ismail, 2002: 101). Knowledge-based economy is derived from a fuller recognition of the place of science and technology in the modern economy. The generation and acquisition of knowledge is highly dependent on research and development activities that drive innovation, especially in science and technology. Things significant human capital when FDI is concentrated in the higher technology and more knowledge-based activities (refer primarily of production, distribution and use of knowledge and information).

In this research is choosing the period from 2009-2016 based on the consideration of the situation of economy in Indonesia. Despite the stable economy in 2002-2008, at the end of 2008 and start of 2009 was highly fluctuating especially by the effect of global economy crisis to Indonesia. If the data of 2008 is used, there will be a huge effect to the result that considerably insufficient to be explained by the export and GERD variable only. Therefore, period 2008-2016 are chosen to provide more stable data and more relatable interpretation of result.

B. THEORITICAL REVIEW

1. Human Capital

Jacob in the book *Studies in Human Capital* (1993:286), economist who popularized human capital, as a new term of human resource, is referring to the stock of knowledge, habits, social, and personality attributes, including creativity, embodied in the ability to perform labor so as to produce economic value.

It is an aggregate economic view of the human being acting within economies, which is an attempt to capture the social, biological, cultural and psychological complexity as they interact in explicit and/or economic transactions. Many theories explicitly connect investment in human capital development to education, and the role of human capital in economic development, productivity growth, and innovation has frequently been cited as a justification for government subsidies for education and job skills training.

2. Export

Export definition manifestation of international trade on the import side. Where exports of goods and services produced in a country in great demand and bought by citizens of other countries that produced the main products have good quality and service. There are some theories of how international trade, including export and import, is occurring. One of the most acknowledged theory is the competitive advantage theory. This theory starts from the principle that the only important concept at the national level is the national productivity.

However, the industries are using different approaches to management. The simpler concept of nations' competitiveness is productivity. Productivity, that depends on the quality and features of products and the efficiency with how it produced, is a main determinant of national income which is a purpose of all of the actions of a country. A country can offer different competitive advantages for a company, depending if it is an origin country or a host country. A conclusion for national competitiveness, the comparative advantage is closely depending on management practices, including management-labour relations. Porter (2008: 44)

3. Gross Domestic Expenditure on R&D

Adequate R&D funding that is commensurate with economic growth and national income is necessary for ensuring sustainable development. Scientists are improving their understanding on policy-relevant issues such as climate change, growth in resource consumption rates, demographic trends, and environmental degradation. Changes in R&D investments in these and other areas need to be taken into account in devising long-term strategies for development. Scientific knowledge should be applied to assess current conditions and future prospects in relation to sustainable development. However, it is one of indicators when measuring S&T in developing countries. Expenditure reflects the potential of R&D in a given country, and the effort conducted in a given year. This indicator is widely used to measure the so-called R&D intensity.

4. Foreign Direct Investment

Foreign direct investment (FDI) occurs when a firm invests directly in facilities to produce or market a product in a foreign country or generally called host country (Charles, 2008: 229-253). FDI takes two main forms which are greenfield investment and involving acquirement or merge with host country existing company. Another forms of FDI are merger, acquisition, and expand of multinational corporation (MNC). As globalization has been breaking through the world's economy, each country has enlarged their impact to another country. FDI, as one of factors of a country economic growth, becomes an important purpose to both home and host country.

C. METHOD OF RESEARCH

1. Type of Research

The type of this research is explanatory research with quantitative approach. This research is using quantitative approach to identify the correlation between the Labour Export (X1), Gross Domestic Expenditure on Research and Development (X2), as the independent variables as the measurement source is in Indonesia with The Foreign Direct Investment (Y1) is the dependent variable

which is measured by the inflow in Indonesia.

2. Population and Sample

The population of this study is Export, Gross Domestic Expenditure on Research and Development, and the inflow of Foreign Direct Investment in 2009-2016 (per quarter) in Indonesia. The determination of this population is based on the Export and GERD in human capital concept.

The sample of this study is the non-probability sampling technique which contains saturation sampling.

3. Method of Data Collecting

For this study, this researcher will choose the secondary data that is data which has already been collected by someone else or organization and which have already been passed through statistical process. To use this secondary data, there are several kind of sources where researcher can obtain the data whether it has been published or not. This research will use published data such as various publication by government or organization, journals, books, public records and web statistics.

4. Source of Data

The sources to get the datas needed are Bank of Indonesia monthly statistic, IMF and World Bank; R&D Magazine for Gross Domestic Expenditure on Research and Development and Ministry of Trade of Indonesia for Export. Foreign Direct Investment data is retrieved from Badan Koordinasi Penanaman Modal (BKPM).

5. Analysis of Data

Researcher should begin their data analyses by thoroughly exploring and describing their data for both quantitative and qualitative (Vogt et al., 2014: 206).

a. Descriptive Statistic

Descriptive statistic are methods used to potray the cases in a collection of data, to depict patterns in the data, to explore the distributions or shapes of the data, and/or to summarize the basic features of the data (Vogt et al., 2014: 206).

b. Inferential Statistic

Inferential statistic is so central to research involving quantitive data that finely honed routines have been developed to handle it (Vogt, 2014: 241). One of inferential statistic techniques is Ordinary Last Square (OLS). Classical

assumptions test are requirement test for multiple linear regression that use OLS techniques. Logistic and ordinal regression techniques do not need classical assumption test.

D. RESULT AND DISCUSSION

a. Descriptive Analysis Result

Table 1. Descriptive Statistics Analysis Result

Descriptive Statistics

	N	Min	Max	Mean	Std. Dev.
FDI	32	2.00	7.00	5.3750	1.7367
Export	32	23.03	53.61	41.287	7.3320
GERD	32	8.22	72.30	36.340	21.418
Valid N (listwise)	32				

Source: data processeed

b. Inferential Statistics

1. Normality Test

Table 2. Result of Kolmogorov-Smirnof Normality Test

Country	df	Stat	Sig	Interpretation
Indonesia	32	0.752	0.624	Normal Distribution

Source: data processed

Based on the table 2, the test result is normally distributed where significance value $0.624 > 0.05$.

2. Multicollinearity Test

Table 3. Result of Multicollinearity Test

Variables	Tolerance Value	VIF Value	Interpretation
Export (X_1)	0.999	1.001	There is no multicollinearity
GERD (X_2)	0.999	1.001	There is no multicollinearity

Source: data processed

3. Autocorrelation Test

Table 4. Result of Run Test

Sig (2-tailed)	N1	N2	r	Interpretation
0.106	16	16	12	There is no autocorrelation

Source: data processed

From the table above, the result is significant, where significance value is $0.106 > 0.05$. also in the result, $n_1 < r < n_2$

($n_1=16, n_2=16, r=12$), based on F_{table} , $11 < 12 < 23$ means in the regression model used in this research there is no autocorrelation.

4. Heteroscedasticity Test

Based on the test result above, despite of some plots are overlapping, most of it are randomly scattered. The result of scatterplot is not making any specific forms like wavy, roundy, or a wound. The result of the figure of scatterplots are the dots evenly distributed, for the amount for some dots that are overlapping is considered normal and not making any form. Therefore in the regression model there is no heteroscedasticity.

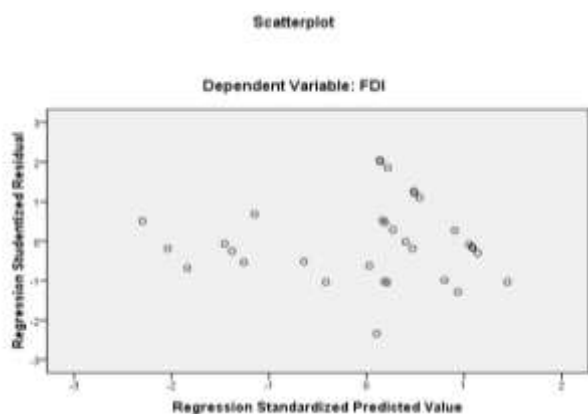


Figure 1. Result of Heteroscedasticity Test

Source: data result

c. Multiple Regression Analysis

a. Hypothesis Test

The formula of Multiple Regression:

$$Y = -1.084 + 0.097X_1 + 0.068X_2$$

Table 5. Result of Multiple Regression Analysis

F test			
F _{statistics}	F _{table}	Sig	Note
79.572	3.33	0.000	Significant

T test					
Variables	B	Beta	T _{statistics}	T _{table}	Sig
Constant	-1.084				0.165
Export (X_1)	0.097	0.408	5.595	2.045	0.000
GERD (X_2)	0.068	0.837	11.480	2.045	0.000

Source: data processed.

Regression pattern in the table above shows a constant value as 1.084 with negative symbol that explain if there is no change between independent variables; export and gross domestic expenditure on research and

development, therefore the foreign direct investment inflows would decrease about 1.084.

Regression coefficient b_1 shows 0.097. this coefficient shows if export is increasing in the amount of US\$ 1, then foreign direct investment will also increase US\$ 0.097.

Regression coefficient b_2 shows 0.068. this coefficient shows if gross domestic expenditure is increasing in the amount of US\$ 1, then foreign direct investment will also increase US\$ 0.068.

d. Coefficient of Determination

Table 6. Result of Coefficient of Determination (R^2)

R	R square	Adjusted R square
0.92	0.846	0.835

Source: Attachment 5, data processed.

Despite the R square shows a large number, there is a lack that the probability can be biased when the independent variable is entered into model. In this research will use the value of adjusted R square. Based on the table above, it explains that independent variables export (X_1) and gross domestic expenditure on research and development (X_2) influences the dependent variable foreign direct investment (Y_1) for about 83.5%. Meanwhile, the rest of the probability (100-83.5%) 16.5% that influencing foreign direct investment is other than variables that are not used in this regression model.

E. CONCLUSION AND SUGGESTION

a. Export

Based on the test results hypothesis, export variable partial effect on foreign direct investment. Exports have been allegedly known as a strong variable for FDI inflows. Where exports are essentially good activity or products and services sold to other countries, improve a country's ability to produce. High export growth be a factor to help increase FDI. The ability to produce and to move products efficiently across borders and thought to be one of the most important as a factor encouraging investment decision. As a liaison between exports and the contribution of human capital, productivity indirectly shown to have an effect on foreign investment.

The role of human capital is essential for participation in the whole process of export. Productivity is a product of a country,

whether they are good or service. Therefore, the development of human capital for productivity Imboost has strived for. A country with a good record of export interest of investors because of the potential product, network, technology, and resources. The quality of human resources in Indonesia should be competitive in handling the entire export process, if Indonesia can improve the quality of exports, including the entire process, then this should be a great attractive point for investors.

This study had similar results with Miankhel et al. (2009: 16), exports shown to affect FDI in both the short and long term, depending on the country. Growth in exports proved not only have a one-way relationship to FDI, but affect each other. This is also evidenced by research Azam et al. (2015: 159) which found significant exports to the FDI. In a research journal Won et al. (2008: 75), exports as a substitute for human capital has a positive impact on inward FDI, therefore, especially for low-income countries, promote exports at the beginning of development encouraged.

Based on a comparison with data export and FDI in Figure 3 and 5, in which the two variables of different fluctuations, export was found to decrease but stable FDI inflows increased. Because investment in Indonesia is actually made up of the financial sector as well. Based on the facts where in 2013-2016 the decline in exports, but the level of productivity in Indonesia is still quite good, it can be concluded investments in the financial sector also helped FDI at certain times of the same.

b. Gross Domestic Expenditure on Research and Development

Based on the hypothesis test result, gross domestic expenditure on research and development variable (GERD) has partial effect to foreign direct investment. Gross domestic expenditure on research and development, represents technology along with information and communication development in a country, whereas is easily deployed by FDI. But in this case also, the main way to attract FDI is from the technology development where is easy to boost production for investors to gain benefit. If Indonesia has well developed technology, that investors will not have to pay the cost to

transfer new technologies, then a higher amount of foreign direct investment can increase.

Gross domestic expenditure on research and development (GERD), as an effort and a hope of countries to develop the human capital they have, is believed to help to attract investor. Some purpose of research and development (R&D) are to explore something new, to develop something that can be developed, or else. Basically whatever the purpose is, R&D is pursue an improvement. This improvement will make a more efficient way of living. In terms of business, the purpose is to have products that better, more efficient, more cheaper. Every country has their own advantage to excavated or to own, and investors are attracted to a new or more develop products that will benefit them.

A big interest is clearly going toward the availability of high quality and competitive business services at various levels that can be accomplished by increasing competitiveness in human capital. The availability of competitive human capital is crucial because economic activities as a whole still in the labour-intensive area. This according to Yussof et al. (2002: 106), the purpose of giving effort on research and development are important in the global economy. The advancement that encouraged by gross domestic expenditure on research and development (GERD) will be showed in the improvement of information, knowledge and communication technologies. Similar with this research result, Changwatchai (2010: 64) medium low and high technology level countries are found have higher inflows of FDI. The importance of advancement of technologies is also disclosed by Kuo (2010: 392), where appropriate technology gap is the right strategy to attract inflows of FDI and also promoting productivity.

Based on the perspective of investors, the practical implementation of GERD in this research was indirectly going to the interest of investors. The implementation of the increase of GERD as substitution of science and technology progress have to be proved initially by some results such as the increase of skilled workers, improved education, or patents. Also comparing with the second National Development Plan in Indonesia, the attempt for training and producing skilled

workers, encouraging research at high institution and more efficient management in education are newly implemented since 2015 until 2019, so the direct result to increase the inflow is still insufficient. Underlining the fact that the plan was recently going for 2 years.

c. Suggestion

Based on the results of this statistic analysis along with the chance for a better research ahead, there are a few suggestion that hopefully can contribute to improve the development and economic growth in Indonesia, which are:

1. A country is going to pursue a good economic. Export, meanwhile, is a sign of a progress to a good economic where the country is able to provide the necessity in its country and other. It is good to maximize the potential to a higher export value, but it is also essential to nurture the resources well. Natural resources is clearly need to be preserved because it has limit. Human resources is in the other way need to be developed well because there is no limit of how human in Indonesia can be. There is much more potential that have not been developed, such as knowledges, skills, characters and more. With a big population of Indonesia has, there is a big potential to be competitive not only in Asia but in the international scene.
2. Challenges in Indonesia is mainly coming from the lack of maintaining. There are inequality of economic, unemployment, poor health, poor education and etc. As the effort to fix those challenges, expenditures in some areas as education, research and development and its kind could be a good help. Development is not only be done by the government by also the human in it, increase the quality of human is expected to help the other in the process. Therefore, Indonesia should plan the expenditure in those areas well to also improve the life quality in the country.
3. This research consists only of two variables as representative to approach the human capital concept. Human capital variables is not limited in the area of variables used here. There are many red threads among human capital variables and economic variables. So hopefully the

next researchers are going to expand the variables that used in this research.

BIBLIOGRAPHY

- Agnieszka, Dorozynska and Dorozynski, Tomasz. 2014. The Role of Human Capital in Attracting FDI The Case of The Lodz Region. *Studia Prawno-Ekonomiczne*, t. XCII.
- Bryman, A. & Bell, E. 2007. Planning A Research Project and Formulating Research Questions. In: *Business Research Methods*. New York. Oxford University Press. pp. 75-92.
- Changwatchai, Piyaphan. 2010. The determinants of FDI inflows by industry to ASEAN (Indonesia, Malaysia, Philippines, Thailand, and Vietnam). The University of Utah.
- Fafchamps, Marcel. 2008. *Human Capital, Exports, and Earnings*. University of Oxford.
- Gopalan, Sasidaran, Hattari, Rabin and Rajan, Rmkishen S. 2016. Understanding Foreign Direct Investment in Indonesia. *Emerald: Journal of International Trade Law and Policy*.
- Hill, Charles W. L. 2008. *Global Business Today: fifth edition*. McGraw Hills Companies: United States.
- Jacob, M. 1993. *Studies in Human Capital*. Cheltenham: Edward Elgar.
- Kothari, C. R. 2004. *Research Methodology: Methods and Techniques*, second revised edition. New Age International: India.
- Madura, Jeff. 2008. *International Finance Management: ninth edition*. Thompson South-Western: USA.
- Miankhel, Adil K., Thangavelu, Shandre M, and Kalirajan, K. 2009. *Foreign Direct Investment, Exports, and Economic Growth in South Asia and Selected Emerging Countries*. Australian National University.
- Porter, Michael. 2008. *On Competition: Updated Edition*. Boston: A Harvard Business Review Book.
- Singarimbun, Masri, and Sofyan Effendi. 2006. *Metode Penelitian Survei*. LP3ES: Jakarta.
- Sarwono, Jonathan. 2013. *Strategi Melakukan Riset*. Indonesia: Penerbit Andi.
- Sugiyono. 2011. *Metode Penelitian Kuantitatif, Kualitatif, R&D*. Jakarta: Alfabeta.

Vogt, Paul W., Vogt, Elaine R., Gardner, Dianne C.,
and Haeffele, Lynne M. 2014. *Selecting the
Right Analyses for Your Data: Qualitative,*

Quantitative and Mixed Methods. New York:
The Gilford Press