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The Relationship between the Level of Corruption and Economic Growth in Indonesia: An Investigation using Supply Chain Strategy and Bounds Test

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Abstract- **Global competition has intensified geographic repositioning of supply chain activities with implications for the economic prosperity of specific regions and geographies affected by such shifts. This study examines the relationship between the level of corruption and economic growth using the supply chain and ARDL bounds test method. The data used are GDP, the level of corruption, foreign direct investment, government spending and inflation from 2000-2018. The results of the study indicate a negative and significant impact on the level of corruption on economic growth in the long run. The implication of this research is that weak institutions, indicating the failure of government (corruption) that affect the performance of economic growth.**

Keywords: *corruption perception index, economic growth, supply chain strategy, the stock of human capital, Foreign direct investment and Government spending.*

1.   Introduction

Over the past decade a combination of economic, technology and market forces such as globalization, the proliferation of product variety, and increasing complexity of supply chains has forced companies to examine and recreate their supply chain managements (SCM) [1]. Corruption is not a new thing in various developed countries, developing countries and developing countries. Continued corruption will have a negative impact on the country's economy and society. [2], said that an effective legal system can be seen as a key component in reducing corruption. Furthermore, Bliau also said that corruption is a continuous phenomenon and strong forces tend to perpetuate corruption at a fairly constant level. [3], this paper examines the impact of various components of

economic freedom on corruption. He identified aspects of economic freedom that affect corruption differently depending on whether the country is rich or poor. This implies that a country's economic development depends on its economic freedom and corruption. The results of his research also found that certain types of regulations reduce corruption. In addition, he stated that the theoretical perspective, free economy tends to reduce corruption because the government does not intervene for business activities and does not impose tariff and non-tariff barriers. Some experts argue that the relationship between corruption and economic growth is a matter of debate, whether corruption will endanger economic growth in the long run. In general, experts say that corruption will disrupt economic activity and distort the allocation of limited resources. However, there are some experts who say that corruption can also be a low income cause and will eventually lead to poverty [4]. The economic transition from poor to rich greatly reduces corruption, while periods of high inflation increase corruption. The (relative) difference between the level of GDP in the same region with culture is smaller than the (relative) difference between the level of corruption. Furthermore, his research resulted in a positive relationship between corruption and income distribution. Empirically, the negative relationship between corruption and economic freedom is shown by various studies such as [5]. In addition, many studies [6; 7; 8] also found that corruption decreases economic growth. However, different research conducted by [9], shows that corruption increases

economic growth in East Asia. [10], analyzed several indices of 'suspected corruption' collected from business risk surveys for the 1980s and 1990s. These studies have shown that corruption is a multi-dimensional and complicated concept. According to the results of this study corruption occurred, not only economic factors such as economic development, economic freedom, inflation and income distribution and others. But also political, social and cultural factors such as democracy, political stability, gender and ethno-linguistic diversity have important effects on corruption. [11], examine the effects of corruption on long-term growth that combines measures of political freedom as the main determinant of the relationship. The results of the study found evidence of a non-monotonic relationship between corruption and growth after controlling for several other economic variables. Our results also show that the level of corruption can maximize growth is significantly greater than zero. Furthermore corruption is beneficial for economic growth at low incidence rates and is detrimental at high incidence rates. [12], examined the relationship of corruption, inflation and economic growth. The results of the study indicate that the embezzlement of tax revenues by public officials caused the government to rely more on seigniorage to finance its expenses. Furthermore, the loss of tax revenue causes the printing of money and causes inflation. The occurrence of inflation has resulted in a decrease in investment through cash-in-advance constraints. [13], their research investigates whether countries with high or lower levels of corruption benefit differently in terms of FDI flows and follow a similar increase in the level of human capital. The results of the study using panel data indicate that if a very corrupt country corruption score is comparable to a low corruption country, FDI flows will rise by almost 40 percent for an equivalent increase in the stock of human capital. Further research by [14], examines the market impact of state finance through its negative impact on foreign portfolio investment (FPI). However, the effect of corruption on FPI is non-

linear and reverse J-shaped, with intermediate levels of corruption producing negative effects. The results also found that nonlinear patterns are consistent with the desire of foreign investors to trade in markets where they are not at a loss of information. The reseach of [15], examines the effects of corruption and government spending on economic growth. Taking into account the effects of corruption on the components of government expenditure, namely military spending and investment. The results showed important complementarity between corruption and military expenditure, then found that fighting corruption will not only have a direct positive effect, but also tends to have indirect effects. Furthermore it was found that policies to reduce corruption, combined with policies to reduce military burdens, such as regional security agreements, would have a major impact on economic growth. The World Bank assumes that corruption is a threat to the greatest economic and social development. The practice of corruption is causing a phenomenon for the rich and poor. This is because the practice of corruption can result in the suppression of problems that cannot be channeled to the right path and are not entitled to benefits and vice versa. Therefore, for everyone holding trust must remain to hold trust and trust and avoid corruption. Data from the Central Statistics Agency (BPS) illustrates that there is an increase in the perception index from 2012 to 2018. This shows that there is an understanding and assessment of the community towards increasingly good anti-corruption behavior. In Figure 1, it can be seen that Indonesia's anti-corruption behavior index (IPAK) of 3.66 in 2018 was lower by 3.71 compared to 2017. The index of experience, the IPAK value also indicates a fluctuation in 2018, an anti-corruption behavior index (IPAK) value of 3, 66 lower than anti-corruption behavior index (IPAK) 2017 (3.71). In 2018, there was an increase in the perception index of 3.86 compared to 2017, which was 3.81. The data below also describes the 2018 experience index of 3.57 and a decrease compared to 2017 which was 3.60 [16]. For more details, see in Figure 1:
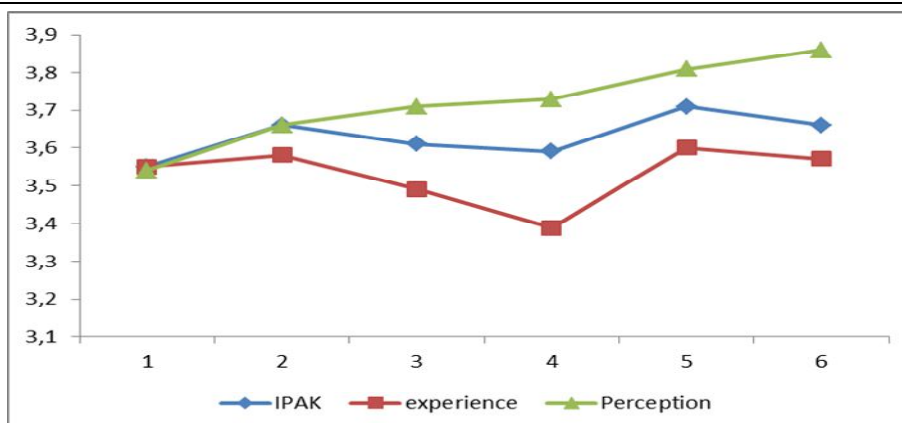
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Figure1. Corruption Perseption Index

In the above explanation, the importance of research is conducted to examine the long-term relationship between the level of corruption and economic growth. So it is hoped that this study will provide something useful to the government or other authorities to determine the right direction of national development policies and economic growth can be improved in the future.

2.   Literature Review

Correlation relations with economic growth, some researchers examine among them [16, 17] examined the relationship of corruption with economic growth using the transmission line in 1970-1985. His study focused more on corruption from 54 countries in the corruption perception index (CPI). Using the ordinary least squares model (OLS) and the two-stage least squares estimation (2SLS), find that the direct effects of corruption turn out to be insignificant. This means that if there is an increase in corruption, it will cause a decrease in growth of 0.72 percent. Furthermore, it was found that an increase in the corruption index would also reduce growth by 0.545 percent. He also said that the variable political instability as well as an important row in influencing these variables was 53 percent. [18] examined the effect of corruption on economic growth and foreign investment by taking 121 countries in 1999-2004. The results showed that the increase in the consumer price index would cause an increase in per capita growth rate of 1.7 percent. But for European countries, the increase in the consumer price index will increase 2.4 percent per capita growth. [19], examines the relationship of corruption with economic growth by using a threshold model to estimate the impact of corruption on economic growth. The results show that there is a negative

impact on economic growth in countries with high-quality institutions, while corruption does not have an impact on economic growth in countries with low-quality institutions. [20], investigating the long-term consequences of corruption. In the model of economic growth with public input used in private production, government bureaucrats buy inputs from the private sector with some level of wisdom. The level of corruption is a decision variable in maximizing the expected income. This model is supported by econometric analysis of the Italian case. A dynamic panel data approach to economic growth based on 20 regional data allows us to estimate the effect of corruption on productivity expenditure on public investment. The effect is significant and different from the direct negative effects of corruption on growth rates. In addition, in his view, corruption is not profitable for businesses and innovators, especially those who do not have the necessary cash flow and the power of lobbying that is set to bribe or lobby bureaucrats.

The reseach of [21], examines the relationship of economic freedom between corruption and economic growth by using panel data from 60 countries. The results of his study found that corruption affects growth indirectly mediated by economic freedom. If there is a decline in economic growth, this is due to economic freedom so corruption will occur. Conversely, if there is an increase in economic growth, it will increase economic freedom and corruption. While [22], the results of the study showed that CPI had a positive effect on economic growth in 12 Asia Pacific countries. Thus corruption is not a Grease of Wheel or corruption does not become a lubricant for the wheels of the economy. Furthermore Swaleheen, [23], several previous

studies examined the relationship of corruption to economic growth, but this study only provides empirical evidence that the relationship does not always occur together, regardless of its indirect effects, a decrease in corruption is growth that only increases if there has been a decline who have been persistent in corruption in the past. They also take into account the endogenous corruption, fixed effects, and growth volatility. [24], examine the relationship of corruption and the institutional environment to economic growth. The results of the study show that corruption will encourage economic growth when there are many restrictions on economic freedom. Conversely, increasing economic freedom along with the decline in corruption. So if the government imposes strict regulations, the effect of corruption will soon disappear.

The research of [25], carried out empirical research on the impact of corruption on economic growth in Nigeria in 1980-2009 using regression analysis. Granger causality tests and impulse response functions are carried out. Empirical results show that corruption has a negative influence on the output of labor directly or indirectly on foreign private investment, spending on education and labor capital expenditure. Furthermore, this study reveals that there is a causality in the direction of the influence of the output of workers' corruption. Therefore, this study recommends this strategy depends on actions in various sectors in fighting corruption in Nigeria. Studies conducted [25], indicate the existence of gaps at the macro level in examining the relationship between corruption and GDP in Malaysia. Huang, conducted this study using a cross-sectoral Granger causality approach and heterogeneity between countries, to investigate whether corruption had a negative impact on economic growth in thirteen Asia-Pacific countries during the period 1997-2013. The empirical results show that there is a positive and significant causality of corruption to economic growth in South Korea, a significant positive causality of economic growth to corruption in China and no significant causality between corruption and economic growth for the remaining countries. According to empirical results they do not support the perception that corruption has a negative impact on economic growth for the thirteen Asia Pacific. The findings of their study also produce in Asia-Pacific countries, the use of anti-corruption policies by policy makers to promote economic development of a country may not be effective. Finally, the results of the study also show that for China, increasing economic growth leads to increased corruption. Neeman examined the relationship between corruption and economic growth depending on the degree of openness of a country's economy. The results of the study found that corruption was negatively related to the GNP per capita on open economics. Conversely, if the country adheres to a closed economic system there is no connection between the two. Whereas Farooq investigated the impact of corruption on economic growth by including financial development and trade openness in growth models in Pakistan during the period 1987-2009. Using the cointegration test it was found that corruption hampered economic growth. Financial development adds to economic growth. Trade openness stimulates economic growth. Whereas by using the test of causality there is an effect of feedback between corruption and economic growth and so also for trade openness and corruption. Trade openness and economic growth are interdependent. By using the Granger test Financial development causes economic growth. Alesina and The results of the study indicate that there is a relationship between variables related to governance and growth rates, only controlling corruption and government effectiveness significantly and influencing the average growth rate. While the relationship between volatility in growth and governance, the results show that higher control of corruption, control of takeover risks, government effectiveness, and government consumption reduces growth volatility. Dzhumashev, Ratbek. (2014, February), examining the quality of governance, measures of public expenditure, and economic development affect bureaucratic corruption and economic growth. The results of the study indicate that the interaction between corruption and governance shapes the efficiency of public spending, which in turn, determines the effects of corruption growth. In particular, corruption increases economic efficiency only when the actual size of the government is above the optimal level. This implies that the level of corruption can maximize growth. The results of the study also found that corruption incidents decreased with economic development. This is because with economic development, wage rates rise and make rental costs higher, thereby reducing corruption. The implication of the research is that targeting tax evaders from bureaucrats is more

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effective in terms of reducing corruption and increasing the potential for economic growth. Wu conducted research on government spending and corruption on total productivity factors. Using provincial panel data from 2007 to 2014 the results of the study show that there is a relationship between government expenditure from administrative services, investment development, governance protection and total "U" curve factor productivity. Furthermore, the relationship between the structure of government expenditure and total factor productivity follows a "reversed" shape curve. This means that an increase in the level of corruption directly reduces regional total factor productivity and the effect of the proportion of administrative service expenditures, investment development expenditures, and protection of governance expenditures on the productivity of total factors has one threshold of corruption. As an important management ideology and method in production operation management, SCM is a long-standing concept. Most of the supply chain research starts with the manufacturing supply chain. SCM is used to describe the logistic management between organizations. This causes corruption to increase economic development, mainly due to illegal practices and payments as 'fast money' and bureaucratic delays. The results of this study provide implications for company managers must increase profitability, must achieve economies of scale, optimal level of capital structure and optimal levels of working capital because profitable companies grow faster than other companies. Nguyen., & Van Dijk conducted research on the relationship between corruption and growth for private companies and state-owned companies (SOEs) in Vietnam. We obtained three different measures of the severity of corruption felt from the 2005 survey among 741 private companies and 133 BUMN. His research also found that corruption hampered private sector growth in Vietnam, but did not harm growth in the country's sector. We document significant differences in the severity of corruption in 24 provinces in Vietnam can be explained by the quality of provincial governance (such as new business entry fees, land access, and private sector development policies). Our results show that corruption can jeopardize economic growth because it benefits the state sector at the expense of the private sector and improving the quality of local public governance can help to reduce corruption and stimulate economic growth. Financial backwardness

makes corruption more severe and thus increases the benefits of the reduction. They conduct testing by predicting growth, country and industry, using measures of financial development, lack of corruption, and interaction terms. Both approaches show a positive effect of increasing one factor, as well as the substitution between the two. The increase in growth associated with the shift from 25th to 75th in one factor is 0.63-1.68 percent higher if the second factor is at the 25th percentile than the 75th. The results show the robustness of different measures of corruption and financial development and do not appear to be driven by outliers, omitted variables, or other growth and convergence theories. Wang., & You conducted empirical research on the relationship between corruption and financial growth and development affecting it in China. Empirical results show that corruption contributes to the growth of the company. This means that corruption is not a vital obstacle to the growth of the company if the financial markets have not developed. However, corruption hinders the growth of companies where there are more advanced financial markets. This means that the company's rapid growth will not be examined until the next stage when financial markets function properly and corruption is under control. Mauro, Paolo uses index effectiveness data and upholds subjective bureaucracy to determine the effect of corruption on economic development. The study analysis covers 58 countries by examining the relationship between investment and corruption. Negative and significant relationship between corruption and investment and development. Despite limited data, the results of the study also show in detail the strong relationships to determine standards for investment and growth. In fact, there is evidence of the same important effects of bureaucracy determined by political stability in determining investment and growth. [4], economic development and bureaucratic corruption are determined in the general equilibrium model of dynamic growth, bribery and tax avoidance. Corruption arises from the incentives of public and private agents to conspire to conceal information from the government. These incentives depend on aggregate economic activity which, in turn, depends on the incidence of corruption. This model produces various development regimes, transitions between which may or may not occur. In accordance with the latest empirical evidence, the relationship between

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corruption and development is predicted to be negative.

A one percent increase in the bribery rate will decrease the company's growth by three percent. This has implications for corporate-level corruption theories which assume that corruption impedes the development process to a far greater extent than taxation. The same research was carried out by (, examining the relationship between corruption and economic growth while previous large studies focused on the micro level and investigated the impact of corporate behavior on corruption. The study conducted by [21] states that savings depend on incentives and abilities. The results of the study prove that the determination of savings is related to corruption. The relationship between corruption and foreign investment. The results of the study found that savings are reduced due to investment. The study also found that the level of income, the rate of growth of per capita income and the tax-GDP ratio showed evidence of corruption for savings. This research decision is important where the level of corruption that needs to be considered is to analyze the relationship with its determination. The results of the study also found that with tax reduction will increase the national savings rate by 6.1 percent.

3.   Methodology

The research method used is using the ARDL method bounds test approach. Data used is the perception of index corruption (ICP), data on gross regional domestic product (GDP), government expenditure (GE), foreign direct investment (FDI), inflation (INF) and the human development index (HDI). All data in the form of logarithms except inflation, perceptions of the corruption index, and the human quality index.The data were obtained from Transparency International 2000-2018 and the Indonesian Central Bureau of Statistics, the research equation model is;

Furthermore, the equation model used by ARDL as used by Pesaran get a long-term relationship from the model used. However, first the stationary test is carried out for each variable not in stage I (2). It should be explained that the cointegration test based on the ARDL approach can be applied without taking into account whether all variable stationers are in the form of I (0), I (1). But to ensure the unit root test is used the Augmented Dickey-Fuller (ADF) test as

follows:

$$\Delta X_t = \eta_0 + \eta_1 X_{t-1} + \sum_{i=1}^{k} \eta_i \Delta X_{t-i} + \varepsilon_t \quad (1)$$

Where Δ is the first difference, εt is a statistical error (white noise), X_t is the time sequence variable. The hypothesis tested is the null hypothesis, that is, the point is not the unit root, when the alternative hypothesis is stunned on time sequence data. If the null hypothesis is rejected, it means that the time sequence of the X_t variable is stationary with the value min zero. The stationary test of this study was also carried out by the ADF and Phillip Perron (PP) test methods.

To explain the ARDL model approach, the model specifications that show the relationship between perception of index corruption, gross regional domestic product, government expenditure, foreign direct investment, inflation and the human development index are formed as below:

$$GDP_t = \beta_0 + \beta_1 ICP_t + \beta_2 FDI_t + \beta_3 GE_t + \beta_4 INF_t + \beta_5 HDI_t + \mu_t \qquad (2)$$

Where, GDP is gross regional domestic product, ICP is the perception of index corruption, FDI is foreign direct investment, GE is government expenditure, INF is inflation and HDI is human development index. All variables in the form of logarithms except inflation in the long run is used by the ARDL model as done by Pesaran which we adopted to examine the existence of short and long-run relationships between economic growth. To estimate the ARDL model, a cointegration test is needed. The VECM procedure in testing is at most one cointegration vector between the dependent variable Yt and a set of Xt regressors. To get the model it is necessary to follow the assumptions made by Pesaran in Case III, which is an unlimited trend and no trend. After imposing restrictions on λxy = 0, μ ≠ 0 and α = 0, the relationship between corruption and economic growth and other variables can be expressed as the following unrestricted error correction model (UECM):

$$\Delta\log(GDP)_t = \alpha_0 + \sum_{i=1}^{p}\beta_{1i}\Delta\log(GDP)_{t-1} + \sum_{i=0}^{q}\beta_{2i}\Delta ICP_{t-i} + \sum_{i=0}^{r}\beta_{3i}\Delta\log(FDI)_{t-i} + \sum_{i=0}^{s}\beta_{4i}\Delta\log(GE)_{t-i}$$

$$+ \sum_{i=0}^{t}\beta_{5i}\Delta(INF)_{t-i} + \sum_{i=0}^{u}\beta_{6i}\Delta(HDI)_{t-i} + \delta_{1t}\log(GDP)_{t-i} + \delta_{2t}(ICP)_{t-i} + \delta_{3t}\log(FDI)_{t-i}$$

$$+ \delta_{4t}\log(GE)_{t-i} + \delta_{5t}(INF)_{t-i} + \delta_{6t}(HDI)_{t-i} + v_t \tag{3}$$

Where v_t is an error term that must be white noise, Δ indicates the first-difference operator, for i, j = 0, 1, 2, ... k and k is the optimal lag length (p, q, r, s, v) and is chosen by the author. Akaike Information Criterion (AIC) is used to determine the selection of the optimal lag length. In the ARDL boundary testing approach, this study uses the F-statistical test to test the null hypothesis that there is no cointegration between variables. The estimated F-value will compare with two sets of critical values from the upper and lower limits.

In equation (3), where Δ is the operator of the first difference. To determine the existence of long-term relationships between the variables in equation (3), the null hypothesis and the alternative hypothesis are tested using the F-statistic test as follows:

H_0 : $\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$ (no long-run relationship)

H_1 : $\delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq 0$ (has long-run relationship)

if the F statistic is calculated to be less than the lower bound, then the null hypothesis is rejected and that explains that there is no long-term relationship between economic growth and determinant factors. On the contrary, if the computed F statistic is greater than the upper bound value, then its economic growth and determinants have a long-term relationship. On the other hand, if the F statistic is calculated to fall between the lower and upper bound values, then the results cannot be inferred..

4.   Results and Discussion

Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) tests are used to check the order of integration between variables. The results obtained are reported in Table 1. Based on ADF test statistics, it was found that all series, except for the human development index (HDI), were non-stationary at the 1% level. Likewise with the PP test, it shows inflation and the human development index produce a mixture at level I (0) but not for other series stationary at the first level I (1). Because there is a mixture in the stationary test the Johansen procedure cannot be used. This gives the reason for the boundary test approach, or ARDL model, proposed by Pesaran et al. (2001) can be used.

Table 1. Results of the unit root tests

Variables	ADF		PP	
	Level	1st Difference	Level	1st Difference
gross regional domestic product (GDP)	-4.1638 (3)	-6.4056*(3)	-0.4290 (13)	-11.6519*(12)
perception of index corruption (ICP)	-0.3579 (1)	-4.0722* (1)	-0.3579 (0)	-4.0721*(1)
foreign direct investment (FDI)	-0.3322 (0)	-6.3205* (0)	0.8612 (1)	-6.5689* (2)
government expenditure (GE)	-2.1792 (0)	-6.5518 *(0)	-2.5721 (2)	--6.0243*(2)
inflation (INF)	-3.3995(0)	-6.0777*(1)	-3.3747**(3)	-12.6219*(9)
human development index (HDI)	--3.0725**(0)	-3.8539*(0)	--7.0725**(16)	-3.8588*(1)

Note: (*) shows a significant level of understanding of 1 percent, (**) is significant at the level of understanding of 5 percent and   (***) significant at the level of understanding of 10 percent, namely, triumphantly rejecting the null hypothesis which states that the   modifier does not reach stationary (non-stationary). The number in brackets () are the optimum lag based on Akaike Information Criterion, Akaike.

Estimation of Equation (3) using the ARDL model as shown in Table Table 2. From the findings, it was found that the coefficient values of R-squared and adjusted R-squared were 0.9999 and 0.9998, respectively. This shows evidence that the

determinants of economic growth made a significant contribution. Furthermore, several diagnostic tests such as the Breusch-Godfrey LM Durbin Watson series correlation test, the Jacque-Bera normality test and the Cusum test. All tests reveal that the model in series is uncorrelated, normally distributed and homoscedastic. Therefore, the model used can be valid interpretation.

Table 2. Estimated ARDL model based on equation (4)

I. Estimates Model			
Variable	Coefficient	t-Statistic	Probability
GDP_{t-1}	-0.239380	-5.004403*	0.0000
ICP_{t-1}	-0.011613	-4.824199**	0.0417
FDI_{t-1}	-0.303858	-3.337744**	0.0185
GE_{t-1}	0.078261	2.412696**	0.0205
INF_{t-1}	0.569750	2.671540**	0.0109
HDI_{t-1}	0.000583	0.120717	0.9045
β_0	1.262175	1.393944	0.1710
ΔGDP_{t-1}	-0.404838	-3.696341**	0.0492
ΔGDP_{t-2}	-0.085153	-4.032676**	0.0341
ΔICP_{t-1}	0.039607	2.070957**	0.0449
ΔFDI_{t-1}	0.454996	1.849595***	0.0718
ΔGE_{t-1}	-1.329407	-4.628903*	0.0000
ΔINF_{t-1}	-0.839909	-2.606380**	0.0128
ΔHDI_{t-1}	0.151633	5.330429*	0.0000
II. Criteria Model – Goodness of fit			
$R^2 = 0.9999$ Adjusted $R^2 = 0.9998$ F-Statistic = 55.7412 [0.0104]* Diagnostic test Jarque-Bera = [0.3909] Breusch-Pagan-Godfrey = [14.2215] Durbin Watson = [2.1976] Cusum $_{(SQ)}$ = Structural Break			

Note: * significant at the 1 percent level of significance, ** significant at 5 percent significance level, * * * significant at the 10 percent significance level

Table 3, Describe the results of the boundary cointegration test, using the hypothesis H_0 : $\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$ (no long-run relationship) , against its alternative H_1 : $\delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq 0$ (has long-run relationship) is easily rejected at the 1 percent significance level. The computed F-statistic of 28.089 is greater than the upper critical bound value of 4.68, thus indicating a long-term relationship between economic growth and corruption and other determinants.

Table 3. Bounds test for cointegration analysis Based on Equation (3)

Critical value	Lower bound value	Upper bound value
1%	3.41	4.68
5%	2.62	3.79
10%	2.26	3.35

Computed F-statistic : 28.089 (signficant at 1 percent marginal level), Critical value are sited from Pesaran, Table C1(III): Unrestricted intercept and no trend

In table 4 using equation (3) shows that the variable perception of index corruption, foreign direct investment (FDI) and government expenditure is positively related to economic growth, with an estimated elasticity of -0,00057 each; 0.0802 and 0.3208. The biggest contribution to increasing economic growth was government expenditure of only 32.08%. However, the perception of corruption influences economic growth negatively and significantly. This means that increasing public perceptions of corruption will reduce economic growth, but the effect is only slightly. The increase in corruption also has an impact on economic growth, especially inflation and the human development index. This means that the higher people's perception of corruption will increase inflation and the human development index which will have a significant impact on economic growth. In addition, the negative impact of the level of corruption on economic growth is also due to the large number of corruption cases

that have not been resolved. While foreign direct investment and government spending also have a positive and significant relationship to economic growth. This means that if there is an increase in foreign direct investment, and government spending will have an impact on increasing economic growth. The causality effect also produces a positive and significant relationship, between the corruption perception index, foreign direct investment, inflationary government spending and the human development index. This means that in the short and long term it affects economic growth, especially the corruption perception index. Based on the results of previous studies consistent with previous researchers.

Table 4. The long-run elasticities and short-run causality of credit investment in West Sumatra based on equation (4)

I. Long run estimation coefficient				
Variable		Coefficient		
ICP		-0.00057**		
FDI		0.0802**		
GE		0.3208**[a]		
INF		-0.0079**[a]		
HDI		-0.00377**		
II. Short-run Causality test (Wald test F-Statistic)				
ΔICP	ΔFDI	ΔGE	ΔINF	ΔHDI
62.9348**	92.5921*	10.9811***	46.9730 ***	18.8522**
[0.0101]	[0.0069]	[0.0578]	[0.0136]	[0.0337]
Note: ICP = perception of index corruption; FDI = foreign direct investment; GE = government expenditure; INF = Inflation; HDI = human development index; *,**,*** = denote significant at 1 percent, 5 percent, 10 percent level, respectively. Figures in brackets refer to marginal significant. [a] Long term elasticity coefficient is obtained by equation 8 of Bardsen (1989).				

5. Conclusion And Research Implication

SCM is considered as a key strategic challenge for companies. In other words, strategic and competitive success of an organization depends on the efficient management of the skills, resources and capabilities of its suppliers, distributors and business processes. Supply chains management is regarded as a critical element of successful e-business implementation. The research objective is to examine the impact of corruption on economic growth. The results of the test carried out a negative and significant relationship between economic growth and corruption at a significance level of 1 percent. As for variables (government expenditure, foreign direct investment (FDI) and inflation) are significant at different levels of confidence.

This finding is in line with several previous studies also saying that corruption has a negative impact on economic growth. For example, a study conducted by Pak Hung Mo states the role of corruption with economic growth. The results of his research also said that if a one percent increase in the level of corruption would reduce the rate of economic growth by 72 percent.

The research of Mauro, P, also shows evidence that corruption reduces investment and will slow economic growth. In the study, he found that a decrease in the corruption index would lead to an increase in investment by 5 percent and economic growth would grow by half of the increase in the percentage.

Meanwhile, as a result of corruption itself also increases the country's inflation. Fahim's study of Al-Marhubi found that the negative impact of corruption and he assumed that corruption was part of an increase in the inflation rate. His empirical evidence found that, an increase in corruption also increased inflation indirectly. Therefore, rising inflation also has an impact on the country's economic growth.

Based on the results of the research described, several policy implications can be suggested to ensure that Indonesia's economic growth can grow rapidly. In other words, if the level of corruption must be addressed immediately, so that economic growth can increase.

The findings are obtained if an increase in corruption has an impact on economic growth, indirectly. Therefore, the Indonesian government must ensure that corruption can be overcome together. The implications of this policy must be followed by countries that the impact of corruption reduces economic growth.

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To combat and reduce corruption, we need to know the causes of corruption. Among them are a lack of appreciation of moral values, moral character and religious knowledge which fall into corruption crimes. Therefore, it is very important for the government to strengthen its identity by adopting religious and moral values.

Factor of poverty which causes an increase in the level of corruption, especially for low income earners. It is not even surprising that for civil servants, especially among low-income people, it is more likely to commit corruption due to income difficulties. Poverty also exists as a result of uneven wealth in the country, because wealth is only owned by certain parties. Therefore, the rich are getting richer and poorer, getting poorer.

Through a combination of exploratory Delphi panels, web content analysis, and cluster mapping procedures, the research suggests a framework highlighting the potential role of regional supply chain capabilities and public sector strategies on economic development outcomes. Findings indicate that regional geographies are differentially and uniquely qualified to serve as supply chain hubs by capitalizing on these capabilities through actionable public and private sector interventions.

From the findings obtained when an increase in corruption, it will indirectly cause a decline in the growth of Indonesian economies. Therefore, the Indonesian government must ensure that corruption can be overcome by both the central and regional governments, especially monitoring the civil service. Therefore, it can be concluded that corruption activities do indeed have a negative influence on economic growth, especially among developing countries. This clearly shows that the effects of corruption will impede indirect economic growth. Therefore, it can be concluded that corrupt practices will lead to economic instability and the welfare of society and the social environment.

6.   Acknowledgment

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