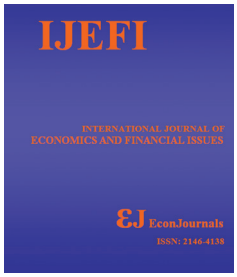

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Effect of Fiscal Policy and Trade Openness on Economic Growth in Indonesia: 1990-2015

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ABSTRACT

This study examines empirically the effect of fiscal policy and trade openness on economic growth in Indonesia for the period 1990-2015. Fiscal policy includes government spending on infrastructures, human resources, and routine spending, while tax revenue and foreign loans is as source of financing. This study finds government spending on infrastructure and human resources have positive and significant effect on economic growth if they are financed by tax revenue and insignificant if they are financed by foreign loans. Routine government spending has negative and insignificant effect on economic growth for both financed by taxes and foreign loans. Trade openness has positive and significant effect on economic growth. The implication is the proportion of spending on infrastructure and human resources should be increased by taxes financing rather than foreign loans. Competitiveness of domestic industries should be improved to achieve a positive impact of free trade.

Keywords: Fiscal, Trade Openness, Economic Growth
JEL Classifications: E62, F13, F41, H5, H6

1. INTRODUCTION

Economic growth is a key indicator of the success of a country's development. With high economic growth can overcome some macroeconomic problems such as unemployment, poverty and income inequality. The importance of economic growth has been debated both theoretically and empirically. The focus of the debate lies on the determinants of economic growth.

In endogenous growth theory introduced by Barro (1990), Barro and Sala-i-Martin (1992), Roomer (1990; 1996; 2001) emphasize that the endogenous technology is a decisive factor of economic growth of a country. Similarly, in the new international trade theory also asserts that the transfer of technology through the flow of goods and services from abroad will encourage the acceleration of economic growth in home country (Grossman and Helpman, 1991b; Krugman and Obsfeld, 2000). Both theories are equally emphasized the importance of technological progress to economic growth. Macroeconomic instruments that play an important role to encourage technologies that can further stimulate economic growth are fiscal policy and trade policy.

Fiscal policy and trade openness are interesting and highly relevant to the conditions in Indonesia for the period 1990-2015. During this period, the relationship between fiscal policy, trade openness, and economic growth is quite attractive to be estimated. In the period 1990-1997, economic growth is quite high on average 7.4% per year, but in that period is relatively less expansionary fiscal policy and the ratio of exports plus imports to gross domestic product (GDP) as proxy of trade openness has not significantly increase. In the period 1998-2015, in which the expansion of fiscal policy is quite large and rapidly growing trade volume, but economic growth is only an average of 3.96% per year which is relatively slower than the previous period. This condition rises the critical question how far fiscal policy and trade openness affects economic growth in Indonesia during the period. Which of fiscal policy instruments have impact on economic growth?

Empirical studies that have examined the effect of fiscal policy and trade openness on economic growth basically too much both in developed and developing countries include in Indonesia[1]. The

1 Ahmed and Miller (2000), Yasin (2001), Bleaney et al. (2001), Benos (2004; 2009), Ali (2005), Gray et al. (2007), Abdullah et al. (2009), Ismal (2011), Cottarelli and Jaramillo (2012), Shijaku and Gjokuta (2013), Mercan et al. (2013), Razmi and Refaei (2013), Attinasi and Klemm (2014) and the latest Paparas and Richter (2015), Dao (2015).

result of their finding are different, it depends on the instruments of fiscal policy, measurement trade openness, and model specification. However, in general, the results found that the fiscal policy and trade openness significantly influence economic growth especially in developing countries.

The study is organized in the following sections. Section 2 discusses literature survey. Section 3 discusses the model specification. Section 4 describes the results and discussion.

2. LITERATURE SURVEY

Some previous studies have estimated the relationship between fiscal policy and economic growth using several fiscal policy instruments. Fiscal policy instruments are grouped into three major groups: (i) Fiscal policy focused on aggregate government spending, (ii) fiscal policy focused on disaggregate government spending, (iii) fiscal policy instruments include simultaneously government spending and tax revenue as financing sources. The same case for trade openness is measured differently by empirical studies. The instrument includes tarif, trade volume, export to GDP ratio, import to GDP ratio.

At the aggregated level of fiscal policy effect on economic growth was estimated by Barro and Sala-i-Martin (1992) using panel data on 75 countries. The size of fiscal policy is the ratio of total government expenditure to GDP and the ratio of consumption expenditure to GDP. They found that there are negative effect and not significant between fiscal policy and economic growth per capita. The same results were found by Folster and Henrekson (2000) analyzes the fiscal policy by focusing on aggregate expenditures, they found the negative effect of fiscal policy on economic growth in developed countries. Several subsequent studies using ordinary least squares method and they found the same results, among others; Kweka and dan Morissey (2000) in Tanzania, Jung and Thorbecke (2001) in Tanzania and Zambia, Huart (2002) at Emu state, Dong et al. (2003) using vector auto regression methods in the United States, and Koulovatianos and Mirman (2004) in the case of developed countries, and Ismal (2011) in Indonesia. Recently studies for Nigeria by Ismaila and Imoughele (2015), Osinowo (2015) reinforce the results of previous studies.

The findings were different when government spending estimated at disaggregated level or per sector[2]. Douglas and William (1997) examined government expenditure by sector for OECD countries and generally found a positive correlation and significant. The same thing was found by Asante (2000) for the state of Ghana. This finding is in line with Barro (1990) for the developed countries. Glomm and Ravikumar (2001) conducted research focusing on infrastructure investments in Taiwan, Korea and Japan, the results reported to positive effect. Peretto (2000) only look at R and D expenditure in 12 European countries, generally his finding has a positive effect. Hermes and Lensink (2001) analyzed fiscal policy included infrastructure spending, education and health as the independent variable simultaneously on 33 developing countries. The study found that infrastructure expenditure, education and health have a positive effect on economic growth in most countries. The same findings made by Zang (1996), Wolft (2000), Bos et al. (2003), Hadiwibowo (2010) in Indonesia using vector error correlation, and recently was conducted by Abdon et al. (2014) in developing Asia, the results is consistent with the previous studies especially government spending on education. The study was contrast by Devarajan et al., (1996) and Agel and Ohlsson (2003).

Fiscal policy instruments are quite interesting aside from government spending is tax revenue because the role of taxes can be positive or negative effect on economic growth. Several studies analyzed the effects of taxes and government spending simultaneously on economic growth. Hosoya (2003) examined the influence of government expenditure on health, where government expenditure is financed by taxes. His finding is the effect of government spending on health is positive. Dong et al. (2003) empirically tested the relationship between fiscal policy and economic growth in the period 1983-2002 in the United States which the government spending financed by increased taxes and the results is positive and significant. In contrast to Attinasi and Klemm (2014) analyzed the impact of discretionary fiscal policy for a sample of 18 EU countries over the period 1998-2011 and using the revenue side. In general, the results indicate that indirect tax increases are found negative impact on growth.

The effect of trade openness on economic growth depends on the size of trade openness definitions. Several indicators of trade openness are used by empirical studies among other; the ratio of exports plus imports to GDP, the ratio of exports to GDP, the ratio of imports to GDP, import tariffs, import penetration, the ratio of Foreign direct investment to GDP, import duties and dummy variables. Yasin (2000) examined the effect of trade openness on economic growth for the case of Sub-Saharan African countries, Morrisey et al. (2002), Pernia and Quising (2003) in four regions in the Philippines. They found that trade openness has significantly positive effect of economic growth. Walde and Wood (2004) evaluated the empirical results the relationship of trade liberalization and economic growth, where low tariff rates and no tariff rates have a strong positive relationship with growth. Jawaid et al. (2011) showed trade policy has insignificant effect on economic growth the case of Pakistan. Yusoff and Febriana (2012) showed the positive relationship among economic growth, investment, and trade openness in Indonesia. The same result was conducted by Dao (2015) that trade liberalization has impact positive on economic growth. However, in contrast to Simorangkir (2006) found the negative effect trade openness and economic growth in Indonesia. This result is in line with Benos (2004) in the case of OECD countries, however Benos (2009) found the positive effect insignificant of trade openness and economic growth in EU countries.

2 Government spending will provide different policy implications when government spending was estimated on per sector such as government spending on productive sectors such as infrastructure spending, government spending of education, health, housing, spending on R and D.

3. SPECIFICATION MODEL

The effect of fiscal policy on economic growth was first introduced by Barro (1990)[3]. This model is consistent with endogenous growth theory. Trade openness accelerates economic growth through the development of R and D as the new international trade theory (Grossman and Helpmant, 1991b). Thus, endogenous growth theory explicitly confirms that fiscal policy and trade openness can accelerate economic growth through technological progress.

This study developed two estimation models to determine and analyze the effect of fiscal policy and trade openness on economic growth in Indonesia for the period 1990-2015: (1) The effect of fiscal policy and trade openness on economic growth when government spending is financed by taxes, (2) the effect of fiscal policy and trade openness on economic growth when government spending is financed by foreign debt[4]. General form of estimation equation of the effects of fiscal policy and trade openness on economic growth that is;

$$gr = \alpha_0 + \sum_{b=1}^{m} \beta_b IF_b + \alpha_6 Op + u_1 \quad (1)$$

Where, *gr* is economic growth, *IFb* is instruments of fiscal policy. Instruments of fiscal policy include the types of government expenditure (*Gi*), taxes (*T*), and foreign debt (*Db*). *Gi* includes routine government expenditure (*GRT*), infrastructure expenditure (*GINFR*), and expenditure on human resources (*GHM*). *Op* is trade openness in term of the ratio of total export and import to *GDP*. The government maximizes its expenditure with budget constraint through taxes and non-taxes. In this study uses foreign loans variable as non-taxes which is followed by Benos (2009). Equation for budget constraint is:

$$\sum_{s=1}^{3} Gi = T + Debt \quad (2)$$

To avoid perfect multicollinearity problems in the estimation equation, one of instruments fiscal policy should be excluded from the equation Ahmed and Miller (2000) and Bleaney et al. (2001). Thus,

$$IF_m = -\sum_{b=1}^{m-1} IF_b \quad (3)$$

Where *m* is the number of fiscal policy instruments. While *m*−1 is the number of fiscal policy instruments minus one of the all fiscal policy instruments. *b* is the types of government expenditure (*GINFR, GRT, GHM*), *T*, and Foreign debt. Variable excluded from the estimation equation is assumed to compensate the budget constraint. Hence, the Equation 3 becomes:

$$gr = \alpha_0 + \sum_{b=1}^{m-1} (\beta_b - \beta_m) IF_b + \alpha_6 Op + u_2 \quad (4)$$

Equation 4 stresses that *IFb* coefficient should be interpreted as $(\beta_b - \beta_m)$ not β_b (Bleaney et al., 2001; Benos, 2004). In another word, the true explanation of each coefficient of the budget constraint is the effect of a unit change in fiscal policy instruments offset by a unit change in fiscal policy instruments are removed from the regression equation, which implicitly financed fiscal policy instrument variations (Benos, 2009). For example, if tax revenue is removed from the regression equation it means the increased of government expenditure is implicitly financed by taxes. Similarly, if the debt variable excluded from the regression equation, it means the increased of government expenditure is implicitly financed by foreign debt. To estimate the effect of fiscal policy and trade openness on economic growth, the Equation 4 is divided by two estimation equation that is:

If government expenditure is implicitly financed by foreign debt, the estimation equation is:

$$gr = \beta_0 + \beta_1 GHM + \beta_2 GINFR + \beta_3 GRT + \beta_4 T + \beta_5 Op + \beta_6 Dm + \mu_1 \quad (5)$$

Where; $\alpha_1>0$; $\alpha_2>0$; $\alpha_3<0$, $\alpha_4>0$; $\alpha_5>0$; $\alpha_6>0$; ceteris paribus. Dummy variable (*Dm*) is added to the model to analyze how the impact of the economic crisis on economic growth where 0 is for the period before the crisis (1990-1997) and 1 after that period (1998-2015). If government expenditure is implicitly financed by taxes, the estimation equation is:

$$gr = \alpha_0 + \alpha_1 GHM + \alpha_2 GINFR + \alpha_3 GRT + \alpha_4 Db + \alpha_5 Op + \alpha_6 Dm + v_1 \quad (6)$$

Where $\beta_1>0$; $\beta_2>0$; $\beta_3<0$; $\beta_4<0$; $\beta_5>0$; $\beta_6>0$ ceteris paribus. Data for the all fiscal instruments (*GHM, GINFR, GRT, T, Db*) and trade openness (*Op*) is a percentage of GDP.

Table 1: Unit root test

Variables	ADF calculated value in level	ADF calculated value in 1st difference	Order of integration
Gr	−3.438112*	−6.178305**	1(0)
GHM	−2.386138	−6.042540**	1(1)
GINFR	−1.528151	−4.265820**	1(1)
GRT	−3.104605*	−5.599919**	1(0)
T	−2.781421	−6.632608**	1(1)
Db	−2.1709691	−4.708598**	1(1)
Op	−4.185017**	−7.013090**	1(0)
Dm	−1.494753	−4.898971**	1(1)
MacKinnon critical values for rejection of unit root hypothesis			
1% critical value	−3.724070	−3.737853	
5% critical value	−2.986225	−2.991878	

*,**Denotes statistical significance at 1% and 5% level respectively. Source: Computed by the Author (2015)

3 Barro stated output per capita was affected by the capital input per worker and expressed the government's investment in the Cobb-Douglas production function $y=f(k, g)=Ak1\text{-}ag\alpha$ where y is output per worker *(Y/L), k* is capital per worker *(K/L), g* is the quantity of goods and public services provided to each household and firms. Conceptually the government does not have output and capital. So the government only buys the output from the private sector.

4 In line with the endogenous growth model of fiscal policy and trade openness, the following empirical study is specified *gr=f(IF, Op),* where *IF* is instrument fiscal policy and *Op* is trade openness.

4. RESULT AND DISCUSSION

4.1. Unit Root Test of Stationary of Variable

This study developed two models to show the relationship between fiscal policy, trade openness, and growth. One is the types of government spending are implicitly financed by taxes and the other is the types of government expenditures are financed by foreign loans. There are nine variables for both models. To test whether time series data is stationary or not, this study used the augmented Dickey Fuller (ADF) test. Based on results ADF test, there are two variables is stationary at level and remaining stationary on first different. However, all variables are stationary at first different and it means that each data series is integrated on the order of 1.

4.2. Test for Cointegration

To determine the long-run relationship between fiscal policy instrument, trade openness, and economic growth, this study used Johansen co-integration test. The results of the data series for the Equations 5 and 6 can be seen in Tables 2 and 3, respectively.

Tables 2 and 3 show that all the trace and maximum Eigen value statistics are greater than critical value of 5% and that means they reject the null hypothesis of no cointegration. Therefore there is a long run relationship between fiscal policy, trade openness, and growth either government expenditure is implicitly financed by taxes or foreign debt.

4.3. Effect of Fiscal Policy and Trade Openness on Economic Growth

Table 4 shows the effect of fiscal policy on economic growth varies depending on the type of government expenditure and alternative sources of financing. Government spending on infrastructure and human resources are positive and significant impact on economic growth if they are implicitly financed from taxes and insignificant if they are financed by foreign loans. This shows that tax revenue has been quite conducive in stimulating economic growth. This fact has been reinforced by a tax coefficient in Equation 5 which is positive and significant, which means the role of taxes as a source of development financing is quite large. The findings of this study is in line with Hosoya (2003), Dong et al. (2003), and Abdon et al. (2014). The results of this study are highly relevant to the current policy of the Indonesian government. One of the successful policies is a tax amnesty program. Tax amnesty program is expected to boost the ratio of tax revenue to GDP, which is still comparatively low with an average of 12% in the period 1990-2015. However, this study contradicts with Attinasi and Klemm (2014)[5].

Positve and significant effect of government spending on infrastructure and human resources have strengthened some of the results of previous studies both the developed countries and other developing countries[6] and studies in Indonesia by Hadiwibowo (2010). Conversely, routine government spending has a negative and no significant effect on economic growth for both financed by taxes and foreign loans. Even the effect of increased routine government spending without considering the source of financing is also negatively related to economic growth in this study. These findings support the results for Ahmed and Miller (2000), Kweka and dan Morissey (2000), Jung and Thorbecke (2001), Mansouri (2000), and Bose et al. (2003), and Benos (2009)[7]. They support Barro (1990), Barro and Sala-i-Martin (1992) which asserts unproductive expenditure does not encourage economic growth.

Its quite interesting to be analyzed is the effect of government spending on infrastructure and human resources to economic growth if they are financed by foreign loans. The estimation results indicate a positive relationship but not significantly. This means that foreign loan has not been fully to encourage economic growth in the long run. The implication of this finding is to give attention to the Indonesian government to be careful in raising foreign loans because based on the estimates that the foreign debt affects negative significantly to economic growth. This study is in line Siddique (2015) at indebted poor countries and Osinowo (2015) in Nigeria, but contrary to Kasidi and Said (2013) for the case of Tanzania.

This study suggests that foreign loans should be reduced and managed properly. This is quite reasonable considering the withdrawal of foreign loans has exceeded principal repayments of foreign debt. In 2015, the withdrawal of foreign loans amounting to US $48 647, while principal repayments foreign debt amounted to USD 64183.2 billion. During the 1990-2015, the ratio of gross foreign debt to GDP is an average of 1.98% per year. Based on data released by Bank Indonesia, total foreign debt (private and public) to a July 2015 reached Rp. 4376.3 trillion.

In general, the effect of fiscal policy in term of the government spending on infrastructure and human resources is quite effective on economic growth in the long run. The proportions of central government expenditure for the economy function (such as economic and social infrastructure) and education function reached an average of 10.29% per year and 11.11% per year respectively in the period 2010-2015. Although this figure is still relatively small, but it indicates that during this period, the government's attention to physical and human investments has been improved. In the coming years, the share of budget allocations for infrastructure and human resources are expected to increase quite dramatically in order to accelerate economic growth in the long run.

Trade openness shows a significant and positive sign, which means the results of the estimates in accordance with the theory. This indicates that the impact of economic openness has been a positive effect on the performance of the Indonesian economy. The result is in line with previous studies[8] and the recent empirical

5 Gale (2014) suggests that not all tax changes will have the same impact on growth. Reforms that improve incentives, reduce existing subsidies, avoid windfall gains, and avoid deficit financing will have more auspicious effects on the long-term size of the economy, but may also create trade-offs between equity and efficiency.

6 Zang (1996), Wolft (2000), Asante (2000), Glom (2001), Hermes and Lensink (2003), Bos et al. (2003), and Donghyun (2014).

7 Benos, 2009 denotes that if routine expenditure is financed by non-distortionary tax. Sebaliknya jika pen, it has neutral effect, but if it is financed by distortionary tax, it has negative effect.

8 For example Cuadros et al. (2002) in Argentina, Brazil and Mexico, Choudhri and Hakura (2000), Yasin (2001) in Sub Saharan Afrika, Duncan and Quang (2002) in some developed and developing countries, and Anderson (2001) in Swedia.

Table 2: Co-integration test result for series data in Equation 5

Hypothesized number of CE(s)	Trace statistic	5% critical value	Hypothesized number of CE(s)	Max-Eigen value statistic	5% critical value
None*	254.6952	125.6154	None*	101.8427	46.23142
At most 1*	152.8525	95.75366	At most 1*	80.23908	40.07757
At most 2*	72.61342	69.81889	At most 2	31.94780	33.87687
At most 3	40.66562	47.85613	At most 3	20.72812	27.58434
At most 4	19.93750	29.79707	At most 4	14.36922	21.13162
At most 5	5.568283	15.49471	At most 5	4.048267	14.26460
At most 6	1.520015	3.841466	At most 6	1.520015	3.841466
Trace test indicates 3 cointegrating Equations at the 0.05 level.			Max-Eigen value test indicates 2 cointegrating Equations at the 0.05 level.		
*Denotes rejection of the hypothesis at the 0.05 level			*Denotes rejection of the hypothesis at the 0.05 level		

Source: Computed by the Author (2015)

Table 3: Co-integration test result for series data in Equation 6

Hypothesized number of CE(s)	Trace statistic	5% critical value	Hypothesized number of CE(s)	Max-Eigen value statistic	5% critical value
None*	296.9969	125.6154	None*	108.5857	46.23142
At most 1*	188.4112	95.75366	At most 1*	76.50318	40.07757
At most 2*	111.9080	69.81889	At most 2*	58.24833	33.87687
At most 3*	53.65969	47.85613	At most 3*	34.18516	27.58434
At most 4	19.47453	29.79707	At most 4	12.18827	7.286261
At most 5	15.49471	21.13162	At most 5	5.318165	14.26460
At most 6	1.968095	3.841466	At most 6	1.968095	3.841466
Trace test indicates 4 cointegrating equations at the 0.05 level.			Max-Eigen value test indicates 4 cointegrating equations at the 0.05 level.		
*Denotes rejection of the hypothesis at the 0.05 level			*Denotes rejection of the hypothesis at the 0.05 level		

Source: Computed by the Author (2015)

Table 4: Results estimation

Independent variables	Government expenditure is implicitly financed by external debt	Government expenditure is implicitly financed by taxes	Without tax and external debt
Constant	−1.799767	−0.966068	−0.596142
GHM	0.113739ns	6.987693**	4.488378ns
GINFR	2.794370ns	2.461393**	5.518430**
GRT	−1.420906ns	−0.493721ns	−1.439564**
T	1.076320**	-	
Db	-	−3.178220**	
Op	0.194003*,**	0.181615**	0.211554**
Dm	−0.914931ns	−7.053137**	0.121677ns
R^2	0.517486	0.817684	0.404157
Adjusted R^2	0.365113	0.760110	0.255197
F-statistic	3.396183	14.20243	2.713183

*,**: Denotes 10%, 5%, respectively. Source: Computed by the author (2015)

studies[9]. This result is not in line with Simorangkir (2006) found the negative effects of trade openness and economic growth in Indonesia. Therefore, this study suggests that the quality of human resources should be increased in the future. Improving the quality of human resources is expected to create new innovation through the transfer of technology from partner countries. The opportunities of the free trade of Asean Economic Community (AEC) can be utilized as much as possible and the threat can be reduced. This is very important for the Indonesia because the data shows that in the last three years, there is a tendency of the value of imports exceeded the value of exports, which also affect the economic slowdown.

The economic crisis began in 1997 and continued global crisis in 2008 turned out to have an impact on the domestic economy. Indonesia's economic growth in the period before the crisis was in the range of 7-8%, but after the economic crisis, Indonesia's economic growth reached negative figures in 1998. Since then, the various instruments of fiscal and monetary policies adopted by the government to restore the economy and the results are quite positive. This fact is reflected in economic performance is gradually growing at a rate 3-6% since 2000-2007. But the global economic crisis had a significant effect on economic growth in Indonesia. Economic growth in the last few years has slowed to only reach 4.8% in 2015. This condition is statistically proven by the results of estimation shown by Equation 5 and 6 that the economic crisis shown by dummy variable has a negative impact to economic growth.

9 Jawaid et al. (2011) showed trade policy has insignificant effect on economic growth the case of Pakistan and Yusoff and Febriana, (2012).

5. CONCLUDING REMARKS AND POLICY IMPLICATIONS

Empirical studies on the effect of fiscal policy and trade openness to economic growth has been widely discussed in the literature. This study examines empirically the effect of fiscal policy and trade openness on economic growth in the period 1990-2015. Fiscal policy includes government spending on infrastructure, human resources (education and health), and routine spending. Tax revenue and foreign loans are used as a source of financing.

This study develops two models, one is the model that examines the effect of government spending on infrastructure, human resources, and routine expenditures and trade openness on economic growth where the types of government spending are implicitly financed by tax revenues, and the second model is the types of government spending are financed by foreign loans. All variables in the model estimation are stationary and cointegrated in the first different so that there is long-run effects of fiscal policy and trade openness to economic growth in Indonesia. The study found that government spending on infrastructure and human resources have positive and significant effect on economic growth if they are financed by tax revenue and insignificant effect when they are financed by foreign loans. While routine government spending has a negative and insignificant impact to economic growth. Other findings are trade openness has a positive and significant effect on economic growth in the long-run.

The implications of these findings affirm that fiscal policy, especially government spending on infrastructure and human resources should be prioritized and financed by taxes revenue. This statement is in line with the findings that the tax revenue has a positive and significant impact on economic growth. While the financing from foreign loans should be reduced considering the amount of principal repayments of foreign debt is large enough so that the effects of foreign debt can depress economic growth in the long-run. Therefore, tax reform needs to be done in accordance with the circumstances and economic conditions. The forms of tax reform, among others a decline in the tax rate, the sustainability of the tax amnesty program, the improvement/simplification of tax administration and the extension of tax objects intensified. The proportion of spending for the development of infrastructure and human resources has been increased so far, but it is still needs to be improved in the future. The availability of adequate infrastructure and the improvement of human resource capabilities will have a positive effect in the era of free trade which in turn to accelerate economic growth.

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