

## FISCAL AND MONETARY POLICY FOR THE DEVELOPMENT OF INDONESIAN PLANTATION

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### **Abstract**

The global monetary crisis in 2007-2008 and the focus of development on climate changes make it important to promote a healthy economic growth based on the local resources. The economic crisis, which has slowed down the economic growth and has caused job losses which result in increasing unemployment and poverty, should alter the focus of Indonesian economic development in the future to be based on renewable and sustainable local resources. Indonesia is an agricultural and maritime country so these two aspects should be the core of the growth. In agricultural culture, plantation sector is the source of sustainable economic growth because of its geographical, demographic, and cultural potentials. The problems in plantation sector are the low growth of areas and productivity as well as its limited end-products. The research findings indicated that in order to increase areas, there should be a guarantee on investment, interest rate, and little retribution or good governance. To increase productivity, we need a guarantee on fertilizer price, interest rate, and wages, as well as pricing factors to avoid market distortion. This is very important relating to the economic stimulus policy which is essential to revitalize from the economic doom in the future.

**Keywords:** plantation sector, area, productivity, investment, interest rate, and wages

**JEL classification:** E52, E62

### **INTRODUCTION**

The economic growth which is healthy and pro-environment nowadays has to be the focus for Indonesia. The existing growth has caused a growing disparity between the rich and the poor, decreasing elasticity of labor absorbance, and a growing number of unemployment. Indonesian GDP growth during 1992-2007 is around 3.3% per year. Compared to those of other Asean countries, this value is almost the same as that of the Philippines and Thailand, which is around 3.0-3.6%, but relatively lower compared to that of Malaysia and Vietnam, which is around 5-8%. There are countries whose growth comes from the plantation sector, as a result of a great population and a need to

fulfill domestic food demands, such as China and India whose GDPs grow to 10,2 % and 6.7%, and the agricultural sector can grow to 3.7% and 3.9%, likewise Malaysia 4,9%, Vietnam 4.1%, also in Australia where agricultural sector can grow to 3.9%. The growth of agricultural sector in those countries is higher than that of Indonesia, which is around 1.7%.

It should be admitted that since 1990s the attention towards agricultural sector in Indonesia has decreased. Bank financing and government's attention since then are focused on industrial and service sectors, especially banking. Food crisis in the beginning of 2008 increased the price of the world's rice to 1.000 US\$ per ton from 360

US\$, and the price of CPO rocketed to 800-900 US\$ per ton. This phenomenon should bring awareness to the society and the government to refocus on the economic development which is based on the local and renewable resources. Industry and Service can be sustainably developed if we can pass the most fundamental stage, i.e. agricultural development, as the bases for meeting the food demands, as mentioned by Solow and Mundel-Fleming. Indonesian economy, in the time of food and energy crises in 2008, should be based on agriculture, forestry, and fishery as renewable local resources for food and energy sources. Fisher (2007) emphasized that tough economic structure should be supported by industries whose raw materials are domestic and renewable to gain a great added value and to be relatively stable against the fluctuating currency rates.

The share of agricultural sectors on Indonesian GDP in 2008 reached 17.5%, the growth of that sector was 1.7%, while industry reached 3.7%. This condition is similar to those in the Philippines and China, where the share of agricultural sector ranges 15-20%, along with high industrial growth of 4-10% and agriculture of 3-4%. The performance of Indonesian exports from 1999 to 2008 was around 5% per year, worth 52-56 million US\$. The exports consisted of 76-84% non oil/gas and 16-24% oil and gas. According to Samuelson (1971) in Krugmen and Obstfeld (1997) and Porter (2005), exports which are triggered by the domestic resources or special factors such as non oil/gas will improve competitiveness and will become a source for sustainable growth, compared to oil and gas exports which are non-renewable. Therefore, the Indonesia's strategy to develop non oil and gas exports is on the right track. The next problem is the efficiency of production and labor productivity (Idris 2006, Saragih 2004, Tambunan 1999, Baharumsyah and Rasjid 1999).

From the growth of non oil and gas exports, it can be seen that the percentage of agricultural products is around 32-35%, industry 53-59%, and mining 6-8%. Export of agricultural products is dominated by shrimps, fish, cacao, and coffee. The percentage of main agricultural products on agricultural exports reaches 35%, especially from cacao, coffee, tea, and tobacco. However, the growth of export of agricultural products, agroindustry, and mining keeps decreasing, while the exports of industrial products are increasing. This export structure, according to Rostow (1956) and Rahardjo (1986), depicts an industrialization process from agriculture to industry.

The growth of export of agroindustrial products reaches 78% from the total export of agricultural products. The export consists of plantation and forestry products. The main agricultural products are CPO and rubber; while the forestry products are processed timber and paper. Learning from Malaysia's and Thailand's experiences, it is important to develop agroindustry to increase added values. In Malaysia's case, for example, income from CPO, rubber industries and their related products can produce 75% of the government revenue. The development of plantation products cover CPO industries and 27 related products, not only cooking oil industries. Rubber is also developed, not only limited to RSS. Cacao and tea are developed to be drinks and beverages, and are not exported in bulks. The development of agroindustry has backward linkage to job opportunity and foreign exchange earnings (*devisa*) to support the national development.

Industrial-based development which has begun since 1990s, especially relocating industries such as textiles and electronics, must continue because of its important role in providing job opportunities. The developed industrial products especially the footloose industries should be

maintained by developing technology and innovation so that it will decrease its dependence on imported raw materials. Industries should also be developed to promote exports by providing privileges such as *berikat* area which is tax free.

The development of economic growth sources has to maintain not only *capital-intensive* and *labor-intensive* industries, but also to develop agroindustry which is people's economy, especially the agricultural sector, forestry and fishery, and, specifically plantations. The reasons why it is important to develop these sectors are: a) the plants grown are those suitable to the tropics, b) the plants are familiar to the society and easy to grow, and c) the plantation is an organized enterprise, such as smallholding plantations and large plantations, so that it can easily mobilize resources. Therefore, the development of agricultural sector basically covers smallholding plantations (PR), and government estates and private estates (PBN/S). The PR and PBN/S in Indonesia have rapidly developed since 1980s along with the agricultural credit facilities from KLBI facilities (Credit liquidity from the Bank of Indonesia). The development of plantations includes increasing plant productivity, especially for smallholding plantations, and areas for new plantations. Since 1984, plantation sub-sector has grown approximately 4-5% per year.

Data from the National Statistics Bureau (BPS) and the Department of Agriculture show that in terms of areas, smallholding plantations are relatively larger than state or private plantations. Smallholding plantations are dominant for rubber, coffee, coconuts, and cacao. Large government and private estates are dominant for palm oil and rubber. In terms of area growth, palm oil commodity has the highest growth of 13.7% per year for smallholding plantations and 9.87% per year for government and private estates. Commodities whose growth is sig-

nificant include cacao 4.49% for smallholding plantations and 0.39% for government and private estates. Rubber grows 1.8% for smallholding plantations and 2.18% for government and private estates. The relatively slow growth of rubber is caused by adequate areas and dropping price in the world's market. In terms of production, palm oil grows significantly up to 13.98% for smallholding plantations and 7.54% for government and private estates. Cacao production also grows relatively high to 11.51% for smallholders and 9.06% for government and private estates. The rapid growth of palm oil production is triggered by the increasing demand for CPO (crude palm oil) for various derivatives such as soap, butter, cosmetics, and cooking oil. On the other hand, cacao production is triggered by the growth of food industries, along with the increase of the people's income.

The fundamental problem to be seriously analyzed regarding the plantation sector is the low productivity. As an example, palm oil production in smallholders is 1.45 tons / ha, and 2.41 tons/ha in government and private estates. This fact significantly differs from that of Malaysia which can reach up to 6-7 tons/ha. Technology has become a barrier to develop this plantation sub-sector. Besides the problem of technology mastery in comparison with other countries, the problem of technological gap is obviously seen from the difference in productivity between smallholders and government or private estates. Productivity data show that all commodities from smallholders are only 50% of the total production of government or private estates. For tea, this is even much smaller with the ratio of 2.48. Therefore, the development of plantation sector is expected to be able to see barriers in improving smallholding and government or private estates, as well as to see the impacts of any policy, both fiscal and monetary, in order to improve the well-

being of producers and consumers, to increase the nation's foreign exchange earnings (*devisa*), which eventually become sustainable sources of the growth. Problems analyzed in this research are 1) What factors influence the growth of plantation sub-sector, both in terms of the growth of areas as well as productivity for smallholding plantations and large plantations; 2) What fiscal and monetary policies effectively influence the growth of plantation sub-sector and investment climate in Indonesia. The research objectives are formulated as follows a) to identify the factors which will influence the growth of areas and productivity for smallholding plantations and large plantations in order to determine the most effective policy both for short and long terms; b) to recognize factors which can influence investments in the plantation sector, specifically, and in Indonesia, in general, and to formulate policy which is suitable for investments in the plantation sector.

## METHODS

### Data Sources

The data used in this research are secondary data. The data are obtained from FAO and BPS in the forms of time-series data since 1980 to 2008. Data containing time-relating value needs to be valued by using year-base as applied by BPS.

The analysis used multiple regression which is simultaneous against the functions of production, exports, imports, and prices. The function being analyzed is the function generated from the function of exports, imports, and prices. As an aid to do regression, program SAS 12 is used.

The equation for the growth of smallholding plantation areas (LASPR) is:

$$\begin{aligned} \text{LASPR} = & a_0 + a_1 \text{HDSP} + a_2 \text{HEMP} \\ & + a_3 \text{INSP} + a_4 \text{TSBI} + a_5 \text{PBB} \\ & + a_6 \text{PE} + \varepsilon_1 \end{aligned} \quad (1)$$

where:

- LASPR = The area of smallholding plantation (ha)
- HDSP = Domestic price of plantation products (Rp/Kg)
- HEMP = Export price of plantation product (Rp/Kg)
- INSP = Investment on plantation (Rp/year)
- TSBI = Interest rate of Bank Indonesia (%/year)
- PBB = Property Tax (Rp/year)
- PE = Export Tax on plantation products (%)
- $\varepsilon_1$  = Error terms

The equation for the growth of largeholding plantation areas (LASPN) is:

$$\begin{aligned} \text{LASPN} = & a_0 + a_1 \text{HDSP} + a_2 \text{HEMP} \\ & + a_3 \text{INSP} + a_4 \text{TSBI} + a_5 \text{PE} \\ & + a_6 \text{LLASPN} + \varepsilon_2 \end{aligned} \quad (2)$$

where:

- LASPN = The area of largeholding plantation (ha)
- HDSP = Domestic price of plantation product (Rp/Kg)
- HEMP = Export price of plantation product (US\$/tonne)
- INSP = Investment on plantation (Rp/year)
- TSBI = Interest rate of Bank Indonesia (%/year)
- PE = Export Tax on plantation products (%)
- LLASPN = t-1 Lag of the area of largeholding plantation (ha)
- $\varepsilon_2$  = Error terms

The equation for the productivity of smallholding plantation (PSPPIR) is:

$$\begin{aligned} \text{PSPPIR} = & a_0 + a_1 \text{HESP} + a_2 \text{HDMP} \\ & + a_3 \text{TSBI} + a_4 \text{HPI} + a_5 \text{USPI} \\ & + a_6 \text{LPSPPIR} + \varepsilon_3 \end{aligned} \quad (3)$$

where:

- PSPIR = Productivity of smallholding plantation (tonne/ha)
- HESP = Export price of plantation products (US\$/ton)
- HDMP = Domestic price of plantation product (Rp/Kg)
- TSBI = c (%/th)
- HPI = Fertilizer price (Rp/Kg)
- USPI = Labor wage of plantation sector (Rp/year)
- LPSPIN = t-1 Lag of the productivity of plantation (tonne/ha)
- $\epsilon_3$  = Error terms

- HPI = Fertilizer price (Rp/Kg)
- USPI = Labor wage of plantation sector (Rp/th)
- PE = Export tax on plantation products (%)
- BCM = Import Tax (%)
- LPSPIN = 1-t Lag productivity of largeholding plantation (tonne/ha)
- $\epsilon_4$  = Error terms

The equation for the productivity of largeholding plantation (PSPIN):

$$PSPIN = a_0 + a_1 HESP + a_2 HDSP + a_3 TSBI + a_4 HPI + a_5 USPI + a_6 PE + a_7 BCM + a_8 LPSPIN + \epsilon_4 \quad (4)$$

dimana:

- PSPIN = Productivity of largeholding plantation (tonne/ha)
- HESP = Export price of plantation products (US\$/ton)
- HDSP = Domestic price of plantation products (Rp/Kg)
- TSBI = Interest rate of Bank Indonesia (%/year)

**RESULT DISCUSSION**

The first function to be discussed relates to factors which influence the growth of smallholders areas and that of large plantations. The area of smallholding plantations is determined by domestic price of plantation products, export price, national investments, interest rates, PBB, local retributions, and export taxes. The regression results can be seen in Table 1.

The regression shows that determination coefficient is 0.93 so that the dependent variables can explain their variation as much as 93%, which indicates that it is a good model. The value of calculated-F 49.8 is higher than F-table. This shows that independent variables all together significantly influence the dependent variables. Moreover, from partial test, t-test, it is known that only the domestic price is insignificant, while other variables are significant at the confidence level of 1,5 and 10%.

**Table 1:** Regression Result on Area of Smallholding Plantation

Independent Variables	symbols	Perceived Parameter	Calculated-t	Elasticity
Area of smallholding plantations	LASPR			
Intercept		7205905	*11.797	
Domestic price	HDSP	965	1.998	0,13
Export price	HEMP	137517	***0,304	0,02
Investments	INSP	653	*3.118	0,43
Interest rates	TSBI	-22927	*-3.122	-0,05
PBB and local retributions	PBB	-3460	** -2.497	-0,29
Export taxes	PE	-1458	** -2.413	-0,05
		R <sup>2</sup> 0.93 calculated-F 49.8 Dw 1.98		

**Table 2: Regression Result on Area of Large Plantation**

Independent variables	Variable symbols	Perceived Parameter	Calculated-t	Elasticity
Area of large plantations	LASPN			
Intercept		382656	*2.899	
Domestic price	HDSP	167	0.374	0,070
Export price	HEMP	15216	***1,379	0,018
Investment	INSP	68	***2.122	0,239
Interest rate	TSBI	-173	** -2.721	-0,002
Export taxes	PE	-133	-0.968	-0,024
Lag of last year's area	LLASPN	0,48	0.056	
R <sup>2</sup> 0.97 Calculated-F 134 Dw 2.02				

The variable which positively and significantly impacts is investment. The value is 3.118 with the elasticity of 0.43. If there is an increase of investment as much as 1 %, the growth of smallholding plantations is increased by 0.43%. Other significant variables are domestic price and export price. The findings show that it is important for the government, local government, and the society to maintain a conducive investment climate. The guarantee for security and stability, investment, and proper land use has to be secured and improved to promote more investments.

The three variables which negatively influence the land expansion for smallholders are PBB tax and retributions, interest rates, and export taxes. If PBB and retributions increase by 1%, the agricultural area decreases by 0.29%. Likewise, the increase of interest rate by 1% will decrease the area by 0.05%. This will give an important insight for the government and regional government about the development reform and local autonomy. Autonomy in a region makes room for the local government to increase retributions and PBB, and each region has different regulations. This research shows that this policy has negative impacts on investment in the plantation sector. Moreover, the government has to guarantee that the interest rate should stay low,

export taxes are moderate, abolished if possible, and the control of local government's regulations regarding retributions and PBB, where the price of tax object is determined by the local government, thus making the investment not conducive.

What about the factors which influence the growth of areas in the large plantations? The variables which significantly influence are export price, investments, and interest rate, while other variables do not significantly influence (see Table 2).

The two variables which are significantly influencing are investment and export price. Investment has the regression coefficient of 68 and the elasticity of 0,239. This is the biggest value compared to those of other variables. It should, therefore, be given attention to. The increase of investment by 1% will increase the growth of area by 0.239%. Likewise, if the export price increases by 1%, the area growth increases by 0.018%. Large plantations are usually government estates, foreign or private estates. The form of the enterprise will influence the area growth. The area growth is determined by investment factors which are subject to business worthiness and the security of investment. Therefore, it is necessary to maintain a conducive investment climate. The export price factor is also important because the majority of large plantation

products are export-oriented, such as palm oil, rubber, and cacao. Therefore, the government has to improve the export price by eliminating export taxes and other policies which hinder exports or regulates the plantation products.

The factor which negatively and significantly influences the area expansion is the interest rate. If the interest rate increases by 1%, it will decrease the area as much as 0.002%. Response for the interest rate is significant for large plantations because its finance usually comes from banking in the forms of capital credits or investment credits. As a result, any increase in interest rate will directly influence the enterprise's finance. And so, it is necessary for the government and the Bank of Indonesia to maintain the interest rate to suit the real sector, especially the plantation sector where the gestation period is relatively long.

The second problem in the plantation sector is productivity. The productivity greatly depends on treatments or maintenance, such as fertilization, weeding, research and development. All those productivity components are related to income and cost. The factors in income include domestic and export prices, and the cost factors are interest rate, fertilizer price, labor wages, climate factors, and last year's production (See Table 3). The productivity of smallholders is influenced by the export price. If the export price increases by 1%, productivity will increase by 16.52%. This elasticity value is quite high. Most probably this is not the result of production increase resulting from fertilization or maintenance but be-

cause of the harvest exploitation when the export price goes up. At a high price, the plants such as palm oil and cacao, are harvested several times which result in low quality products. This behavior should be given attention because it will deteriorate the quality of products and plants because it focuses only on short-term gain and may fail in the future.

The two variables which are negatively influencing are fertilizer price and labor wages. The coefficients of those two variables are -0.011 and -0.000003 with the elasticity values of -2.05 and -2.41. In other words, any increase of 1% fertilizer price will decrease productivity by 2.05% and any increase of 1% labor wages will decrease the productivity by 2.41%. This value is elastic and the response is greater. Therefore it needs a serious attention. The increase of fertilizer price will be responded by farmers by cutting back the number of fertilizations, so that the plant's need is imbalanced with the availability of fertilizers. Likewise, the increase of labor wages will be responded by farmers by decreasing the quality of maintenance such as the fertilization periods, maintenance and harvesting. These two factors will result in the significant decrease of productivity. It is therefore necessary for the government to take control of labor wages, fertilizer price and its distribution.

What about the productivity in large plantations? There are some significant variables which are the same with those in smallholders. They are export price, fertilizer price, labor wages, last year's production and one additional variable is the interest rate

**Table 3: Regression Result on Productivity of Smallholders**

Independent variables	Variable symbols	Perceived Parameter	Calculated-t	Elasticity
Productivity of smallholders	PSPIR			
Intercept		29,37	***1.729	
Export price	HESP	0,031	***1.634	16,52
Domestic price	HDMP	0,072	0,046	0,12
Interest rate	TSBI	-0,077	0,696	-1,39
Fertilizer price	HPI	-0,011	***-1,381	-2,05
Labor wages	USPI	-0,000003	***-1,589	-2,41
Lag of last year's productivity	LPSPIR	0,279	***1.582	
R <sup>2</sup> 0.62 calculated-F11.6 Dw 1.77				

**Table 4: Regression Result on Productivity of Large Plantations**

Independent variables	Variable symbols	Perceived Parameter	Calculated-t	Elasticity
Productivity of large plantations	PSPIN			
Intercept		311,253	*4.274	
Export price	HESP	0,035	***1.768	9,33
Domestic price	HDSP	0,003	0,345	1,52
Interest rate	TSBI	-1,142	** -2.907	-10,28
Fertilizer price	HPI	-0,143	***-1.639	-13,30
Labor wages	USPI	-0,000004	***-1.538	-1,60
Export taxes	PE	-0,025	***-1.591	-3,24
Import Tariffs	BCM	-0,014	-1,287	-19,34
Lag of last year's production	LPSPIN	0,362	***2.000	
R <sup>2</sup> 0.87 calculated-F 15.9 Dw 2.64				

The table shows that the variable which positively influences is the export price. Any increase of export price by 1% will increase the productivity by 9.33%. The significant increase of productivity may behave similarly with that of smallholding plantations i.e. excessive exploitation when the price goes up rapidly.

Negatively influencing variables are the fertilizer price and the interest rate while moderate influence comes from labor wages and export taxes. The increase of 1% of interest rate will decrease the productivity by 10.28% and the increase of 1% fertilizer

price will decrease the productivity by 13.38%. The impact of the increase in fertilizer price is significant. Therefore, the increase of fertilizer price and interest rate should be well controlled because they will increase the costs.

#### CONCLUSION

The growth of Indonesian economy in the future should depend on the domestic renewable resources (DRR). The DRR-based growth will improve competitiveness, high interdependence with local resources, and create job opportunities. One of the DRR is



the plantation sector. This sector is suitable because of the climate suitability, grown plants, people with their skills and education, and its competitiveness in the international market. The fundamental problem in the plantation sector is the growth of areas and productivity. The important factors which influence the area growth are investments, interest rate, and export prices. While those influencing productivity are fertilizer price, interest rate, labor wages, and export price.

The implications of the policy likely to be developed regarding stimulus policy in order to overcome the economic crisis in Indonesia and to promote the growth of agricultural areas are: (a) to promote a conducive investment climate by reducing the local regulations, PBB and retentions which have negative impacts on

investments, and (b) to lower and to promote realistic interest rates for the sake of plantation growth, and (c) to ensure that there is little interference on plantation regulations regarding the export taxes and others. The implications of the policy likely to be developed in order to promote productivity are: (a) the fertilizer price should be made stable and the fertilizer is evenly distributed with regards of time and locations so that the fertilization can be done on time and at the right level, (b) the security of positive and stable interest rates for the real sectors, (c) labor wages which are not burdening the employers, and (d) coaching and mentoring for the farmers and the employers to wisely harvest their crops when the price goes up so that the product quality will be maintained and the plants are not excessively exploited.

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