

Djoni Hartono

Assessing policy effectiveness during the crisis: The case of Indonesia

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Abbreviations

BPS	<i>Badan Pusat Statistik</i> (Central Agent of Statistics)
DySAM	Dynamic SAM
FSP	Fiscal Stimulus Policy
GDP	Gross Domestic Product
GoI	Government of Indonesia
ILO	International Labour Organization
IO	Input – Output
KHM	<i>Kebutuhan Hidup Minimum</i> (consumption at the minimum level)
KILM	Key Indicators of The Labor Market
KUR	<i>Kredit Usaha Rakyat</i> (people credit program)
LFS	Labour Force Survey
MSME	Micro, Small, Medium Enterprises
NTP	<i>Nilai Tukar Petani</i> (farmer trade index)
PNPM	<i>Program Nasional Pemberdayaan Masyarakat</i> (national program for community development)
PTKP	<i>Pendapatan Tidak Kena Pajak</i> (level of income that is not accounted in the tax)
SAM	Social Accounting Matrix
UMR	<i>Upah Minimum Regional</i> (regional minimum wage)
VAT	Value Added Tax

Executive summary

Economic crisis has struck Indonesia many times. The two most severe economic crises have been the hyperinflation crisis of 1965/1968 and the multi dimensional Asian crisis of 1997/1998. Currently, a financial crisis hit the world economy, including the Indonesian economy.

Each crisis has different characteristics. The Asian 1997/1998 crisis started with the significant depreciation of Thailand Bath, which spread to almost all East Asian countries, including Indonesia. The Indonesian IDR depreciated substantially from approximately 2,450 per USD in June 1997 to 14,900 per USD in June 1998. The current crisis - the 2008 global financial crisis - began in the United States in the financial sector and is associated with speculation focused on the short-term appreciation of assets and the underestimation of the risk with asset backed securities.

The global financial crisis has not seriously affected Indonesia's economy in comparison to its impact on other countries. This is largely due to the sizeable portion of GDP (65 per cent) that is attributed to domestic consumption. Indonesia still had positive economic growth during the crisis, together with China and India. However, the excellent performance of the Indonesian national output was not followed by the performance of Indonesia's financial market or exchange rate. Moreover, the economic recession that is faced by many countries potentially threatened and continues to threaten Indonesian's export performance.

In order to cope with the possible threat of a global economic crisis, the Government of Indonesia (GoI) – in line with other countries - implemented a fiscal stimulus package to secure the domestic economy. The Indonesian fiscal stimulus package can be grouped into three programs, namely: (i) maintenance of purchasing power; (ii) prevention of employee contract termination and improvement of product competitiveness; (iii) increase investment in labour intensive infrastructure. Each program consists of many subcomponents. The total budget that are allocated for the fiscal stimulus amounted to 73.3 trillion IDR, which consists of 56.3 trillion IDR in terms of tax incentive (tax cut) and an additional 17 trillion IDR injected into the government budget.

This report provides an analysis on the impact of the GoI's 2009 fiscal stimulus package using a dynamic social accounting matrix (DySAM) with an employment satellite. The output is expected to give valuable information regarding the types of instrument that have best responded to the crisis and indicates the type of instruments that have had significant positive impacts on household and employment creation.

In Indonesia, there are two sources of employment data, namely the LFS and the Labour Statistic of SAM, and each of these has specific character. Each source uses a different definition of labour. In the LFS, labour is defined as the economically active population aged 15 and over, whereas in SAM, labour is defined as the economically active population aged 10 and over. In terms of number of sectors, LFS classifies labour by 9 sectors, whereas SAM disaggregate labour by 24 sectors. Another difference is the time period. The number of workers in the SAM is calculated at the end of the year of the SAM publication (December), whereas the LFS is based on February or August data sets. Time matters in employment data, since employment in a particular sector has a specific trend, for instance agriculture. If we conduct labour survey in the harvesting time, the number of labours will substantially increase in agriculture and vice a versa.

The realization rate of the FSP in Indonesia was 83.84 per cent of its total budget. Based on its objective, the realization of fiscal stimulus consists of 78.7 per cent realization of the first group of programs, 85 per cent realization of second group of programs, and 91.4 per cent realization of third group of programs. There are number of factors that caused low realization rates, namely decision lag, implementation lag, regulation problem, administration problem and timely tender process.

Overall, all the FSP instruments have a positive impact on Indonesian macroeconomic indicators, namely sectoral output, labour income, household income and employment by location and gender. One of the FSP instruments is personal income tax reduction. This instrument had a larger impact on production activities in almost all sectors, except for infrastructure sectors, such as labour and capital intensive roads, irrigation and the rest of the construction sector. It is important to note here that the total budget that is spent through this scenario was substantial - as much as 24.7 trillion IDR. According to the results of the simulations, the five sectors that will experience the highest impact are livestock, fishery, crops, restaurant and food, drink and tobacco sectors. It is expected that labour in the crops sector seems to benefit the most in any scenario. In terms of occupation, agriculture worker and manual worker is expected to receive the largest impact. Since the structure of employment in Indonesia is majorly dominated by informal worker and mostly are men, the impact of fiscal stimulus is expected to be biased to informal worker particularly on men worker.

It is worth noting that estimating the impact of the fiscal stimulus policy by using DySAM approach in this study has some limitations. Those limitations are (i) the method does not address the price issue; (ii) structure of sectors in DySAM are not detail. This causes a relatively low precision on the mapping procedure; (iii) all shocks or injections are placed in exogenous matrix, thus the impact of each shock is simply the product of exogenous matrix and multiplier matrix. Since the multiplier matrix are the same for all scenarios, the impact of tax changes, tariff income changes, subsidy changes, and others shock on particular account with the same value will be treated the same and the result will be the same in magnitude. In other words, as long as we satisfy above condition, all fiscal stimulus instrument will have same multiplier effect.

Chapter 1 Introduction

Indonesia has been struggling with many crises, including economic crises. Since independence in 1945, the two most destructive crises have been the hyperinflation crisis of 1965/1968 and the multi dimensional Asian crisis of 1997/1998. The latter one changed Indonesia substantially.

The Asian 1997/1998 crisis started with the significant depreciation of the Thailand Bath, which spread to almost all East Asian countries, including Indonesia. The Indonesian IDR depreciated substantially from approximately 2,450 per USD in June 1997 to 14,900 per USD in June 1998 (Islam and Chowdhury, 2009:140). These conditions subsequently put substantial pressure on Indonesian's economic performance, especially for producers who largely depended on imported commodities and foreign debt. From an annual average of seven percentage points, growth declined by nearly 14 percentage points in 1998. Consequently, many firms went bankrupt and this created severe loss of employment in the formal sector, and many formal workers were pushed into self-employment in the agricultural and informal economy. Churning in the labour market was high, with 30 per cent of male workers and 40 per cent of female workers changing sectors between 1997 and 1998 (World Bank, 2010:36). Moreover, the inflation rate grew to 38 per cent in the first semester of 1998 and caused a significant drop in real income (Bank of Indonesia, 1999:11). People began to lose faith in the currency and this caused a 'run on' many banks, particularly large-scale private banks (Bank Central Asia). As a result, 16 private banks were liquidated. The combination of the crisis of the exchange rate, destabilization of the banking sector and high inflation caused an economic collapse, which then triggered a social and politic crisis. Massive demonstrations across the country demanded that the President resign.

In the period after the crisis, price stabilization policies were adopted and Growth Domestic Product (GDP) growth averaged 4.7 percentage points between 1999 and 2003, largely due to rapid growth in minerals and crude oil exports (World Bank, 2010; Islam and Chowdhury, 2009). However, economic recovery was characterized by jobless growth and labour market participation decreased as the number of discouraged workers increased.

In 2008, a crisis, now known as 'the global financial crisis', hit the world economy. This crisis has different characteristics than the previous 1997/1998 Asian economic crisis. The global financial crisis began in United States in the financial sector and is associated with speculation focused on the short-term appreciation of assets and the underestimation of the risk of asset backed securities. The underestimation of risk translated to the relaxation of lending practices, which saw credit made available to riskier segments of the market - the so-called 'sub-prime' loans market. The assumption was that housing prices would remain stable and that options for re-financing on the basis of increasing property values would remain available. However, in 2006 housing prices began to deteriorate, which undermined equity and thus exposed risk, subsequently foreclosures began to rise. This undermined the value of financial assets based on these mortgages (mortgage backed securities), which had been given investment grade status by credit rating agencies. Concurrently, insurance provided in the speculative market through credit default swaps, which offered holders a guarantee against loan default, were also written against many of these risky mortgage loans. As a result, many financial insurance providers were unable to honour their obligations.

Economies the world over saw high levels of uncertainty, declining asset values and falling consumer demand, as the implications of failure in global financial sector began to manifest. The economic down turn has had implications for employment and progress towards poverty reduction the world over. Analysis from the International Labour Organization (ILO) Key Indicators of the Labour Market (KILM) indicates that between 2007 and 2009 up to 61 million additional people may have fallen into unemployed and up to 222 million additional workers are likely to fall into extreme poverty (ILO, 2010).

The crisis saw governments in developed and developing countries step in to prevent the collapse of the financial sector, in an attempt to restore confidence and circumvent the subsequent impact that recessions have on enterprise and households. Many governments launched job creation programs and targeted cash transfer programs. Interest rates were lowered in many countries in an attempt to improve lending conditions.

In comparison to other countries, the global financial crisis has not seriously affected Indonesia's economy, largely due to the sizeable portion of GDP (65 per cent) that is attributed to domestic consumption. Indonesia still had positive economic growth during the crisis, together with China and India. In 2008, the Indonesian economy grew 6.1 per cent relative to previous year and then grew slower by 4.5 per cent in 2009 (Central Bank of Indonesia, 2010:29). Even though the Indonesian growth declined in 2009, in the first semester of 2010 it has shown strong signs of recovery, with growth at 5.9 percentage points (Central Agency of Statistics, 2010:1).

The excellent performance of the Indonesian national output was not followed by the performance of Indonesian financial market and exchange rate. The Jakarta Stock Exchange Index dropped nearly 50 per cent in January 2009 in comparison to January 2008. These conditions implied a massive capital outflow that negatively affected Indonesia's economic performance. In the second quarter of 2009, the performance of the financial market started to recover, as investor confidence increased. At the end of 2009, the Jakarta Stock Exchange Index achieved a significantly higher level, at 2,534 relative to the level in the end 2008 that was only achieved 1,355 (Central Bank of Indonesia, 2010:24). A similar condition was also experienced by Indonesian exchange rate market. The IDR fluctuated during the crisis and declined to 12,150 per USD in November 2008 (Bank of Indonesia, 2009:5). The exchange rate performance began to improve from the second quartile of 2009. The IDR appreciated to 9,425 per US dollar by the end of 2009 (Bank of Indonesia, 2010:26).

Despite the fact that the Indonesian economy still performed better than other countries during the crisis, the economic recession that is faced by many countries potentially threatens Indonesian's export performance. In line with other Asian countries, Indonesia's export decreased due to lower demand particularly from other developed countries (Bank of Indonesia, 2010:24). Trade surplus that has existed for several years decreased from 32.7 billion USD in 2007 to 23.3 billion USD in 2008. Even though export performance has deteriorated, strong domestic demand provided a buffer and offset the negative impact of weaker performance of export (Ziegenhain, 2010:1). The crisis also potentially threaten Indonesian labour market which dominated by informal sector. If the business collapse, many workers will be drawn to informal sector and increase the Indonesian informality rate. A report by World Bank (2010) found that informal workers have a significantly less income than formal workers. Thus. It is also expected that poverty rate will increase as well as the informality rate.

In order to cope with the possible threats of global economic crisis, Government of Indonesia (GoI) implemented a fiscal stimulus package to secure domestic economy. Those polices can be grouped into three programs, namely:

1. maintenance of purchasing power;
2. prevent employee's contract termination and improvement on product competitiveness;
3. enhanced infrastructure investment.

Each program consists of many subcomponents. Together they are expected to minimize the impact of global financial crisis on Indonesian economic performance and support employment creation.

This report provides valuable analysis on the types of instruments that have best responded to the crisis and indicates the type of instruments that have had significant positive impacts on household and employment creation. The instrument that is primarily used to undertake this analysis is a dynamic social accounting matrix, which was developed to analyze the impact and cost-effectiveness of government investments, such as those associated with the GoI's 2009 fiscal stimulus package.

Section 1 of this report presents the introduction, which explains the background of the study. Section 2 describes research methodology. Section 3 presents the crisis overview and followed by an analysis of employment data in Section 4. The simulation and results are provided in section 5. Finally, the conclusion and policy implication are finally drawn in section 6 and section 7.

Chapter 2: Research methodology

2.1. Basic methodology of a Social Accounting Matrix (SAM)

2.1.1. A basic framework of SAM

SAM is a double entry of traditional economic accounting, shaped partition matrix that records all economic transactions between agents, particularly among the sectors in the production block, institutions blocks (including households), and in the sectors of production factors (Pyatt and Round, 1979; Sadoulet and de Janvry, 1995; Hartono and Resosudarmo, 1998). As a data collection system, it is comprehensive and has many benefits. A SAM summarizes all the activities of transactions in an economy within a particular period of time (usually one year), thus providing a general overview of the socio-economic structure in an economy and describes the situation of income distribution.

SAM is also an important analytical tool, because: (1) through the concept of the multiplier, the SAM can show the impact of economic policy on household income and income distribution; and (2) application is relatively simple and thus comparatively easily applied.

Figure 2.1. SAM Framework

			A. EXPENDITURE				
			<i>Endogenous Accounts</i>			<i>Exogenous Account</i>	TOTAL
			Production Factors	Institutions	Production Activities		
R E C E I P T S	<i>Endogenous Accounts</i>	Production Factors	0	0	T_{13}	Z_1	y_1
		Institutions	T_{21}	T_{22}	0	Z_2	y_2
		Production Activities	0	T_{32}	T_{33}	Z_3	y_3
	<i>Exogenous Account</i>		T_{41}	T_{42}	T_{43}	Z_4	z
	TOTAL		y'_1	y'_2	y'_3	z'	

The basic framework of a SAM is a partition matrix with 4x4 dimensions, as shown in Figure 2.1. In general, the accounts in a SAM are grouped into endogenous and exogenous accounts.¹ Endogenous accounts in a SAM are the main accounts, consisting of three blocks, namely: production factors, institutions and production activities. The row shows income, while the column shows expenditure. Sub-matrix T_{ij} shows the income of the account in row i from the account of column j . Vector y_i shows the total incomes of the account in row i , otherwise vector y'_j shows the total expenditure of the account in column j . In addition, SAM requires that the vector y_i is the same with vector y'_j , in other words y'_j is a transpose of y_i for every $i = j$. Relationship contained in Figure 2.1 can be written in matrix form as (Defourny and Thorbecke, 1984):

¹ Endogenous account is parts of SAM account that its values are determined by products of accounting multiplier matrix and exogenous account. Exogenous account is previously determined and use as injection to give impact on endogenous account.

$$y = Ay + x \quad [1]$$

where:

y is the vector of total income

x is the vector whose members are expressed by $x_m = \sum_n z_{mn}$ where $z_{mn} \in Z_i$

A is the matrix whose members are expressed by $a_{mn} = t_{mn} / y_n$ where $t_{mn} \in T_{ij}$ and $y_n \in y'_j$

2.1.2. The derivation of an accounting multiplier matrix and an employment multiplier matrix

The accounting multiplier matrix within the framework of a SAM is very important, because the matrix can capture the full impact of the change in a sector across other sectors in the economy and can also be used to explain the impact that occurs in the endogenous accounts caused by changes in exogenous accounts. This matrix is a multiplier matrix, which is common and frequently used for economic analysis. The accounting multiplier matrix is basically a standard form of the inverse matrix of the , and can be derived from the basic framework of the SAM and expressed as (Defourny and Thorbecke, 1984):

$$y = Ay + x \Leftrightarrow y - Ay = x \Leftrightarrow y = (I - A)^{-1}x \Leftrightarrow y = M_a x \quad [2]$$

The accounting multiplier matrix or M_a is a matrix that informs of the overall impact of changes given to a particular sector and how this transmits to other sectors after going through the entire system in the SAM. The accounting multiplier matrix is used to simulate the effect of stimulus on the economy, especially on household income and production activities. Furthermore, to see the impact of stimulus on labour, an employment multiplier matrix can be developed. An employment multiplier matrix is derived from the following equation:

$$L = By \quad [3]$$

where:

B is the diagonal matrix whose membership represents the ratio between labour and output (employment-output share matrix).

L is the vector whose members are the sectoral employment.

If equation [1] and [2] substituted into equation [3], equation [3] can also be written as:

$$L = By \Leftrightarrow L = B(Ay + x) \Leftrightarrow L = B(I - A)^{-1}x = L = BM_a x \quad [4]$$

where:

BM_a is the employment multiplier matrix

The employment multiplier matrix or is a matrix that shows the overall impact of changes in employment within and across production activities after going through the entire system in the SAM. The employment multiplier matrix is used to simulate the effect of stimulus on employment.

2.2. Dynamic Social Accounting Matrix (DySAM)

2.2.1. Description of DySAM

DySAM is a tool that is based on an existing ‘static’ SAM for an economy and the available time series of national accounts. DySAM can provide an up-to-date and periodic static SAM². By using the DySAM, we will have different accounting multiplier matrix for each time period that enable us to analyze and compare the economic performance in the two or more periods more accurately. Dynamic SAM or DySAM can be used to make: (i) counterfactual simulation analysis, and (ii) short-run policy simulations from the terminal year.

SAM methodology covers a single period of data, which creates limitations. A dynamic SAM deals with the four main problems of a static SAM, including:

- a SAM model is static with fix coefficients;
- data in the SAM refers to one single period (one year);
- the year of the SAM is normally not current;
- a SAM lacks behaviour.

The static SAM gives a snapshot of the economy, while a dynamic SAM shows the consistent evolution of the economic structure over time, for periods covering the years before and after the static SAM. A dynamic SAM thus helps to identify cross sections and time series data problems. The dynamic SAM can be updated when new data becomes available or when a more current System of National Accounts (SNA) time series data comes on stream. Complementary data sets, such as that which is included in the employment satellite account, can be coupled with the dynamic SAM. The dynamic SAM may be used for counterfactual simulation analysis for any year for which it is computed. This helps to validate valuable experiences, such as analysis of completed public policies programmes. Using the dynamic SAM approach may be viewed as a “full-information” data model, which solves problems associated with exclusive use of a dated static SAM or a SNA, the latter of which typically has low resolution to capture the circular flow operating in the economy.

The DySAM for Indonesia is based on a static SAM from 2005, and it includes nine years of data, from 2000 to 2008. The model has been adapted and includes disaggregate information on the infrastructure sector into 4 sub sectors, namely labour intensive road construction, capital intensive road construction, irrigation and rest construction. Moreover, it also includes an employment satellite account to analyze the impact of exogenous injection on employment.

The DySAM consists of: (i) 24 categories for the commodity, (ii) 27 categories for production activities, (iii) 16 classifications for workers, (iv) 1 classification of production factors of capital, (v) 10 classification of household groups; (vi) two other institutions namely the government and corporate, and (vii) four other accounts in this SAM are capital account, indirect tax, subsidies and foreign transaction accounts.

2.2.2. Technical Framework of DySAM

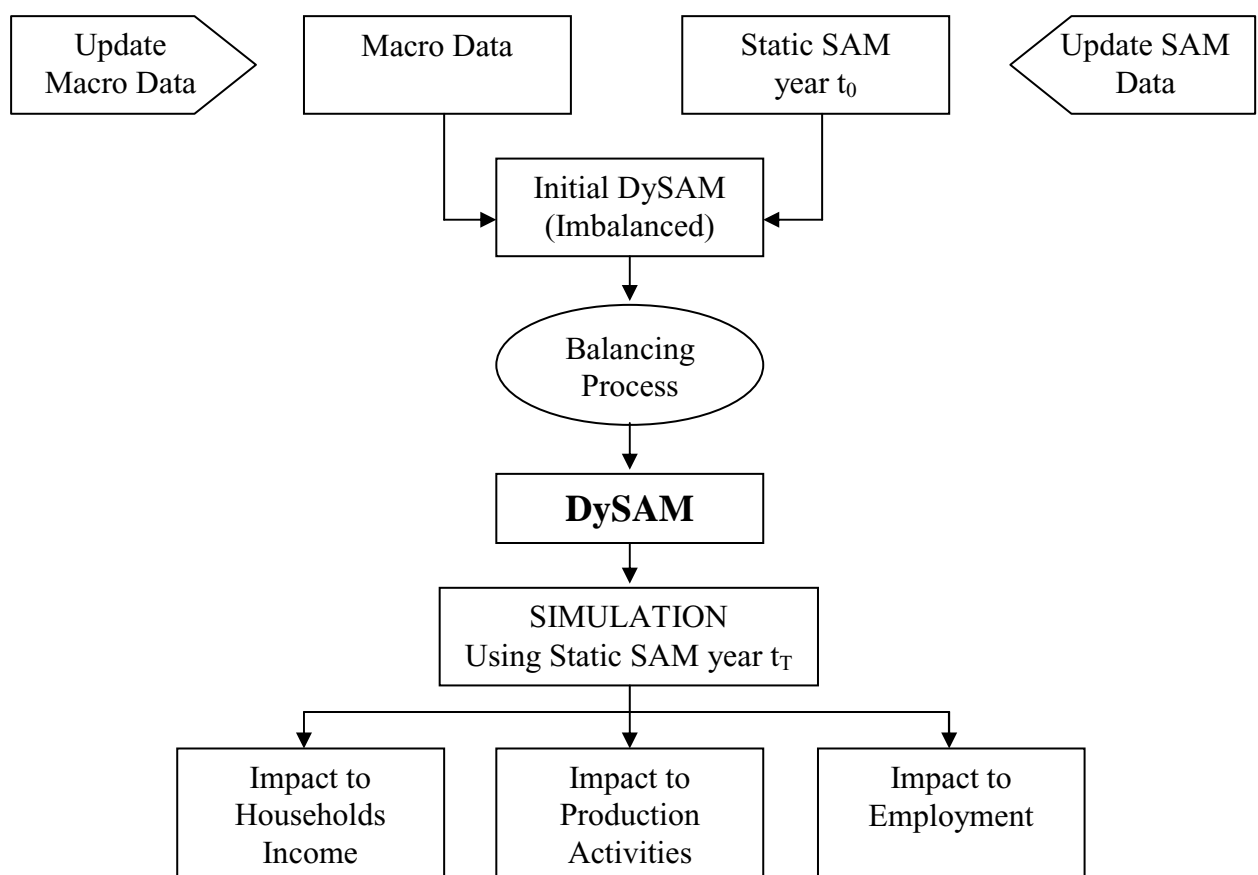
The basic framework of a DySAM can be seen in Figure 2.2. In general, this framework is divided into two parts, namely updating SAM and simulation. For updating SAM is required four stages, while for the simulation by using updating SAM, use a framework that has been described in section 2.1.2. The four stages of work for updating the SAM are as follows:

² For each static SAM that is resulted from DySAM, the circular flow will follow basic static SAM framework (See Figure 2.1)

1. Update the macro and sectoral data, so the macro and sectoral data obtained in a time series for the period from t_0 (initial year) to t_T (terminal year). The macro and sectoral data needed to update are: (i) the real side (supply, production and demand); (ii) the government budget; (iii) money and credit; (iv) the balance of payments; (v) population; and (vi) sectoral data-real, nominal GDP, and employment.
2. Preparing the SAM data to be used as a baseline static SAM (for the period t_0).
3. Establish initial DySAM using information derived from macro data, sectoral data and information contained in the baseline static SAM.
4. Balancing process is intended to obtain a balance SAM qualified and available time series (SAM period t_0 to t_T).

Next, to conduct simulations using DySAM, we use the following steps: (i) define the instrument by selecting the appropriate exogenous variables for the purpose of research, (ii) using the accounting multiplier matrix and exogenous variables that has been selected, apply the equation [2] to see the economic impact of a policy on the economy, especially the factor incomes, household income and income production activities, and (iii) apply the equation [4] to see the economic impact of a policy toward labour. In this study we use 5 exogenous accounts in which the injection will be made. Those accounts are capital account, indirect tax account, subsidy account, rest of the world account and government expenditure account.

Figure 2.2. DySAM Framework



Chapter 3: Crisis overview

3.1. Indonesian economic performance prior to and during the 1997 Asian Financial Crisis

Prior to the 1997 Asian Financial crisis, Indonesia was one of the emerging economies in Asia. GDP grew positively at between seven to nine per cent per year from 1990 onwards. During the same period, the unemployment rate was on average 4.89 per cent. In 1990 approximately 45 per cent of the labour force worked in the agricultural sector (World Bank, 2010). In terms of the inflation rate, Indonesia experienced a relatively stable inflation rate on the level of 8.1 per cent (year on year / yoy).

One year before the 1997 Asian Financial crisis, Indonesia's economic performance was healthy. The national output grew by 7.8 per cent, the inflation rate was at an acceptable level of an average of 6.6 per cent and the unemployment rate was on average 4.89 per cent. In terms of labour composition, 43 per cent of the labour force was employed in agricultural sector, followed by trade, restaurant and hotel sectors which employed approximately 19 per cent of workers. Approximately 14 per cent were employed in the services sector and 13 per cent in the manufacturing sector. The agricultural sector was the most dominant sector in terms of labour absorption, but the percentages of workers who worked in this sector decreased continuously from 56 per cent in 1990 to approximately 44 per cent in 1996 (Central Agency of Statistics, 2009; World Bank, 2010). This implies that employment in Indonesia started to move from the primary sector to the secondary and tertiary sector (the detail figure can be found in Annex 1 and Annex 2).

In 1997 Indonesian output grew positively by 7.4 per cent in the first quartile, 6.1 per cent in the second quartile and 4.5 per cent in the third quartile. Then, in the fourth quartile, Indonesian output contracted by -0.9 per cent - mostly due to the collapse of the manufacturing sector. The condition became worse in the next period, which saw output drop significantly to -19.4 per cent in the fourth quartile 1998. Indonesia entered into a recession and almost all sectors, except the agricultural sector experienced negative growth. The most affected sector was the banking sector that experienced the largest output drop by 43.5 per cent in the fourth quartile, followed by the construction sector (39.4 per cent) and the trade, hotel and restaurant sector (28.7 per cent).

The significant drop in growth was also accompanied by high inflation rate in 1997. Inflation rate increased up to the two digit level, amounting to 11.6 per cent. The decrease in the output and the higher inflation rate saw stagflation emerge in Indonesia. Inflation worsened in 1998 by as much as 77.6 per cent. It impacted on real income and purchasing power. In 1997, private consumption still grew positively by 5.9 per cent and in 1998 consumption dropped to -4.1 per cent.

The impact of the economic recession on employment was seen in severe loss of employment in the formal sector, and many formal workers were pushed into self-employment in the agricultural and informal sector. Due to the nature of poverty in Indonesia, the crisis was not reflected well in unemployment statistics, job destruction between sectors was however evident. For example, in 1998 the unemployment rate increased to 5.46 per cent from 4.68 per cent in 1997 (World bank, 2010). The number of workers who were employed in almost all sectors decreased except for agricultural sector and transportation sector. The worst case was in the manufacturing sector, followed by the construction sector, and trade, hotel and restaurant sector. The bankruptcy of many firms were triggering a wave of employee' contract termination. Approximately 1.3 million of workers fell into unemployment due to contract termination in manufacturing sector. In the construction sector, approximately 678,000 workers lost their jobs followed by 406,000 others in trade, hotel and restaurant sector (Central Bank of Indonesia, 1999:38-39). Many newly unemployment workers switched to the informal economy or become entrepreneurs, with many workers turning to the agricultural sector. The agricultural sector created nearly 3.5 million new jobs in 1998. The expansion of the agricultural sector, along with the rise of the informal economy, minimized the impact of crisis on aggregate employment, but severely compromised employment quality. Total employment in 1998 was more than 87.6 million people or approximately 0.7 per cent higher than 1997. In terms of household income, real income decreased substantially even though the nominal wage increased.

This is largely due to the increasing number of workers who work in informal sector. On average the workers who work in informal sector are relatively earn less than formal sector and do not have any non-wage benefit (World Bank, 2010). As a result, more households received lower income than before and then increase the poverty level.

3.2. Indonesian economic performance prior to and during the 2008 Global Economic Crisis

After hit by the 1997 Asian Financial crisis, Indonesia has changed substantially economically, socially and politically. These changes caused a prolonging of the recovery period relative to other East Asian countries. Even now the economy has not returned to the pre-crisis growth levels. Since 2000 the Indonesian economy became more stable with the national output growing by between 5 per cent and 6 per cent per year. In 2007, Indonesia achieved 6.3 per cent on its output growth and moderate inflation rate by 11.6 per cent.

In terms of the labour market condition, the unemployment rate was higher than before, at 9.1 per cent in 2007. Based on data from Statistics Indonesia, the total labour force in August 2007 was equal to 109.9 million, which is 3.6 million higher than 2006 figures (4.69 per cent increase)(Central Agency of Statistics, 2008). The agricultural sector remained as the most dominant sector in terms of labour absorption, followed by trade sector and manufacturing sector. Indonesian labour market was dominated by informal labour, which was accounted approximately more than 70 per cent from total employment. In 2007, the number of people underemployed was high as much as 30.2 million or about 27.9 per cent from total labour force. (the detail figure can be found in Annex 1 and Annex 2).

In the first quartile of 2008, Indonesian growth was still positive and even larger than 2007. After that, output grew consistently by 6.2 and 6.3 per cent in the second and third quarters, and slightly slower at 5.27 per cent in the fourth quartile. In total, national output increased by 6.1 per cent in 2008. The decline in the growth rate, in comparison with 2007 levels, is attributed to lower growth in the manufacturing sector. The manufacturing sector experienced a quite difficult period, and Indonesian exports deteriorated from 10.63 per cent in first quartile up to 1.99 per cent in fourth quartile. Other sectors that also experienced slower growth are construction sector, trade sector and services sector.

The inflation rate in 2008 was quite high, at approximately 11.06 per cent. The consistent high inflation rate was mainly due to the increase of domestic oil prices and the price of world food crops. In May 2008 (Bank of Indonesia, 2009:5), GoI increased the domestic oil price by 28.7 per cent. Moreover, the scarcity of oil stock in some areas due to bad distribution also contributed to relatively higher inflation rate. The higher domestic oil price resulted in more expensive distribution costs. Thus, along with relatively higher prices of world food crops, the increase of the domestic oil price caused food commodity prices to rise much faster. In terms of labour statistics, the unemployment rate in 2008 was much lower than the previous year. The unemployment rate decreased from 9.11 per cent to 8.39 per cent of total labour force. Two sectors that are quite dominant in creating new job are services sector and trade sector. However, Informal labour still dominant and even increased in August 2008 relative to August 2007 (the detail figure can be found in Annex 3). In 2008, number of labourers who were underemployed also increased gradually up to 31.1 million people in August 2008 or about 27.8 per cent from total labour force. Underemployment and informal labour will move in the same direction since some persons who work less than its optimal rate (underemployment) can also be categorized as informal labour. The decrease of unemployment rate is understandable since more informal workers are employed in agricultural sector and transportation sector in line with the high output growth of those sectors. In this context, lower unemployment rate is not always a good news for the economy if the sectors that are improved are informal sector instead of formal sector. As we defined previously, workers in informal sector usually earn less than formal sector and do not received any non-wage benefit, such as insurance.

In the first quartile 2009, Indonesian national output grew by 4.53 per cent, which is much lower than the previous year. The second and third quarter continued to slow, with growth at 4.08 percentage

points and 4.16 per cent respectively. The decline in growth was mainly caused by the downturn in export performance due to world economic recession. In the fourth period, the economy showed signs of recovery, with growth at 5.43 per cent. The better economic growth in the last quartile 2009 was largely attributed to the recovery of manufacturing sector, which grew at approximately 4.16 per cent. The recovery was also supported by better performance of agricultural sector and construction sector. Accumulatively, the national output increased by 4.5 per cent in 2009. Even though the output grew slightly slower than a year before, Indonesia was one of the countries with best economic performance during the financial crisis, after China and India. One important determinant that successively prevented Indonesia from economic recession was the growth in domestic consumption. The general election and improvement in consumer confidence index contributed to the substantially high consumption growth by 5.95 per cent on average per annum. The fiscal stimulus package also supported this.

Relatively high consumption growth was also supported by the increase on household income, low inflation rate, and lower unemployment rate. Household income grew considerably high in all type of jobs. Labour in the financial sector, such as bank and insurance experienced the highest income growth, as much as 8 per cent to 13 per cent (Central Bank of Indonesia, 2010: 31-32). Moreover, a farmer trade index (Nilai Tukar Petani or NTP) and agricultural worker wage also showed positive trend since the third quartile 2009. Inflation rate decreased significantly from 11.06 per cent in 2008 to 2.78 per cent in 2009. This level was much lower than the Central Bank's inflation target goal of up to 4.5 per cent. The unemployment rate slightly decreased from 8.4 per cent in August 2008 to 7.9 per cent in August 2009. All these factors positively contributed to offsetting the negative impact of the 2008 Global economic crisis. In terms of labour market, the dominance of informal labour still continued, which was accounted as much as 72.2 per cent of total employment in August 2009. Moreover, Indonesian still suffered from the increasing trend of underemployment that reached 31.6 million people in 2009.

Table 3.1. Trend of Employment 2007-2009

Employment	2007	2008	2009
Share of Formal Employment	(Feb) 27.5% (Aug) 28.1%	(Feb) 27.9% (Aug) 27.5%	(Feb) 27.7% (Aug) 27.8%
Share of Informal Employment	(Feb) 72.5% (Aug) 71.9%	(Feb) 72.1% (Aug) 72.5%	(Feb) 72.3% (Aug) 72.2%
Underemployment (million people)	(Feb) 30.2 (Aug) 30.4	(Feb) 30.6 (Aug) 31.1	(Feb) 31.4 (Aug) 31.6

Source: Central Agency of Statistics, 2010

3.3. The Government of Indonesia's response to the crisis.

The GoI introduced a fiscal stimulus package to minimize the negative impact of the 2008 global economic crisis in March 2009. The policies in the package could be grouped into three programs, namely:

1. Maintain and improve people purchasing power;
2. Prevent employee's contract termination and improvement on product competitiveness;
3. Increase investment in labour intensive infrastructure.

The total budget that are allocated for the fiscal stimulus amounted to 73.3 trillion IDR, which consists of 56.3 trillion IDR in terms of tax incentive (tax cut) and additional government budget as much as 17 trillion IDR.

3.3.1. Maintain and improve people purchasing power

Consumption is one of the most important determinants of Indonesian economic growth, especially to prevent economic recession due to economic crisis. In order to maintain and improve purchasing power, the GoI utilized fiscal instruments, including tax and government expenditure. The Government reduced the individual tax rate, which resulted tax saving up to 24.5 trillion IDR. These tax saving policies consisted of two aspects, i.e. the reduction of tax rate for each group of household income and the increasing of level of income that is not accounted in the tax (Pendapatan Tidak Kena Pajak or PTKP). Each of those aspects contributed to as much as 13.2 trillion IDR and 15.8 trillion IDR additional savings respectively.

By using a second instrument, government expenditure, the Government raised the subsidy for three commodities, namely cooking oil, bio-fuels and selected medicines. The Government spent approximately 1.35 trillion IDR on subsidies under the fiscal stimulus policies. Total fiscal stimulus aligned for the “Maintain and Improve People Purchasing Power” program was 25.8 trillion IDR. Overall, the objectives of this fiscal stimulus package are to mitigate the social impact and improve the income transfer. These can be reflected in some programs such as reduction of tax rate for each group of household income and the increasing of level of income that is not subject to tax (PTKP). (The detail figure can be found in Annex 4).

3.3.2. Prevent employee’s contract termination and improvement on product competitiveness

In order to improve domestic product competitiveness and increase the business resilience, the Government used three instruments, i.e. tax, subsidies and financing. Tax stimulus is given through the decreasing of corporate tax rate as much as 18.5 trillion IDR.

In terms of subsidies, the government spent approximately 16.4 trillion IDR for tax and non tax subsidies. The tax subsidy consisted of the exemption of import duties, value added tax (VAT) on oil and gas exploration, income tax on geothermal and employee under the article 21. Meanwhile, the non-tax subsidies consisted of reduction of diesel fuel price, electricity price discount for industry, and interest rate subsidy for water companies. The last instrument that is used under this program was financing. Government gave capital investment for Askrindo and Jamkrindo to guarantee a ‘People Credit Program’ (Kredit Usaha Rakyat or KUR). The program is expected to increase the access of micro, small and medium enterprises (MSMEs) and cooperatives to financing sources. Total budget that were expected to spend under this program was 35.4 trillion IDR. (The detail figure can be found in Annex 4).

Based on the details, each program has different sub objective. Corporate tax rate discount aims to save existing job, tax subsidy aims to improve income transfer and non-tax subsidy aims to mitigate the social impact that might occurred.

3.3.3. Increase investment in labour intensive infrastructure

The GoI increased the total budget on infrastructure construction as much as 11.93 trillion IDR. The additional expenditure was accounted as much as 15 per cent of total government expenditure on infrastructure or 1.3 per cent of total Indonesian National Budget 2009. The highest share of infrastructure expenditure is allocated through Ministry of Public Works as

much as 6.6 trillion IDR. Sum of total government expenditure on infrastructure and fiscal stimulus on infrastructure will increase share of government expenditure on infrastructure from 8 per cent up to 9.6 per cent of total national budget. The program is focused on labour intensive projects, in order to create more jobs and to overcome the threat of employee's contract termination. The fiscal stimulus on infrastructure was concentrated on nine types of infrastructure, namely:

- (1) public works infrastructure;
- (2) transportation infrastructure;
- (3) energy infrastructure;
- (4) public housing infrastructure;
- (5) special housing infrastructure;
- (6) road and irrigation infrastructure;
- (7) market infrastructure;
- (8) employment training; and
- (9) health infrastructure.

Moreover, the government also allocated 721.5 billion IDR for two program, i.e. revitalization and rehabilitation of primary warehouse in the food production centers and additional budget for national programs of community empowerment (Program Nasional Pemberdayaan Masyarakat or PNPM). In 2010, Government of Indonesia allocated around 12 trillion IDR for PNPM program. The total budget allocation for the additional infrastructure investment fiscal stimulus program was 11.93 trillion IDR. All additional spending on infrastructure projects aim to create jobs and mitigate the social impact or economic downturn. The two other programs have a different objective. First, national program of community empowerment (PNPM) is implemented to provide social assistance to society. Second, skill improvement training aims to help unemployment to find jobs through employment services. (The detail figure can be found in Annex 4).

Chapter 4: Analysis of employment data

4.1. Overview of Economic Growth and Employment by Sector

Before we analyze the impact of each fiscal stimulus on Indonesian economy, it is important to understand the characteristic of sectors that are used in this study. In general we can cluster the sectors into 4 groups based on its labor multiplier index and output multiplier index, namely Cluster A, Cluster B, Cluster C, and Cluster D. Cluster A consists of sectors that have both labour multiplier and output multiplier above national average. Cluster B consists of sectors that have output multiplier above national average and labor multiplier below national average. Sectors that have output multiplier below national average and labor multiplier above national average are grouped in Cluster C. While, sectors that have both labour multiplier and output multiplier below national average are categorized as Cluster D. Table 4.1. suggests that eleven sectors out of 27 sectors are categorized as Cluster A, 9 out of 27 sectors are categorized as Cluster D, 5 out of 27 sectors are categorized as Cluster B and 2 out of 27 sectors are categorized as Cluster C.

Table 4.1. Labour Multiplier and Output Multiplier by Sector

Sector	Labour Multiplier Index	Output Multiplier Index	Cluster
Crops	3.06	1.18	A
Other Agriculture	1.23	1.14	A
Livestock	1.68	1.17	A
Forestry	0.95	0.84	D
Fishery	1.00	0.86	C
Coal, Metal, Petroleum Mining	0.39	0.60	D
Mining and Quarry	1.01	1.11	A
Food, Beverages and Tobacco	1.31	1.27	A
Textile, Wearing apparel, Garment and Leather	0.76	1.03	B
Wood	1.05	1.09	A
Paper, Print, Transp, Metal Product, other industry	0.50	0.82	D
Chemical, Fertilizer, Clay and Cement	0.46	0.72	D
Electricity, Gas and Water	0.46	0.95	D
RoadLI	1.23	1.23	A
RoadKI	0.61	0.93	D
Irrigation	0.62	1.05	B
Construction	0.78	0.99	D
Trade Services	1.20	1.11	A
Restaurant	1.71	1.31	A
Hotel Affairs	0.91	1.03	B
Land Transportation Services	0.96	1.14	B
Air, Water Transportation and Communication	0.89	0.79	D
Storage, Other Transportation Service	0.88	1.01	B
Bank, Insurance, and Services	0.55	0.84	D
Real Estate and Business Services	0.58	0.76	D
Government, Defensive, Education, and	1.19	1.12	A
Other Individual and Household Services	1.03	0.90	C

4.2. Overview of the estimation of employment in the official Indonesian SAM 2005

The number of workers in each sector in the Indonesian SAM 2005 is calculated from National Labour Force Survey (Survei Angkatan Kerja Nasional or Sakernas) and data from some other survey such as population census (Sensus Penduduk), Intercensal population survey (Survei Antar Sensus), Economic Census (Sensus Ekonomi) and the National Socio-Economic Survey (Survei Sosial Ekonomi Nasional or Susenas). SAM basically uses an adjusted Labor Force Survey (LFS). Procedures that are taken to adjust LFS are as follows:

- (1) List wage and salary table by sector (24 sectors in SAM);
- (2) Calculate average wage from each sector by dividing wage and salary payment account in Input Output (IO) Table with number of worker that are generated from LFS;
- (3) Compare the result from the second step with wage statistic periodically.

If there is any different figure between those two statistics, Central Agency of Statistics (*Badan Pusat Statistik* or BPS) will adjust the number of workers that are generated from LFS. Consequently, these procedures will result in a different distribution of labour between the one that is presented in SAM

table with the one that is resulted LFS.³ Workers are divided into two categories for each sector, i.e. paid worker and unpaid worker. The number of sectors that are used in the SAM is 24. Based on Central Agency of Statistics (2008) a paid worker is defined as labourer who is involved in economic activity as a production factor and accept wages in return. Meanwhile, unpaid worker is defined as labourer who is involved in economic activity as a production factor but does not accept wages in return. The number of labourers by type and sector are presented in Table 4.2.

Table 4.2. Number of Labour by Types and Sectors in 2005 SAM

No.	Main Industry	Employment		
		(in thousand employment)		
		Paid	Unpaid	Total Employment
1	Food crop agriculture	5,387.98	26,426.82	31,814.80
2	Other crop agriculture	1,851.89	3,764.04	5,615.93
3	Livestock and its products	1,093.40	1,354.27	2,447.67
4	Forestry and hunting	227.66	276.39	504.05
5	Fishery	575.16	1,050.12	1,625.28
6	Coal, ore and natural oil mining	314.94	0.00	314.94
7	Mining and other excavations	229.00	321.73	550.73
8	Food, beverage and tobacco industry	1,438.83	994.42	2,433.25
9	Milling industry, textile, clothing and leather	2,122.83	683.38	2,806.21
10	Timber industry and wooden products	1,099.65	1,288.79	2,388.44
11	Paper industry, printing, transportation means and metal products and other industries	1,667.33	844.05	2,511.38
12	Chemical, fertilizer, clay products and cement industry	1,192.62	539.87	1,732.49
13	Electricity, gas and clean water	179.21	11.98	191.19
14	Construction	3,192.95	1,304.61	4,497.56
15	Trading	3,515.73	12,710.75	16,226.48
16	Restaurant	866.49	1,210.17	2,076.66
17	Hotels	169.81	20.70	190.51
18	Land transportation	1,297.02	2,068.39	3,365.41
19	Air and water transportation and communication	951.28	754.26	1,705.54
20	Transportation supporting services, and storage	247.93	292.18	540.11
21	Bank and insurance	511.66	29.80	541.46
22	Real estate and company service	623.71	280.35	904.06
23	Government and defense, education, health, film and other social services	5,739.64	762.98	6,502.62
24	Individual service, household and other services	2,008.32	1,968.77	3,977.09
Total		36,505.04	58,958.82	95,463.86

Source: Central Agency of Statistics, 2008

It is also interesting to analyze the labour statistic by occupation and location for both formal and informal sector. Table 4.3 shows that informality is majorly exist for agriculture worker and clerical

³ Based on interview Mr. Setyanto and Mrs. Nina Suri (Statistic of Account Division, Central Agency of Statistics)

worker both in rural and urban. Meanwhile, manual worker and professional worker is majorly dominated by formal worker. These means that if agricultural sector improve, type of labour that will benefit the most is informal labour.

Table 4.3. Number of Labour by Occupation

Occupation	Urban	Rural	Total	Occupation Total
Formal Agricultural Worker	1505470	7142690	8648160	41272500
Informal Agricultural Worker	2710590	29913750	32624340	
Formal Manual Worker	8491100	4977070	13468170	23739030
Informal Manual Worker	4475570	5795290	10270860	
Formal Clerical Worker	8572270	1934110	10506380	25617700
Informal Clerical Worker	9367090	5744230	15111320	
Formal Professional Worker	2717800	1164520	3882320	4834630
Informal Professional Worker	611550	340760	952310	
Total	38451440	57012420	95463860	

4.3. Overview of the methodology used to construct the employment satellite of the DySAM

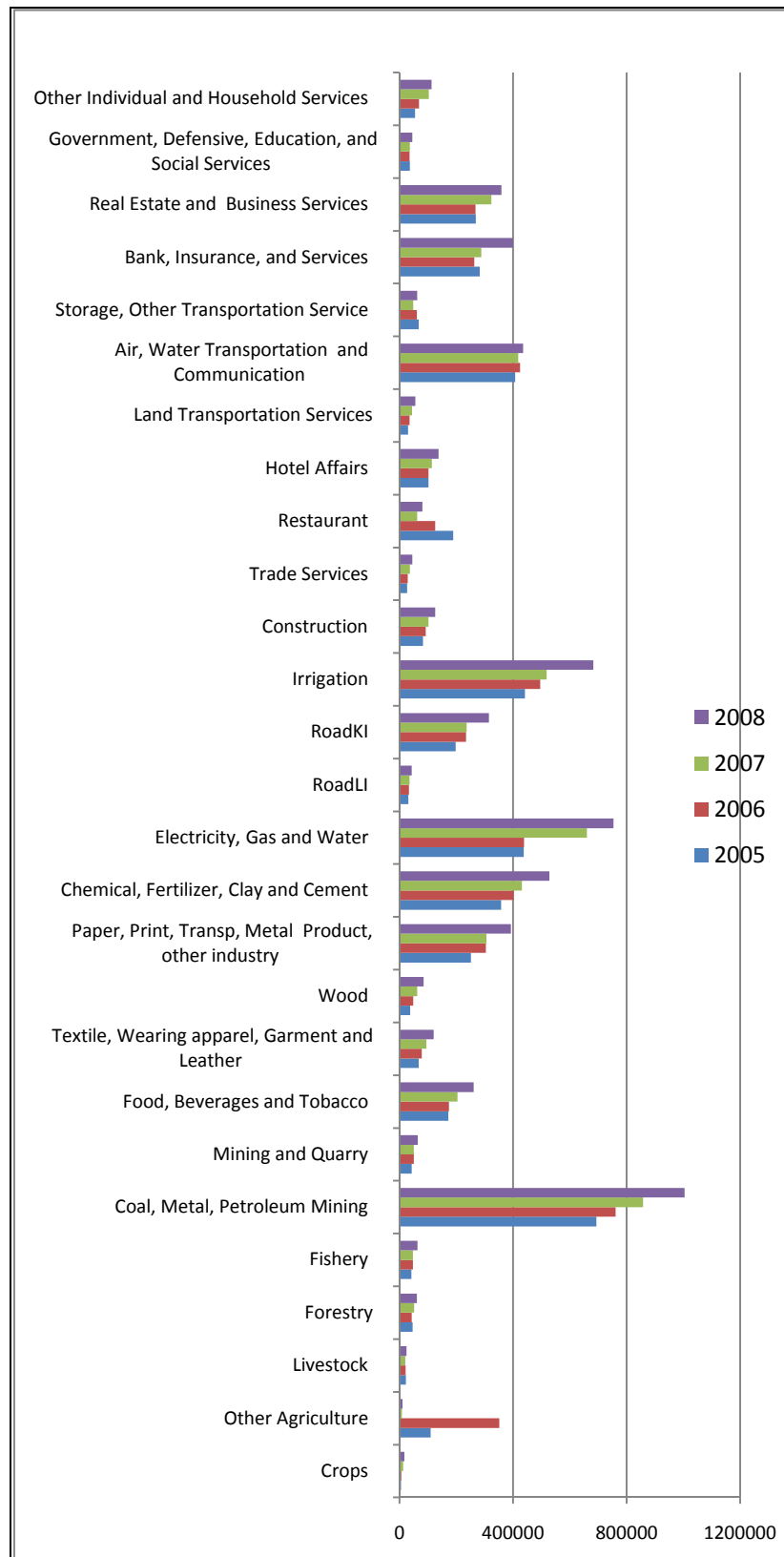
In this sub section, we present briefly about the methodology to estimate labour statistic which are then used as employment satellite of the DySAM based on LFS⁴. There are three important things that must be considered in estimating labour statistic based on LFS, i.e. sample frame, household sample sampling and projection. In order to estimate the number of workers, the sample frame that is used by Central Agency of Statistics is data from the Population Census or Sustainable Voter Census. This sample frame is used to picture the number of households in each census block. Important to note that sample frame that are used in February survey is only covering estimation up to Province level. Whereas, sample frame in August is covering sample frame in February plus some new sample that will be used to estimate number of worker up to district level. After that, Central Agency of Statistics uses several stages of household sample sampling, i.e. (i) sub district sampling; (ii) village sampling; (iii) census block sampling in each village; and (iv) household sampling in each census block. Central Agency of Statistics chooses 16 household samples in each census block. Next, the household sample is surveyed by using LFS questioner to capture labour force characteristic and employment information. In order to get the total number of workers at the national level, Central Agency of Statistics use weights and inflation factors that are derived from Intercensal Survey and Population Census.

4.4. Estimation of labour productivity based on DySAM

Figure 4.1 present average labour productivity ratios by activity sectors in 2005-2008. The number of labour and output that are used in the calculation of labour productivity is taken from the DySAM. In general, all sectors are gaining better average labour productivity except for restaurant and other agriculture sector. There are also non patterned changes in several sectors, i.e. crops; storage and other transport services, food, drink and tobacco; restaurant; other agriculture; bank and insurance services; and electricity, gas and water sector.

⁴ Based on interview Mr. Watekhi (Central Agency of Statistics Training Center) and Mr. Dani Jaelani (Labour Statistics Division, Central Agency of Statistics)

Figure 4.1. Productivity by Economic Activity for 2005-2008



4.5. Comparative analysis of two employment data sets (Labour Force Survey / DySAM versus SAM)

The two datasets both have strength and weaknesses. SAM-based employment data is adjusted LFS-based employment data that has been controlled by wage and salary account in IO table and wage statistics that are published by Central Agency of Statistics. Therefore, the result would give a clear figure of employment condition that is in line with sectoral output and pattern of sectoral value added. However, SAM-based employment data also have weaknesses in which the employment data is not available yearly since it will in line with the publication of SAM Table (5 years period).

Table 4.4. Comparison of SAM-based employment data and LFS-based employment data in 2005

Sectors	DySAM or LFS	SAM
Crops	36,118,340	31,814,800
Other Agriculture	784,817	5,615,930
Livestock	2,679,101	2,447,670
Forestry	508,811	504,050
Fishery	1,566,512	1,625,280
Coal, Metal, Petroleum Mining	442,874	314,940
Mining and Quarry	743,064	550,730
Food, Beverages and Tobacco	2,715,745	2,433,250
Textile, Wearing apparel, Garment and Leather	3,010,985	2,806,210
Wood	2,001,264	2,388,440
Paper, Print, Transp, Metal Product, other industry	2,487,520	2,511,380
Chemical, Fertilizer, Clay and Cement	1,524,493	1,732,490
Electricity, Gas and Water	194,642	191,190
Construction	4,573,929	4,497,560
Trade Services	16,807,240	16,226,480
Restaurant	911,870	2,076,660
Hotel Affairs	250,442	190,510
Land Transportation Services	4,706,211	3,365,410
Air, Water Transportation and Communication	444,430	1,705,540
Storage, Other Transportation Service	509,091	540,110
Bank, Insurance, and Services	556,153	541,460
Real Estate and Business Services	585,699	904,060
Government, Defensive, Education, and	7,565,171	6,502,620
Other Individual and Household Services	2,786,105	3,977,090
Total	94,474,509	95,463,860

Source: Central Agency of Statistics

LFS is a periodical datasets that can provide us with the most up-to-date labour data. The data is built based on survey on sample that is chosen by using some particular criteria (see the detail in Chapter 4.1). LFS-based employment data is a projection data that use weigh from Intercensal Survey and Population Census. Consequently, we have large different employment statistics in SAM-based employment data and LFS-based employment data since there is no control variables in LFS-based employment data, for instance crops sector, other agriculture sector, restaurant sector, air, water transportation and communication sector (see Table 4.4).

4.6. Recommendations for estimation of employment for the DySAM employment satellite account

Based on Chapter 4.1, SAM-based employment data has been controlled by wage and salary account in IO Table and wage statistic. Therefore, employment data for DySAM employment satellite should be formulated by considering LFS data and then control by control variable which is done in SAM-based employment data. However, SAM-based employment data only available for particular year, the latest one is 2005. In this study we propose another approach to formulate DySAM employment satellite. This approach is the most feasible approach since wage and salary account in IO Table only available every 5 years. Moreover, this approach also makes corrections to the previous DySAM employment satellite, particularly on crops sector, other agriculture sector, and air, water transportation and communication sector.

This approach consists of three steps, hence:

1. Re-estimate employment statistics by sector based on LFS data and then calculate yearly growth of employment in each sector.
2. Calculate number of labour in 2006 up to 2008 by using employment statistic in SAM Table 2005 and growth of employment which is resulted in (a). Number of employment in 2005 must be exactly the same with employment statistic in SAM Table 2005.
3. Control total number of labor in (c) with total number of labor in LFS for each year and each sector. Total number of labours that are used in this approach is based on LFS data in August. Labour is defined as worker who are 10 years old and above.

4.7. New employment estimates derived for the DySAM employment satellite account for 2005 -2008

Based on steps that are taken in Chapter 4.5, we have new estimates of employment statistic which can be shown in Annex 5. The figure suggests that changes in the employment in each sector across years are not too fluctuated. Some sectors experienced increasing level of employment and some others had a negative trend of employment. The basic question that might arisen here is how much difference the result of new estimation with the one that generated by DySAM approach. Table 4.5 shows the comparison of the two datasets by looking the changes of employment in each year respect to number of labour in 2005. In general, the new estimation does not significantly change the employment dataset except for the other agriculture sector. In DySAM-based employment database, the definition of main industry in agriculture and other agriculture for 2005-2006 is different with the one for 2007-2008. Consequently, number of labour in other agriculture for 2007 increased substantially more than 17 times higher than number of labour in 2005. If we assume that the definition is unchanged, we should have employment statistic that is not significantly change across year except there is an economic shock. Table 4.5 shows that the new estimates of employment result a less fluctuated employment statistic particularly on other agriculture sector. Sector that has highest employment changes across years is restaurant sector as much as 3.9 per cent in 2007 relative to 2005.

Table 4.5. Changes of employment respect to 2005

Sectors	DySAM estimation				Revised estimation			
	2005	2006	2007	2008	2005	2006	2007	2008
Crops	1.000	0.964	0.584	0.560	1.000	0.964	0.963	0.960
Other Agriculture	1.000	0.356	17.960	18.753	1.000	0.803	0.630	0.615
Livestock	1.000	1.178	1.556	1.657	1.000	1.035	1.350	1.392
Forestry	1.000	1.231	1.219	1.327	1.000	1.207	1.161	1.261
Fishery	1.000	0.990	1.186	1.150	1.000	0.970	1.130	1.093
Coal, Metal, Petroleum Mining	1.000	1.035	1.098	1.215	1.000	1.103	1.141	1.253
Mining and Quarry	1.000	0.959	1.158	1.169	1.000	0.940	1.102	1.110
Food, Beverages and Tobacco	1.000	1.118	1.144	1.157	1.000	1.096	1.090	1.099
Textile, Wearing apparel, Garment and Leather	1.000	0.987	0.970	0.989	1.000	0.967	0.924	0.940
Wood	1.000	0.888	0.817	0.786	1.000	0.896	0.886	0.832
Paper, Print, Transp, Metal Product, other industry	1.000	0.940	1.116	1.127	1.000	0.922	1.063	1.070
Chemical, Fertilizer, Clay and Cement	1.000	1.042	1.126	1.207	1.000	1.021	1.072	1.147
Electricity, Gas and Water	1.000	1.171	0.899	1.034	1.000	1.148	0.856	0.982
RoadLI	1.000	1.059	1.177	1.245	1.000	1.038	1.121	1.183
RoadKI	1.000	0.958	1.136	1.102	1.000	0.939	1.082	1.046
Irrigation	1.000	1.011	1.156	1.137	1.000	0.991	1.101	1.080
Construction	1.000	1.021	1.100	1.164	1.000	1.001	1.048	1.106
Trade Services	1.000	1.039	0.992	1.030	1.000	1.019	0.944	0.978
Restaurant	1.000	1.711	4.110	4.136	1.000	1.677	3.914	3.929
Hotel Affairs	1.000	1.134	1.226	1.312	1.000	1.112	1.168	1.246
Land Transportation Services	1.000	0.966	0.939	0.953	1.000	0.948	0.895	0.905
Air, Water Transportation and Communication	1.000	1.090	1.321	1.645	1.000	1.065	1.255	1.567
Storage, Other Transportation Service	1.000	1.258	1.888	1.906	1.000	1.230	1.798	1.811
Bank, Insurance, and Services	1.000	1.220	1.331	1.243	1.000	1.195	1.268	1.181
Real Estate and Business Services	1.000	1.140	1.129	1.314	1.000	1.117	1.075	1.248
Government, Defensive, Education, and	1.000	1.176	1.334	1.425	1.000	1.083	1.090	1.056
Other Individual and Household Services	1.000	0.894	0.712	0.848	1.000	1.071	1.145	1.459

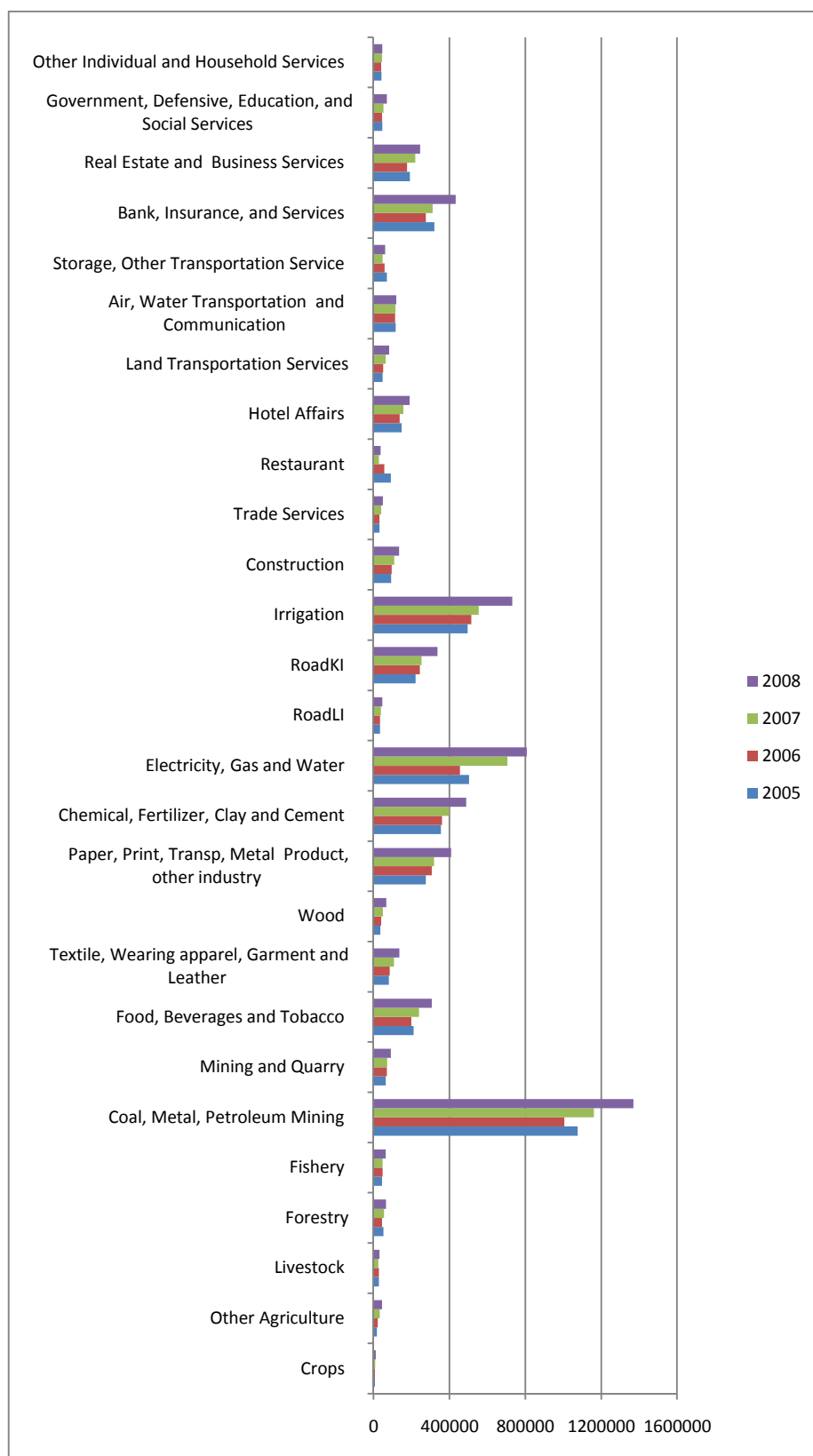
Source: Author's own analysis

4.8. New labour productivity estimates for 2005 -2008

Figure 4.2 shows the new labour productivity based on new estimates of employment statistics which is mentioned in Chapter 4.6 and Annex 6. Generally, productivity statistics in each sector based on new estimation are quite similar with the DySAM-based productivity statistics in Chapter 4.3 except for particular sectors. If we compare Figure 4.1 and Figure 4.2, some sectors such as other individual and household services sector, air, water transportation and communication sector, real estate and business services sector, restaurant sector and other agriculture sector in the new labour productivity estimates have lower productivity relative to the DySAM-based productivity statistics. Meanwhile, productivity of coal, metal, petroleum mining sector in the new estimates is higher than the DySAM-based productivity statistics.

In terms of pattern of productivity changes, in the new estimates we also found that almost all sectors experienced a relatively higher productivity across years. However there are also non patterned-changes such as the productivity changes in real estate and business services sector, bank, insurance and services sectors, etc. If we compare Figure 4.1 and Figure 4.2, we found that pattern in the productivity changes for several sectors differ between the two datasets, for instance in electricity, gas and water sector and coal, metal, petroleum mining sector.

Figure 4.2. A New Estimates of Productivity by Economic Activity for 2005-2008



Chapter 5: Simulation and results

5.1. Data on the realization rates of the fiscal stimulus

The total realization rate of the fiscal stimulus was 83.84 per cent or equal to 61.4 trillion IDR. Based on its objective, the realization of fiscal stimulus consists of 78.7 per cent realization of the first group of programs, 85 per cent realization of second group of programs, and 91.4 per cent realization of third group of programs (See the detail on Table 5.1).

The realization of fiscal stimulus in the first group of fiscal stimulus instruments, hence to maintain and improve people purchasing power was the lowest relative to others. These are largely contributed by the very low realization rates on value added tax cut along with personal income tax cut which amounted 61.35 per cent and 79.70 per cent respectively.

In the second group of fiscal stimulus instruments, three instruments have 100 per cent and nearly 100 per cent realization rate, namely corporate income tax cut, government capital expenditure to State Owned Enterprises, and subsidy. The other 3 instruments have relatively low realization rates, especially on tariff import tax cut, which was only less than half per cent. The poor realization of these instruments was due to a relatively late implementation date. The instrument was only effective in the second semester 2009, which is late, especially as firms usually sign contracts on raw material buying in the beginning of the year. Moreover, it is also affected by the lower demand of imported raw material due to lower global demand associated with the crisis.

The highest realization rate was in the third group of program, increase investment in labour intensive infrastructure. The realization rate achieved was 91.4 per cent of the target. Almost all instruments achieved nearly 100 per cent realization except for government investment for employment program that only achieved 84.43 per cent and government investment for agricultural infrastructure that has zero realization rates. Generally, factors that became barriers in the infrastructure program implementation were lack of supporting regulation, complicated administration and accounting process, tender process, and implementation process. Beside of these factors, thrift also become another determinant, for instance in the tender process. The particular problems of each infrastructure component of the fiscal stimulus include:

1. Fiscal stimulus on transportation infrastructure: the problem occurred due to incomplete administration requirements for fund disbursement (Konawe Port), unfinished process in the provision of land (Kuala Semboja Port) and natural disaster, such as earth quake (Carocok Padang Port).
2. Fiscal stimulus on housing infrastructure: The problem arose due to Contract Change Order (CCO) in some projects and the provision of land. The consequence of CCO is non-optimal utilization of the property.
3. Fiscal stimulus on employment infrastructure: the problem occurred due to incomplete administration requirements for fund disbursement.
4. Fiscal stimulus on market infrastructure: the problem occurred due to incomplete administration requirements for fund disbursement, land provision, tender process and implementation process.

Table 5.1. Realization of the Fiscal Stimulus

No.	Group of Fiscal Stimulus Package	Fiscal Instrument	Budget	Realization	% Realization
1.	Maintain and improve people purchasing power	a. Personal Income tax cut	24,500.0	19,526.7	79.70
		b. Value added tax cut	1,350.0	828.2	61.35
2.	Prevent employee's contract termination and improvement on product competitiveness	a. Employee income tax cut	6,500.0	5,180.6	79.70
		b. Corporate income tax cut	19,300.0	19,300.0	100.00
		c. Value added tax cut	2,500.0	1,006.7	40.27
		d. Tariff Import tax cut	2,500.0	7.2	0.29
		e. Subsidy	4,172.8	4,157.8	99.64
		f. Government capital expenditure to State Owned Corporate	500.0	500.00	100.00
3.	Increase investment in labour intensive infrastructure	a. Govt Investment for General Work Infrastructure	6,601.2	6,433.4	97.5
		b. Govt Investment for Transportation Infrastructure	2,198.8	2,079.73	94.58
		c. Govt Investment for Energy and Mineral Resource	500.0	492.35	98.47
		d. Govt Investment for Public Housing	500.0	493.9	98.79
		e. Govt Investment for Trade Infrastructure	315.0	289.20	91.81
		f. Govt Investment for Agriculture Infrastructure	650.0	0.00	0.00
		g. Govt Investment for Ketenagakerjaan	300.0	253.3	84.43
		h. Govt Investment for Public Health	150.0	149.79	99.86
		i. Govt Investment for People Empowering Program	601.5	601.50	100.00
		j. Govt Investment for Revitalization for Primary Commodity Warehouse	120.0	120.00	100.00
Total			73,259.3	61,420.4	83.84

Source: Ministry of Finance

5.2. Mapping of realization of fiscal stimulus budget on Indonesian SAM classification

Various fiscal instruments that are used as a stimulus fiscal 2009 can be grouped into 7 (seven) groups of fiscal instruments. Those are (a) Personal Income Tax Cut, (b) Corporate Income Tax Cut, (c) Value Added Tax (VAT) Cut, (d) Tariff Import Tax Cut, (e) Subsidy, (f) Government Transfer to State Owned Enterprises, and (g) Government Expenditure on Infrastructure. Furthermore, to analyze the impact of fiscal stimulus to the economy by using DySAM approaches, those fiscal instruments stimulus are necessary to classified following the SAM classification (SAM structure).

Table 5.2. Mapping Fiscal Stimulus on SAM Classification

No.	Group of Fiscal Stimulus / Fiscal Instrument	Realization	% Realization
1	Maintain and Improve People Purchasing Power	20,354.90	78.74
	a. Change in household account in the institution block	19,526.70	79.70
	b. Indirect tax change in commodity block	828.20	61.35
2	Prevent employee's contract termination and improvement on product competitiveness	30,152.30	85.00
	a. Change in household account in the institution block	5,180.60	79.70
	b. Change in corporate account in the institution block	19,300.00	100.00
	c. Indirect tax change in commodity block	1,006.70	40.27
	d. Tariff change in activity block	7.20	0.29
	e. Subsidy change in activity block	4,157.80	99.64
3	Increase Investment in labour intensive infrastructure	10,913.23	91.43
	a. Government capital account	10,913.23	91.43
Total		61,420.43	83.84

Source: Author's own analysis

Based on the classification of the SAM, the realization of the 2009 fiscal stimulus can be grouped as

follows. First, the fiscal stimulus through the personal income tax cut is classified as a change in household account in the institution blocks with the amount of 24.7 trillion IDR (1a and 2a). Second, corporate income tax cut is classified as a change in company accounts in the institution block with the amount of 19.3 trillion IDR (2b). Third, value added tax is classified as an Indirect tax cut change in commodity block with the amount of 1.8 trillion IDR (1b and 2c). Fourth, import tariff is classified as a change in activity block with the amount of 7.2 billion IDR (2d). Fifth, subsidies are classified as subsidy change in activity block with the amount of 4.2 trillion IDR (2e). Sixth, the government transfer to State Owned Enterprises is classified as transfers from government accounts in the institution block with the amount of 500 billion IDR (2f). Seventh, the government investment on infrastructure classified as an increasing of government capital account as much as 10.9 trillion IDR(3a).

5.3 List of possible scenarios on DySAM analysis

After mapping the fiscal instruments on the SAM structure, scenarios that are relevant to government fiscal stimulus are formulated. Scenarios should follow fiscal stimulus instrument based on SAM classification. The detail scenario can be seen in Annex 6 in which each scenario is defined into every block of institution, commodity block and activity block. Eight scenarios are derived from the long list of fiscal stimulus budget (Ministry of Finance, 2009), hence:

1st Scenario Reduction of personal income tax as much as 24.7 trillion IDR. The value is distributed proportionally to each household depend on their tax payment⁵.

2nd Scenario Reduction of corporate income tax by 19.3 trillion IDR.

3rd Scenario Reduction of indirect tax as much as 1.8 trillion IDR on three commodities, namely: (i) food by 0.8 trillion IDR; (ii) chemical by 0.03 trillion IDR; and (iii) oil exploration by 1 trillion IDR.

4th Scenario Reducing tariff import as much as 7.2 trillion IDR on Paper, Print, Transp, Metal Commodity.

5th Scenario Subsidy as much as 4.2 trillion IDR on 5 (five) activities, namely (i) Chemical, Fertilizer, Clay, Cement by 3.1 trillion IDR, (ii) Food by 82.7 billion IDR, (iii) Wood by 68.9 billion IDR, (iv) Weave, Textile, Garment, Leather by 0.34 trillion IDR, and (v) Paper, Print, Transp, Metal by 0.58 trillion IDR.

6th Scenario Government transfer to Corporate as much as 0.5 trillion IDR

7th Scenario Increase of government capital account as much as 10.9 trillion IDR on 5 (five) commodities namely: (i) Construction by 9.8 trillion IDR, (ii) Electricity, Gas and Water by 0.07 trillion IDR, (iii) Land Transportation by 0.17 trillion IDR, (iv) Government Services by 0.86 trillion IDR.

8th Scenario Aggregate scenarios (overall fiscal stimulus policy).

⁵ Basically we have to options to simulate personal tax cut, -evenly and proportionally. In this study we choose to use proportional because of three reasons. First, number of households are differ across 10 household groups in SAM. Second, we do not have data on number of households that eligible to pay income tax. Third, information that available is only share of personal income tax from 10 groups of households.

5.4. The impact of fiscal stimulus on Indonesian economic performance

5.4.1. Output and employment by sector

In this sub chapter we present the character of sector based on its output and employment. Table 5.3 show the contribution of each sector on national output and employment. In general, manufacturing sectors have relatively larger contribution on national output but lower contribution on employment. Oppositely, agriculture sector has relatively smaller contribution on national output and larger contribution on employment. Only trade sector that has relatively high contribution on both national output and employment.

Table 5.3. Contribution of Sector on National Economy in terms of Output and Employment

Sector	Output	Employment
Crops	4%	29%
Other Agriculture	2%	3%
Livestock	1%	3%
Forestry	0%	1%
Fishery	1%	2%
Coal, Metal, Petroleum Mining	6%	0%
Mining and Quarry	1%	1%
Food, Beverages and Tobacco	9%	3%
Textile, Wearing apparel, Garment and Leather	4%	3%
Wood	2%	2%
Paper, Print, Transp, Metal Product, other industry	12%	2%
Chemical, Fertilizer, Clay and Cement	11%	2%
Electricity, Gas and Water	2%	0%
RoadLI	1%	2%
RoadKI	3%	1%
Irrigation	4%	0%
Construction	2%	1%
Trade Services	9%	15%
Restaurant	3%	8%
Hotel Affairs	1%	0%
Land Transportation Services	3%	3%
Air, Water Transportation and Communication	4%	5%
Storage, Other Transportation Service	1%	1%
Bank, Insurance, and Services	3%	1%
Real Estate and Business Services	3%	1%
Government, Defensive, Education, and	5%	7%
Other Individual and Household Services	3%	5%

Source: Central Agency of Statistics

5.4.2. The impact of each fiscal stimulus instrument on production activities

The impact of each fiscal stimulus instrument across the eight scenarios for production activities is presented in this section. In general, all fiscal stimulus instruments will have positive impact on production activities. Before analyzing the impact for each fiscal instrument, it is really important to consider the magnitude of stimulus on each scenario. Scenario 8 is the accumulation of all 7 scenarios, thus the size of the shocks is the largest among others. Consequently, we can easily predict that the impact of scenario 8 will be largest relative to others.

Table 5.4. The Impact of Each Fiscal Stimulus Instrument on Production Activities

No	Production Sector	Baseline Condition (Billion IDR)	Scen 1	Scen 2	Scen 3	Scen 4	Scen 5	Scen 6	Scen 7	Scen 8
1	Crops (%)	391.378,88	3.824,04 0,98	142,63 0,04	294.35 0,08	0,56 0,00	305,79 0,08	3,70 0,00	927.15 0,24	5,498.21 1,40
2	Other Agriculture (%)	168.016,69	1.097,96 0,65	40,86 0,02	112.90 0,07	0,28 0,00	215,55 0,13	1,06 0,00	328.53 0,20	1,797.14 1,07
3	Livestock (%)	118.102,58	1.227,65 1,04	45,72 0,04	76.76 0,06	0,18 0,00	96,96 0,08	1,18 0,00	298.70 0,25	1,747.15 1,48
4	Forestry and Hunting (%)	45.260,31	98,97 0,22	3,72 0,01	4.37 0,01	0,02 0,00	20,51 0,05	0,10 0,00	225.82 0,50	353.50 0,78
5	Fishery (%)	126.245,42	1.276,57 1,01	47,61 0,04	71.08 0,06	0,18 0,00	97,66 0,08	1,23 0,00	302.50 0,24	1,796.83 1,42
6	Coal, Metal, Petroleum Mining (%)	596.095,05	839,34 0,14	31,12 0,01	1,046.90 0,18	0,28 0,00	585,91 0,10	0,81 0,00	527.13 0,09	3,031.49 0,51
7	MiningQuarry (%)	59.264,29	38,44 0,06	1,42 0,00	2.41 0,00	0,01 0,00	19,76 0,03	0,04 0,00	528.37 0,89	590.46 1,00
8	Food, Drink and Tobacco (%)	906.172,49	8.220,48 0,91	305,52 0,03	1,105.20 0,12	1,29 0,00	719,94 0,08	7,91 0,00	1,968.37 0,22	12,328.70 1,36
9	Weave, Textile, Garment and Leather (%)	398.260,03	1.628,84 0,41	61,17 0,02	59.07 0,01	9,84 0,00	606,15 0,15	1,58 0,00	410.41 0,10	2,777.07 0,70
10	Wood (%)	146.035,76	252,55 0,17	9,38 0,01	9.58 0,01	0,04 0,00	103,48 0,07	0,24 0,00	455.11 0,31	830.39 0,57
11	Paper, Print, Transp, Metal Product (%)	1.199.138,72	4.395,83 0,37	163,18 0,01	182.30 0,02	0,83 0,00	1.079,57 0,09	4,23 0,00	2,544.43 0,21	8,370.37 0,70
12	Chemical, Fertilizer, Clay and Cement (%)	1.068.163,96	3.484,34 0,33	129,10 0,01	199.94 0,02	1,18 0,00	3.664,37 0,34	3,34 0,00	2,520.70 0,24	10,002.97 0,94
13	Electricity, Gas and Water (%)	165.049,14	1.063,57 0,64	39,47 0,02	43.53 0,03	0,45 0,00	142,07 0,09	1,02 0,00	415.02 0,25	1,705.14 1,03
14	RoadLI (%)	129.764,66	29,48 0,02	1,08 0,00	1.95 0,00	0,01 0,00	3,84 0,00	0,03 0,00	1,303.43 1,00	1,339.82 1,03
15	RoadKI (%)	297.437,90	67,57 0,02	2,48 0,00	4.47 0,00	0,02 0,00	8,80 0,00	0,06 0,00	2,987.64 1,00	3,071.05 1,03
16	Irrigation (%)	373.375,02	84,82 0,02	3,12 0,00	5.61 0,00	0,02 0,00	11,04 0,00	0,08 0,00	3,750.39 1,00	3,855.10 1,03
17	Construction (%)	156.119,93	35,47 0,02	1,30 0,00	2.35 0,00	0,01 0,00	4,62 0,00	0,03 0,00	1,568.16 1,00	1,611.94 1,03
18	Trade Services (%)	864.285,82	5.212,98 0,60	186,84 0,02	239.09 0,03	1,23 0,00	550,05 0,06	4,84 0,00	2,183.26 0,25	8,378.29 0,97
19	Restaurant	329.990,27	3.050,96	114,36	107.46	0,47	241,10	2,96	807.34	4,324.66

	(%)		0,92	0,03	0,03	0,00	0,07	0,00	0,24	1,31
20	Hotel Affairs	49.318,21	167,07	6,16	6,33	0,03	15,12	0,16	54,34	249,22
	(%)		0,34	0,01	0,01	0,00	0,03	0,00	0,11	0,51
21	Land Transportation Service	274.825,49	1.851,16	68,26	83,02	0,43	191,82	1,77	834,43	3,030,90
	(%)		0,67	0,02	0,03	0,00	0,07	0,00	0,30	1,10
22	Air, Water Transportation and Communication	349.882,67	2.226,71	83,00	91,99	0,43	211,80	2,15	730,03	3,346,12
	(%)		0,64	0,02	0,03	0,00	0,06	0,00	0,21	0,96
23	Storage, Other Transportation Service	66.629,08	345,14	12,72	15,51	0,09	37,53	0,33	128,22	539,55
	(%)		0,52	0,02	0,02	0,00	0,06	0,00	0,19	0,81
24	Bank, Insurance, and Services	301.273,72	2.217,84	82,52	103,34	0,57	241,60	2,14	793,03	3,441,03
	(%)		0,74	0,03	0,03	0,00	0,08	0,00	0,26	1,14
25	Real Estate and Business Services	302.316,35	2.009,86	74,26	83,16	0,42	197,23	1,92	880,57	3,247,43
	(%)		0,66	0,02	0,03	0,00	0,07	0,00	0,29	1,07
26	Government, Defensive, Education, and Other Social Services	517.755,08	2.622,13	97,67	96,03	0,39	208,65	2,53	1,519,97	4,547,38
	(%)		0,51	0,02	0,02	0,00	0,04	0,00	0,29	0,88
27	Other Individual and Household Services	287.679,68	2.069,27	76,69	86,83	0,37	189,10	1,99	646,37	3,070,63
	(%)		0,72	0,03	0,03	0,00	0,07	0,00	0,22	1,07
	Total	9.687.837,22	49.439,03	1.831,39	4,135,57	19,62	9.770,02	47,45	29,639,45	94,882,52

Note: Baseline is the condition without fiscal stimulus injection

Source: Author's own analysis

Personal income tax reduction (scenario 1) will have larger impact on production activities in almost all sectors, except for the infrastructure sectors, such as labour and capital intensive roads, irrigation and the rest of the construction sector. It is important to note here that the total budget that are spent through this scenario is substantial - as much as 24.7 trillion IDR. According to the results of the simulations, the five sectors that will experience the highest impact are livestock, fishery, crops, restaurant and food, drink and tobacco sectors. Personal income tax reduction will increase disposable income and then lead to an increase in the purchasing power. Since Indonesian people spend a larger proportion on food products, the higher disposable income should result in higher consumption of food commodities.

Scenario 2 and scenario 6 are very similar. In both scenarios enterprises are the main concern. The differences between the two scenarios are the magnitude of the shocks and type of instrument that are used in each scenario. In scenario 2, the government uses a tax instrument, whereas in scenario 6 the government uses a transfer instrument. Consequently, the impact on production activities is nearly the same in both scenarios, except for the size of the impact. Generally, a corporate income tax reduction will cause both direct and indirect impact. A corporate income tax directly will increase corporate investment and indirectly will increase final demand of goods and services through an increase on institution transfer from corporate to government and household. The highest impact is expected to existed in crops sector, livestock sector, fishery sector, food, drink and tobacco sector, restaurant sector, bank, insurance and services sector and other individual and household services sector.

Another instrument that can be used by government is value-added tax (VAT). A VAT reduction (scenario 3) on the food sector will not only have an impact on the food sector, but also on agricultural sectors except for forestry sector. Higher activities in the food sector will cause higher demand on input for the food sector. Therefore, the production activities of the agricultural sectors, such as crops, other crops, livestock, and fishery sector will increase as well. Based on this scenario, we can see that the magnitude of the fiscal stimulus matters, since the impacts are relatively larger in

the coal, metal, petroleum mining sector and food sector. In other hand, it will only has slightly increase the production activities of chemical industry, since the budget is only 0.03 trillion IDR. This is also the case for scenario 4, in which tariff import reduction in other industry sectors is approximately 0.007 trillion IDR. Such an investment will have a very small impact on the sector approximately less than 0.01 per cent.

In scenario 5, a subsidy on a particular sector will only have a moderate impact on the chemical sector and the textile sector and other agriculture. Moreover, it will only have a small impact on food sector and paper, print and other industry sector. In scenario 7, the government invested more on infrastructure. As expected, the impact on the production activities in all sector are quite significant, especially on road sector, irrigation sector, construction sector and electricity, gas and water sector. Higher activities in the construction sector increases the demand for raw materials, therefore, the scenario sees an also increase the production activities of the mining and query sector.

In the last scenario (Scenario 8), the highest impact of all fiscal stimulus policy is expected to exist in agricultural sector and agriculture-related industry –food, drink and tobacco sector-. If we aggregate the sector, fiscal stimulus policy is expected will increase the output of manufacturing sector, construction sector and trade sector by 0.9 per cent, 1.03 per cent, and 1.04 per cent respectively. These impact are still smaller than the impact of financial crisis 2008 on those three sector in the fourth quartile 2008 (see Annex 1).

To sum up, agricultural sector seems to benefit moderately from any scenario and even received the highest impact if the fiscal stimulus policy is conducted through personal tax cut and corporate income tax cut. Manufacturing sector is expected to experienced highest impact if subsidy on activities is implemented. Interestingly, the impact of value added tax cut on manufacturing sector performance is expected not too significant in magnitude. The argument is mainly due to the size of the shock which is only 1.8 trillion IDR and mostly (about 1 trillion IDR) was distributed on Coal, Metal Petroleum Mining sector. Meanwhile, construction sector, road sector and irrigation sector is only benefit from fiscal stimulus policy on infrastructure. Due to the financial crisis 2008, sectors that are affected the most are construction sector, trade sector and manufacturing sector (Central Bank of Indonesia, 2009). Therefore, mix policies between subsidy and fiscal stimulus policy on infrastructure are types of fiscal instrument that are relevant to stimulate the sectors that are experiencing a decline due to financial crisis 2008.

5.4.3. The impact of each fiscal stimulus instrument on labour income

In terms of labour income, the impacts are strongly related with the impact on production activities, since production activity is a function of production factors. Table 5.5 suggests that personal income tax reduction will have larger impact on agricultural workers, both formal and informal in urban and rural areas. Higher production activities in the agricultural sector will result in higher demand for labour. As a result, the type of labour that will get a higher percentage change on income are those who work in the agricultural sector. Interestingly, other types of workers also experienced a large positive impact, with percentages changes between 0.37 per cent up to 0.64 per cent. These results are all rational, since personal income tax reduction also will generate higher production activities in almost all services sectors. Therefore, it will trigger higher income for all types of workers including manual, clerical and professional worker.

Corporate tax reduction (Scenario 2) and subsidy (Scenario 5) are expected to increase labour income in all types of labour with the largest impact existed on agricultural worker both formal and informal in urban and rural areas. These are completely in line with the impact on production activities in which agricultural sector are expected to increase relatively higher than others. Scenarios 4 and 6 have a relatively small impact on labour income. Even though percentage changes in Table 5.4 are zero, there are some small changes that amount to less than 0.01 per cent.

In the third scenario, VAT reduction on particular sectors is expected to increase labour income at least 0.06 per cent for all agricultural worker both informal and formal in both urban and rural. This is

mainly due to the positive impact on activities in the agricultural sectors, except for forestry and hunting. The positive growth of production activities in almost all agricultural sub-sectors is mainly contributed by the improvement of food industry performance. The second highest impact will be accepted by rural and urban formal manual workers. This is mainly due to the impressive positive impact on production activities in the coal, metal and petroleum mining sector and food drinking and tobacco (food) sector. Even though the impact of VAT reduction is substantially large for the coal, metal and petroleum mining sector and food sector, these two sectors are more capital intensive. Therefore, the impact on labour will be moderate, particularly on manual worker since the share of manual formal worker on the sectors' labour structure is relatively higher.

Fiscal stimulus on infrastructure (Scenario 7) is expected to increase labour income for all types of labour ranging between 0.23 up to 0.42 per cent. Formal manual worker in rural areas are expected to receive the highest impact. This type of workers is largely employed in the construction process. Since construction, road, and irrigation sector are mostly affected by infrastructure stimulus, therefore the results are completely rational. In scenario 8, all fiscal stimulus policy is expected to result highest impact on all agricultural worker both informal and formal in both urban and rural. Moreover, the impact on other types of workers are also significant with an increase at least 0.89 per cent.

In conclusion, agricultural worker is expected to gain a relatively high positive impact under any scenario except fiscal stimulus policy on infrastructure (scenario 7). If government focus on stimulating manufacturing sector performance, manual worker will benefit the most and the impact will be quite evenly distributed across types of worker ranging between 0.05 per cent to 0.11 per cent. Similar condition also existed if fiscal stimulus policy is implemented through an increase of government investment on infrastructure.

Table 5.5. The Impact of Each Fiscal Stimulus Instrument on Labor Income

No.	Labor Classification	Baseline Condition (Billion Rp)	Scen 1	Scen 2	Scen 3	Scen 4	Scen 5	Scen 6	Scen 7	Scen 8
1	Formal Agricultural Worker - Rural (%)	106.314,06	930,93 0,88	34,70 0,03	70,94 0,07	0,16 0,00	96,64 0,09	0,90 0,00	254.14 0.24	1,388.40 1.31
2	Formal Agricultural Worker - Urban (%)	26.387,63	233,34 0,88	8,70 0,03	16.65 0.06	0,04 0,00	22,86 0,09	0,23 0,00	65.40 0.25	347.20 1.32
3	Informal Agricultural Worker - Rural (%)	328.007,35	3.009,53 0,92	112,21 0,03	233.04 0.07	0,47 0,00	282,56 0,09	2,91 0,00	773.46 0.24	4,414.18 1.35
4	Informal Agricultural Worker - Urban (%)	32.130,10	300,94 0,94	11,22 0,03	22.09 0.07	0,05 0,00	26,37 0,08	0,29 0,00	77.84 0.24	438.79 1.37
5	Formal Manual Worker - Rural (%)	185.177,41	682,56 0,37	25,30 0,01	66.85 0.04	0,35 0,00	180,07 0,10	0,66 0,00	829.28 0.45	1,785.07 0.96
6	Formal Manual Worker - Urban (%)	385.275,45	1.588,32 0,41	58,84 0,02	136.98 0.04	1,02 0,00	428,38 0,11	1,52 0,00	1,340.06 0.35	3,555.12 0.92
7	Informal Manual Worker - Rural (%)	137.773,20	589,49 0,43	21,86 0,02	40.74 0.03	0,27 0,00	157,68 0,11	0,57 0,00	511.06 0.37	1,321.67 0.96
8	Informal Manual Worker - Urban (%)	112.072,33	510,41 0,46	18,90 0,02	33.80 0.03	0,24 0,00	89,39 0,08	0,49 0,00	457.20 0.41	1,110.44 0.99
9	Formal Clerical Worker - Rural (%)	85.650,98	517,29 0,60	19,08 0,02	31.61 0.04	0,12 0,00	64,42 0,08	0,49 0,00	218.28 0.25	851.29 0.99
10	Formal Clerical Worker - Urban (%)	458.527,77	2.695,97 0,59	99,46 0,02	149.69 0.03	0,70 0,00	364,21 0,08	2,58 0,00	1,186.88 0.26	4,499.48 0.98
11	Informal Clerical Worker - Rural (%)	139.758,36	886,00 0,63	32,06 0,02	39.75 0.03	0,20 0,00	93,20 0,07	0,83 0,00	358.21 0.26	1,410.25 1.01
12	Informal Clerical Worker - Urban (%)	248.147,08	1.580,39 0,64	57,30 0,02	70.37 0.03	0,35 0,00	159,40 0,06	1,48 0,00	642.88 0.26	2,512.18 1.01
13	Formal Professional Worker - Rural (%)	66.735,18	337,56 0,51	12,55 0,02	16.32 0.02	0,06 0,00	34,01 0,05	0,33 0,00	195.22 0.29	596.04 0.89
14	Formal Professional Worker - Urban (%)	200.276,73	983,40 0,49	36,48 0,02	56.57 0.03	0,21 0,00	131,63 0,07	0,94 0,00	627.74 0.31	1,836.97 0.92
15	Informal Professional Worker - Rural (%)	12.694,24	57,04 0,45	2,10 0,02	3.00 0.02	0,01 0,00	9,33 0,07	0,05 0,00	53.06 0.42	124.60 0.98
16	Informal Professional Worker - Urban (%)	30.775,27	136,66 0,44	5,06 0,02	6.02 0.02	0,03 0,00	20,93 0,07	0,13 0,00	115.84 0.38	284.68 0.93
	Total	2.555.703,14	15.039,82	555,82	994.40	4,27	2.161,08	14,40	7,706.57	26,476.36

Source: Author's own analysis

5.4.4. The impact of each fiscal stimulus instrument on household income

Generally, the impact of all instruments are positive on household income. All types of household will get higher income due to personal income tax cut policy. It is expected that household income to increase more than 0.9 per cent relative to the baseline. Groups of household that will benefit the most are the high income household both in urban and rural. Oppositely, agricultural employee will received the lowest impact due to personal tax cut policy. These results is mainly derived from the size of the injection which are relatively larger on those two groups of households.

Table 5.6. The Impact of Each Fiscal Stimulus Instrument on Household Income

No.	Household Classification	Baseline Condition (Billion Rp)	Scen 1	Scen 2	Scen 3	Scen 4	Scen 5	Scen 6	Scen 7	Scen 8
1	Agriculture Employee (%)	254.677,00	2,410.60 0.95	83.96 0.03	79.41 0.03	0.27 0.00	146.59 0.06	2.18 0.00	448.05 0.18	3,171.06 1.25
2	Small Farmer (%)	368.451,27	3,867.95 1.05	135.05 0.04	154.83 0.04	0.48 0.00	267.75 0.07	3.50 0.00	799.06 0.22	5,228.60 1.42
3	Medium Farmer (%)	200.526,91	2,081.64 1.04	89.44 0.04	90.28 0.05	0.32 0.00	172.52 0.09	2.32 0.00	521.29 0.26	2,957.82 1.48
4	Larger Farmer (%)	195.230,87	2,271.51 1.16	113.86 0.06	98.64 0.05	0.30 0.00	181.04 0.09	2.95 0.00	505.53 0.26	3,173.83 1.63
5	Rural Non-Labour (%)	519.167,29	4,968.23 0.96	205.87 0.04	191.32 0.04	0.76 0.00	418.69 0.08	5.33 0.00	1,449.20 0.28	7,239.40 1.39
6	Rural Low Income (%)	176.303,51	1,730.03 0.98	62.13 0.04	74.37 0.04	0.25 0.00	148.49 0.08	1.61 0.00	452.87 0.26	2,469.76 1.40
7	Rural High Income (%)	439.458,95	5,959.84 1.36	211.31 0.05	202.55 0.05	0.67 0.00	396.80 0.09	5.47 0.00	1,176.90 0.27	7,953.55 1.81
8	Urban Non Labor (%)	704.260,06	7,438.21 1.06	241.98 0.03	241.14 0.03	1.28 0.00	610.29 0.09	6.27 0.00	1,936.27 0.27	10,475.44 1.49
9	Urban Low Income (%)	248.718,81	3,080.23 1.24	118.90 0.05	89.09 0.04	0.42 0.00	212.78 0.09	3.08 0.00	651.35 0.26	4,155.86 1.67
10	Urban High (%)	776.700,03	10,156.02 1.31	374.97 0.05	285.95 0.04	1.18 0.00	641.67 0.08	9.71 0.00	2,149.76 0.28	13,619.26 1.75
	Total	3.883.494,70	43.964,26	1.637,48	1,507.58	5,93	3.196,61	42,42	10,090.29	60,444.57

Source: Author's own analysis

Similar with previous findings, the impact of corporate tax cut (scenario 2) on household income is expected to increase income in all types of households with highest impact on larger farmer as much as 0.06 per cent. Similar figures can also be found in the Scenario 5 with the exception on urban non labour and urban low income. If government give subsidy to manufacturing sector, urban non labour and urban low income household will also received the highest benefit. The increase in subsidy is expected to result higher household income for all groups of households, ranging between 0.06 per cent and 0.09 per cent. The smallest impact is expected to received by agricultural employee. Again the impact of scenario 4 and 6 are insignificant, and only increase household income by less than 0.01 per cent. The reasons are similar with the previous results suggesting that the shock is too small in magnitude.

Value added tax reduction (scenario 3) is expected to increase income of all groups of households, ranging between 0.03 per cent and 0.05 per cent. Agricultural employee, and urban non labor, are expected to be positively affected less than others. The highest impact will be accepted by medium farmer, larger farmer and rural high income. In scenario 7, fiscal stimulus on infrastructure, is expected to result in a relatively prevalent impact on household income. Only agricultural employee have a smaller change in income - less than 0.2 per cent - since infrastructure jobs will involve many manual worker instead of agricultural workers. In aggregate, if we measure the impact of the whole fiscal stimulus policy (scenario 8) the smallest positive impact will be accepted by agricultural employee. Meanwhile, rural high income and urban high income will benefit the most.

To sum up, the results in all scenarios suggest that the benefit of fiscal stimulus policy will be bias to medium-high income household which is reflected on the types of household who received the highest impact. Even though the impact of fiscal stimulus is also positive for agriculture employee but its magnitude is the lowest among others. These two conditions would cause a larger disparity of income between medium-high income household and agriculture employee, rural low income and urban low income. Types of households that are presented here are grouped by functional.

5.4.5. The Impact of Each Fiscal Stimulus Instrument on Employment

In this sub section we present the impact of each fiscal stimulus instrument on employment. We disaggregate employment by location, gender, informality and occupation. In general, all scenarios are expected to create more jobs in all sectors. Personal income tax reduction is expected to create new jobs, as much as 0.75 million labour places. Most of the labour places (about 60 per cent) are located in the rural areas. In terms of sectors, the crops sector is expected to get the highest positive impact, since nearly 40 per cent of the new jobs are created in this sector. These results are consistent with other findings from scenario 1, which have a relatively larger impact on the agricultural sector, agricultural workers and subsequently employment.

Corporate tax reduction is also expected to increase employment creation in a relatively smaller magnitude. In terms of location, the rural areas is expected to be more dominant than the urban areas. This is also the case for the rest of the scenarios except for in Scenario 4 in which sectors that are mostly affected are located in urban areas, for instance Textile and Leather sector. In line with previous findings, the impact of Scenario 4 and Scenario 6 are relatively very small. New jobs that can be created through this investment is low - less than 730 persons. Again, the reason is because the budget of fiscal stimulus is relatively small.

Table 5.7. The Impact of Each Fiscal Stimulus Instrument on Employment by Location (in person)

N o.	Production Sector	Location (U/R)	Scen 1	Scen 2	Scen 3	Scen 4	Scen 5	Scen 6	Scen 7	Scen 8
1	Crops	Urban	29,412	1,097	2,264	4	2,352	28	7,131	42,288
		Rural	268,054	9,998	20,633	39	21,435	259	64,991	385,408
2	Other Agriculture	Urban	1,614	60	166	0	317	2	483	2,642
		Rural	16,833	626	1,731	4	3,305	16	5,037	27,551
3	Livestock	Urban	4,763	177	298	1	376	5	1,159	6,779
		Rural	32,802	1,222	2,051	5	2,591	32	7,981	46,683
4	Forestry and Hunting	Urban	150	6	7	0	31	0	342	536
		Rural	1,212	46	54	0	251	1	2,766	4,330
5	Fishery	Urban	5,041	188	281	1	386	5	1,194	7,095
		Rural	13,161	491	733	2	1,007	13	3,119	18,525
6	Coal, Metal, Petroleum Mining	Urban	285	11	355	0	199	0	179	1,028
		Rural	357	13	446	0	249	0	224	1,290
7	MiningQuarry	Urban	121	4	8	0	62	0	1,668	1,864
		Rural	263	10	17	0	135	0	3,620	4,045
8	Food, Drinkand Tobacco	Urban	11,407	424	1,534	2	999	11	2,731	17,108
		Rural	13,264	493	1,783	2	1,162	13	3,176	19,892
9	Weave, Textile, Garment and Leather	Urban	7,658	288	278	46	2,850	7	1,929	13,056
		Rural	3,649	137	132	22	1,358	4	920	6,222
10	Wood	Urban	1,118	42	42	0	458	1	2,015	3,676
		Rural	2,146	80	81	0	879	2	3,867	7,056
11	Paper, Print, Transp, Metal Product	Urban	7,219	268	299	1	1,773	7	4,179	13,746
		Rural	2,459	91	102	0	604	2	1,424	4,683
12	Chemistry, Fertilizer, Clay and Cement	Urban	3,767	140	216	1	3,962	4	2,725	10,815
		Rural	2,741	102	157	1	2,882	3	1,983	7,868
13	Electricity, Gas and Water	Urban	935	35	38	0	125	1	365	1,499
		Rural	383	14	16	0	51	0	149	614
14	RoadLI	Urban	284	10	19	0	37	0	12,549	12,899
		Rural	302	11	20	0	39	0	13,367	13,741
15	RoadKI	Urban	94	3	6	0	12	0	4,166	4,282
		Rural	100	4	7	0	13	0	4,438	4,561

16	Irrigation	Urban	54	2	4	0	7	0	2,367	2,433
		Rural	57	2	4	0	7	0	2,521	2,592
17	Construction	Urban	123	5	8	0	16	0	5,427	5,579
		Rural	131	5	9	0	17	0	5,781	5,943
18	Trade Services	Urban	59,221	2,123	2,716	14	6,249	55	24,803	95,180
		Rural	38,032	1,363	1,744	9	4,013	35	15,928	61,125
19	Restaurant	Urban	62,665	2,349	2,207	10	4,952	61	16,582	88,826
		Rural	14,004	525	493	2	1,107	14	3,706	19,850
20	Hotel Affairs	Urban	563	21	21	0	51	1	183	840
		Rural	260	10	10	0	24	0	85	388
21	Land Transportation Service	Urban	10,322	381	463	2	1,070	10	4,653	16,901
		Rural	7,856	290	352	2	814	8	3,541	12,862
22	Air, Water Transportation and Communication	Urban	24,839	926	1,026	5	2,363	24	8,143	37,326
		Rural	8,231	307	340	2	783	8	2,699	12,370
23	Storage, Other Transportation Service	Urban	2,474	91	111	1	269	2	919	3,868
		Rural	789	29	35	0	86	1	293	1,234
24	Bank, Insurance, and Services	Urban	4,080	152	190	1	444	4	1,459	6,330
		Rural	897	33	42	0	98	1	321	1,391
25	Real Estate and Business Services	Urban	6,054	224	251	1	594	6	2,652	9,782
		Rural	1,077	40	45	0	106	1	472	1,740
26	Government, Defensive, Education, and Other Social Services	Urban	26,718	995	978	4	2,126	26	15,487	46,334
		Rural	12,871	479	471	2	1,024	12	7,461	22,321
27	Other Individual and Household Services	Urban	30,562	1,133	1,282	5	2,793	29	9,547	45,351
		Rural	8,680	322	364	2	793	8	2,711	12,880
	Total	Urban	301,542	11,152	15,069	101	34,872	289	135,039	498,064
		%	40	40	32	51	44	40	45	41
		Rural	450,612	16,741	31,872	95	44,833	434	162,579	707,166
		%	60	60	68	49	56	60	55	59

Source: Author's own analysis

Table 5.7 also suggest that sector that experiences relatively higher production activities does not always experience a higher employment impact and vice a versa, for instance electricity, gas and water sector, transportation sector, other agriculture sector and some services sectors. These are largely due to the characteristic of the sector. If a sector experiences higher production activities and the sector is capital intensive, the impact on the employment will be a relatively small since more capital is needed to increase the production. In Scenario 7 we can see that infrastructure stimulus will result more than 297,628 new jobs. The result is rational because infrastructure will employ a relatively large number of workers. However the impact is much smaller than the scenario 1 which can create approximately 0.75 million labour places. Important to note here that budget that are spent in this scenario is only less than half of personal tax cut policy. In scenario 8 we can see the total employment that can be created from the whole fiscal stimulus policy. It is estimated that at least 1.2 million new jobs could be created. However we should notice that the new jobs could be in formal or informal sector.

Table 5.8. The Impact of Each Fiscal Stimulus Instrument on Employment by Gender (in persons)

No.	Production Sector	Sex (M/W)	Scen 1	Scen 2	Scen 3	Scen 4	Scen 5	Scen 6	Scen 7	Scen 8
1	Crops	Men	176,262	6,574	13,567	26	14,095	170	42,735	253,430
		Women	121,203	4,521	9,329	18	9,692	117	29,386	174,267
2	Other Agriculture	Men	11,956	445	1,229	3	2,347	12	3,577	19,569
		Women	6,491	242	667	2	1,274	6	1,942	10,624
3	Livestock	Men	21,935	817	1,372	3	1,732	21	5,337	31,217
		Women	15,631	582	977	2	1,234	15	3,803	22,245
4	Forestry and Hunting	Men	1,077	40	48	0	223	1	2,458	3,848
		Women	285	11	13	0	59	0	651	1,018
5	Fishery	Men	16,572	618	923	2	1,268	16	3,927	23,326
		Women	1,630	61	91	0	125	2	386	2,294
6	Coal, Metal, Petroleum Mining	Men	602	22	751	0	420	1	378	2,174
		Women	40	1	50	0	28	0	25	144
7	MiningQuarry	Men	281	10	18	0	145	0	3,867	4,321
		Women	103	4	6	0	53	0	1,421	1,587
8	Food, Drinkand Tobacco	Men	11,525	428	1,549	2	1,009	11	2,760	17,284
		Women	13,146	489	1,767	2	1,151	13	3,148	19,716
9	Weave, Textile, Garment and Leather	Men	4,489	169	163	27	1,670	4	1,131	7,653
		Women	6,818	256	247	41	2,537	7	1,718	11,625
10	Wood	Men	1,953	73	74	0	800	2	3,519	6,420
		Women	1,311	49	50	0	537	1	2,363	4,312
11	Paper, Print, Transp, Metal Product	Men	7,264	270	301	1	1,784	7	4,205	13,832
		Women	2,414	90	100	0	593	2	1,398	4,597
12	Chemistry, Fertilizer, Clay and Cement	Men	4,539	168	260	2	4,773	4	3,284	13,030
		Women	1,969	73	113	1	2,071	2	1,425	5,654
13	Electricity, Gas and Water	Men	1,205	45	49	1	161	1	470	1,932
		Women	113	4	5	0	15	0	44	181
14	RoadLI	Men	572	21	38	0	75	1	25,308	26,015
		Women	14	1	1	0	2	0	608	625
15	RoadKI	Men	190	7	13	0	25	0	8,401	8,636
		Women	5	0	0	0	1	0	202	208
16	Irrigation	Men	108	4	7	0	14	0	4,773	4,907
		Women	3	0	0	0	0	0	115	118
17	Construction	Men	248	9	16	0	32	0	10,946	11,251
		Women	6	0	0	0	1	0	263	270
18	Trade Services	Men	49,343	1,769	2,263	12	5,206	46	20,666	79,304

		Women	47,910	1,717	2,197	11	5,055	44	20,065	77,001
19	Restaurant	Men	55,456	2,079	1,953	9	4,382	54	14,675	78,608
		Women	21,213	795	747	3	1,676	21	5,613	30,069
20	Hotel Affairs	Men	343	13	13	0	31	0	111	511
		Women	480	18	18	0	43	0	156	717
21	Land Transportation Service	Men	17,487	645	784	4	1,812	17	7,883	28,632
		Women	691	25	31	0	72	1	311	1,131
22	Air, Water Transportation and Communication	Men	23,237	866	960	5	2,210	22	7,618	34,919
		Women	9,833	367	406	2	935	9	3,224	14,776
23	Storage, Other Transportation Service	Men	2,163	80	97	1	235	2	803	3,381
		Women	1,101	41	49	0	120	1	409	1,721
24	Bank, Insurance, and Services	Men	3,267	122	152	1	356	3	1,168	5,070
		Women	1,709	64	80	0	186	2	611	2,651
25	Real Estate and Business Services	Men	5,331	197	221	1	523	5	2,335	8,613
		Women	1,801	67	75	0	177	2	789	2,909
26	Government, Defensive, Education, and Other Social Services	Men	25,069	934	918	4	1,995	24	14,532	43,475
		Women	14,519	541	532	2	1,155	14	8,416	25,180
27	Other Individual and Household Services	Men	10,093	374	424	2	922	10	3,153	14,977
		Women	29,149	1,080	1,223	5	2,664	28	9,105	43,254
Total		Men	452,565	16,797	28,164	104	48,247	435	200,020	746,334
		%	60	60	60	53	61	60	67	62
		Women	299,588	11,096	18,776	92	31,458	287	97,598	458,895
		%	40	40	40	47	39	40	33	38

Source: Author's own analysis

The next analysis in this sub section is to analyze the impact of various fiscal stimulus instruments on employment by gender. In general, men are expected to benefit more than women. These are largely due to the characteristic of sectors that are mostly affected. Those sectors are employed more women labourer relative to men, for instance in crops sector, livestock sector, trade services sector and restaurant sector. Therefore, character of sector is important to take into account.

Beside those classification, we also can derive employment by informality and occupation. Overall, the impact of fiscal stimulus on employment is biased to informal sector. These means that even though the unemployment rate decrease but this improvement is largely determined by the performance of informal sector. This result confirm the statistics that are reported in Chapter 3. In terms of occupation, manual worker will benefit the most relative to other sectors whereas the smallest impact will be received by clerical worker.

Table 5.9. The Impact of Each Fiscal Stimulus Instrument on Employment by Informality and Occupation (in persons)

Labour by Occupation and Informality	Scen 1	Scen 2	Scen 3	Scen 4	Scen 5	Scen 6	Scen 7	Scen 8
Formal Agricultural Worker	9,032.06	336.79	683.49	1.36	779.55	8.73	2,268.90	13,110.87
Informal Agricultural Worker	309,983.87	11,558.63	23,457.70	46.78	26,754.32	299.45	77,869.46	449,970.21
Formal Manual Worker	139,641.82	5,158.61	7,409.45	47.24	16,722.32	133.64	69,463.92	238,577.00
Informal Manual Worker	228,495.42	8,441.02	12,124.06	77.29	27,362.67	218.68	113,663.56	390,382.70
Formal Clerical Worker	7,740.15	285.62	389.30	2.79	962.96	7.40	4,094.17	13,482.39
Informal Clerical Worker	19,109.38	705.15	961.13	6.89	2,377.42	18.27	10,107.95	33,286.19
Formal Professional Worker	32,497.13	1,199.06	1,631.23	11.77	4,042.66	31.06	17,164.07	56,576.99
Informal Professional Worker	5,653.80	208.61	283.80	2.05	703.34	5.40	2,986.18	9,843.18
Total	752,153.62	27,893.49	46,940.17	196.18	79,705.23	722.63	297,618.21	1,205,229.53
Labour by Occupation								
Agricultural Worker	319,015.93	11,895.42	24,141.19	48.15	27,533.87	308.17	80,138.36	463,081.08
Manual Worker	368,137.24	13,599.64	19,533.52	124.53	44,084.98	352.32	183,127.48	628,959.71
Clerical Worker	26,849.52	990.76	1,350.43	9.69	3,340.38	25.67	14,202.13	46,768.57
Professional Worker	38,150.93	1,407.67	1,915.03	13.82	4,746.00	36.47	20,150.25	66,420.17
Total	752,153.62	27,893.49	46,940.17	196.18	79,705.23	722.63	297,618.21	1,205,229.53
Labour by Informality								
Formal	188,911.16	6,980.08	10,113.48	63.16	22,507.48	180.83	92,991.06	321,747.25
Informal	563,242.46	20,913.41	36,826.69	133.02	57,197.75	541.80	204,627.16	883,482.28
Total	752,153.62	27,893.49	46,940.17	196.18	79,705.23	722.63	297,618.21	1,205,229.53

Source: Author's own analysis

Based on the result above, we can take some important findings. First, the impact of fiscal stimulus policy on employment will be biased to worker in rural area, men and informal sector. Second, crops sector seem to received highest impact for any scenario in terms of number of jobs that are created. This is rational since crops sector is a labor intensive sector and the impact of all scenario are relatively larger on crops activities that will derive higher demand on labour. Third, the impact of extra government budget on infrastructure will not only increase number of worker in construction related sector but also other sectors and even larger on crops sector, restaurant sector and trade services sector.

5. 5. The Net Cost of the Fiscal Stimulus

As previously mentioned, the Government used several types of fiscal stimulus instruments that were grouped into seven scenarios. In the first scenario, the Government decreased the personal income tax rate, which equaled to 24.7 trillion IDR decrease in government tax revenue. Based on SAM approach, the policy is expected to improve Indonesian economic performance including production activity, factor's income and household income. Consequently, government income from taxes and tariff will increase. This is also the case for the rest of scenarios. This implies that even though in the fiscal stimulus policies increased government spending and reduced their revenue, the improvement on economic activity or household will result more government income than the baseline condition. Based on those argument, the net cost of each fiscal stimulus instrument should be considered. However, the injections that are used in the eight scenarios are differ one to another. Thus, we cannot compare the output of net cost directly.

Table 5.10. The Net Cost of the Fiscal Stimulus

	scen 1	scen 2	scen 3	scen 4	scen 5	scen 6	scen 7	scen 8
Gov Income	5,749.03	2,659.38	556.61	1.43	684.11	68.90	2,320.66	12,034.74
Govt Injection	24,707.27	19,300.00	1,834.93	7.19	4,157.80	500.00	10,913.23	61,420.43
Net Cost	18,958.24	16,640.62	1,278.32	5.76	3,473.69	431.10	8,592.57	49,385.69
B/C Ratio	23%	14%	30%	20%	16%	14%	21%	20%

Source: Author's own analysis

An alternative solution that can be used is Benefit Cost Ratio (B/C Ratio) concept. B/C Ratio can give us an information regarding how much benefit that can be earned by government relative to the cost or budget that are spent. Among 8 scenario, indirect tax scenario will give the largest B/C ratio. If government decrease the indirect tax, sectors will develop and have more incentive to produce more. As a result, output will increase and then raise the government income from the indirect tax. Moreover, more labor and capital will be employed and result higher factor income. Consequently, household income will increase as well as the government income from income tax. Both the raise of indirect tax and income tax will increase government income.

Chapter 6: Conclusion

Employment satellite account is a very useful feature in DySAM, particularly to estimate the impact of policy scenarios on the employment. However, the accuracy of the employment data is strongly important in determining the impact, as is a good methodology for calculating the satellite account. In Indonesia, there are two sources of employment data, namely LFS and Labour Statistic of SAM. Each source uses different definition of labour. In LFS, labour is defined as the economically active population aged 15 and over, whereas in SAM, labour is defined as economically active population aged 10 and over. In terms of number of sectors, LFS classified labour by 9 sectors whereas SAM disaggregate labour by 24 sectors. Another difference is the time period. Number of labours in SAM is calculated at the end of the year of SAM publication (December) whereas the one that published in LFS is calculated at February or August. Time is matters in employment data since employment in particular sector has specific trend, for instance agriculture. If we conduct labour survey in the harvesting time, number of labour will substantially large in agriculture and vice a versa. Thus, if we want to conduct SAM analysis by using employment satellite, we must be convinced that the structure of employment data is perfectly matched with the SAM structure. There are two important points that should be considered if we want to use Indonesian employment data in SAM analysis. First, if the analysis is conducted at the same period with year of SAM publication, SAM-based employment data is more appropriate than LFS-based employment data. Second, if the analysis is conducted at the period that is not the same with year of SAM publication, we should do some adjustment on the employment data. In this study we propose alternative approach to adjust employment data that is presented in this study.

One of the benefits of DySAM with employment satellite is to analyze the impact of fiscal stimulus policy (FSP) on Indonesian macroeconomic indicators, namely sectoral output, labour income, household income and employment by location and gender. Overall, the realization rates of FSP in Indonesia achieved 83.84 per cent from its total budget. There are number of factors that cause this low realization rates, namely decision lag, implementation lag, regulation problem, administration problem and timely tender process. Based on result of policy scenario in DySAM analysis, we can conclude that the impact of each fiscal stimulus is differs from one to another. These are largely determined by type of FSP tools that are used and the characteristic of sector in which FSP is implemented. Therefore, in formulating fiscal stimulus programs, government should consider the tools and transmission mechanism of each tool to estimate the impact of each FSP instrument and then match the predicted output with the government objective.

In order to get an accurate estimation, we must ensure that a shock or injection procedure in the model is appropriate. There are three important points that should be considered in the management of shocks. First, we should be convinced that the data or magnitudes that are used for injection is correct. Second, we should ensure that mapping procedure between real data and SAM structure is appropriate and has good precision. Third, after mapping procedure, we should allocate the magnitude or size of injection (shock) on more detail account in SAM. In this step, we should convince that approach we have used is appropriate and in line with the description of scenario. For instance if we want to simulate the personal tax cut, we will face two options, whether to allocate the tax cut evenly or proportionally on ten types of households in SAM structure.

Chapter 7: Policy implication

Seven scenarios that have been presented previously could provide Government of Indonesia a very useful information regarding the impact of each and all fiscal stimulus instrument on Indonesian economic performance. All scenarios are designed based on the document of Ministry of Finance and used the realization value as the shocks. There are some lessons that can be drawn from the results. First, since the fiscal stimulus policy use either tax reduction or expansive government spending, the impact on Indonesian economic performance will be positive. However the magnitude and the most affected “stakeholders” will be differ across fiscal stimulus instrument. Second, any scenario will result a moderate and even a relatively higher impact on agricultural sector if the stimulus is conducted through personal tax cut or corporate income tax cut. Even though the main objective of some fiscal stimulus instrument are to improve the competitiveness of manufacturing sector but agricultural sector -as the primary sector- will benefit from the second round effect of the stimulus. Third, fiscal stimulus policy through subsidy and value added tax reduction seems to be the most appropriate instrument to increase the competitiveness of manufacturing industry. However, the size of fiscal stimulus budget is matters which can be seen from a relatively low impact of value added tax cut policy. If government focus to improve the performance of manufacturing industry, Government of Indonesia should allocate more budget on these two instruments, namely subsidy and value added tax reduction. Fourth, construction sector, road sector and irrigation sector is expected to benefit the most if the fiscal stimulus policy is conducted through an expansion of government budget on infrastructure. These four important findings imply that the best fiscal stimulus policy to respond the Global Financial Crisis 2008 is conducted through mix policy since the impact of the crisis is existed in almost all sectors.

Another important lesson can also be drawn in terms of the impact of fiscal stimulus on factor’s income. Type of production factor that will received the largest impact will significantly depend on the characteristic of sector that benefit from the stimulus. For instance, if the construction sector is one of sectors that received the highest benefit due to the fiscal stimulus, type of worker that is expected to benefit the most will be manual worker. This is largely due to the characteristic of construction sector that employ more manual worker relative to others.

One of the most interesting findings is on the impact of fiscal stimulus on household income. It is expected that the benefit of fiscal stimulus policy will be bias to medium-high income household. The argument is due to type of sector that received the fiscal stimulus. If government want to support the low income household (agriculture employee, rural low income and urban low income), government should impose the fiscal stimulus policy on the sector that employ worker from a low income household groups, for instance agricultural sector, and trade sector.

Gender, location, occupation and informality are another focus in this study. In line with the impact on the activities, labour in the crops sector seems to benefit the most in any scenario. In terms of occupation, we can simply conclude that the impact will be a relatively larger on agricultural worker and manual worker and it has been justified by the result in this study. Crops sector is mostly located in rural area, thus the impact of fiscal stimulus is significantly higher for employment in rural area. Since the structure of employment in Indonesia is majorly dominated by informal worker and mostly are men, the impact of fiscal stimulus is expected to biased to informal worker particularly on men worker.

ANNEX

Annex 1. Indonesian Economic Performance before and during the Crisis

Indicators	1996	1997	1998	2007	2008	2009
GDP growth:						
1st Quartile	5.97 %	7.44 %	-7.14 %	6.06 %	6.21%	4.53%
2nd Quartile	6.81 %	6.11 %	-15.94 %	6.73 %	6.30%	4.08%
3rd Quartile	7.62 %	4.46 %	-17.45 %	6.74 %	6.25%	4.16%
4th Quartile	9.64 %	-0.92 %	-19.39 %	5.84 %	5.27%	5.43%
GDP by Sector						
Agriculture	3.05%	0.81%	-2.96%	3.47%	4.83%	4.13%
Mining	4.73%	1.14%	-1.68%	1.93%	0.68%	4.37%
Manufacturing	8.77%	2.41%	-20.53%	4.67%	3.66%	2.11%
Electricity, Gas & Water	14.27%	13.81%	1.75%	10.33%	10.92%	13.78%
Construction	12.75%	7.36%	-36.44%	8.53%	7.51%	7.05%
Trade, Hotel & Restaurant	11.26%	8.28%	-17.71%	8.93%	6.87%	1.14%
Transport & Communication	13.02%	10.76%	-9.91%	14.04%	16.57%	15.53%
Finance	5.95%	6.07%	-24.03%	7.99%	8.24%	5.05%
Other Services	3.44%	3.97%	-3.23%	6.44%	6.23%	6.40%
Inflation rate	6.6 %	11.6 %	77.6 %	11.6 %	11.06%	2.78%
Unemployment rate	4.89 %	4.68%	5.46%	9.1 %	8.39 %	7.9%
Employment Total	85,701,813	87,049,756	87,672,449	(Feb) 97,583,141 (Aug) 99,930,217	(Feb) 102,049,857 (Aug) 102,552,750	(Feb) 104,485,444 (Aug) 104,870,663
Share of Formal Employment	n.a.	n.a.	n.a.	(Feb) 27.5% (Aug) 28.1%	(Feb) 27.9% (Aug) 27.5%	(Feb) 27.7% (Aug) 27.8%
Share of Informal Employment	n.a.	n.a.	n.a.	(Feb) 72.5% (Aug) 71.9%	(Feb) 72.1% (Aug) 72.5%	(Feb) 72.3% (Aug) 72.2%
Underemployment (million people)	n.a.	n.a.	n.a.	(Feb) 30.2 (Aug) 30.4	(Feb) 30.6 (Aug) 31.1	(Feb) 31.4 (Aug) 31.6
Sector that suffer the most in terms of impact on labour		Industry	Industry		Industry	Industry
Private Consumption per capita	n.a.	n.a.	n.a.	353,421	386,370	430,065
Growth of Household Consumption		5.9%	-4.1%	5.01%	5.34%	4.85%

Annex 2. Labour Composition before and during the Crisis

Sector	1996	1997	1998	2007		2008		2009	
				Feb	August	Feb	August	Feb	August
Agriculture	43%	41%	45%	44%	41%	42%	40%	41%	40%
Mining	1%	1%	1%	1%	1%	1%	1%	1%	1%
Industry	13%	13%	11%	12%	12%	12%	12%	12%	12%
Electricity, Gas and Water	0%	0%	0%	0%	0%	0%	0%	0%	0%
Construction	5%	5%	4%	5%	5%	5%	5%	4%	5%
Trade, Hotel and Restaurant	19%	20%	19%	20%	21%	20%	21%	21%	21%
Transportation	5%	5%	5%	6%	6%	6%	6%	6%	6%
Banking and Finance	1%	1%	1%	1%	1%	1%	1%	1%	1%
Other Services	14%	15%	14%	11%	12%	13%	13%	13%	13%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Annex 3. Informality by Sector before and during the Crisis

Sector	Category	2007		2008		2009	
		Feb	August	Feb	August	Feb	August
Agriculture	Formal	2,339,166	2,373,850	2,593,709	2,612,063	2,443,499	3,011,011
	Informal	40,269,594	38,832,624	40,095,926	38,719,643	40,585,994	38,600,829
Mining	Formal	426,786	468,418	462,106	446,757	493,423	428,476
	Informal	594,021	526,196	600,203	623,783	646,072	726,757
Industry	Formal	7,391,480	7,030,572	7,320,335	6,762,721	6,973,014	6,814,606
	Informal	4,702,587	5,338,157	5,119,806	5,786,655	5,642,426	6,025,194
Electricity, Gas and Water	Formal	202,668	147,571	167,528	156,240	186,729	192,544
	Informal	44,391	27,313	40,381	44,874	22,712	30,510
Construction	Formal	1,472,820	2,299,070	1,758,523	1,940,953	1,642,202	1,738,331
	Informal	2,924,312	2,953,511	2,975,156	3,498,012	2,968,493	3,748,486
Trade, Hotel and Restaurant	Formal	4,086,442	3,931,662	4,219,061	4,303,376	4,233,517	3,425,982
	Informal	15,338,828	16,622,988	16,464,980	16,918,368	17,603,251	18,521,841
Transportation	Formal	1,827,402	1,771,659	1,828,352	1,652,306	1,912,900	1,714,418
	Informal	3,748,097	4,187,152	4,185,595	4,527,197	4,034,773	4,403,567
Banking and Finance	Formal	1,014,838	1,186,808	1,118,905	1,121,870	1,167,807	1,177,339
	Informal	237,357	212,682	321,137	338,115	316,791	309,257
Other Services	Formal	8,107,449	8,832,780	9,046,839	9,187,487	9,860,027	10,611,334
	Informal	2,854,903	3,187,204	3,731,315	3,912,330	3,751,814	3,390,181

Annex 4. Government Fiscal Stimulus 2009 (billion IDR)

Policy Instruments	Budget
I. Tax Cut	56,300.0
a. Personal Income	31,000.0
b. Corporate Income	19,300.0
c. Value Added Tax	3,500.0
- Cooking Oil	800.0
- Biofuels	200.0
- Oil and Gas Exploration	2,500.0
d. Tariff Import	2,500.0
- Airplane	416.0
- Vehicle	795.2
- Electronic	215.4
- Shipping	151.0
- Heavy equipment	106.0
- Infusion	11.4
- Water generated power plant	14.0
- Sorbitol	0.7
- Telematics	50.0
- Methyl	0.9
- Pen	3.2
- Others	736.2
II. Government Spending	16,958.5
a. Subsidies	4,522.8
- Clean Water	15.0
- Medicines	350.0
- Diesel fuel	2,779.9
- Electricity for food industry	82.7
- Electricity for textile industry	344.5
- Electricity for wood industry	68.9
- Electricity for paper industry	578.7
- Electricity for chemical industry	303.1
b. Government Transfer to Corporate	500.0
- Jamkrindo and Askrindo	500.0
c. Infrastructure Expenditure	11,935.7
- Infrastructure for flood control in Bengawan Solo	700.0
- Rehabilitation food security network	461.0
- Distribution network and installation of drinking water	450.0
- Acceleration of multi years project	900.0
- Road, bridge and irrigation	3,423.2
- Housing	243.0
- Inspection road and irrigation	424.0
- Railway	300.0
- Airport	714.0
- Extension of airport runway	145.2
- Revitalization of railroad system	100.0

- Port	881.0
- Land Transportation	57.8
- Electricity network and electricity main station	425.0
- Energy Self Sufficiency Village	75.0
- Housing for army and policemen	400.0
- Housing for fisherman	100.0
- Specific market for medium and small enterprises	100.0
- Traditional market	215.0
- Access road on farm production	650.0
- Employment training	136.0
- Job training hall	164.0
- International standard hospital (RSCM)	150.0
- National Program on society Empowerment (PNPM)	601.5
- Revitalization and rehabilitation of primary warehouse	120.0
Total	73,258.5

Annex 5. New Estimates of Employment

Sectors	2005	2006	2007	2008
Crops	31,814,800	30,676,471	30,638,909	30,527,137
Other Agriculture	5,615,930	4,510,376	3,536,325	3,452,175
Livestock	2,447,670	2,532,195	3,303,705	3,407,475
Forestry	504,050	608,293	585,130	635,565
Fishery	1,625,280	1,577,043	1,835,992	1,775,711
Coal, Metal, Petroleum Mining	314,940	347,491	359,276	394,512
Mining and Quarry	550,730	517,510	607,137	611,464
Food, Beverages and Tobacco	2,433,250	2,665,828	2,651,551	2,673,431
Textile, Wearing apparel, Garment and Leather	2,806,210	2,713,336	2,591,724	2,636,927
Wood	2,388,440	2,140,502	2,117,101	1,987,930
Paper, Print, Transp, Metal Product, other industry	2,511,380	2,314,682	2,668,504	2,687,494
Chemical, Fertilizer, Clay and Cement	1,732,490	1,769,089	1,857,509	1,986,709
Electricity, Gas and Water	191,190	219,507	163,706	187,709
RoadLI	2,246,912	2,331,372	2,517,961	2,657,921
RoadKI	800,673	751,850	866,400	837,883
Irrigation	449,971	445,913	495,491	485,982
Construction	1,000,004	1,000,518	1,047,743	1,105,860
Trade Services	16,226,480	16,528,646	15,323,415	15,869,948
Restaurant	2,076,660	3,482,202	8,127,491	8,159,323
Hotel Affairs	190,510	211,818	222,450	237,433
Land Transportation Services	3,365,410	3,189,497	3,011,323	3,046,302
Air, Water Transportation and Communication	1,705,540	1,816,219	2,140,932	2,672,169
Storage, Other Transportation Service	540,110	664,352	971,010	978,121
Bank, Insurance, and Services	541,460	647,236	686,320	639,501
Real Estate and Business Services	904,060	1,010,097	972,040	1,128,659
Government, Defensive, Education, and	6,502,620	7,043,591	7,090,888	6,866,101
Other Individual and Household Services	3,977,090	4,258,318	4,552,102	5,801,244

Source: Author's own analysis

Annex 6. New Estimates of Productivity

Sector	2005	2006	2007	2008
Crops	7046	7531	9010	11704
Other Agriculture	16942	21738	33139	43928
Livestock	27579	27471	25167	31575
Forestry	51881	44301	55046	65578
Fishery	44325	47073	48328	64661
Coal, Metal, Petroleum Mining	1076518	1005413	1162300	1369698
Mining and Quarry	63709	69865	71179	91454
Food, Beverages and Tobacco	211436	198871	238981	306713
Textile, Wearing apparel, Garment and Leather	80346	85629	107150	136277
Wood	34888	40116	48478	66808
Paper, Print, Transp, Metal Product, other industry	274872	307320	318620	409385
Chemical, Fertilizer, Clay and Cement	355530	361635	398471	488813
Electricity, Gas and Water	503378	455437	706219	808248
RoadLI	34467	34230	37882	46439
RoadKI	221702	243295	252351	337659
Irrigation	495210	514948	553907	730786
Construction	93172	95962	109529	134284
Trade Services	30542	30897	39834	49771
Restaurant	91606	56296	28829	37160
Hotel Affairs	148558	137685	156703	189980
Land Transportation Services	47027	51143	64698	82784
Air, Water Transportation and Communication	117071	113313	114789	119055
Storage, Other Transportation Service	70229	58835	48114	61807
Bank, Insurance, and Services	320313	276133	311252	432252
Real Estate and Business Services	192184	177252	220155	245351
Government, Defensive, Education, and Social Services	46592	44327	52619	70324
Other Individual and Household Services	42027	40448	45225	45921

Source: Author's own analysis

Annex 7. Tax Cut Instrument on Fiscal Stimulus by SAM Classification (in billion IDR)

Policy	Budget	Realization	% to Budget
I. Tax Cut	56300.00	45849.40	81.44
a. Personal Income	31000.00	24707.27	79.70
b. Corporate Income	19300.00	19300.00	100.00
c. Value Added Tax	3500.00	1834.93	52.43
- Food Commodity	800.00	800.00	100.00
- Chemical Commodity	200.00	28.20	14.10
- Mining and Quarry Commodity	2500.00	1006.73	40.27
d. Import Tariff	2500.00	7.20	0.29
- Paper, Print, Transport, Metal Commodity	2423.00	7.20	0.30
- Chemical, Fertilizer, Clay, Cement Commodity	13.00	0.00	0.00
- Electricity, Gas and Water Commodity	14.00	0.00	0.00
- Air-Water Transportation and Communication Commodity	50.00	0.00	0.00
II. Government Spending	16959.30	15571.03	91.81
a. Subsidies	4522.80	4157.80	91.93
- Electricity, Gas and Water Sector	15.00	0.00	0.00
- Chemical, Fertilizer, Clay, Cement Sector	3433.04	3083.04	89.80
- Food Sector	82.67	82.67	100.00
- Wood Sector	68.90	68.90	100.00
- Weave, Textile, Garment, Leather Sector	344.48	344.48	100.00
- Paper, Print, Metal Sector	578.72	578.72	100.00
b. Government Transfer to Corporate	500.00	500.00	100.00
c. Infrastructure Expenditure	11936.50	10913.23	91.43
- Construction Commodity	9608.60	8680.14	90.34
- Electricity, Gas and Water Sector Commodity	950.00	915.13	96.33
- Land Transportation Commodity	175.40	173.19	98.74
- Trade Commodity	315.00	289.20	91.81
- Government Services Commodity	887.50	855.57	96.40
Total	73259.30	61420.43	83.84

Source: Ministry of Finance, modified

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