# How Financial Sector and Social Overhead Capital Determine GDP Growth

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#### Abstract:

The objective of this research is to analyse the relevance between the financial sector and the social overhead capital to domestic product. The research also examines if there is big influence through parsial and also through simultaneous effects from the financial sector variable to the variable of social overhead capital to gross domestic product.

The method of Analysis used is probit analysis constructively executed by program E-Views 5.

The results considered very interesting with some of the variables used to be statistically significant.

**Keywords:** institutional rigidities, marginal propensity to invest, financial sectors, probit analysis, GDP, social overhead capital.

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#### 1. Introduction

For Developing Countries, Indonesia boost economic activity by making the substitution of imports of goods intermediation to increase production for domestic consumption and export needs. Policy of import substitution is to export very well done, because it can provide economic growth and improvement of production quality. Macro sector developments that had improved and because of the government's strategy to rank, so in May 2006 has been improved again. The encouraging thing has enabled the further decline in interest rates, and stimulate the capital market so that the process of economic recovery is gaining momentum back in the year 2011. With these positive developments and attention to economic fundamentals, especially the level of macro-economic indicators are getting stronger.

Macro sector that could make a surprise in 2011 that the value of JCI peaked at 3821.99 exceeded, which is the highest in recent years. Improvement in macroeconomic indicators, may not be an exaggeration to say the cabinet economic team's greatest achievement in recent years, is the government's success in restoring macroeconomic stability throughout 2008 recent decline further, as JCI end of 2007 was 2745.83 down to 1355.410 in end of 2008. The improvement in the macro sector is however not necessarily directly followed by the improvement in the real sector, improvement of various financial indicators such as the Composite Stock price Index, the rupiah, interest rates and inflation. Lately estimated more driven by capital inflows in the short term (hot money) in a considerable scale, and want to take advantage of the momentum high interest rates in the country (Denisova *et al.*, 2017; Vovchenko *et al.*, 2017; Boldeanu and Tache, 2016; Theriou, 2015).

While the development of export figures reached a record US \$ 201,472.0 million in late 2011, unprecedented. But the export surge is more driven by improved prices in the international market coincidence, or is alleged to have occurred the practice of buying and selling export or transshipment documents, as had previously been the case in Indonesia's shrimp exports. Transshipment it means that it is not derived from the export of domestic products, but products of other countries which take an advantage Indonesian export documents, by exploiting weaknesses in the existing surveillance system in Indonesia.

The complexity of the issues that still convolute the real sector, it seems can't be expected to quickly recover from adversity. For labor-intensive sectors, heavy conditions still occur on the grounds if it will compete, this sector requires new investment climate and also fixes the bureaucracy. Therefore, from the banks have an obligation to immediately innovate by shifting the focus on working capital credit and investment credit (Miller and Choi, 2014; Polemis, 2014; Thalassinos *et al.*, 2010; 2012; Anureev, 2017).

Furthermore, the purpose of this research is to find and examine the possible reasons why the monetary sector conditions also affect the real sector (Taylor 1995). In

general, this study uses the framework of monetary transmission, through the interest rate channel, the amount of credit, asset price proxy JCI, exchange rates and inflation expectations are currently being used as the focus of attention.

The impasse in the monetary field will cause a deadlock on the real sector with an investment of slow, with no movement of the real sector unemployment will occur and increase in number. Unemployment is the main source of their poverty, for it to eliminate poverty will vanished the unemployment. Which can eliminate unemployment is necessary to create employment opportunities and create jobs is by investing.

Furthermore, the infrastructure and institutional bureaucracy is social capital. Social capital is stated with confidence, norms and networks. Research conducted by Sudarsono-Cicih Ratnasih (2007) uses the index SOC (social overhead capital) as evidence of institutional behavior. In a 2011 study by Cicih Ratnasih shows that regional SOC index has a significant influence on the decision of the Regional investment and GDP.

The analysis is based on conjektural approach that exposes the real sector variables (GDP and Investment Regional) with variable SOC. SOC index variable is introduced into a new and united with the monetary variables simultaneously which includes the interest rate channel, the exchange rate channel, asset price channel JCI proxy, proxy expectations channel M1 base money, the credit channel and Investment Regional GDP as the dependent variable. The correlation coefficient between the index and the regional SOC (GDP & Investment) can be shown in Table 1 below:

Table 1. Correlation Coefficient

GRegDP - SOverheadC Indeks	INVR - SOC Indeks				
0.29	0.12				
0.29	0.27				
0.34	0.30				
0.65	0.28				
0.68	0.30				
0.62	0.31				
0.59	0.39				
	GRegDP - SOverheadC Indeks  0.29 0.29 0.34 0.65 0.68 0.62				

Source: Regional Data.

So based on the above table can be made allegations that the SOC is a weakness of the real sector responsive to stimuli transmitted by the monetary sector. It is therefore of some of these conditions is no indication that the financial sector has stabilized should conducive to the growth of the real sector, but the real sector has not moved much, for it is necessary to find the cause. This research was carried out based on the condition of the financial sector and the added variable of social capital / social overhead capital (SOC), based on the Theory of Economic Growth Ford

Brad Delong J., (2002) that economic growth is influenced by the efficiency of labor which includes education and skill. Currently in Indonesia that the financial sector has improved, but not followed by the improvement in the real sector, meaning that the inaction of the real sector to absorb the financial sector has improved.

Process that illustrates how these policies affect a variety of economic and financial activity which in turn can achieve a variety of goals, (in Law No. 3/2004). Specifically, J.B. Taylor, (1995) says that the transmission mechanism of monetary policy is "the process through the which monetary policy decisions are transmitted into changes in real GDP and inflation". Also supported by previous studies including the theories of the causes of instability of the financial sector, such as Timothy J. Bond (1994) demonstrated empirically that the relationship between the interest rate with the rate of inflation is much stronger than the relationship between the money supply to the rate of inflation, so it is proposed that interest rate is used as the target of monetary policy.

Thus the rationale leads to the movement of interest rates and the exchange rate is an important variable in transmitting the effect of monetary policy on economic activity. Irving Fisher (1932) was the first economist to support the view that the movement of the price level is an important factor for the business cycle through its influence on the real cost of debt. According to Fisher (1932; 1933), the business sector triggered by exogenous factors that provide benefits to the business opportunities in key sectors in the economy. Credit financing from banks to increase deposits and the money supply in the economy, these factors lead to the role of government for withdrawing the funds to stimulate the real sector.

Gertler and Gilchrist (2003), argues that the aggregate price instability can interact with asymmetric information and various problems in the credit markets that could exacerbate the business cycle. Ramakrishnan and Vamsakidi (2002), examined the effect of the money supply, wages, productivity levels, the output gap, domestic interest rates, foreign inflation and the exchange rate against the determination of the rate of inflation in Indonesia by year observations from 1980 to 2000 with the approach of ECM (Error Correction models). The study results that the only variable in the money supply, exchange rate and foreign inflation is positive and significant effect on the determination of the rate of inflation in Indonesia.

In an unpublished dissertation (Nyoman Utari, 2007) provides discovery that social capital plays an important role in regional economic growth in the province of Bali. Utari introduce trust or confidence, norms and networks to represent social capital. While in this study SOC introduced with education participation index and nutritional status. As important proof of this social capital variables initially proposed by (Gary Becker, 1975; Mahbul Ul Haq, 1990; and Amartya Sen, 2000). Therefore SOC introduced and used in the framework of the theory as variable number 6.

# 2. Social Capital (Social Overhead Capital)

Gylfason (2000) stated that social capital is social and political infrastructure of a country to boost economic growth. Therefore weak social capital will be shown by the high rent seeking behavior and corruption that disrupt efficiency and hamper economic growth. While Coleman (1990) argues that social capital is an attribute of the social structure in which a person is in it. Social capital inherent in the social structure and has the characteristics of a public good, but on par with financial capital, physical capital, and human capital.

Adler and Kwon Woo (1999) have the same view by stating that social capital is a public good (public good), not owned by a particular person, but depends on all members in a network. Public good nature of the cause of each individual tends to ignore the obligation to maintain continuity and instead rely on other members to guarantee its maintenance.

World Bank (1998) which states specifically social capital as norms and social relations embedded in the social structure and enable people to coordinate activities and achieve the desired goal. In line with the World Bank definition, (Woolcock and Narayan, 2000) states that social capital is the norms and networks that would allow people to do things together. Social capital (SOC) used in this study used indicators of education index and indesks good nutrition, more details can be seen for the investment data by SOC in Indonesia in the last eleven years as follows:

Table 2. Investment and SOC Indonesia

No	Year	Year Investment (billion)	S.O.C (index)
1	1995	112386,4	36,99
2	1996	128698,6	37,58
3	1997	139725,5	38,96
4	1998	90070,8	38,55
5	1999	272070,2	40,87
6	2000	93360,2	40,37
7	2001	97057,7	40,66
8	2002	307513,1	41,26
9	2003	309431	41,78
10	2004	354865,7	42,64
11	2005	393177,8	43,18
12	2006	404606,6	43.72
13	2007	447200,2	43,88
14	2008	493822,3	43,47
15	2009	510100.2	42,96
16	2010	145340,5	43,63
17	2011	162081,2	44,82

**Source:** BPS Data processed

Today many in Indonesia and other developing countries faced with the challenges and problems of population movement from rural to urban areas in large numbers, stagnant agricultural productivity, and rising unemployment in urban and rural areas.

## 3. Gross Domestic Product

Economic growth or GDP is the total output growth of all sectors of the economy, high economic growth and sustainable is the main condition or a necessity for the survival of economic development and increased prosperity. Apart from the demand (consumption), from the supply side, population growth also requires a growth in employment (source of income). Meeting the needs of consumption and employment itself can only be achieved by an increase in aggregate output (goods and services) or continuous GDP. Below is the structure of the distribution of the components of GDP in Table 3:

**Table 3.** Distribution Component Usage GDP 2008 - 2010 (percent)

Type of use	2008	2009	2010
1. Household consumption	66.5	68.0	65.2
2. Government consumption	7.0	7.8	7.6
3. Gross fixed capital formation	18.2	17.8	18.4
4. Exports of goods and services	31.4	29.2	32.4
5. Imports of goods and services	25.3	22.5	27.7
GDP	100.0	100.0	100.0

Source: BPS

In the understanding of the macro economy, economic growth is the addition of the GDP, which means an increase in PN (income countries). That is narrowly PN is PN, whereas in the broad sense PN can refer to GDP, or refer to the GNP, or to PNN. Appropriate standard method, PN calculation begins with the calculation of GDP. In this approach, the calculation of GDP also includes depreciation and indirect taxes net. Therefore, the income approach, GDP is the sum of gross value added (NTB) of the nine sectors:

$$GDP = NTB1 + NTB2 + \dots NTB9$$

As according to the expenditure approach, GDP is the sum of all the components of final demand, ie consumption expenditure of households and non-profit-oriented private institutions (C), gross domestic fixed capital formation, including changes in stock (I), government consumption expenditure (G), exports (X), and imports (M) as follows:

$$GDP = C + I + G + X - M$$

#### 3.1 Previous research

The same model has been used in several cases as written below:

1. Calvo, Leiderman, and Reinhart (1993) Sample: 10 Latin American countries: Argentina, Bolivia, Brazil, Chilie, Columbia, Ecuador, Mexico, Peru, Uruguay and Venezuela.

Period: 1988.01-1991.12 (monthly data) of each State.

Model: PC series, VAR, variance decomposition, Impulse response function. Dependent variable total deficit of gold reserves and the exchange rate (Simultaneously with logs) IFS.

US independent variable interest rates, the return of capital markets and real estate. External factors explained 30% -60% of the inflows of Latin American countries.

2. Schandler et al (1993) Samples: Chile, Mexico, Spain, Thailand Period: 1980-1991 or 1976-1991 (quarterly) for each State.

Model: Co-integration, Error correction mechanism (ECM) Dependent Variable: local interest rates (per state).

Independent variables:

Foreign rate, rate, domestic currency deprecition. Foreign long-term rates tend to be significantly towards these countries, but the short term a significant effect only in the State of Mexico and Thailand.

3. Dooley, Fernandez-Arias, and Kletzer (1994) Sample: 20 countries: Argentina, Bolivia, Cote d'Ivoire, Columbia, Costa Rica, Guatemala, Jamaica, Mexico, Marocco, Nigeria, Panama, Peru, Senegal, Brazil, Uruguay, Venezuela, Chilie, Ecuador, Philippines, and Nicaragua.

Period: 1986 - 1992 (year of data) the data panel.

Model: GLS Dependent variable: Price of secondary debt (Salomon Brothers) in the log.

Independent variables: log US 10ys I rates (IFS), log LT debt / exports, log LT debt / GNP, log commercial debt / total debt LT, WB's world debt tables. The secondary market price is very strong effect on inflows. (Source: Library BI 2010).

# 3.2 Methodology

The model developed in this study is derived from the theories, concepts and empirical research that has been stated above. To get an overview, it can be seen in the form of explicit models below:

Y1 = 
$$f(\beta_1X_1, \beta_2X_2, \beta_3X_3, \beta_4X_4, \beta_5X_5, \beta_6X_6, \epsilon)$$
  
Y2 =  $f(\beta_1X_1, \beta_2X_2, \beta_3X_3, \beta_4X_4, \beta_5X_5, \beta_6X_6, \epsilon)$ 

#### where:

Y1 = Gross Domestic Product (GDP)

Y2 = Gross Regional Domestic Product (GDP)

X1 = interest rate (INT)

X2 = exchange rate (SPT)

X3 = (E = dp / dt) proxy M1 (BMO)

X4 = JCI (HIS) X5 = Credit (KDT) X6 = Social Capital / Social Overhead Capital (SOC) β1 s / d β6 = coefficient of regression

Once transformed it into:

$$Y = \alpha + \beta 1X1 + \beta 2X2, + \beta 3X3, X4 + \beta 4, \beta 5 + X5, X6\beta 6 +, + \epsilon$$

or

GDP = 
$$\alpha + \beta 1$$
INT +  $\beta 2 + \beta 3$  HIS SPT +  $\beta 4 + \beta 5$  BMO KDT +  $\beta 6$  SOC, +  $\epsilon$  GDP =  $\alpha + \beta 1$ INT +  $\beta 2 + \beta 3$  HIS SPT +  $\beta 4 + \beta 5$  BMO KDT +  $\beta 6$  SOC, +  $\epsilon$ 

Based on the relationship variables that have been formulated in the hypothesis, then be analyzed the influence and the relationship between some of these variables based on empirical data. An overview of the phenomenon of the research problems indicated from macroeconomic data collected from secondary data sources. Object of this study is the Indonesian economy at the macro level in the period between 1980 to 2011, and served as a national and regional data for comparison.

The analysis performed with the model prediction, simple and multiple regression analysis (OLSE), while the second uses Probit methodology, (Robert S. Pindyck and Daniel I. Rubinfeld 1998) with software E-views 5. The two models are:

#### 1. Model OLSE:

Using a simple regression (single equation) as follows:

$$Y = \alpha + \beta 1 X 1 + \epsilon$$

Using multiple regression (multiple equation) as follows:

$$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \epsilon$$

## 2. Probit Model:

Ln e = 
$$\alpha + \beta 1X1 + \varepsilon$$
 and 1-e

Using multiple regression Probit as follows:

Ln e = 
$$\alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \epsilon$$
  
1-e

Probability Probit models consist of two, with a normal probability models and logistic model. The normal probability model as follows:

$$Zi = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \epsilon$$

As for the Probit models (Probit / Normit probability models) are as follows (Damodar Gujarati, 2003).

$$\epsilon = yi - \hat{Y}$$

$$\log ---- = Dependent \ variable \\ (1 - \epsilon)$$

## 4. Results and Discussion

## 4.1 Test Data and Model Research

This chapter will discuss the results of research on the relationship of the financial sector to the real sector, institutional rigidity and its implications on economic growth in Indonesia. This study will analyze the use of non-linear equations approach Probit models and multiple regression to determine the effect of monetary transmission through the interest rate channel, the exchange rate channel, the channel M1 expectations proxy, proxy asset price channel JCI, lines of credit, and SOC (social capital ) to invest in Indonesia. In addition, this study also discussed and analyzed by using the approach of the first equation with non-linear Probit models to determine how much the marginal propensity to Invests.

In this study used multiple regression models and regression Probit method, in order to get and find answers from alleged and intended purpose. Multiple regression model will provide information about the independent variables are significant and accompanied by information on the results of the investment in Indonesia. Furthermore used multiple regression probit model is used to provide results and understanding of the influence of the independent variables on the probability ratio rises and whether or not the value of the investment (the marginal propensity to invest).

In analyzing the dependent variable probit model used is the investment by using two categorical that is 0 if the percentage decline in investment growth, and 1 if the percentage of an increase in investment growth. To determine whether the equations are expressed in a system of equations can be estimated probit model analysis or not, then tested the model fit (goodness of fit), partial significance test parameters (partial test or t-test). The use of probit models was conducted to determine what are the factors that have the greatest likelihood and the smallest of the overall equation, using the probit model it is no longer required tests such as the classical assumption of normality test of heteroscedasticity, multicollinearity test and test otokolerasi. As for the linear equations used classic tests.

# a. Data Analysis Indonesia nationally

Research conducted by the Indonesian national data time series version. There is a model equation for the national data, the first equation is GDP as the dependent variable. Furthermore, the independent variables are the same. The first equation consists of two models are as follows:

First equation is:

$$GDP = \alpha + \beta 1INT + \beta 2SPT + \beta 3BMO + \beta 4HIS + \beta 5KDT + \beta 6SOC + \beta 7INVt-1 + \epsilon$$

From the analysis of regression equation as follows:

```
GDP = -1093.401 - 1093.401INT - 24.91626 SPT + 0.007197BMO

(-2.700463) (-0.396661) (-1.891246) (11.69545) -180.2915HIS +

0.111460KDT + 23056.82SOC - 0.568671KDTt-1

(-3.171340) (0.632131) (3.273469) (-3.967097)

R¬2 = 0.997527

F = 1094.857

N = 27
```

From the above variables appear to variable interest rate channel, the credit channel variable is not significant, because the value of the t-sig is close to 1. whereas equation KDTt variable phase II-1 were not included into the model to see which variables are not significant strength partially tested. Stage II the following equation:

```
GDP = \alpha + \beta1INT + \beta2SPT + \beta3BMO + \beta4HIS + \beta5KDT + \beta6SOC + \epsilon
GDP = -363136.2 - 2534.619INT - 28.76144 SPT + 0.0077219BMO (-2.700463) (-0.396661) (-1.891246) (11.69545) -285.1932HIS - 0.010103KDT + 15283.57SOC (-3.171340) (0.632131) (3.273469) R=2 = 0.995479 F = 733.9028 N = 27
```

From the above model is not significant the channel variable interest rate and credit channels variable, meaning that the equation of Phase I and Phase II results are the same equation for each value of t-sig close to 1.

Analysis using multiple probit regression model performed on the dependent variable GDP produces the following equation:

```
Ln e = \alpha + \beta1INT + \beta2SPT + \beta3BMO + \beta4HIS + \beta5KDT + \beta6SOC 1-e 
 + B5KDTt-1 + \epsilon
Ln e = -18.84463 + 0.174565INT - 0.000656SPT + 2.41E-08BMO 1-e 
 (-1.205527) (1.276053) (-1.166715) (1.044219) 
 + 0.000571HIS - 945E-06KDT + 0.649919SOC - 474E-06KDTt-1 
 (0.592722) (-1.411218) (1.478829) (-1.250534) 
R2 = 0.522175 
F = 2.056597 
N = 27
```

With the credit channel variables included t-1 (KDTt-1) in equation probit regression model of multiple Phase I is visible asset price variable proxy JCI (HIS) is not significant because the value of the t-sig close to 1. As for the GDP equation probit regression models multiple stages II are as follows:

```
Ln e = \alpha + \beta1INT + \beta2SPT + \beta3BMO + \beta4HIS + \beta5KDT + \beta6SOC + \epsilon1-e

Ln e = -16.51529 + 0.158744INT - 0.000686SPT + 2.38E-08BMO 1-e

(-1.135584) (1.234763) (-1.134924) (1.009459) - 0.000338HIS - 1.03E-05KDT + 0.587470SOC (-0.407043) (-1.355729) (1.426962)

R2 = 0.522175

F = 2.056597

N = 27
```

## b. Data analysis Indonesia regionally

The study was conducted with regional data Indonesia versions cross section and time series.

```
The equation is:

GDP = f(\alpha + \beta 1INT + \beta 2SPT + \beta 3BMO + \beta 4KDT + \beta 5SOCR + \epsilon)
```

It appears from the results of the data (results printout attached) which uses multiple regression equation estimation method possible with the help of E views OLSE 5.0 as follows:

```
GDP = \alpha + \beta 1INT + \beta 2SPT + \beta 3BMO + \beta 4KDT + \beta 5SOCR + \epsilon

263.0458 - 7.685632INT + 0.022086SPT - 5.68E08BMO

(8.429745) (-7.387842) (5.072652) (-0.223107)

9.13E-05KDT + 4.842493SOCR

(1.551677) (5.519627)

R2 = 0.784445

F = 298.4126

N = 416
```

# 5. Conclusion

## 1) Indonesian National Economy

Observation of the results of the analysis to the state infrensial Indonesia nationally, in effect together of independent variables on the dependent variable showed findings that together all variables in the model best observed a significant effect on the interest in investing in Indonesia. The independent variable is the interest rate channel, the channel rate, inflation expectations channel M1 proxy, proxy JCI ase

price channel, the credit channel and SOC. The dependent variable is the investment interest.

Further on partial observations show that not all independent variables included in the model have a significant effect on investment. From the observation of the best models that monetary transmission channel jointly affect investment in diverse, and SOC variables affect the rise and fall of the value of investment in Indonesia. This means that the existence of institutional inaction SOC is influenced by social capital.

# 2) Indonesian Regional Economy

Observation of the Indonesian state regional shows, the results of the analysis infrensial jointly influence of independent variables on the dependent variable that appears findings together all variables in the model best observed a significant effect on the value of investments in areas of Indonesia. The independent variable is the interest rate channel, the exchange rate channel, the channel M1 proxy for inflation expectations, the credit channel and Statistics Online Computational Resource. The dependent variable is the investment interest. Further on partial observations show that not all independent variables included in the model have a significant effect on investment. From the observation of the best models that monetary transmission channel jointly affect investments in these areas are diverse, and Statistics Online Computational Resource variables affect the rise and fall of the value of investment in areas of Indonesia. This means that the existence of institutional inaction Statistics Online Computational Resource influenced by social capital.

With the discovery of the causes of institutional inaction is the variable of social overhead capital (SOC), it is recommended to the government that the indicators of education and public health needs serious attention, so that Indonesia won the trust of the world that the investment climate in Indonesia is very supportive. To obtain the necessary investment climate that supports bureaucrats clever, intelligent, careful and fast in serving investors. It can be interpreted that as a public servant who invests, it must be shown that quality services characterized by speed and accuracy in the delivery of services, responsiveness to the needs of investors with the education and skills thus absolutely necessary. In connection with the necessary health bureaucrats prime, so the guarantee of service expected by investors, then that is indeed social capital.

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