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Impact of Financial Inclusion and Social Inclusion on Economic Growth in North Sumatera Province: A Panel Data Approach

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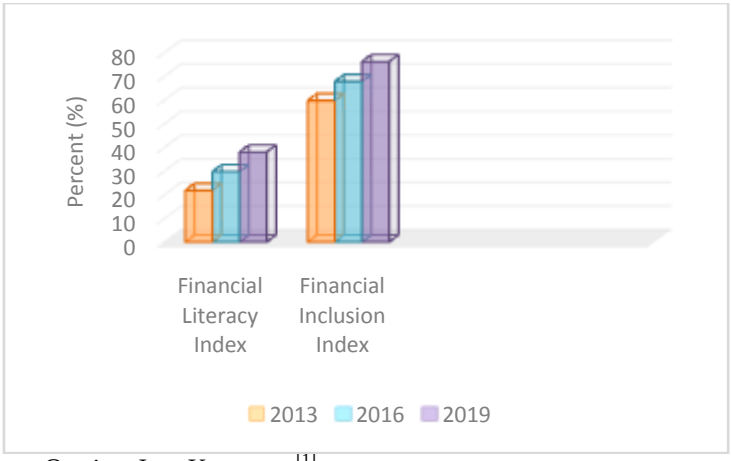
ABSTRACT: The government has introduced the inclusion of financial policy since 2012. However, the application of the inclusion financial policy that has been running for more or less five years still requires a solution to the problems faced in the field. This solution is not only an obligation for the government but also for all parties, especially researchers. This study aims to determine the impact of financial inclusion and social inclusion financial effects on economic growth in 33 districts/cities in North Sumatera Province. The independent variables examined in terms of financial inclusion are the amount of community savings, while in terms of social inclusion, that is the number of poor people and the level of education, and the dependent variable is the Gross Regional Domestic Product (GDRP) during the period 2011-2018. The type of analysis used in the study is by using panel data analysis, which is the combined data from time series and cross-sections. The results showed that financial inclusion in terms of the amount of public savings turned out to play a crucial role in improving the economy. Social inclusion in terms of education also played a critical role in improving the economy in 33 districts/cities in North Sumatera Province.

KEYWORDS: *Financial Inclusion, Social Inclusion, GDRP, North Sumatera Province*

I. INTRODUCTION

In increasing financial inclusion in Indonesia, OJK complies with the National Inclusive Finance Strategy (SNKI) was composed of six pillars, namely: Financial Education, Public Financial Facilities, Mapping Financial Information, Supporting Policies/Regulations, Intermediation and Distribution Channels, and Consumer Protection. SNKI was formulated with the aim of poverty alleviation for the realization of community welfare.



Source: Otoritas Jasa Keuangan[1]

Fig 1. Financial Literacy Index and Financial Inclusion Index in Indonesia

Figure 1 above shows that Indonesia's financial literacy index continues to increase. In 2013 amounted to 21.8%, an increase of 7.9% to 29.7% in 2016. Then it doubled again by 8.38% to 38.08% in 2019. Although Indonesia's financial literacy index has increased, financial literacy is still needed. Indonesia's financial inclusion index has also increased. In 2013 it was 59.7%. Then in 2016, it increased by 8.1% to 67.8% and expanded again in 2019 by 8.39% to 76.19%.

The National Financial Inclusive Strategy (SNKI) continues to be promoted in all provinces in Indonesia, including one in North Sumatera Province. From the results of a 2016 national financial literacy and inclusion survey conducted by the Financial Services Authority, it shows that the financial literacy index of North Sumatera Province is 32.36 percent, which means that only a small number of people have knowledge and beliefs about financial service institutions and financial service products. While the financial inclusion index of North Sumatera province was 75.27 percent, which means that quite a lot of people had become customers or users of financial services. The low level of financial literacy illustrates that financial literacy is still a problem that requires solutions and involvement of all parties. With the high level of financial literacy and financial inclusion, it is expected to be able to support financial stability, which is the foundation for a substantial and sustainable economic development and can benefit the welfare of the people, especially in North Sumatera Province.

This study aims to determine the effect of financial inclusion as measured by the amount of community savings and the impact of social inclusion as measured by the number of poor people and the level of education on economic growth in 33 districts/cities in North Sumatera Province.

II. LITERATURE REVIEW

1. Financial Inclusion

According to the OJK, financial inclusion is all efforts aimed at removing all forms of price and non-price barriers to public access in utilizing financial services so that they can provide significant benefits to improving people's lives, especially for regions with regions and conditions geographic areas that are difficult to reach or border areas[2].

The Financial Action Task Force (FATF) defines "financial inclusion involves providing access to an adequate range of safe, convenient and affordable financial services to disadvantaged and other vulnerable groups, including low income, rural and undocumented persons, who have been underserved or excluded from the formal financial sector."

The Reserve Bank of India (RBI) defines financial inclusion as "the process of ensuring access to appropriate financial products and services needed by all sections of society in general and vulnerable groups such as weaker sections and low income groups in particular, at an affordable cost in a fair and transparent manner by regulated, mainstream institutional players"[3].

1.1. Indicators of Financial Inclusion

To find out the extent to which the development of financial inclusion activities requires a performance measure. From several references, indicators that can use as a measure for a country in developing financial inclusion are:

a) Availability/access
   Measuring the ability to use formal financial services in terms of real affordability and price.
b) Use
   Measure the ability to use actual financial products and services (including regularity, frequency, and duration of use).
c) Quality
   Measuring whether the attributes of financial products and services meet customer needs.
d) Welfare
   Measuring the impact of financial services on the level of life of service users.

2. Social Inclusion

Social inclusion is an effort to place the dignity and independence of individuals as the primary capital to achieve ideal quality of life[4]. Through social inclusion, the Program Peduli encourages all elements of society to receive equal treatment and get the same opportunities as citizens, regardless of any difference.

Social inclusion guarantees the opportunity for every individual to participate in the economic system, society, and country. It can enjoy the benefits of providing goods and services produced by mainstream society. By paying attention to the social inclusion of the community through social funding assistance such as Bantuan Langsung Tunai (BLT), Bantuan Operasional Sekolah (BOS), Jamkesmas, and others are expected to improve community welfare, and financial inclusion is also getting better.

III. METHOD

The approach in this study uses a quantitative approach relating to the independent variable data on the amount of community savings (X1), the number of poor people (X2), an education level (X3), and the dependent variable (Y), namely the Gross Domestic Regional Product (GDRP). This research was conducted in 33 districts/cities in North Sumatera Province. When the study began in 2011 - 2018 (8 years). To see the

magnitude of the effect of the amount of community savings, the number of poor people, and the level of education of the 33 districts/cities in North Sumatera Province during the period 2011 - 2018, the analysis used was the Panel Data Regression analysis.

The panel data regression analysis equation model is:

$$Y_{it} = \alpha + \beta X_{1it} + \beta X_{2\,it} + \beta X_{3\,it} + \varepsilon_{it} \quad (1)$$

Where:

i	=	Regency / City (1,2, ..., 33)
t	=	Year (2011,2002, ..., 2018)
Y	=	Gross DomesticRegional Product
α	=	Constant
β	=	Regression Coefficient
X_I	=	Number of Community Savings
X_2	=	Number of Poor Population
X_3	=	Education Level
ε	=	Error term

1. Selecting Panel Data Estimation Model

To estimate the model parameters with panel data regression, there are three techniques offered[5], namely:

1. Common Effect (CEM) Model
2. Fixed Effect (FEM) Model
3. Random Effect Model (REM)

2. Model Conformity Test

To test the suitability or goodness of the three methods in the estimation technique with the panel data model, the Lagrange Multiplier Test, Chow Test, and Hausman Test are used[6].

1. Lagrange Multiplier Test

Lagrange Multiplier (LM) is a test to find out whether the Random Effect model or the Common Effect (OLS) model is the most appropriate to use. Breusch Pagan developed the Random Effect significance test. The Pagan Breusch method for the Random Effect significance test is based on the residual value of the OLS method. The LM statistical values are calculated based on the following formula[7]:

$$LM = nT\ 2(T-1\ [\ \sum = 1\ ni\ [\sum = 1\ Tteit\ ]\ \sum = 1\ ni\ \sum = 1\ Tteit\ 2-1]^{\,2} \quad (2)$$

Where :

n	=	Number of individuals
T	=	Number of periods
e	=	Residual Common Effect (OLS) method

The hypothesis used is:

H0	:	Common Effect Model
H1	:	Random Effect Model

The LM test is not used if the Chow test and Hausman test show the most appropriate model is the Fixed Effect Model. The LM test is used when the Chow test shows the model used is the Common Effect Model, while the Hausman test shows the most appropriate model is the Random Effect Model. Then the LM test is needed as the final stage to determine the most appropriate Common Effect of Random Effect model[7].

2. Test Chow

Chow Test is to determine which test between the two methods, namely the common effect model and the fixed effect model, which should be used in panel data modeling. The hypothesis in this chow test is as follows[6]:

H0	:	Common Effect Model
H1	:	Fixed Effect Model

The basis for rejecting the null hypothesis (Ho) is to use F-statistics, like the following formula[6]:

$$CHOW = (ESS1 - ESS2)/(N - 1\ (ESS2)/(NT - N - K) \quad (3)$$

Where :
ESS1 : Residual Sum Square results from the estimation of the fixed-effect model
ESS2 : Sum Square residuals estimated by the pooled last square model
N : Number of Cross-Section Data
T : Amount of Time Series Data
K : Number of Explanatory Variables

Chow statistics follow the distribution of F-statistics in degrees of freedom (N-1, NT-N-K). If the statistical chow (Fstatistik) > F table, then H1 is accepted, then the chosen effect model is fixed, and vice versa[6].

3. Hausman Test

Hausman Test is to determine which test between the two random effects model and the fixed effects model should be performed in panel data modeling. The hypothesis in the Hausman test is as follows[6]:
H0 : Random Effect Model
H1 : Fixed Effect Model

With the following formula:

$$m = (\beta - b)(M0 - M1) - 1(\beta - b) \sim X2\ (K) \quad (4)$$

Where β is a vector for fixed effect variable statistics, b is a statistical vector for random effect variables, M0 is the covariance matrix for the alleged fixed-effect model, and M1 is the covariance matrix for the so-called random effect model.

IV. RESULTS AND DISCUSSION

1. Common Effect Model (CEM)

Common effect model is the most basic estimation model or method in panel data regression, which still uses the principle of ordinary least square or least squares. Therefore, this method is also called the Pooled Least Square (PLS). In this common effect, the model does not pay attention to the dimensions of time and even individual sizes or cross-section, so it can be assumed that the behavior of individuals does not differ in different periods.

The results of the common effect model are as follows:

Table 1. Common Effect Model (CEM) Results

Variable	Coefficient	Prob.	
C	-2582713	0.0096	R-squared: 0.802509
SAVINGS	0.681113	0.0000	F-statistic: 352.1710
POOR_POPULATION	1389846	0.6845	Prob(F-statistic): 0.0000
EDUCATION	599.1650	0.0000	

Source:

From Table 1 above, partially shows that the savings variable has a positive and significant effect on the North Sumatera GDRP, as well as the education variable has a positive and significant impact on the North Sumatera GDRP. While the poor population affects the GDRP positively and insignificantly. Simultaneously, the three independent variables affect North Sumatera's GDRP seen from the F-statistical probability value of $0.0000 < \alpha = 0.05$.

The coefficient of determination (R2) of 0.802509 means that the saving, poor population, and education variables can explain the North Sumatera GDRP of 80.25% while other variables outside the model explain the remaining 19.75%.

2. Fixed Effect Model (FEM)

The Fixed effect model is different from the common effect, but still uses the principle of ordinary least square. Assumptions from making models that produce a constant intercept for each cross-section and time are considered less realistic, so we need a model that can better capture the difference.

Fixed effects assume that differences between individuals (cross-sections) can be accommodated from disagreements in their intercepts. To estimate the Fixed Effects Model with different intercepts between

individuals, a dummy variable technique is used. This estimation model is often referred to as the Least Squares Dummy Variable technique or abbreviated as LSDV.

The results of the fixed effect model are as follows:

Table 2. *Fixed Effect Model* (FEM) Results

Variable	Coefficient	Prob.	
C	-32744733	0.0000	R-squared: 0.934571
SAVINGS	2.706755	0.0000	F-statistic: 93.04873
POOR_POPULATION	3.331816	0.9793	Prob(F-statistic): 0.0000
EDUCATION	2039.353	0.0000	

Source:

From Table 2 above, partially shows that the saving variable has a positive and significant effect on GDRP of North Sumatera, as well as the education variable has a positive and significant impact on GDRP in North Sumatera. While the poor population affects the GDRP positively and insignificantly. Simultaneously, the three independent variables affect North Sumatera's GDRP seen from the F-statistical probability value of $0.0000 < \alpha = 0.05$.

The coefficient of determination (R2) of 0.934571 means that the variable of savings, poor population, and education can explain the North Sumatera GDRP of 93.45% while other variables outside the model explain the remaining 6.55%.

3. Chow Test

Chow test is a testing technique to determine the model, whether the common effect model or fixed effect model is the most appropriate to be used in estimating panel data.

The Chow test results are as follows:

Table 3. Chow Test

Effect Test	Statistic	Prob
Cross-section F	14.381229	0.0000
Cross-section Chi-square	291.649488	0.0000

Source:

From Table 3 above, shows the Chi-square cross-section probability value of $0.0000 < \alpha = 0.05$, then H0 is rejected, H1 is accepted. It means that the fixed effect model is more suitable when compared to the common effect model. Because the fixed effect model is suitable, then it will be compared with the random effect model.

4. Random Effect Model (REM)

This random effect model is useful for overcoming fixed effect problems, which often indicate the uncertainty of the model used by using residual variables. In the random effect model, residuals may be interconnected between time and between individuals or cross-sections. Therefore, this model assumes that there are intercept differences for each individual, and that intercept is a random variable. So in the random effect model, there are two residual components. The first is overall residuals, where the residuals are a combination of cross-section and time series. Whereas the second residual is an individual residual, which is a random character of the i and unit observation and remains at all times.

The results of the random effect model are as follows:

Table 4. *Random Effect Model* (REM) Results

Variable	Coefficient	Prob.	
C	-13392.29	0.9917	R-squared: 0.626956
SAVINGS	0.929939	0.0000	F-statistic: 145.6561
POOR_POPULATION	-222.7553	0.0000	Prob(F-statistic): 0.0000
EDUCATION	984.7941	0.0000	

Source:

From Table 4 above, partially shows that the saving variable has a positive and significant effect on North Sumatera's GDRP, the poor's variable has a negative and significant impact on North Sumatera's GDRP, and the education variable has a positive and significant effect on North Sumatera's GDRP. Simultaneously, the three independent variables affect North Sumatera's GDRP seen from the F-statistical probability value of $0.0000 < \alpha = 0.05$.

The coefficient of determination (R2) of 0.626956 means that the variable of savings, poor population, and education can explain the North Sumatera GDRP of 62.69% while other variables outside the model explain the remaining 37.31%.

5. Hausman Test

Hausman test is a statistical test to choose whether the Fixed Effect or Random Effect model is the most appropriate. The Hasman test results are as follows:

Table 5. Hausman Test

Test Summary	Chi-Sq Statistic	Prob
Cross-section random	249.169720	0.0000

Source:

Table 5 above shows the random cross-section probability value of 0,000 <α = 0.05, then Ho is rejected H1 is accepted. Thus the decision-making model used is the fixed effect (FEM) model.

6. Hypothesis testing

6.1. Partial Test (t-test)

The t-statistic Test is used to measure how far the influence of each independent variable is in explaining the dependent variable. The following is a t-statistic test the effect of savings, the number of poor people, and education on economic growth in 33 districts/cities of North Sumatera Province.

Table 6. t-Statistic Test

Independent Variable	t-Statistic	Prob.
SAVINGS	6.294	0.0000
POOR_POPULATION	0.026	0.9793
EDUCATION	10.606	0.0000

Source:

Based on Table 6, it is known t statistic variable savings of 6.294 and probability 0.0000 < α = 0.05, thus decision making is a significant effect on savings. For the t statistic variable, the number of poor people is known to be 0.026 and the probability of 0.9793 > α = 0.05. Thus decision making is the number of poor people having no significant effect. For t statistics, educational variables of 10.606 and probability 0.0000 < α = 0.05, therefore decision making is that education is having a substantial impact on economic growth in 33 districts/cities of North Sumatera Province.

6.2. Simultaneous Test (F Test)

The F test is used to see whether all the independent variables in the model have a joint influence on the dependent variable. The following is a statistical test table F the effect of savings, the number of poor people, and education on economic growth in 33 districts/cities of North Sumatera Province.

Table 7. F-Statistic Test

F-Statistic	Prob(F-Statistic)
93.04873	0.0000

Source:

Based on Table 7, the F statistical test value is 93.04873, and the probability is 0.0000 < α = 0.05. Thus, together with the variables of savings, the number of poor people and education has a significant effect on economic growth in 33 districts/Cities of North Sumatera Province.

6.3. Determination Coefficient Test (R2)

The coefficient of determination (R2) test is used to measure how much the model's ability to explain variations in the dependent variable. The range of R2 is zero to 1, the more R2 approaches the value of 1, the higher the independent variables provide all the information needed to predict variations in the dependent variable. From the test results using the Fixed Effect Model, the effect of savings, the number of poor people, and education on economic growth in 33 districts/cities in North Sumatera obtained R2 of 0.934571. It means

that the independent variables in the model can explain the economic growth of 93.45%, while other variables outside the model explain the remaining 6.55%.

7. Panel Data Analysis Model

Based on the analysis with panel data using fixed effects can be presented as follows:

$$GDRP = -32744732.5354 + 2.70675474631*SAVINGS_{it} + 3.3318157803*POOR\_POPULATION_{it} + 2039.35311915*EDUCATION_{it} + e_{it} \quad (5)$$

Based on the model above, the savings variable, the number of poor people, and education have a positive influence on economic growth in 33 districts/cities of North Sumatera Province with the most significant value, namely the education variable of 2039,353. So the dominance of the most significant influence is the education variable.

V. CONCLUSION

Based on the results and discussion above, it can be concluded that financial inclusion measured through the amount of community savings has a positive and significant effect of 2.7067 on economic growth in 33 districts/cities of North Sumatera Province. Following the framework of the Harrod-Domar model, in a closed economy (without foreign sector) in full employment, and without capital mobility, saving becomes very important for economic growth. In other words, if the saving rate is high, then the economy will have massive capital stock and a high level of output, and vice versa. Financial inclusion in terms of the amount of community savings turns out to play a vital role in improving the economy in 33 districts/cities of North Sumatera Province.

Social inclusion, as measured by the number of poor people and education level, also has a positive effect on economic growth in 33 districts/cities of North Sumatera Province. However, the number of poor people has a significant positive impact, in contrast to the level of education that has a positive and significant effect. It means that social inclusion in terms of education turns out to play a crucial role in improving the economy in 33 districts/cities of North Sumatera Province.

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