

## Conference Paper

# Effect of Deepening Financial Sector on Income Gap in Six Asia Countries 2012-2016

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### Abstract

The financial sector has an important role in increasing a country's economic growth, but the income gap is one of the main problems in economic growth in various countries. The financial sector has a strong influence on economic development, poverty alleviation and economic stability. This study aims to determine the effect of financial sector deepening on income inequality by using panel data from six countries, namely Malaysia, Indonesia, Philippines, Singapore, China and Korea which are divided into two groups, namely lower middle income countries, namely Indonesia and the Philippines and upper middle / high income, namely Malaysia, Singapore, China and Korea in 2012-2016. By using the Panel Least Squares analysis technique, this study found results that were upper middle / high income; bank assets, money supply, stock traded have a positive effect; lending to the private sector; domestic money bank assets, private sector debt securities and stock market capitalization have a negative effect. Whereas in lower middle income countries; bank assets, money supply, stock market capitalization have a negative effect; stock traded has a positive effect; however, lending to the private sector, domestic money bank assets, government debt and private sector debt does not affect the income gap.

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**Keywords:** Financial Deepening, Income Gap, Asia

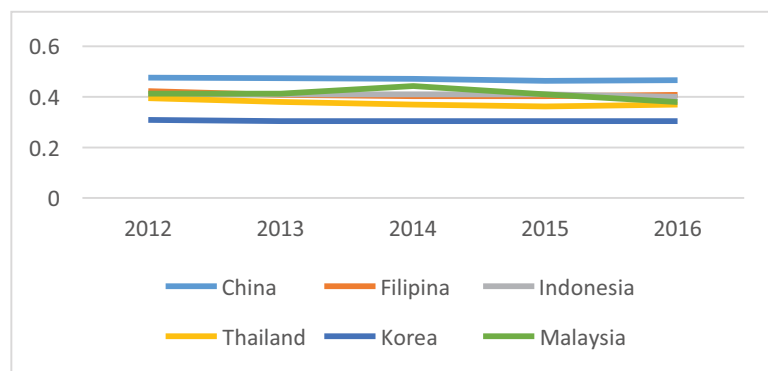
## 1. Introduction

The income gap is one of the main problems in economic development in various countries, which can be seen through the Gini coefficient. Some countries assume that rapid economic growth can have a positive impact on the income gap. However, the income gap will emerge in the early stages of growth due to high economic growth. In Figure 1 there are a gap in income from

2012-2016 in six Asia countries (China, Philippines, Indonesia, Thailand, Korea, and Malaysia), from the six countries, the highest income gap in China and the lowest income gap in Korea.

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The economic development of a country cannot be separated from the role of financial sector. Financial development can increase the resilience of the country and encourage economic growth. Financial development is defined as a combination of financial depth, access, efficiency, and stability (Sahay et al., 2015). Fry (1995) in Ruslan (2011) discusses the development of the financial sector, where at the stage of development a country is faced with financial deepening and shallow finance. The financial sector plays an important role in increasing a country's economic growth. The condition of a good financial sector will encourage economic activity, which in turn will increase economic growth. Conversely, if the financial sector is not well developed, it can hamper the economy and liquidity in achieving high economic growth (Brandl, 2002: 4). Furthermore, the distribution of income becomes uneven causing the income gap to increase. Therefore, deepening the financial sector can affect the income gap. This can be reflected through an increase in the size of the financial sector but not accompanied by equitable distribution of financial products.



**Figure 1:** Income Gap in Six Asia Countries (China, Philippines, Indonesia, Thailand, Korea, and Malaysia) 2012-2016 (Source: World Bank).

## 2. Research Gap and Research Questions

The financial sector has an important role in economic development. This is reflected in the development of the financial sector itself. The financial sector is believed to be able to increase the resilience of a country and encourage economic growth if it is able to develop well. The development of the financial sector includes four characteristics, namely depth, access, stability, and efficiency. Basically, the presence of the financial sector makes it easy for the public to carry out daily transactions in the household, business and government sectors. As one of the characteristics of the financial sector development, the low depth of the financial sector led to low financial development. This is caused by four interrelated characteristics of the financial system. So, if the

financial development in a country is low it will cause economic instability and income gap. This then raises several questions, namely;

1. Does the financial deepening sector affect the income gap?

Based on the background and formulation of the problem described, this study aims to find the influence of the financial sector on income inequality in six Asia countries and know what financial sector is able to reduce the income gap.

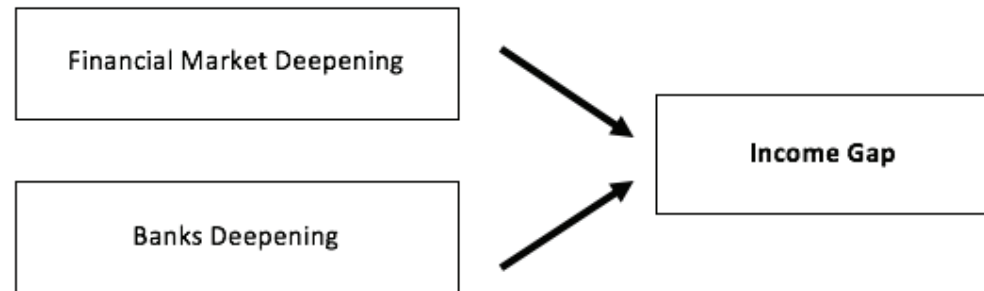
### 3. Conceptual Framework

The financial sector consists of the banking sector and financial markets. In the financial sector, there are four combinations of financial development characteristics, namely stability, efficient, inclusive, and deep (Cihak et al., 2012 and Sahay et al., 2015). In this study, the focus of the characteristics of the financial sector is the deepening of the financial sector. Deepening is one of characteristics of the financial sector that proves by value and size itself, the higher value and size of the Financial sector whether from financial market nor banks. Deepening of the financial sector is one of the characteristics of the financial sector that is seen from its size (Cihak et al., 2012). The size of the financial sector is seen from how much value and the distribution of funds channeled by the financial sector. The higher the size of the financial sector, the more it means in the financial sector. The deep financial system in instruments in the financial sector increases a country's resilience and promotes economic growth (Sahay et al., 2015). In addition to economic growth, there is one thing that is the main focus of the income gap. The income gap is one of the important problems in each country. In OECD countries, the gap between rich and poor is at the highest level since

30 years, currently the richest 10% of the population in the OECD region earns 9.5 times the income of the poorest 10 percent (Cingano, 2014). Financial development can increase opportunities for the poor to access formal finance by addressing the causes of financial market failures such as asymmetric information and high borrowing costs for small borrowers (Stiglitz, 1998).

### 4. Literature Review

Financial institutions (banks and insurance companies) and financial markets (including stock markets, bond markets and derivative markets) have a strong influence on economic development, poverty alleviation and economic stability (Levine 2005, in Cihak, 2012). But on the other hand, if the financial system cannot carry out its functions



**Figure 2:** Framework Chart Current Registered Engineers on the ACPECC Database.

properly, it will cause economic growth to be hampered. There are still many financial institutions or services that perform their functions aimed at certain parties such as the middle and large sectors. In addition, there are still many individuals who do not use financial institutions and financial markets as their financial services. Therefore, a good financial sector will carry out its functions well, one of which is by conducting financial deepening. Deepening the financial sector is one of the characteristics of financial development from the other three (access, efficiency, and stability). The deepening of the financial sector itself is seen in terms of the size and liquidity of the financial market. According to Sahay (2015), the rate of financial development is important, when the pace of financial development is fast, financial deepening can lead to economic and financial instability.

There are several indicators that illustrate financial deepening, this financial deepening indicator was taken from the Cihak study (2012), this financial deepening is seen from the side of the financial institution side and the financial market side. On the side of financial institutions there are loans to the private sector, financial institution assets, broad money or the money supply, the amount of deposits, the value of the financial sector. While on the financial market side there is stock market capitalization, outstanding bonds of domestic private companies, private corporate bonds, public bonds (government-owned companies), traded shares. In the Cihak (2012) study, there are several findings, from the side of financial institutions there is a strong positive relationship between financial deepening and economic growth, besides from the financial market side also according to Zervos (1998) in Cihak (2012) shows that claims trading in the companies in an economy are closely related to the level of economic development.

Some financial deepening indicators such as broad money, bank lending to the private sector, and domestic money bank assets can reduce poverty levels (Odhiambo, 2009). More financial deepening indicators are found to have a significant effect on income inequality and poverty levels in EMDEs (Yolanda, 2018). Stock Market positively has a positive influence on economic inequality, because stock is a source of financing that is still used for middle to upper income people (Golina, 2018). Private credit growth has a positive influence on the income gap, this is due to inequality in the distribution of credit to all levels of society (Jianu, 2017). Public debt has a positive influence on GDP and income inequality, this is due to the uneven distribution of government spending, therefore it can suggest that public spending is higher in infrastructure and R & D investments (Sanyal and Ehlen, 2017). This indicator will be examined as financial deepening factors in six Asian countries. The six countries include Indonesia, the Philippines, Malaysia, Thailand, China and Korea. Furthermore, the related countries are grouped into two, namely lower middle income and upper middle income / high income. The countries of Indonesia and the Philippines are included in the lower middle income, while the countries of Malaysia, Thailand, China and Korea fall into the upper middle income / high income category (World Bank, 2018).

According to Sheera and Bishoni (2013), theoretically financial deepening can be related to Keynesian theory, in Keynesian theory where when government spending increases it will increase demand to get full employment, then also increase income which results in higher interest rates due to increased demand money. The existence of financial deepening will indirectly increase revenue, but it will also increase interest rates higher due to increased demand for money. Therefore, this study will look at the effect of financial deepening indicators on the income gap. The indicator that describes the income gap is the Gini Ratio or Gini Coefficient. The Gini Coefficient has been used by economists to measure income inequality. The Gini Coefficient is widely used to measure the distribution of income and wealth which ranges from 0 which represents perfect equality, to 1 which represents perfect inequality (Greselin and Zitikis, 2018).

## 5. Research Methodology

To achieve the goal, this study uses panel data in six Asian countries in 2012-2016. Cross-sectional elements in Asia, there are Indonesia, Malaysia, Thailand, Philippines, China, and Korea and the time series elements use annual data from 2012-2016. This study uses the Gini coefficient as the dependent variable and 10 financial deepening indicators as independent variables which are divided into two sectors, there are from the side of

financial institutions and financial markets. The financial institution sector is illustrated through the variables of lending to the private sector, bank’s assets, money supply, and deposit of money bank assets. While the financial market sector is illustrated by variable stock market capitalization, outstanding bonds of domestic private companies, private company bonds, public bonds (government-owned companies), market capitalization of shares and stock traded. By using these variables, the expected results are how much each financial depth indicator both in terms of financial institutions and financial markets affects the income gap. As an explanatory form for the cross-sectional element, we use the dummy variable with the explanation of country grouping as follows:

TABLE 1: Research Indicators.

Indicators	Notation	Explanation	Data Source
Bank Asset	BA	Total Bank Asset in six Asia countries in 2012-2016	World Bank
Deposit Money Bank Asset	DMBA	Total bank assets seen from total deposits in six Asian countries in 2012-2016.	International Monetary Fund
Domestic Credit to Private Sector	DCPS	Domestic loans channeled by banks to the private sector in six Asian countries in 2012-2016	World Bank
Broad Money	M2	The money supply for six Asian countries in 2012-2016	World Bank
Private Debt Securities	PRIDEB	Private debt in six Asian countries in 2012-2016	World Bank
Public Debt Securities	PUBDEB	Government bonds issued in six countries in 2012-2016	International Monetary Fund
Stock Market Capitalization	SMC	Stock market value in six Asian countries in 2012-2016	International Monetary Fund
Stock Traded	ST	Stock that are traded on financial market in six Asian countries in 2012-2016	International Monetary Fund
Gini Coefficient	GINI	Income gap indicators for six Asian countries in 2012-2016	World Bank

- B1: lower middle income (Indonesia and the Philippines),
- B2: upper middle and high income (China, Malaysia, Thailand, Korea). Table 1 shows the indicators used along with the data source

The estimation technique used in this study is the Panel Least Squares (PLS). The use of PLS estimation techniques is useful for analyzing the influence of financial deepening from the banking sector and financial market side in six Asian countries on the income gap which is described through the gini ratio. The following models are used:

$$Gini_{it} = \alpha + \beta_1 BA_{it} + \beta_2 DCPS_{it} + \beta_3 M2_{it} + \beta_4 DMBA_{it} +$$

$$\beta_9 B_+ + \beta_{:B_+} BA_{,j} + \beta_{,B_+} DCPS_{,j} + \beta_{<B_+} M2_{,j} + \beta_{=B_+} DMBA + \epsilon_{,j}$$

$$Gini_{it} = \alpha(+\beta_{+} PUBDEB_{,j} + \beta_0 PRIDEB_{,j} + \beta_5 SMC_{,j}$$

$$+\beta_8 ST_{,j} + \beta_9 B_+ + \beta_{:B_+} PUBDEB_{,j} + \beta_{,B_+} PRIDEB_{,j} +$$

$$\beta_{<B_+} SMC_{,j} + \beta_{=B_+} ST_{,j} + \epsilon_{,j}$$

In conducting estimation techniques, this data and equations need to determine the appropriate model for this study. There are three models in the least square panel, namely the common effect model, the fixed effect model, and the random effect model. The common effect model is the simplest model that combines the time series data and cross sections and uses the OLS approach to find the parameters. Fixed effect model is a model whose intercept value is not constant but the slope coefficient is constant, this model is able to see the uniqueness of each individual studied. While the Random effect model is a model that is seen from differences in individual characteristics and time. This study uses dummy variables, therefore the right model to be used in the Least Square Panel analysis technique is the Fixed Effect Model.

## 6. Techniques Estimation Result

From the statistical results using the Panel Least Square with fixed effect model. The results of this study indicate that there are several financial deepening factors that have no effect, have a positive effect, and negatively affect income inequality in six countries (China, Thailand, Indonesia, Malaysia, Philippines and Korea). In Table 2. there are banking equations, the results of this study indicate the coefficient of determination (R-squared) of 0.70, which means that 70% of the variation independent variables can explain the variation dependent variable. In the banking equation, in upper middle income and high income countries indicate that;

- Bank assets (BA) have a positive influence on the income gap, when bank assets increase by 1%, it will increase the income gap by 0.023704
- Lending to the private sector (DCPS) has a negative influence on the income gap, when lending increases by 1 it will reduce the income gap by 0.001516

- Domestic money bank assets (DMBA) have a negative influence on income inequality, when domestic money bank assets increase by 1, it will reduce the income gap by 0.001609
- The money supply (M2) has a positive influence on the income gap, when the money supply increases by 1 it will increase the income gap by 0.003016
- In the financial deepening equation in the banking sector, the results of research in lower middle income countries show that;
  - Bank lending to the private sector (DCPS) and domestic money bank assets (DMBA) does not affect the income gap
  - Bank assets (BA) have a negative influence on the income gap, when a bank's assets increase by 1, it will reduce the income gap by 0.000249
  - The money supply (M2) has a negative influence on the income gap, when a bank's assets increase by 1 it will reduce the income gap by 0.000789

TABLE 2: Estimation Result of Financial Deepening (Banks) Effect on Income Gap in Six Asia Countries 2012-2016.

Financial Deepening (Banks)		
Variable	Coefficient	Probability
BA	0,023704	0,0142
DCPS	-0,001516	0,0338
DMBA	-0,001609	0,0949
M2	0,003016	0,0001
B1	-0,290524	0,0429
B1*BA	-0,023953	0,0169
B1*DCPS	-0,000376	0,8771
B1*DMBA	0,003542	0,3249
B1*M2	-0,003805	0,0107
R-Squared	0.703980	

In the financial deepening equation in the financial market shows the coefficient of determination (R-squared) of 0.91, which means that 91% of the independent variables can explain the dependent variable. In the financial market equation, in the upper middle income and high income countries indicate that;

- In upper middle income and high income countries, government debt securities (PUBDEB) have no influence on the income gap.
- In upper middle income and high income countries, private sector debt securities (PRIDEB) have a negative influence on the income gap, when private sector debt increases by 1, it will reduce the income gap by -0.003609.



- Stock market capitalization (SMC) has a negative influence on the income gap, when the stock market capitalization increases by 1, it will reduce the income gap by 0.001160

- Stock Traded (ST) has a positive influence on the income gap, when stock traded increases by 1, it will increase the income gap by 0.000408

In the financial deepening equation in the financial market, the results of research in lower middle income countries show that;

- Government debt and private sector debt have no effect on the income gap
- Stock market capitalization (SMC) has a negative influence on the income gap, when the stock market capitalization increases by 1, it will reduce the income gap by 0.00028

- Stock Traded (ST) has a positive influence on the income gap, when stock traded increases by 1, it will increase the income gap by 0.002451

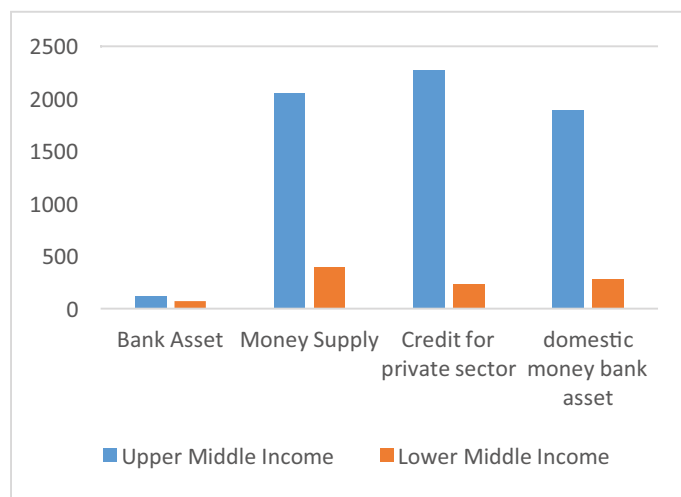
TABLE 3: Estimation Result of Financial Deepening (Financial Market) Effect on Income Gap in Six Asia Countries 2012-2016.

Financial Deepening (Financial Market)		
Variable	Coefficient	Probability
PUBDEB	-0,000182	0,8439
PRIDEB	-0,003609	0,0001
SMC	-0,001160	0,0000
ST	0,000408	0,0000
B1	-0,215132	0,0000
B1*PUBDEB	-3,31E-05	0,9762
B1*PRIDEB	0,001538	0,4172
B1*SMC	0,000880	0,0193
B1*ST	0,002043	0,0929
R-squared	0,914441	

## 7. Discussion

Spatial gap is a gap that could seen the income gap from between regions, provinces, or countries. This study looks at the spatial gap between six Asian countries divided into two groups, namely lower middle income and upper middle income. In Graph 2 illustrates the average financial deepening of the banking sector in 2012-2016 in Asian countries which are grouped into two parts, namely upper middle income and lower middle income. In the graph shows that the deepening level of the banking

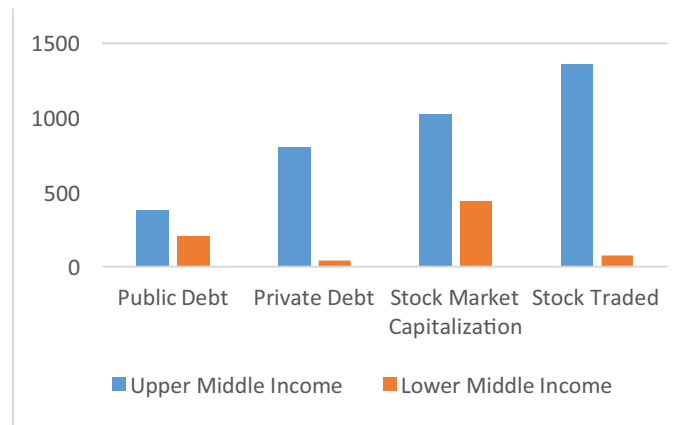
sector in upper middle income countries is higher than lower middle income countries. Deepening factors in the banking sector, namely, bank assets which constitute the total assets of the bank. The position of the asset is the accumulation of transactions and other flows in 2012-2016. Total assets consist of financial assets and non-financial assets (property income, service and financial use), money supply, bank lending to the private sector, and deposit money bank assets which are total bank assets as seen from total deposits. Bank deposits consist of commercial banks and other financial institutions that receive deposits that can be transferred (Savings, Current Account)



**Figure 3:** Average Deepening of the Banking Sector in Upper Middle Income and Lower Middle Income Countries (Source: World Bank (processed)).

Figure 4 shows the financial deepening of financial markets in 2012-2016 in upper middle income countries and lower middle income. Financial market financial deepening factors, namely, public debt which is a debt that is accumulated by the private sector. Forms of debt securities are personal loans, credit cards, corporate bonds or business loans, public debt is the sum of financial obligations issued by all regional government agencies (eg government bonds), stock market capitalization which refers to the total market value of shares circulating companies, and stock traded are shares that are traded on the stock market, shares that are sold are shares from the private sector and BUMN. From Figure 4 this shows that the level of financial market depth in upper middle income countries is higher than the depth of the financial market in lower middle income countries.

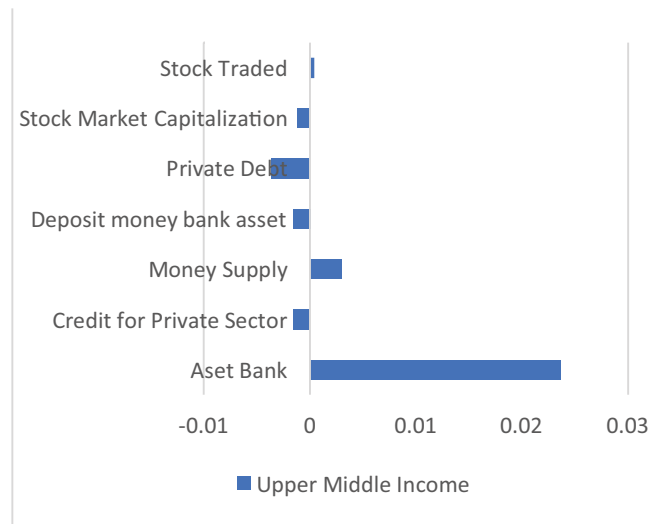
Sectoral gaps are one type of gap that explains across sectors. the banking sector and financial market are two types of financial institutions that play a role in funding. In law number 10 of 1998 concerning banking, the Bank is mentioned as a business entity that collects funds from the public in deposits and distributes funds to the community in the form of credit funds or other forms in order to improve people’s lives (Financial Services



**Figure 4:** Average Financial Market Deepening in Upper Middle Income and Lower Middle Income Countries (Source: World Bank (processed)).

Authority, 2017). While the financial market is a market for various long- term financial instruments that can be traded, both debt (obligation), shares, and other instruments (Indonesia Stock Exchange, 2018).

The banking sector and financial markets have different roles in each country, either upper middle income or lower middle income in Asia. In Asian countries in the upper middle income group, all indicators that illustrate the deepening of the banking sector are; bank assets, lending to the private sector, depositing money bank assets, and the money supply have a significant relationship to the income gap, but there are three indicators of financial market deepening that have a significant relationship to the income gap, namely; private debt, stock market capitalization and stock traded. Public debt does not have a significant relationship to the income gap. In Figure 5 shows the effect of financial deepening on the income gap, in the banking sector which has a negative relationship to inequality, namely; deposit money bank assets and credit distribution to private sector. That is, depositing money bank assets and lending to the private sector plays a role in reducing the income gap in Asian countries that are in the upper middle income group. The banking sector deepening indicators that have a positive effect are; bank assets and the money supply. This means that bank assets and the money supply play a role in increasing the income gap in Asian countries which are in the upper middle income group. Whereas in the financial market, there are indicators that have a negative relationship to the income gap, namely; lending to the private sector and stock market capitalization. This means that lending to the private sector and stock market capitalization has a role in reducing the gap in the income gap in Asian countries in the upper middle income group. Indicators that have a positive relationship only stock traded, meaning stock traded can increase the income gap in Asian countries in the upper middle income group.



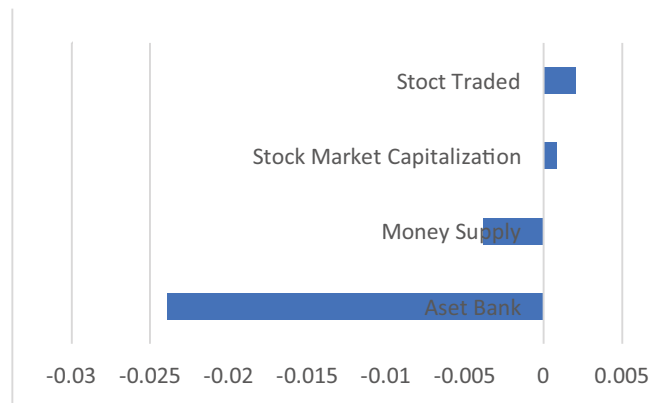
**Figure 5:** The Role of the Banking Sector and Financial Market in the Income Gap in Upper Middle Income Countries in Asia.

The banking sector and financial markets have different roles for Asian countries in the lower middle income group. There are indicators of banking sector deepening that have a significant relationship to the income gap in lower middle income countries, namely; bank assets and money supply, but there are also indicators of banking sector deepening that do not have a significant relationship to income gaps, namely; deposit money bank assets and channel loans to the private sector. Whereas in the financial market deepening indicator, the one that has a significant relationship to income inequality is stock market capitalization and stock traded, but what is not significant in the income gap is public debt and private debt.

In Figure 6 shows that all indicators of banking sector deepening that have a significant relationship to income inequality in the lower middle income group play a negative role, while all financial market deepening indicators that have a significant relationship to the income gap in the upper middle income group play a positive role. This means that in the lower middle income group in Asia, the banking sector plays a role in reducing the income gap, while the financial market plays a role in increasing the income gap.

## 8. Conclusion and Implication

The economic development of a country cannot be separated from the financial sector. The financial sector plays an important role in increasing a country's economic growth. In addition to influencing economic growth, the financial sector can affect the income gap. From the results of data processing, it can be concluded that there are influences of financial deepening factors on different income inequalities in six Asian countries



**Figure 6:** The Role of the Banking Sector and the Financial Market in the Income Gap in Lower Middle Income Countries in Asia.

namely Indonesia, Malaysia, Korea, Philippines, Singapore and Thailand which are divided into two groups, namely lower middle income (middle down) and upper middle income.

In the group of upper middle income countries (Korea, China, Thailand and Malaysia) there are different roles for financial deepening. In the banking sector, all indicators of deepening the banking sector have an effect on the income gap but there are some negative and positive influences. Whereas, in the financial market there are deepening indicators that have no effect on the income gap, namely public debt. In the lower middle income category (Indonesia and the Philippines), of the eight financial deepening indicators, only four had an influence on the income gap, two indicators of the banking sector deepening (bank assets and money supply) and two indicators of financial market deepening (stock market capitalization and stock traded). The four indicators, which have a negative influence are the banking sector, meaning that the banking sector plays an important role in reducing the income gap in the lower middle income group, while the two indicators of financial market deepening have a positive influence on income inequality, meaning financial markets increase the income gap in groups of lower middle income countries. This can occur because financial deepening is not accompanied by equitable distribution of financial products, there are still many low-income people who do not use financial products from the financial market, so the indicator of financial deepening increases the income gap in lower middle income countries.

The implication of this study is to advise the government, especially the government concerned with the financial sector, to pay attention to the distribution of financial product equity because there are several financial deepening factors that increase income inequality in both middle to upper and middle income countries

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