

# International Studies Program

Working Paper 02-20  
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## Capital Mobility Among Provinces in Indonesia

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**Mini Thesis**

**Indonesian Master's Program**

**Capital Mobility Among Provinces in Indonesia**

**MULIADI WIDJAJA**

## **I. Background**

It is well known that under the Soeharto regime, the natural resources of provinces in Indonesia were controlled by the central government, and sold to foreign countries to gain foreign reserves for the nation. Among these natural resources are crude oil, gas and coal. Still, the revenue from the natural resource sales were not paid back to the regions, but were collected in Jakarta instead. From this point of view, it is expected that there is a huge capital mobility from the provinces to the capital city.

On the other hand, there are also dynamic movements of resources among provinces. The timber log has been cut from many forests in Kalimantan for the making of furniture and household utensils, where the log is shipped to many island in Indonesia. The coffee and coconut plantation has been grown in many provinces in the Sumatra Island and manufactured in North Sumatra and Jakarta.

Meanwhile, one can say that the hurdles for trade among regions are almost nothing. Before the enactment of the decentralization act, there was no local government regulation for movement of goods and services across provincial borders. The only cost for crossing the provincial borders was the illegal charges taken by local people. This type of cost is not significant for business transaction so they can be ignored.

There are also dynamic labor movements from rural to urban areas. Many women moved to big cities, working as housekeepers, while men, waiting for the paddy harvest time, came to the city to work as construction workers or moving vendors. The employment of construction workers has declined drastically ever since the economic crisis. Some of those who had financial support opened permanent food vending in big

cities. The income they received was sent back to the urban areas where they came from, creating a large flow of funds from the urban to the rural areas.

All of the economic activity mentioned above has created a flow of income from rural to urban and from urban to rural. Still, the prediction is that the flow of capital to the urban area is higher than the reverse flow and concentrated in three big cities- Jakarta, Surabaya and Medan. These three cities are trading cities and have ports and airports as their trading infrastructures. In addition to that, Jakarta, the capital and the center of governance, attracted many resources to itself since there is an obligation for the head of the regency to store some money to keep his or her position. The three cities are themselves located in two big islands in west Indonesia- those are Java and Sumatra. The fact that the western part of Indonesia grew much faster than the eastern part of Indonesia supports the prediction. The other fact supporting the prediction is that around 70% of the Indonesian population is located in these two islands, which means that the Indonesian economic wheels are rolling more in these two regions than in any other place. The banking sector which was just deregulated in 1988 is expected to have a certain role in the capital movement.

### **Hypothesis**

The hypothesis in this research is that capital is perfectly mobile among regions in Indonesia, and that it is concentrated in the Java and Sumatra islands. If the hypothesis is true, then it is true that the centralized government under the Soeharto regime has attracted the capital resources to the capital and neglected the development of any other regions. This can be seen as follows: the high 'domestic saving' in each region should

have been diverted into ‘domestic investment’, which means that the higher savings rate should also proliferate a high investment rate for each region, or a high correlation of investment saving for each region. If the correlation is low, then we can say that the capital is highly mobile. What is interesting to see here is that, even though capital is expected to be mobile, since Indonesia is divided into 6 big islands, the obstacle of inter-island connection may or may not have an impact on the movement of capital. For example, the capital from North Sulawesi may be invested in South Sulawesi and in Jakarta but not in Kalimantan, because people do not feel comfortable investing in the areas that they feel are different from their own origin. Their reluctance is based on the culture and language differences.

### **Methodology**

The methodology of this research is empirical. The data needed for this research is the Indonesian Regional Gross Domestic Product and it is available from the LPEM database. This data is annual data and ranges from 1983 to 1999 (17 observations). These data, even though they are not long enough to do time series estimations, are the data available right now. Other sources of data will be the Central of Board Statistics and the database of Bank Indonesia, the Indonesian central bank. The calculation and the estimation will use the econometric and statistical software E-Views. There is no previous work for this research on Indonesia.

### **The Implication of The Result**

The result of this paper is going to prove the economic integration of Indonesian provinces, although those provinces are separated by island and sea. If the economy is

fully integrated, then actually it is relatively easy to generate trade and allocate the capital efficiently among provinces, despite any non-physical barriers, such as red-tape and bureaucracy. The result will also prove whether the economic networks among provinces are dense or loose, and whether it is very costly or efficient to create access towards national economic regional cooperation.

One of the implications of this research is that if the capital is highly mobile to any other region, the regional government intervention towards the private investment should be minimized as much as possible in order not to create what we know as dead-weight welfare loss. The other implication is that Indonesia could create the lending-borrowing system among provinces to help the funding of development, instead of engaging in external borrowing like the central government did under the Soeharto regime.

## **II. Theoretical Background**

Along with the regional economic growth, we assume that each region in Indonesia has its own savings as what is left after incomes are consumed. We also assume that the owner of these funds would try to invest their money in any region in Indonesia. As between region capital is perfectly mobile, regional savings could be used to invest in any region in Indonesia. Regions' expenditure could be financed from anywhere in the region. Under the era of President Soeharto, where all of the government funds were brought to Jakarta, we suppose that private businessmen would complete the tasks.

Theoretically, the saving-investment decisions are two different-made decisions. According to the inter-temporal macroeconomic model, the savings at the first period are what left is after income is spent on consumption in the first period. The savings in the second period depend on the income left after consumption in the first period. If the consumption in period 2 is higher than the income left, people will borrow from abroad.

Interest rate plays an important role in determining the consumption level. According to the theory, the higher the present interest rate, the lower the level of current consumption. The implication is that the higher the interest rate, the higher the saving rate.

On the other hand, investment is defined as the increment of capital stock. The present investment is simply a difference between capital stock in period 2 and capital stock in period 1. Therefore, in this model, investment is defined as the function of capital alone.

Since the two variables are made of different decisions, economists try to explain any connection between the saving-investment behavior. Listed are five factors inducing the saving-investment behavior. The first channel is the demographic factor. Obstfeld (1986) states that characteristics of a nation's labor force may simultaneously affect national saving and the profitability of domestic investment. The high labor force growth might raise national savings by increasing the ratio of young savers to old dissavers, while at the same time higher labor growth raises the demand for capital needed to equip them. For the Indonesian case, this reason is hard to accept due to the low level of education of the young generation.

The second channel is real interest rate (Frankel 1993). The increase of real interest rate will induce the increase of national saving and the increase of national saving will spur the growth of investment. For the case of Indonesia, even though nominal interest rate is the same for every region, the inflation rate differentiation could create the differences of real interest rate. Therefore, this reason might be applied for the Indonesian case.

The third channel comes from the supply side argument. Regions with low external resources should finance their own development. Therefore, they should have high savings through their domestic savings. High savings accumulate large capital stock and will specialize in capital-intensive industries.

The fourth channel through which savings affect the investment is the government policies. Helliwell and McKittrick's (1998) studies on Canadian provinces find that the strict fiscal policy (transfer payment) from the central government to the local government might create high savings in the region, which in turn create high

investments. As the reverse, loose fiscal policy would result in a low level of saving. For the Indonesian case, there is a tendency for the Central Government to collect funds from regional governments.

The fifth channel is the economy's inter-temporal budget constraint. As an economy grows at the steady growth rate over time, the budget constraint tells us that the saving-investment relationship must also be close over time.

Having understood the savings-investment channel, now we go through the model which is going to be used to estimate the data.

## II. Econometric Model

The model which is going to be used in this research is the inter-temporal macro-economic model, based on the paper of Helliwell and McKittrick (1998). The model begins as follows :

$$I_i = a + bS_i \quad (1)$$

where

$$I_i = \frac{1}{T} \sum_{t=1}^T \frac{I_{it}}{Y_{it}};$$

$$S_i = \frac{1}{T} \sum_{t=1}^T \frac{S_{it}}{Y_{it}};$$

$$S_{i_1} + \frac{S_{i_2}}{1+r} = Y_{i_1} - C_{i_1} - I_{i_1} - G_{i_1} + \frac{Y_{i_2} - C_{i_2} - I_{i_2} - G_{i_2}}{1+r}$$

where  $I_{it}$  is investment at region  $i$  at time  $t$ , and  $S_{it}$  and  $Y_{it}$  are the saving and income for each of the regions. If the capital is perfectly mobile, then the parameter  $b$  (or the *saving retention rate* according to Feldstein-Horioka model (1980)) should be closed to zero.

The Saving function itself is defined as the function of region's income  $Y_t$  less household consumption  $C_t$ , private consumption  $I_t$  and government expenditure  $G_t$ . The real interest rate  $(1+r)$  represents that the present level of consumption must have an impact on the future level of consumption.

The variation of estimation for the correlation of saving-investment will be made through the variation of provinces. First, the estimation will be done by using data from the whole 27 provinces. After that, the second estimation will be done by looking at

provinces located in the same island. For example, we presume that there exists an economic integration for the provinces in Kalimantan island, those are among West Kalimantan province, South Kalimantan province, Central Kalimantan province, and East Kalimantan province. The estimation will also look at the estimation of individual province as an evaluation of the performance of each province. Lastly, we expect that there exists an economic integration among provinces that are geographically close but not located in the same island, such as Lampung province in Sumatra island, with Jakarta and West Java. Each of these estimations will give a picture as to how integrated those provinces really are from their economic performance.

## **IV. Estimation Result and Graphical Analysis**

This chapter deals with the estimation result and the analysis of the data plot on macroeconomic variables of each province. The estimation result is given in the first part, while the graphical analysis is provided in the second part. Both analyses complement each other. The regression analysis provides information on the saving retention rate, while the graphical analysis provides information on GDP, consumption rate and trade balance.

### **A. Estimation Result**

The regression work comprises one single model, that is investment as the function of savings rate, but with two different definitions of savings. The first model states savings as the regional trade balance, which is the pure savings of regions. The second model states savings as the sum of regional trade balance and regional investment. Since most of the regional investments are decided by the central government, not by the local governments, we can say that it is actually the central government who has the central role in the allocation of funds at the provincial level.

The first model (Appendix I model I) is the estimation result for the 26 provinces (out of the 27 total provinces, East Timor is excluded since there is some missing data for East Timor). The E-views software is used as the tool for the estimation. The above estimation is a pooled estimation, and the result is achieved after the author does the Cochrane-Orcutt technique to solve the auto-correlation problem. The AR (1) shows every improvement; it is not the result but the autoregression coefficient. In the table

above, the result is shown with the 'save' mark, and the constant intercept for the whole estimation. Meanwhile, since the value of the variables is denominated in terms of ratio and the log function, the variance for each variable is so small that the problem of heteroscedasticity can be ignored here.

The model explains 89% of the variation in the investment variable, which is quite good in explaining the model. On the other hand, the expected sign in the model for the  $\beta$  (or the saving retention rate) is positive, with  $0 < \beta < 1$ . As we see, most of the estimation results for each of the provinces are in different signs than what is expected in the model. Only 5 out of the 26 provinces have the positive sign of  $\beta$ , but 3 of them have no statistically significant result, where the t-statistics are very low. Those provinces are SMT (North Sumatra), Riau, NTT (East Nusa Tenggara), KLB (West Kalimantan) and KLT (Mid Kalimantan).

The last two provinces, West Kalimantan and Mid-Kalimantan, have statistically significant result. For West Kalimantan, 52% of the saving rate explains the investment rate, while for Mid Kalimantan, only around 18% of the saving rate explains the investment rate. Those results mean that in West Kalimantan, around 50% of the local investment is financed by its own regional savings, while in Mid Kalimantan, only around 18% of its local investment is financed by its own regional savings.

The negative sign of the  $\beta$  may have two different interpretations. Those are that either the regions occurred the dissavings (negative trade balance) for most of the estimation period, or occurred the savings (positive trade balance) but there is a negative movement between savings and investment. For regions occurring the negative savings, their own investment must not be financed by local funds. For regions occurring the

positive savings, their own savings must be only partially used for their own local investment. To make a particular conclusion for what actually happened in every region, the information from the result of estimation still has to be added with the information from the plot of trade balance and investment data.

Another peculiar result is the estimation of  $\beta$  on BKL (Bengkulu) province. Here, the value of  $\beta$  equals 1 but with a minus sign, which means that the investment at the region has no correlation at all with the savings at the region. Next is the second model, where savings are defined as regional trade balance plus regional investment.

In model II (Appendix I model II), the definition of savings has already changed into trade balance plus regional investment. The result from E-Views shows that regions' own characteristics no longer show up, but that only the national average of how many fractions of savings are used as investment in every region shows up. As in the first model, the second model explains 89% of the variation in the investment variable, which is quite good in explaining the model. The expected sign in the model for  $\beta$  (or the saving retention rate) is positive, with  $0 < \beta < 1$ . Unlike the first model, all of the estimation results for each of provinces have the same sign as what was expected in the model. The t-statistics are high, showing that estimation for each province is significant. The Cochrane-Orcutt method is used once again in the second estimation to eliminate the problem of autocorrelation.

The  $\beta$  variable represents the level of saving retention rate, which is how much a region actually converts its saving into investment. With the average of 0.006 of the savings rate being turned into investments, this level is actually very low, compared to the same estimation result on Canadian Province by Helliwell and McKittrick (1998).

Their findings for the estimation in the period 1983-1993 shows that the savings retention rate for the Canadian province reached 0.047.

For Indonesia, the low level of saving retention rate reflects both good news and bad news. The good news is that there actually is a fund allocation outside of a province. The bad news, which we will find more of in the graphical analysis, is that the fund allocation is actually concentrated in Jakarta and Java island. The concentration of the funds in Java island is actually not a surprising result since Jakarta, the capital city, is located in Java island. As mentioned in the previous chapter, this attraction of the funds to the capital and to Java had already been occurring throughout the Suharto administration.

## **B. Graphical Analysis**

Each graph in Appendix II shows three pieces of information regarding macroeconomic variables of each province. These graphs depict Real GDP, Consumption and Trade Balance. Theoretically, we know that GDP represents output, which is the function of labor and capital. The large differences of the real GDP between those provinces in Java and those provinces outside Java but which are rich with natural resources reveal the fact that funds are actually concentrated in Java.

The consumption rate reflects the level of utility of population in the region. Regions with a steady growth of the consumption rate over time shows that at least the pulling out of the capital from the regions to Java did not decrease the utility of per capita consumption of the region's population. However, regions with a steady level of

consumption show that there actually has been a decrease of the per capita consumption level over time, assuming that the population growth increases over time.

The level of trade balance reflects the ability of each province to finance its own investment in the region. Many Indonesian regions have a positive trade balance, while some of them have a negative trade balance. A region with a positive trade balance has a potential ability to finance its own investment, while a region with a negative trade balance does not.

There are several other facts that we can draw from the graphs. First, the economic growth of western Indonesian provinces is higher than that of middle and eastern Indonesian provinces. Second, when the level of trade balance is low, almost equal to zero to some provinces and even negative in other provinces, the spread between the level of GDP and the level of consumption can be thought of as being equal to the level of investment. Third, the spread between GDP and the consumption level is higher in the decade of the 1990's than that in the decade of the 1980's for all of the regions. This means that the activity of investment, or capital incremental activities for each region, is higher in the decade of 1990's.

### **B.1. Role of Banking Sector.**

There are some explanations to these phenomena, and the explanation pertains to the financial sector channel of fund allocation. Before June 1983, the Indonesian government ran a kind of conservative financial policy, known as financial repression. The Government pegged the nominal interest rate, creating negative real interest rate for depositors since the nominal interest rate had been set below the inflation rate. In

addition, long before October 1988, the government did not allow commercial banks to expand their branches outside the capital of the province. The reserve requirement ratio<sup>3</sup> was set as high as 15%, confining the ability of commercial banks to lend money. As the result of such a policy, we would not expect that people would store their money in the bank, at least up to June 1983.

The first and important banking sector deregulation in June 1983 removed the peg on interest rates, increasing the propensity of people to save. Banks may set a higher deposit rate, inviting people to store their financial wealth in banks. This deregulation policy truly strengthened the role of banking sectors as financial intermediaries since the commercial banks and state-owned banks began to be able to collect funds from the society. However, their ability to transfer the funds to investors was still limited, due to the government rule of branch expansion and reserve requirement ratio.

The second, and not less important, banking sector deregulation in October 1988 reduced the reserve requirement ratio to 2%, increasing the power of commercial banking for lending. This lending power is very important for financial sectors since it is actually the way that financial intermediaries nurture themselves. They gain the profit from differentials between lending and deposits interest rate. Having greater lending power means that the financial sector will grow up by itself. For the Indonesian macroeconomy, the developing financial sector was expected to boost private investment. Included also in this deregulation are the regulations allowing commercial banks to open their branches in the kabupaten region (the region directly under the provincial level) and the regulations

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<sup>3</sup> By definition, reserve requirement ratio is the fraction of the amount of deposits that should be stored in the central bank as required by prudential policy. This amount of deposits stored as reserve requirement bears no interest and cannot be used as a lending fund. Therefore, the higher the reserve requirement ratio set by the government, the lower the ability of commercial bank to lend money.

regarding the starting of new commercial banks, including a very low initial own capital.<sup>4</sup>

From the graphs, it can be seen that in the decade of the 1980's, the spread between GDP and the level of consumption is actually very close for most of the province. This condition is parallel to the undeveloped nature of the Indonesian financial sector at the time. The undeveloped financial sector drives little private investment. With negative or nonexistent levels of trade balance, the only important drive of GDP is consumption level. This explains why in the decade of the 1980's, the spread between GDP and consumption level was small for most of the provinces.

Exceptions are for the provinces which have huge amounts of natural resources. For these types of provinces, the central government invested much capital there to extract natural resources, or they invited the foreign investors to do the mining. Included in these provinces with huge amount of natural resources are Aceh (coal, crude oil and liquid natural gas), South Sumatra (aluminum), Riau (crude oil), East Kalimantan (coal and log), and Irian Jaya or West Papua (copper and gold). Provinces in Java are also rich in natural resources. West Java, Mid Java and East Java each have their own crude oil mines. West Java also has its own gold mining. The government or foreign investors here are so huge that their own GDP is driven not only by the consumption level, but also by the investment level, which is mostly made up of the central governments' investment.

One important note about the fund allocation in Indonesia at this period is that the central government had already concentrated the funds in Jakarta and Java provinces. The GDP level of these provinces are very high, twenty or even thirty times higher than the

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<sup>4</sup> At the time, the initial own capital to start a new commercial bank was as much as Rp. 100 million. With the exchange rate at about Rp. 2,000 per USD, that amount equals USD 50,000. The target at the time was to invite many entrepreneurs to do business in the banking sector.

provinces with very low GDP, such as West Nusa Tenggara. The revenue they received from the trading of natural resources was not allocated back to the province but was used as a development fund in Java provinces instead. Meanwhile, the central government increased external debt each year for infrastructure investment or plant investment in those provinces with high natural resources. This practice really disconnected the savings-investment relationship for each province.

As the financial sector grew up, the private sector in each province started to take part in the GDP growth process. This phenomenon has shown up in the larger spread of GDP and consumption level in the decade of the 1990's for each province. But again, since most of the capital has already been concentrated in Jakarta and Java, the investment-driven growth is much faster and much larger in those provinces than in other provinces. However, around this period the saving-investment relationship process actually takes place in each of the provinces.

## **B.2 Economic Integration Issue**

After the growth of the financial sector, we might expect that there exists some kind of economic integration among provinces that are nearby each other. This type of economic integration works in the following way: a faster growing province will accelerate its neighboring provinces' growth at a higher level than if its neighbors grow up alone. This type of economic integration usually emerges following the development of investment in a certain region. As the investment in one region increases, there follows the trade of goods and services between one region and its neighbor, accelerating the economic

growth. Therefore, such economic integration will bring a similar pattern of economic growth between or among those provinces where integration exists.

From the graphs in Appendix II, the existence of such economic integration has shown up in the pattern of economic growth between North Sumatra and West Sumatra. North Sumatra is the center of the growth here and West Sumatra follows. Jakarta and West Java must have such economic integration since Jakarta is actually located in West Java. The same is true of Yogyakarta and Mid Java since Yogyakarta is actually a city located in Mid Java. From all of the integration seen in these graphs, the pattern takes place for only pairs of provinces. Types, patterns and degrees of economic integration of those provinces need further research.

## **V. Conclusion**

The centralized government system in Indonesia in the past years had led to the centralization of funds in the Java region. Both the levels of GDP and the levels of consumption in Java are very high, even though the amount of Java region's natural resources are relatively equal to the amount of natural resources of other province. Meanwhile, other regions with high natural resources such as Aceh, East Kalimantan, Irian Jaya (West Papua), have only a small amount of GDP relative to those regions in Java.

As the Indonesian political system changes, we expect that the investment and fund allocation decisions will be made in the regions. In order to do this, the regions themselves must have their own potential ability to create funds in order to finance their own regional public investments. From the graph, we know that some provinces have very little or no ability to do this, due to the negative regional savings. Therefore, we still need the central government to help such provinces to provide their own public investment. Furthermore, a lending-borrowing system of inter-governments should also be developed to satisfy the necessity.

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