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Regional Convergence and Indonesia Economic Dynamics

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Abstract

This paper looks at the pattern of inequality and convergence of Indonesia's regional income since the 1970s. Although economic growth frameworks have mostly been applied to analyse cross-country growth and convergence, some regional country studies have been done. However, the impact of the macroeconomic conditions at the national level on regional inequality and the convergence process need to be incorporated.

Indonesia is an interesting case study, since the economy has been through much turbulence in the last few decades from external shocks as well as some major national policy changes. The different record in sub national development has made regional inequality and growth a crucial topic.

It shows the pattern has been affected by a few of major changes in Indonesian policies and economic development, including macroeconomic conditions and structural change.

Keywords *: Analysis of Growth, Development and Changes, Size and Spatial Distributions of Regions,Indonesia*

JEL Classification: *R11, R12*

1. INTRODUCTION

The differing level of development among countries and regions has been a subject of concern in the field of development economics for a long time. Recent research puts more emphasis on regional growth and convergence within a country. For that purpose, analytical and empirical frameworks have been adapted from the theories of growth and development applied to international cross-country studies.

Although these frameworks have mostly been applied to analyse cross-country growth, some regional country growth studies have been undertaken. Using these frameworks, there may be some aspects that differ in the implementation and interpretation between these two applications. What would differentiate the application of an inequality analysis is the impact of the macroeconomic conditions facing a national economy on regional inequality, and the convergence process, including any economic reform at the national level. Beside the differences in transfer and investment allocation policy from central government to regional counterparts, a single national policy change could have different economic effects for different regions and hence impact on income disparity.

Indonesia is an interesting case study, since the economy has been through much turbulence in the last few decades from external shocks as well as some major national policy changes. Before 1982, Indonesia was predominantly a resource based economy. It then had to adjust to the fall in oil price during period 1983-1986. From 1987 to 1992, continuous reform succeeded in increasing the importance of non oil exports but the reform momentum slowed during period of 1993-1997. In period of 1997-1998, Indonesia experienced a deep economic and political crises which led to the weakening of the central government and finally to a major decentralization program in 2001.

During all these development episodes, the record of sub national development has made regional inequality and growth a crucial topic. The mining rich provinces showed their dissatisfaction with the central government, demanding larger income transfers and greater authority in constructing their development plans. This was one of the major issues during the rapid political change after the economic crisis. As a result, by 2001 Indonesia had shifted drastically from a highly centralised system of government to a highly decentralized one (Alm *et al.*, 2001; Tadjoedin *et al.*, 2001; Balisacan *et al.*, 2002).

This paper will look at the pattern of inequality and convergence of Indonesia's regional income, given the changes in the national economy since the 1970s. The organisation of the remainder of the paper will be as follows, section 2 and 3 will revisit the framework and data to be used for the analysis. The episodes of the Indonesian economy from the 1970s up to 2003 are described in section 4. Section 5 reveals the inequality and convergence process throughout the period being studied. Section 6 will conclude the discussion.

2. METHODOLOGY

The concept of convergence has been widely used to analyse the disparity in income among regions, also known as regional inequality. There are two concepts of convergence commonly used in regional inequality analysis, namely β (beta) and σ (sigma) convergence.

The concept of β convergence focuses on whether poorer regions grow faster than richer regions. On the other hand, σ convergence measures changes in per capita income dispersion across economies. Although focussing on two different aspects, these two convergence concepts have a strong relationship with each other.

2.1 The Application of Convergence

β convergence is named after the coefficient β as the partial correlation between the growth of income and its initial value. This approach is developed from the work of Solow (1956) and Swan (1956) in their growth models. The Solow-Swan Model implies that per capita income growth of all economies in the long run will follow the path of

$$\ln y_t - \ln y^* = e^{-\beta t} \ln y_0 - e^{-\beta t} \ln y^* = e^{-\beta t} (\ln y_0 - \ln y^*) \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where y_t is the current income per capita, y_0 is the initial income per capita and y^* is the steady state income per capita. Studies in β convergence use this trajectory equation to find the existence and speed of the convergence.

This trajectory is estimated in the reduced form of

$$\ln (y_t / y_0)/t = \alpha + (e^{\beta} - 1) \ln y_0 + u_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

The negative value of the coefficient of $(e^{\beta} - 1)$ and hence β means that higher growth is experienced by an initially lower income economy. It also means that, on average, poorer economies catch up to higher income economies, in other words β convergence. The value of β is also used to calculate the speed of the catch up process. In particular, it can be used to estimate when the half way point of the common steady state will be achieved for a given speed. Given equation (1) and the assumption that all income will go to the steady state, the half way point means $e^{-\beta t}$ in equation (1) should be half or $e^{\beta t}$ is equal to 2. It implies that βt is equal to 0.69. If for example, β is equal to 2%, then t will be 35 years meaning in 35 years all y_t should already be at the half way of the journey from y_0 to y^*.

In the growth literature, there are two types of β convergence namely absolute and conditional. Absolute β convergence is when the convergence condition is achieved without controlling for any other variable in equation (2). On the other hand, in conditional β convergence, the convergence condition can only be achieved if one or more variables are controlled. The illustration can be formalized by the equation

$$\ln (y_t / y_0)/t = \alpha + (e^{\beta} - 1) \ln y_0 + X'_{it} \gamma_x + u_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

where X'_{it} is the vector of those control variables. If negative β is achieved without the existence of X'_{it}, there is absolute β convergence. On the other hand, if negative β can be achieved only if X'_{it} exists, the β convergence is not absolute but conditional. This means there is no convergence unless some economic or non economic factors are specified to be the same across economies. If β is negative with or without the existence of X'_{it}, there are both absolute and conditional convergences at the same time. However, there are cases when a particular condition should not be controlled to generate the existence of convergence. Migration is one example. The movement of labour and capital among economies should lead to a more balanced production factor and hence promote convergence. If it is controlled, the convergence process might stop or at least become slower.

This chapter will focus on the discussion of absolute β convergence based on two arguments. First, Sala-i-Martin (1996) argued that openness and commercial integration among regions in one country has made the existence of intra country convergence more likely. Furthermore, the empirical results for intra country study show that the value of β has not changed substantially given the control variable, meaning that the speed

of convergence among sub national economy is not affected by any other factor. This may not be true for developing country studies, since Sala-i-Martin (1996) reports the results only from developed country studies. Second and more important, this study will focus on the convergence process over time in the past. This means the speed of convergence will be examined with the existing historical condition. As a result, it is not appropriate to control or set some condition to be the same across regions if it was not the reality at that time.

Econometrically, the non-existence of any control variable means the error term (u_t) in equation (2) is purely random and cannot be predicted by any variable, including the one that correlates with initial income as the only independent variable. So it is acceptable to assume there is no expectation of correlation between the independent variable and the error term. This is one of the three assumptions required to use ordinary least square (OLS) estimation to estimate absolute convergence without having a bias problem. Another assumption is linearly independent exogenous variables, which should be achieved since there is only one exogenous variable. The last assumption, zero expected value of error, should be achieved with the existence of an intercept in the equation so if the means of error is not zero it will be added or subtracted to the intercept.

2.2 The Application of Convergence

The other concept, the σ convergence, is the measure of standard deviation. Standard deviation and its squared value, variance, measure the dispersion of a distribution by the total distance of each number to their mean. Alternatively, the measurement of σ convergence analyses the degree of difference among incomes, income distribution is expected to decline over time.

In the growth theory literature, the measurement of dispersion in the σ convergence concept uses the variance of logarithm value of income per capita.[1] Baumol (1986) has popularized the used of this measurement to analyse σ convergence among growth economists (Barro and Sala-i-Martin 1991, Dowrick and Quiggin 1997). The formula for the variance of logarithm value is

[1] It might be important to know that beside the variance of logarithm value of income, there is another concept called the logarithm variance of income. The first one, the logarithm value of income, the distance of logarithm value of income is defined to the mean of logarithm value of income while the second is defined to the logarithm value of mean income.

$$\sigma^2 = \sum_{i=1}^{n} (\ln y_i - \ln \bar{y})^2 \frac{1}{n} \quad \text{.....(4)}$$

where: y_i = income per capita in region i

$\bar{y}$ = average income per capita

n = number of regions.

There are two advantages of using the logarithm value instead of the level value of income per capita. The first concerns the scale effect and second the relationship between β and σ convergence.

Regarding the scale effect, the logarithm value will eliminate the problem that often occurs when the shape of two distributions with different scale or mean average are compared. The same shape of distribution will have higher standard deviation if it involves a larger nominal value. As an example, if all the numbers in a distribution have become twice as big then the shape of the distribution should be the same but the magnitude of the standard deviation will double and the variance will quadruple. Taking the logarithm value will eliminate the scale effect, since the subtraction of two logarithm values is equal to the logarithm value of the ratio of those numbers. It means each individual income in equation (4) is actually scaled by its average. By that concept, equation (4) can be rewritten as $\sigma^2 = \sum_{i=1}^{n} \left\{ \left(\frac{1}{n} \right) \ln^2 \left(\frac{y_i}{\bar{y}} \right) \right\}$. So if all the values in the distribution are getting bigger by the same proportion, the variance of logarithm value will be the same since the means would also be multiplied by that proportion.

3. DATA

The data consist of 26 provinces in Indonesia during the period of 1975-2002. The main database is established from two publications of the Indonesian Statistical Board (BPS), which are the regional accounts by production or value added and by expenditure. The population data is taken from the CEIC Asia Database.

The data set will start from 1975, since the data before 1975 are inconsistent and has major problem in some sectors (Arndt, 1973). He argued that this is probably because the first effort of producing the

regional income data was coming from university economists rather than the official body. Although they have work closely to each other and according to BPS national income estimation procedure, but there were some deficiencies in the data source that would cause some inconsistency. The problem is more obvious in the sectoral estimation.[2]

3.1 Provinces

Some concerns have been addressed to the discussion on what level the regional analysis in Indonesia should be done, since there are provincial and district/municipal level. The paper is dealing with provinces despite the fact that decentralization has put more power on district level. The reason is that since the beginning the tension of imbalance development was built up in the provincial level. In the first 20 years of Indonesian independence, the weak central government in Jakarta had to face armed insurrection, i.e. separation movements, from several regions such as in Aceh, West Sumatra, West Java, South Sulawesi and Maluku (Thee, 2003). Note that East Timor is not included since it had recently separated from Indonesia. Also the on-going separatist movements in Aceh and Papua are at the provincial level. It is hence suspected that the military and central government were afraid that more provinces would demand independence if greater power were given to them in decentralization.

Prior to July 1976, Indonesia consisted of 26 provinces and East Timor was the 27th province of Indonesia from July 1976 until August 1999. After the new laws on regional governance were passed in 1999, seven new provinces were proposed, but, until now, only four have been fully established, namely Banten from West Java, North Maluku from Maluku, Bangka Belitung from South Sumatra and Gorontalo from North Sulawesi. However, in order to have a continuous panel dataset from 1975 to 2002, these provinces have been regrouped to their original boundaries so that there will be only 26 provinces in the dataset (i.e. excluding East Timor). However, it is important to note that the regrouping of the new provinces to their original has made their GDP increase significantly higher in 2000. The possible explanation for this is that the separation of provinces would mean new investment for local government infrastructure and new employment for local civil servant.

[2] As an illustration, The manufacture sector in Jakarta was estimated very low around 7 to 8% before it became 12% in 1973, on the other hand, the trade estimate was too high.

3.2 Income Proxies

We focus on income per capita in this analysis. There are three income proxies that will be evaluated, provincial gross domestic product (GDP) per capita, non mining GDP per capita and household expenditure per capita. GDP per capita is the ratio of provincial GDP to the total population. The data for non mining GDP per capita are calculated from the GDP per capita less mining sector value added per capita. The household consumption data are a part of the GDP expenditure series.

The reason for three proxies is because the use of GDP per capita has been criticized, on the ground that most of the large mining output accrues to the central government and oil companies. Excluding the mining value added from GDP is one popular alternative income proxy. However, this proxy ignores any income or benefit from mining sector that may go to local people. As a result, total household consumption has become the third alternative.

Household consumption shows how much welfare can be enjoyed by the whole household in a province. As a result, it can show the real income for the society regardless of the output taken by central or local government. The weakness of this proxy is that it does not reflect the value of future income stream as a result of saving or investment. Moreover, the data are available only after 1983 instead of 1975.

3.3 Constant Prices

Price differences among regions are an important issue in a regional inequality discussion, since the same nominal income will give a different basket of goods and services if the prices are different (Dowrick and Quiggin, 1997).[3] The data in constant prices are used to deal with this problem both in cross country and intra country studies. Although there could be different prices amongst regions or countries in the base year, but the proportion of this mistake would be the same from time to time. Given these same price differences, if the real value of income disparity is increased from time to time, the estimated disparity in constant price will also be increased. As a result, the constant price of income can be used in convergence analysis since the focus is on whether the disparity is increasing or decreasing.

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[3] Dowrick and Quiggin (1997) also acknowledged the substitution effect problem if the relative prices among goods and services are different.

3.4 Additional

We also include data on Indonesia's exchange rate, oil prices, national growth and export as a share of gross domestic product at national level since 1975. The data are calculated from balance of payments and national income data from the CEIC Asia Database, except for oil prices. The latter data is taken from Energy Information Administration, which is the official energy statistics of the US government. The real value of the oil prices is estimated by deflating the nominal value by the US GDP deflator.

4. THE INDONESIAN ECONOMY

The growth studies initiated by Solow (1956) and Swan (1956) concern long run growth. In particular regarding to the economic process to achieve the balanced growth path and hence go to the steady state condition. That also the case in seeing how the impact of some major policy changes on the growth and hence convergence process. However, there is no consensus on how long is this long run process should be achieved. In intra country studies, the early literature such as Barro and Sala-i-Martin (1990) and Sala-i-Martin (1996) used 10 year as this long run period, but most of recent studies decreased the time period to 5 yearly, given the need for more observations using advanced econometric techniques.

Applying this long run concern as well as recognizing the different characteristic in Indonesia economy from time to time, a short history of Indonesian economic development is divided into five major periods or episodes. The relationship between the characteristics of each episode and the disparity as well as the speed of convergence throughout a particular episode is the basis of this analysis.

4.1 Economic Development Episodes since 1975

Based on the above argument, there should be three criteria for selecting the episodes. There are internal economic conditions, policy orientation and external circumstances. Five episodes from 1975 to 2002 can be identified. First is period of 1975-1981 when economic growth very much depended on oil export. Second is period of 1982-1986 when the oil price plunged and Indonesia had to adjust its economy. The non oil export promotion during period of 1987-1992 is the third episode. The fourth episode is the slowing economic reform in period of 1993-1997. The economic crises and decentralization is the fifth episode.

Figure 1
Expor – GDP Ratio Trend 1975-2004

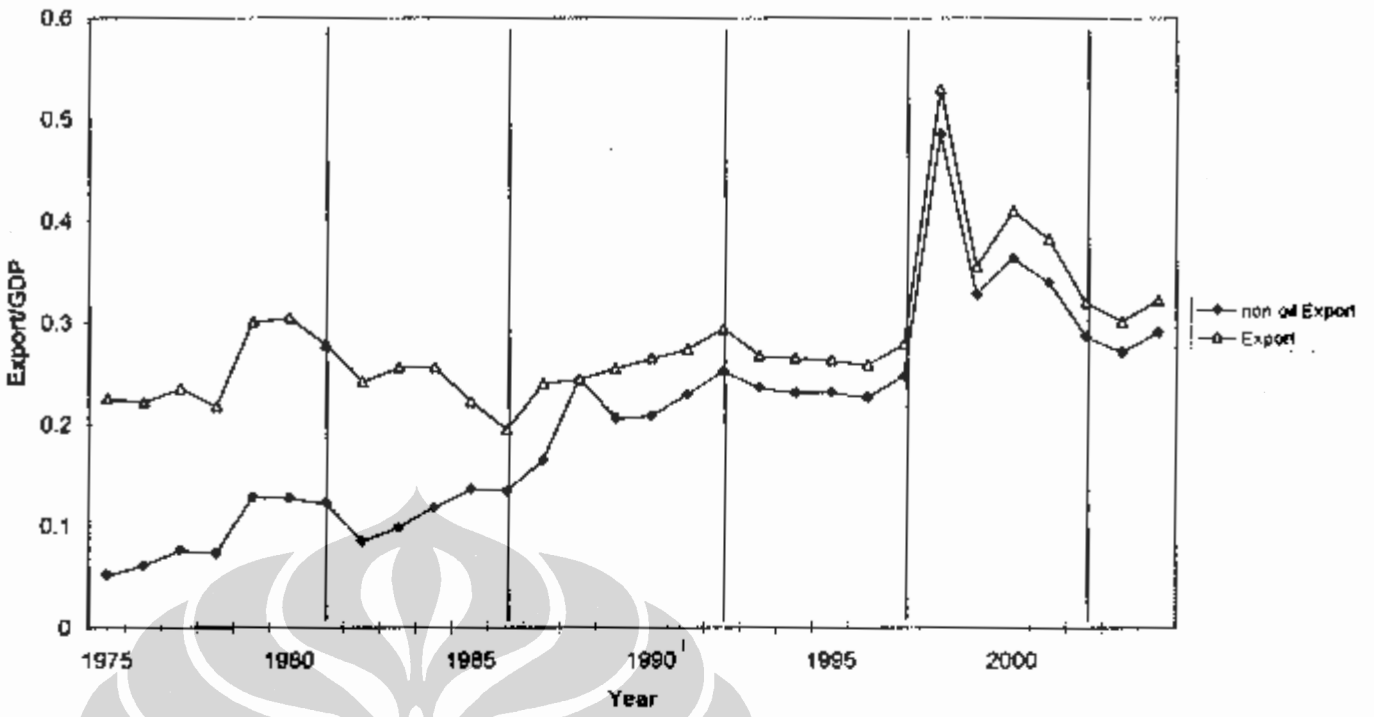
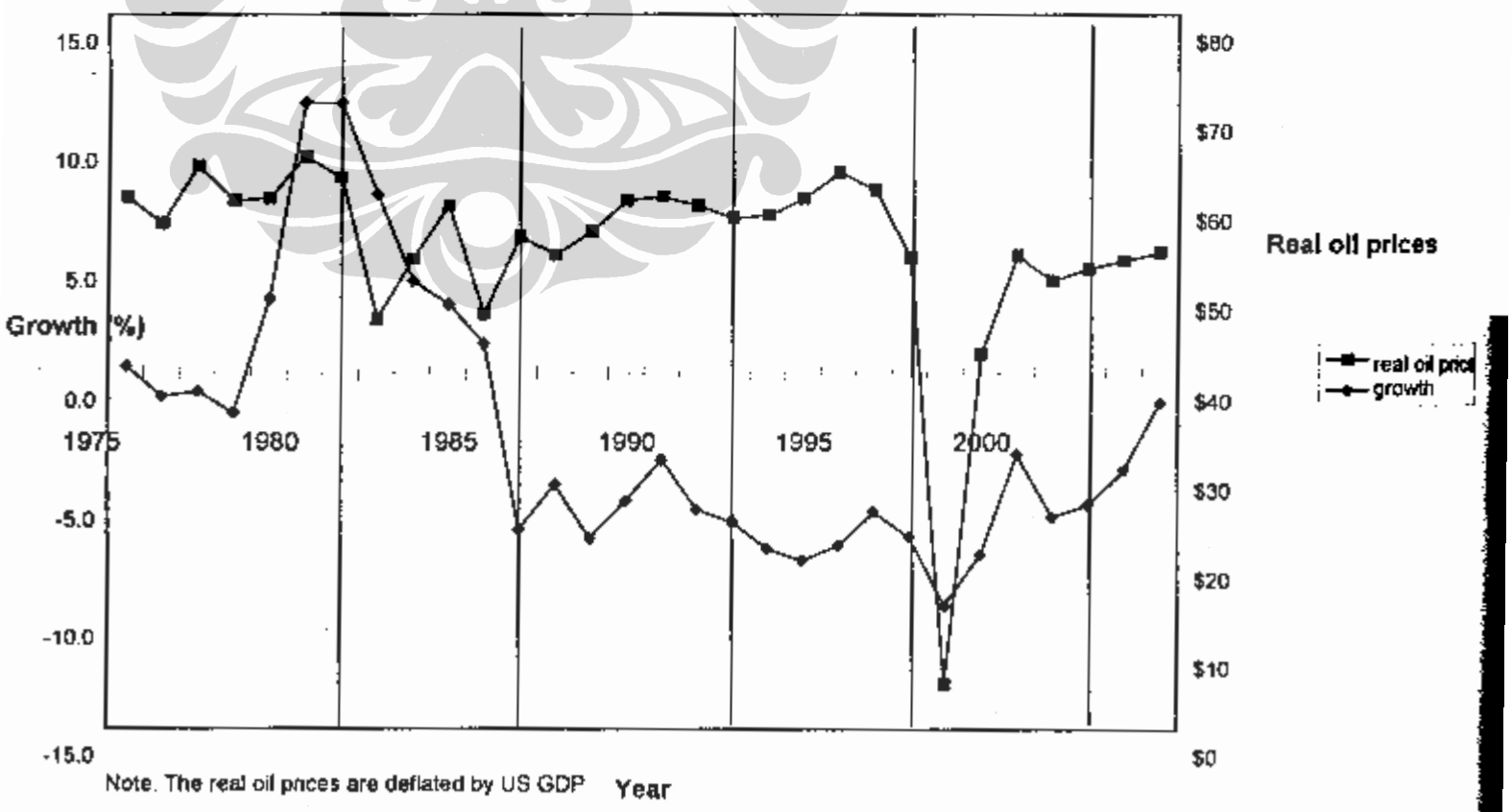


Figure 2
Growth and Real Oil Price Trend 1975-2004



Note. The real oil prices are deflated by US GDP

4.1.1 Period of 1975-1981

The high international oil price dominated the economic picture in the period of 1975-1981. It started with the massive oil price increase in late 1973 to 1974 triggered by the 1973 Arab oil embargo. As an oil exporting country, this resulted in massive increase revenue for the Indonesian central government and *Pertamina* as the state oil enterprise. The massive revenue flow was also a result of the equalization policy that allowed the central government to retain the income from the oil producing provinces to redistribute it nationally. The income was partly used by the central government and partly redistributed to all provinces based mostly on population. The massive revenue allowed the central government to expand state enterprises and increasingly restrict foreign investment (Hill, 2000).

During this period, Indonesia was growing quite fast at 7.7% annually. The growth was a bit slower in 1978 and 1979 because of concern that the oil price would decline, and a major devaluation occurred in November 1978. Yet, the devaluation increased the share of non oil export to GDP from 7.2% in 1978 to 12.8% in 1979, owing to of the exchange rate effect, while the oil export share of GDP slightly decreased from 17.4% to 15.7%. In 1980, economic growth picked up to more than 9%, not only because of the increase in non oil exports but also because of another increase in the oil price owing to the commencement of the Iran-Iraq war.

4.1.2 Period of 1982-1986

In 1982, the oil price began to plunge and continued to do so through to 1986. This was the adjustment period of the Indonesian economy to the lower oil price. First, the government had to adjust to the lower revenue, while at the same time an increasing proportion of the foreign debt required payment. As a result, the central government had to cut back expenditure by cancelling some large projects. Second, the government sought to strengthen non oil exports through a number of policies. In 1983, the government began to change the industrialization strategy toward export orientation and the rupiah was devalued to support the strategy (Rachbini, 2003). Reform in tax and customs was introduced by presidential instruction in 1985 to reduce the high cost economy. Several trade reforms were also introduced, mainly on tariff barriers, and the rupiah was again devalued in 1986. Yet, there was no change in the regional economic transfer policy and the equalization policy remained in place.

Growth fell sharply during period of 1982-1986, with an average of 4.4% annually. After falling to nearly 2% in 1982, growth climbed back in the next two years before plunging again in 1985. The share of non oil export in GDP increased after a fall in 1982. It reached 13.4% of total GDP in 1986. Meanwhile, the share of oil export plunged from 15.7% in 1982 to only 6% of GDP in 1986.

4.1.3 Period of 1987-1992

Period of 1987-1992 was the export orientation period with the ratio of export to GDP increasing from 16.4% in 1987 to 25.2% by 1992. It was driven mainly by the increasing share of non oil exports as the result of the adjustment to the lower oil prices. During period of 1987-1992, the non oil export share increased by 5.4 percentage points from 24% to 29.4% of total GDP. There was also a decision to depreciate the nominal value of the rupiah against the dollar at a fairly steady rate, averaging 3.3% annually since the 1986 devaluation while inflation was reaching 8%. GDP growth increased from 4.9% in 1987 to 6.5% in 1992 with an annual average of 6.5% for the entire period.

Major trade and financial deregulation took place during this period. By the end of 1987, the government came up with a deregulation package that included export incentives, import monopolies, foreign capital, domestic share/stock market, and tourist promotion (Booth, 1988). This was followed by three major deregulations in 1988. The first deregulation package was released on 27 October 1988. It focused on market entry deregulation especially in financial institutions. Second was the November 21 packaged that focused on trade and shipping. And third was the December 22 package that focused on the financial system (Simanjuntak, 1989).

4.1.4 Period from 1993 to the crises

However, reform slowed during period of 1993-1997. In contrast, private capital from both foreign and domestic resources was increasingly dominant. The conglomerates that emerged before the deregulation era had absorbed an increasing share of investment (Rachbini, 2003). As a result, the share of export per GDP experienced a slight fall from 23.6% in 1993 to 22.6% in 1996 (after being at 25.2% in 1992). In 1997, the share of export increased to 24.7% of total GDP, but only because the exchange rate jumped from Rp2383/US dollar at the end of 1996 to Rp4650/US dollar. In 1997, GDP growth suddenly slumped from an average 7.5% annually during 1993-1996 to only 4.6%. The growth was actually still

strong in the first quarter at 7.5% year on year and starting to fall at 5% in the second and third before only achieved 1% growth in the last quarter.

With the exchange rate continuing to approximately Rp15,000/US dollar by June 1998,[4] Indonesia had a serious currency problem. The problem had become a financial crisis with collapse of the stock market, bankruptcy of local companies, and a serious problem faced by banks (Soesastro and Basri, 1998). This led to the social and political crisis marked by the resignation of President Soeharto on May 1998 after having led the country for 32 years.

His resignation did not stop the crisis. There were vertical and horizontal disputes afterwards. A vertical dispute, meaning the dispute between two agencies in different levels of bureaucracy, was motivated by a weak central government. Some regions demanded a greater share of mining output or independence. The central government then passed two new laws to give more autonomy and authority to the regional government on May 1999. These laws, which were not implemented until 2001, began the new equalization formula that gave a greater share to the rich resources provinces. This dispute has already resulted in the independence vote in East Timor on August 1999 that separated a province that had joined with Indonesia in 1976.

Horizontal dispute and conflict emerged at the national as well as the local level. At the national level, the 1999 general election brought only temporary peace and the elected president was replaced by his vice president on July 2001 following a formal impeachment process. At the local level, conflicts were widespread with Aceh, Maluku, Central Sulawesi, and Jakarta particularly serious (Barron *et..al.*,2005). At one stage, the conflict seemed very serious, but the frequency was somewhat reduced by 2002.

Period of 1998-2002 episodes were also marked by a 13% drop of GDP in 1998, followed by 0.8% growth in 1999 and continued stronger growth in 2000 of 4.9%. Yet, the exchange rate, which had been around Rp7,000/US dollars at the end of 1999, again hiked to approximately Rp9,600/US dollars in 2000 and continued to Rp10,500/US dollars in 2001. As a result, growth was held at 3.9% in 2001, and a slightly increasing trend after that.

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[4] The record low was actually on 22 January 1998 at Rp17,000/US dollar.

4.2 Provincial Economies between 1975 and 2002

Indonesia is an archipelago with more than 13,000 islands. The five main islands are Kalimantan, Sumatra, Java, Sulawesi and West Papua. From 26 provinces, 22 provinces were located in these islands with 8 were located in Sumatra, 5 in Java, 4 in Kalimantan, 4 in Sulawesi and 1 big province in Papua. Each island is separated by a significant amount of sea area and endowed with different types or quantities of minerals, soil, plant and animal. They also had different histories before and during the Dutch occupation. As a result, disparity in culture and income is high.

4.2.1 Population

As discussed, the majority of the Indonesian population is concentrated in Java despite the fact that it only occupies 7% of the land area. The reason for this is that Java has the most fertile land in the country (Muhidin, 2002). Moreover, the Dutch in the 1930s decided to concentrate industrialization on Java (Thee, 2003). The growth of Indonesia's population during period of 1975-2002 varied among provinces, from 0.7% annually in Yogyakarta to 3.9% annually in Riau. Below Riau were East Kalimantan, Bengkulu, Central Kalimantan and South-East Sulawesi. On the other side, East Java, Central Java, West Sumatra and Bali were in the bottom five with Yogyakarta.

Population growth has been declining overtime. It was 2.3% annually during period of 1971-1980 and has become 1.3% annually during period of 1990-2000. This was partly caused by the significant decline in total fertility rate from 4.7 according to 1980 census to only 2.8 according to 1995 intercensal survey (Muhidin, 2002). West Nusa Tenggara, Bengkulu and Maluku had the highest fertility rate in 1980 with all above 6, while Yogyakarta, East Java and Jakarta were the lowest with all below 4. The fertility rate of Bengkulu has been decreased dramatically to only 3.2 in 1995. Maluku and West Nusa Tenggara were both managed to have 3.7 as their fertility rate in 1995, just below 3.8 as the highest fertility rate in 1995 which was achieved by Papua. Jakarta, Yogyakarta and Bali were the lowest at all around 2.0.

Beside the differences in fertility rate among provinces, migration is definitely one of the determinants of population growth difference. In term of lifetime migration which differentiated the place of born and the place of current residency, Jakarta, Lampung and West Java are always the main destinations of migration and their number of immigrants is significantly higher than for other provinces (Muhidin, 2002). However in term of recent migration the high net migration area has moved from

Lampung, Bengkulu, Jakarta, and East Kalimantan with all have the number of net migration more than 5% in 1970 to Riau, Central Kalimantan, South East Sulawesi and East Kalimantan. Included in this migration is the central government official migration program - transmigration, from inner Java-Bali-Lombok to the other islands in order to balance the Indonesian population.

4.2.2 Income

In terms of Gross Domestic Product constant 1993 prices, the four provinces in Java, excluding Yogyakarta, have been among the biggest economies in Indonesia since 1975. These four provinces comprised 47.4% and 56.4% of the Indonesian economy in 1975 and 2002, respectively. However, with 61.1% and 57.0% of the total Indonesian population in 1975 and 2002, their population is also much bigger than the other provinces. As a result, except for the capital city Jakarta, their GDP per capita has never been in the top five. Jakarta's GDP per capita was number four in 1975 (below Riau, East Kalimantan, and Papua) and second in 2002 (below East Kalimantan and above Riau, Papua and Bali).

The importance of the mining sector is indicated from those ranks, since East Kalimantan, Papua and Riau, which have always been in the top five, are all mineral rich provinces, and Aceh, another resource rich province, and was sixth in 2002. Nevertheless, most of the benefits of this mining income have been retained by the central government. As a result, many researchers argue that the welfare of these seemingly rich provinces with high GDP per capita is overvalued. Yet, **Table 1** also shows that, the non mining per capita income of these provinces is actually still ranks among the top, since they usually do not have a large population to begin with. Thus East Kalimantan was in second place, following Jakarta, while Riau was in third place in 1975 but fell slightly to fourth place in 2002. Papua however had the largest fall in this ranking; it was 14th in 2002 after being in fourth place in 1975.

Expenditure per capita is another measure of the welfare of these provinces. The provincial data for household consumption expenditure are available from 1983. Here too Jakarta again had the highest figure based on 1993 constant prices data. Three resource rich provinces were in the top five places, with East Kalimantan second, Papua third and Riau fifth, while Bali was in fourth place. The last province was unexpectedly high. Bali is a special case owing to tourism sectors that starting to flourish at that time. Although none of the rich resource provinces were among the highest growth provinces during period of 1983-2002, in 2002

four of the five provinces with the highest expenditure per capita were resource rich provinces. Jakarta was in the first place followed by East Kalimantan, Papua, Riau and Aceh.

Tabel 1
The Comparison of Provincial Income per Capita and the Growth per Capita. (Indonesia Income per Capita= 100)

	GDP per capita			GDP non mining per capita			Household Expenditure per capita		
	1975	2002	Growth (%)	1975	2002	Growth (%)	1983	2002	Growth (%)
Aceh	89.1	109.2	4.6	99.2	96.1	4.5	88.5	113.8	3.8
North Sumatra	84.4	103.4	4.6	102.5	112.1	5.0	92.5	110.6	3.4
West Sumatra	66.4	93.7	5.2	88.2	97.3	5.0	72.5	105.0	4.5
Riau	1430.2	219.4	-3.1	214.6	119.1	2.4	110.5	115.3	2.7
Jambi	90.2	71.6	3.0	111.3	70.3	2.9	54.9	77.1	4.3
South Sumatra	138.9	87.9	2.1	137.6	84.8	2.8	90.2	99.7	3.0
Bengkulu	52.1	56.3	4.2	69.2	59.9	4.1	73.7	64.2	1.7
Lampung	50.1	54.2	4.2	66.8	57.4	4.0	40.4	52.0	3.8
Jakarta	261.9	360.4	5.1	349.6	395.6	5.1	254.8	313.0	3.6
West Java	73.4	84.9	4.4	87.6	89.5	4.7	83.1	104.6	3.7
Central Java	49.4	65.8	5.0	65.7	71.1	4.9	59.1	74.8	3.7
Jogjakarta	83.3	82.4	3.8	110.8	89.4	3.8	72.2	66.1	2.0
East Java	68.7	82.9	4.6	91.6	89.3	4.5	65.8	96.8	4.6
Bali	60.5	119.8	6.5	80.4	130.6	6.5	117.7	113.5	2.3
W. Nusatenggara	39.7	57.6	5.3	52.2	44.8	4.0	35.1	40.5	3.3
E. Nusatenggara	33.3	40.1	4.6	44.3	43.5	4.5	32.3	40.0	3.6
West Kalimantan	75.2	87.5	4.4	100.1	94.6	4.4	68.2	79.5	3.3
Central Kalimantan	104.3	108.4	4.0	138.9	117.0	4.0	85.8	106.3	3.6
South Kalimantan	92.4	108.7	4.5	122.7	97.7	3.7	66.6	88.2	4.0
East Kalimantan	573.1	466.5	3.1	343.5	345.2	4.6	161.6	188.4	3.3
North Sulawesi	54.7	74.5	5.1	72.8	77.5	4.9	49.0	78.7	5.1
Central Sulawesi	50.9	56.7	4.3	67.7	60.7	4.2	56.6	59.5	2.7
South Sulawesi	53.6	64.3	4.6	71.5	67.4	4.4	50.1	64.1	3.8
S.E. Sulawesi	40.8	47.8	4.5	43.3	50.8	5.2	49.0	43.1	1.8
Maluku	67.5	45.9	2.4	88.1	50.1	2.5	53.3	49.0	2.0
Papua	280.5	185.4	2.3	145.6	86.1	2.6	146.7	168.7	3.2
Indonesia (million Rp)	0.8	2.1	3.9	0.6	1.9	4.6	0.7	1.2	2.5

Source: own calculation

Indonesia's GDP grew at 5.7% annually in the 1975- 2002 period. Bali, Bengkulu, South East Sulawesi, Central Kalimantan, and West Nusa Tenggara all had growth above 7.4% annually. On the other hand, Riau, Yogyakarta, Maluku, South Sumatra, and Papua, all grew below 5.5%, and were in the bottom five. Nevertheless, to measure the speed of development, the growth of GDP per capita is considered more important. With population growth of 1.8% annually, Indonesia's GDP per capita was growing at approximately 3.9% per year. Bali, West Nusa Tenggara, West Sumatra, Jakarta and North Sulawesi had the highest per

capita annual growth all with above 5%, while the lowest five were Riau, South Sumatra, Papua, Maluku and Jambi with below 3% annually. Yet, the higher and lower growth provinces would be different in different sub period of 1975-2002. None of these 26 provinces was always the fastest or slowest growing region during the entire episode of 1975-2002, yet Riau has always in the bottom five after experiencing very high growth in early 1970s.

4.2.3 The high performer

Bali was the fastest growing province during period of 1975-2002. It was also the most consistent growth economy, in that it was always among the provinces with the highest growth in the four episodes from 1975-1997, before the economy experienced negative growth in period of 1998-2002. The reason behind this consistency was the boom in tourism in Bali during the 1970s and 1980s. The opening of Ngurah Rai (Bali) airport to international airlines in the early 1970s played a significant role in addition to the attraction of its unique culture and beautiful scenery. The tourism sector grew rapidly during the 1980s, particularly when the government removed most restrictions on international flights to Bali in 1985 and provided funds for the province to boost tourism development (Jayasuriya and Nehen, 1989).

West Nusa Tenggara was one of the bottom three provinces in terms of GDP per capita since 1975. Despite recording the second fastest growth during period of 1975-2002, West Nusa Tenggara was actually only among the top five growing provinces during the period of 1997-2002. While Indonesia struggled with 0.1% annual growth and 11 other provinces experienced contraction during that period, West Nusa Tenggara was able to maintain growth at 6.0% annually. The main reason was copper mining. After ten years of exploration, Newmont Mining Corporation started the construction phase in Batu Hijau in 1997, began the start up process in 1999 and established commercial production in 2000.

West Sumatra was another of the high growth provinces during period of 1975-2002. In the 5 development episodes, it became one of the top five growing provinces only between 1982 and 1986. West Sumatran economic growth was dominated by the growth of services sector. It is presumably based on its culture of trading and out-migrating (*merantau*). Another interesting fact is that West Sumatra manufacturing productivity was positive during period of 1998-2002, while other provinces experienced negative growth.

As the capital city of Indonesia, Jakarta has consistently been among the richest provinces. Jakarta is also the centre for trade, communication and transportation in Indonesia. The share of the services sector is very high at 75% in 1975 slightly decreasing to 66% in 2002 due to the rapid development of the manufacturing sector. With that structure, Jakarta was among the fastest growing provinces during period of 1987-1997, which was the period of export orientation and rapid financial development. Jakarta also became the centre of private capital in the period of 1993-1997. The same reasons led Jakarta to be the worst hit province by the financial crises in term of GDP. However, migration out of Jakarta weakened the tension and there was no contraction in term of GDP per capita during the economic crisis period during period of 1999-2002.

North Sulawesi was also among the five fastest growing provinces during period of 1987-1997. Yet, North Sulawesi did not experience any GDP contraction in period of 1998-2002. Instead its GDP and GDP per capita grew by 3.7% and 2.4%, respectively, at the time of the crises in Indonesia. One reason is its strong services sector, with Bitung as a large seaport and Bunaken Island as a major tourism attraction. In addition, North Sulawesi also has a strong agriculture sector with coconuts and fish the main commodities which export increased dramatically in increase time (Jones and Sondakh, 2003).

4.2.4 Structural change

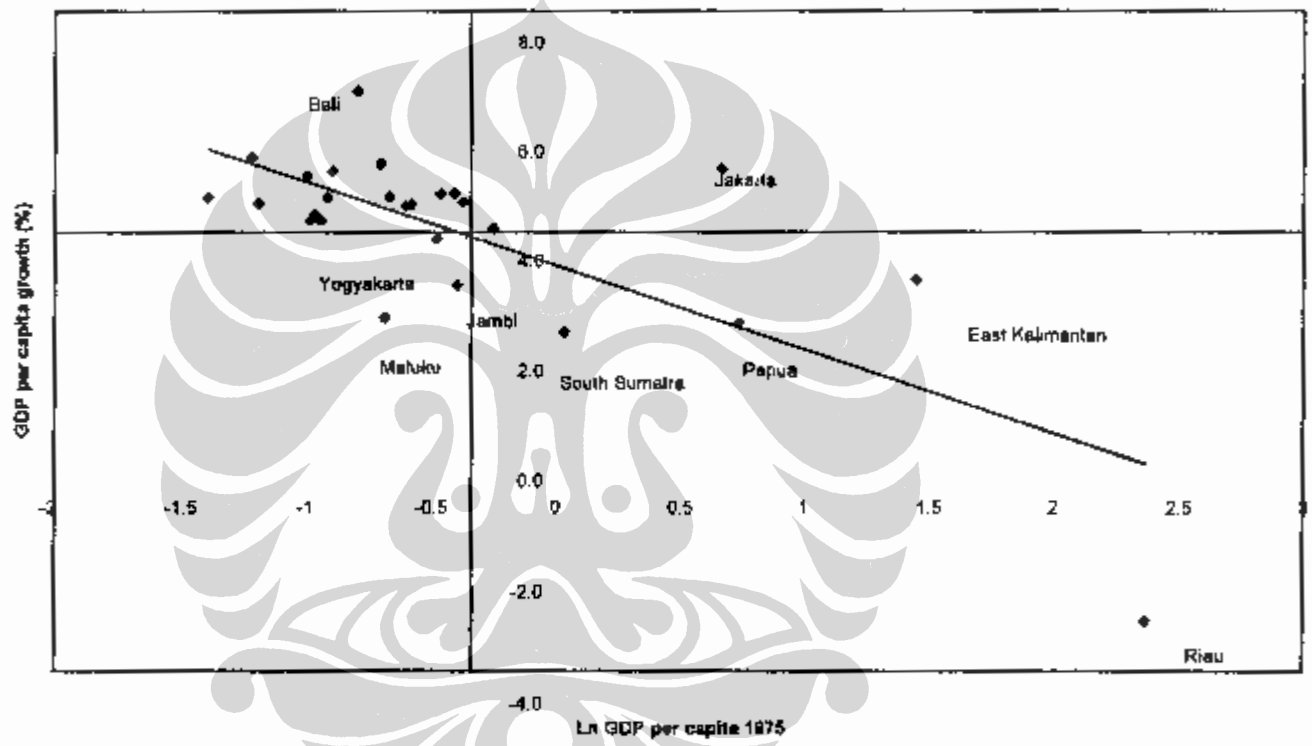
Despite the existence of the mineral rich resources provinces, other Indonesian provinces also experienced rapid structural change over the period of 1975-2002. Indonesian provinces had predominantly agricultural economies in 1975, with 21 of 26 provinces having more than one third of their GDP from agriculture. Nine of these provinces had more than half of their GDP from the agricultural sector. Yet, none had such a large agricultural sector in 2002 and only 5 of the 26 provinces had more than one third as the share of agriculture in their provincial GDP. The industrial sector was growing rapidly in most provinces - from only 4 provinces in 1975 with more than 25% as their industrial share to 15 in 2002. The services sector has always had a high share in Indonesia's GDP, it is always around 40% since 1975 to 2002. The sector was still growing with 15 provinces having more than one third of their GDP from services in 1975, increasing to 20 provinces in 2002.

Trade is very important part of service sector given Indonesia geographical condition and the differentiated output among provinces.

The sector share of GDP was increasing from 16% in 1975 to 18% in 2002. Bali, Jakarta, Central Java and East Java had the highest share at above 20% in 2002 while Aceh and Papua were the lowest with 7.6% and 4.7%. Transportation and financial sectors were around 7% to 8% of GDP each during period of 1975-2002. While transportation is almost spread evenly, the financial sector was heavily concentrated in Jakarta. The government and other services sector was also big with their initial share was 12% of GDP in 1975 but then shrinking to 9% in 2002. East Nusa Tenggara, Yogyakarta, and Bengkulu were the provinces with the biggest share of this sector at 25% to 18% in 2002.

Figure 3

Growth and Initial Income



5. ON REGIONAL INCOME CONVERGENCE

Analysis of convergence begins by comparing the growth performance of each province with its initial income (i.e. absolute β convergence). As can be seen in **figure 3**, there were four provinces, Riau, East Kalimantan, Papua and Jakarta, which had per capita GDP above average, but only Jakarta had above average growth. On the other hand, of the 21 provinces which had below average growth during period of 1975-2002, only three provinces grew at less than the average growth rate. As a result, convergence seems to be occurring in Indonesia's regional economy.

However, many researchers suggested this convergence process in Indonesia may be overstated. Inclusion of the mining sector in the calculation of GDP per capita is the main reason. The output of the

mining sector is unequally distributed with only five provinces having very big contributions in the sector. As a result, the high regional inequality is due to that sector, but most of the mining output is retained by the central government to be redistributed, which means the income of people in these mining rich provinces cannot be represented by the output of that sector. Moreover, the convergence is not that obvious in case of per capita GDP without mining, where 2 of 7 provinces with above average per capita non mining GDP were growing above the average and 6 of 19 below the average provinces were growing below the average growth.

The regression for absolute β convergence confirms the above argument. The estimation of β coefficient in GDP per capita for the whole period from 1975 to 2002 is of 1.5%, meaning the disparity will be halved within 46 years. It is also statistically very significant.[5] On the other hand, the β coefficient for GDP per capita without mining in 1975-2002 (0.4%) is far below the coefficient with mining and statistically not significant, meaning that it cannot be said there is absolute β convergence in per capita non mining GDP. Unfortunately, the finding cannot be confirmed with other income measures, i.e. household consumption, because of data unavailability. Nevertheless, the coefficient for the existing data (1983-2002) suggests the coefficient is 0.2% in 1993 constant prices and statistically insignificant.

The results show the strong convergence in GDP per capita but very weak in term of non mining GDP per capita during 1975-2002 and also in per capita consumption during period of 1983-2002. It is also useful to compare some results from other country convergence studies. Generally, it is expected that the result of developing country would be different with the one from developed country since the mechanism of convergence process is more suitable to be applied on a well developed market economy (Solow, 2001).

5.1 Comparison of Overall Convergence to Other Countries

China would be the country with the characteristic of planning system in period of 1952-1965 and market system after the reform in 1993. The magnitude of β coefficient in Indonesia GDP per capita case during period of 1975-2002 is higher than China in period of 1952-1965 (0.6%) but less than China during period of 1978-1993 at 1.7% (Jian, Warner and Sachs, 1996) or 2% during period of 1978-1989 (Gundlach, 1997). The

[5] The β coefficient can be directly estimated since $e^{\beta} - 1 \sim \beta$

adjusted R^2 of the regression is relatively high compared to the China regression. Nevertheless, the magnitude of β convergence for non mining GDP per capita is lower than China convergence in planning system era. Vietnam, another economy that just through market reform process has a very low convergence rate at 0.3% during period of 1995-2000 (Klump and Nguyen, 2004).

Comparing to the other developing country studies, the magnitude of 0.4% from non mining GDP per capita is actually not too low. India has experienced regional divergence between 1961 and 1991 (Cashin and Sahay, 1995). Mexico was only achieved only 0.2% rate of convergence during 1970-2003, while Argentina and Brazil were slightly better with 0.5% and 0.6% respectively (Serra *et. al.*, 2006; Ferreira, 2000; Azzoni, 2001). The highest regional convergence among Latin America in this period was Chile with 1.2% followed by Peru with 1.1%, all based on GDP per capita convergence although this is not as high as Philippines during period of 1988-1997 at 10.7% (Balisacan and Fuwa, 2003). Interestingly, this rate of convergence has not been constantly low along the period and it will be discussed as the comparison for the impact of economy episodes on regional convergence in Indonesia later on.

The result from developed country studies show higher rate of convergence with the average of 2% (Sala-i-Martin, 1996). From the 8 countries, Canada in period of 1961-1991 and Spain in period of 1950-1987 were the highest at 2.4% and 2.3% each. Nevertheless, the rate of convergence of GDP per capita in Indonesia is also almost the same as the β coefficient for France (1.6%) and Germany (1.4%), and higher than Italy (1.0%) during the 1950-1990 period (Sala-i-Martin, 1996). These results have been confirmed by Coulembe and Lee (1995) for Canada and Paci and Pigliaru (1997) for Italy.

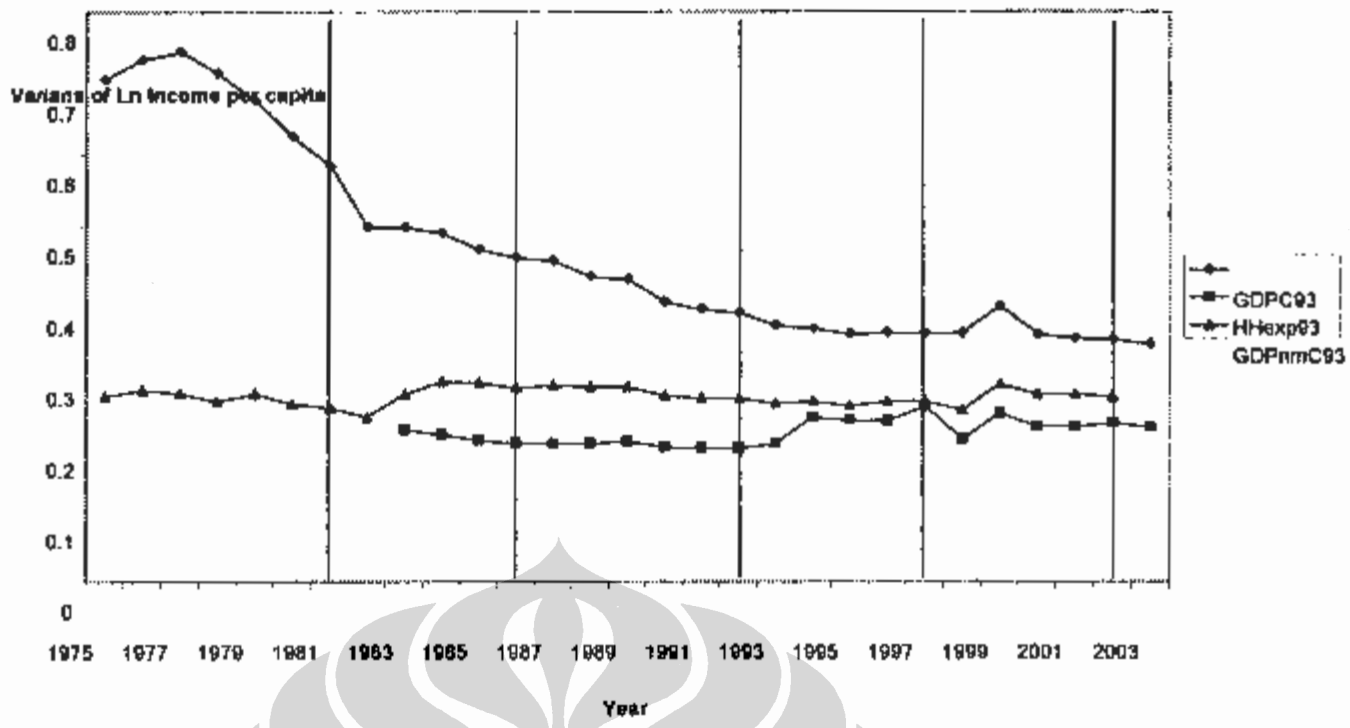
Tabel 2
The Estimation Result of per Capita GDP Absolute β Convergence

	Logarithm per capita real GDP			Logarithm per capita real GDP non mining			Logarithm per capita real Household consumption		
	Initial value	Constant	Adj. R^2	Initial value	Constant	Adj. R^2	Initial value	Constant	Adj. R^2
1975-2002	-0.015***	0.033***	0.539	-0.004	0.038***	0.022	-0.002	0.032***	-0.030
	-5.493	-12.782		-1.250	-13.77		-0.529	11.342	
1975-1981	-0.020**	0.053***	0.188	-0.01	0.057***	0.025			
	-2.608	-7.561		-1.280	-9.43				
1981-1986[a]	-0.028***	0.028***	0.301	0.001	0.037***	-0.042	-0.017**	0.012**	0.178
	-3.433	-4.624		-0.07	-5.1		-2.534	2.357	
1986-1992	-0.017***	0.050***	0.313	-0.008	0.051***	0.021	-0.007	0.025***	-0.002
	-3.520	-15.504		-1.240	-16.12		-0.971	4.957	
1992-1997	-0.010*	0.052***	0.084	-0.003	0.050***	-0.027	0.018	0.050***	0.024
	-1.814	-12.852		-0.580	-17.62		1.268	6.121	
1997-2002	-0.007	0.005	-0.016	-0.001	-0.001	-0.041	-0.018	0.030***	0.056
	-0.777	-0.682		-0.160	-0.230		-1.575	4.987	

Note: *, **, and *** are 10%, 5%, and 1% significance respectively. [a] starting from 1983 for household consumption regression

Figure 4.

Sigma Convergance



5.2 Convergence in the Oil Based Economy

In the first episode, from 1975 to 1981, there was a significant absolute β convergence for per capita GDP with the magnitude of the β coefficient estimated to be 2.0%. The expected time for the disparity to halve from 1975 value is 35 years. The coefficient is higher than the overall period of 1975-2002 estimation, but surprisingly the value of adjusted R^2 is only 0.19, meaning there were factors affecting the process other than simply the convergence process since although very significant, the convergence process only explain 19% of the provincial growth. This means that there are other growth determinants that should be discussed later on. It is also important to note that, although not significant, the β coefficient for non mining GDP per capita is relatively high at 1.0%.

The σ convergence may give a clearer picture in the changing of the inequality, since it shows the trend of the distribution disparity from year to year. According to this convergence concept, there was actually a divergence from 1975 to 1977 before a steep downward trend toward 1981. The variance of logarithm GDP per capita increased from 0.71 in 1975 to 0.74 in 1977 before dropping to 0.58 in 1981. On the other hand, the variance for non mining GDP per capita fluctuated slightly throughout the period and decreased from 0.26 in 1975 to 0.25 in 1981. These two inequality measurements have also shown that the disparity in Indonesia's regional economy was much less severe when mining is excluded from the domestic product.

Since the first Indonesian economic episode was dominated by the oil based economy, it is expected explanation should centre on the performance of the mining rich provinces compared to the others. The story of how strongly oil dominated the economy can be seen from the performance of the mining rich provinces. Riau, East Kalimantan and Papua were among the provinces with the highest GDP per capita, along with Jakarta and South Sumatra in 1975, while Aceh, Central Kalimantan, Bali, North Sulawesi and East Kalimantan achieved the highest growth. So the catching up process in this period was still due to the rapid growth of the two mining rich provinces, Aceh and East Kalimantan, in addition to the slightly negative growth of Riau, which had the highest per capita GDP in 1975. As a result, Aceh joined the highest GDP per capita group in 1981, while the gap between Riau and East Kalimantan as the first and second on the list was very close. Nevertheless, there was also high growth in the two non mining rich provinces, Bali and North Sulawesi.

5.3 Rapid Convergence in Mining Sector as oil Price Fall

Indonesia is estimated to have had a rapid absolute β convergence following the fall in oil prices in the second episode. The magnitude of the β coefficient was high at 2.8%. It was statistically significant and has higher adjusted R^2 than for the previous period at 0.30. Interestingly there was a sign of β divergence in non mining GDP per capita although it was not significant. The estimation can also be done for household consumption per capita from period of 1983 to 1986, which means missing the year 1981 and 1982 from this episode. The result shows the existence of β convergence in household consumption with a lower β coefficient at 1.7% and weakly significant.

There was also σ convergence in GDP per capita period of 1981-1986. The variance dropped from 0.58 in 1981 to 0.50 in 1982 and then continued to decrease steadily to 0.46 in 1986. On the other hand, the slight increasing disparity in non mining GDP per capita was also captured by the slight increase in disparity. It was 0.23 in 1982 and 0.27 in 1986. The variances of per capita household consumption in both prices have a slight downward slope from 1983 toward 1986. They were 0.21 in 1983 and had become 0.19 by 1986. So the disparity in consumption was lower than the disparity in non mining GDP and has become even lower in this period. This was probably because the consumption variable also includes the consumption of mining employees.

The convergence in per capita GDP was due to the fact that two mining rich provinces, Riau and Papua, had the slowest growth and Bali,

Central Java, West Kalimantan, Bengkulu and West Sumatra, which had the highest growth, were all below the median of this income distribution. On the other hand, the divergence in non mining GDP per capita was mostly due to the high growth of Aceh and East Kalimantan in non mining sectors. This shows that these two provinces were able to transfer the high income from mining to the non mining sector in those periods.

5.4 Slowing Convergence during Trade Liberalization

The speed of β convergence in GDP per capita had become much slower in the third episode of Indonesian economy when the economy was opening up by major trade deregulation in 1987. It happens as the regional economies better connected to the global economy benefited the most. After experiencing 2.0% and 2.8% convergence rate during the first and second episode, the magnitude of β coefficient is estimated to be low at 1.7% during period of 1986-1992. Meanwhile, the estimation for non mining GDP per capita β coefficient shows insignificant convergence. The same result is estimated for the β coefficient for household consumption.

This result is similar with the impact of trade liberalization in Latin America in early 1990 undertaken by Argentina, Brazil, Colombia and Peru. In Argentina and Colombia the speed of convergence plunged from 1.5% and 1.7% in period of 1980-1990 to 0.4% and 0.8% in period of 1990-2002 respectively, however both countries has experienced the low convergence before in period of 1970-1980 for Argentina and in period of 1960-1970 for Colombia. Nevertheless, Peru, which has experienced a convergence since 1970, has also slowed the speed of convergence significantly from 1.8% in period of 1980-1970 to 0.2% in period of 1990-2000 (Serra et.al., 2006). The massive impact of trade liberalization was experienced by Mexico in 1985 as it had significant β divergence after experiencing strong convergence in period of 1970-1980 at 2.1% and period of 1980-1985 at 3.4% (Serra *et.al.* 2006, Paluzie 1999, Hanson, 2003).

The variance of GDP per capita is estimated to have decreased from 0.46 in 1986 to 0.38 in 1992 as the sign of σ convergence. Nevertheless, the convergence was slower in the first half of the period and then decreased on a steeper slope after 1989. In the estimation on non mining GDP per capita, the disparity had only a very slight decrease from 0.27 in 1986 to 0.26 in 1992, while there was almost no σ convergence in household consumption. However, there was increasing disparity trend toward 1989 decreasing thereafter.

During this export promotion episode, Lampung, Bali, North Sumatra, Jakarta and North Sulawesi were the five fastest growing provinces. The additional deregulation in the trade and financial sector enhanced the economic performance of these provinces which had a relatively high share of the services sector to begin with. Bali and Jakarta have a very high share of trade sector in their GDP, moreover Jakarta also had high share of financial sector while Bali had high share of tourism sector. North Sumatra and North Sulawesi were two of the provinces with the highest transportation sector especially because they also have relatively good ports. Meanwhile, Lampung is the border of Sumatra and Java so although did not have such a big share of service sector but it had the impact of the increasing mobility of good from those two big islands. However, except for Jakarta, these provinces were not among the top five provinces in term of GDP per capita, although three of them, including Jakarta, were in the top ten. The reason being that is these provinces had relatively big economies with a high population.

5.5 Increasing Consumption Disparities in the Slowing Reform

After the episode of export promotion, the reform process especially on trade was slowing down. Yet, the speed of β convergence was lower than in the previous period. The magnitude of β coefficient for GDP per capita is estimated to have been only 1.0% and it is weakly significant. Meanwhile, the β convergence in non mining GDP per capita was not significant. These were also shown in the σ convergence trend. The variances were slightly decreased in GDP per capita and relatively constant in non mining GDP per capita.

The disparity in household consumption increased in this period as indicated by both β and σ convergence although still statistically insignificant. The high consumption growth was achieved by most of provinces in Kalimantan with East Kalimantan, the richest provinces among them, had the highest growth. Central Java and West Sumatra were also among the top five, while Jakarta was in sixth. Given Jakarta and East Kalimantan was in first and second position in household consumption per capita, the high growth of these two provinces have become the triggered for the increasing disparity.

In terms of GDP per capita, the leading growth province was almost the same as previously, except for Lampung which dropped to twelfth place and was replaced by Papua. Aceh had the lowest non mining GDP per capita growth in period of 1992-1996 after the highest growth in the previous period. One possible explanation is the escalation of conflict

after the Indonesian government declared Aceh to be a military operation area in 1990. The step was taken regarding some clashes with the Aceh freedom movement (GAM), but instead of solving the problem, the operation gradually exacerbated it.

5.6 Impact of Crises

There was no significant β convergence in the episode of Indonesian crises. 11 of 26 provinces had negative GDP per capita growth between 1998 and 2002. The highest growth was achieved by West Nusa Tenggara, East Kalimantan, Jambi, North Sulawesi and East Nusa Tenggara. The two Nusa Tenggara provinces were the two with the lowest GDP per capita, while in contrast, East Kalimantan had the highest income per capita that may cause the insignificant result. With East Kalimantan, Jambi, North Sulawesi and East Nusa Tenggara were also among the highest growth provinces in term of non mining GDP per capita, the story was very much the same. The speed of convergence for GDP per capita and non mining GDP per capita were 0.7% and 0.1%, while in household it was higher at 1.8%.

This might be surprising for those who believe the economic crisis in 1998 should have affected the wealthy provinces first as it hit the financial sector. The variance in σ convergence trend could give a clearer view. Although it is estimated to have been relatively constant between 1997 and 1998 for GDP per capita but the other two measures, especially household consumption, show a significant decrease in 1998 disparity compared to 1997. However, all income disparities, including GDP per capita, increased in 1999 before decreasing slightly again in 2000 and becoming fairly constant afterwards.

These fluctuations may show the different impact of economic and socio-politic crises on income disparity in Indonesia or simply because the rich provinces has managed to recover faster than others although suffered the worst hit by the crises. The cultural revolution of China can be a comparison how the socio-political crises full of conflict could have an impact on convergence. During period of 1965-1978, there was a massive disruption on the central planning system in China. Yet, the impact was mainly on agricultural region while the industrialized region continued to grow.

However, as stated earlier the conflict has also happened in Aceh, Jakarta and also Papua which rank fifth, second and fourth in GDP per capita beside Maluku, Central Sulawesi which rank 17th and 22nd . as a result there is no obvious impact of the conflict to GDP per capita

convergence. The similar situation can be stated for household consumption and non mining GDP. Yet, in non mining GDP Papua's rank was lower at twelfth that could make the convergence even more unlikely.

To sum up, the convergence speed of provincial GDP per capita in Indonesia became slower from one episode to another after the economy adjusted to the fall in oil prices and trade liberalized. There was no convergence in non mining GDP per capita in any of these Indonesian economy episodes, while household consumption was weakly converging when the economy was adjusting to oil price plunge. As a result, the disparity in GDP per capita, which was far above the other two income measures at the beginning, had closed the gap in those episodes because of the relatively slow growth by the mining sector.

7. CONCLUSION

This paper has looked at the pattern of inequality and convergence of Indonesia's regional income given the changes in the national economy since 1975. It has also shown that the convergence has been affected by a few of the major changes in Indonesian policies and its macroeconomic condition especially in relation to the structural change from mining sector domination to the manufacturing sector. However, it also shows that the pattern of disparity was mostly flat, i.e. the absence of convergence, except for the GDP per capita.

Generally, the speed of provincial GDP per capita convergence in Indonesia has become slower from one episode to another after the economy adjusted to the fall in oil prices. There was no convergence in non mining GDP per capita in any of these Indonesian economy episodes, while household consumption was weakly converging during the time the economy was opening up but diverged in the time capital accumulate during period of 1992-1996. The regional disparity in GDP per capita, which was far above the other two income measures in the beginning, became closer during those episodes because of the slow growth of the mining rich provinces.

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