FINANCING EDUCATION SECTOR UNDER THE CURRENT DECENTRALIZED SYSTEM IN INDONESIA : *DISPARITIES IN EDUCATION EXPENDITURES PER STUDENT AT PUBLIC JUNIOR SECONDARY SCHOOLS*

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This study examined the current decentralized system in Indonesia for increased disparities in educational expenditures across districts. It also examined the impact of these on the quality of education at public junior secondary education. The study used the most recently available data from the Ministry of National Education (MONE) and Central Bureau of Statistics (BPS) covering 1999/00 and 2002/03. These data measured district level school expenditures, demographic and socio-economic variables.

The study found that the current decentralized system in Indonesia increased fiscal capacities for education at districts. Unfortunately, increases in the fiscal capacities for education led to increased disparities in education expenditures per student, creating growing gaps in fiscal capacities for education across districts. Districts which received larger general allocation funds (DAU) per capita were also more likely to allocate more funding for education, whether or not they were poor or wealthy districts. This fact was reflected by the finding that district GRDP per capita in sub-national regions of Java-Bali and Sumatera had no impact on districts' education expenditures per student. In addition, the sub-provincial districts of the Kota (more urban) and Kabupaten (less urban) also differed in the way that they allocated funding for education. The Kota in the Sumatera region tended to allocate significantly more for education

than did the Kabupaten. At the same time, the Kota in Java-Bali did not allocate significantly more for education than the Kabupaten.

Teacher compensation was national, so funding variance was measured by locally controlled variables. The most significant impact on student achievement were teaching and learning process expenditures (textbooks, libraries, labs, field trips, etc.).

The study concluded that increased funding, combined with more efficient budget allocations, were keys to quality improvement. Policy recommendations include: a) targeting DAU transfers to reduce the gaps in fiscal capacity for education across districts; b) rewarding districts with effective budget allocations that support improved student achievement; and c) placing education closer to the center of development and security policy. Better government monitoring and district transparency is needed for this major investment. Improved policy research and reporting capacities are needed, including annual reports on decentralization policy implementation.

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LIST OF ABBREVIATIONS

Bappenas	:	Badan Perencanaan Pembangunan Nasional (National Development Planning Board)
BPS	:	Biro Pusat Statistik (Central Bureau of Statistics)
CV	:	Coefficient of Variance
DAK	:	Dana Alokasi Khusus (Specific Allocation Fund)
DAU	:	Dana Alokasi Umum (General Allocation Fund)
GER	:	Gross Enrollment Rate
GNP	:	Gross National Product
GRDP	:	Gross Regional Domestic Product
HDI	:	Human Development Index
JSS	:	Junior Secondary School
MONE	:	The Ministry of National Education
NES	:	National Examination Scores
OLS	:	Ordinary Least Square

CURRENCY EQUIVALENTS

As of January 2000: 1 USD ($) = 8,421 IDR (rupiahs)

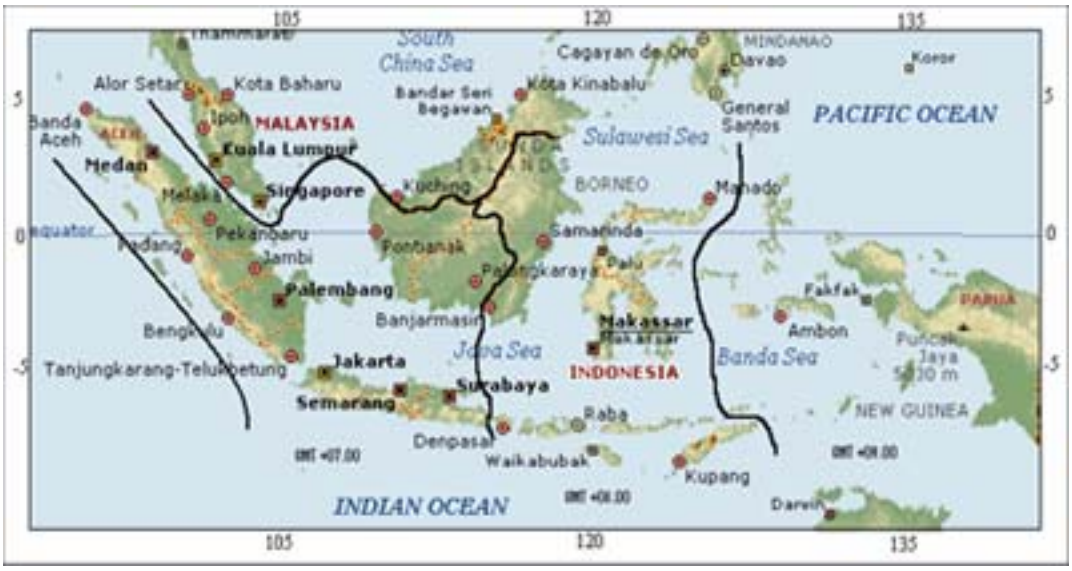
As of January 2002: 1 USD ($) = 10,377 IDR (rupiahs).

1.0 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Indonesia is comprised of nearly 13,700 islands. It is divided into 1.8 million square kilometers of land area and 7.9 million square kilometers of sea area (including an exclusive economic zone). Based on location and time zone, these areas have been grouped into three regions: western, central, and eastern Indonesia (see Figure 1). Western Indonesia consists of West and Central Kalimantan, and all of the provinces in Java and Sumatera. The central region includes East and South Kalimantan, Bali, East and West Nusa Tenggara, and all of the provinces in Sulawesi. The provinces in Maluku and Papua make up eastern Indonesia.

In 2000, the total population of Indonesia in 2000 was 205.8 million, which included a growth rate of 1.49 percent during 1990-2000 (UNESCAP, 2005). This population increase has resulted in an uneven distribution over the regions. Fifty nine percent of Indonesia's population resides on Java Island, a land area constituting only 7 percent of the country's land mass. Maluku and Papua (Irian Jaya) constitute 24 percent of Indonesia's total area, but are inhabited by only 2 percent of the total population. According to the estimation of Indonesia's age structure in 2004, 29.4 percent of Indonesians were under 14 years of age; 65.5 percent were between 15 and 64; and only 5.1 percent were 65 and older.



Source : Bureau of Meteorologist and Geo-physics, Jakarta

Figure 1. Indonesia Regional Division based on Time Zones. Based on Keppres No. 41, 1987. Effective date: January 1st, 1988.

In 2000, Indonesia established a decentralized system that provided opportunities, under specific requirements, for some districts/municipalities to have rights to establish their own local authorities. This was reflected in the establishment of several new provinces. Previously Indonesia consisted of 26 provinces (excluding East Timor); today, there are 33 provinces, which are made up of 349 districts (kabupaten) and 91 municipalities (kotamadya/cities). Currently, nine Indonesian cities are classified as metropolitan cities that each boosts a population of over one million. Most are located on Java Island: Jakarta, Bandung, Surabaya, Bekasi, Tangerang and Semarang. The rest are located on either Sumatera Island (Medan and Palembang) or Sulawesi Island (Makassar).

Expanding the economic development in an urban area contributes to a rapid urban population growth. Based on a National Development Planning Board (Bappenas) report, 46.01 percent of the Indonesian population lived in urban areas in 2005. This figure is expected to

increase to 57 percent by 2025. Since the economic crisis of mid-1997, which devastated the Indonesian economy, not only has the population increased but the number of people living under poverty line has increased as well especially in urban areas. Based on a National Socio-economic Survey conducted in 2000, 13.6 percent of Indonesian urban population living under the poverty line in 1996, and by the year 2000 it had increased to 14.58 percent.

Despite Indonesia's recent economic growth, there exists an imbalance in economic development across the regions. Table 1 illustrates that, in 2000, West Java was the biggest contributor to Indonesia's Gross Regional Domestic Product (GRDP), with about 15.8 percent. Southeast Sulawesi was the smallest contributor with only 0.4 percent. Regionally, western Indonesia is more populated and has better economic development. Its GRDP contribution was about 82.70 percent of the gross national product (GNP), while other regions contributed only 17.30 percent combined. Some researchers argue that this was due to the close proximity of the western region to Jakarta, the capital of Indonesia. This region, therefore, would have the advantages of faster and easier access to information, technology, and other materials that would ultimately boost regional development. On the other hand, South Sulawesi, located in the center Indonesia, experiences better economic development in its region because South Sulawesi serves as the center of transportation and economic activities for the central and eastern regions. Commerce and transportation activities for those regions must pass through South Sulawesi.

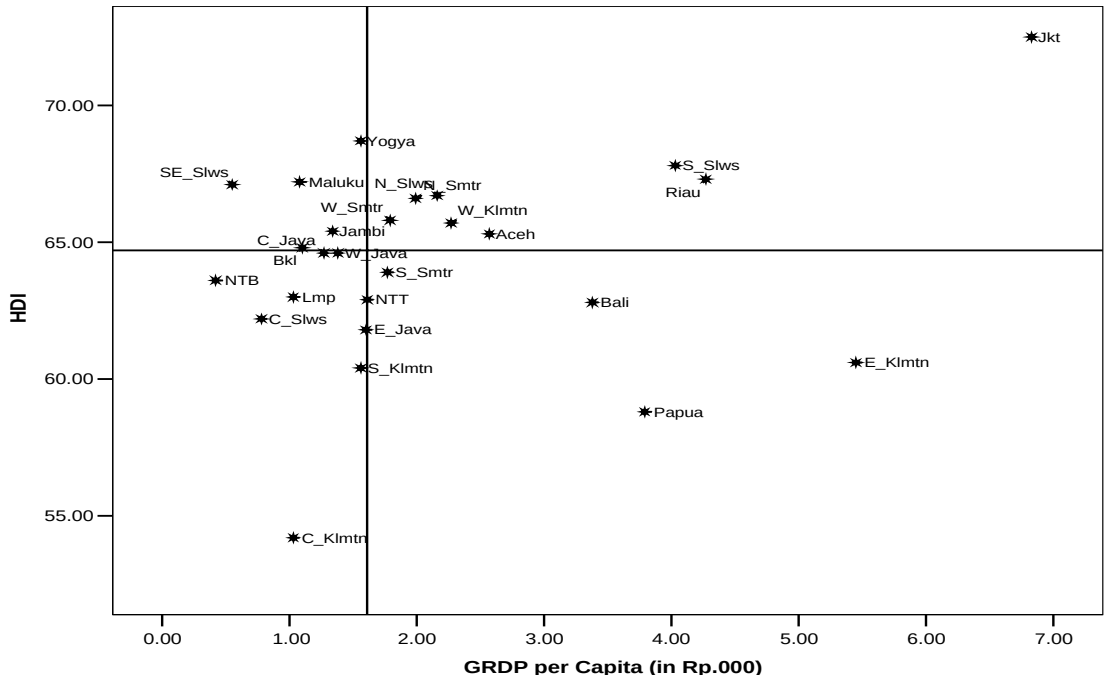
Economic development, or the lack of it, affects quality of life; and it becomes increasingly important to understand the relationship between the two. The Human Development Index (HDI) measures the quality of life. Developed by the United Nations (UN), this index is composed of life expectancy, adult literacy and GNP per capita. One of the starling revelations of the HDI is that not all of the wealthy countries can be assumed to have high HDI,

and vice versa. Tim Arnold (arnold@stat.ncsu.edu) reports[1] that some Arab countries have poor HDI as a result of a low literacy rate among women, while some formerly communist countries have better HDI as the result of a high literacy rate. Latin America has low GNPs, but their HDIs still fall into the plus range, because they are still enjoying a higher literacy rate and the improved health-care investments of earlier years.

Indonesia also experienced the same phenomenon. Figure 2 shows that, in 1999, a positive correlation existed between the economic development (GRDP per capita) and the human development index across the provinces, but that was quite low (r=0.19). A few of the wealthy provinces had access to better human resources. They had better living conditions and opportunities to support the education sector as ways to improve human resources. Figure 2, however, also shows that some provinces with a low GRDP per capita still had a high HDI. Southeast Sulawesi, for example, had a GRDP per capita of about Rp.896.27. Its HDI, however, was above the average (62.9). The condition in which poor provinces such as Southeast Sulawesi could still post a high HDI was established under the centralized system of government control, which existed prior to 2000. Under the post-2000 decentralization system, the map of this low per capita-high HDI relationship could change. For example, a wealthy province/district that had greater capabilities and more opportunities to provide a better life for its citizens and support education sector development drives up the relationship between the HDI and GRDP per capita. Therefore, decentralized system has the potential to increase the social gap between the rich and the poor provinces/districts, unless the central government continues to provide adequate financial resources to the poor. One way for the government to reduce district fiscal gaps between fiscal need and fiscal capacity would be by providing intergovernmental transfers

[1] This report has been posted on Activist's Mailing List (ACTIV-L@UMCVMB) and can be retrieved from http://lib.stat.cmu.edu/datasets/humandevel

through general allocation funds (DAU). The districts that receive adequate funding for development have more opportunities and capabilities to provide better public services and keep the sector development growing, thus providing their citizens with a better quality of life overall, including better living conditions, education for children, and employment opportunities . When the fiscal gaps between the poor and the rich districts become wider and wider, the social gaps between the rich and the poor districts could also increase. This way, the intergovernmental transfers might be able to reduce the unexpected social gaps between those districts.



Data Source : Central Bureau of Statistics

Figure 2. Human Development Index (HDI) relative to GRDP per Capita in 1999 at Constant Price 1993

Regarding education financing, one policy concern is the allocation of sufficient funding for education, not only to be able to maintain the existing level of quality of education, but also to improve it over time. In a UNESCO report, Hickling (2001) reported the share of the Indonesian GNP for education in 2001 was about 2.74 percent. Compared to the world standard,

Table 1. Population and Gross Regional Domestic Product (GRDP) at constant prices 1993 by province, 2000

Province	GRDP			Population			GRDP per Capita (in Rp.000)
	(in Rp.000)	%	Growth Rate	Number	%	Growth Rate	
DKI Jakarta	59,492,203	14.89	0.0398	8,389,443	4.07	0.002	7.09
West Java	63,149,580	15.8	0.049	43,828,317	21.25	0.001	1.44
Central Java	40,932,538	10.24	0.039	31,228,940	15.14	0.009	1.31
DI Yogyakarta	5,018,093	1.26	0.0402	3,122,268	1.51	0.007	1.61
East Java	57,594,982	14.41	0.0397	34,783,640	16.86	0.007	1.66
JAVA	**226,187,395**	**56.6**	**0.0416**	**121,352,608**	**58.83**	**0.0051**	**1.86**
Aceh	9,999,017	2.5	0.0049	3,930,905	1.91	0.014	2.54
North Sumatera	24,016,652	6.01	0.0483	11,649,655	5.65	0.013	2.06
West Sumatera	7,868,589	1.97	0.0385	4,248,931	2.06	0.006	1.85
R i a u	21,633,953	5.41	0.0652	4,957,627	2.4	0.041	4.36
Jambi	3,251,212	0.81	0.022	3,314,043	1.61	0.018	0.98
South Sumatera	14,468,495	3.62	0.0592	6,899,675	3.35	0.009	2.10
Bengkulu	1,743,491	0.44	0.0578	1,567,432	0.76	0.029	1.11
Lampung	7,065,799	1.77	0.0279	6,741,439	3.27	0.011	1.05
SUMATERA	**90,047,207**	**22.53**	**0.0405**	**43,309,707**	**21**	**0.0177**	**2.08**
West Kalimantan	7,275,422	1.82	0.0296	4,034,198	1.96	0.023	1.80
Central Kalimantan	4,133,556	1.03	0.0168	1,857,000	0.9	0.029	2.23
South Kalimanatan	6,333,623	1.58	0.0482	2,985,240	1.45	0.014	2.12
East Kalimantan	21,889,882	5.48	0.019	2,455,120	1.19	0.027	8.92
KALIMANTAN	**39,632,483**	**9.92**	**0.0284**	**11,331,558**	**5.49**	**0.0232**	**3.50**
North Sulawesi	4,131,705	1.03	0.0622	2,847,142	1.38	-0.021	1.45
Central Sulawesi	2,383,700	0.6	0.0424	2,218,435	1.08	0.026	1.07
South Sulawesi	10,100,508	2.53	0.0488	8,059,627	3.91	0.014	1.25
Southeast Sulawesi	1,672,193	0.42	0.0529	1,821,284	0.88	0.03	0.92
SULAWESI	**18,288,105**	**4.58**	**0.0516**	**14,946,488**	**7.25**	**0.0126**	**1.22**
Maluku	2,076,087	0.52	-0.0551	1,990,598	0.97	-0.042	1.04
B a l I	7,521,841	1.88	0.0306	3,151,162	1.53	0.013	2.39
West Nusa Tenggara	4,510,571	1.13	0.3418	4,009,261	1.94	0.018	1.13
East Nusa Tenggara	2,946,892	0.74	0.0395	3,952,279	1.92	0.019	0.75
P a p u a	8,424,572	2.11	0.0322	2,220,934	1.08	0.03	3.79
OTHER	**17,958,122**	**4.49**	**0.0778**[2]	**15,324,234**	**7.43**	**0.0075**	**1.17**
INDONESIA	**399,635,154**		**0.0477**	**206,264,595**		**0.0134**	**1.94**

Source : Central Bureau of Statistic

[2] This growth rate seems to indicate that Eastern Indonesia has a better economic growth than Western Indonesia. The growth rate of 0.0778, however, does not portray the actual growth rate of this region. This Researcher finds that such a high growth rate occurs simply as the result of a low basic GRDP with a high increment of economic growth rate in West Nusa Tenggara. Therefore, the researcher could say that West Nusa Tenggara lies outside in this region.

which was more than 4.5 percent, this figure was very low. John and Morphet (1960) argue that when the quantity or quality of education is increased, financial support generally needs to be increased. They also stated that when financial support is restricted, the quantity or quality of education is likely to be limited.

Providing equitable access to a quality education is essential for all segments of the population, including the poor and the geographically isolated. Therefore, because the current decentralized system in Indonesia gives the districts authorities to allocate their available funds across their development sectors, ensuring equitable and sufficient funds for education sectors across districts becomes more important. Such monitoring would reduce the chance that some districts might spend most of their allocation money on construction rather than on education.

Table 1 also shows that in 2000 there was a disparity in economic growth across the provinces. For example, the GRDP per capita of East Nusa Tenggara was about Rp.750. DKI Jakarta, however, had a GRDP per capita of Rp. 7,090 almost 10 times that of East Nusa Tenggara. If such financial disparity across districts exists, then it is necessary to explore whether this condition impacts education expenditures. Studies to identify educational funding gaps are not only conducted in the developing countries, like Indonesia, but also done in developed countries. In the USA, for example, some researchers argue that there are still critical funding gaps between high- and low-poverty districts. The Education Trust (2002) reported that nationally, districts educating the greatest number of poor students received $966 less per student than those in low-poverty districts. It argues that this significant gap has real consequences for the quality of education for low-income children.

1.2 PROBLEM STATEMENT AND RESEARCH QUESTIONS

By complying with the implementation of the decentralized system, the imbalance in economic development may put the Indonesian government at high risk for disparity in regional development priorities and financial capabilities in education sector development. Some local authorities may have the ability to finance this sector but others may not. Even worse, some may give less attention to the education sector than to other sector development, despite their financial capabilities. Some districts argue that they need to focus more on physical development or infrastructure in order to accelerate economic development in their areas. Consequently, if disparities in financial sources increase, disparities in school expenditures are most likely going to increase as well.

Since the amount of funds allocated to a school might impact the school's efforts to improve its educational services, a provision of education financial sources becomes very critical. The current study aims to identify whether the existing decentralized system serves to increase disparities in educational expenditures across districts as well as to examine its impact on the quality of education**.** Quantity may refer to the number of children enrolled, school building, teaching-learning materials, and of course, funds for education. Quality can be interpreted as student's achievement in examinations, teacher performance in class, principal performance in school management, etc. The current study, however, will limit the scope of quality to encompass only student achievement in national examinations because of its more measurable and accessible data.

In order to provide a better understanding of the issues, this researcher raises the following questions:

1. What characteristics of disparities in education expenditures occured across the districts?
2. How do geographic, demographic, and socio-economic characteristics of districts impact the disparities in education expenditures?
3. Do the disparities in education expenditures impact student achievement?

1.3 SIGNIFICANCE OF THE STUDY

Identifying disparities in education expenditures across districts and providing insight into those disparities might help the Indonesian government, as policymaker, in evaluating the current mechanisms in place in educational finance. Currently, the government provides such a mechanism through two funds: one general (DAU) and one specific (DAK) allocation fund. The DAU and the DAK, both reduce the financial gap between fiscal capacity and fiscal need. The current study, therefore, can contribute to government policy analysis in the following ways:

First, it can describe the magnitude of the disparities in education expenditures that may exist across districts. It can describe how the DAU and DAK achieve their goal of helping districts boost their financial capabilities. The education sector may receive less attention than other sectors because of its limited impact on economic development at the local level, particularly in the area of job creation. Therefore, evaluating and enforcing a connection between intergovernmental fund transfer and district allocation funds into the education sector is needed in order that the districts address their concerns in preparing better human resources as a way to boost social and economic development.

Second, assuring sufficient funding for the education sector is not merely an attempt to maintain the quality of education, but also to increase access to it. Funds are used to build schools, procure school materials, and extend compulsory basic education from six to nine years. MONE hopes that, by allocating more funds to education, especially in districts with low enrollment rates, it can help boost those enrollment rates. By analyzing the relationship between enrollment rates and funding allocation in education, the Indonesian government may be able to adjust the disparities in education expenditures across the districts. Through this adjustment, some districts may even be able to receive more funding.

Third, understanding the disparities in education expenditures is not merely based on the amount of funding received by the schools. To understand these disparities, other factors should also be taken into consideration such as the demographic and socio-economics of the districts. The way in which districts allocate funding for the education sector may differ between the poor and the rich districts, or between a village (*kabupaten*) and a city (*Kotamadya*), or between Western and Eastern regions. By examining such factors, the government will be able to recognize the extent to which disparities in education expenditures exist and thereby, reconsider these factors in providing sufficient funding for education. The government may need to require some districts to pay more attention to the education sector and to develop specific mechanisms for those districts with less financial capabilities.

Fourth, exploring the schools' spending behavior is also necessary in understanding student achievement in portraying quality of a district 's education. The researcher argues that a low quality of education is not merely the result of limited funding, but is also contingent on how schools allocate their budget. The current study, therefore, will explore school budgets in order to see how funds are allocated for salaries, teaching-learning or instructional activities,

rehabilitation and maintenance, etc. This may also provide additional insight into a more in-depth analysis of the relationship between school expenditures and student achievement.

The researcher hopes that the results of the current study portray what is happening in the field, identify common patterns of the problems, and provide possible solutions for those problems, especially with regard to the issue of financing for the education sector in Indonesia.

1.4 LIMITATION OF THE STUDY

The current study has a number of limitations which need to be considered when interpreting research results and making considerations based on those results. First, the current study used secondary data collected by the Ministry of National Education (MONE) and the Central Bureau of Statistics (BPS). A common issue in using secondary data is its validity. In the process of educational data collection, MONE, through the Center of Informatics, gathers educational data by distributing annual questionnaires to regional offices and schools across the country. The questionnaires are returned to MONE for data entry. Because MONE does not have direct control over the process of completing questionnaires completed by schools and regional offices, human error may exist. At the data entry level at MONE, additional human error may also occur. To reduce the risk of human error, MONE re-evaluates and re-validates the output of data entry before publishing them into education statistics book.

Another limitation of the current study is time lag in gaining up-to-date information from the field. In the current study, this researcher has attempted to obtain the most current information available. Considering the process of data collection mentioned above, a several year time lag exist between up-to-date information from the field and the data becoming

available at MONE and BPS. The results of the current study, therefore, may differ from the current situation in the field. Nonetheless, the current study may assist in providing a better picture about education finance and in recognizing possible problems that exist in the field.

The current study used two different sources of data: MONE and BPS. Because of the different mechanisms in data collection by both offices, the current study also has a limitation in data flexibility in terms of the year in which the data were published. The researcher matched data from MONE and BPS in the same year the data were published. The current study, therefore, used data estimation techniques. For example, the educational data used was collected from the academic year 2002/03. The demographic data available at BPS was from the 2000 census. In order for both sets of data to match, this researcher estimated the demographic data of 2002/03.

2.0 REVIEW OF LITERATURE

2.1 A PROCESS OF DECENTRALIZATION IN INDONESIA

There are three forms of decentralization system: deconcentration, delegation, and devolution (Winkler, 1989; Fiske, 1996; Florestal and Cooper, 1997; McGinn and Welsh, 1999). *Deconcentration* refers to a transfer of authority to lower levels within the central government agencies. This system is nothing more than a shifting of management responsibilities from the central government to the regional government or an expansion of central authority to the region. In the case of Indonesia, for example, under a centralized system the Ministry of National Education had branch offices in each province (called *Kanwil)* and at each district (called *Kandep*). The branch offices implemented all programs provided by the ministry. They had to consult and request for the ministry's approval for any changes in programs and budgets. This indicates that the central ministry remained firmly in control. The local authorities had little or no say at all in designing programs and allocating funds.

Delegation is a more extensive approach in which the central authority lends or transfers the authority to lower levels of government or even to autonomous organizations such as public corporations or regional development agencies. In the education sector, the most commonly delegated areas are vocational and higher education. In Brazil, for example, SENAI – an autonomous training agency - is typically assigned to do vocational trainings and report to a

board of directors rather than any particular minister (Winkler, 1989). Similarly, universities are also autonomous bodies carrying out higher education under a delegation agreement.

Finally, the most effective form of decentralization in transferring power to local authority is *devolution*. This form implies the creation of autonomous and independent sub-national units of government, which have authority to raise revenues and spend resources. The local authorities, therefore, would be more powerful than those in the two previous forms of decentralization. A process of shifting authority from de-concentration to devolution, for example, occurred in Indonesia during the year 2000. Starting with the Indonesian economic crisis and followed by the fall of Suharto's regime, there were strong pressures and demands from local authorities to have broader regional autonomies and fiscal authorities. This condition pushed the Indonesian government to shift its governmental system gradually from a centralized to a fully decentralized system. This process could bring the government closer to their constituents so that government services can be delivered more effectively and efficiently (Usman, 2001).

One assumption driving this process is that local authorities have better knowledge of local conditions, characteristics, and preferences than does the central government. Florestal and Cooper (1997, p.3) list four key features of devolution: the body that exercises responsibility is legally separate from the central ministry; the body acts on its own, not under the hierarchical supervision of the central ministry; the body can exercise only the powers given to it by law; and the body can act only within the geographic limits set out by the law.

The concept of decentralization in Indonesia is actually not a recent phenomenon. As a part of the decentralization initiative, President Habibie, who replaced President Soeharto, established two sets of government laws: the Regional Governance Law No. 22/1999 and the

Fiscal Decentralization Law No. 25/1999 as legal frameworks for the devolution process. According to the Law no. 22/1999, the hierarchical relationship among provinces and districts was abolished. All districts become fully autonomous and responsible for the planning, managing, financing and delivering of most public services, including education, health, and infrastructure. Based on this law, the central government will only be responsible for the judicial system, religious affairs, national defense and security, fiscal and monetary affairs, international diplomatic relationships as well as the macroeconomic planning and standardization. All other responsibilities will be handled by local governments. Local autonomy, therefore, is no longer defined as the responsibility to support national development, but rather the rights of the locals to make decisions over responsibilities within their jurisdiction. It also indicates that the reform is not merely transferring administrative authority, but also transferring political power to the local governments. This becomes more visible when Law 22 of 1999 was revised as the Law 32 of 2004 that allows direct election of sub-national leaders.

The concept of three levels of local government – province, district, and municipality – were already introduced under the Local Government Act no. 18/1965 (UNESCAP, 2005). It was mentioned that the local government would have full autonomy. Due to a change in the national government at that time, a process of local autonomy had not yet been implemented until the year 1974 when the Local Government Act no. 5/1974 was issued. Under this law, a local autonomy was established to increase efficiency and productivity, especially in executing the process of development, providing public services and maintaining political stability as well as national integrity (UNESCAP, 2005). Many government functions, however, were still carried out by the central government agencies in provinces and districts. Most local decisions, therefore, were made by central government and did not necessarily reflect local preferences. It

indicated that the national government was still very much in control, and choices at the local level were substantially constrained (Ranis and Steward ,1994; Alm, Aten and Bahl, 2001). Consequently, the so-called autonomy was more of a de-concentrated form of decentralization rather than devolutionary.

2.1.1 Forces behind the Decentralization of Educational System.

One consequence of the devolutionary decentralization process in Indonesia is that the local government now has to fully shoulder the responsibility of the tasks and functions assigned to them, including the development of the educational sector. According to Education Law 20/2003, the principal responsibilities, authority, and resources for the delivery of education are transferred to lower levels of government, while some decision-making power is transferred to schools (World Bank, 2004). One of the reasons to decentralize the education sector is that local authorities, which are closer to the schools, hopefully can precisely and quickly determine what the schools need.

Florestal and Cooper (1997) argue that there are a variety of reasons why countries decentralize their basic education systems: to save money and improve management efficiency and flexibility; to transfer responsibility to the most capable level of government; to raise required revenues; to conform with a wider administrative reform or with the general principle that administrative responsibility should be vested in the lowest capable level of government; to give users a greater voice in decisions that affect them; and to better recognize local linguistic or ethnic diversity. Winkler (1989) more specifically categorizes the rationale for education decentralization into three groups: (i) efficiency and effectiveness, (ii) educational finance, and (iii) redistribution of political power.

It is a common argument that transferring decision-making power to local authority is a way to increase efficiency and effectiveness. Efficiency can be defined as a way to make the best use of scarce resources to achieve given ends (Thomas *in* Guthrie, 1980, p. 148). Thomas argues that an increase in efficiency may result from procedures that increase goal attainment with no increase in cost, reduce cost without reducing goal attainment, or enhance goal attainment while also reducing costs. From the efficiency point of view, high unit costs of primary and secondary education provided by the central government become a main argument for decentralizing education (Winkler, 1989; Burki, Perry and Dillinger, 1999). There are some reasons behind this argument: (i) Since the capacity of national government to manage and supervise the education system is inadequate or weak, the transfer of the responsibilities to local authorities may increase the accountability of the school to improve its performance. (ii) The costs of decision-making in a system where even the most minor local education matters must be decided by a geographically and culturally distant bureaucracy in the capital city; and (iii) Prices and production processes may vary across the regions. Therefore, implementation of national standards for curriculum, construction, and teacher quality that are designed by the ministry of national education could prevent cost savings since they would preclude adjustment of educational inputs from local or regional price difference. Thus, by letting the local authorities allocate budgets across inputs there will be an increase in efficiency.

From the effectiveness point of view, decentralizing education can be seen as a way to increase school responsiveness to the parents' and local communities' requirements and eliminate the need for central government decisions on local education matters (Winkler, 1989). This means, the school should be able to fit the educational inputs to the preferred outputs, and decide what the important inputs into the educational process should be. The school, therefore,

requires strong leadership, well-prepared school planning, provision of resources, support for decisions, and monitoring (Brown, 1990). By giving more power to the school through the decentralization process, there will be an increase in the school effectiveness.

One example of decentralization of the education sector is Chile. Chile's education reform in 1980 was aimed at increasing efficiency and effectiveness in the country's education sector. The reform was made through the transfer of responsibility for school management from the Ministry of Education to the municipalities. Municipalities became responsible for the hiring and firing of staff (including school heads) as well as wage setting and the purchase of supplies. The central government retained responsibility for drawing up general regulations (minimum curriculum, universal coverage condition, etc), as well as the tasks of administrative and technical supervision, and the provision of basic finance for the sector (Larranaga, 1996). According to Castaneda (1991 *in* Larranaga, p. 4), the main objective of the reform was to solve the following problems of the centralized system: (i) low quality and efficiency levels associated with a lack of systemic incentives for attracting and retaining students; (ii) low teacher salaries as a result of high administration costs; (iii) inadequate supervision of both schools and teachers; (iv) rigid study programs that did not respond to local needs; and (v) low level of community participation in schools issues.

Fiscal constraints can be another reason to decentralize the education sector. When the proportion of school-age children enrolled in primary and secondary schools increases, the educational expenditures are most likely to increase as well. If the central government is more responsible for the development of the education sector then it may face severe fiscal constraints to continue the expansion of education opportunities (Winkler, 1989). Winkler (1989) argues that shifting a part of the burden for support of primary and secondary education to sub-national

units of government, to community and voluntary organizations, and to parents has become an increasingly attractive alternative. By sharing responsibilities for education, the local units, hopefully, will be more motivated to collect more funds for education due to a greater sense of belonging to the schools. They can spend the funds more wisely and monitor the outcomes more closely. Education reform in Argentina in 1978, for example, was mainly driven by financial reasons (Filmus, 1998 *in* Gorostiaga, Acedo, and Xifra, 2003). The reform was done by transferring responsibility for the national primary schools to the provinces. It continued transferring all national secondary schools and post secondary institution in 1992. Gorostiaga, Acedo, and Xifra (2003) noted that the provinces agreed to receive the national secondary and post-secondary system, but were not given specific resources to face the economic effort. One argument behind this national government policy was that significant increases in tax collection in 1991 would give more resources for the provinces that allowed them to finance the administration of the transferred schools (Senen, Gonzalez and Arango, 1997 *in* Gorostiaga, Acedo, and Xifra, 2003).

Another argument for decentralizing education sector is redistribution of political power. This argument is rarely stated as the reason, but democratization or inclusion of marginal groups in society is frequently stated as the goal (Winkler, 1989). McGinn and Street (1986 *in* Winkler, 1989) argue that redistribution of political power is the primary objective of decentralization by empowering such groups in society who support central government policies, or weakening groups who oppose the policies. The decentralized education sector in Mexico, for example, was aimed at reducing the power of the national teacher union by transferring salary negotiations from central to the state government level (Winkler, 1989).

Referring to Winkler's arguments, the Indonesian decentralized education sector was driven by two reasons: (i) increasing efficiency and effectiveness, and (ii) redistributing political power. Given the heterogeneity of cultures and ethnic groups and the large geographical scale of Indonesia, the central government most likely does not have sufficient knowledge of all local conditions. Efficiency and effectiveness, thus, becomes the main argument for decentralizing the education sector. Lack of laboratory equipment and poor teacher distributions, for example, were the results of inefficiency and ineffectiveness inherent in the previous system. Citing reasons of "economies of scale" and "scarce" items, the ministry of national education procured the laboratory equipments centrally. The ministry then distributed the items to the schools through districts. The ministry argued that when the purchase of the items was centrally pooled, then it could reduce the total cost. However, it became inefficient when the cost increased due to the high cost of delivery from the central government to local schools. There were even instances where the schools received late delivery due to geographical barriers.

A long history of poor teacher distribution is also an example of the ineffectiveness of the Indonesian centralized education system. Under the centralized system, the ministry was responsible for recruiting and distributing teachers to schools. Due to lack of information regarding the school needs, some schools had too many teachers in one subject but too few in others. Unfortunately, the school principals could not change teachers to attract those with needed credentials. Some teachers, therefore, would teach subject matters without any appropriate academic background. This condition, therefore, increased the teacher mismatch problem and lowered the quality of education. The existence of the teacher mismatch problem, however, is not merely due to poor teacher distribution. A lag between development of new curriculum and the availability of appropriate teachers in schools also most likely contributed to

the existing problem. Schools were often not ready to implement the new curriculum because of inadequate time to disseminate the new curriculum to the teachers, and few in-service training opportunities. Moreover, teacher institutions were also not ready to support the new curriculum in their pre-service program. Thus, the problem of teacher or subject mismatch is a complex one. There was a possibility that by transferring the responsibility for teacher deployment to the districts that the mismatch problem could be decreased and the effectiveness of teacher distribution could be increased. Establishing good coordination among the center for curriculum development, schools, districts and teacher institutions also required more attention.

On the other side, political considerations were also hidden factors behind the process of decentralization in Indonesia. Following the fall of Suharto's regime and the economic crisis, there were strong pressures from the local governments to have broader autonomy and fiscal authority. In order to prevent separatist political movement, the central government, led by President Habibie at that time, introduced the idea of devolutionizing authority to the local governments. Based on Regional Governance Law No. 22/1999, most of the authority for the development sectors was transferred to local governments, including primary and junior secondary education.

At the same time, however, there was also a national goal of compulsory basic education programs for a nine-year formal basic education up from six. Not all local governments, however, were ready to develop the education sector using their own resources. Low student enrollment rates and untrained teachers, insufficient school facilities, etc, as well as weak financial resources became critical factors for transferring responsibility for the education sector to local authorities. Pushing all development sectors to local authorities at one time, rather than in a gradual process, however, may increase financial and administrative burdens for ministry

authorities. The World Bank (2004) commented that Indonesia's new systems allowed local governments to produce the services transferred to them under the decentralization reform were just beginning to emerge. There was, however, no national strategy to encourage or disseminate good practices. Insufficiently trained and experienced staff to carry out their new and expanded roles also becomes a concern in part due to a lack of in-service support from local universities. Moreover, since the Ministry of Education had no regulatory authority over local districts, the development of the education sector was likely to receive less attention compared to other job creating development sectors, such as road and building construction. Referring to the argument of John and Morphet (1960) that the increase in quantity and quality of education generally should be followed by financial support, disparities in quality of education across districts were thus likely to become a new problem in Indonesia.

Any policy reform that changes from one condition toward the hope for better condition needs an appropriate strategy or plan. In decentralizing education, for example, there are many strategies or ways of thinking. McClure and Triaswati (2001) suggested two approaches that may be used in decentralizing the education sector in Indonesia: (a) shifting tactics, and (b) shifting strategy. The tactical approach focused on restructuring the government system by reproducing and miniaturizing existing hierarchies. The strategic approach focused on building professional networks. In the centralized system, many schools in Indonesia had "bad experiences" of a long line and complexity of bureaucracy. By shifting the strategic mission through transferring authority to a more grassroots level and leaving the traditional organizational relationships of mandates (McClure and Triaswati, 2001), the schools could have quick responses and received better compliance with their needs which should increase school effectiveness.

Concerning the fiscal gap between education needs and resources and the increasing complexity of the Indonesian political economy, McClure and Triaswati (2001) argue that "the Indonesian government (GOI) needed to reach out to provinces and districts to form an inclusive generational strategy that built network of adults who advocated and generated resources for good schools" (p.15). They suggested that shifting of strategic vision could be done through creating intergovernmental peer networks for collaborative learning of professionals. This strategy, therefore, is essential as McClure and Triaswati (2001) argue :

> "Moving from mandates to partnerships will require new forms of cooperation. One way of initiating public and professional dialogue about a strategic vision for education is to think about the fundamental importance of learning and knowledge to the sustainability of civil societies…….The education community needs to keep a strategic vision with large, long-term goals in front of the public to help ensure a public commitment to taxation. Decentralization brings new opportunities for entire communities to take greater public responsibility for the education for children" (p. 15).

The effort to build a clear strategic vision, therefore, could strengthen public confidence on how their money – channeled through taxation – will be invested. McClure and Triaswati (2001) suggest that an effective education finance strategy that improves the quality of basic education for all of Indonesia' children will require a broad generational coalition of concerned educational policymakers, professionals and parents (p. 15).

2.2 FINANCING THE EDUCATIONAL SECTOR DEVELOPMENT

Adequate financial resources for education are essential when transferring responsibility for the educational sector to local authorities. Chile, for example, designed its own mechanism to

finance its education sector. A per-capita subsidy was used for transferring financial resources to education establishments. It plays a central role in the working of Chile's decentralized system. The subsidy is structured in a rate system which takes account of difference in the cost of providing the service according to the type and level of education, as well as the geographical location of the school (Larranaga, 1996). The subsidy mechanism pays a flat rate per student attending each municipal or private subsidized school. Gropello (2004) also noted that the responsibility for the delivery of education in Chile was transferred to the municipalities through specific agreements, and there was an attempt to reward municipal performance by tying central resources to the number of student attending class.

In compliance with the reform in Indonesian government infrastructures under the decentralized system, an effort to provide revenues for local authorities was set up under the Fiscal Decentralization Law No. 25/1999. This law aims to both transfer additional funds to regional/local governments, and to provide some equalization of revenues. Under this law, the two previous intergovernmental funds, a subsidy for autonomous region (SDO) – largely used for local civil servant salaries (including teachers' salaries) and region recurrent expenditures -- and a general development transfer (INPRES) – aimed at financing regional development, were eliminated. These two funds, then, were combined into a general allocation fund (DAU). This law, together with Law 34/2000 (Local Government Taxes and Charges), also provided opportunities for local governments (provincial and districts/municipal) to raise their own revenues from various sources such as local taxes, local charges, locally-owned enterprise profit, and other eligible local revenues.

Currently, there are three sources for intergovernmental funds in Indonesia: a) natural resources revenue sharing, b) a general allocation fund (DAU), and c) a specific allocation fund

(DAK). Due to limited available natural resources across the provinces and a limited use of DAK, then DAU becomes the most available funding source for local governments. The DAU is a grant aiming to equalize fiscal capacities of regional government to deliver public services. It is determined based on a fiscal gap as the difference between fiscal needs and fiscal capacities of regional government. Twenty five percent of net domestic revenue (total domestic revenue minus revenue sharing) in the central government budget is allocated for the DAU. From that amount, 10 percent is allocated to provincial governments and 90 percent to district/municipal governments. The World Bank (2003) commented that neither the 25 percent share of total revenues, nor the distribution of the DAU to provinces and local governments was based on a thorough analysis of the expenditure needs of the regions. In practice, the use of DAU really depends on the local government's prioritizing. The central government does not have enough power to specify the amount allocated of DAU for a specific purpose, such as education.

A possible fund in which the central government can control the local government is DAK. Law 25/1999 states that the DAK can be used for special needs of the regions, including emergencies, and for financing central priorities at the regional level. This fund, therefore, is intended to finance projects on reforestation, education, health, rural road, and irrigation. The DAK, however, is limited and need some counterpart or sharing from the local government, in which the local governments have to provide at least 10 percent of the total amount on their own (a matching grant). Local governments have high dependency upon the DAU (Brodjonegoro, 2004). Therefore, it would be interesting to recognize the percentage of DAU for education sector development at district level in respect to accelerating student enrollment rates as part of a compulsory basic education program.

McClure and Triaswati (2001) argued that the basic education finance system in Indonesia suffered from problems of vertical fiscal imbalances and horizontal inequities. They stated that vertical fiscal imbalances occurred when the central government placed the burden of education on local governments without also providing them adequate taxing authority. They also argued that horizontal inequalities were created by the Indonesia's provincial economies that generated widely disparate per capita resources. Usman (2001) also argued that decentralization over budgetary matters was mainly applied to the expenditure side, not to the revenue side, so there is no increased capacity of local government to tax income or assets. He concluded that although the regions now have the authority to decide how to allocate their budget, they have been given no new revenue-raising powers. He found that the increment in local taxes and levies have not been matched by the provision of better services of local government.

Table 2. Source of Local Government Revenues.

Before Law No. 25/1999	Under Law No. 25/1999
1. Fiscal Transfer from Central Government a. Regional Autonomous Subsidy (SDO) b. Inpres Grant (for village, district, and provincial governments) c. Revenue sharing of Property Tax (on land and building).	1.Fiscal Transfer from Central Govt: a. General Block Grant (DAU) b. Specific Grant (DAK) c. Revenue Sharing from natural Resources and Property Tax
2. Local Own-revenues: a. Local Taxes and Retributions (Law no. 18/1997) b. Revenues from local state-owned companies	2. Local Own-revenues: a. Local Taxes and Retributions (law no. 18/2001) b. Revenues from Local State-owned companies
3. Local Borrowing	3. Local Borrowing

Source : Alm and Indrawati (2000).

In addition, regionally generated revenues (PAD) – primary consisting of taxes, user charges and income from regional enterprises – had insignificant contributions to local revenue sources (Brodjonegoro, 2004; World Bank, 2003). The absence of property taxes (land and building) from the list of regional taxes contributed to the insignificance of PAD contribution. These taxes were collected and shared with the regions by the central tax authority (World Bank, 2003). This condition, thus, made local governments heavily dependent on the central government transfer through DAU for their sources of fund.

2.2.1 Decentralized System and Disparities in Education Expenditures

There are many factors that might contribute to the increase in the disparities. Differences in geographic, demographic and social-economic background of the districts might be factors causing these disparities. Parrish, Matsumo and Fowler (1995) argued that factors such as wealth and poverty status, metropolitan status, geographic region, median household income, education attainment, etc. should be taken into consideration in order to ensure the provision of some level of adequate or appropriate services in education sector. They asserted positive relationships between expenditures and wealth. Wealthy communities have a greater capacity to support public education services through local revenues. On the other hand, it is not surprising that there is a negative relationship between local revenues per student and the percentage of school-age children in poverty.

In the US, for example, in Pennsylvania, the state and local revenues available per student for education in the lowest-poverty districts were around 1.2 times greater than those in the highest-poverty districts (The US Department of Education, 1999-2000). The funding gap was around $1,248 per student. State and federal funds allocations, therefore, have a much

stronger equalizing influence in reducing differences created by poverty. In the US, wealthy suburban districts receive more support from local resources than other districts. Rural districts receive more support from state sources and urban districts more federal support than other districts. The National Central for Education Statistics (NCES, 1995) reported that federal funds in high poverty districts exceed those in low poverty districts by more than a multiple of four.

In regard to the provision of local funds for education, the geographic region could also be considered for allocating education funds. Parrish, Matsumo, and Fowler (1995) identified that school district spending in the US substantially varied by geographic region, with the South and West region receiving larger amounts of federal funds compared to the Northeast and Midwest regions. The level of education attainment of households also has an impact on the willingness of local support for providing funds for education. Parrish, Matsumo, and Fowler (1995) find that districts with the lowest average education attainment showed the least support from local revenues and the most from state and federal sources.

Providing adequate public funds for education, therefore, is critical. In the US, tax revenues are important financial sources to support the education sector. There are many kinds of local taxes, such as sales, income, and property taxes. Local property taxes are the biggest source of funding for education in the US, supplying a third of the budgets for public K-12 education (US census bureau 1998). Odden (1999, in Goertz and Odden, p.155), however, notices that local education tax base, usually property wealth per pupil, varies widely across districts within states and provinces. He argues that this condition, therefore, makes local school districts face different challenges in raising education revenues and spending on education programs. Low-wealth districts often had low levels of expenditures even with high tax rates,

whereas high-wealth districts often had high levels of per pupil expenditures even with low tax rates.

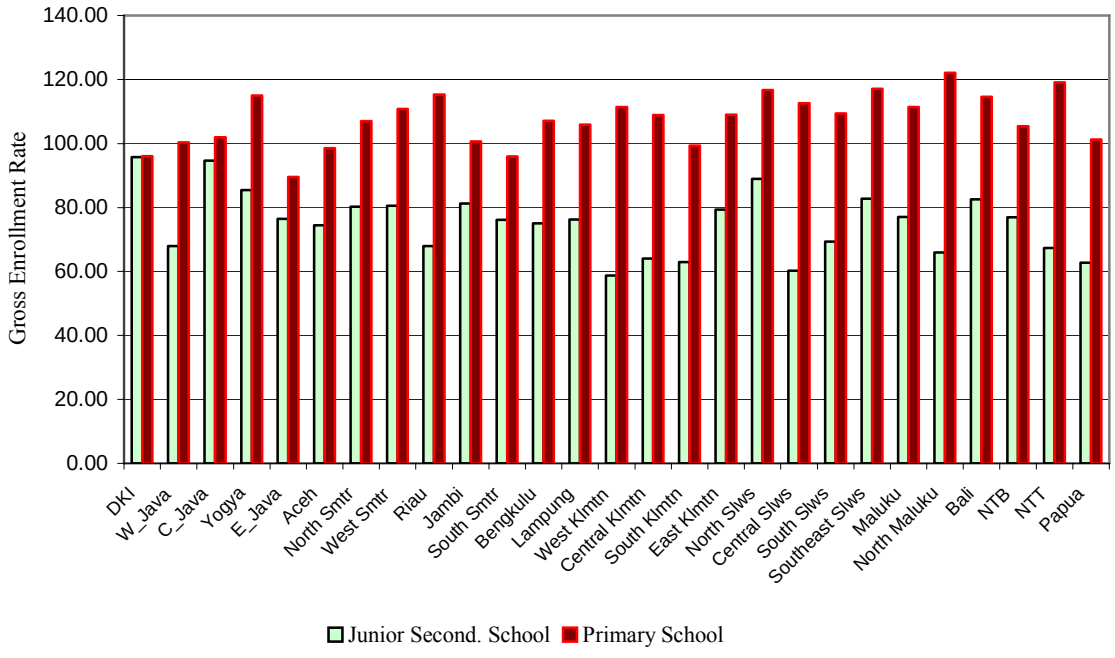
With regards to the Indonesian case, the disparity of financial resources across the provinces/districts may impact the national agenda on education sector. Since 1993/94, the Indonesian government launched a nine-year compulsory basic education program. This program aims to urge all Indonesian children between the ages of 7 and 15 to have at least nine years of basic education, covering primary and junior secondary education. The percentage of children who are already enrolled in school in such a region is reflected by its gross enrollment rate (GER). The GER at junior secondary level, for example, is calculated by dividing all students at the junior secondary level by all 13-15 year-old children.

Based on the GER, the central government mandated that the local governments with low GERs should make specific efforts in order to reach a national standard of enrollment rate, which states that at least 95 percent of the children must enroll in formal education. This completion is called as *Tuntas Paripurna*. Since the decentralized system assigned the power to the local governments to decide how they allocate their budget, then it is important to know how much effort has been spent to reach this goal – in other words, how much of their budgets are allocated to the local education sector.

Figure 3 illustrates that generally the participation rate at primary school in 2000 across the provinces approaches 100 percent, even more. In contrast, the participation rate at the junior secondary remains low. Even if they increase, the increment is too slow. Considering that the population of age 13-15 has continued to grow, then, the low increment of the secondary GER means that the absolute number of those without access to secondary school has increased. When the primary GER increases, meaning most primary school-age children have been

enrolled, the educational policies can now focus on improving the quality and achievement of the primary education, such as improved curricula, better school management and more efficient use of resources. As a result, the number graduating from the primary school increases. The competition for secondary-school places become intensive and it creates the demand for secondary-school places. Under the current decentralized system, then, the local governments need to think how to finance secondary-school expansion.

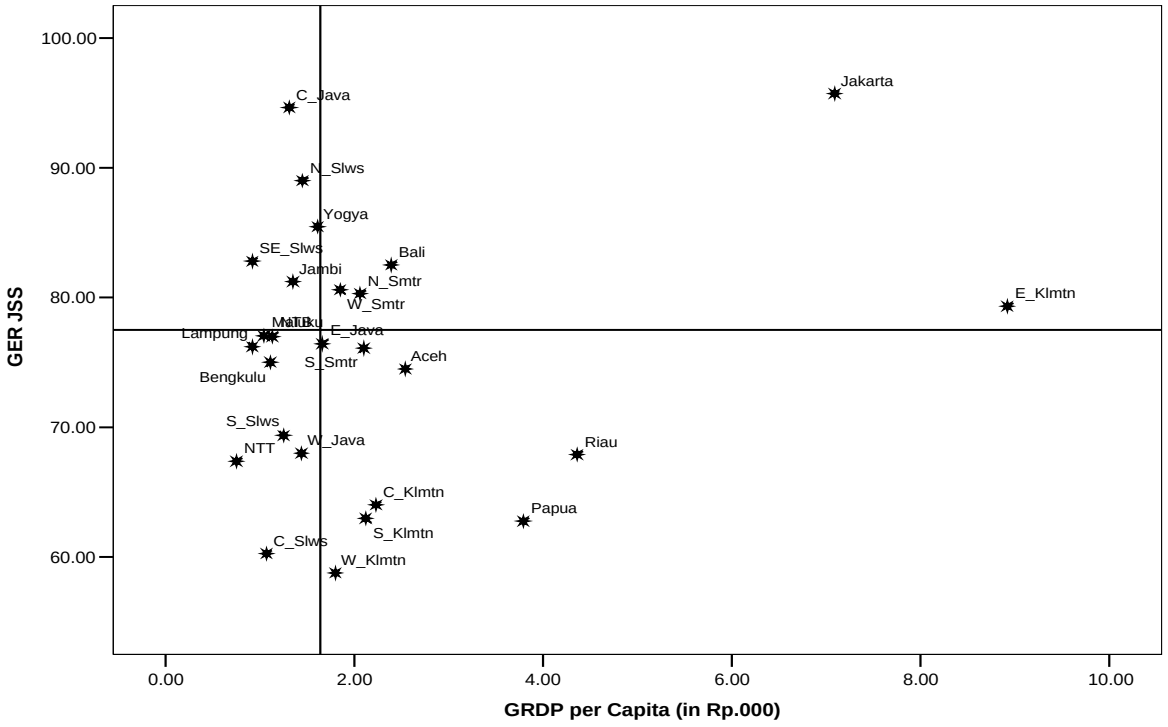
As part of the secondary-school expansion that might include more students and be less selective, the local government should address the quality of student achievement by improving the secondary education curricula. The development of curricula, of course, not only gives students new knowledge, but also prepares them for globalization and provides them competency and employment opportunities in labor markets which require certain skills, language abilities, technologies, etc.



Data source : Central for informatics, Ministry of National Education

Figure 3. Gross Enrollment Rate for Primary and Junior Secondary School across the Provinces, 2000/01

Figure 4 shows that although some provinces which have high GRDP per capita also tend to have high GER at the junior secondary level, in general the economic development in provinces does not have a high correlation to the gross enrollment rate (r=0.17). Southeast Sulawesi, for example, had a GRDP per capita in 2000 of about Rp.918.14. Its GER in 2000/01, however, was above the median (82.24). This situation, of course, might be explained by the policy of the central government during the previous regime to force local governments to



Data sources : Center of Informatics, MONE and Central Bureau of Statistics

Figure 4. The growth of GER JSS relative to GRDP per Capita by provinces in 2000

accelerate the compulsory basic education programs. The central government subsidized the poor provinces in order to make this program successful. Since implementation of decentralization just began in 2000, then, the growth of GER is just a carry-over from the

previous year. The effort in increasing the GER should therefore receive special attention since local governments would have more power in controlling the development budget. Allocating development budget into the education sector, especially at the junior secondary level, may contribute to the effort to accelerate a nine-year compulsory basic education program.

With reference to some of the above aspects, the investment at the secondary level related to the structural features of secondary-school systems and their financing is really critical. Lewin and Caillods (2001 *in* Lewin and Caillods, 2001) argue that there are some points that could be seen as a linkage between social-sector and governmental spending with the education sector funding. First, when government revenues are limited or squeezed, the absolute level of investment in education will decline. Since most recurrent expenditure is in salaries, then the real value of teachers' salaries may deteriorate. This condition, of course, will influence the commitment and performance of teachers in classrooms, which will, in turn, effect student achievement. Second, when the proportion of salary as a recurrent expenditure rises, the capital spending including budget for learning materials is likely to decline. This situation also will negatively influence both quality and achievement. Third, government policy priorities in the education sector will help distribute investment across levels of education. For example, if the government gives priority to primary education as part of universalized basic education, then secondary education could receive less attention. Fourth, as education expenditures are limited in most poor countries, the option of gaining external support or donor agencies becomes virtually the only source of developmental initiatives at the secondary level, otherwise the infrastructure will deteriorate. Such reformed methods of financing, therefore, are needed in order to maintain sustainable expansion.

2.2.2 Decentralized System and Quality of Education

After exploring the factors that might contribute to increasing disparities in educational expenditures, it is very useful to recognize the impact of the disparities in school expenditures on school performance. It has been known that the amount of money spent on education can give schools opportunities to enhance educational resources. The improvement of educational resources, may be termed educational inputs, may produce better quality of education.

Concerning the relationship between education expenditures and student achievements, some researchers argue that it would depend on the allocated education expenditures efficiently. A schools that efficiently allocates resources will purchase that combination of inputs which maximizes the potential educational impact of its budget (Levin, 1970 *in* John, Goffman, Alexander and Stollar, p. 191). Allocating more funds to the teaching-learning process provides more opportunities for schools to provide better facilities and services which correlate highly with student achievement. John and Morphet (1960) also argues that when providing additional educational inputs will cost money to obtain, then if each of additional inputs is unrelated to increasing performance, one might draw to a conclusion that significant inefficiency exists in schools. It is common, therefore, to ask whether additional funds spent on education provides better quality of education and improves student achievement.

It would be also interesting to see whether a decentralized system would impact the priorities that schools place upon their expenditures. Some schools may prioritize improvement in their facilities or teaching materials as a way to improve student performance; while other schools may focus on renovating their buildings, etc. Concerning the school expenditure allocation, there are some sub-components of expenditures in which the schools in Indonesia spend their money. These sub-components can be categorized into teacher salaries, the teaching-

learning process, maintenance and rehabilitation, and others. The existence of disparities in educational expenditures, therefore, may impact on how the schools invest their money across the sub-components. As a result, it would also be interesting to recognize the impact of the educational spending to the educational outputs.

In general, the term "educational output" will refer to educational quality. The term of "quality" itself, however, does not have a standard definition. Different people might have different interpretation. Some think of quality only in terms of academic achievement of pupils in schools, whereas others insist that quality be judged by all-round development and progress as well as by knowledge of pupils (John and Morphet, 1960, p. 14). Adams (2002b) also argues that education quality may refer to *inputs* (number of teachers, amount of teacher training, number of textbooks), *processes* (amount of direct instructional time, extent of active learning), *outputs* (test scores, graduation rates), and *outcomes* (performance in subsequent employment). In more comprehensive views, he also argues that quality of education can be interpreted based on an institution's programs' reputation, the extent to which schooling has influenced change in student knowledge, attitudes, values, and behavior, or a complete theory or ideology of acquisition and application of learning (1998 in Adams, 2002b). In this current study, the researcher defined the quality of education as student performances reflected by national examination scores (NES) as one of final outputs in teaching-learning process.

In addition, when the "quality of education" is linked to the educational cost, there tend to be greater differences in opinion. Some people will argue that increasing quality is likely to add somewhat to the cost, but fewer would agree that increasing the cost would necessarily add to the quality. When disparities in educational cost are large, therefore, it is common to ask whether a larger educational expenditure per student result in better quality. John and Morphet

(1960) report that some studies find that educational quality does not always relate to educational cost. Their arguments are based on the following conditions. First, small schools tend to cost more per pupil than average or larger sized schools (Rosenstengel and Eastmond, 1957) and reduction in class size does not always increase student performance (Odden and Picus, 1992, p.278). Some believe that larger units are more cost-effective and more educationally efficient. In larger units, teachers could specialize and schools could offer a broader course of studies.

Second, in some school systems, inept leadership and administration may adversely affect the quality of education. Good leadership and management must be combined with adequate and soundly conceived financial support in order to produce a good education program. Inept leadership often means perpetuation of undesirable and inequitable practices, inefficiency in development and management of resources and, consequently unsatisfactory educational opportunities (John and Morphet, 1960, pp. 10-11). In addition, incompetence and less qualified teachers can impact the quality of education. Low morale of teachers and other school employees may result in relatively low quality of services in education. John and Morphet, therefore, argue that quality may be affected in some extent by a number of factors that are not directly related to finance.

Moreover, Hanushek (1996) also supports a conclusion that there is no consistent relationship between school resources and student performance. His conclusion is based on a summary of the results of his exploration of 377 studies on the effects of school resources on student performance. He states that since three educational inputs – student-teacher ratio, teacher education, and teacher salary – are combined to indicate variations in instructional expenditure per student, the results lead to the conclusion that no strong or systematic relationship exists between spending and student performance (Hanushek *in* Gary Burtless, 1996,

p. 56). He finds that the estimated effects of various measures of resources are either statistically insignificant, or, more frequently, statistically significant but with an unexpected sign.

Hanushek's arguments of an insignificant cost-quality relationship bring controversies among researchers. Many current studies arrive at conclusions which refute his findings. These studies suggest that there is a strong and substantially positive relation between educational resource inputs and academic achievement (Hedges and Greenwald, 1996; Lee and Barro, 2001; Wendling and Cohen, 1981). Hedge, Greenwald and Laine (1996) argue that Hanushek's methodology led to misleading results. First, aggregate cost data from 1900, when there was only a small fraction of the population (mostly in cities and towns) attended secondary school, is not comparable to cost data from 1970, when secondary schooling was nearly universally available. Second, comparing aggregate educational achievement of the national population across such large time periods is also inappropriate.

Hedge et al also disagrees with Hanushek's assertion that if resources are up and achievement is down, then those two variables cannot be positively related. To arrive at this conclusion, requires an assumption that everything relevant to the cost of education and the production of student achievement remained constant. In fact, there have been important changes over time, including a dramatic expansion in the level and comprehensiveness of education and a decline in social capital available in families, which substitute for school resources (Hedge and Greenwald, 1996). They argue that changes in family structures and decreasing social capital have increased school expenditures as part of social capital investment. One aspect of social capital is the amount of time mothers have to devote to their children presumably some of which is given over to informal educative activities. Therefore, when mothers work, social capital is diminished, or shifted.

Eberts, Kehoe, and Stone (1984) also find that when the effect of social economic status (SES) is taken into account, there is a positive effect of small-scale schooling on student achievement. Controlling for SES is important because poverty is known to have a depressing effect on student achievement, and the poverty rate of rural areas is generally high (O'Hare, 1988). Friedkin and Necochea (1988) also predicted that school size and district size would interact with SES to explain the relationship of organizational scale and student achievement. They hypothesized that in low-SES schools and districts, large size would negatively affect student achievement, whereas in high-SES schools and districts it would positively affect student achievement.

In addition, to explore the cost-quality relationship, Paul R Mort (*in* John and Morphet, 1960, pp.14-16) conducted a number of studies in this area over a period of years. On the basis of those numerous studies, he drew the following conclusions:

> "……..The quality of education provided in the school systems where expenditures are low is far less satisfactory than that in systems where expenditures are above the national average. Low expenditures tend to mean inadequate leadership, large classes, poor teachers and teaching, and many other features that contribute to low quality.
> …….Even in the higher expenditure level school systems, there seems to be a strong relationship between expenditures and quality of education. The districts which spend more appear generally to contribute more per dollar to individuals and to our national life than those who spend less…."

Al Samarrai (2002 *in* Leclercq, 2005) provides a broader view of the evidence by surveying the papers by Hanushek and Kimko (2000), Lee and Barro (2001) along with four earlier studies (Colclough and Lewin, 1993; McMahon, 1999; Schultz, 1995; Woessmann, 2000), although no definitive conclusion was presented. He finds that there is no consistent effect of resources on educational outcomes. He argues that studies using internationally comparable test scores tend

to show that resources have a statistically significant impact, but the direction of this impact differs across the studies. Odden and Picus (1992, p. 280) argue that there are several reasons why education production function research has been relatively unsuccessful in identifying a relationship between education resources and student achievement. First, production function research assumes that all school systems are pursuing the same goals, and that those goals are related to student achievement. He insists that the reality is that the school systems pursue a variety of goals, and in many cases student achievement may not be the primary goal.

Second, it is difficult to identify inputs. They find that many studies of input-outcome relationships ignore processes and vary widely on the inputs to be analyzed. He argues that inputs could be reconceptualized to mean the "enacted curriculum" and instructional quality, but since production function analysis ignores process, this might not be an acceptable approach for a production function.

Third, the functional relationship among variables itself is hard to determine. Most studies assume a linear relationship, but the linkages might be curvilinear, logarithmic, or interactive. Fourth, he notes that most literature reviews do not distinguish among production function studies by unit analysis: districts, schools, classroom or student. He argues that not only is there variation within the unit analysis, but also the size of the unit matters, since positive results between resources and achievement are more likely to be found for smaller units. Finally, most studies use cross-sectional rather than longitudinal data and thus cannot analyze "value added" as the real issue in relating education to achievement. Although there is no definite conclusion of cost-quality relationship, it is still interesting to see its relationship case by case. Some findings in developed countries differ from results found in developing countries.

2.2.3 Teacher salary and educational quality

Hanushek and Rivkin (1990, *in* Lazear, 2001 p.795) argue that teachers are the most important determinants of educational output. Levin (1970) and Lazear (2001), therefore, suggest that teacher quality can be raised by paying higher salaries. It means that teacher, as part of the labor force, can be highly selected by school. Providing higher salary implies to a larger pool of applicants, which permits a school to engage in more selective hiring. Unfortunately, public schools in Indonesia do not have enough power to hire qualified permanent teachers and/or to determine teacher salaries. The assumption of salary-quality relationship is still impossible to apply.

Although under the current decentralized system the district will have a responsibility for hiring and paying teachers in public and private schools except those in *madrasahs,* the central government still set the salary levels, promotional and reward systems for the teachers (World Bank, 2004). Districts may provide teachers some supplementary benefits and incentives within their jurisdictions, but it is merely due to district economic capabilities and/or high-living-cost adjustment. There are no such rules in providing incentives or "merit-pay" for teachers due to their good performances. Their performances have no impact on their salaries. Teachers therefore become less motivated to improve their performance. This condition, therefore, may impact the quality of education. Chapman (2002 *in* Adams, 2002b, p.22) argues that "frequently suggested incentives for teachers include: (i) merit pay to motive teachers with significant portion of a teacher's salary based on performance as assessed by supervisors; (ii) salary premiums to mathematics and science teachers; and (iii) location premiums to teachers working in rural areas". In this particular case, Adams (2002b, p.22) argues that "apparent solutions to ineffective teaching and learning due to lack of incentives and motivations turn out to be

complex because of organizational context. Teachers who do not receive merit pay may respond not by trying harder but rather by reducing their efforts. And, paying premium salaries to math and science teachers may make other teachers angry, frustrated, and bitter".

Kingdon (1996 *in* Leclercq, 2005) also finds the same result for studies of the secondary schools of urban North India. She concludes that existing remuneration schemes are not structured so as to motive teachers towards improving their pupils' achievement. This result is different from a case for the US where she finds that a distinction arises between the relationship of teacher pay with the entry of professionals into teaching and its relationship with the motivation of teachers once appointed. Kingdon and Teal (2003 *in* Leclercq, 2005) estimated education production function for government and private schools of the same area in urban North India and found that given student characteristics and school resources, private schools obtain better academic results. In contrast to government schools, private schools related teacher pay to student achievement.

Contrasting results have been found in the US. Rossmiller (2001, *in* Chaikind and Fowler, p. 27) notes that there has been much discussion in the US during the past few years regarding teacher compensation practices. Compensation should reflect what teachers know and are able to do rather than the long-established practice of basing pay increments for teachers on their years of teaching experience and number of academic credits or degrees they have accumulated. He notes that the success of the National Board for Professional Teaching Standard (NBPTS) in US in identifying and certifying teachers who meet high and rigorous standards of professional knowledge and practice was an important first step toward basing compensation on a teacher's knowledge and skills. The Teacher Union Reform Network (TURN) in the US has also been actively exploring ways in which teacher compensation can be

used to support a school's strategic goals and its need to improve student performance (Urbanski & Erskine, 2001 *in* Rossmiller, 2001, p. 27). TURN recognizes that the single salary schedule approach to teacher compensation has neither encouraged nor rewarded productivity in elementary and secondary schools.

2.3 SUMMARY

Starting with the Indonesian economic crisis in 1997 and followed by the fall of Suharto's regime, there were strong pressures and demands from local authorities to have broader regional autonomies and fiscal authorities. This condition pushed the Indonesian government to shift its governmental system gradually from a centralized to a fully decentralized system. Based on Regional Governance Law No. 22/1999, most of the authority for the development sectors was transferred to local governments, including primary and junior secondary education. According to Education Law 20/2003, the principal responsibilities, authority, and resources for the delivery of education are transferred to lower levels of government, while some decision-making power is transferred to schools (World Bank, 2004). Local authorities, which are closer to the schools, hopefully can precisely and quickly determine what the schools need.

Beside political considerations as hidden factors behind the process of decentralization in Indonesia, efficiency and effectiveness also became the argument for decentralizing the education sector. Given the heterogeneity of cultures and ethnic groups and the large geographical scale of Indonesia, the central government most likely did not have sufficient knowledge of all local conditions. A high cost of delivery of laboratory equipments from the

central government to local schools and a long history of poor teacher distribution were examples of these inefficiency and ineffectiveness cases.

Pushing all development sectors to local authorities at one time, rather than in a gradual process, however, may increase financial and administrative burdens for ministry authorities. The World Bank (2004) commented that Indonesia's new systems allowed local governments to produce the services transferred to them under the decentralization reform were just beginning to emerge. There was, however, no national strategy to encourage or disseminate good practices. Insufficiently trained and experienced staff to carry out their new and expanded roles also becomes a concern in part due to a lack of in-service support from local universities. Moreover, since the Ministry of Education had no regulatory authority over local districts, the development of the education sector was likely to receive less attention compared to other job creating development sectors, such as road and building construction. Referring to the argument of John and Morphet (1960) that the increase in quantity and quality of education generally should be followed by financial support, disparities in quality of education across districts were thus likely to become a new problem in Indonesia. Adequate financial resources for education, therefore, are essential when transferring responsibility for the educational sector to local authorities.

3.0 RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter describes the following sections: (1) population and sampling, (2) data collection, (3) methodology and data analysis. Population and sampling provides insight to the coverage of information collected. The researcher also introduced such a preliminary study using a sample data to support this research. Data collection describes how and what kind of information was collected. Methodology and data analysis explains the kind of methodology and analysis used to answer the research questions based on the information obtained.

3.2 POPULATION AND SAMPLING

The current study examined the educational finance for public junior secondary schools at 440 districts in 33 provinces in Indonesia as shown in Table 3. The unit of analysis of this current study was a district level. The researcher chose the issue of public junior secondary schools for several reasons. First, in 1993 the Indonesian government launched a national agenda of a nine-year compulsory basic education program, which meaning all Indonesian children would need to have at least at primary and secondary level. This program is an expansion from the previous

Table 3. Names of Province with its Number of Districts.

No.	Province	Number of Districts		
		Kabupaten	Kotamadya	Total
1.	DKI Jakarta	1	5	6
2.	West Java	16	9	25
3.	Central Java	29	6	35
4.	Yogyakarta	4	1	5
5.	East Java	29	9	38
6.	Banten *	4	2	6
7.	Nanggroe Aceh Darussalam	17	4	21
8.	North Sumatera	18	7	25
9.	West Sumatera	12	7	19
10.	Riau	9	2	11
11.	Jambi	9	1	10
12.	South Sumatera	10	4	14
13.	Lampung	8	2	10
14.	Bengkulu	8	1	9
15.	Kep. Bangka Belitung *	6	1	7
16.	Kep. Riau *	4	2	6
17.	West Kalimantan	10	2	12
18.	Central Kalimantan	13	1	14
19.	South Kalimantan	11	2	13
20.	East Kalimantan	9	4	13
21.	North Sulawesi	6	3	9
22.	Central Sulawesi	9	1	10
23.	South Sulawesi	20	3	23
24.	West Sulawesi *	5	0	5
25.	South East Sulawesi	9	1	10
26.	Gorontalo *	4	1	5
27.	Bali	8	1	9
28.	West Nusa Tenggara	8	1	9
29.	North Nusa Tenggara	15	1	16
30.	Maluku	7	1	8
31.	North Maluku *	6	2	8
32.	Papua (Irian Jaya)	19	1	20
33	West Irian Jaya *	8	1	9
	T O T A L	349	91	440

Source : Department of Home Affair, 2005.

* These provinces are new provinces, which are expansions from some provinces since the decentralized system was being implemented. The expansions are as follows: Banten is from West Java, Bangka Belitung is from Jambi, Kep. Riau is from Riau, West Sulawesi is from South Sulawesi, Gorontalo is from North Sulawesi, North Maluku is from Maluku, and West Irian Jaya is from Papua. Since these provinces are still new, then some of their data or information may still integrate into their previous provinces. The name of provinces is based on the minister of home affair's decision no. 18, 2005, which can be retrieved from http://www.depdagri.go.id/konten.php?nama=DataWilayah.

six-year to a nine-year basic education. The local governments, therefore, were urged to accelerate this program. Since the gross enrollment rates at junior secondary schools were still lower than those at primary schools, the government tends to concentrate on junior secondary schools. The current study, therefore, focused on junior secondary schools (JSS).

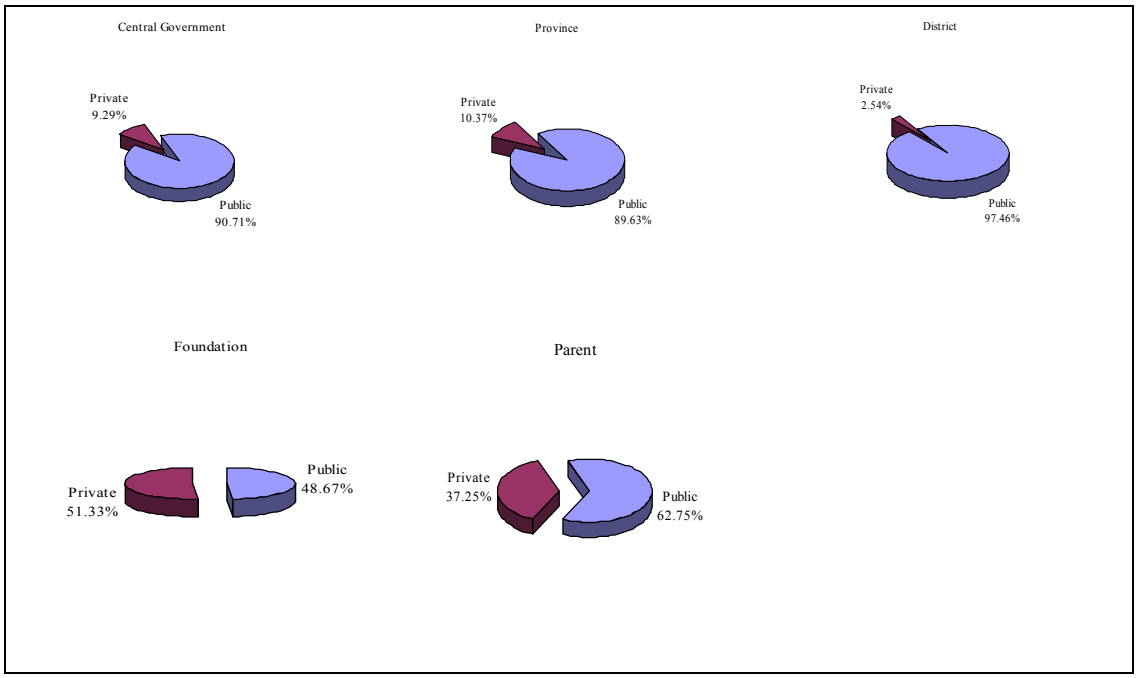


Figure 5. Financial Sources for JSS at each Category by Type of School in 2002/03 at 62 Districts

Second, the government still gives a priority on financing the public schools. The public schools, therefore, are highly dependent on government funds. These facts are based on a preliminary study done by the researcher to identify financial sources for junior secondary schools in 2002/03 at 62 districts[3] in 8 provinces: Central Java, Yogyakarta, Bali, North Sumatera, Bengkulu, West Kalimantan, North Sulawesi, and Gorontalo. Figure 5 illustrates that

[3] The available 2002/03 districts educational data at MONE was only from 62 districts when the preliminary study was carried out in 2004.

educational funds for junior secondary education provided by the central, province, and district authorities were mostly allocated for public schools, compared to those for private schools. In addition, Figure 6 shows that around 82.78 percent of public school financial sources was from the government (the central, province, and district authorities).

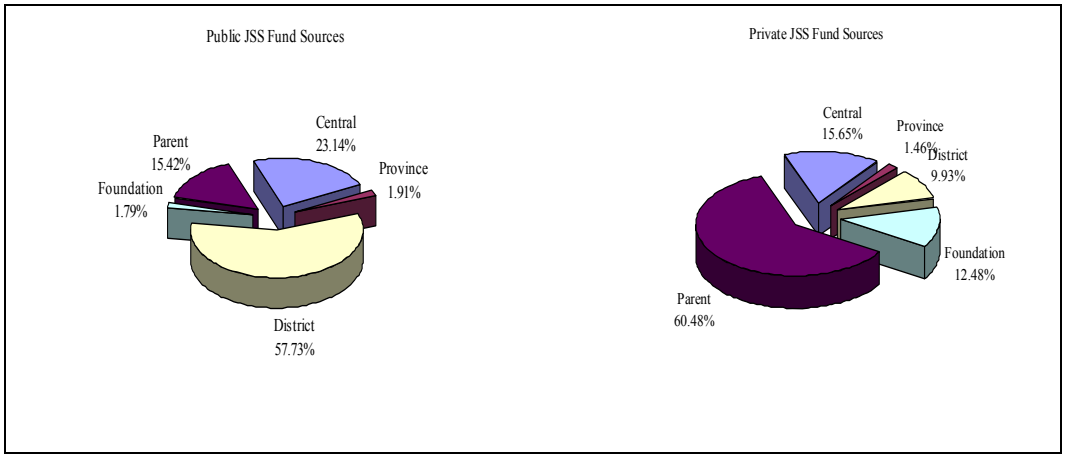


Figure 6. Financial Sources for JSS by Type of School in 2002/03 at 62 Districts

The researcher also realized that many factors might influence the disparities in educational expenditures across the districts. Some variables related to demographic, geographic and socio-economic of the districts, therefore, were also collected.

3.3 DATA COLLECTION

One of the objectives of the current study was to explore the impact of a decentralized system on changes in disparities in educational expenditures. For comparison purposes, the researcher collected data of 1999/00 and 2002/03. Year 1999/00 is the last year when the centralized

system was carried out, and 2002/03 is the current available data since the decentralized system was implemented.

In the process of data collection, the researcher visited the Center of Informatics at the Ministry of National Education (MONE) to get educational data, and the Central Bureau of Statistics (BPS) to acquire socio-economic and demographic data. In order to have this information, the researcher filed a special request to MONE and BPS to have access to the data. First, the researcher visited the library at each office to look for possible data in published books. In order to have further information about the data, the researcher contacted and met directly with the person in charge who was responsible for the data publishing at each office.

To analyze the educational finances at public junior secondary schools, the researcher collected information by district on school expenditures, number of students, Gross Enrollment Rates, and National Examination Scores (NES). School expenditures consist of expenditures for teachers' salaries, non-teachers' salaries, teaching-learning, procurement, extracurricular, maintenance, rehabilitation, services, and administration. In this study, the researcher grouped those expenditures into the following categories: teachers' salaries (consisting of salaries only for teachers), teaching-learning process (consisting of expenditures for teaching-learning, procurement, and extracurricular), maintenance & rehabilitation (consisting of expenditures for maintenance and rehabilitation), and others (the rest of expenditures). For a comparison purposes, expenditures per student were also calculated. Information of Gross enrollment rates was also collected to portray how far the nine-year compulsory basic education program has been reached by the district and how it relates to district's educational fund allocation.

To measure the quality of education, an average national examination scores (NES) from all subject matters was calculated for each district. Concerning the NES standardization across

the districts in Indonesia, the MONE through the Center of National Examination develops an item test bank. In order to prevent a risk of test leakage, the MONE provides each province with three different test packages for each subject matter with a degree of equivalent difficulty. The province will distribute the packages to the districts randomly. The three different but equivalent difficulty test packages also have a function as an inter-changeable test. One package can replace other packages in case a test leaks. In order to prevent such a personal interest or a personal bias in scoring, the schools within a district carry out an inter-change scoring across the same level of schools. Schools within a district, then, do a cross evaluation of students' test sheets.

Other factors, including demographic, geographic, and socio-economic data of the districts, were also collected. The demographic data provides information regarding a total area, a total population and the density of the district. Information of district types was also recorded. There are two types of district: *Kabupaten* (a rural area) and *Kota* (an urban area). In general, the *Kota* has a smaller area, but is more developed and populated than the *Kabupaten*. The capital city of a province, therefore, is located in the Kota. The researcher argues that different types of districts could impact on the way that districts allocate their budget for the education sector.

To reflect on the level of economic development of the district, the researcher included information about Gross Regional Domestic Product (GRDP) per capita. The researcher assumed that a district with a low GRDP per capita reflects a poor district, and conversely a district with a high GRDP reflects affluent district. Since the decentralized system gives the districts more power to allocate the money, the districts with higher GRDP per capita are more

likely to have more opportunities to support their education sector development by providing more funding for education.

3.4 METHODOLOGY AND DATA ANALYSIS

The type of information collected in the current study was continuous and categorical data. To analyze this information, the researcher used quantitative analysis. To answer the research questions, the researcher used Lotus 123 and SAS programs to produce graphs and statistical analysis.

To answer research question 1 "What characteristics of disparities in education expenditures occurred across the districts?", the researcher provided graphs and calculated the *coefficients of variance* (CVs). The graphs aim to show patterns of education expenditures per student across districts. The coefficient of variation was used to measure the magnitude of the disparity. This coefficient reflects a degree to which a set of data points varies or expresses the standard deviation as a percentage of the mean. The minimum value of CV is zero, meaning that the data is homogeneous. The larger this number, the greater variability exists in the data. One advantage of using the CV over a standard deviation in measuring the variability is that the CV expresses a variation relative to the size of the observations being summarized (Korin, 1975, p. 66). The CV, therefore, is also called *a relative standard deviation*. The CV is a very useful tool when comparing variability between different sets of data.

To portray the magnitude of the disparities, the CVs for the districts across the country, within the province, and across the regions were also calculated. The researcher argues that since the decentralized system gives the local authorities more power to allocate the budget

across their development sectors, then the disparities in education expenditures in 2002/03 might increase. One local authority may have a different priority on its development sector than other local authorities.

Formula: $CV = (s / x) * 100$

Where, CV = coefficient of variance,

s = a standard deviation of education expenditures per student,

and x = a mean of educational expenditures per student.

An ordinary least square (OLS) regression analysis was used to answer research question 2: "How do geographic, demographic and socio-economic conditions of districts impact the disparities in education expenditures?", hence identifying the factors that influence the education expenditures per student. The regression equation uses six independent variables to explain variations in the educational expenditures.

The equation is as follows:

$$EXP_i = \alpha + \beta_1 Reg1_i + \beta_2 Reg2_i + \beta_3 Reg3_i + \beta_4 Reg4_i + \beta_5 TYPE_i + \beta_6 DENSITY_i$$

$$+ \beta_7 GER_i + \beta_8 GRDP_i + \beta_9 DAU_i + \varepsilon_i; \quad i = \text{number of the districts,}$$

where EXP is an education expenditure per student, Reg1-Reg4 are dummy variables representing the regional codes, TYPE is a type of districts which is coded as 1 for Kota and 0 for Kabupaten, DENSITY is a density of a district population, GER is a gross enrollment rate at district's public junior secondary schools, GRDP is a Gross Regional Domestic Product per capita, and DAU is a general allocation fund per capita. The codes for the dummy variables are as follows: Reg1 for Java and Bali region, Reg2 for Sumatera region, Reg3 for Kalimantan region, and Reg4 for Sulawesi region.

In analyzing the impact of the disparities in education expenditures on student achievement as stated in research question 3: "Do the disparities in education expenditures matter for student achievement?", national examination scores were recorded. Referring to the literatures, however, there was no consistent conclusion in determining a relationship between expenditures and the quality of education. Hanushek argued that there was no connection between them, but Hedges and Greenwald (1996); Lee and Barro (2001); and Wendling and Cohen (1981) argued that there was a high relationship between education resources and student achievement.

In this case, the researcher hypothesized that there should be a significantly positive relationship between the expenditures and achievement as measured by test scores. Many factors might contribute into performing the quality of education. It was not only the total amount of money allocated into education, but also how the money used effectively. Other factors such as teachers' salaries, teacher-student ratio, and class size might also give such contributions. The researcher, therefore, explored the relationship of the quality of education, represented by student achievement, with expenditures and other factors previously mentioned. An Ordinary Least Square (OLS) regression analysis was used to explore this relationship. The regression equation uses 7 independent variables to explain variations in student achievement.

The equation is as follows:

$$NES_i = \alpha + \beta_1 Reg1_i + \beta_2 Reg2_i + \beta_3 Reg3_i + \beta_4 Reg4_i + \beta_5 TYPE_i + \beta_6 RATIO_i + \beta_7 SIZE_i$$
$$+ \beta_8 SALARY_i + \beta_9 TEACHING_i + \beta_{10} MAINT_i + \varepsilon_i \;\; ; \;\; i = \text{number of the districts,}$$

where NES is a district's national examination score, Reg1-Reg4 are dummy variables representing the regional codes, TYPE is a type of the district which is coded as 1 for Kota and 0

for Kabupaten, SALARY is an average of teachers' salaries, TEACHING is expenditures for teaching and learning process per student, MAINT is expenditures for rehabilitation and maintenance per student, RATIO is a ratio of student-teacher, SIZE is number of students in a class.

4.0 RESEARCH FINDINGS

4.1 INTRODUCTION

This chapter begins with a discussion of the obstacles faced by the researcher during data collection, which impacted the number of observations able to be collected. It will, then be followed by a discussion of the study findings.

4.2 DATA COLLECTION

During data collection, the researcher was able to obtain information from 288 districts on 1999/00 data (86.49 % of the 333 total districts in 1999/00) and 236 districts on 2002/03 data (53.64%[4] of the 440 total districts in 2002/03). These data can be seen in Appendix A and B. The researcher was unable to collect information from all districts for the following reasons:

1. Under the decentralized system, districts or sub-districts were permitted to either join or to establish a new province or district; therefore, the number of provinces and districts increased in 2002/03. In 1999/00, there were 26 provinces with 333 districts. This

[4] The researcher argues that the percentage of the collected data of 2002/03 was actually higher than 53.64%. It occurred as the result of the statistical data of the new districts being counted under that of their previous districts. The researcher estimated that the actual data collected for 2002/03 might be closer to 71% (referred to the number of districts in 1999/00).

number increased in 2002/03 to 33 provinces and 440 districts. The statistical information of several new districts or provinces, however, was still being counted under previous province/district information. These new districts had not established a data collection system yet.

2. During the data collection, the researcher was unable to collect information from all districts. Some districts did not submit their statistical data to BPS or MONE, and some other districts did not provide the required financial information. The data, therefore, were incomplete. The districts with incomplete information were dropped from the study. The missing information could not be collected separately because there was little enforcement by MONE to generate a more complete data set.

4.3 STUDY FINDINGS

4.3.1 Disparities in Education Expenditures per Student

To answer research question 1: "What characteristics of disparities in education expenditures per students occurred across districts?", the researcher compared the data of 1999/00 and 2002/03, retaining the same name and number of districts for both 1999/00 and 2002/03. In this way, the researcher was able to match 185 districts for both the 1999/00 and the 2003/03 data (see Appendix C). Based on normal probability plots (see Appendix D), the researcher found four outliers[5]: two in 1999/00 and two in 2002/03 data. After removing these outliers, the

[5] An outlier is defined as an observation lying outside the range of the rest of the observation (Studenmund, 1997, p. 73).

researcher used 181 districts which were grouped into 5 regions: (a) region 1: all districts in Java and Bali; (b) region 2: all districts in Sumatera; (c) region 3: all districts in Kalimantan; (d) region 4: all districts in Sulawesi; and (e) region 5: Other districts. For each region, the researcher calculated the disparity in education expenditures per student. The number of districts in each region is shown in Table 4.

Table 4. Number of Districts within the Regions

Region	Number of Districts			Number of Districts by Type			
	1999/00 (reference)	Completed[6]	%	Type	1999/00 (reference)	Completed[5]	%
Java-Bali	116	89	76.72	Kota	26	16	61.54
				Kab	90	72	80.00
Sumatera	95	47	49.47	Kota	22	15	68.18
				Kab	73	32	43.84
Kalimantan	38	15	39.47	Kota	8	2	25.00
				Kab	30	13	43.33
Sulawesi	44	20	45.45	Kota	6	3	50.00
				Kab	38	17	44.73
Others	35	10	28.57	Kota	5	0	0.00
				Kab	35	10	28.57
Total	333	181	54.35	Kota	67	36	53.73
				Kab	266	144	54.14

4.3.1.1 Disparities in Education Expenditures per Student across Districts, among and within Regions.

To measure the magnitude of the disparities in education expenditures per student, the researcher calculated means and coefficients of variance (CV) of education expenditures per student in

[6] Completed data is collected data which was then corrected by eliminating the outliers and retaining the same name and number of districts in 1999/00 and 2002/03.

1999/00 and 2002/03 across districts, among and within regions. The researcher used the data of 2002/03, which was corrected for an inflation factor of about 30 percent during 1999/00-2002/03.

Table 5. Mean and Coefficient of Variance (CV) of Education Expenditures per Students across Districts, among and within Regions in 1999/00 and 2002/03.

	Mean (in Rp.000/year)			CV		
	1999/00	2002/03	diff	1999/00	2002/03	Diff
Across Districts	396.60	660.93	264.33	32.23	42.13	9.89
Among Region	416.15	689.00	272.85	19.77	18.76	-1.02
Within Region						
- Java-Bali	365.36	621.91	256.55	25.69	33.93	8.23
- Sumatera	390.34	638.07	247.73	31.45	45.44	13.99
- Kalimantan	443.62	806.91	363.29	36.51	51.37	14.87
- Sulawesi	545.30	840.41	295.11	28.22	41.99	13.77
- Other	336.13	537.68	201.55	23.26	21.65	-1.61

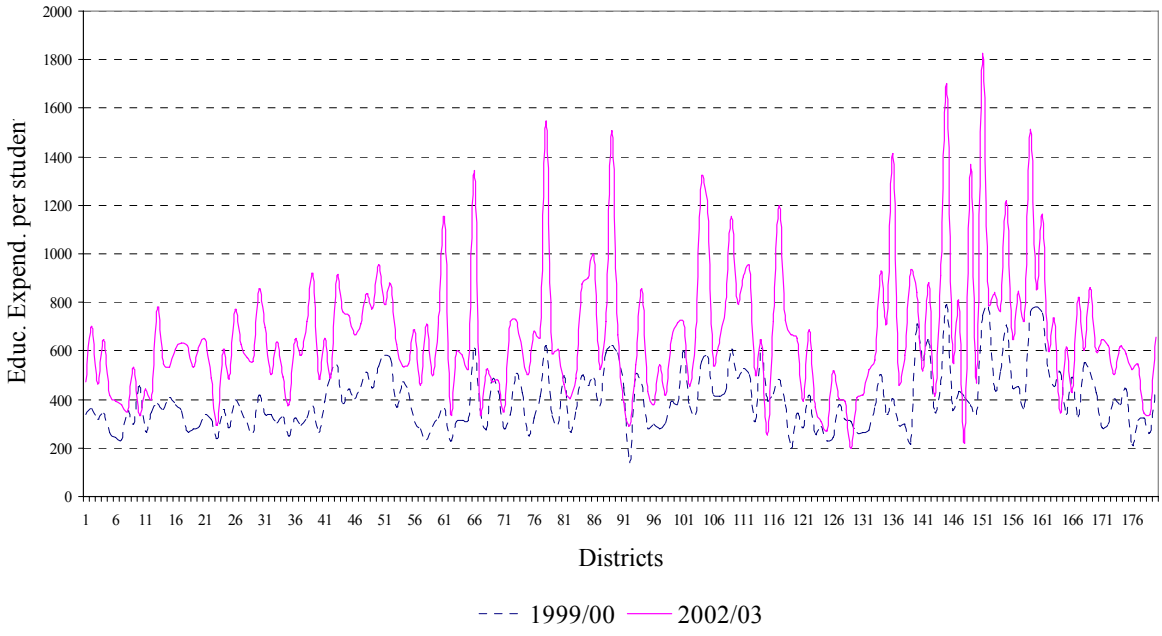
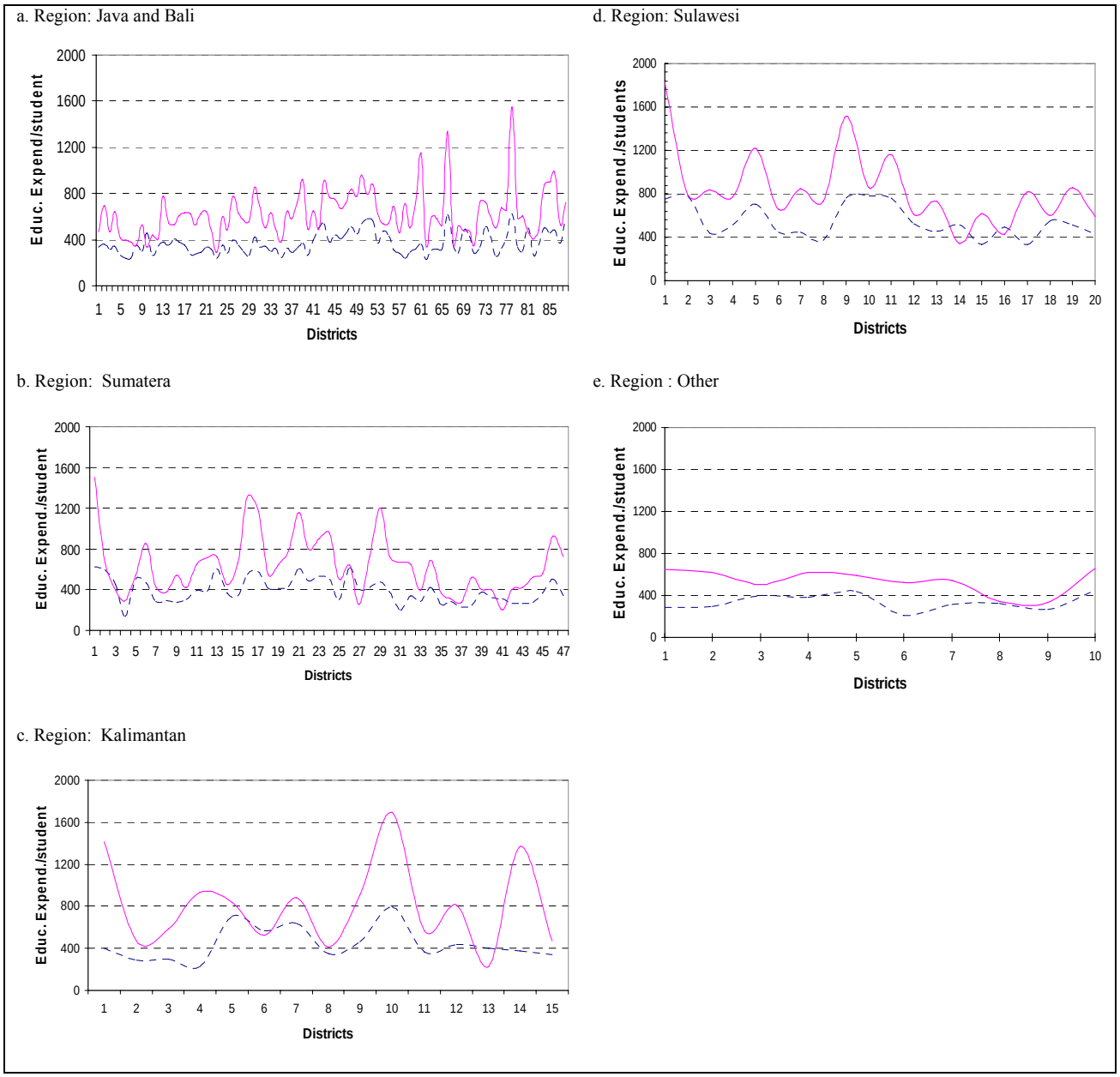


Figure 7. Disparities in Education Expenditures per Student across Districts in 1999/00 and 2002/03

Table 5 shows that education expenditures per student across districts increased by Rp. 264,330/year; expenditures increased from Rp. 396,600/year in 1999/00 to Rp. 660,930/year in 2002/03. Such a significant increase in education expenditures per student indicated that the fiscal capacity for education increased. Table 5 also illustrates that a disparity in education expenditures per student across districts increased from 32.23 in 1999/00 to 42.13 in 2002/03. Increasing the disparity in education expenditures per student, however, indicates that an imbalance in fiscal capacities for education across districts most likely increased. Figure 7 shows the pattern of the disparity in education expenditures per student in both 1999/00 and 2002/03. Some districts had lower abilities; while other districts had higher abilities to increase them. Districts with high education expenditures per student in 1999/00 most likely retained high expenditures in 2002/03; sometimes expenditures were even higher relative to other districts.

To portray the efforts to increase regional fiscal capacities, the researcher also calculated mean differences in education expenditures per student across regions. Table 5 shows that education expenditures per student for each region increased in 2002/03. Sulawesi region had the largest education expenditure per student (Rp. 840,410/year), which means that the Sulawesi region had the largest fiscal capacity for education. Meanwhile, Kalimantan region had the largest mean difference in education expenditures per student (Rp. 363,290/year), which means that the Kalimantan region made the greatest effort to increase the fiscal capacity for education.

Table 5 also shows that disparities in education expenditures per student among the regions decreased slightly from 19.77 in 1999/00 to 18.76 in 2002/03, whereas disparities within regions tended to increase. An increase in disparities indicates that imbalance in fiscal capacities



Note : ----- : 1999/00, —— : 2002/03

Figure 8. Disparities in Education Expenditures per Student within Regions

for education at each region increased. Compared to the disparity in education expenditures per student across districts in 2002/03, which was about 42.13, the Java-Bali region had a relatively low disparity (33.93). This illustrates that the Java-Bali region had relatively more balanced fiscal capacities for education across the districts. In contrast, the imbalances in fiscal capacities

for education in Sumatera, Kalimantan, and Sulawesi region tended to be high. The Kalimantan region had the highest disparity (51.37). A larger disparity in education expenditures per student indicates a greater imbalance in fiscal capacities for education across districts within the region. Kalimantan region also had the largest incremental disparity in education expenditures per student, an increase of 14.87. This means that the Kalimantan region tended to have a greater imbalance in the ability to increase fiscal capacities across its districts. Figure 8 shows that some districts in the Kalimantan region had higher capacities for education relative to other districts in this region. Another region (consisting of Nusa Tenggara, Maluku and Papua), however, had the lowest disparity, even slightly decreasing in 2002/03, which indicating that districts in Nusa Tenggara, Maluku and Papua had relatively more balanced fiscal capacities for education.

4.3.1.2 Disparities in Education Expenditures per Student based on Type of Districts

There are two types of districts in Indonesia: a) *Kota* (an urban area) and b) *Kabupaten* (a rural area). In general a Kota is more developed and populous than a Kabupaten. Table 6 shows that in 2002/03 the Kota posted larger education expenditures per student than did Kabupaten (Rp. 695,830/year vs Rp. 651,960/year). The Kota also posted a larger mean difference (Rp.289,900/year). This illustrates both Kota's larger fiscal capacity for education as well as its greater effort to increase the fiscal capacity for education.

Increasing the fiscal capacity, however, may lead to increasing the disparity in education expenditures. Table 7 shows that disparities in education expenditures per student across districts for both Kota and Kabupaten increased in 2002/03. Kabupaten showed larger disparities in both 1999/00 and 2002/03, but the increment of disparity was lower (9.86). This means that, although in 2002/03 the Kabupaten still had a larger imbalance in fiscal capacities for education across the districts, the ability to increase the fiscal capacity for education in each

district was relatively equal. As a result, the Kabupaten had a relatively low increment in fiscal capacities for education (see Table 6). In contrast, the Kota showed a lower disparity than the Kabupaten, but revealed a larger increment of disparity (11.12). This means, in 2002/03, the Kota still had a relatively smaller imbalance in fiscal capacities for education across the districts, but some of the Kota-districts had larger abilities to increase their fiscal capacity for education (see Figure 9; some districts in Kota posted higher education expenditures per student). As a result, the Kota had a relatively larger increment in fiscal capacities for education (see Table 6).

Table 6. Means and Mean Differences of Education Expenditures per Student in 1999/00 and 2002/03 (in Rp.000/year) based on Type of Districts.

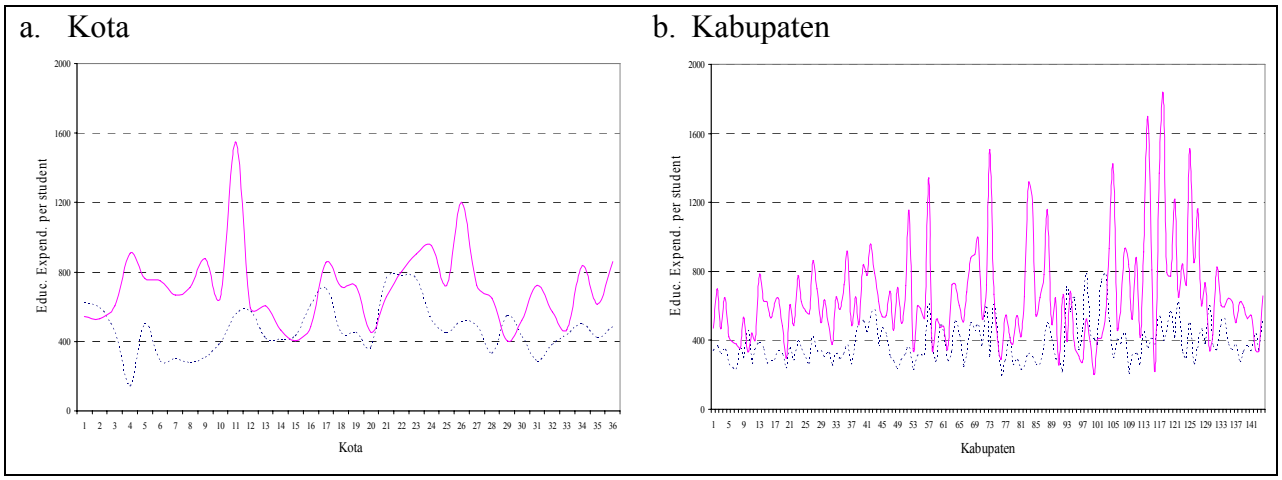
Type of District	Year	Across Districts	Within Regions				
			Java-Bali	Sumatera	Kalimantan	Sulawesi	Other
Kota	1999/00	405.93	400.93	413.87	352.63	430.04	-
	2002/03	695.83 (*289.90*)	670.04 (*269.11*)	733.48 (*319.61*)	519.57 (*166.94*)	771.29 (*341.25*)	-
Kab	1999/00	394.20	356.96	379.32	457.62	565.64	336.13
	2002/03	651.96 (*257.76*)	610.55 (*253.59*)	593.36 (*214.04*)	851.12 (*393.50*)	852.60 (*286.96*)	537.68 (*201.55*)

Note : The italic number inside the parentheses is a mean difference between mean in 1999/00 and 2002/03

Table 7. Coefficients of variance (CV) and CV differences in Education Expenditures per Student in 1999/00 and 2002/03 based on Type of Districts

Type of District	Year	Across Districts	Among Regions	Within Regions				
				Java-Bali	Sumatera	Kalimantan	Sulawesi	Other
Kota	1999/00	22.35	8.35	24.01	22.71	5.11	20.32	-
	2002/03	33.47 (*11.12*)	16.46 (*8.10*)	41.56 (*17.55*)	27.24 (*4.53*)	13.26 (*8.15*)	17.62 (*-2.70*)	-
Kab	1999/00	34.47	22.41	25.76	35.36	37.20	27.53	23.26
	2002/03	44.33 (*9.86*)	21.92 (*-0.49*)	31.51 (*5.75*)	53.37 (*18.02*)	50.43 (*13.23*)	44.59 (*17.06*)	21.65 (*-1.61*)

Note : The italic number inside the parentheses is a CV difference between CV in 1999/00 and 2002/03



Note : ----- : 1999/00, —— : 2002/03

Figure 9. Disparities in Education Expenditures per Student at Kota and Kabupaten in 1999/00 and 2002/03

In addition, as shown in Table 5, the disparities in education expenditures per student within each region revealed greater differences than those among the regions. The figures in Table 8 may be able to explain why this phenomenon occurred. Table 8 shows that, in 2002/03, the gap of fiscal capacities for education between the Kota and the Kabupaten in Java-Bali,

Table 8. Gaps (Mean Differences) of Education Expenditures per Student in 1999/00 and in 2002/03 (in Rp.000/year) based on Type of Districts

Year	Type of District	Across Districts	Within Regions				
			Java-Bali	Sumatera	Kalimantan	Sulawesi	Other
1999/00	Kota	405.93	400.93	413.87	352.63	430.04	-
	Kab	394.20	356.96	379.32	457.62	565.64	336.13
	Gap	*(11.73)*	*(43.97)*	*(34.55)*	*(-104.99)*	*(-135.60)*	-
2002/03	Kota	695.83	670.04	733.48	519.57	771.29	-
	Kab	651.96	610.55	593.36	851.12	852.60	537.68
	Gap	*(43.87)*	*(59.49)*	*(140.12)*	*(-331.55)*	*(-81.31)*	-

Note : The italic number inside the parentheses is a gap of education expenditures per student between Kota and Kabupaten at each region in 1999/00 and 2002/03.

Sumatera, and Kalimantan region increased, but those in Sulawesi region decreased. The increments of fiscal capacities for education in the Kota in the Java-Bali, Sumatera, and Sulawesi regions were relatively higher than those at Kabupaten (see Table 6). This means, Kota in these regions had relatively experienced better fiscal capacities for education than did the Kabupaten.

In 2002/03, the Kota in the Sumatera and Sulawesi regions appeared to have larger increments in fiscal capacities for education. Table 6 shows that the Kota in the Sumatera region increased the fiscal capacity for education by Rp. 319,610/year, compared to the Kabupaten increase of 214,040/year. And, the Kota in the Sulawesi region increased the fiscal capacity for education by Rp. 341,250/year, compared to the Kabupaten increase of 286,960/year. These phenomena, however, provided different results. Table 8 shows that better fiscal capacity for education at the Kota in Sumatera region succeeded only in widening the gap of fiscal capacities for education between the Kota and Kabupaten. An inverse result, however, occurred in the Sulawesi region: Increasing fiscal capacities for education in the Kota in the Sulawesi region reduced the gap of fiscal capacities for education between the Kota and Kabupaten. This indicates that the efforts made to increase the fiscal capacities for education in the Kota in the Sulawesi region were much more successful.

The ability to increase fiscal capacities for education between the Kota and the Kabupaten in Java-Bali region relatively did not effect much change. As shown in Table 8, in 2002/03, the Java-Bali region posted the lowest gap in education expenditures per student between the Kota and Kabupaten. As a result, the disparity in education expenditures per student in the Java-Bali region in 2002/03 did increase. This increase was relatively small (8.23; see Table 5). On the other hand, Table 6 shows that the Kalimantan region showed a larger increment of education expenditures per student in the Kabupaten not in the Kota. This indicates

that the Kabupaten in the Kalimantan region showed a better fiscal capacity for education (a Rp. 393,500/year increase) than did the Kota (a Rp. 166,940/year increase). However, this larger gap in the fiscal capacities for education between the Kota and Kabupaten in the Kalimantan region (about Rp.331,550/year) only resulted in increasing the disparity in education expenditures per student across districts: Kalimantan region posted the largest imbalance in fiscal capacities for education across districts (about 51.37; see Table 5).

4.3.2 Factors that impact Disparities in Education Expenditures

After recognizing the increasing disparities in education expenditures per student across districts, an exploration of the factors possibly impacting increasing disparities in education expenditures per student will prove very interesting. Based on Parrish, Matsumo and Fowler's argument (see Chapter 2, p.28), the researcher also argued that geographic, demographic, and socio-economic characteristics of the districts in Indonesia might impact the way in which the district allocate the budget for education, and perhaps lead to increasing disparities in education expenditures across districts. The researcher, therefore, developed research question 2: "How do geographic, demographic, and socio-economic factors impact the disparities in education expenditures per student?".

To answer research question 2, the researcher developed an Ordinary Least Square (OLS) Regression analysis using the data of 2002/03, which consisted of 236 districts (70.87% collected; compared to the number of districts in 1999/00). The districts' education expenditures per student were established as a dependent variable, and the following variables were used as independent variables: (a) a demographic factor, consisting of a density and a junior secondary

gross enrollment rate, (b) a geographic factor, consisting of a region and a type of the district, and (c) a socio-economic factor, consisting of a GRDP per capita and a DAU per capita.

During the analysis, the factor of density had a high correlation to the types of districts (r=0.7), indicating that the Kota tends to be more populous than the Kabupaten. Therefore, in order to eliminate a *multicollinearity*[7] problem in the regression analysis, the variable of density was excluded from the analysis and the variable of district type was incorporated into the analysis. Based on the Ordinary Least Square Regression Analysis, a plot of residuals against predicted values shown in Figure 10 was provided. This plot shows that some observations had extremely high residual, indicating that there were some outliers found in the analysis. These

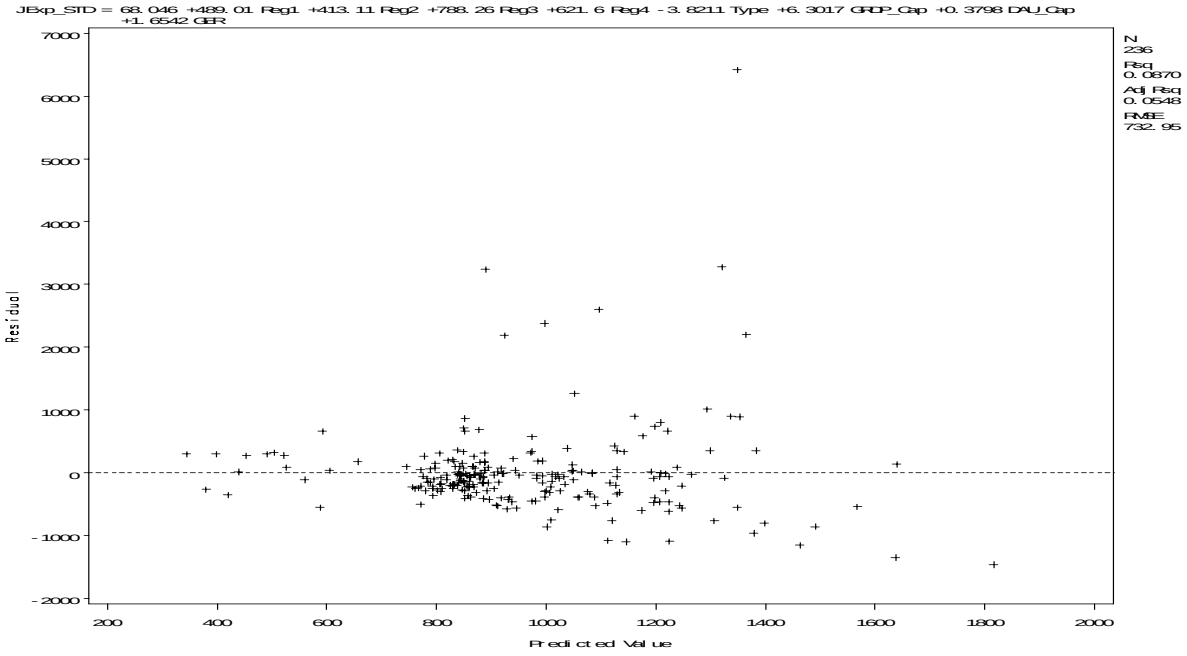


Figure 10. A plot between residuals and predicted values of education expenditures per student to show existing outliers in the analysis

[7] A *multicollinearity* is a violation of the regression assumption that no independent variable is a linear function of one or more other independent variables (Studenmund, 1997, p. 259). This problem can be corrected by excluding one of the collinear variables from the equation.

outliers could indicate that some districts might have outstanding education budget allocations, or that specific circumstances explaining such high education expenditures per student at the district levels. This situation, of course, requires further analysis in the future. In the current study, the researcher focused only on exploring general phenomena that exist in the field. The researcher, therefore, used a robust regression analysis instead of an OLS regression analysis.

Table 9. Parameter Estimates on Predicting Districts' Education Expenditures per Student

Variable	Df	Parameter Estimate	Chi-Sq	p-value
Intercept	1	95.236	0.22	0.6363
Reg1	1	309.200	14.79	0.0001
Reg2	1	216.793	7.27	0.0070
Reg3	1	205.411	4.96	0.0259
Reg4	1	398.706	22.21	<.0001
Type	1	135.028	7.35	0.0067
GRDP per Cap	1	-0.006	4.24	0.0395
DAU per Cap	1	0.167	6.60	0.0102
GER	1	3.453	3.94	0.0472

R-square = 0.28.

Table 10. A Chow Test of Regionalism on Districts' Education Expenditures per Student

Source	df	Mean Square	F-value	p-value
Numerator	4	481,001	6.22	<0.001
Denominator	207	77,348		

A robust regression is an important tool for analyzing data that are contaminated with outliers (Chen, 2002). He argues that the robust regression provides resistant (stable) results in the presence of outliers. In completing this analysis, the researcher used a Robustreg procedure with a Least Trimmed Squares (LTS) estimation method provided by SAS 9.1. The robust regression analysis result is shown in Table 9. For the first step, the researcher was trying to

recognize whether there was a structural change of the regression model across regions. To acquire this information, a Chow test[8] was conducted. For the current study, the Chow test result, shown in Table 10, indicates that at a 95 percent confidence interval (α=0.05) a structural change of the regression model occurred across the regions. It also means that geographic region has significant impact on education expenditures per student[9]. The researcher, therefore, examined the impact of independent variables (type of district, GRDP per capita, DAU per capita and gross enrolment rates) on education expenditures per student in each region.

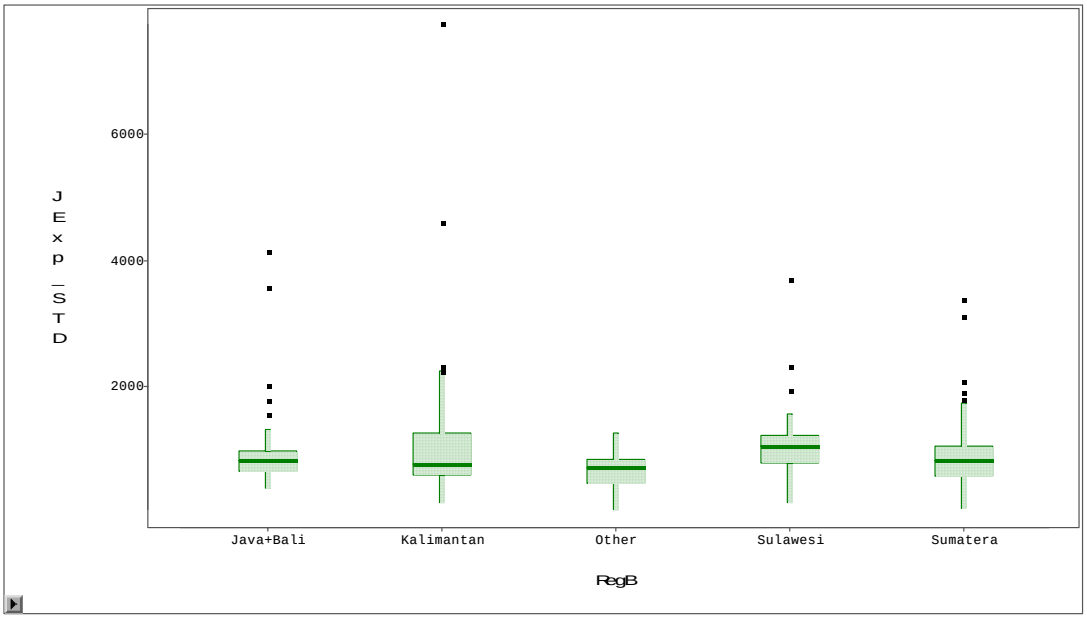


Figure 11. Box-plot of Education Expenditures per Student at each Region

Figure 11 shows the data distribution of education expenditures per student for each district, and illustrates that some extreme observations or possible outliers existed for some

[8] A Chow test particularly examines structural change; it is an econometric test that determines whether the coefficients in a regression model are the same in separate sub-samples. When the Chow test indicates rejecting the null hypothesis that no structural change in the regression model exists, then treating the data as different sub-samples is more appropriate than assuming that the same model parameters apply equally to the groups.

[9] This finding was also in line with Parris, Matsumo, and Fowler's finding in the US. They identified that school district spending in the US substantially varied by geographic region (see Chapter 2 p.28).

regions. Then, instead of using an OLS regression analysis for each region, a robust regression analysis was used. However, the robust regression analysis proved applicably only to the Java-Bali and the Sumatera region data. The results are shown in Table 11. A linear regression analysis was, unfortunately, inappropriate for Kalimantan, Sulawesi, and Other[10] region data. This could occur as a result of an inadequate number of observations collected from each of those regions to run a linear regression analysis or because no linear relationship exists between the education expenditures per student and the independent variables. Further or specific analysis for those regions is needed.

Table 11. Parameter Estimates on Predicting Districts' Education Expenditures per Student at Java-Bali and Sumatera Region

Region	Source	df	Estimate	Chi-Square	p-value	R-square
Java-Bali	Intercept	1	531.769	7.24	0.007	0.25
	Type	1	-6.999	0.01	0.924	
	GER	1	1.708	0.84	0.360	
	GRDP per Cap	1	-0.004	0.43	0.513	
	DAU per Cap	1	0.344	4.83	0.028	
		1				
Sumatera	Intercept	1	653.185	3.32	0.068	0.37
	Type	1	203.143	8.15	0.004	
	GER	1	-1.947	0.35	0.554	
	GRDP per Cap	1	0.003	0.79	0.373	
	DAU per Cap	1	0.509	27.45	<0.000	
		1				

Table 11 shows that at a 95 percent confidence interval (α=0.05) the general allocation fund (DAU) per capita had a statistically significant impact on education expenditures per student in both the Java-Bali and the Sumatera regions. The parameter estimation of the DAU per capita for the Sumatera region (0.509) was larger than that for the Java-Bali region (0.344),

[10] Other region consists of West and East Nusa Tenggara, Maluku, and Papua provinces.

indicating that the DAU per capita for the Sumatera region tended to cause a stronger impact on education expenditures per student. Its positive sign of parameter estimation indicates that districts with larger DAU per capita are those also most likely to have larger education expenditures per student.

The significance of DAU per capita indicates that districts in the Java-Bali and the Sumatera region appear to have a high dependency on an intergovernmental transfer through the DAU to support education sector development, a theory that falls in line with the Brodjonegoro's argument (2004) that local governments would have a higher dependency on the DAU (see Chapter 2, p.25). This high dependency on the DAU is also strengthened by the finding that the GRDP percapita in both regions had no statistically significant impact on education expenditures per student, indicating that local authorities may have no significant support for education sector development. The richer of such districts (the districts with higher GRDP per capita) did not necessarily mean a greater allocation of funding for education.

Table 11 also shows that a different type of district in the Sumatera region seemed to provide a significant impact on the way in which districts allocated education funding. A positive sign of parameter estimation of the district type indicated that the Kota in the Sumatera region tended to have a larger allocation for education than did the Kabupaten. This result was quite similar to the preliminary finding provided by Research Question 1, in which the Kota in Sumatera region had larger education expenditures per student than did the Kabupaten. In contrast, there was no statistically significant different for education expenditures per student between Kota and Kabupaten in the Java-Bali region. This condition may also explain why in 2002/03 the Java-Bali region had a lower disparity in education expenditures per student than did the Sumatera region (see Table 5).

In addition, the central government enforcement that districts should support the nine-year compulsory basic education program still appeared to be ineffective in the Java-Bali and the Sumatera regions. At a 95 percent confidence interval (α=0.05), the junior secondary gross enrollment rates (GER) in both the Java-Bali and the Sumatera region had no statistically significant impact on education expenditures per student. Districts with larger gross enrollment rates do not always indicate a greater allocation of funding for education.

4.3.3 Disparities in Education Expenditures and Educational Quality

After identifying the existing disparities in education expenditures and the possible factors influencing those disparities, the researcher explored the impact of the education expenditure disparities on educational quality, and formulated Research Question 3: "Do the disparities in education expenditures impact student achievement?". In the current study, the educational quality was represented by the student achievement measured by national examination scores (NES). To answer this question, the researcher developed an OLS regression analysis using the data from 2002/03. The education expenditures were grouped into expenditures for teachers' salaries, school maintenance and rehabilitation, and the teaching-learning process (see Chapter 3 p. 46). During the analysis, however, the expenditures for school maintenance and rehabilitation seemed to have high correlation with the expenditures for the teaching-learning process (r=0.74). In order to eliminate a multicollinearity problem (see p. 63), the expenditure for school maintenance and rehabilitation were excluded from the analysis and the expenditure for the teaching-learning process were included as part of the analysis. By plotting the residuals and the predicted values, as shown in Figure 12, the researcher found observations that had high

residuals, indicating the presence of outliers in the analysis. To resolve the problem, a robust regression analysis was used (see p. 62).

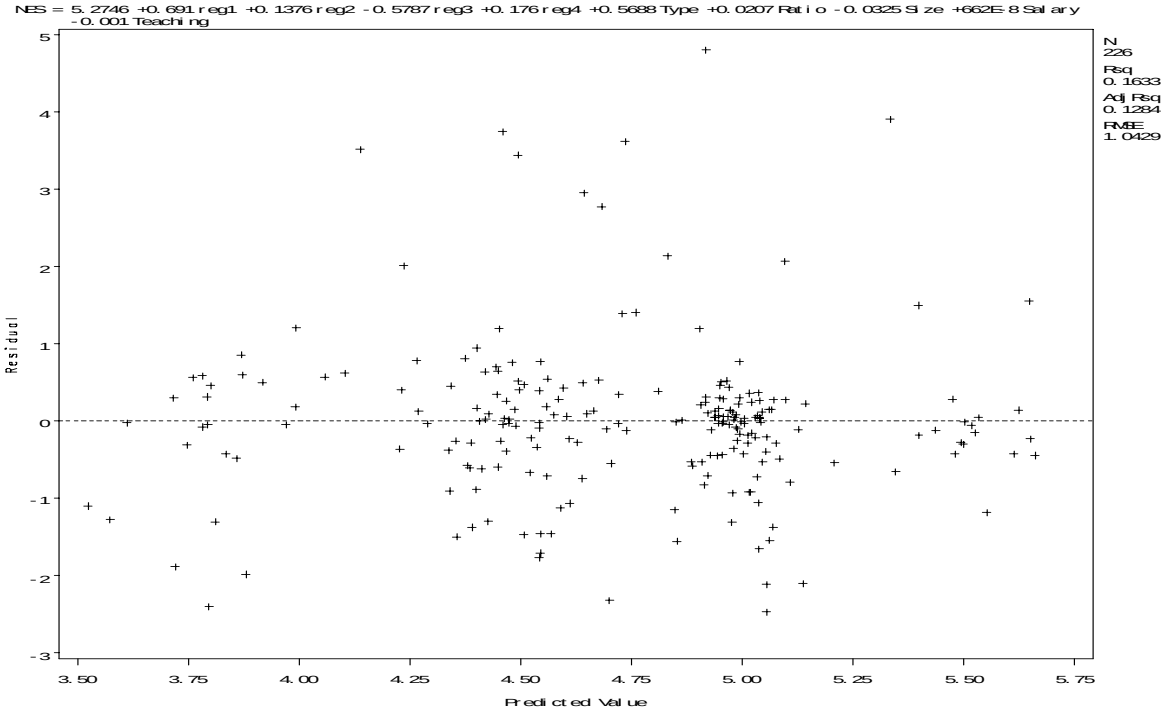


Figure 12. A Plot between residual and predicted value of national examination scores to show existing outliers in the analysis

Table 12 shows the robust regression result. First, the researcher used a Chow test to analyze whether a significant difference in national examination scores existed across the regions. The Chow test (see Table 13) indicated that at a 95 percent confidence interval (α=0.05) a structural change of national examination scores across the regions was found, suggesting that treating the data as different sub-samples would be more appropriate than assuming parameters of the same model would apply equally to all the groups. The data for each region was analyzed. Figure 12 shows a data distribution of national examination scores for each region with a median

Table 12. Parameter Estimations on predicting National Examination Scores

Variable	df	Parameter Estimate	Chi-Sq	p-value |
Intercept	1	4.577	71.64	<0.0001
Reg1	1	0.888	29.65	<0.0001
Reg2	1	0.368	4.75	0.0294
Reg3	1	-0.056	0.08	0.7823
Reg4	1	0.228	1.50	0.2205
Type	1	0.427	14.77	0.0001
Ratio	1	-0.027	2.67	0.1023
Size	1	0.006	0.13	0.7183
Salary	1	0.000	2.56	0.1093
Teaching	1	-0.001	4.22	0.0399

R-square = 0.46

Table 13. A Chow test of Regionalism on National Examination Scores

Source	df	Mean Square	F-value	p-value
Numerator	4	4.722	13.77	<0.001
Denominator	195	0.343		

(Q2) of national examination scores for each region. Because the median as the middle of a distribution is less sensitive to extreme scores than the mean, thus making the median a better measurement of a highly skewed distribution. The Box-plots in Figure 13 show that the Java-Bali region had the highest median of national examination scores (5.07), while the Kalimantan region had the lowest (4.07). The medians of the national examination scores for other regions were as follows: 4.64 in Sumatera, 4.52 in Sulawesi, and 4.11 in Other.

Figure 13 also shows that several extreme observations or possible outliers in the regions exist. To eliminate such possible outliers, the researcher used a robust regression analysis rather than an OLS regression analysis. The robust regression analysis, however, was only able to be applied to the data of the Java-Bali, and the Sumatera regions. Because of either an inappropriate linear model or an inadequate number of observations needed to run a regression

analysis, the analysis was not able to apply to data of Kalimantan, Sulawesi and other regions. The results of the Java-Bali and the Sumatera regions are shown in Table 14.

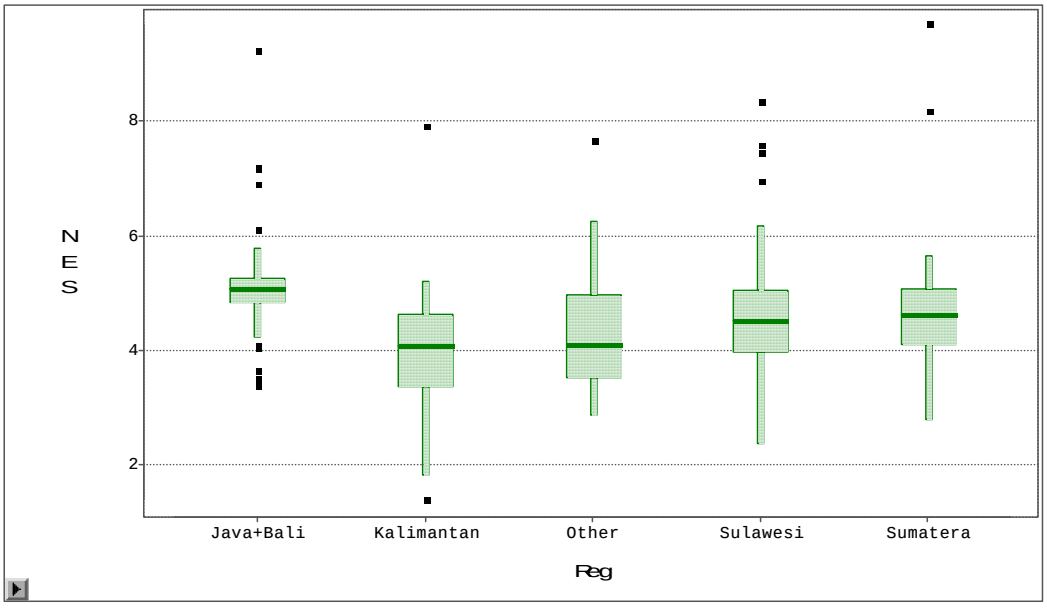


Figure 13. Box-plot of National Examination Scores for each Region.

Table 14. Parameter of Estimation on national Examination Scores at Java-Bali and Sumatera Region

Region	Source	df	Estimate	Chi-Square	p-value	R-square
Java-Bali	Intercept	1	5.519	109.42	<0.0001	0.47
	Type	1	0.234	8.67	0.0032	
	Ratio	1	-0.009	0.61	0.4336	
	Size	1	-0.020	1.79	0.1812	
	Salary	1	0.000	1.63	0.2023	
	Teaching	1	0.004	9.11	0.0025	
Sumatera	Intercept	1	4.485	14.02	0.0002	0.37
	Type	1	-0.068	0.08	0.7756	
	Ratio	1	-0.087	4.12	0.0424	
	Size	1	0.033	0.81	0.3679	
	Salary	1	0.000	1.49	0.2223	
	Teaching	1	-0.003	4.25	0.0392	

Table 14 shows that at a 95 percent confidence interval, the type of district and budget for the teaching-learning process had a statistically significant impact on the national examination scores in Java-Bali region. A positive sign of a parameter estimation of the district type indicated that Kota tended to have better national examination scores than did Kabupaten. A positive sign of a parameter estimation of teaching indicates that allocating more funding for the teaching learning process would increase the national examination scores in the Java-Bali region. Factors such as student-teacher ratio, class size, and teachers' salaries had no statistically significant impact on national examination scores in the Java-Bali region.

The Sumatera region, however, revealed a different phenomenon. Table 14 shows that at a 95 percent confidence interval, there was no statistically significant different between Kota and Kabupaten on the national examination scores in the Sumatera region. However, the ratio of student-teacher did have a statistically significant impact on the national examination scores in the Sumatera region. A negative sign of its parameter estimation indicated that decreasing the student-teacher ratio most likely increased the national examination scores in the Sumatera region.

Another interesting phenomenon in the Sumatera region occurred as well. Table 14 shows that, at a 95 percent confidence interval, the budget for the teaching-learning process had a negatively significant impact on the national examination scores in the Sumatera region, indicating that allocating more budgets for the teaching-learning process seemed to have direct correlation on decreasing national examination scores. This phenomenon was completely contradictory to the researcher's argument that allocating more budgets for the teaching-learning process would increase the quality of education. The researcher argues that the inefficiency of budget allocation on teaching-learning process in the Sumatera region may be influenced by

other factors, including low quality of teachers[11]. Appendix E shows that, in 2002/03, for about 66.07 percent of public junior secondary school teachers in Sumatera region possessed non-graduate degrees. These teachers may not be able to use the utilities, instruments, or facilities provided for teaching-learning process effectively. This condition, therefore, may result in negative impact on efforts to improve the quality of education.

The following figures may be able to provide another possible explanation of the negative relationship between budgets for the teaching-learning process and national examination scores in Sumatera region. In this particular case, the researcher would say that an inefficiency and an ineffectiveness of budget allocation occurred in the Sumatera region, which impacts student achievement. Let us compare the findings provided in Research Question 2 and 3. Table 11 shows that the Kota and Kabupaten in the Java-Bali region had no statistically significant different in fiscal capacities for education. However, the figures in Table 14 shows that the Kota and Kabupaten in the Java-Bali region made statistically significant different in the student achievement. In contrast, Table 11 shows that the Kota and Kabupaten in the Sumatera region made statistically significant different in the fiscal capacities for education. However, Table 14 shows that the Kota and Kabupaten in the Sumatera region made no statistically significant difference in the student achievement. These findings look like contradictory. The possible explanation of this phenomenon is that the Kota and Kabupaten in each region differed in the way in which they allocated their education budget for the teaching-learning process (see Table 15).

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[11] In this study, the researcher defines the quality of teachers based on their years of education. The years of education of public junior secondary school teachers in Indonesia are from a one-year till a doctoral degree (see Appendix E). As shown in Appendix E, teachers who had less than four years of education (D1, D2, and D3 program) and *sarjana muda* program are classified as *non-graduate teachers*. Actually, *sarjana muda* program has four years of education, but it is not equivalent and may less qualify than S1, which also has four years of education. *Sarjana muda* needs one additional year of education to be S1. Meanwhile, teachers who earned *undergraduate* (S1), *master* (S2) and *doctor* (S3) programs are classified as *graduate teachers*.

Table 15. Descriptive analysis of teachers' salaries and teaching-learning expenditures per student in Java-Bali and Sumatera region in 2002/03 based on type of districts.

Region	Type of Districts	Variable	N	Mean (in Rp.000/year)
Java-Bali	Kota	Salary	15	8449.88
		Teaching	15	100.40
	Kabupaten	Salary	64	8471.80
		Teaching	64	74.73
Sumatera	Kota	Salary	13	10,086.02
		Teaching	13	70.76
	Kabupaten	Salary	39	8,101.61
		Teaching	39	75.68

Table 16. Test of mean differences (T-tests) between Kota and Kabupaten for teachers' salaries and teaching-learning expenditures per student in Java-Bali and Sumatera region in 2002/03

Region	Variable	df	t-value	p-value
Java-Bali	Salary	77	0.03	0.9739
	Teaching	77	-3.94	0.0002
Sumatera	Salary	50	-2.22	0.0309
	Teaching	50	0.26	0.7955

Table 15 illustrates that the Kota in the Java-Bali region posted a larger allocation for the teaching-learning process (Rp. 100,400/year per student) than did the Kabupaten (Rp. 74,730/year per student). Based on a t-test (see Table 16), at a 95% confidence interval, the difference in the budget for teaching-learning process between the Kota and Kabupaten in the Java-Bali region made statistically significant different. In contrast, the Kota in the Sumatera region had slightly a smaller budget for the teaching-learning process (Rp. 70,680/year per student) than did the Kabupaten (Rp. 75,680/year per student). However, based on the t-test (see Table 16), at a 95% confidence interval, the difference in the budget for the teaching-learning process between the Kota and Kabupaten in the Sumatera region made no statistically significant

different. These figures illustrates that such a significant different in the budget for the teaching-learning process may impact student achievement (see the case of the Java-Bali region), but such a small difference in the budget for the teaching-learning process may generate no impact on student achievement (see the case of the Sumatera region).

The figures in Table 15 and 16 may also be able to explain why a teacher salary is still not a significant factor to increase student achievement in both the Java-Bali and Sumatera regions. Table 15 shows that the teachers' salaries in the Kota in the Java-Bali region (Rp.8,449,880/year) was slightly smaller than those in the Kabupaten (Rp. 8,471,800/year). However, at a 95% confidence interval, this difference had no statistically significant (see Table 16). On the other hand, Table 15 shows the teachers' salaries in the Kota in the Sumatera region was larger than those in the Kabupaten (Rp.10,086,020/year vs Rp. 8,101,610/year). At a 95% confidence interval, this difference is statistically significant (See Table 16). Does the difference in the teachers' salaries impact student achievement? A surprisingly result occurred. Although the Kota and Kabupaten in the Java-Bali region made no significant different in the teachers' salaries, the figures in Table 14 indicate that different types of districts in the Java-Bali region had impact on student achievement. In contrast, the Kota and Kabupaten in the Sumatera region made statistically significant different in the teachers' salaries. The figures in Table 14, however, show that the different types of districts in the Sumatera region made no impact on the student achievement. Why would this mystery occur? Once again, the possible answer would be a combination between the teachers' quality and the efficiency budget allocation. The Java-Bali region had more graduate teachers and the efficiency budget allocation. On the other hand, the Sumatera region had fewer graduate teachers and the inefficiency budget allocation.

The figures in Table 15 would also explain another phenomenon might occur in the Sumatera region. These figures tell us that the average teachers' salaries in the Sumatera region were slightly higher than that in the Java-Bali region (Rp. 8,597,710/year vs Rp. Rp.8,467,630/year). However, this difference is not statistically significant (p-value=0.7764). The figures in Appendix E, however, show that the Sumatera region had a larger percentage of non-graduate teachers (66.07%). than that of graduate teachers (33.93%). So, what do these all figures mean? The two big determining factors of teachers' salaries in Indonesia are: a) Level of education; and b) years of experience. The higher level of education the higher the salaries are, and the more years of experience the higher the salaries are. The figures show that the Sumatera region had a larger percentage of non-graduate teachers with higher average salaries. The researcher argues that the higher average salaries in the Sumatera region occurred may be more likely due to the more years of experience. Does this situation impact on student achievement? Table 14 shows that the teachers' salaries in the Sumatera region made no significant impact on student achievement. As a result, it may also indicate that years of experience in the Sumatera region may have no impact on student achievement. Does the same phenomenon occur in the Java-Bali region too? Unfortunately, the researcher was unable to analyze the Java-Bali region because the percentage of graduate and non-graduate teachers in the Java-Bali was relatively close (48.37% vs 51.63%). Thus, the researcher could not predict which group of teachers was more dominant in determining the average salaries in the Java-Bali region. The researcher, therefore, strongly recommends carrying out such a study for this particular issue in both the Java-Bali and Sumatera region. The future study, hopefully, could explain the impact years of experience on student achievement more accurately.

4.4 SUMMARY

The current decentralized system in Indonesia provided better budget allocations for education. The fiscal capacities for education at districts increased. Unfortunately, increasing the fiscal capacities for education has led to increasing disparities in education expenditures per student, meaning the imbalance in fiscal capacities for education across districts increased. Some districts had high abilities to increase their fiscal capacities for education; other districts had low ones.

The ability to increase the fiscal capacities for education between the Kota and Kabupaten effected differently to the disparities in fiscal capacities for education. The Kota in the Sumatera region succeeded only in widening the gap in fiscal capacities for education between the Kota and Kabupaten. Increasing fiscal capacities for education in the Kota in the Sulawesi region, however, reduced the gap between the two. Meanwhile, the ability to increase the fiscal capacities for education between the Kota and Kabupaten in the Java-Bali region relatively did not effect much change. It was relatively small. However, the increase in the fiscal capacities for education in the Kabupaten in the Kalimantan region caused the largest gap in fiscal capacities for education between the Kota and Kabupaten.

Some factors involved in increasing the disparities in fiscal capacities for education in Indonesia. The DAU per capita and the district types made significant contribution to the fiscal capacities for education. Districts in both the Java-Bali and Sumatera regions were highly dependent upon the DAU to subsidy the education sector development. Districts which received larger general allocation funds (DAU) per capita were also more likely to allocate more funding for education whether or not they were poor or wealthy districts. This fact was reflected by the finding that district GRDP per capita in the Java-Bali and Sumatera regions had no statistically

significant impact on the education expenditures per student. It indicates that local authorities may have no significant support for education sector development. The richer of such districts did not necessarily mean a greater allocation of funding for education.

In addition, the Kota and Kabupaten also differed in the way that they allocated funding for education. The Kota in the Sumatera region tended to allocate significantly more for education than did the Kabupaten. At the same time, the Kota in the Java-Bali region did not allocate significantly more for education than the Kabupaten.

Ensuring enough funding for education, therefore, is essential to support education development. However, it is not enough to guarantee that the education quality will improve. It depends on how the funding will be used. Thus, the use of funding in an appropriate way becomes an important factor in education quality improvement as well as other factors which relate to education quality, such as quality of teachers. A combination between efficiency budget allocation and teacher's quality, therefore, became a key of quality improvement.

5.0 SUMMARY, IMPLICATION AND RECOMMENDATIONS

This final chapter provides summary of the study as well as implications of its findings and recommendations for further research. This chapter starts with the summary of the study. The implications of the study are discussed in the following section guided by the study findings. The chapter is closed with suggestion for further study.

5.1 SUMMARY OF THE STUDY

The main purpose of the current study was to identify whether the current decentralized system in Indonesia increases disparities in educational expenditures across districts and its impact on the quality of education**.** Data of 1999/00 and 2002/03 covering information about public junior secondary school expenditures, demographic and socio-economics of districts were collected. In the current study, the researcher was able to obtain information of 288 districts for 1999/00 data (86.49 % of the 333 total districts in 1999/00) and 236 districts for 2002/03 data (53.64 % of the 440 total districts in 2002/03).

To accomplish the objective of the study, the following research questions were addressed:

1. What characteristics of disparities in education expenditures occurred across the districts?

2. How do geographic, demographic and socio-economic conditions of districts impact the disparities in education expenditures?
3. Do the disparities in education expenditures impact student achievement?

To investigate disparities in education expenditures per student as stated in research question 1, the researcher calculated coefficients of variance of 181 districts in both 1999/00 and 2002/03. These districts were also grouped into 5 regions: Java and Bali, Sumatera, Kalimantan, Sulawesi, and Other. A coefficient of variance, then, was calculated for each region. The researcher also provided a robust regression analysis to answer research question 2 and 3. Data from 236 districts in 2002/03 was used in this analysis. Because of either an inappropriate linear model or an inadequate number of observations needed to run the robust regression analysis, the analysis was only able to apply to data of the Java-Bali and Sumatera regions. The findings of this current study are summarized in the following sections.

5.1.1 Disparities in Education Expenditures

The current decentralized system in Indonesia provided better budget allocations for education. The fiscal capacities for education at districts increased. Unfortunately, increasing the fiscal capacities for education has led to increasing disparities in education expenditures per student, meaning the imbalance in fiscal capacities for education across districts increased. Some districts had high abilities to increase their fiscal capacities for education; other districts had low ones. This condition also increased the disparities in fiscal capacities for education among the region. The Kalimantan region, for example, provided better fiscal capacities for education. Unfortunately, this increased the imbalance in fiscal capacities for education across districts. In

contrast, the Java-Bali made a better performance. Its fiscal capacities for education increased with lower disparities across the districts.

The fiscal capacities for education also differed between Kota and Kabupaten. The Kota and Kabupaten varied on the way in which they allocated funding for education. The Kota, generally, had a higher and a larger increment of education expenditures per student than did the Kabupaten. This illustrates that the Kota had a larger fiscal capacity for education as well as its greater effort to increase the fiscal capacity for education. This phenomenon occurred in the Kota in the Java-Bali, Sumatera and Sulawesi regions. Meanwhile, a larger increment of fiscal capacities for education at the Kabupaten occurred only in the Kalimantan Region.

The ability to increase the fiscal capacities for education between the Kota and Kabupaten effected differently in the disparities in fiscal capacities for education. Kota in Sumatera region succeeded only in widening the gap in fiscal capacities for education between the Kota and Kabupaten. Increasing fiscal capacities for education in the Kota in the Sulawesi region, however, reduced the gap between the two. Meanwhile, the ability to increase the fiscal capacities for education between the Kota and Kabupaten in the Java-Bali region relatively did not effect much change. It was relatively small. However, the increase in the fiscal capacities for education in the Kabupaten in the Kalimantan region caused the largest gap in fiscal capacities for education between the Kota and Kabupaten.

5.1.2 Factors that Impact Disparities in Education Expenditures

Some factors involved in increasing the disparities in fiscal capacities for education in Indonesia. The DAU per capita and the district types made significant contribution to the fiscal capacities for education. Districts in both the Java-Bali and Sumatera regions were highly dependent upon

the DAU to subsidy the education sector development. This highly dependency on the DAU is also strengthened by the finding that the GRDP percapita in both regions made no statistically significant impact on the education expenditures per student. It indicates that local authorities may have no significant support for education sector development. The richer of such districts (the districts with higher GRDP per capita) did not necessarily mean a greater allocation of funding for education.

The Kota and Kabupaten in the Java-Bali and Sumatera region also differed in the way that they allocated funding for education. The Kota in the Sumatera region tended to have a larger funding allocation for education than did the Kabupaten. This result was quite similar to the preliminary finding provided in Research Question 1 that the Kota in the Sumatera region posted larger education expenditures per student than did the Kabupaten. In contrast, the Kota and Kabupaten in the Java-Bali region made no statistically significant different in providing fiscal capacities for education. This condition may also explain why in 2002/03 the Java-Bali region had a lower disparity in fiscal capacities for education than did the Sumatera region (see Table 5).

In addition, the central government enforcement that districts should support the nine-year compulsory basic education program, however, still appeared to be ineffective in both the Java-Bali and the Sumatera regions. The GER of junior secondary schools in both the Java-Bali and Sumatera regions made no statistically significant impact on education expenditures per student. Districts with larger GER do not always indicate a greater allocation of funding for education.

5.1.3 Disparities in Education Expenditures and Educational Quality

Ensuring enough funding for education is essential to support education development. However, it is not enough to guarantee that the education quality will improve. It depends on how the funding will be used. Thus, the use of funding in an appropriate way becomes an important factor in education quality improvement as well as other factors which relate to education quality, such as quality of teachers. The current study found that a teacher salary was not a significant factor to improve student achievement in both the Java-Bali and Sumatera region, but allocating budget for the teaching-learning process impacted student achievement in these two regions. The way in which the Kota and Kabupaten allocated the funding was also a factor to improve student achievement in the Java-Bali region. The Kota in the Java-Bali region tended to have better student achievement than did the Kabupaten. Nevertheless, allocating more funding for the teaching learning process in both the Kota and Kabupaten in the Java-Bali region would increase student achievement. Other factors such as student-teacher ratio and class size also made no significant impact on student achievement in the Java-Bali region.

The Sumatera region revealed a different phenomenon. An inefficiency of budget allocation seemed to occur in the Sumatera region: allocating more budgets for the teaching-learning process appeared to have direct correlation on decreasing student achievement. This phenomenon was completely contradictory to the researcher's argument that allocating more budgets for the teaching-learning process would increase the quality of education. The inefficiency of budget allocation on teaching-learning process in the Sumatera region may be influenced by other factors, including low quality of teachers. Approximately 66.07 percent of public junior secondary school teachers existed in the Sumatera region only had a non-graduate degree. These teachers may not be able to optimize the use the utilities, instruments, or facilities

provided for the teaching-learning process effectively. This condition, therefore, would result in a negative impact on the efforts to improve the quality of education.

5.2 IMPLICATION

The study suggests that the current decentralized system in Indonesia was likely to have an impact on budget allocations for education. The fiscal capacities for education at districts increased. Unfortunately, increasing the fiscal capacities for education has led to increasing disparity in education expenditures. It means, imbalance in fiscal capacities for education across the districts increased. It is very important, therefore, to understand that increasing imbalance in fiscal capacities for education could give the following implications:

5.2.1 The Role of Intergovernmental Transfer

The current study found that the intergovernmental transfer through the DAU[12] per capita made a significant impact on education expenditures per student; Districts with larger DAU per capita most likely allocated larger fiscal capacities for education. At this point, the researcher needs to emphasize that the purpose of the DAU is not merely to fund education: The use of the DAU depended upon the decisions of local authorities, who might choose to allocate a larger portion of the DAU for infrastructures, roads, buildings, or other non-educational sector development. The

[12] General Allocation Fund (DAU) is a grant aimed at equalizing the fiscal capacities of regional governments to deliver public services. It is determined by the fiscal gap: the difference between fiscal needs and fiscal capacities of a regional government. The Ministry of Finance transfers the DAU to local treasurers. Based on Fiscal Decentralization Law No. 25/1999, the portion of DAU allocation is 10 percent at the provincial level and 90% at the district level. (see Chapter 2, p.24).

central government did not have enough power to specify the amount of the DAU budget to be used for a specific purpose, such as education. Therefore, the discovery of a positive impact of the DAU per capita on education expenditures per student is quite important and indicates that the larger the DAU per capita of such a district, the greater the chances that the district will allocate more funding for education.

Because the education expenditures per student were highly dependent upon the DAU per capita, failure in providing such an appropriate system of funding distribution could widen the disparities in education expenditures per student. In the long term, this situation could impact the overall process of education development. Some regions/districts would benefit from better education development; other regions/districts would suffer from the lack of it. This situation impacts an unequal access to better and qualified education for children in the differing regions. This widening gap in education opportunities between students in the rich and poor areas has become one of the most frequently mentioned problems in the implementation of decentralized programs (Adams, 2002b). The central government needs to take a more active and significant role in order to reduce this gap. One of ways in which the central government can do is by providing an intergovernmental transfer in an appropriate way. The central government should take into consideration the local fiscal capacities before it allocates the funding.

The researcher argues that increasing the GRDP per capita of a district should have a positive impact on education expenditures per student. More local financial support for education should be in place. This current study, however, found that those districts with larger GRDP per capita in both the Java-Bali and Sumatera regions made no significant impact on fiscal capacities for education. The insignificance of GRDP per capita to education expenditures per student indicates that local governments still provide too little financial support for education

sector development, and seemed, instead, to be highly dependent upon intergovernmental transfers through the DAU.

The researcher, therefore, suggests that in order to reach a condition of fiscal neutrality, an interrelationship should be established between local financial support and central government financial intervention as revenue sources for education. This principle suggests that children should have equal access to education regardless of the economic condition of the area in which they live (Odden and Picus, 1992). Alexander and Bedenbaugh (1971) define equalization as a provision in a grant program, either in the allocation, or the matching, or both, which gives some statutory recognition to underlying differences in the state's relative capacities to raise funds from their own resources for financing a joint federal-state program, in order to achieve more uniform standards throughout the nation. Based on this definition, central government allocation and local fiscal capacities become variables of great importance. This idea implies specific targets of the intergovernmental transfers from the central government, suggesting that intergovernmental transfers should favor poor districts. One of the purposes of this funding, therefore, is to provide equal education expenditures per student across districts, or at least to reduce financial gaps or disparities in financing education between the rich and the poor districts, and, therefore, the poor districts provide at least a minimum service standard of education. This educational minimum service standard itself, of course, should be designed and defined further by the government.

5.2.2 Budget Allocation Efficiencies and Education Quality

Concerning educational quality improvement, Odden and Picus (1992) suggest that the use of financial resources for education should be based on an effectiveness principle. They imply that

a resource inequity exists not only when sufficient resources are unavailable, but also when resources are not used effectively enough to produce the desired impact on student performance. Study findings showed that budgets for the teaching-learning process[13] had a significant impact on student achievement, indicating that increasing budget for the teaching-learning process would increase student performance. The findings of this current study supported the argument that effective budget allocation has a direct correlation to improved student achievement.

This current study found that budget size is not always related to student achievement. In 2002/03, different phenomena in the Java-Bali and Sumatera regions occurred. The Java-Bali districts with higher budget for teaching-learning process produced higher level of student achievement. In contrast, Sumatera districts with higher budget for the teaching-learning process in Sumatera region tended to have low student achievement. This may result from ineffective and inefficient expenditures of the educational funds in the Sumatera region. Using school resources efficiently to produce a better quality of education is also supported by the arguments of John and Morphet (1960) and Levin (1970)[14]. John and Morphet (1960) point out that when providing additional educational inputs will cost money to obtain, then if each of additional inputs is unrelated to increasing performance, one might draw to a conclusion that a significant inefficiency exists in the schools. Levin (1970) stresses that a school that efficiently allocates resources will purchase a combination of inputs geared toward maximizing the potential educational impact of its budget.

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[13] Education expenditures at public junior secondary schools are consisting of sub-components of expenditures. Those expenditures were grouped into teachers' salaries, maintenance and rehabilitation, teaching-learning process, and others. This current study found that a different level of budget allocation for the teaching-learning process between the Kota and Kabupaten provided different results in attempts to improve student achievement. A larger budget allocation for the teaching-learning process most likely increased student achievement (see Chapter 4, pp. 73-74).

[14] . See Chapter 2, pp. 33

Another possible explanation of the different impact of budget allocation on student achievement is that there was unequal graduate teacher distribution[15]. Such unequal graduate teacher distribution still seems to be a common problem in education. It occurs not just only in developing countries, but also in developed countries, like the United States. Boyd, Lankford, Loeb, and Wycoff (2003, p.55) found that "even with increases in spending equity within states in the US, substantial differences remain across schools is the qualification of teachers". Appendix E shows that, in 2002/03, the Jawa-Bali region had 48.37% of public junior secondary teachers who had graduate degrees (data source: MONE). In contrast, the Sumatera region had only 33.93% (data source: MONE). This finding, therefore, impacts not only education finance, but also teacher distribution policies.

The researcher agrees that providing more funding for the teaching-learning process may give more opportunities for schools to purchase equipment and facilities that support the learning process and for children to access a better quality of education. These efforts, however, should

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[15] . Theobald and Laine (2003) argue that teacher quality (e.g., subject matter knowledge, cognitive ability, selectivity of college attended) is the single most important school factor affecting student achievement. Hanushek, Kain, and Rivkin (1999) reported that variations in teacher quality explain at least 7% of student test score differences, and they argue that this is a lower boundary.

In this study, the researcher defines the quality of teachers based on their years of education. The years of education of public junior secondary school teachers in Indonesia are from a one-year till a doctoral degree (see Appendix E). As shown in Appendix E, teachers who had less than four years of education (D1, D2, and D3 program) and *sarjana muda* program are classified as *non-graduate teachers*. Actually, *sarjana muda* program has four years of education, but it is not equivalent and may less qualify than S1, which also has four years of education. *Sarjana muda* needs one additional year of education to be S1. Meanwhile, teachers who earned *undergraduate* (S1), *master* (S2) and *doctor* (S3) programs are classified as *graduate teachers*

Adams (2002b) compared some studies about the impact of teachers' experience on student achievement. He found no consistent results. Some studies concluded that teachers with longer experience improve student achievement in India, Iran and Malaysia (Heynemen and Loxley, 1983; Beebout, 1972). Another study showed no evidence that teacher experience is associated with student achievement in Indonesia (Sembiring, 1981).

Adams (2002b) also found no consistent results in studies of the impact of teachers' years of schooling on student achievement. Teachers' years of schooling raised student achievement in India, Thailand, and Iran (Heyneman and Loxley, 1983; Comber and Keeves, 1973; Beebout, 1972). Another study indicates that teachers' years of schooling do not effect student achievement in Indonesia (Sembiring, 1981).

also included improving teachers' knowledge and performance so that teachers can optimize the use of school equipment, school facilities, and technology that support and enhance the teaching-learning process. The researcher believes that improving teachers' knowledge will also develop teachers' motivation and attitude to produce better education for students[16].

The problem of unequal graduate teacher distribution may also explain why student-teacher ratio had a different impact on student achievement in the Java-Bali than in the Sumatera region. This current study found that in 2002/03 districts with lower student-teacher ratio in the Sumatera region most likely produced higher student achievement. In the Java-Bali region, however, student-teacher ratio had no significant impact on student achievement (see Table 14). The researcher found that in 2002/03 the student-teacher ratio (teacher's burden) in the Java-Bali and Sumatera regions was relatively the same. It was 16:1 in the Java-Bali and 15:1 in the Sumatera (data source: MONE). Why, then, does student-teacher ratio have a different impact on student achievement from region to region?

In this particular case, the researcher argues that although teacher's burden in the Java-Bali and Sumatera regions was relatively the same, the quality of teachers differed. Appendix E shows that, in 2002/03, the Sumatera region had a larger percentage of non-graduate teachers (66.07%); conversely, the Java-Bali region had a smaller percentage of non-graduate teachers (51.63%). The researcher argues that non-graduate teachers may do better in classes with fewer students, because of a decrease in the teacher's burden. In addition, decreasing student-teacher ratio may also mean increasing the number of teachers. This fact, therefore, would implicate the education policy on teacher recruitment and distribution, and should consider the quality or at least the educational backgrounds of those teachers recruited.

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[16] Adams (2002b) found that studies done by Fuller and Chantavanish (1976) and Rowe et al (1966) conclude that teachers who expect high achievement raise student performance.

This current study also found that budgets for teachers' salaries in both the Java-Bali and Sumatera regions made no significant impact on student achievement (see Table 14). This finding contradicts both the Levin (1970) and the Lazear (2001) argument, which suggest that teacher quality can be increased by paying higher salaries (see Chapter 2 p.38). One possible explanation was stated in the report from the World Bank (2004), which mentioned that although under the current decentralized system in Indonesia the district would have a responsibility for hiring and paying teachers in public and private schools, except those in *madrasahs,* the central government still set the salary levels, and the promotional and reward systems for teachers. Districts might provide teachers with some supplementary benefits and incentives within their jurisdictions, but this was dependent upon district economic capabilities and/or high cost-of-living adjustments. No such rule existed for providing incentives or "merit-pay" for teachers due to their good performances in classes. Their quality of performances in classes did not impact their salaries (World Bank,1989 *in* Bjork, 2006)[17]. Teachers became less motivated to improve their performance (Adams, 2002b)[18], which, of course, affected the quality of education.

5.2.3 Political, Social, and Economic Stability

The researcher realizes the difficulty or the impossibility of having a zero disparity or absolute equality in education expenditures per student across districts. But, this should not hinder the

[17] World Bank (1989 *in* Bjork, 2006) notices that teachers, as public employees in Indonesia, are guaranteed a basic salary regardless of performance on the job. "As long as they do not upset their principals or employees in the provincial office of education, teachers can expect to receive regular pay increases every 4 years, regardless of their efforts in the classroom" (p. 135).

[18] Adams (2002b, p.22) argues that "apparent solutions to ineffective teaching and learning due to lack of incentives and motivations turn out to be complex because of organizational context. Teachers who do not receive merit pay may respond not by trying harder but rather by reducing their efforts (see Chapter 2, pp.39-40).

government's efforts to reduce the gap. These efforts, however, are sometimes political rather than educational decisions. There is an argument that the significance of continuing disparities lies in the threat which they pose to national integration rather than to the extent that they betray divergence from the world norms of educational equality (UNESCO, 1981). In other words, the objective of reducing regional disparities in educational development can undoubtedly be justified for ethical reasons of justice and social equity, but in practice it is often prescribed quite simply as a political necessity (UNESCO, 1981).

Chapter 2 of the current study addresses political consideration as a hidden factor behind the process of decentralization in Indonesia. One reason the central government adopted a decentralized system was to save the national integrity. Strong pressures from local authorities to be granted a broader range of power accelerated the process of decentralization, thereby, giving local districts the authority to manage their sector development, including funding allocation based on priorities. The central government did not have the power to require local districts to allocate specific percentages of their total budget for education. Nevertheless, this condition increases the chance of varying fiscal capacities for education across districts.

Providing equal opportunities and capabilities to local authorities for education sector development becomes the government's challenge[19]. Ensuring adequate and equal funding to support education sector development, therefore, is essential in establish and maintain economic, social, and political stability. "Education also may contribute to poverty reduction, to improvements in income distribution, and to various dimensions of social, demographic, and

[19] Thomas (1983) argues that the politics-education interaction may occur when one region of a country enjoys superior educational opportunities – more and better school facilities, more and better teachers. He argues that the youth of the privileged region find that the superior educational facilities fit them well for influential positions in the civic services. Consequently, the percentage of government officials from that region continues to increase and the bias of the government in favor of that specific region continues to grow. In the long term, it could challenge the national stability.

political development" (Adams, 2002a, p.21). Adams (2002a) also emphasizes that one of education's contributions to economic growth is –possibly- by contributing to political stability. In this case, the researcher strongly agrees with the following Thomas' argument (1983, p.20) as well:

> "Nearly every nation's development scheme includes a manpower production component that is assigned to the education system. Schools and non-formal programs are expected to provide the kinds and amounts of workers needed to implement the country's socioeconomic growth plan. And while manpower production is usually viewed as an economic matter, it is necessarily political as well since every economic system is intimately linked to the particular political structure it supports. Therefore, how well the education system carries out the manpower assignment influences the stability and longevity of the existing political organization".

However, one may ask how significant is the contribution of basic education, including primary and secondary education, to social, economic, and political stability in a country?. Some politicians may argue that investments in higher education may be more beneficial than investments in basic education, because they can better accelerate a country's development. This opinion may be right, but developing a better society and a fundamental thinking of an ideology and a national identity is essential for strong national economics and for political stability. Balancing local and national identities is a partial concern in Indonesia, because it is comprised of multi-ethnic groups, many local languages, and many cultures. Strengthening national identity needs to occur at the early stages of education such as primary and junior secondary levels. Children need to learn both how to behave in local societies and how to be proud as citizens of the country.

Moreover, education quality in Indonesia thus has two components. First, an emphasis on appreciation of both local cultures and national identity strengthen civil society in Indonesia. Second, an emphasis on high quality language and math skills helps to prepare students for

global economic competitiveness. If the government ignores the low fiscal capacities for education in certain districts, it could lead to an increase in the unskilled labor force, unemployment rates, and the social burden. All three contribute to political and economic instability. If it were left to districts to increase their fiscal capacities for education in order to support or finance education development and improve the quality of education, then parents would likely have to bear that burden[20]. Poor families would be affected most; their children may be forced to drop out of school – even at primary and junior secondary level, if parents were unable to pay. This happened during the economic crisis of 1997. These children would be denied access to the knowledge and skills. They need to grow up successfully. As a result, the gap between the poor and the rich would become wider[21], and this would eventually impact political, economic, and social stability in the long run.

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[20] One of the goals of educational decentralization is expanding parental participation in order to bolster local support for the schools and generate additional resources (Bjork, 2006). The MONE document pointed out that "it is expected that school personnel honor the participation and support of the parents and communities. That kind of mutual respect and mutual responsibilities can be cultivated in the management of education" (MONE, 1994 in Bjork, 2006, p. 136). However, Bjork (2006) observed that "parental participation was construed as making financial contributions to schools " (pp.144-145).

[21] Harrison (1976, pp.188-189) points out that "persons with more schooling find it easier to obtain jobs with high social status, and to earn the high salaries associated with those jobs. These people with more schooling, which was obtained at higher quality schools that spent more on each student, are apt to be especially successful in the job market. The quality of schools makes positive contribution to economic success, controlling for the quantity of schooling."

Harrison (1976, p.189) also argues that "the areas with less economic development, schooling has a particular ability to increase incomes. Thus areas with low income and low schooling are places where educational investments and schooling have a particular ability to produce a high rate of returns, when one compares marginal incomes and marginal schooling." Therefore, he concerns that where the average level of schooling is low, the distribution of schooling tends to be highly unequal, controlling for other key variables that shape educational inequality. As a result, when the strata of society are highly differentiated by schooling, the result of low schooling is social inequality. And, when the schooling is unequal, the distribution of incomes tends to be highly unequal.

5.3 RECOMMENDATION FOR POLICIES AND FUTURE STUDIES

A decentralized educational system in Indonesia is underway. However, many mechanisms need to be re-formatted from the previous to the current system. New processes are required to transfer governmental structures not only administratively, but also financially. In this case, the researcher is concerned more with the issue of financing the education sector itself more than with the details of administration. The researcher argues that misconduct in financing education sector may result in a loss of education quality. Current program may not being implemented in the appropriate way. It is, therefore, necessary to emphasize the importance of increasing the number of future studies related to educational finance issues in Indonesia. In order to create better future studies, the researcher wishes to make the following recommendations:

First, the current study found that the imbalance in fiscal capacities for education was greater within each region rather than among regions. The future studies, therefore, should focus more on sub-national regions. In order to produce more in-depth analyses of the factors involved in generating increasing the disparities in education expenditures per student in a specific region.

Secondly, the current study found that the ways districts allocated their funds for the teaching learning process which had a significant impact on student achievement[22]. A larger budget for the teaching-learning process may be more likely to increase student achievement. The researcher, therefore, strongly recommends that the government should better monitor how schools spend their funds for education to ensure that there will be an adequate funding for the teaching-learning process.

[22] This current study found that a different level of budget allocation for the teaching-learning process between the Kota and Kabupaten provided different results in attempts to improve student achievement. A larger budget allocation for the teaching-learning process most likely increased student achievement (see Chapter 4, Pp. 73-74).

Thirdly, the current study also found that the teacher's salary was not a significant factor on student achievement. This occurred since teachers' performance in classes did not have impact on their salaries. Teachers became less motivated to improve their performance. The researcher, therefore, strongly recommends that such a government's policy in providing rewards or incentives (merit-pay) for teachers due to their good performances in classes becomes one option to increase teachers' motivation to improve their performance in classes.

Fourthly, the current study also found that the existing disparities across regions involved not only fiscal capacities for education, but also the distribution of graduate teachers. The researcher, therefore, strongly recommends that any efforts to increase the quality of education should not merely provide sufficient funding for education, but also improve the quality of teachers. Future studies, therefore, should pay more attention to the teacher quality as a variable in explaining the quality of education in Indonesia. This also implies recognizing to what degree does the investment of a district to improve teacher quality as well. This also suggests that government investment of teacher education may have produced significant results.

Fifthly, the researcher agrees that such investments are required for improving continuing teacher quality. This could be done by allocating funds for pre-service teacher training to upgrade teachers' academic skills or in-service teacher training to improve performance of the existing teachers. The investments in pre-service teacher training may improve teacher's academic skills with a consequence of a large funding with a limited number of teachers as targets. On the other hand, investments in in-service teacher training may improve teachers' performance in class. Many regions have limited budget. Consequently, the researcher strongly recommends that future studies are needed to determine what kinds of teacher training are more

effective and efficient in contributing to student achievement in each region. Future studies in such a specific region, therefore, are also recommended.

Sixthly, greater funding is needed to improve teacher quality. Central government need to urge districts to earmark funds from the DAU to support teachers' quality improvement. Government monitoring through MONE may be required to ensure both the budget allocation for education and the management of equity issues. In this case, districts' transparency around how the district allocates funding for teachers' quality improvement is strongly required.

Seventhly, a reliable data bank that supports educational finance studies, especially at the Ministry of National Education (MONE) is needed. During the data collection period of the current study, the researcher found missing or incomplete data related to the educational finance information at MONE. Therefore, for the current study, the researcher was only able to collect data for about 87.09% of 1999/00 and 53.64% of 2002/03 in which the educational finance information was available. MONE needs to both generate a more complete data and to require strengthen compliance by MONE for data requests. This lack of enforcement could have resulted from too little use of educational finance information to support educational policies of the previous system. In addition, few studies exist in the educational finance field in Indonesia. Increasing the number of educational finance studies could result in greater demand for education finance data. This 'virtual cycle' could create a mechanism for better educational finance development.

Finally, because of a lack of adequate data / information from other regions, the current study, using district level as a unit analysis, analyzed data only from the Java-Bali and Sumatera regions. The researcher, therefore, recommends that future studies use a smaller unit analysis,

such as sub-districts or school levels, which would provide more access to a larger amount of data.

APPENDIX A

EDUCATION EXPENDITURES OF PUBLIC JUNIOR SECONDARY SCHOOLS, 1999/00

APPENDIX A. EDUCATION EXPENDITURES OF PUBLIC JUNIOR SECONDARY SCHOOLS, 1999/00

No	Province	District	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000/year)					
									Salaries		Teaching	Maintenance	Others	Total
									Teacher	Non-teacher				
1	West Java	Kab. Bandung	1	71	75648	3604	1687	5.51	16,308,470	2,749,552	3,642,176	1,364,395	1,447,172	25,511,765
2		Kab. Bekasi	1	54	39842	1630	857	3.57	4,690,325	1,396,970	3,346,358	1,023,756	58,870,263	69,327,672
3		Kab. Bogor	1	251	100682	5748	2397	5.37	11,780,123	3,212,299	5,142,236	3,416,743	3,161,918	26,713,319
4		Kab. Ciamis	1	86	38822	2354	1012	5.48	9,309,696	1,670,551	1,964,152	628,284	570,027	14,142,710
5		Kab. Cianjur	1	82	37088	1815	870	4.56	5,083,703	1,589,158	1,674,294	782,217	2,698,898	11,828,270
6		Kab. Cirebon	1	99	60405	2743	1334	5.29	7,948,208	2,065,297	2,176,577	1,247,959	1,046,913	14,484,954
7		Kab. Garut	1	116	50880	2815	1201	5.45	9,135,233	3,056,572	2,333,106	1,006,854	2,037,841	17,569,606
8		Kab. Indramayu	1	97	45467	2039	1072	5.28	6,320,701	981,474	1,619,381	798,824	2,223,433	11,943,813
9		Kab. Karawang	1	79	51499	2074	1161	5.30	7,032,088	1,238,288	2,686,800	941,920	539,334	12,438,430
10		Kab. Kuningan	1	62	35150	1665	816	5.40	5,882,715	1,482,585	1,514,137	807,417	868,634	10,555,488
11		Kab. Lebak	1	54	24993	978	603	5.06	2,651,453	1,402,079	989,782	550,758	245,760	5,839,832
12		Kab. Majalengka	1	60	32043	1543	809	5.47	7,354,897	923,292	1,464,000	458,697	1,195,779	11,396,665
13		Kab. Pandeglang	1	46	21839	1008	556	5.11	3,701,029	888,938	1,145,075	527,913	250,608	6,513,563
14		Kab. Purwakarta	1	37	22284	965	506	5.43	5,957,071	1,235,239	1,355,925	313,981	1,381,927	10,244,143
15		Kab. Serang	1	80	42595	1896	982	5.10	5,947,551	1,132,078	2,058,683	1,035,741	1,223,029	11,397,082
16		Kab. Subang	1	68	39080	1739	912	5.27	5,301,370	1,428,815	1,278,319	529,096	2,129,764	10,667,364
17		Kab. Sukabumi	1	110	45363	2118	1055	5.54	5,503,321	1,460,018	1,913,497	1,196,913	1,335,423	11,409,172
18		Kab. Sumedang	1	74	33683	1830	838	5.50	8,239,782	1,593,922	1,253,642	525,946	422,057	12,035,349
19		Kab. Tangerang	1	211	86358	4605	2073	5.53	12,597,842	3,872,615	5,050,200	4,130,169	4,341,766	29,992,592
20		Kab. Tasikmalaya	1	111	45175	2750	1135	5.41	10,414,300	1,784,875	3,026,499	897,364	1,152,030	17,275,068
21		Kot. Tasikmalaya	1	19	11284	707	283	5.62	2,814,439	494,413	989,397	239,668	802,126	5,340,043
22		Kota. Bandung	1	213	101201	5996	2436	5.58	22,825,627	6,133,795	5,097,671	2,801,453	3,437,595	40,296,141
23		Kota. Banjar	1	7	4266	204	98	5.55	809,248	156,309	92,672	72,043	204,501	1,334,773
24		Kota. Bekasi	1	91	25141	1765	648	4.54	6,488,919	1,736,986	17,077,488	2,477,866	27,218,821	55,000,080
25		Kota. Bogor	1	88	36216	2094	892	5.51	5,906,100	1,697,964	1,976,199	1,126,842	2,203,979	12,911,084
26		Kota. Cilegon	1	24	10150	509	244	5.30	1,761,647	313,903	380,670	345,212	409,193	3,210,625
27		Kota. Cimahi	1	9	11004	568	241	6.04	2,976,219	564,070	393,388	374,610	192,788	4,501,075
28		Kota. Cirebon	1	39	14896	841	392	5.45	2,900,495	661,053	554,141	194,910	224,269	4,534,868
29		Kota. Depok	1	6	6222	303	132	6.42	1,540,191	489,447	505,231	269,995	70,187	2,875,051
30		Kota. Sukabumi	1	33	12206	701	321	6.46	2,796,524	494,049	708,117	230,334	357,430	4,586,454
31		Kota. Tangerang	1	70	37793	1852	880	5.61	6,854,516	2,152,237	2,205,360	1,283,018	2,407,985	14,903,116
32	Central Java	Kab. Banjarnegara	1	54	24897	1138	571	5.64	5,572,668	787,456	1,199,779	457,156	747,752	8,764,811
33		Kab. Banyumas	1	103	50668	2361	1110	5.63	7,670,095	1,544,384	2,421,616	1,035,187	952,721	13,624,003
34		Kab. Batang	1	50	20304	971	457	5.62	3,408,567	660,071	911,263	261,208	369,307	5,610,416
35		Kab. Blora	1	75	31558	1577	728	5.60	5,713,507	937,593	1,299,661	593,585	551,546	9,095,892
36		Kab. Boyolali	1	89	39668	2469	908	5.68	8,700,543	1,410,338	1,750,435	802,694	790,128	13,454,138
37		Kab. Brebes	1	52	33967	1286	726	5.66	7,168,649	903,869	1,246,400	788,016	774,006	10,880,940
38		Kab. Cilacap	1	153	66481	3060	1508	5.10	7,989,675	547,581	2,456,747	1,221,239	3,634,181	15,849,423
39		Kab. Demak	1	24	6280	534	165	5.43	436,774	68,720	104,440	60,048	1,566,887	2,236,869
40		Kab. Grobogan	1	88	42250	1933	946	5.60	7,464,202	1,278,765	1,555,185	597,672	1,036,505	11,932,329
41		Kab. Jepara	1	56	20476	1258	492	5.55	4,953,223	1,243,385	925,910	331,643	678,703	8,132,864
42		Kab. Karanganyar	1	73	38847	2268	859	5.69	8,429,160	789,804	1,665,506	1,336,406	1,462,018	13,682,894
43		Kab. Kebumen	1	101	50186	2411	1149	5.69	9,051,743	1,715,195	2,214,148	1,069,926	1,097,007	15,148,019
44		Kab. Kendal	1	76	34888	1663	777	5.75	5,397,389	1,010,116	1,478,957	584,121	736,524	9,207,107
45		Kab. Klaten	1	100	50588	3197	1142	5.99	14,722,248	1,982,714	2,522,973	1,163,713	861,563	21,253,211
46		Kab. Kudus	1	43	22535	1149	505	5.77	4,182,866	502,060	1,129,158	336,954	1,432,196	7,583,234
47		Kab. Magelang	1	119	34650	2206	877	5.85	7,719,815	1,216,676	1,572,208	670,647	621,930	11,801,276
48		Kab. Pati	1	75	35796	1911	794	5.78	7,029,778	1,155,101	1,400,117	448,905	753,494	10,787,395
49		Kab. Pekalongan	1	53	22946	1136	527	5.72	3,100,539	1,270,602	1,334,699	1,015,644	831,264	7,552,748
50		Kab. Pemalang	1	82	41287	1928	904	5.55	5,420,178	1,533,784	1,666,692	799,209	912,604	10,332,467
51		Kab. Purbalingga	1	58	26038	1290	575	5.74	6,869,826	689,490	1,188,631	378,916	896,193	10,023,056
52		Kab. Purworejo	1	92	38745	2145	894	5.63	7,824,295	1,519,936	1,580,126	831,604	850,575	12,606,536
53		Kab. Rembang	1	44	18489	969	439	5.83	3,253,823	638,404	996,432	294,959	460,330	5,643,948
54		Kab. Semarang	1	85	32221	1677	747	5.86	6,157,802	1,073,781	1,105,378	382,421	766,646	9,486,028
55		Kab. Sragen	1	84	41409	2337	886	5.77	8,599,060	1,651,845	1,655,510	715,565	746,280	13,368,260

APPENDIX A (continue)

No	Province	District	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000/year)					
									Salaries		Teaching	Maintenance	Others	Total
									Teacher	Non-teacher				
56		Kab. Sukoharjo	1	67	32433	2118	742	5.87	8,338,416	800,025	1,605,956	473,973	859,035	12,077,405
57		Kab. Tegal	1	67	40097	1686	887	5.55	5,176,856	1,409,212	2,060,948	839,233	1,006,709	10,492,958
58		Kab. Temanggung	1	63	21622	1220	531	5.74	4,961,645	943,167	1,170,478	995,218	459,873	8,530,381
59		Kab. Wonogiri	1	116	44063	2797	1024	5.66	9,174,547	1,907,431	2,227,109	968,802	1,648,051	15,925,940
60		Kab. Wonosobo	1	61	21526	1142	530	5.21	3,768,314	2,477,995	2,172,618	1,130,783	1,235,894	10,785,604
61		Kota. Cilacap	1	9	6923	299	143	5.62	1,588,158	0	394,882	157,882	1,351,212	3,492,134
62		Kota. Klaten	1	19	9173	596	219	6.11	2,630,267	442,065	468,746	200,289	240,130	3,981,497
63		Kota. Magelang	1	23	10083	661	249	6.22	3,227,022	670,584	751,876	303,625	491,064	5,444,171
64		Kota. Pekalongan	1	26	12333	656	302	5.82	2,417,858	805,921	783,302	266,218	425,154	4,698,453
65		Kota. Purwokerto	1	23	12473	583	274	6.04	2,319,292	701,729	681,802	401,039	339,802	4,443,664
66		Kota. Salatiga	1	20	9216	519	229	6.15	2,299,213	497,756	523,463	366,463	374,311	4,061,206
67		Kota. Semarang	1	165	64362	3807	1579	5.86	14,592,131	2,728,023	3,534,925	2,332,302	2,762,147	25,949,528
68		Kota. Surakarta	1	80	35133	2316	841	5.94	10,051,212	1,688,602	2,297,032	913,014	965,331	15,915,191
69	Yogyakarta	Kab. Bantul	1	99	31768	2600	868	5.90	11,191,536	1,911,221	1,658,991	654,327	854,309	16,270,384
70		Kab. Gunung Kidul	1	102	27744	2089	761	5.70	8,247,704	1,290,749	1,328,643	670,754	829,051	12,366,901
71		Kab. Kulon Progo	1	73	20184	1621	589	5.91	7,233,674	1,579,784	1,087,507	488,601	427,074	10,816,640
72		Kab. Sleman	1	115	34859	2886	956	5.93	11,431,669	2,994,136	1,627,299	691,646	3,485,264	20,230,014
73		Kota. Yogyakarta	1	60	23166	1790	626	6.07	6,129,491	2,534,192	1,608,373	638,745	2,206,480	13,117,281
74	East Java	Kab. Bangkalan	1	40	11413	834	302	5.61	3,069,999	389,862	425,019	182,450	151,405	4,218,735
75		Kab. Blitar	1	89	36583	2173	860	5.56	6,579,370	554,774	1,309,291	397,116	8,432,484	17,273,035
76		Kab. Bojonegoro	1	90	36255	2057	835	5.47	5,485,995	911,239	1,367,820	438,473	377,743	8,581,270
77		Kab. Bondowoso	1	33	9418	642	260	5.86	2,556,475	444,233	647,226	234,348	142,436	4,024,718
78		Kab. Gresik	1	100	30209	2384	724	5.74	5,501,839	805,135	1,456,507	701,721	819,786	9,284,988
79		Kab. Jember	1	135	45509	2869	1097	5.63	8,934,926	818,452	1,570,686	783,155	1,301,189	13,408,408
80		Kab. Jombang	1	123	41125	2535	994	5.50	6,707,438	218,012	998,289	389,979	2,888,215	11,201,933
81		Kab. Kediri	1	100	47151	2905	1132	5.54	9,081,819	1,161,780	1,427,178	756,134	700,805	13,127,716
82		Kab. Lamongan	1	125	39090	2710	948	5.69	5,257,822	786,942	1,813,028	680,888	625,580	9,164,260
83		Kab. Lumajang	1	62	21241	1316	514	5.57	4,036,572	559,887	882,059	280,318	331,015	6,089,851
84		Kab. Madiun	1	48	23785	1480	552	5.67	4,662,513	652,085	991,034	294,713	1,038,768	7,639,113
85		Kab. Magetan	1	57	29917	1822	704	5.83	7,845,756	825,077	1,183,798	379,868	560,722	10,795,221
86		Kab. Malang	1	273	73157	5278	1816	5.52	9,689,569	1,841,940	2,124,947	1,303,760	1,000,646	15,960,862
87		Kab. Mojokerto	1	90	32415	2042	722	5.64	4,422,870	935,739	972,192	501,210	617,961	7,449,972
88		Kab. Nganjuk	1	77	41969	2485	981	5.66	8,719,289	1,482,524	1,456,203	430,622	783,699	12,872,337
89		Kab. Ngawi	1	71	32112	1806	766	5.73	6,656,530	735,466	1,365,141	346,261	965,811	10,069,209
90		Kab. Pacitan	1	56	19998	1297	496	5.63	4,222,450	492,946	1,005,309	301,501	264,275	6,286,481
91		Kab. Pamekasan	1	35	10519	816	284	5.69	2,815,494	988,805	548,941	244,193	1,862,337	6,459,770
92		Kab. Pasuruan	1	103	27894	1966	687	5.66	3,832,486	952,776	1,748,178	1,453,349	1,912,455	9,899,244
93		Kab. Ponorogo	1	82	34202	1998	773	5.69	5,912,334	928,781	1,367,338	421,170	953,340	9,582,963
94		Kab. Probolinggo	1	57	13933	994	375	5.50	3,714,771	417,401	528,219	290,172	1,786,637	6,737,200
95		Kab. Sampang	1	24	6428	441	173	5.51	1,848,051	263,545	334,111	184,133	141,588	2,771,428
96		Kab. Sidoarjo	1	125	63817	3981	1423	5.70	11,081,606	1,632,146	2,352,665	1,518,229	1,341,590	17,926,236
97		Kab. Situbondo	1	44	12753	913	336	5.52	2,964,388	393,869	515,117	256,184	182,805	4,312,363
98		Kab. Sumenep	1	42	10123	784	290	5.56	3,135,469	543,839	501,932	171,972	795,828	5,149,040
99		Kab. Trenggalek	1	51	25282	1553	601	5.57	6,764,264	653,238	1,467,896	443,469	1,530,006	10,858,873
100		Kab. Tuban	1	65	27709	1488	648	5.56	4,074,188	811,726	1,226,538	455,010	437,967	7,005,429
101		Kab. Tulungagung	1	67	35379	2266	822	5.59	8,428,179	920,552	1,207,069	376,080	448,255	11,380,135
102		Kota. Batu	1	4	2849	160	63	6.22	569,140	103,887	100,935	27,644	49,593	851,199
103		Kota. Blitar	1	17	9528	610	229	5.88	2,381,119	734,703	451,667	172,821	214,194	3,954,504
104		Kota. Kediri	1	29	14879	953	306		2,912,939	697,097	436,255	270,301	650,536	4,967,128
105		Kota. Madiun	1	23	11840	829	293	5.74	4,158,333	667,425	831,593	263,626	1,449,794	7,370,771
106		Kota. Malang	1	99	34778	2343	928	5.53	6,620,837	1,038,726	1,419,825	1,151,513	1,407,442	11,638,343
107		Kota. Mojokerto	1	8	2137	174	54	5.65	316,979	57,370	56,224	86,779	115,431	632,783
108		Kota. Pasuruan	1	20	7012	453	175	5.93	1,852,872	223,806	176,668	727,743	509,568	3,490,657
109		Kota. Probolinggo	1	18	7529	440	182	5.74	1,243,277	222,865	257,892	110,049	171,898	2,005,981
110		Kota. Surabaya	1	340	110943	8446	2701	5.77	20,179,481	5,061,166	4,326,785	3,378,323	6,574,888	39,520,643

APPENDIX A (continue)

No	Province	District	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000/year)					
									Salaries		Teaching	Maintenance	Others	Total
									Teacher	Non-teacher				
111	Bali	Kab. Badung	1	41	14218	1166	351	5.38	4,236,329	1,637,014	865,220	867,131	1,063,446	8,669,140
112		Kab. Bangli	1	15	7414	434	199	6.05	2,123,497	876,847	413,507	109,760	176,023	3,699,634
113		Kab. Buleleng	1	65	24653	1762	637	5.51	7,990,161	1,497,211	1,001,695	262,623	521,402	11,273,092
114		Kab. Gianyar	1	39	15241	1247	369	5.60	5,060,616	811,617	706,910	272,477	588,034	7,439,654
115		Kab. Jembrana	1	28	9688	701	271	5.70	2,105,452	440,647	377,382	112,987	554,647	3,591,115
116		Kab. Karang Asem	1	33	15144	911	394	5.57	4,414,496	929,091	601,241	193,508	792,384	6,930,720
117		Kab. Klungkung	1	18	7044	498	191	5.84	2,598,826	531,386	348,461	80,968	102,320	3,661,961
118		Kab. Tabanan	1	31	13955	1122	376	5.72	5,998,670	773,257	724,422	278,827	479,467	8,254,643
119		Kota. Denpasar	1	29	13428	883	306	5.81	2,314,958	348,250	498,904	630,882	451,782	4,244,776
120	Aceh	Kab. Aceh Barat	2	59	14299	870	398	4.96	4,066,600	474,955	489,907	257,595	243,670	5,532,727
121		Kab. Aceh Besar	2	42	10689	1098	312	5.98	5,272,795	372,629	587,636	205,358	230,888	6,669,306
122		Kab. Aceh Selatan	2	59	15009	869	435	4.24	4,574,730	157,902	30,949,511	429,457	647,064	36,758,664
123		Kab. Aceh Tengah	2	40	9825	716	291	4.84	3,441,667	779,419	447,984	184,753	973,574	5,827,397
124		Kab. Aceh Tenggara	2	39	10221	583	257	5.10	2,927,871	565,738	397,665	247,604	456,831	4,595,709
125		Kab. Aceh Timur	2	60	26184	1411	682	4.78	1,797,602	784,051	490,629	185,269	442,757	3,700,308
126		Kab. Aceh Utara	2	84	30398	1884	784	4.85	9,053,840	685,639	1,810,368	479,660	3,223,654	15,253,161
127		Kab. Pidie	2	56	20507	1370	571	5.07	7,614,378	435,741	613,090	360,003	332,181	9,355,393
128		Kota. Banda Aceh	2	29	12420	878	324	5.26	4,651,399	385,328	423,317	232,855	72,940	5,765,839
129		Kota. Lhokseumawe	2	21	9323	580	261	5.42	1,928,433	332,355	352,189	162,394	1,194,752	3,970,123
130		Kota. Sabang	2	6	1402	124	40	5.26	378,241	21,718	67,480	25,322	17,918	510,679
131	North Sumatera	Kab. Asahan	2	85	27638	1452	668	5.13	5,389,664	723,382	916,718	524,704	267,166	7,821,634
132		Kab. Dairi	2	50	19587	912	502	5.40	4,960,827	417,586	659,249	277,590	171,734	6,486,986
133		Kab. Deli Serdang	2	251	79442	5218	1790	5.12	30,599,000	2,444,999	2,340,450	1,737,488	8,752,491	45,874,428
134		Kab. Karo	2	54	16959	1409	453	4.63	6,545,178	374,580	618,642	318,323	215,048	8,071,771
135		Kab. Labuhan Batu	2	94	22248	1262	555	5.18	4,634,293	503,721	780,935	351,868	351,614	6,622,431
136		Kab. Langkat	2	131	37621	2390	908	5.24	7,008,600	1,281,394	887,756	583,712	697,587	10,459,049
137		Kab. Nias	2	73	21388	1105	582	5.16	4,129,889	866,532	939,237	361,093	240,063	6,536,814
138		Kab. Tapanuli Selatan	2	116	33358	1954	851	5.26	9,560,759	1,191,060	1,524,660	528,828	231,109	13,036,416
139		Kab. Tapanuli Tengah	2	40	11650	606	284	5.23	2,325,752	406,767	411,340	155,537	233,652	3,533,048
140		Kota. Binjai	2	36	14216	943	332	5.23	2,857,421	418,554	586,179	287,502	514,650	4,664,306
141		Kota. Kisaran	2	15	8961	506	204	5.42	1,876,471	246,079	287,548	183,419	476,097	3,069,614
142		Kota. Padang Sidempuan	2	16	7665	489	186	5.33	2,026,673	326,326	209,161	119,107	45,588	2,726,855
143		Kota. Pematang Siantar	2	45	19425	1236	467	5.56	5,279,468	575,551	652,639	503,783	397,395	7,408,836
144		Kota. Rantau Prapat	2	15	5804	342	198	5.16	1,270,423	179,855	151,315	92,142	98,528	1,792,263
145		Kota. Sibolga	2	11	5514	295	131	5.65	2,457,376	167,637	232,791	110,146	359,334	3,327,284
146		Kota. Tanjung Balai	2	13	5922	297	140	4.82	1,419,182	282,266	262,489	166,067	69,710	2,199,714
147		Kota. Tebing Tinggi	2	27	10338	578	250	5.37	2,301,972	530,208	391,331	167,201	131,009	3,521,721
148	West Sumatera	Kab. Agam	2	49	16851	1302	478	5.73	7,072,825	842,099	817,680	434,800	183,678	9,351,082
149		Kab. Lima Puluh Koto	2	33	11191	955	335	5.66	4,974,342	490,099	661,340	228,525	80,402	6,434,708
150		Kab. Padang Pariaman	2	43	20852	1379	519	5.48	6,323,139	1,974,357	1,860,797	520,150	1,747,315	12,425,758
151		Kab. Pasaman	2	42	16013	1005	422	5.37	5,052,735	468,455	693,570	213,899	228,312	6,656,971
152		Kab. Pesisir Selatan	2	38	20447	1252	524	5.39	6,700,940	862,422	760,829	418,966	1,080,766	9,823,923
153		Kab. Sawahlunto/Sijunjung	2	30	9616	623	264	5.57	2,822,226	337,958	509,229	198,062	102,580	3,970,055
154		Kab. Solok	2	42	15345	1029	431	5.45	5,272,039	503,647	440,370	223,539	174,953	6,614,548
155		Kab. Tanah Datar	2	39	13662	1111	399	5.62	6,015,261	839,123	733,110	352,265	369,836	8,309,595
156		Kota. Bukittinggi	2	10	5037	351	126	6.24	2,603,231	207,302	180,936	88,706	190,571	3,270,746
157		Kota. Padang	2	71	39856	2553	941	5.57	13,248,480	2,541,175	1,875,184	827,873	877,556	19,370,268
158		Kota. Padang Panjang	2	9	3417	304	97	5.71	4,539,524	115,255	199,152	69,111	218,296	5,141,338
159		Kota. Pariaman	2	8	4694	316	115	5.35	1,870,562	291,991	853,838	144,298	109,279	3,269,968
160		Kota. Payakumbuh	2	13	5743	441	158	5.89	2,339,169	144,775	377,034	115,473	59,980	3,036,431
161		Kota. Sawah Lunto	2	8	2749	191	81	5.60	1,012,738	121,964	158,833	43,809	42,967	1,380,311
162		Kota. Solok	2	6	3637	238	94	5.71	1,722,720	130,684	223,762	41,015	84,286	2,202,467
163	Riau	Kab. Bengkalis	2	123	40504	2150	998	5.40	7,660,192	1,514,298	1,469,411	619,770	1,149,229	12,412,900
164		Kab. Indragiri Hilir	2	52	9660	638	272	5.78	2,213,529	218,314	352,698	148,152	260,115	3,192,808
165		Kab. Indragiri Hulu	2	66	18007	1195	497	5.53	6,446,197	896,982	1,059,157	351,745	2,295,244	11,049,325

APPENDIX A (continue)

No	Province	District	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000/year)					
									Salaries		Teaching	Maintenance	Others	Total
									Teacher	Non-teacher				
166		Kab. Kampar	2	99	28616	1719	771	6.10	7,644,846	1,073,379	1,099,839	359,147	1,250,664	11,427,875
167		Kab. Kepulauan Riau	2	50	14255	811	380	5.59	3,903,516	397,570	723,717	233,515	584,570	5,842,888
168		Kota. Batam	2	22	8028	418	201	5.72	1,846,074	248,868	424,494	254,610	621,792	3,395,838
169		Kota. Dumai	2	4	3208	178	76	5.73	1,110,349	206,818	154,245	26,079	44,184	1,541,675
170		Kota. Pekan Baru	2	53	28618	1649	703	5.65	6,891,749	1,554,761	1,227,356	664,417	505,484	10,843,767
171		Kota. Tanjung Pinang	2	18	7124	404	181	5.67	1,748,864	255,831	484,232	182,445	172,802	2,844,174
172	Jambi	Kab. Batang Hari	2	38	11972	673	271	5.39	1,090,586	129,384	290,720	176,014	715,649	2,402,353
173		Kab. Bungo Tebo	2	59	14738	921	427	5.25	2,630,579	425,390	694,834	280,016	2,549,856	6,580,675
174		Kab. Kerinci	2	45	12824	1097	409	5.99	6,274,237	1,439,326	725,130	346,775	1,841,738	10,627,206
175		Kab. Sarolangun Bangko	2	51	11591	636	318	5.70	2,765,268	220,433	453,976	189,648	157,587	3,786,912
176		Kab. Tanjung Jabung	2	40	9551	543	261	5.53	2,009,205	134,771	327,645	127,868	318,760	2,918,249
177		Kota. Jambi	2	56	22087	1377	549	5.53	5,041,043	751,027	774,860	517,868	467,955	7,552,753
178	South Sumatera	Kab. Bangka	2	81	19821	1162	514	5.51	3,438,811	746,541	901,268	268,442	294,660	5,649,722
179		Kab. Belitung	2	34	8311	573	225	5.70	1,140,821	285,871	370,458	173,141	1,517,008	3,487,299
180		Kab. Lahat	2	73	32064	1164	737	5.14	5,229,458	514,527	1,246,683	528,716	851,696	8,371,080
181		Kab. Muara Enim	2	36	17303	656	409	5.49	3,053,963	518,047	659,082	282,598	478,353	4,992,043
182		Kab. Musi Banyu Asin	2	117	29695	1688	731	5.47	4,299,618	602,356	935,116	424,308	570,717	6,832,115
183		Kab. Musi Rawas	2	45	13935	757	350	5.33	2,158,692	217,658	585,192	272,040	189,343	3,422,925
184		Kab. Ogan Komering Ilir	2	75	25620	1420	591	5.15	4,474,089	753,899	720,162	424,989	810,745	7,183,884
185		Kab. Ogan Komering Ulu	2	129	42648	2381	1032	5.45	6,345,370	832,243	1,420,946	769,639	535,700	9,903,898
186		Kota. Lubuk Linggau	2	22	8772	532	208	5.31	1,562,501	158,030	312,893	234,521	139,604	2,407,549
187		Kota. Palembang	2	54	42711	2221	946	5.61	11,630,565	1,612,710	1,648,976	670,003	487,612	16,049,866
188		Kota. Pangkal Pinang	2	23	9475	453	213	5.79	1,656,295	444,879	333,024	212,466	158,872	2,805,536
189		Kota. Prabumulih	2	5	3241	166	73	5.85	692,111	104,773	102,541	20,237	31,248	950,910
190	Lampung	Kab. Lampung Barat	2	27	8564	703	214	4.36	1,515,325	685,553	289,613	136,590	108,363	2,735,444
191		Kab. Lampung Selatan	2	151	41705	2895	1025	8.89	5,177,739	871,280	921,596	550,288	527,157	8,048,060
192		Kab. Lampung Tengah	2	253	72924	4945	1744	5.21	12,804,298	2,339,930	1,914,963	2,182,643	3,213,874	22,455,708
193		Kab. Lampung Timur	2	29	14688	668	322	3.23	2,598,404	254,424	493,790	152,475	347,580	3,846,673
194		Kab. Lampung Utara	2	110	37437	2067	907	4.18	6,040,598	398,733	1,427,572	432,491	1,521,531	9,820,925
195		Kab. Tanggamus	2	108	33120	2087	830	3.10	2,488,428	278,422	315,546	130,245	2,506,320	5,718,961
196		Kab. Tulang Bawang	2	67	18004	1053	438	3.71	2,543,572	293,095	564,595	194,701	179,573	3,775,535
197		Kab. Way Kanan	2	5	514	39	16		45,941	1,794	1,275	650	350	50,010
198		Kota. Bandar Lampung	2	114	40527	2667	988	3.68	6,927,932	1,674,159	1,127,832	468,259	860,875	11,059,057
199	Bengkulu	Kab. Bengkulu Utara	2	56	15228	980	411	5.34	3,384,503	403,664	528,356	175,925	1,161,165	5,653,613
200		Kab. Rejang Lebong	2	45	16489	921	441	5.36	4,748,228	1,402,756	899,502	414,270	822,008	8,286,764
201		Kota. Bengkulu	2	31	14214	824	345	5.52	3,290,247	447,586	410,081	170,489	505,665	4,824,068
202	West Kalimantan	Kab. Kapuas Hulu	3	44	6184	567	215	4.89	1,350,681	370,607	390,054	194,391	197,280	2,503,013
203		Kab. Pontianak	3	138	29157	1947	730		50,525,941	9,567,538	34,178,086	13,672,339	106,722,398	214,666,302
204		Kab. Sambas	3	106	28353	1757	717	5.27	5,023,503	1,014,872	1,059,782	537,307	657,986	8,293,450
205		Kab. Sanggau	3	93	17888	1139	500	4.48	3,852,839	258,490	539,504	275,558	385,415	5,311,806
206		Kab. Sintang	3	62	15204	793	402	5.42	1,917,832	182,312	561,030	268,883	491,801	3,421,858
207		Kota. Ketapang	3	49	11430	537	309	5.40	1,123,547	243,516	264,584	186,304	235,371	2,053,322
208	Central Kalimantan	Kab. Barito Utara	3	44	5600	415	196	5.72	1,322,511	127,286	208,299	96,183	104,401	1,858,680
209		Kab. Kotawaringin Barat	3	36	7425	342	194	5.53	1,290,236	177,548	240,622	89,090	80,223	1,877,719
210		Kota. Palangka Raya	3	25	7514	672	195	5.24	3,575,663	149,299	637,610	265,524	23,374,958	28,003,054
211	South Kalimantan	Kab. Banjar	3	30	6222	568	207	5.38	3,137,769	456,320	364,009	191,468	229,522	4,379,088
212		Kab. Barito Kuala	3	26	5151	394	159	5.40	1,733,310	311,464	319,145	140,906	403,260	2,908,085
213		Kab. Hulu Sei Selatan	3	21	2723	409	121	5.41	2,342,499	500,397	209,587	100,735	16,249,624	19,402,842
214		Kab. Hulu Sei Tengah	3	17	5149	417	171	5.22	2,345,002	470,397	275,133	110,530	93,087	3,294,149
215		Kab. Hulu Sei Utara	3	28	4047	347	141	5.35	1,863,017	420,070	246,757	155,331	270,288	2,955,463
216		Kab. Kota Baru	3	46	10723	636	310	5.24	2,572,150	293,981	450,339	183,562	238,278	3,738,310
217		Kab. Tabalong	3	22	4150	306	108	5.33	1,754,782	179,321	248,713	119,344	504,425	2,806,585
218		Kab. Tanah Laut	3	24	5733	379	174	5.36	1,734,171	311,974	331,060	114,484	169,568	2,661,257
219		Kab. Tapin	3	19	2904	290	108	5.11	1,246,643	248,989	222,478	73,007	505,468	2,296,585
220		Kota. Banjarmasin	3	64	22615	1441	565	5.18	4,168,991	2,208,235	911,969	324,781	648,555	8,262,531
221		Kota.Banjarbaru	3	13	4161	324	118	5.57	1,504,101	159,526	263,314	178,374	39,673	2,144,988
222	East Kalimantan	Kab. Berau	3	22	3802	317	114		967,495	44,141	349,884	161,592	129,465	1,652,577
223		Kab. Bulongan	3	43	7283	503	205	5.11	1,722,297	1,419,651	250,919	1,801,354	1,137,612	6,331,833
224		Kab. Kutai	3	133	26412	2076	804	5.30	6,236,034	912,677	1,203,070	673,542	1,697,930	10,723,253
225		Kab. Pasir	3	39	9691	532	244	5.16	1,977,793	320,991	445,903	230,860	680,537	3,656,084
226		Kota. Bontang	3	12	2587	206	73	5.35	191,088	29,415	28,403	5,325	57,652	311,883
227		Kota. Tarakan	3	12	5031	245	122	5.33	871,586	167,204	333,102	110,218	227,855	1,709,965
228	North Sulawesi	Kab. Gorontalo	4	61	19396	1515	657	5.86	8,751,508	1,555,531	1,882,683	758,778	1,556,189	14,504,689
229		Kab. Minahasa	4	208	30174	2892	1139	6.11	15,122,193	2,807,827	2,719,337	982,566	1,945,503	23,577,426
230		Kab. Sangihe Talaud	4	73	11511	1067	400	6.61	4,588,641	515,540	791,274	529,999	237,729	6,663,183

APPENDIX A (continue)

No	Province	District	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000/year)					
									Salaries		Teaching	Maintenance	Others	Total
									Teacher	Non-teacher				
231		Kota. Bitung	4	11	1510	115	49	5.36	542,227	25,170	108,660	94,170	55,560	825,787
232		Kota. Gorontalo	4	15	6077	469	171	6.31	1,909,442	206,057	230,340	99,682	232,068	2,677,589
233		Kota. Manado	4	83	17140	1218	501	5.97	6,371,358	500,471	890,652	613,100	394,515	8,770,096
234	Central Sulawesi	Kab. Banggai	4	68	14038	938	412	5.54	4,079,069	404,727	482,347	280,901	793,532	6,040,576
235		Kab. Poso	4	73	15725	1113	499	5.56	6,141,239	477,938	612,817	321,768	2,646,162	10,199,924
236	South Sulawesi	Kab. Bantaeng	4	15	3703	283	111	5.83	1,227,104	508,438	133,138	52,969	106,400	2,028,049
237		Kab. Barru	4	18	5344	393	161	5.75	1,852,528	885,905	284,146	188,948	3,161,085	6,372,612
238		Kab. Bone	4	58	16815	1206	499	6.51	6,174,319	973,285	781,569	399,714	353,981	8,682,868
239		Kab. Bulukumba	4	29	10588	748	312	6.46	4,054,714	452,148	290,005	218,214	375,787	5,390,868
240		Kab. Enrekang	4	27	7374	628	241	5.71	3,913,486	608,871	282,609	128,549	283,138	5,216,653
241		Kab. Gowa	4	40	13535	951	348	6.27	4,289,693	873,088	403,262	261,211	233,770	6,061,024
242		Kab. Jeneponto	4	20	7409	446	214	5.97	1,959,496	355,381	213,187	135,115	144,802	2,807,981
243		Kab. Majene	4	16	4391	301	133	5.85	1,567,501	337,584	180,763	50,570	279,777	2,416,195
244		Kab. Mamuju	4	37	7562	452	224	6.12	1,739,364	223,755	273,423	84,913	118,983	2,440,438
245		Kab. Maros	4	39	10124	793	272	5.43	2,573,464	374,823	304,886	142,967	102,981	3,499,121
246		Kab. Pangkajene Kepulauan	4	36	10330	790	288	6.36	3,075,932	437,534	306,038	143,665	701,396	4,664,565
247		Kab. Pinrang	4	36	12468	778	358	6.33	2,957,828	738,373	463,944	164,491	284,344	4,608,980
248		Kab. Polewali Mamasa	4	54	13279	933	382	6.09	6,064,184	551,433	701,752	279,527	4,078,790	11,675,686
249		Kab. Selayar	4	18	3496	341	104	6.11	1,975,539	249,789	173,376	104,582	163,412	2,666,698
250		Kab. Sidenreng Rappang	4	27	9572	578	293	6.13	3,102,611	508,073	370,603	139,842	601,892	4,723,021
251		Kab. Sinjai	4	22	6632	526	210	6.06	2,767,553	417,258	347,602	212,358	1,446,089	5,190,860
252		Kab. Soppeng	4	31	7260	745	287	6.15	4,232,716	381,448	441,300	235,572	214,263	5,505,299
253		Kab. Takalar	4	22	8789	568	230	6.04	2,944,733	648,934	183,271	92,828	731,050	4,600,816
254		Kab. Tana Toraja	4	68	22615	1363	635	5.87	6,911,917	1,382,848	1,117,335	441,155	397,097	10,250,352
255		Kab. Wajo	4	33	9429	633	283	5.96	3,042,363	719,301	344,488	188,148	528,758	4,823,058
256		Kota. Makassar	4	148	51101	3490	1251	6.10	11,555,075	1,819,081	1,430,844	1,139,875	1,318,918	17,263,793
257		Kota. Watampone	4	2	1935	98	44	6.72	764,433	74,577	26,546	27,116	11,057	903,729
258	Southeast Sulawesi	Kab. Buton	4	64	17389	970	522	6.11	5,938,704	1,769,536	692,279	481,738	2,662,099	11,544,356
259		Kab. Kendari	4	65	20292	1225	586	6.19	6,790,591	1,164,144	894,596	366,191	796,093	10,011,615
260		Kab. Kolaka	4	36	11728	639	325	6.64	2,489,633	528,759	398,965	180,572	259,164	3,857,093
261		Kab. Muna	4	48	14174	878	410	5.93	5,540,319	773,487	640,061	196,634	635,663	7,786,164
262		Kota. Bau Bau	4	12	6800	379	174	5.94	1,801,231	1,291,127	248,993	53,777	383,407	3,778,535
263	Maluku	Kab. Halmahera Tengah	5	31	6693	456	213	6.23	1,269,131	172,054	301,238	106,484	50,547	1,899,454
264	West Nusa Tenggara	Kab. Bima	5	46	27616	1449	653	5.10	5,371,496	1,064,865	1,015,703	365,275	409,111	8,226,450
265		Kab. Dompu	5	20	9705	517	244	5.63	1,932,054	325,817	381,973	77,144	183,122	2,900,110
266		Kab. Lombok Barat	5	34	15329	838	398	5.22	3,037,897	480,866	510,230	210,531	316,794	4,556,318
267		Kab. Lombok Tengah	5	42	17409	1036	451	5.28	4,457,902	1,026,052	721,466	298,538	489,245	6,993,203
268		Kab. Lombok Timur	5	57	23968	1271	610	5.34	5,333,125	777,063	910,941	274,419	369,305	7,664,853
269		Kab. Sumbawa	5	39	18205	895	459	5.64	3,721,103	750,330	1,512,740	287,794	4,326,641	10,598,608
270		Kota. Mataram	5	8	901	92	30	5.60	126,888	42,669	96,458	8,270	23,737	298,022
271	East Nusa Tenggara	Kab. Alor	5	29	6631	442	188	5.63	2,019,268	33,184	324,660	173,683	289,275	2,840,070
272		Kab. Belu	5	31	10038	462	245	6.04	1,480,540	227,351	268,991	122,201	127,346	2,226,429
273		Kab. Ende	5	52	10078	622	284	5.40	2,303,613	127,861	380,854	204,275	174,892	3,191,495
274		Kab. Flores Timur	5	58	10809	738	318	5.77	2,731,499	309,711	507,265	245,824	302,610	4,096,909
275		Kab. Kupang	5	65	13948	1022	424	5.98	4,384,464	388,985	796,792	247,502	351,781	6,169,524
276		Kab. Manggarai	5	63	19133	918	482	5.65	2,681,460	286,775	511,063	256,797	314,044	4,050,139
277		Kab. Sikka	5	37	8214	529	236	5.82	1,567,406	244,691	316,723	190,576	239,917	2,559,313
278		Kab. Sumba Barat	5	47	10384	598	271	6.14	1,951,840	213,203	445,083	182,440	139,223	2,931,789
279		Kab. Sumba Timur	5	18	6498	348	170	5.60	1,118,520	100,447	220,250	47,866	1,335,133	2,822,216
280		Kab. Timor Tengah Selatan	5	59	13227	827	342	5.21	2,763,669	609,542	538,119	150,241	216,235	4,277,806
281		Kab. Timor Tengah Utara	5	23	6237	313	158	5.64	1,087,927	161,339	203,336	69,625	121,553	1,643,780
282	Papua	Kab. Biak Numfor	5	27	6666	359	176	5.13	2,084,195	362,285	295,401	104,792	122,221	2,968,894
283		Kab. Jayawijaya	5	31	6274	376	161	4.19	1,140,099	2,091,410	141,703	47,214	1,719,416	5,139,842
284		Kab. Manokwari	5	33	7411	480	207	5.45	2,973,908	516,464	476,708	154,418	115,507	4,237,005
285		Kab. Merauke	5	47	10415	588	285	5.52	2,281,796	367,088	466,993	170,126	174,317	3,460,320
286		Kab. Paniai	5	33	7272	409	205	5.29	1,516,209	17,259	222,011	54,415	43,929	1,853,823
287		Kab. Sorong	5	44	10883	579	277	5.93	3,480,327	486,906	531,778	192,779	857,296	5,549,086
288		Kab. Yapen Waropen	5	16	3710	219	102	5.17	1,683,168	286,353	213,639	67,756	78,946	2,329,862

APPENDIX B

EDUCATION EXPENDITURES OF PUBLIC JUNIOR SECONDARY SCHOOLS, 2002/03

APPENDIX B. EDUCATION EXPENDITURES AT PUBLIC JUNIOR SECONDARY SCHOOLS, 2002/03

No.	Province	Kabupaten/Kota	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000)						DAU	GRDP
									Salaries		Teaching	Maintenance	Other	Total	per Capita	per Capita
									Teacher	Non-teacher						
1	West Java	Kab. Bandung	1	235	119,349	7,154	2,784	4.36	42,302,270	9,738,657	8,180,393	4,612,651	10,999,168	75,833,139	150.26	5,021.50
2		Kab. Ciamis	1	95	40,851	2,380	1,062	5.08	24,272,975	7,825,974	3,943,254	1,754,584	802,370	38,599,157	219.34	4,055.10
3		Kab. Cianjur	1	79	37,179	1,504	945	4.67	16,021,494	3,464,857	2,190,736	1,201,047	441,355	23,319,489	167.05	3,622.90
4		Kab. Garut	1	125	62,608	3,648	1,322	6.12	29,748,447	7,312,371	6,420,662	4,788,379	6,396,596	54,666,455	187.38	4,343.00
5		Kab. Indramayu	1	115	46,966	2,487	1,097	4.22	15,543,218	2,761,533	3,826,224	2,703,689	1,695,450	26,530,114	168.84	13,027.30
6		Kab. Karawang	1	76	58,194	2,262	1,285	4.58	18,558,850	3,326,889	4,310,490	2,479,635	2,245,615	30,921,479	13.92	8,016.20
7		Kab. Lebak	1	64	27,559	1,318	679	3.52	7,872,940	2,467,056	1,503,076	699,696	1,116,625	13,659,393	189.74	3,128.10
8		Kab. Majalengka	1	38	24,062	1,041	563	4.52	6,733,621	1,596,307	1,199,293	715,977	1,301,852	11,547,050	477.50	7,400.00
9		Kab. Pandeglang	1	56	25,771	1,320	636	4.83	8,222,099	2,743,352	2,006,996	1,584,268	3,415,314	17,972,029	224.70	3,441.10
10		Kab. Purwakarta	1	1	779	34	17	4.93	263,683	26,601	34,638	19,074	4,282	348,278	223.44	8,025.00
11		Kab. Serang	1	95	47,828	2,445	1,119	4.50	15,711,842	3,848,664	3,646,198	2,735,983	1,885,545	27,828,232	152.35	4,806.50
12		Kab. Tangerang	1	153	79,448	3,888	1,974	3.39	18,953,312	5,906,866	5,703,750	5,446,317	5,981,872	41,992,117	101.19	6,979.60
13		Kab. Tasikmalaya	1	96	35,428	2,386	936	3.67	24,793,273	3,932,735	4,637,351	1,760,896	1,864,419	36,988,674	159.58	2,268.90
14		Kota. Bekasi	1	95	57,897	2,915	1,231	4.69	20,129,803	3,942,057	6,549,941	4,835,031	5,501,082	40,957,914	117.50	6,701.20
15		Kota. Cilegon	1	23	11,417	566	253	9.24	3,081,591	992,085	2,074,839	883,830	1,134,052	8,166,397	267.10	29,047.40
16		Kota. Cirebon	1	38	15,225	875	402	5.22	6,963,725	1,705,594	819,723	471,208	652,588	10,612,838	470.65	17,502.80
17		Kota. Tangerang	1	98	49,848	2,623	1,140	5.06	20,384,501	7,115,177	3,714,949	4,078,306	4,281,171	39,574,104	111.69	15,011.80
18	Central Java	Kab. Banjarnegara	1	52	25,297	1,261	621	5.30	12,094,481	1,454,481	3,089,999	812,901	3,282,528	20,734,390	255.48	3,096.20
19		Kab. Banyumas	1	109	48,229	2,401	1,185	5.03	26,120,154	3,641,031	4,093,471	2,368,356	2,900,610	39,123,622	219.70	2,303.70
20		Kab. Batang	1	51	20,818	1,005	490	5.21	9,133,554	2,473,354	1,652,019	573,035	541,264	14,373,226	317.57	3,407.80
21		Kab. Blora	1	76	30,428	1,680	789	5.22	16,354,720	2,480,161	2,533,272	1,074,932	2,177,489	24,620,574	350.04	2,500.70
22		Kab. Boyolali	1	85	36,184	2,470	918	5.11	22,317,922	2,972,504	2,628,934	1,605,846	862,076	30,387,282	277.84	4,213.00
23		Kab. Brebes	1	91	44,682	2,036	1,017	5.02	16,773,638	3,700,108	3,812,264	2,203,190	1,707,689	28,196,889	177.07	2,825.20
24		Kab. Cilacap	1	134	60,810	2,814	1,433	4.83	12,040,189	2,526,916	3,962,119	2,422,036	2,368,318	23,319,578	202.17	17,166.40
25		Kab. Demak	1	53	24,979	1,362	583	5.03	13,627,241	1,519,593	2,351,197	964,656	1,084,592	19,547,279	197.17	3,041.50
26		Kab. Grobogan	1	93	42,288	2,111	981	5.03	16,845,990	3,438,699	2,586,105	1,333,214	2,628,840	26,832,848	209.02	1,820.50
27		Kab. Jepara	1	56	19,727	1,251	466	5.20	10,548,463	2,308,460	3,089,178	813,145	3,067,677	19,826,923	235.04	3,679.90
28		Kab. Karanganyar	1	72	33,821	2,269	865	5.41	18,411,374	2,360,385	3,515,252	1,783,858	1,533,974	27,604,843	286.29	4,732.80
29		Kab. Kebumen	1	101	48,382	2,450	1,205	5.09	22,917,057	4,022,169	4,330,388	2,365,923	2,359,147	35,994,684	241.94	2,075.50
30		Kab. Kendal	1	78	34,274	1,746	791	5.12	14,050,541	2,838,724	3,656,770	1,417,343	2,939,268	24,902,646	334.98	5,376.80
31		Kab. Klaten	1	97	43,550	3,212	1,140	5.49	35,965,415	3,806,226	4,788,460	2,486,608	1,535,541	48,582,250	288.89	3,598.60
32		Kab. Kudus	1	42	19,993	1,210	504	4.97	11,982,977	2,288,062	1,518,174	733,189	1,639,264	18,161,666	260.55	13,612.10
33		Kab. Magelang	1	112	32,496	2,324	894	5.41	14,920,023	2,143,685	2,477,924	945,638	826,617	21,313,887	242.66	3,030.30
34		Kab. Pati	1	71	32,102	1,929	786	5.46	16,984,613	4,130,626	2,742,852	1,540,678	1,148,030	26,546,799	230.35	3,181.10
35		Kab. Pekalongan	1	54	24,119	1,206	574	5.07	9,508,070	2,427,890	1,877,485	874,776	711,544	15,399,765	252.65	3,505.40
36		Kab. Pemalang	1	83	41,277	1,956	945	4.82	9,422,036	2,254,393	3,334,206	1,380,164	4,005,744	20,396,543	190.20	2,457.60
37		Kab. Purworejo	1	86	33,636	2,232	891	4.63	17,591,693	2,848,847	4,003,456	1,366,204	2,504,615	28,314,815	15.55	2,868.80
38		Kab. Semarang	1	83	31,366	1,678	771	5.38	13,178,726	4,127,698	1,989,469	880,494	5,330,209	25,506,596	256.54	5,397.50
39		Kab. Sragen	1	81	37,008	2,415	920	5.25	24,889,267	3,666,338	3,089,397	1,837,231	1,185,652	34,667,885	280.29	2,809.80
40		Kab. Sukoharjo	1	60	28,161	2,125	742	5.41	24,839,879	1,906,245	3,081,489	1,740,355	1,927,691	33,495,659	259.42	4,605.10
41		Kab. Tegal	1	67	38,109	1,790	908	5.04	15,587,517	1,804,299	3,529,027	1,741,364	1,607,857	24,270,064	183.37	1,958.50
42		Kab. Temanggung	1	63	22,595	1,285	579	5.31	13,354,017	2,132,528	1,972,353	785,458	914,832	19,159,188	283.27	3,150.40
43		Kab. Wonosobo	1	61	21,792	1,184	580	7.17	8,759,657	1,494,278	1,643,289	964,934	1,048,946	13,911,104	289.23	2,236.70
44		Kota. Magelang	1	21	9,310	642	236	5.76	6,918,359	3,129,702	1,346,451	596,647	4,427,229	16,418,388	911.13	8,074.50
45		Kota. Pekalongan	1	27	12,697	696	329	5.19	7,170,685	2,593,087	1,395,883	751,652	672,777	12,584,084	375.12	6,330.20
46		Kota. Salatiga	1	20	9,094	555	238	5.77	6,562,331	737,921	750,912	302,556	496,990	8,850,710	632.24	5,195.50
47		Kota. Semarang	1	160	62,729	3,876	1,584	5.38	32,246,357	5,035,276	6,816,542	6,116,075	4,178,413	54,392,663	188.08	11,983.90
48		Kota. Surakarta	1	75	33,350	2,387	888	5.58	19,053,365	4,244,288	3,960,583	1,731,454	2,508,027	31,497,717	364.92	7,717.60
49		Kota. Tegal	1	30	13,311	704	342	5.42	9,349,601	1,141,516	1,262,262	477,677	1,026,166	13,257,222	687.56	4,034.50
50	Yogyakarta	Kab. Bantul	1	94	29,640	2,654	825	5.27	25,390,131	3,871,950	2,048,584	1,164,109	937,305	33,412,079	328.81	4,242.50
51		Kab. Gunung Kidul	1	98	24,999	2,116	705	5.08	20,045,740	2,727,383	1,968,450	738,019	706,768	26,186,360	321.97	4,212.40
52		Kab. Kulon Progo	1	70	17,376	1,567	551	5.37	16,398,560	2,850,537	1,634,352	857,497	711,281	22,452,227	561.93	3,998.80
53		Kab. Sleman	1	92	26,900	2,419	770	4.82	20,640,685	3,492,066	2,267,751	1,347,949	957,288	28,705,739	292.17	6,001.40
54		Kota. Yogyakarta	1	59	22,228	1,725	610	5.49	12,625,956	5,420,877	3,538,153	1,466,858	3,285,838	26,337,682	413.68	11,764.50

APPENDIX B. (continue)

No.	Province	Kabupaten/Kota	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000)						DAU	GRDP
									Salaries		Teaching	Maintenance	Other	Total	per Capita	per Capita
									Teacher	Non-teacher						
55	East Java	Kab. Bangkalan	1	43	12,816	875	338	5.17	8,148,858	1,319,317	650,458	353,719	349,034	10,821,386	250.10	2,960.60
56		Kab. Banyuwangi	1	112	40,751	2,477	981	4.92	15,785,065	2,630,321	2,035,471	1,365,709	1,769,637	23,586,203	215.35	4,581.20
57		Kab. Blitar	1	79	31,314	2,005	779	5.03	18,335,489	949,055	1,781,112	950,222	706,332	22,722,210	266.41	3,620.60
58		Kab. Bondowoso	1	33	9,668	649	261	5.21	4,606,702	1,482,415	529,467	321,275	176,545	7,116,404	367.82	2,203.00
59		Kab. Gresik	1	93	27,313	2,281	700	5.16	16,481,354	4,101,850	1,998,894	1,589,537	1,090,252	25,261,887	201.07	12,012.10
60		Kab. Kediri	1	98	42,279	2,878	1,046	4.99	18,666,589	2,810,181	2,458,148	1,197,920	1,056,836	26,189,674	219.65	3,258.70
61		Kab. Lamongan	1	118	36,466	2,791	917	5.07	25,569,561	3,618,632	2,354,533	1,647,775	2,010,432	35,200,933	217.43	2,861.20
62		Kab. Lumajang	1	62	22,125	1,387	582	4.66	11,097,698	1,175,415	1,263,880	841,299	656,037	15,034,329	248.09	376.80
63		Kab. Madiun	1	41	22,540	755	747	7.20	15,082,485	2,850,315	1,891,202	843,574	1,284,901	21,952,478	349.82	3,274.90
64		Kab. Magetan	1	54	26,088	1,849	649	5.00	32,033,917	2,648,953	2,162,989	811,379	3,106,310	40,763,548	333.53	3,321.40
65		Kab. Mojokerto	1	95	30,163	2,170	742	4.38	8,391,640	2,307,982	1,407,790	1,013,405	1,349,748	14,470,565	280.14	4,449.90
66		Kab. Nganjuk	1	69	38,059	2,453	935	5.12	23,216,062	3,283,369	1,996,657	789,762	1,684,810	30,970,660	252.62	3,168.80
67		Kab. Ngawi	1	68	30,030	1,761	735	4.89	18,118,956	1,672,780	1,978,028	1,184,874	833,410	23,788,048	276.85	2,587.00
68		Kab. Pacitan	1	52	18,618	1,389	491	4.93	9,153,234	1,547,081	1,526,456	639,965	521,368	13,388,104	367.55	2,033.20
69		Kab. Pamekasan	1	38	11,262	904	310	4.05	8,769,883	2,997,228	1,416,032	1,407,120	31,959,442	46,549,705	290.14	2,284.50
70		Kab. Pasuruan	1	86	27,265	1,824	706	4.91	7,825,717	1,236,966	1,656,796	688,613	1,687,773	13,095,865	299.56	3,696.00
71		Kab. Ponorogo	1	80	31,368	1,951	759	5.23	13,783,982	3,230,272	2,540,463	936,422	1,795,449	22,286,588	289.69	2,516.30
72		Kab. Probolinggo	1	52	13,995	998	390	4.79	6,687,755	813,797	770,266	436,117	307,215	9,015,150	254.15	4,724.30
73		Kab. Sampang	1	29	7,169	563	189	4.10	3,889,337	323,755	177,935	125,341	156,816	4,673,184	231.72	2,375.80
74		Kab. Sidoarjo	1	135	63,263	4,128	1,458	4.84	16,401,434	3,369,575	2,955,800	2,110,607	5,453,099	30,290,515	209.18	12,973.60
75		Kab. Situbondo	1	45	13,304	1,010	353	4.99	8,057,158	2,837,263	875,638	516,589	740,622	13,027,270	341.33	3,845.80
76		Kab. Sumenep	1	38	10,441	763	284	4.85	5,537,739	2,546,672	466,330	194,124	1,552,583	10,297,448	373.55	4,740.80
77		Kab. Trenggalek	1	50	23,012	1,618	562	4.99	14,441,585	1,871,201	1,082,534	865,163	639,243	18,899,726	338.76	2,192.90
78		Kab. Tuban	1	65	25,588	1,482	640	5.08	12,384,270	2,670,727	1,207,415	682,015	622,306	17,566,733	229.10	3,813.70
79		Kab. Tulungagung	1	64	32,933	2,268	819	4.95	23,607,794	2,597,244	2,244,936	862,532	1,261,775	30,574,281	352.80	7,232.10
80		Kota. Blitar	1	18	8,851	644	227	4.37	4,823,857	1,682,389	409,058	179,779	468,830	7,563,913	684.08	3,468.20
81		Kota. Kediri	1	30	13,523	909	328	0.00	26,747,681	4,721,275	2,492,961	3,075,141	11,149,529	48,186,587	468.44	74,514.50
82		Kota. Madiun	1	20	10,686	803	256	5.22	7,615,510	2,123,279	1,214,629	689,403	9,873,435	21,516,256	1,145.82	4,268.30
83		Kota. Malang	1	90	34,163	2,299	858	5.20	16,204,289	3,678,126	3,145,913	2,310,208	1,592,246	26,930,782	232.95	11,214.90
84		Kota. Mojokerto	1	17	7,962	512	187	5.32	4,004,350	575,191	674,371	444,419	877,185	6,575,516	944.22	8,618.20
85		Kota. Pasuruan	1	20	7,061	484	180	5.46	2,510,617	407,837	530,719	684,980	322,818	4,456,972	883.90	5,714.60
86		Kota. Probolinggo	1	18	7,342	433	178	5.22	2,064,299	725,077	590,004	151,944	317,805	3,849,129	517.75	6,930.00
87		Kota. Surabaya	1	346	105,671	8,338	2,512	6.90	39,221,699	6,711,773	6,309,191	5,080,349	12,008,887	69,331,899	131.05	21,172.80
88	Bali	Kab. Bangli	1	17	7,331	456	196	4.32	6,183,169	1,495,602	455,320	202,671	191,270	8,528,032	485.51	4,701.20
89		Kab. Buleleng	1	56	23,572	1,716	603	5.10	18,770,989	4,774,818	1,671,637	1,358,971	1,671,471	28,247,886	344.18	4,926.10
90		Kab. Gianyar	1	40	15,499	1,321	375	4.88	15,781,541	1,742,889	1,204,127	1,029,721	648,691	20,406,969	499.31	7,086.40
91		Kab. Jembrana	1	26	9,447	639	248	4.31	4,804,718	891,830	452,895	140,902	308,525	6,598,870	572.81	6,340.30
92		Kab. Tabanan	1	27	14,239	1,127	376	5.25	4,975,114	2,443,605	1,045,512	575,695	4,628,989	13,668,915	513.63	12,420.20
93	Aceh	Kab. Aceh Barat	2	1	368	25	6	5.58	0	0	11,397	0	3,340	14,737	922.38	9,973.20
94		Kab. Aceh Besar	2	47	11,244	1,272	341	4.42	18,654,581	1,670,726	1,765,831	698,344	425,533	23,215,015	1,114.97	12,615.00
95		Kab. Aceh Tengah	2	40	10,335	861	297	5.11	8,317,194	575,393	328,550	120,786	117,970	9,459,893	612.76	6,370.60
96		Kab. Aceh Tenggara	2	28	9,371	490	238	5.03	426,894	0	0	0	4,585,813	5,012,707	788.25	4,706.10
97		Kab. Aceh Timur	2	56	19,119	1,219	488	4.45	3,436,863	1,176,990	1,124,827	215,329	1,675,772	7,629,781	465.90	10,829.80
98		Kab. Aceh Utara	2	34	14,839	852	361	5.10	8,745,514	656,246	801,003	497,718	338,123	11,038,604	680.27	23,272.00
99		Kab. Bireuen	2	37	17,258	1,192	434	0.00	18,669,227	1,468,758	4,768,093	728,038	6,972,364	32,606,480	1,237.19	17,885.70
100		Kota. Banda Aceh	2	28	12,453	1,065	310	5.11	9,882,613	1,871,116	369,544	181,218	2,292,735	14,597,226	700.63	7,697.40
101	North Sumatera	Kab. Asahan	2	84	25,671	1,531	647	4.73	10,853,092	1,564,529	1,192,105	615,728	653,817	14,879,271	240.84	11,035.60
102		Kab. Labuhan Batu	2	84	24,064	1,328	597	4.64	9,425,280	1,011,358	866,532	637,074	249,398	12,189,642	246.99	8,276.70
103		Kab. Langkat	2	118	36,304	2,470	937	8.21	17,093,663	1,541,247	1,508,075	1,071,408	5,249,241	26,463,634	258.07	6,484.80
104		Kab. Mandailing Natal	2	42	11,480	792	307	4.90	9,143,081	1,074,243	848,647	204,244	693,302	11,963,517	384.44	3,924.60
105		Kab. Nias	2	76	25,105	1,337	603	5.65	10,120,924	1,874,214	1,129,248	717,276	282,863	14,124,525	301.89	3,869.20
106		Kab. Tapanuli Selatan	2	72	20,926	1,303	563	4.52	13,242,352	1,686,888	1,223,112	483,889	566,671	17,202,912	337.70	354.20
107		Kab. Tapanuli Utara	2	90	34,563	1,617	865	4.66	16,590,572	1,780,067	1,596,741	780,708	325,639	21,073,727	519.26	513.20
108		Kab. Toba Samosir	2	57	23,283	1,152	568	4.31	11,540,185	866,816	912,210	358,852	1,433,118	15,111,181	486.57	6,192.10
109		Kota. Pematang Siantar	2	42	18,951	1,241	458	5.02	13,465,758	1,127,839	1,428,310	690,249	619,439	17,331,595	565.10	7,148.00
110		Kota. Sibolga	2	12	5,676	327	138	4.10	3,840,950	200,391	337,342	157,532	745,244	5,281,459	1,047.64	6,796.70

APPENDIX B. (continue)

No.	Province	Kabupaten/Kota	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000)						DAU	GRDP
									Salaries		Teaching	Maintenance	Other	Total	per Capita	per Capita
									Teacher	Non-teacher						
111		Kota. Tanjung Balai	2	13	5,959	310	143	5.11	2,756,598	411,336	273,262	119,656	63,165	3,624,017	715.98	8,324.70
112		Kota. Tebing Tinggi	2	22	9,854	563	247	3.70	7,013,419	518,825	565,342	309,209	278,784	8,685,579	849.78	6,908.20
113	West Sumatera	Kab. Agam	2	50	15,081	1,335	421	5.24	17,126,230	1,818,072	1,242,052	646,784	5,094,783	25,927,921	404.29	5,517.10
114		Kab. Lima Puluh Koto	2	33	9,549	963	332	5.21	11,562,987	1,475,944	796,368	299,811	772,243	14,907,353	431.16	6,696.40
115		Kab. Pasaman	2	46	16,153	1,153	455	4.75	8,403,235	694,571	590,685	368,367	1,521,442	11,578,300	341.15	5,775.60
116		Kab. Sawahlunto/Sijunjung	2	38	10,731	747	312	0.00	6,705,813	1,119,361	605,317	354,196	301,380	9,086,067	445.06	6,012.60
117		Kab. Solok	2	46	14,946	1,141	445	5.03	11,948,484	1,129,090	923,055	463,540	832,494	15,296,663	387.15	4,825.40
118		Kab. Tanah Datar	2	40	11,789	1,116	383	5.14	12,055,785	1,114,640	689,149	241,849	3,761,921	17,863,344	456.75	6,010.50
119		Kota. Padang	2	69	36,196	2,523	881	4.52	28,733,496	4,037,393	2,182,295	1,028,030	2,053,787	38,035,001	327.43	12,976.10
120		Kota. Padang Panjang	2	9	3,211	318	79	4.69	2,323,487	1,116,658	615,285	124,213	1,131,746	5,311,389	1,597.95	7,781.40
121		Kota. Payakumbuh	2	13	5,451	444	149	5.35	5,672,181	265,630	312,050	63,885	135,572	6,449,318	1,067.46	6,429.30
122		Kota. Sawah Lunto	2	7	2,130	178	62	5.38	2,050,043	207,595	187,937	106,686	97,350	2,649,611	1,393.49	9,819.60
123	Riau	Kab. Bengkalis	2	1	249	21	8	4.75	78,000	75,000	4,800	12,000	4,742	174,542	364.24	44,195.50
124		Kab. Indragiri Hulu	2	38	10,752	658	296	3.86	6,618,450	794,251	1,213,060	543,969	426,791	9,596,521	657.57	13,187.40
125		Kab. Kampar	2	4	1,057	82	27	5.19	267,303	28,532	53,594	15,031	11,402	375,862	416.14	15,843.40
126		Kab. Karimun	2	23	6,790	392	176	3.87	3,743,440	1,203,863	17,331,553	226,189	436,893	22,941,938	714.01	9,701.90
127		Kab. Natuna	2	16	2,825	188	76	3.81	1,905,568	761,492	556,532	326,934	1,469,509	5,020,035	1,890.09	40,560.20
128		Kab. Rokan Hulu	2	26	7,280	484	174	4.10	3,722,650	541,524	424,765	119,509	2,095,372	6,903,820	391.99	10,225.00
129		Kota. Batam	2	38	10,212	624	273	2.94	3,501,389	1,852,924	853,649	878,297	2,429,662	9,515,921	325.18	65,719.30
130		Kota. Dumai	2	21	8,148	457	217	3.04	5,965,041	1,873,006	609,671	1,436,779	2,724,718	12,609,215	539.76	17,865.10
131		Kota. Pekan Baru	2	55	30,756	1,926	766	4.87	22,273,104	3,634,203	1,818,129	2,018,855	1,495,203	31,239,494	246.26	11,933.00
132	Jambi	Kab. Batang Hari	2	31	6,000	410	181	0.00	3,546,781	1,037,081	269,405	309,797	75,153	5,238,217	523.13	5,165.00
133		Kab. Bungo	2	33	8,947	578	255	3.13	6,177,123	5,103,358	2,056,613	367,979	14,128,936	27,834,009	585.18	3,977.20
134		Kab. Merangin	2	32	7,108	475	203	3.47	3,710,409	227,179	315,852	68,286	224,245	4,545,971	495.78	3,498.40
135		Kab. Muaro Jambi	2	28	10,204	830	293	2.78	5,281,071	455,633	340,177	240,062	105,042	6,421,985	403.17	4,183.10
136		Kab. Tanjung Jabung Barat	2	24	4,546	287	135	3.90	1,567,262	181,120	186,912	42,188	387,666	2,365,148	483.93	7,413.40
137		Kab. Tanjung Jabung Timur	2	18	4,997	276	156	0.00	1,700,162	548,715	154,189	55,331	95,070	2,553,467	494.17	10,923.10
138		Kab. Tebo	2	25	6,380	376	178	4.36	4,342,597	379,717	281,907	206,935	828,783	6,039,939	440.66	3,245.50
139		Kota. Jambi	2	53	21,961	1,372	538	4.74	10,435,740	1,993,948	995,016	1,099,488	4,171,971	18,696,163	344.81	6,102.00
140	South Sumatera	Kab. Bangka	2	69	20,671	1,119	529	5.01	6,794,993	2,120,995	1,409,539	521,269	403,649	11,250,445	543.51	16,646.00
141		Kab. Belitung	2	31	8,411	550	230	4.94	5,216,920	1,082,210	491,648	130,650	1,080,276	8,001,704	667.07	10,526.80
142		Kab. Lahat	2	63	26,267	1,275	547	4.40	8,978,312	1,256,668	1,382,071	532,654	1,281,429	13,431,134	250.68	4,524.10
143		Kab. Muara Enim	2	60	21,012	1,259	537	4.45	6,399,801	658,483	915,528	302,578	734,194	9,010,584	245.56	8,650.10
144		Kab. Musi Banyu Asin	2	63	16,122	988	412	4.20	3,552,065	609,071	735,591	453,635	804,544	6,154,906	398.61	22,481.00
145		Kab. Musi Rawas	2	46	14,503	788	365	4.50	4,022,309	323,660	1,003,717	4,037,521	1,084,207	10,471,414	262.42	5,445.20
146		Kota. Palembang	2	191	76,627	5,170	1,837	9.72	25,851,170	5,145,881	3,463,682	1,533,971	6,871,085	42,865,789	218.02	10,843.00
147	Lampung	Kab. Lampung Barat	2	21	6,464	402	156	3.02	2,423,916	122,743	289,277	78,657	476,651	3,391,244	353.96	329.96
148		Kab. Lampung Tengah	2	2	549	35	12	4.64	93,542	11,800	19,250	19,000	3,908	147,500	256.40	4,331.80
149		Kab. Lampung Timur	2	104	27,090	2,156	742	4.50	11,002,846	1,009,588	1,162,181	1,224,535	417,797	14,816,947	238.38	4,521.40
150		Kab. Lampung Utara	2	57	22,330	1,357	540	3.80	8,132,712	2,157,832	761,630	552,089	895,678	12,499,941	370.73	4,662.50
151		Kota. Bandar Lampung	2	92	37,828	2,578	867	0.19	16,734,809	1,756,037	1,443,149	1,757,824	4,702,374	26,394,193	256.96	5,326.90
152	Bengkulu	Kab. Bengkulu Selatan	2	53	17,973	994	456	5.35	6,911,635	1,479,944	2,629,439	222,752	795,182	12,038,952	955.38	4,994.00
153		Kab. Bengkulu Utara	2	46	14,247	786	360	3.04	7,380,494	1,109,384	747,789	294,274	801,771	10,333,712	460.03	3,796.80
154		Kab. Rejang Lebong	2	54	16,902	1,088	443	4.57	9,760,170	2,529,714	2,498,223	1,844,146	3,643,098	20,275,351	400.03	5,282.30
155		Kota. Bengkulu	2	31	14,633	983	373	4.73	9,951,194	1,690,130	977,320	405,266	637,227	13,661,137	495.54	6,305.00
156	West Kalimantan	Kab. Kapuas Hulu	3	24	3,628	292	121	2.43	1,553,173	108,724	1,728,464	815,525	12,468,540	16,674,426	807.86	4,194.70
157		Kab. Ketapang	3	47	11,210	658	295	3.71	3,916,680	944,037	759,349	337,011	2,112,932	8,070,009	417.33	3,653.10
158		Kab. Landak	3	2	184	19	6	4.73	14,584	700	6,066	1,750	2,540	25,640	407.93	5,228.30
159		Kab. Pontianak	3	69	17,492	1,330	461	4.02	6,650,038	2,054,721	858,130	220,353	335,750	10,118,992	297.31	5,827.10
160		Kab. Sambas	3	65	14,418	935	381	1.40	6,626,277	940,934	490,765	467,255	291,334	8,816,565	383.31	4,895.60
161		Kab. Sanggau	3	96	19,865	1,240	532	4.11	5,178,435	7,100,310	932,665	637,702	1,225,184	15,074,296	399.65	4,837.20
162		Kab. Sintang	3	67	16,748	964	436	4.26	5,362,815	1,065,910	703,911	388,707	12,774,515	20,295,858	413.50	2,901.40
163		Kota. Pontianak	3	62	24,280	1,549	590	5.05	12,741,699	2,155,412	959,386	1,062,696	703,591	17,622,784	369.48	11,282.30

APPENDIX B. (continue)

No.	Province	Kabupaten/Kota	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000)						DAU	GRDP
									Salaries		Teaching	Maintenance	Other	Total	per Capita	per Capita
									Teacher	Non-teacher						
164	Central Kalimantan	Kab. Barito Selatan	3	38	6,503	559	206	4.47	2,468,159	500,481	419,537	566,303	178,919	4,133,399	1,099.13	9,091.80
165		Kab. Kapuas	3	25	4,429	290	110	1.84	3,114,794	1,044,147	227,119	123,468	1,008,700	5,518,228	704.45	7,391.70
166		Kab. Kotawaringin Barat	3	43	7,971	469	277	3.59	2,902,473	1,458,136	4,211,683	2,777,225	50,552,265	61,901,782	688.09	11,780.70
167		Kab. Kotawaringin Timur	3	39	10,825	617	277	4.37	2,967,994	481,880	402,232	182,727	512,113	4,546,946	701.73	12,989.20
168	South Kalimantan	Kab. Banjar	3	36	5,740	703	214	3.93	4,624,447	985,967	367,835	224,618	150,544	6,353,411	322.21	4,489.70
169		Kab. Barito Kuala	3	35	5,478	538	172	3.38	2,390,338	676,655	222,776	121,383	347,571	3,758,723	439.30	8,624.90
170		Kab. Hulu Sungai Selatan	3	24	2,726	460	122	4.73	4,721,489	1,054,733	149,338	77,705	288,279	6,291,544	599.16	4,330.10
171		Kab. Hulu Sungai Tengah	3	20	4,808	465	173	4.18	4,041,896	658,776	333,570	154,382	400,829	5,589,453	548.26	3,416.20
172		Kab. Kota Baru	3	57	11,483	768	371	5.20	3,720,495	535,788	416,364	97,769	1,495,722	6,266,138	442.82	19,087.40
173		Kab. Tanah Laut	3	27	5,853	444	178	4.42	5,319,140	779,331	353,135	140,818	450,719	7,043,143	407.17	6,166.90
174		Kab. Tapin	3	20	2,454	323	98	4.63	3,298,082	233,719	117,075	80,683	1,767,549	5,497,108	720.81	4,972.10
175		Kota. Banjarmasin	3	64	21,446	1,585	584	4.80	11,502,972	1,860,334	1,154,798	624,922	943,955	16,086,981	300.51	6,405.50
176	East Kalimantan	Kab. Berau	3	29	4,546	404	133	3.44	2,751,247	918,776	513,274	196,071	287,994	4,667,362	1,072.99	22,035.20
177		Kab. Bulongan	3	23	3,821	346	110	3.75	1,026,191	154,160	76,705	42,969	70,560	1,370,585	2,004.65	13,004.50
178		Kab. Kutai	3	48	12,764	950	356	2.51	2,790,507	360,372	209,977	90,052	297,997	3,748,905	677.72	56,077.00
179		Kab. Nunukan	3	17	2,831	264	73	2.30	384,980	113,912	257,966	65,490	62,329	884,677	980.58	11,654.90
180		Kab. Pasir	3	35	6,916	526	193	1.90	9,350,141	1,277,398	272,552	149,195	984,528	12,033,814	687.77	16,658.30
181		Kota. Balikpapan	3	32	11,461	739	315	7.94	18,763,385	359,761	842,581	1,191,388	4,603,397	25,760,512	325.29	33,812.10
182		Kota. Tarakan	3	15	5,842	332	143	0.00	1,063,012	975,338	633,759	234,058	587,363	3,493,530	616.09	15,481.90
183	North Sulawesi	Kab. Boalemo	4	17	3,177	286	104	2.38	3,313,057	330,306	196,657	164,150	216,562	4,220,732	812.93	4,986.00
184		Kab. Bolaang Mengondow	4	66	13,411	1,062	442	4.59	8,970,493	2,345,663	1,152,686	809,289	1,098,789	14,376,920	390.15	3,733.60
185		Kab. Gorontalo	4	45	10,221	934	384	4.31	19,635,254	2,225,635	626,935	399,594	798,220	23,685,638	416.24	3,259.70
186		Kab. Minahasa	4	202	31,525	3,110	1,110	4.62	26,354,787	4,444,607	1,655,558	881,688	920,422	34,257,062	339.47	6,334.50
187		Kota. Manado	4	78	18,129	1,316	506	5.02	14,752,114	2,064,646	1,549,252	1,526,053	1,465,233	21,357,298	357.35	8,370.80
188		Kota. Gorontalo	4	19	6,362	542	170	3.98	5,334,216	826,022	466,367	104,566	582,965	7,314,136	780.61	2,516.00
189	Central Sulawesi	Kab. Banggai	4	45	11,018	822	308	4.20	6,045,549	699,416	832,094	479,694	328,022	8,384,775	55.33	4,851.10
190		Kab. Banggai Kepulauan	4	21	4,378	296	118	3.09	1,100,464	198,952	128,060	55,766	107,692	1,590,934	652.13	3,512.00
191		Kab. Donggala	4	15	3,203	283	91	2.84	1,277,599	275,824	79,847	37,636	682,403	2,353,309	363.89	5,724.90
192		Kab. Morowali	4	27	6,308	458	185	3.85	3,643,910	326,016	736,759	181,413	175,240	5,063,338	754.58	5,979.10
193		Kab. Poso	4	53	9,459	822	312	4.16	7,368,494	1,418,426	532,742	311,335	236,860	9,867,857	931.51	5,348.20
194		Kab. Toli-Toli	4	24	6,336	403	169	3.11	4,251,227	860,188	352,155	201,559	1,082,538	6,747,667	647.31	5,319.40
195		Kab. Bantaeng	4	15	3,759	336	102	4.33	3,327,021	1,498,517	2,893,165	1,220,737	4,974,746	13,914,186	571.48	3,475.40
196		Kab. Barru	4	21	4,888	386	192	4.09	4,655,300	1,107,268	239,871	127,048	1,104,087	7,233,574	704.28	3,660.60
197		Kab. Bone	4	53	14,757	1,072	455	5.07	12,204,765	1,467,057	498,949	275,947	148,509	14,595,227	322.19	3,723.60
198		Kab. Enrekang	4	28	8,136	659	265	8.36	8,976,526	1,224,863	490,677	207,137	1,775,725	12,674,928	612.45	3,372.60
199		Kab. Gowa	4	41	14,398	1,079	361	0.12	8,818,200	2,317,842	400,051	393,703	158,672	12,088,469	324.48	2,617.70
200		Kab. Jeneponto	4	24	8,682	465	240	4.87	7,385,833	2,004,157	1,519,522	153,763	1,371,527	12,434,802	418.58	2,410.40
201		Kab. Luwu	4	37	14,929	749	387	4.67	676,435	751,081	141,751	61,540	503,062	2,133,869	411.37	4,286.70
202		Kab. Luwu Utara	4	43	14,666	793	345	4.79	1,742,081	471,760	276,209	90,683	1,210,403	3,791,136	309.31	8,431.40
203		Kab. Maros	4	40	10,760	837	297	4.45	5,107,419	1,136,009	384,265	165,027	385,144	7,177,864	462.22	3,232.70
204		Kab. Pangkajene Kepulauan	4	30	9,244	829	253	5.06	5,592,300	1,263,711	1,069,229	557,138	1,529,164	10,011,542	463.14	6,503.30
205		Kab. Pinrang	4	37	12,074	837	344	4.38	8,314,065	1,588,981	747,197	311,605	359,268	11,321,116	419.60	5,650.40
206		Kab. Selayar	4	21	3,277	347	85	4.26	4,353,230	803,789	592,675	130,217	458,654	6,338,565	835.72	3,342.60
207		Kab. Sinjai	4	22	6,959	456	220	6.17	5,725,123	1,004,332	405,344	220,619	245,920	7,601,338	531.20	3,854.80
208		Kab. Soppeng	4	29	6,857	740	276	6.97	7,839,875	722,214	489,178	401,896	721,684	10,174,847	590.28	4,159.60
209		Kab. Takalar	4	23	9,460	618	246	5.32	5,099,326	845,481	245,627	78,315	1,084,875	7,353,624	502.74	2,889.60
210		Kab. Tana Toraja	4	68	23,525	1,432	682	7.46	16,451,711	1,925,080	1,427,832	1,476,536	679,761	21,960,920	412.59	2,584.00
211		Kab. Wajo	4	32	9,472	590	293	7.60	615,038	1,340,254	884,504	637,523	659,869	4,137,188	387.57	4,896.80
212		Kota. Pare-Pare	4	18	5,858	409	162	2.59	5,038,247	477,965	953,726	182,700	428,366	7,081,004	807.02	4,741.80
213		Kota. Ujung Pandang	4	150	54,201	3,779	1,342	5.77	28,799,487	6,186,124	3,091,047	2,221,419	2,354,374	42,652,451	242.89	8,552.20
214	Southeast Sulawesi	Kab. Kendari	4	63	20,392	1,081	656	3.70	8,761,639	1,462,267	721,330	406,847	213,809	11,565,892	483.21	3,727.30
215		Kab. Kolaka	4	39	12,421	722	341	3.55	4,905,776	907,069	681,412	210,592	6,673,707	13,378,556	462.51	7,445.40
216		Kab. Muna	4	58	16,085	1,030	471	4.80	9,497,107	1,721,367	953,383	271,677	214,581	12,658,115	598.29	3,649.70
217		Kota. Kendari	4	26	12,008	777	303	4.60	6,799,034	1,445,959	272,495	183,722	2,831,146	11,532,356	522.46	5,648.10

APPENDIX B. (continue)

No.	Province	Kabupaten/Kota	Region	Schools	Students	Teacher	Class	NES	Expenditures (in Rp.000)						DAU	GRDP
									Salaries		Teaching	Maintenance	Other	Total	per Capita	per Capita
									Teacher	Non-teacher						
218	Maluku	Kab. Buru	5	21	4,934	277	117	6.25	419,213	610,920	217,336	36,570	4,918,136	6,202,175	872.24	2,087.00
219		Kab. Halmahera Tengah	5	32	6,730	455	202	4.08	4,005,756	551,176	578,603	334,352	171,359	5,641,246	1,087.08	1,094.50
220		Kab. Maluku Tenggara Barat	5	2	412	36	8	3.41	9,000	0	1,200	3,000	1,800	15,000	868.20	2,733.10
221		Kota. Ambon	5	40	12,461	1,422	362	6.10	6,186,131	726,433	383,627	125,371	219,125	7,640,687	634.85	6,093.80
222	West Nusa Tenggara	Kab. Bima	5	50	27,874	1,338	578	7.66	1,176,290	1,221,677	132,399	70,522	717,349	3,318,237	404.40	3,288.80
223		Kab. Dompu	5	23	10,279	589	253	2.86	6,420,072	1,011,514	314,734	199,506	306,024	8,251,850	619.93	4,371.10
224		Kab. Lombok Tengah	5	44	18,706	1,065	470	3.44	7,898,084	2,010,883	963,585	473,919	725,727	12,072,198	288.82	2,293.20
225		Kota. Mataram	5	20	16,131	877	383	3.30	785,797	149,154	123,287	42,267	39,419	1,139,924	363.02	4,491.70
226	East Nusa Tenggara	Kab. Flores Timur	5	41	8,446	602	245	3.86	5,266,336	351,931	427,322	461,448	497,037	7,004,074	640.52	2,423.10
227		Kab. Kupang	5	60	15,230	1,006	446	4.43	9,027,990	1,270,755	695,146	558,418	467,766	12,020,075	668.83	3,496.50
228		Kab. Manggarai	5	71	20,836	1,150	516	3.96	7,164,299	2,826,066	796,711	999,281	2,813,177	14,599,534	323.79	2,007.80
229		Kab. Sikka	5	45	10,088	641	276	3.52	4,897,707	600,288	615,468	753,748	486,773	7,353,984	490.04	2,616.60
230		Kab. Timor Tengah Selatan	5	62	14,130	914	385	3.78	4,194,114	578,731	624,073	720,332	365,521	6,482,771	483.99	2,147.90
231		Kab. Timor Tengah Utara	5	26	7,666	402	197	4.11	2,226,091	312,360	386,614	214,550	319,582	3,459,197	797.53	2,461.30
232	Papua	Kab. Biak Numfor	5	23	6,166	349	171	4.98	4,380,525	599,882	263,870	288,155	166,517	5,698,949	1,472.20	6,288.80
233		Kab. Fak-Fak	5	20	3,632	262	109	4.52	1,969,501	254,121	355,489	88,973	237,559	2,905,643	2,743.46	11,025.10
234		Kab. Jayapura	5	40	7,683	565	225	5.15	270,230	50,650	23,600	41,000	14,291	399,771	2,249.45	8,982.40
235		Kab. Nabire	5	20	5,419	357	147	4.41	2,835,329	380,768	184,674	69,212	1,153,769	4,623,752	1,288.10	5,402.20
236		Kota. Jayapura	5	30	10,770	678	280	4.49	4,835,853	645,361	413,859	462,826	563,942	6,921,841	808.82	9,107.20

APPENDIX C.

EDUCATION EXPENDITURES PER STUDENT IN 1999/00 AND 2002/03 IN 185 DISTRICTS

Appendix C. Education Expenditures per Student in 1999/00 and 2002/03

Public Junior Secondary Education

No.	Province	District	Region	Expenditure per student (in Rp.000)			
				1999/00	2002/03	Inflation Rate	2002/03 *) (Inflation)
1	West Java	Kab. Bandung	1	337.24	635.39	0.35	470.66
2		Kab. Ciamis	1	364.30	944.88	0.35	699.91
3		Kab. Cianjur	1	318.92	627.22	0.35	464.61
4		Kab. Garut	1	345.31	873.15	0.35	646.78
5		Kab. Indramayu	1	262.69	564.88	0.35	418.43
6		Kab. Karawang	1	241.53	531.35	0.35	393.59
7		Kab. Lebak	1	233.66	495.64	0.31	378.35
8		Kab. Majalengka	1	355.67	479.89	0.35	355.47
9		Kab. Pandeglang	1	298.25	697.37	0.31	532.35
10		Kab. Purwakarta	1	459.71	447.08	0.35	331.17
11		Kab. Serang	1	267.57	581.84	0.31	444.15
12		Kab. Tangerang	1	347.31	528.55	0.31	403.47
13		Kab. Tasikmalaya	1	382.40	1044.05	0.34	779.14
14		Kota. Cilegon	1	356.50	715.28	0.31	546.02
15		Kota. Cirebon	1	409.04	697.07	0.31	532.11
16		Kota. Tangerang	1	375.75	793.90	0.31	606.03
17	Central Java	Kab. Banjarnegara	1	352.04	819.64	0.30	630.49
18		Kab. Banyumas	1	268.89	811.21	0.30	624.00
19		Kab. Batang	1	276.32	690.42	0.30	531.09
20		Kab. Blora	1	288.23	809.14	0.30	622.42
21		Kab. Boyolali	1	339.17	839.80	0.30	646.00
22		Kab. Brebes	1	320.34	631.06	0.30	485.43
23		Kab. Cilacap	1	238.41	383.48	0.30	294.99
24		Kab. Demak	1	356.19	782.55	0.30	601.96
25		Kab. Grobogan	1	282.42	634.53	0.30	488.10
26		Kab. Jepara	1	397.19	1005.07	0.30	773.13
27		Kab. Karanganyar	1	352.23	816.20	0.30	627.85
28		Kab. Kebumen	1	301.84	743.97	0.30	572.28
29		Kab. Kendal	1	263.90	726.58	0.30	558.90
30		Kab. Klaten	1	420.12	1115.55	0.30	858.12
31		Kab. Kudus	1	336.51	908.40	0.30	698.77
32		Kab. Magelang	1	340.59	655.89	0.30	504.53
33		Kab. Pati	1	301.36	826.95	0.30	636.12
34		Kab. Pekalongan	1	329.15	638.49	0.30	491.15
35		Kab. Pemalang	1	250.26	494.14	0.30	380.11
36		Kab. Purworejo	1	325.37	841.80	0.30	647.54
37		Kab. Semarang	1	294.41	813.19	0.40	580.85
38		Kab. Sragen	1	322.83	936.77	0.30	720.59
39		Kab. Sukoharjo	1	372.38	1189.43	0.30	914.95
40		Kab. Tegal	1	261.69	636.86	0.30	489.89
41		Kab. Temanggung	1	394.52	847.94	0.30	652.26
42		Kab. Wonosobo	1	501.05	638.36	0.30	491.04
43		Kota. Magelang	1	539.94	1179.06	0.30	906.97
44		Kota. Pekalongan	1	380.97	991.11	0.30	762.39
45		Kota. Salatiga	1	440.67	973.25	0.30	748.65
46		Kota. Semarang	1	403.18	867.11	0.30	667.00
47		Kota. Surakarta	1	453.00	944.46	0.33	710.12
48	Yogyakarta	Kab. Bantul	1	512.16	1127.26	0.35	835.01
49		Kab. Gunung Kidul	1	445.75	1047.50	0.35	775.92
50		Kab. Kulon Progo	1	535.90	1292.14	0.35	957.14
51		Kab. Sleman	1	580.34	1067.13	0.35	790.47
52		Kota. Yogyakarta	1	566.23	1184.89	0.35	877.69

APPENDIX C (continue)

No.	Province	District	Region	Expenditure per student (in Rp.000)			
				1999/00	2002/03	Inflation Rate	2002/03 *) (Inflation)
53	East Java	Kab. Bangkalan	1	369.64	844.37	0.35	625.46
54		Kab. Blitar	1	472.16	725.62	0.35	537.50
55		Kab. Bondowoso	1	427.34	736.08	0.35	545.24
56		Kab. Gresik	1	307.36	924.90	0.35	685.11
57		Kab. Kediri	1	278.42	619.45	0.35	458.85
58		Kab. Lamongan	1	234.44	965.31	0.36	709.79
59		Kab. Lumajang	1	286.70	679.52	0.36	499.65
60		Kab. Madiun	1	321.17	973.93	0.36	716.13
61		Kab. Magetan	1	360.84	1562.54	0.36	1148.93
62		Kab. Mojokerto	1	229.83	479.75	0.36	352.75
63		Kab. Nganjuk	1	306.71	813.75	0.36	598.35
64		Kab. Ngawi	1	313.57	792.14	0.36	582.46
65		Kab. Pacitan	1	314.36	719.09	0.36	528.75
66		Kab. Pamekasan	1	614.10	1824.69	0.36	1341.69
67		Kab. Pasuruan	1	354.89	480.32	0.36	353.17
68		Kab. Ponorogo	1	280.19	710.49	0.36	522.42
69		Kab. Probolinggo	1	483.54	644.17	0.36	473.65
70		Kab. Sampang	1	431.15	651.86	0.36	479.31
71		Kab. Sidoarjo	1	280.90	478.80	0.36	352.06
72		Kab. Situbondo	1	338.14	979.20	0.36	720.00
73		Kab. Sumenep	1	508.65	986.25	0.36	725.18
74		Kab. Trenggalek	1	429.51	821.30	0.36	603.90
75		Kab. Tuban	1	252.82	686.52	0.36	504.80
76		Kab. Tulungagung	1	321.66	928.38	0.36	682.63
77		Kota. Blitar	1	415.04	854.58	0.30	657.37
78		Kota. Kediri	1	333.83	356.33	0.30	274.10
79		Kota. Madiun	1	622.53	2013.50	0.30	1548.85
80		Kota. Malang	1	334.65	788.30	0.33	592.71
81		Kota. Mojokerto	1	296.11	825.86	0.36	607.25
82		Kota. Pasuruan	1	497.81	631.21	0.36	464.12
83		Kota. Probolinggo	1	266.43	524.26	0.30	403.28
84		Kota. Surabaya	1	356.22	656.11	0.35	486.01
85	Bali	Kab. Bangli	1	499.01	1163.28	0.33	874.65
86		Kab. Buleleng	1	457.27	1198.37	0.33	901.03
87		Kab. Gianyar	1	488.13	1316.66	0.33	989.97
88		Kab. Jembrana	1	370.68	698.51	0.33	525.20
89		Kab. Tabanan	1	591.52	959.96	0.33	721.78
90	Aceh	Kab. Aceh Besar	2	623.94	2064.66	0.37	1507.05
91		Kab. Aceh Tengah	2	593.12	915.33	0.37	668.12
92		Kab. Aceh Tenggara	2	449.63	534.92	0.37	390.45
93		Kab. Aceh Timur	2	141.32	399.07	0.37	291.29
94		Kab. Aceh Utara	2	501.78	743.89	0.37	542.99
95		Kota. Banda Aceh	2	464.24	1172.19	0.37	855.61
96	North Sumatera	Kab. Asahan	2	283.00	579.61	0.34	432.55
97		Kab. Labuhan Batu	2	297.66	506.55	0.34	378.02
98		Kab. Langkat	2	278.01	728.95	0.34	543.99
99		Kab. Nias	2	305.63	562.62	0.34	419.86
100		Kab. Tapanuli Selatan	2	390.80	822.08	0.26	652.45
101		Kota. Pematang Siantar	2	381.41	914.55	0.28	714.49
102		Kota. Sibolga	2	603.42	930.49	0.29	721.31
103		Kota. Tanjung Balai	2	371.45	608.16	0.34	453.85
104		Kota. Tebing Tinggi	2	340.66	881.43	0.34	657.78
105	West Sumatera	Kab. Agam	2	554.93	1719.24	0.31	1312.40
106		Kab. Lima Puluh Koto	2	574.99	1561.14	0.31	1191.71
107		Kab. Pasaman	2	415.72	716.79	0.31	547.17
108		Kab. Sawahlunto/Sijunju	2	412.86	846.71	0.31	646.35
109		Kab. Solok	2	431.06	1023.46	0.31	781.27
110		Kab. Tanah Datar	2	608.23	1515.26	0.31	1156.68

APPENDIX C (continue)

No.	Province	District	Region	Expenditure per student (in Rp.000)			
				1999/00	2002/03	Inflation Rate	2002/03 *) (Inflation)
111		Kota. Padang	2	486.01	1050.81	0.31	802.14
112		Kota. Padang Panjang	2	1504.64	1654.12	0.31	1262.69
113		Kota. Payakumbuh	2	528.72	1183.14	0.31	903.16
114		Kota. Sawah Lunto	2	502.11	1243.95	0.31	949.58
115	Riau	Kab. Bengkalis	2	306.46	700.97	0.39	504.30
116		Kab. Indragiri Hulu	2	613.61	892.53	0.39	642.11
117		Kab. Kampar	2	399.35	355.59	0.39	255.82
118		Kota. Batam	2	423.00	931.84	0.29	722.35
119		Kota. Dumai	2	480.57	1547.52	0.29	1199.63
120		Kota. Pekan Baru	2	378.91	1015.72	0.40	725.51
121	Jambi	Kab. Batang Hari	2	200.66	873.04	0.31	666.44
122		Kota. Jambi	2	341.95	851.33	0.31	649.87
123	South Sumatera	Kab. Bangka	2	285.04	544.26	0.39	391.56
124		Kab. Belitung	2	419.60	951.34	0.39	684.42
125		Kab. Lahat	2	261.07	511.33	0.39	367.86
126		Kab. Muara Enim	2	288.51	428.83	0.39	308.51
127		Kab. Musi Banyu Asin	2	230.08	381.77	0.39	274.66
128		Kab. Musi Rawas	2	245.64	722.02	0.39	519.44
129		Kota. Palembang	2	375.78	559.41	0.39	402.45
130	Lampung	Kab. Lampung Barat	2	319.41	524.64	0.34	391.52
131		Kab. Lampung Tengah	2	307.93	268.67	0.34	200.50
132		Kab. Lampung Timur	2	261.89	546.95	0.34	408.17
133		Kab. Lampung Utara	2	262.33	559.78	0.34	417.75
134		Kota. Bandar Lampung	2	272.88	697.74	0.34	520.70
135	Bengkulu	Kab. Bengkulu Utara	2	371.26	725.33	0.29	562.27
136		Kab. Rejang Lebong	2	502.56	1199.58	0.29	929.91
137		Kota. Bengkulu	2	339.39	933.58	0.29	723.71
138	West Kalimantan	Kab. Kapuas Hulu	3	404.76	1839.70	0.30	1415.15
139		Kab. Sambas	3	292.51	611.50	0.30	470.38
140		Kab. Sanggau	3	296.95	758.84	0.30	583.72
141		Kab. Sintang	3	225.06	1211.84	0.30	932.18
142	Central Kalimantan	Kab. Kotawaringin Barat	3	252.89	7765.87	0.30	5973.75
143	South Kalimantan	Kab. Banjar	3	703.81	1106.87	0.32	838.53
144		Kab. Barito Kuala	3	564.57	686.15	0.32	519.81
145		Kab. Hulu Sungai Tenga	3	639.76	1162.53	0.32	880.71
146		Kab. Kota Baru	3	348.63	545.69	0.32	413.40
147		Kab. Tanah Laut	3	464.20	1203.34	0.32	911.62
148		Kab. Tapin	3	790.84	2240.06	0.32	1697.02
149		Kota. Banjarmasin	3	365.36	750.12	0.32	568.27
150	East Kalimantan	Kab. Berau	3	434.66	1026.70	0.27	808.42
151		Kab. Kutai	3	406.00	293.71	0.27	231.27
152		Kab. Pasir	3	377.27	1740.00	0.27	1370.08
153		Kota. Tarakan	3	339.89	598.00	0.27	470.87
154	North Sulawesi	Kab. Gorontalo	4	747.82	2317.35	0.27	1824.69
155		Kab. Minahasa	4	781.38	1086.66	0.37	793.18
156		Kota. Gorontalo	4	440.61	1149.66	0.37	839.17
157		Kota. Manado	4	511.67	1178.07	0.37	859.91
158	Central Sulawesi	Kab. Banggai	4	430.30	761.01	0.28	594.54
159	South Sulawesi	Kab. Bone	4	516.38	989.04	0.28	772.69
160		Kab. Bantaeng	4	547.68	3701.57	0.28	2891.85
161		Kab. Barru	4	1192.48	1479.86	0.28	1156.14
162		Kab. Enrekang	4	707.44	1557.88	0.28	1217.10
163		Kab. Gowa	4	447.80	839.59	0.28	655.93
164		Kab. Pangkajene Kepula	4	451.56	1083.03	0.28	846.12
165		Kab. Pinrang	4	369.66	937.64	0.28	732.53

APPENDIX C (continue)

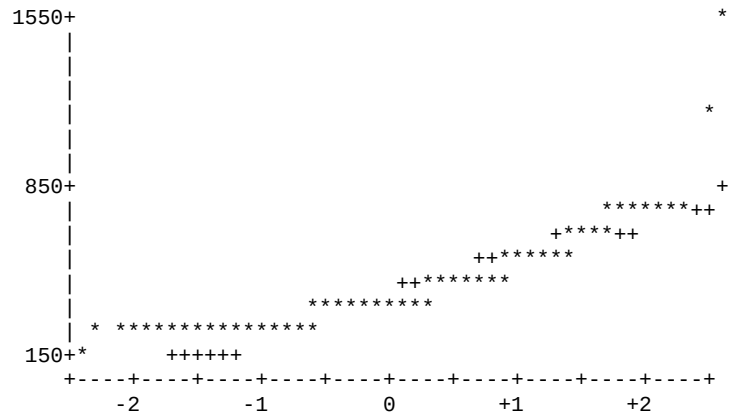
No.	Province	District	Region	Expenditure per student (in Rp.000)			
				1999/00	2002/03	Inflation Rate	2002/03 *) (Inflation)
166		Kab. Selayar	4	762.79	1934.26	0.28	1511.14
167		Kab. Sinjai	4	782.70	1092.30	0.28	853.36
168		Kab. Soppeng	4	758.31	1483.86	0.28	1159.27
169		Kab. Takalar	4	523.47	777.34	0.28	607.30
170		Kab. Tana Toraja	4	453.25	933.51	0.28	729.31
171		Kab. Wajo	4	511.51	436.78	0.28	341.24
172		Kota. Makasar	4	337.84	786.93	0.28	614.79
173	Southeast Sulawesi	Kab. Kendari	4	493.38	567.18	0.31	432.96
174		Kab. Kolaka	4	328.88	1077.09	0.31	822.21
175		Kab. Muna	4	549.33	786.95	0.31	600.73
176	Maluku	Kab. Halmahera Tengah	5	283.80	838.22	0.30	644.79
177	West Nusa Tenggara	Kab. Dompu	5	298.83	802.79	0.29	622.32
178		Kab. Lombok Tengah	5	401.70	645.37	0.29	500.28
179		Kab. Flores Timur	5	379.03	829.28	0.34	618.86
180	North Nusa Tenggara	Kab. Kupang	5	442.32	789.24	0.34	588.98
181		Kab. Manggarai	5	211.68	700.69	0.34	522.90
182		Kab. Sikka	5	311.58	728.98	0.34	544.02
183		Kab. Timor Tengah Selat	5	323.41	458.79	0.34	342.38
184		Kab. Timor Tengah Utara	5	263.55	451.24	0.34	336.75
185	Papua	Kab. Biak Numfor	5	445.38	924.25	0.41	655.50

Note : *) Education expenditures per student in 2002/03 which was corrected by inflation factors

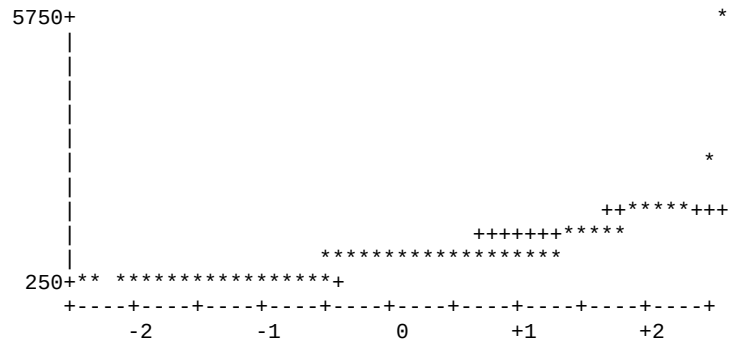
APPENDIX D

NORMAL PROBABILITY PLOTS OF EDUCATION EXPENDITURES IN 1999/00 AND 2002/03 IN 185 DISTRICTS

1. A Normal Probability Plot for Education Expenditures per Student in 1999/00



2. A Normal Probability Plot for Education Expenditures per Student in 2002/03



APPENDIX E

PUBLIC JUNIOR SECONDARY SCHOOL TEACHERS BY LEVEL OF EDUCATION, 2002/03

Appendix E. Number of Public Junior Secondary Teachers By Level of Education, 2002/03

No.	Province	D1	D2	D3		*Sarjana Muda*		Undergraduate (S1)		Graduate	Total	Non-Grad	%	Grad	%
				TT	Non-TT	TT	Non-TT	TT	Non-TT	(S2, S3)					
	Region 1														
1	DKI Jakarta	1,367	3,549	1,632	169	885	186	4,189	216	32	12,225	7,788	63.71	4,437	36.29
2	West Java	2,401	6,727	7,610	117	1,164	135	17,401	190	8	35,753	18,154	50.78	17,599	49.22
3	Banten	437	1,225	1,386	21	212	25	3,171	34	2	6,513	3,306	50.76	3,207	49.24
4	Central Java	4,940	8,512	8,354	235	2,116	333	19,317	214	12	44,033	24,490	55.62	19,543	44.38
5	Yogyakarta	730	1,715	1,035	46	750	75	1,939	31	2	6,323	4,351	68.81	1,972	31.19
6	East Java	4,265	4,229	5,734	363	2,717	385	23,959	800	12	42,464	17,693	41.67	24,771	58.33
7	Bali	1,641	759	1,015	101	264	12	2,951	63	6	6,812	3,792	55.67	3,020	44.33
	Total	**15,781**	**26,716**	**26,766**	**1,052**	**8,108**	**1,151**	**72,927**	**1,548**	**74**	**154,123**	**79,574**	**51.63**	**74,549**	**48.37**
	Region 2														
1	Aceh	1,114	3,207	1,508	61	610	52	2,997	63	24	9,636	6,552	68.00	3,084	32.00
2	North Sumatera	3,846	4,734	2,798	194	2,432	153	4,491	216	5	18,869	14,157	75.03	4,712	24.97
3	West Sumatera	2,281	1,845	3,026	59	732	98	3,249	96	4	11,390	8,041	70.60	3,349	29.40
4	Riau	1,169	1,648	1,232	32	495	54	3,176	36	1	7,843	4,630	59.03	3,213	40.97
5	Jambi	633	1,297	786	25	129	31	1,448	52	-	4,401	2,901	65.92	1,500	34.08
6	South Sumatera	1,154	2,174	1,190	63	317	69	3,498	138	2	8,605	4,967	57.72	3,638	42.28
7	Bangka	134	255	140	8	37	8	410	16	-	1,008	582	57.74	426	42.26
8	Bengkulu	399	849	892	35	237	50	1,075	35	1	3,573	2,462	68.91	1,111	31.09
9	Lampung	1,164	2,140	1,063	53	383	174	4,225	41	6	9,249	4,977	53.81	4,272	46.19
	Total	**11,894**	**18,149**	**12,635**	**530**	**5,372**	**689**	**24,569**	**693**	**43**	**74,574**	**49,269**	**66.07**	**25,305**	**33.93**

Source : The Central of Statistics and Information, the Ministry of National Education, Indonesia

Note : D1, D2, D3 and sarjana muda are classified as non-graduate degrees, undergraduate and graduate are classified as graduate degrees.

TT = Teacher Training College.

APPENDIX F

SAS PROGRAMS

1. SAS Program for calculating coefficients of variance

```
Libname pur 'c:\dissertation';
Option pageno=1;
Proc Format;
  Value Typefmt 0='Kab' 1='Kota';
  Value Regfmt 1='Java+Bali' 2='Sumatera' 3='Kalimantan' 4='Sulawesi' 5='Other';
  Value provfmt 1='DKI Jakarta' 2='West Java' 3='Central Java' 4='Yogyakarta' 5='East
     Java' 6='Aceh' 7='North Sumatera' 8='West Sumatera' 9='Riau' 10='Jambi' 11='South
     Sumatera' 12='lampung' 13='West Kalimantan' 14='Central Kalimantan' 15='South
     Kalimantan' 16='East Kalimantan' 17='North Sulawesi' 18='Central Sulawesi'
     19='South Sulawesi' 20='Southeast Sulawesi' 21='Maluku' 22='Bali' 23='West Nusa
     Tenggara' 24='East Nusa Tenggara' 25='Bengkulu' 26='Papua';

Data Disparity;
Format Type Typefmt. Reg Regfmt. Prov provfmt.;
Set pur.dispar;
Expinf02=exp02/(1+inflasi);/*Calculating Exp02-03 with inflation factor */

proc print data=disparity;
  Var Prov District Reg exp99 exp02 inflasi expinf02;
run;

/*Detecting outliers by normal probality plots */
Proc univariate data=disparity plot normal;
  var exp99 expinf02;
  Qqplot Exp99 expinf02/normal (mu=est sigma=est);
run;

Data dispar2;
Set Disparity;

/*Deleting the outliers based on normal probability plots*/
if exp99 >= 1000 then delete;
if expinf02 >= 2800 then delete;

Proc univariate data=dispar2 plot normal;
  var exp99 expinf02;
  Qqplot Exp99 expinf02/normal (mu=est sigma=est);
run;
```

```
/*Calculating the disparities in education expenditures across the
districts....INDONESIA*/

Proc means data=Dispar2;
var Exp99 Expinf02;
run;

/*Calculating the disparities in education expenditures among the region*/
/*Based on data Dispar2*/

Data dispar3;
Input Reg $ Exp99x Expinfl02x Kota99 Kotainfl02 Kab99 Kabinfl02;
Cards;
Java_Bali   365.36  621.91 400.93  670.04 356.96  610.55
Sumatera    390.34  638.07 413.87  733.48 379.32  593.36
Kalimantan  443.62  806.91 352.63  519.57 457.62  851.12
Sulawesi    545.30  840.41 430.04  771.29 565.64  852.60
Other       336.13  537.68   .       .    336.13  537.68
;

Proc means data=Dispar3;
var Exp99x Expinfl02x Kota99 Kotainfl02 Kab99 Kabinfl02;
run;

/*Calculating the disparities in education expenditures by the region*/

Proc sort data=Dispar2 out=dispsort;
 by reg;
run;
Proc means data=dispsort;
var Exp99 Expinf02;
by reg;
run;

/*Calculating the disparities in education expenditures by the type of
region*/

Proc sort data=dispar2 out=disptype;
 by type;
run;
Proc means data=disptype;
var EXP99 EXPinf02;
by type;
run;

/*Calculating the disparities in education expenditures by the region and
type of region*/

Proc sort data=dispar2 out=dispregtype;
 by reg type;
run;
Proc means data=dispregtype;
var EXP99 EXPinf02;
by reg type;
run;
```

2. SAS program for Education Expenditures per student in 2002/03 by a Robust Regression Analysis.

```
Libname pur 'g:\purwanto';
Option Pageno=1;

Proc Format;
  Value Typefmt 0='Kab' 1='Kota';
  Value Regfmt 1='Java+Bali' 2='Sumatera' 3='Kalimantan' 4='Sulawesi' 5='Other';
  Value Reg1fmt 1='Java+Bali' 0='Others';
  Value Reg2fmt 1='Sumatera' 0='Others';
  Value Reg3fmt 1='Kalimantan' 0='Others';
  Value Reg4fmt 1='Sulawesi' 0='Others';

/*Note: JEXP_STD, GRDP_Cap, DAU_Cap are in Rp.000*/

Data JSEEXP;
Set pur.disertasi;
format regB regfmt. type typefmt.;

/*developing dummy variables for region*/
If regB=1 then Reg1=1; else reg1=0;
If regB=2 then Reg2=1; else Reg2=0;
If regB=3 then Reg3=1; else Reg3=0;
If regB=4 then Reg4=1; else Reg4=0;
run;

proc sort data=jseexp out=srt;
by regb;
run;

proc means data=srt;
 var jexp_std;
  by regb;
run;

proc corr;
  var JEXP_STD Type Density GRDP_Cap DAU_Cap GER;
run;

/*Using OLS Regression Analysis */

Proc reg data=JSEEXP;
 Model JEXP_STD=reg1 reg2 reg3 reg4 Type GRDP_Cap DAU_Cap GER/spec vif tol;
    output out=JSE1 p=phat r=rhat rstudent=r h=lev cookd=cd dffits=dffit;
    Plot r.*p.='*';
 run;
regeffect: test reg1, reg2, reg3, reg4;
quit;
proc univariate data=JSE1 normal;
     var rhat;
       qqplot rhat /normal (mu=est sigma=est);
run;
```

```
/* Using a Robust Regression Analysis */
/* For all Districts */

Proc robustreg method=lts fwls data=jseexp;
  Model JEXP_STD=reg1 reg2 reg3 reg4 Type GER GRDP_Cap DAU_Cap /diagnostics;
  Output out=robust r=resid sr=stdres;
run;

/* A Chow Test */
Data cleaning;
set robust;
if abs(stdres)<3;
proc reg data=cleaning;
  Model JEXP_STD=Reg1 Reg2 Reg3 Reg4 Type GRDP_Cap DAU_Cap GER/spec vif tol;
run;
regeffect: test reg1, reg2, reg3, reg4;
quit;
proc univariate data=JSE2 normal;
     var rhat;
       qqplot rhat /normal (mu=est sigma=est);
run;

/*Sorting data by region */
Proc sort data=Jseexp out=jsesort;
by regB;
run;

/* Checking the existing outliers at each region */

Proc reg data=JSEsort;
 Model JEXP_STD=Type GRDP_Cap DAU_Cap GER/spec vif tol;
    output out=JSE1 p=phat r=rhat rstudent=r h=lev cookd=cd dffits=dffit;
    Plot r.*p.='*';
      by regB;
 run;

/* Using Robust Regression Analysis */
/* By Region */

Proc robustreg  method=lts fwls data=jsesort;
  Model JEXP_STD=type GER GRDP_Cap DAU_Cap/diagnostics;
  Output out=robust2 r=resid sr=stdres;
  by regB;
run;
```

3. SAS program for National Examination Scores in 2002/03 by a Robust Regression Analysis.

```
Option pageno=1;
Proc Format;
  Value Typefmt 0='Kab' 1='Kota';
  Value Regfmt 1='Java+Bali' 2='Sumatera' 3='Kalimantan' 4='Sulawesi' 5='Other';
  Value Reg1fmt 1='Java+Bali' 0='Others';
  Value Reg2fmt 1='Sumatera' 0='Others';
  Value Reg3fmt 1='Kalimantan' 0='Others';
  Value Reg4fmt 1='Sulawesi' 0='Others';

Libname pur 'c:\dissertation';

/*Note : The Names of variables : Prov Type Reg Ratio Size Salary Teaching
Maint ExpStd NES*/

Data NEM;
set pur.nes;
Format reg regfmt. type typefmt.;
If NES < 1 then delete;

/*Providing Correlation Matrix */
proc corr data=nem;
  var NES Type Reg Ratio Size Salary Teaching Maint ExpStd;
run;

/*Regression Analysis for all data*/
Proc reg Data=NEM;
  Model NES=Reg1 reg2 reg3 reg4 Type Ratio size salary teaching /spec VIF;
    output out=score1a p=phat1a r=rhat1a rstudent=r1a dffits=dffit1a;
    Plot r.*p.='*';
run;
regeffect: test reg1, reg2, reg3, reg4;
quit;
proc univariate data=score1a normal;
     var rhat1a;
       qqplot rhat1a /normal (mu=est sigma=est);
run;

/*Using Robust Regression Analysis for all data*/
Proc robustreg method=lts fwls data=NEM
  Model NES=Reg1 reg2 reg3 reg4 Type ratio Size Salary Teaching/diagnostics;
  Output out=robustnem r=resid sr=stdres;
run;

/* A Chow Test*/
Data cleaning;
set robustnem;
if abs(stdres)<3;
Proc reg Data=cleaning;
  Title 'All Districts';
  Model NES=Reg1 reg2 reg3 reg4 Type Ratio Size Salary Teaching /spec VIF;
    output out=score1b p=phat1a r=rhat1a rstudent=r1a dffits=dffit1a;
    Plot r.*p.='*';
run;
```

```
regeffect: test reg1, reg2, reg3, reg4;
quit;
run;

proc univariate data=score1b normal;
     var rhat1a;
       qqplot rhat1a /normal (mu=est sigma=est);
run;

/*Analyzing data by each region */

Proc sort data=NEM out=score2;
  by reg type;
run;

/*Robust Regression Analysis for each region*/

Proc robustreg method=lts fwls data=score2;
  Model NES=Type Ratio size salary teaching /diagnostics;
  Output out=robust2 r=resid sr=stdres;
  by reg;
run;

Data clean2;
set robust2;
if abs(stdres)<3;

proc sort data=clean2 out=cleansort;
by reg type;
run;

/* Mean difference by T-test for data without outliers*/
/*for each region */

proc ttest data=cleansort;
  class type;
  var salary teaching;
  by reg;
run;

/* Mean difference by T-test for data without outliers*/
/*for the Java-Bali and Sumatera region */

data JB_SMTR;
set cleansort;
if reg=1 or reg=2;
proc ttest data=JB_SMTR;
  class reg;
  var salary teaching;
run;
```

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