

Fiscal Capacity Clustering of Local Government in Indonesia (Empirical Evidence of Fiscal Imbalance in Eastern Indonesia and Western Indonesia)

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Abstract-The purpose of this research is to cluster provincial and districts or cities governments in Indonesia based on PMK Number 120 PMK-07-2020 about Regional Fiscal Capacity Maps. The index value is obtained from the income variable, predetermined income, and certain expenditures. The analytical tool used is Microsoft Excel Data Filters and Formulas. The research sample consisted of 34 provinces and 508 districtss/cities in Indonesia. The data are clustered into Eastern Indonesia and Western Indonesia. The number of provinces in eastern Indonesia is 13 provinces and 185 districtss or cities, while the number of provinces in the western Indonesia is 21 provinces and 323 districts or cities. The value of IKFD is very low and low in Eastern Indonesia as many as 10 provinces, Western Indonesia 7 provinces. Medium IKFD value in Eastern Indonesia as many as 2 provinces, Western Indonesia 6 provinces. The IKFD value is high in Eastern Indonesia as many as 1 province, in Western Indonesia 13 Provinces. Very high IKFD values are not found in Eastern Indonesia, in Western Indonesia 4 provinces. Low and very low IKFD values in Eastern Indonesia are 131 districts or cities, in Western Indonesia there are 122 districts or cities. The medium IKFD value in Eastern Indonesia is 34 Districts or Cities, Western Indonesia 92 Districts or Cities. High and very high IKFD values in Eastern Indonesia are 20 districts or cities, Western Indonesia 109 districts or cities. Very low and low IKFD values are mostly found in Eastern Indonesia, on the contrary, medium, high and very high IKFD values are mostly in Western Indonesia. Low Fiscal Capacity indicates a horizontal imbalance between local governments in East Indonesia and Western Indonesia.

Keywords: *Fiscal Capacity Index (IKFD), Local Governments*

I. INTRODUCTION

Cluster is a group of data that has similarity with other data in the same cluster and has no or dissimilarity in other clusters. Cluster analysis is a data analysis tool to explore data in the same or different cluster groups. Hair *et al.* (1) describes the three clustering steps in cluster analysis which include measuring similarity, forming clusters, determining the number of clusters.

Kadafi dan Amirudin (2) examined districtss/cities in Indonesia that experienced financial distress (fiscal distress) during 2014-2018. The three clusters formed in Kadafi and Amirudin research (2), namely cluster 1 consists of 407 districtss/cities that have low Financial Independence, low Budgetary Solvency, and low DSCR. In cluster 2, there are 64 districtss/cities that have above average Financial Independence, above average Budgetary Solvency, and low DSCR. In cluster 3, there are 37 districtss/cities that have low Financial Independence, above average Budgetary Solvency, and above average DSCR.

This research is a continuation of the research of Kadafi and Amirudin (2020). The difference between this study and previous research is that this study clusters fiscal capacity using the Minister of Finance Regulation (3), the grouping adds provincial local governments, the grouping of provincial and districts/city governments is divided into Eastern Indonesia and Western Indonesia. Clustering the fiscal capacity of the regions of East Indonesia and Western Indonesia to see the inequality of financial capacity in the two regions.

Clustering the financial capacity of local governments is very important to know the financial condition of the provincial and districts/city governments. Local governments are the main providers of services directly to the public, including health, education, and infrastructure. The sustainability of local governments in providing public services can be seen in the financial condition of local governments. Local governments that fail to meet their financial obligations have a negative impact on the economy (4).

The purpose of this research was to identify and analyze the clusters formed based on the regional fiscal capacity index (IKFD) of provinces, districts and cities in eastern Indonesia and western Indonesia.

II. LITERATUR REVIEW

Fiscal capacity is the financial capacity of each region which is reflected through regional income minus the income whose use has been determined and certain expenditures. Fiscal capacity map is a description of regional financial capability grouped based on regional fiscal capacity index (3).

Good financial capacity will have an impact on good governance and development spending in order to provide public services to the community. Local governments will spend their resources based on needs, not desires. This condition will have an impact on the public's high concern for paying taxes.

Fiscal needs is the budget needed by a region to meet the total development expenditure needs of a region. Conceptually, the total regional average expenditure is strongly influenced by the population, the size of the area, the number of poor people and price developments (5). The allocation of central government resources to local governments in the form of transfers must reflect the regional fiscal needs, so that the benefits of spending on these resources can be felt by the community. Local governments with low fiscal capacity will receive large transfers (balancing funds). The condition of good financial capacity must be sustainable in order to ensure the implementation of local government and public services.

Definition (6) refers to the Commonwealth Government's definition of financial sustainability, namely "... the ability of a government to manage its finances so that it can meet its spending commitments, both now and in the future. This ensures that future generations of taxpayers do not face unmanageable bills for government services provided to the current generation".

Financial Sustainability (7) is the city's income which has the following characteristics :

1. Continuity. This means that it is somewhat stable and has no short-term fluctuations.

2. Resilience. There is an increase in the revenue base over time and its expansion as expenditure expands in order to avoid financial distress and the ability to determine the operational planning required to collect it.
3. Attraction. This means that to generate the income the principle of justice and does not damage the structure of the environment, physical, social and economic..

The regional fiscal capacity map can be used for consideration in determining the grant recipient area, determining the amount of matching funds by the regional government and other uses in accordance with the provisions of the legislation. By using the regional Fiscal Capacity index, the provinces are grouped as follows :

Table I Province Fiscal Capacity Index (KFD)

Range IKFD	Category of Regional Fiscal Capacity
$\text{IKFD} < 0.277$	Very Low
$0.277 \leq \text{IKFD} < 0.564$	Low
$0.564 \leq \text{IKFD} < 0.934$	Average
$0.934 \leq \text{IKFD} < 1.920$	High
$\text{IKFD} \geq 1.920$	Very High

Source : PMK No. 120, 2020

The Districtss/Cities Regional Fiscal Capacity Index (IKFD) is grouped as follows:

Table II Districts/City Fiscal Capacity Index (IKFD)

Range IKFD	Category of Regional Fiscal Capacity
$\text{IKFD} < 0,517$	Very Low
$0,517 \leq \text{IKFD} < 0,747$	Low
$0,747 \leq \text{IKFD} < 1,168$	Average
$1,168 \leq \text{IKFD} < 2,145$	High
$\text{IKFD} \geq 2,145$	Very High

Source : PMK No. 120, 2020

III. METHODOLOGY

This research uses formula analysis tools and Microsoft excel data filters. The object of this research is 34 provinces and 508 districts/cities in Indonesia. Objects are first clustered based on the regions of Eastern Indonesia and Western Indonesia. Then in the cluster based on the value of the Regional Fiscal Capacity Index (IKFD).

IV. RESULTS AND DISCUSSION

The following is the result of the clustering of 13 provinces in the eastern of Indonesia.

Table III Clustering of Regional Fiscal Capacity Index (IKFD) Provinces in Eastern Indonesia

No	IKFD Category	Index Value	Number of provinces	Name of Provinces
1	Very Low	0.189	5	Maluku
		0.215		North Maluku
		0.103		Gorontalo
		0.156		West Papua
		0.269		West Sulawesi
2	Low	0.504	5	North Sulawesi
		0.406		Central Sulawesi
		0.389		Sulawesi Tenggara
		0.533		Bali
		0.318		West Nusa Tenggara
3	Average	0.799	2	South Sulawesi
		0.786		West Nusa Tenggara
4	High	1.616	1	Papua
5	Very High		0	-
TOTAL			13	

Source: Processed Data

Data in table III the number of provinces in the Eastern Indonesia group is 13 provinces. There are 5 provinces or 38% in Eastern Indonesia that have very low IKFD. Five provinces or 38% which have low IKFD category. Two provinces or 15% have a medium IKFD category and only one province has a high IKFD value. In eastern Indonesia, there is not province that has a very high IKFD category.

The following is the result of the clustering of 13 provinces in the western part of Indonesia.

Table IV Clustering of Provincial Fiscal Capacity Index (IKFD) in Western Indonesia.

No	IKFD Category	Index Value	Number of provinces	Name of Provinces
1	Very Low	0.220	4	Aceh
		0.249		Bengkulu
		0.223		Bangka Belitung
		0.244		Kepulauan Riau
2	Low	0.357	3	Jambi
		0.39		DI Yogyakarta
		0.302		North Kalimantan
3	Average	0.594	6	West Sumatera
		0.678		Lampung
		0.685		West Kalimantan
		0.776		Central Kalimantan
		0.891		South Kalimantan
		0.847		Banten
4	High	1.115	4	North Sumatera
		1.016		Riau
		0.948		South Sumatera
		1.472		East Kalimantan
5	Very High	6.207	4	DKI Jakarta
		4.676		West Java
		2.943		Central Java
		2.885		East Java
TOTAL			21	

Source: Processed Data

The data in table IV shows that the number of provinces in the Western Indonesia group is twenty one provinces. There are four provinces or 19% in Western Indonesia that have very low IKFD. Three provinces or 14% which have low IKFD category. Six provinces or 29% that have a medium KFD category. The high IKFD category in Western Indonesia is four

provinces or 19%. Furthermore, IKFD with a very high category amounted to 4 provinces or 19%.

The following is a comparison graph of the value of the regional fiscal capacity index (IKFD) for the provinces of Eastern Indonesia and Western Indonesia

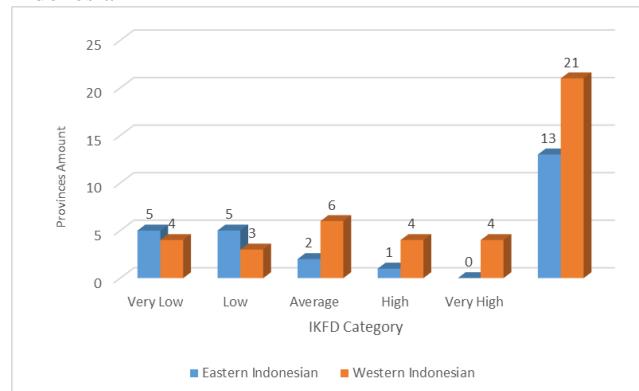


Figure I Comparison Graph of Provinces IKFD Value in Eastern Indonesia and Western Indonesia

As seen in Figure I, the number of provinces in Eastern Indonesia is thirteen provinces and Western Indonesia is twenty one provinces. The IKFD value is very low and low in Eastern Indonesia as many as ten provinces or 77%, while in Western Indonesia as many as seven provinces or 33%. The average IKFD value in Eastern Indonesia is two provinces or 15%, while Western Indonesia is six provinces or 29%. The high IKFD value in Eastern Indonesia is one province or 8% while in Western Indonesia it is four Provinces or 19%. There is no very high IKFD in Eastern Indonesia while in western Indonesia it is four provinces or 19%.

This low fiscal capacity indicates a horizontal imbalance between provincial governments in Eastern Indonesia and Western Indonesia. This condition has an impact on government administration and development being low in Eastern Indonesia. Langoday (8) suggests that the purpose of fiscal decentralization is to minimize vertical and horizontal imbalances. Funding sources from the central government should be evenly distributed and can be felt by all regions of both Eastern Indonesia and Western Indonesia.

Fiscal decentralization policies should be able to overcome vertical and horizontal imbalances between regions and have a positive impact on development growth between rich and poor regions. The existence of glaring economic disparities between regions can lead to unhealthy relations between local governments, especially districts and cities with provincial and central governments (9).

The Commonwealth Grants Commission (CGC) defines it as Horizontal Fiscal Equalization, State governments should receive funds from the Commonwealth of Nations, if each makes an equal effort to increase revenue from its own sources and operates at the same level of efficiency, so that each will have the capacity provide the same standard of service. Fiscal inequality describes a situation where one or more governments do not have the ability to generate sufficient revenue to fund their program responsibilities, while other governments have excess revenue to fund their jurisdictional areas (10).

The very low and low fiscal capacity is not directly proportional to the needs of the program that must be carried out, another thing that affects is the amount of program funding allocation from the Provincial APBD and APBN for programs in each development sector is still very low (11). Rivenbark et al. (12) defines the ability of local governments to meet financial obligations, services, and bond capital by using the flow of resources and shares contained in the annual financial statements. Jones & Walker (13) interpret this condition as fiscal pressure, namely the inability of the government to maintain the level of service that has been there for the community.

The following is the result of the clustering of KFD Regency/City in East Indonesia and West Indonesia.

Table V Clustering of Districts/City Fiscal Capacity (KFD) in Eastern Indonesia and Western Indonesia

IKFD Range	Number of Districts/Cities per Region		Category of Regional Fiscal Capacity Index
	Eastern Indonesia	Western Indonesia	
IKFD < 0.517	65	59	Very Low
0.517 ≤ IKFD < 0.747	66	63	Low
0.747 ≤ IKFD < 1.168	34	92	Average
1.168 ≤ IKFD < 2.145	17	75	High
IKFD ≥ 2.145	3	34	Very High
TOTAL	185	323	508

Source: Processed Data

It can be seen in Table V that the number of districts/cities in Eastern Indonesia is 185 districts/cities or as much as 36% of the total 508 districts/cities in Indonesia. The number of districts /cities in Western Indonesia is 323 districts /cities or as much as 64% of the total 508 districts/cities.

The results of the comparison of districts/city clustering in Eastern Indonesia and Western Indonesia can be seen in Figure II in the graph below:

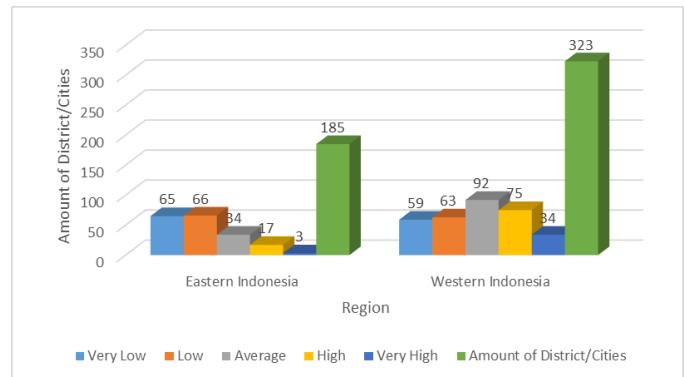


Figure II Comparison of Clustering of Districts/City Fiscal Capacity Index (KFD) in Eastern and Western Indonesia

As seen in Figure II above, the low and very low IKFD in Eastern Indonesia is 131 districts/cities or as much as 71% while in Western Indonesia there are 122 districts/cities or as much as 38%. The moderate IKFD value in Eastern Indonesia is 34 districts/cities or as much as 18%, while in Western Indonesia there are 92 districts/cities or as much as 28%. High and very high IKFD values in Eastern Indonesia amounted to 20 districts/cities or as much as 11%, while in Western Indonesia there were 109 districts/cities or as much as 34%.

In Figure II it can be concluded that for all values of very low IKFD and most of them are found in Eastern Indonesia. On the other hand, the medium, high and very high IKFD values are mostly found in

Western Indonesia. Districts/city governments in Eastern Indonesia as autonomous regions that are in direct contact with the people will find it difficult to provide public services with the same standards as districts/cities in Western Indonesia. In the public finance literature, the term financial distress is used. Kloba et al. (14) defines fiscal distress as failure to meet standards in terms of operating position, debt, and community and resource needs for many years in a row. Overall in Eastern Indonesia and Western Indonesia, the low KFD value of districts/cities in Indonesia is 253 districts/cities. The results of this study support the results of research by Kadafi and Amirudin (2) that in the 2014-2018 time series there are many districts/cities in Indonesia experiencing financial distress.

V. CONCLUSION

The results of the classification of provincial governments in Eastern Indonesia are 13 provinces and Western Indonesia are 21 provinces out of a total of 34 provinces. The results of the cluster of districts/municipal governments in Eastern Indonesia are 185 districts/cities, the number of districts/cities in West Indonesia is 323 districts/cities out of a total of 508 districts/cities

The clustering of local governments in Indonesia based on the Regional Fiscal Capacity Index (IKFD) in both provinces and districts proves that there is a fiscal imbalance between the regions of Eastern Indonesia and Western Indonesia. The number of provincial and districts/city governments that have the lowest and lowest IKFD values is in Eastern Indonesia. The opposite condition for high and very high IKFD values is found in Western Indonesia.

Recommendations that researchers suggest from the results of this study (1) districts/cities and provincial governments currently only manage thin and relatively small taxes, so they only make a very small contribution to Locally Generated Revenue (PAD). The central government handed over large tax management such as VAT as a form of fiscal decentralization so that the low provincial and districts IKFD values could increase, (2) the development of Eastern Indonesia which stimulates the economy must be a top priority compared to Western Indonesia in order to distribute development evenly and avoid fiscal imbalance between East Indonesia and West Indonesia, (3) grants from the central government can be an alternative solution to provincial and districts/city governments with low and very low IKFD values in order to meet development funds.

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