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FISCAL STRESS IN LOCAL GOVERNMENTS: DO LOCAL REVENUE, DEBT UTILIZATION AND SERVICE LEVEL FLEXIBILITY INFLUENCE?

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Abstract
The purpose of this study was to determine and analyze the effect of local revenue, debt usage and flexibility of local government service levels on fiscal stress in regencies and cities in North Sumatra Province. This study included all 33 districts and cities in North Sumatra Province in three periods from 2019-2021. There are several tests used in this study descriptive statistical test, classical assumption test. In addition, the analysis method used is multiple regression analysis. Because in the literature, there is still much that needs to be developed regarding variables or factors that cause fiscal stress. The research results obtained are regional income, debt usage and service level flexibility simultaneously have a positive effect on fiscal stress in districts and cities in North Sumatra Province. Regional income with an indicator of the independence ratio partially has a negative effect on fiscal stress and the intergovernmental ratio partially has a positive effect on Fiscal Stress in districts and cities in North Sumatra Province. The use of debt partially has a negative effect on fiscal stress in regencies and cities in North Sumatra Province and the flexibility of service levels partially has no significant effect on fiscal stress in regencies and cities in North Sumatra Province. This study develops a local revenue model using the independence and intergovernmental ratios that can be used by local governments in designing policies related to the management of their local revenues.

Keywords: *Independence Ratio, Intergovernmental Ratio, Fiscal Stress*

1. Introduction

In 2019-2022 the COVID-19 pandemic has posed unprecedented economic and social challenges in Indonesia. Carrying out policy reforms and creative thinking as well as productive in handling central and local government institutions are the right actions and attitudes in facing tough challenges in dealing with the pandemic, this attitude must get support from all elements of society (Lhutfi et al., 2019). Local governments that should be responsible for handling the pandemic must depend on the decisions of the central government after the issuance of Government Regulation No. 21 of 2020 concerning Large-Scale Social Restrictions and Minister of Health Regulation No. 09 of 2020 concerning Guidelines for Large-Scale Social Restrictions in the Context of

Accelerating Handling of COVID-19, local governments who are actually the hope for handling the pandemic but cannot make their own policies and only depend on the direction of the central government. Local governments are highly dependent on the central government during the emergency period. There is no opportunity for regional level educational institutions to develop learning models that suit the situation in each region (Jospriady, 2020). The central government's position over local governments is contrary to regional autonomy, which aims to give regions more freedom to maximize their potential and reduce inequality. However, that power was pulled back during the pandemic, which ultimately led to slower handling of the pandemic in the regions.

Local governments are crucial to the implementation of policies on the ground since they are an extension of the federal government. Local governments help the community by offering services like health and education in order to combat the epidemic. They also provide an expanding array of public services that raise people's standard of living. The populace relies on the response of local governments during difficult times to maintain their standard of living. Local governments may only do this, however, provided they continue to have sound financial standing (Maher *et* al, 2020). Thus, local governments' capacity to sustain present service levels is directly impacted by their capacity to prevent financial strain (Mamun & Chowdhury, 2022; Leiser et al., 2021).

In Indonesia, there have been systems implemented to maintain service levels and fiscal health because they are considered to meet the needs of the community or because they are considered more efficient. Among these is decentralization (Azzahra et al., 2023). With the issuance of Laws No. 32 and 34 of 2004, fiscal decentralization took place. These policies require local governments to manage existing resources optimally and allow local governments that have resource potential to be more creative in managing and developing these resources. However, as a result of these policies, local governments that have resource potential can experience losses (Lhutfi et al., 2019).

Fiscal Stress is budgetary pressure caused by a lack of local revenue known as budget stress, which can have a considerable impact on the delivery of public services (Alam, 2019). The discussion of local government Fiscal Stress is not new, but it remains an interesting field and that the COVID-19 pandemic is the latest and most severe Fiscal Stress for local governments (Maher et al., 2020). As we realize that Fiscal Stress conditions have a direct impact on the financial reserves channeled by the central government (Huang et al., 2023; Aikins, 2023a). Therefore, high Fiscal Stress can affect excessive dependence on the central government, if the funding stream dries up and local governments fail to find alternative sources of financing (Kim *et al*, 2021). One alternative is to increase the use of debt, given that the pandemic period of high local spending can allow a region to experience a state of Fiscal Stress (Azzahra et al., 2023). Prevention by local governments is of course by increasing local revenue as a form of effort to cover increased regional spending (Septi Suryani, 2023). Luthfi (2019) in his research explains

how the local government's response to this problem is that allocating capital expenditure in accordance with priorities allows an increase and attracts investors, which is expected to increase local revenue. So it can be concluded that Fiscal Stress can be caused by a budget deficit or expenditure that is greater than the income of a local government and the low local revenue of a local government.

To assist regions in financing expenditures during the pandemic and development, the central government issued Law No. 33/2004 on Balancing Funds, which consists of Revenue Sharing Fund, General Allocation Fund, and Special Allocation Fund. To explore the strengths and resources that local governments have to reduce dependence on the central government. Said that there is no universally acceptable definition of fiscal stress, but limitations in local revenues can have a major impact on the delivery of public services. Increased independence increases fiscal stress, which is caused by an increase in own revenues to pay for various existing expenditures. In reality, particularly for regencies/cities in North Sumatra Province, the comparison between own-source revenue and equalization funds shows that the latter is greater than the former. The results of these calculations are presented in table 1 below.

Table 1 Comparison of Regional Original Revenue and Balance Fund Acquisition at Regency/City in North Sumatra in 2021

No	District/City	General Allocation Fund (%)	Fund Balance (%)
1	Nias Regency	10,92%	57,23%
2	Mandailing Natal Regency	8,08%	63,93%
3	South Tapanuli Regency	8,86%	71,20%
4	Central Tapanuli Regency	6,42%	63,03%
5	North Tapanuli Regency	9,83%	54,78%
6	Toba Samosir Regency	6,29%	63,90%
7	Labuhanbatu Regency	17,47%	64,50%
8	Asahan Regency	8%	67,30%
9	Simalungun Regency	7,58%	65,62%
10	Dairi Regency	5,75%	63,59%
11	Karo Regency	7,08%	59,04%
12	Deli Serdang Regency	26,17%	52,96%
13	Langkat Regency	6,43%	68,13%
14	South Nias Regency	2,32%	64,23%
15	Humbang Hasundutan Regency	7,01%	61,75%

16	West Pakpak District	4,20%	72,81%
17	Samosir Regency	6,96%	64,74%
18	Serdang Bedagai Regency	7,80%	61,84%
19	Batu Bara Regency	13,06%	56,26%
20	North Padang Lawas Regency	3,57%	59,83%
21	Padang Lawas Regency	4,20%	61,54%
22	Labuhanbatu Selatan Regency	6,08%	69,11%
23	North Labuhanbatu Regency	5,23%	70,62%
24	North Nias Regency	2,66%	71,21%
25	West Nias Regency	2,70%	68,51%
26	Sibolga City	11,26%	69,43%
27	Tanjungbalai City	9,44%	80,55%
28	Pematang Siantar City	13,83%	69,42%
29	Tebing Tinggi City	11,51%	69,12%
30	Medan City	33,77%	36,49%
31	Binjai City	10,47%	79,38%
32	Padangsidimpuan City	6,47%	69,95%
33	Gunungsitoli City	2,92%	72,66%

Source: djpk.kemenkeu.go.id (processed by researchers, 2023).

As seen by the preceding table, North Sumatra Province's regional revenue is heavily reliant on balancing funding from the federal government. This may suggest that the degree of independence in North Sumatra Province is low. Thus, in line with earlier studies, the local government cannot finance its regional expenditures if it does not get support from the federal government, which might result in the phenomenon known as fiscal stress. In the years after the pandemic and throughout the period of regional autonomy, the study of fiscal stress at the regional level has grown in significance. This is so that local governments may function as independent governments. Local governments are exploring new sources to increase regional income in an attempt to meet the growing budget (Syifa et al., 2021; Ulfa et al., 2021).

Research on fiscal stress in Indonesia has been done in the past, but many of the studies are still reliant on the findings and calculations of foreign academics and are not quite clear on what the appropriate indicators are. The aim of this research is to create a model based on financial risk indicators that may be utilised in Indonesia to anticipate the likelihood of fiscal stress in local governments, even if state finances in Indonesia are

undoubtedly not comparable to those of numerous other nations. Based on Kusnadhi's research (2017) an attempt to produce an efficient and practical measurement model that can be used in Indonesia. In the end, a model based on the FTMS-ICMA and now known as the Financial Trend Monitoring System (FTMS) was created. The model has three dimensions: revenue, debt, and service level flexibility.

Regarding the measurement of Fiscal Stress, we must also adjust to regional finances in order to meet the character of regional finances in Indonesia. Basically, to calculate fiscal capacity at the provincial, district, and city levels, the Ministry of Finance publishes a Fiscal Capacity Index each year based on each region's financial capability as measured through regional revenues. This approach follows previous research studies (Lhutfi et al., 2020) which are based on the idea that regional capacity is correlated with fiscal stress, meaning that the greater the fiscal capacity of a region, the lower the fiscal stress. With these two models, researchers try to predict the likelihood of Fiscal Stress with risk factors including local revenue, debt utilization, and service level flexibility. As for the novelty in this study, researchers try to use a calculation method that is in accordance with the character of regional finances in Indonesia from the acquisition of regional income as well as the use of debt whether it can affect fiscal pressure as well as testing new variables, namely service level flexibility which is one of the financial instrument measurement models that must be tried to be researched more deeply.

2. Literature Review

2.1. Peacock and Wiseman Theory

The Peacock and Wiseman theory, also known as the displacement effect, is a hypothesis that claims that public spending increases rapidly during extraordinary events, such as war or social upheaval (Magazzino et al., 2015; Funashima., 2017). This theory was first introduced in the 1961 monograph "The Growth of Public Expenditure in the United Kingdom" by Alan Peacock and Jack Wiseman. This theory states that spending tends to grow in a gradual pattern, coinciding with social upheavals, especially wars (Magazzino et al., 2015). The displacement effect is one of two aspects of the theory that states that individuals will accept, in times of crisis, methods of increasing income that were previously considered intolerable (Rowley & Tollision, 1994). It relates to a situation where people have a tolerance limit to the value of local taxes. In other words, they can provide the highest possible tax value set by the local government to make it easier to use. Therefore, people assume that the government needs money in order to be able to pay for tax needs. This tolerance threshold is very important for government officials because they will have the opportunity to implement taxes (Ulfa et al., 2021).

As a result, in this theory there are disturbances that prevent taxes from decreasing to their original level. One of these effects is the displacement effect. Since the cost of taxes

is insufficient, the government must borrow funds from abroad to overcome the disturbance. Government funding can be limited if the obligation to repay the debt and pay interest after borrowing arises. Due to new obligations and increased government activity, government spending increases. This is done to prevent the tax rate from falling back to what it was before and after the war. This is due to the problem of tax tolerance. Even if people do not want to pay the high taxes set by the government, the government cannot increase its spending. Conversely, a situation where local expenditure increases in line with limited government revenue is known as Fiscal Stress.

2.2. Fiscal Stress

According to Kloha et al. (2005), fiscal stress is the outcome of the last few years' incapacity to satisfy operational position requirements, debt, and public resource demands. Arnett (2011) defines fiscal stress as the incapacity of the government to fulfil its long-term and short-term commitments, as well as its incapacity to raise the price or availability of goods and services. Nevertheless, a lot of definitions merely understand fiscal stress as an imbalance between income and spending. The concept of fiscal stress today centres on the current financial definition, which is then used to ascertain the ways in which stress impacts government performance, poverty levels, service delivery, demographic shifts, and taxation systems.

Fiscal stress is the state in which a government is unable to fulfil its obligations to provide services and finances (Arnett, 2011). Local administrations may have different causes for the current state of affairs. To include many aspects, including financial imbalance, over-reliance, and incapacity to prioritise services, the definition must be inclusive. If not, it will be very difficult to compare regimes and periods of time. In general in Indonesia, Fiscal Stress is caused by limited revenue in a region (Krisnawati & Elly, 2022). Together with regional autonomy, the government is required to be able to find potential sources of local revenue. However, the reality is in accordance with the phenomenon conveyed by the researcher. Fiscal pressure is more common in regions that are not ready to adapt to the global economy.

In order to quantify fiscal stress, one must first identify the key components of a nation's financial situation, or, in other words, identify the deviations from the norm (Maher *et al*., 2020). The capacity of local governments to maximise their own income by lowering their reliance on the federal government is the definition of financial condition in this research. Both describe crucial elements to take into account while doing an evaluation, including net assets, revenues and expenses, changes in the income base, pressures on spending and required spending, existing debt, and liquidity. Each component relates to obligations, budget, cash, and service levels. The issue of how to gauge effective fiscal pressure then emerges. According to the study Arnett (2011), the availability of data and the analysis unit determine the result to some degree. According to

his study, unreserved year-end budget balances, budget deficits, worsening state income performance, tax hikes in relation to spending patterns, and financial ratios are among the most often used indicators of fiscal stress.

2.3. The Effect of Regional Revenue on Fiscal Stress

Local governments get money from various sources, such as taxes, levies, grants and fines. Since they cannot rely on alternative sources of revenue, these local governments are more vulnerable to financial problems (Su, 2020). In research Lhutfi et al., (2020) and Septira et al., (2019) observed that the growth of local revenue had a significant negative effect which indicated that an increase in the revenue obtained by the local government indicated that it would reduce the level of Fiscal Stress, while Ulfa et al. (2021) found that an increase in local revenue in a region was unable to describe the condition of Fiscal Stress.

Some previous studies have examined the growth of local revenue with the effectiveness of their local revenue with financial ratios. However, in this study local governments must have the ability to utilize revenue sources to cover annual operations, in order to avoid Fiscal Stress. In addition, relying on a large central government can cause Fiscal Stress if the flow dries up and cannot find alternative funding (Su, 2020). Researchers have two proxies for the increase in own-source revenue. First, calculating dependence on own-source revenue as total own-source revenue to total local revenue (Aikins, 2023b). Second, calculating dependence on transfer funds as local revenue and transfer funds as a percentage of total revenue (Abdullah et al., 2021).

Based on the explanation above, the first hypothesis can be drawn as follows:

H_1 : Independence Ratio has a negative effect on Fiscal Stress

H_2 : Intergovernmental Ratio has a positive effect on Fiscal Stress

2.4. Effect of Debt Usage on Fiscal Stress

Local governments use the solvency ratio to assess their ability to repay all debts, including long-term obligations. Local governments are better able to settle their obligations when their liquidity ratio is higher (Surachman & Handayani, 2020). Solvency also affects the ability of local governments to continue existing. Because local governments must fulfil their debt repayment obligations even in times of financial hardship, those that depend primarily on debt funding are more susceptible to bankruptcy than those that do not. Due to their lower creditworthiness and increased default risk, local governments under fiscal stress are also less able than other governments to obtain capital market funding to finance their programmes (Malinowska-Misiąg, 2018; Chung & Williams, 2021).

In Indonesia, local governments can obtain financing through forms of debt, such as regional loans, regional bonds, regional sukuk. Regional loans can provide debt financing

for the purposes of cash management, development financing, and combating COVID-19. Government Regulation No. 12/2019 on Regional Financial Management regulates local government debt limits. This regulation stipulates that the highest regional debt for the 2021 fiscal year is set at 0.34% of the 2021 GDP projection. Local debt also consists of the amount of local government payments and/or local government obligations that can be valued in money based on regulations, agreements, or other valid reasons.

Trussel et al. (2009) in the model show that as the use of debt increases, the risk of Fiscal Stress will also increase. Therefore, based on the description and previous research, the second hypothesis can be proposed as follows:

H_3 : Debt utilization has a positive effect on Fiscal Stress

2.5. Effect of Service Level Flexibility on Fiscal Stress

The concept of Fiscal Stress refers to policymakers' choices in a context where there is an increasing imbalance between revenues and expenditures in a period, or when the imbalance is of a short-term nature that is usually limited to one fiscal year and reflects a different situation from the previous fiscal year used as the base budget (Premchand, 1993). Fiscal Stress is measured using four indices: budget, cash, long-term, and service level (Arnett, 2011). Service level flexibility is an important factor in determining the impact of Fiscal Stress on local governments. Local governments with high fixed costs find it difficult to adjust service levels if resources decline, when local governments feel high Fiscal Stress, they tend to try to maintain services and seek economic savings through service frequency (Aldag et al., 2017).

The balance between the needs and resources of the surrounding community is a key factor in assessing the risk of Fiscal Stress and this relationship is not clearly revealed other than through the level of services provided. The impact of the pandemic has resulted in Indonesia's status changing from an upper middle income country to a lower middle income country in July 2021. This puts pressure on people making unmet economic needs difficult to live in cities, and causing people to return to villages. The loss of tax base in the city makes it difficult for them. Similarly, it puts pressure on small local governments that do not have a good tax base to support the sudden influx of residents. In the end, small local governments will be worst affected by this imbalance, because having a large population is expected to develop the area and quickly overcome some problems but become new problems for them (Warner et al., 2021).

Therefore, researchers determine the flexibility of service levels based on the total revenue generated by local governments and the population in each local government. Therefore, based on the explanation and previous research, the third hypothesis can be drawn as follows:

H_4 : Service Level Flexibility negatively affects Fiscal Stress

3. Research Methods

This quantitative research focuses on the risk factors and predictions of fiscal stress in local governments. Certain risk factors associated with fiscal stress have been described in the previous section. The secondary data used in this study comes from the Local Government Financial Statements of each district and city in North Sumatra for 2019-2021. The Central Bureau of Statistics of the Republic of Indonesia provides this data. Therefore, panel data, which is a combination of data across individuals and across time, is the type of data studied (Subanti & Hakim, 2014). This study utilizes districts and cities in North Sumatra Province in 2019-2021 or those affected by the COVID-19 pandemic. The saturated sampling method was used as the sampling technique. According to Sugiyono (2017), the use of the saturated sampling method is a sampling technique if the entire population is used, then, this study is different from previous researchers who used the purposive sampling method due to limited data in that period (Muda, 2012). This study analyzed 33 regencies/cities in North Sumatra Province.

Fiscal Stress is the dependent variable. The Fiscal Stress variable is defined as an index of fiscal capacity in provinces, districts and cities published by the Ministry of Finance every year. There are three independent variables used in this study. First, local revenue is calculated based on its relationship with balancing funds and local own-source revenue. Then, the use of debt. The third is service level flexibility. Table 2 provides additional explanation.

Table 2 Operational Variables

Variable Name	Code	Size	Reference
Dependent variable			
Fiscal Stress	RFCR	Regional Fiscal Capacity Ratio: $\frac{KFD\ District/City}{Dictrict/City\ employee\ expenditure}$	(Lhutfi et al., 2020)
Independent Variable			
Regional Revenue	SR	Self-sufficiency ratio: $\frac{Local\ Revenue}{Total\ Revenue}$ Intergovernmental ratio: $\frac{Transfer\ Income}{Total\ Revenue}$	(Aikins, 2023b) (Trussell & Patrick, 2009)
Debt Usage	DSCR	Debt Service Coverage Ratio: $\frac{Total\ Revenue - Mandatory\ Spending}{Total\ Liabilities}$	(Chung & Williams, 2021)
Service Level Flexibility	FF	Financial Flexibility: $\frac{Total\ Revenue - Operation\ Expenditure}{Total\ Revenue}$	(Warner et al., 2021)

The first step in this research is to look for descriptive statistics and correlation analysis to provide a clear description of the research data and use that the data used is normal or unbiased. After using the classical assumption test, it is continued by using the panel data regression model. Furthermore, the panel data regression model developed for the study results is as follows:

$$RKFD_{it} = \beta 0 + \beta 1 PDa_{it} + \beta 2 PDb_{it} + \beta 3 PU_{it} + \beta 4 FK_{it} + \varepsilon_{it} \ldots\ldots$$

$RKFD_{it}$: Regional Fiscal Capacity Ratio *i* period *t*

β : Constant

β1 to **β** : Coefficient

SRa_{it} : Independence Ratio *i* period *t*

SRb_{it} : Intergovernmental Ratio *i* period *t*

$DSCR_{it}$: Debt Service Coverage Ratio *i* period *t*

FF_{it} : Financial Flexibility *i* period *t*

4. Results and Discussion

In this section, the results of research that have been processed through statistical calculations and discussions that are analyzed with theory and previous research will be described.

4.1. Results

4.1.1 Descriptive Statistics

Table 3 Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
SRa	99	0,011	0,380	0,09636	0,065765
SRb	99	0,391	0,876	0,70082	0,84770
DSCR	99	-16,533	76,616	2,57985	10,399545
FF	99	0,069	0,626	0,39830	0,101477
RKFD	99	0,254	5,369	0,77821	0,801641
Valid N (listwise)	99				

Source: output results of SPSS for windows version 23

According to the descriptive statistics table above, the average value of the independence ratio in North Sumatra Province shows that in 9% of regions that are still in the low category, that the regions cannot exercise financial autonomy or that the role of the central government is greater than the independence of local governments. However, not all of them can be generalized as incapable if we look at the highest independence ratio in Medan City with a value of 0.380 in 2021, while the lowest independence ratio value is in South Nias Regency with a value of 0.011 in 2020. So, Medan City is already at 38%, indicating that the responsibility of the central government is starting to decrease and

consultation is starting to increase because it is considered capable. The value of the intergovernmental ratio in the average shows at 70%, proving that North Sumatra Province in managing local government more than half still uses funds that are not obtained by the efforts of the local government itself or depends on the central government. If we look back at the highest intergovernmental ratio in Dairi Regency in 2020 with a value of 0.876, it shows that during the pandemic period it is still very dependent on the central government and the lowest ratio value in Medan City in 2019 with a value of 0.391.

The value of the DSCR ratio shows that the region's ability to repay loans in the average value is at 2.57, this is the minimum figure which shows that North Sumatra Province is considered to still have sufficient funds to pay off their debts. But of course there are several regencies or cities that are considered to need to be monitored, among others, with the lowest DSCR ratio value, namely South Tapanuli Regency in 2020, it can be said that with large expenditures during the pandemic, local governments also need to pay attention to their income by looking at the debt they face, as in South Tapanuli Regency also increasing the number in the following year to return to normal with rapidly increasing income.

The higher value on financial flexibility indicates financial flexibility to carry out operations and provide services to its people in North Sumatra Province, it can be seen that the value obtained with an average of 0.398 or 40% of local governments in Sumatra Province can adjust the budget and resource allocation in the face of changing conditions. If we look back at the highest value seen in Medan City in 2019 with a figure of 62% of the budget they obtained was well allocated in contrast to Toba Samosir Regency in 2020 in the pandemic position only obtained 6% indicating a poor allocation and dealing with the situation at that time.

Finally, the value of the local government fiscal capacity ratio which illustrates the ability of local finances that the weak ability of local finances will result in fiscal pressure. Especially regencies and cities in Sumatra Province obtained an average of 0.77 this figure will be a consideration for the application of the region in obtaining central government assistance and this is what we consider that dependence on the central government will be a lie for local governments. Looking at the data above, the highest value was obtained for Medan City in 2019 with a figure of 5.369 indicating very high and the lowest was Pakpak Bharat Regency in 2021 indicating very low.

4.1.2 Classical Assumption Test

4.1.2.1 Normality Test

In testing the normality of this study using the non-parametric Kolmogorov-Smirnov (K-S) test. The probability value in this test must be greater than 0.05, while the probability value below 0.05 indicates that the researcher's data set is not normal. The

following table 4 provides an explanation that the data collected by researchers meets the assumption of normality

Table 4 Normality Test Results

		Unstandardized Residual
N		99
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.42730296
Most Extreme Differences	Absolute	.108
	Positive	.108
	Negative	-.108
Test Statistic		.108
Asymp. Sig. (2-tailed)		.060[c]

Source: output results of SPSS for windows version 23

4.1.2.1 Multicollinearity Test

The multicollinearity test is used to determine whether there is a correlation between the independent variables in the regression model. In a good regression model, multicollinearity problems should not occur. The VIF values of the independent variables are <10 and the tolerability values are all >0.1, as shown in table 4 of the multicollinearity test results. So, the data collected by the researcher shows that there is no multicollinearity.

Table 5 Multicollinearity Test Results

Variables	Collinearity Statistics	
	Tolerance	VIF
SRa	0,692	1,445
SRb	0,686	1,458
DSCE	0,982	1,018
FF	0,988	1,013

Source: output results of SPSS for windows version 23

4.1.2.2 Heteroscedasticity Test

Homoscedasticity is a criterion of a good regression model. The Breusch Pagan test can be used to test for heteroscedasticity; the basis for decision making is that if the probability value is more than 0.05, then the model indicates that it does not contain heteroscedasticity. Conversely, if the probability value is less than 0.05, then the model indicates that it contains heteroscedasticity.

Table 6 shows the results of the heteroscedasticity test which indicates that there is no heteroscedasticity in the tested variables.

Table 6 Heteroscedasticity Test Results

Model		Sig
1	SRa	0,062
	SRb	0,065
	DSCE	0,945
	FF	0,329

Source: output results of SPSS for windows version 23

4.1.2.3 Autocorrelation Test

The Durbin-Watson test can be used to find autocorrelation problems because this study uses linear regression models and time series data. The purpose of this autocorrelation test is to determine whether there is a relationship between the confounding error in each period and the error of the previous period.

Table 7 Durbin-Watson value

Model	Durbin-Watson
d	*1,598*

Source: output results of SPSS for windows version 23

Table 6 shows the results of the D-W test, which obtained a value of 1.598. The study found that (k'; N) = (4; 99) and the values of d_L = 1.5897 and d_U = 1.7575. The value of d falls between d_L and d_U, or d_L < d < d_U, which means 1.589, 1.598, and 1.757. If the d value lies between d_L and d_U, the above test decision-making does not lead to a clear conclusion. For this reason, it can also be said that this model does not show a case of autocorrelation.

4.1.3 Multiple Regression Test

The following regression equation is obtained based on the multiple linear regression test results, which are shown in table 10 above:

$$RKFD_{it} = 2{,}502 + \ 7{,}226\ SRa_{it} - 3{,}410\ SRb_{it} + \ 0{,}005\ DSXCR_{it} - 0{,}111 FF_{it} + \varepsilon_{it}$$

The constant value of 2.502 indicates that the regional income variable developed into the ratio of independence and intergovernmental, debt use, and service level flexibility if the value is 0 then Fiscal Stress has a pressure level of 2.502. The coefficient value of SRa is -7.226 with a negative value. This means that every increase in the ratio of independence or financial independence in generating local revenue by 1 time, the Fiscal Stress in the region will also decrease by 7.226 assuming other variables are constant. The coefficient value of SRb is 3.410 with a positive value. This means that every increase in the ratio between local governments or non-dependence on central government funding sources by 1 time, Fiscal Stress will decrease by 3.410, assuming other variables are constant. The DSCR coefficient value is 0.005 with a positive value. This means that every

increase in the use of debt in the region by 1 time, the regional Fiscal Stress will increase by 0.005, assuming other variables are constant. The FF coefficient value is - 0.111 with a negative value. This means that every increase in service level flexibility by 1 time, regional Fiscal Stress will decrease by 0.111, assuming other variables are constant.

4.1.3 Determination Coefficient Test (R Test)²

To determine how far the model's ability to explain variations in the dependent variable, the R^2 test is used. In this study, the coefficient of determination was calculated with the adjusted R^2 value.

Table 8 Test Results of the Coefficient of Determination (R Test)²

Model	R	R Square	Adjusted R Square
1	.846[a]	.716	.704

a. Predictors: (Constant), SRa, SRb, DCSR, FF

b. Dependent Variable: RKFD

Source: output results of SPSS for windows version 23

The amended R2 test results in table 9 show an adjusted R2 value of 0.704, or 70.4%, which indicates that fiscal stress can be explained by 70.4% by the independent variables, namely local revenue, debt usage, and service level flexibility. Independent variables not included in this study accounted for 39.6% of the variation in Fiscal Stress.

4.1.4 Partial Test (t Test)

Table 9 Regression and t-test results

Model	Coefficients	t	Sig.	Summary
(Constant)	2,502	4,773	,000	
SRa	-7,226	-8,970	,000	Significant Effect
SRb	3,410	5,431	,000	Significant Effect
DSCR	,005	1,673	,044	Significant Effect
FF	-,111	-,253	,801	No Effect
F_{count}: 59,210 *Adjusted R Square*: 0,704				
*Significant at α: 5%				

Source: output results of SPSS for windows version 23

In general, the t statistical test shows how far the influence of one independent variable partially on the variation of the dependent variable. Using a significance level of 0.05 (α = 5%), local revenues are organized by debt utilization, self-sufficiency and intergovernmental ratios, and service level flexibility. If the t_{count} is less than t_{tabel} , then the independent variable partially does not affect the dependent variable. Conversely, if the t-

count is greater than t-tabel , then the independent variable partially affects the dependent variable.

The strength of the relationship between the independent variable and the dependent variable is shown as follows. Based on the first hypothesis of the regional income variable proposed by the researcher, it shows that the regional income variable with the independence ratio indicator has a positive effect on Fiscal Stress. It is also explained in the regression analysis results that the independence ratio indicator has a t-count value of 8.970 greater than the t-table of 1.660 and obtained a significance value of 5% (0.00 <0.05). Therefore it can be concluded that the hypothesis is accepted.

The regional income variable with the intergovernmental ratio indicator has a t-count value of 5.431 from the t-table of 1.660 and a significance value of 0.00 is smaller than the significance rate of 0.05. Therefore, it can be concluded that regional income affects Fiscal Stress and the second hypothesis is also accepted.

The third hypothesis is explained in the debt utilization variable which has a t-count value of 1.673 greater than the t-table of 1.660 and the obtained significance value of 0.044 is smaller than the significance level of 0.05. Therefore, it can be concluded that the use of debt with the DSCR indicator affects Fiscal Stress and the hypothesis is accepted.

The test results on the fourth hypothesis show that service level flexibility has no significant effect on Fiscal Stress. Service level flexibility has a t-count value of 0.253 less than the t-table of 1.660 and also at a significance value greater than the 5% significance level (0.801> 0.05). Therefore, it can be concluded that service level flexibility has no effect on Fiscal Stress and the hypothesis is also rejected.

4.1.4 Simultaneous Test (F Test)

The F significance test aims to show whether all independent variables in the model affect the dependent variable together. The F test also shows whether the four independent variables affect the dependent variable simultaneously. In this study, F-count and F-tabel are compared. The rejected hypothesis is that if F-count is less than F-tabel , then the independent variables do not affect the dependent variable simultaneously. Conversely, if F-count is greater than F-tabel , then the independent variables affect the dependent variable simultaneously.

Table 10 Simultaneous Significance Test Results (F Test)

Model	F	Sig
Regression	59,210	.000[b]

a. Dependent Variable: RKFD

b. Predictors: (Constant), SRa, SRb, DCSR, FF

Source: output results SPSS for windows version 23

F-tabel has a value of 2.46 and a significance value of 0.000 ($p < 0.05$), while the F-count has a value of 59.210. Therefore, it can be said that Fiscal Stress is influenced by local revenues developed into independence and intergovernmental ratios, debt usage, and service level flexibility.

4.2 Discussion

4.2.2 Regional Revenue Relationship (Independence Ratio) has a significant negative effect on Fiscal Stress

The first hypothesis states that the independence ratio partially reduces Fiscal Stress in the Regency/City in North Sumatra Province. With a significance level of 5%, this indicator partially has a significant effect on Fiscal Stress. The independence ratio has a negative effect on Fiscal Stress. This is in accordance with research conducted by Lhutfi et al (2020). Independence in government management has a very close relationship with the utilization of local revenue in the administration of local government, because the higher the source of income that comes from regional potential, not assistance from the local government. The statement that the government must be able to increase local revenue and explore new sources of income is important, if the government is unable to, it will increase Fiscal Stress.

4.2.3 Local Revenue Relationship (Intergovernmental Ratio) has a significant positive effect on Fiscal Stress

The second hypothesis states that the intergovernmental ratio partially increases Fiscal Stress in the Regency/City in North Sumatra Province. With a significance level of 5%, this indicator partially has a significant effect on Fiscal Stress. The intergovernmental ratio has a positive effect on Fiscal Stress. This is also in accordance with research conducted by Trussel (2009). Along with the increase in assistance provided by the central government to local governments, the risk of Fiscal Stress also increases. This supports the researcher's hypothesis that excessive dependence on central government assistance can lead to Fiscal Stress, if the funding stream dries up and local governments cannot find alternatives. Although Indonesia in the face of various possible fiscal risks has taken several policies in overcoming them, but too much dependence also results in weaknesses in the local government itself where they will not maximize the management of their local revenue and are feared to be faced with several problems later.

4.2.4 Debt Use Relationship (Debt Service Coverage Ratio) has a significant positive effect on Fiscal Stress

The third hypothesis states that the use of debt partially increases Fiscal Stress in the Regency/City in North Sumatra Province. With a significance level of 5%, this indicator partially has a significant effect on Fiscal Stress. The use of debt has a positive effect on Fiscal Stress. This is also in accordance with research with increased use of debt, the risk of

Fiscal Stress also increases (Trussel & Patrick, 2009). This finding is expected and supports the hypothesis that debt financing exposes local governments to a greater risk of Fiscal Stress. Although there are already limits on the use of debt for local governments, it is necessary to supervise local governments, especially in North Sumatra, if you look at the data listed that their dependence on the central government and debt financing is basically in accordance with the requirements and some are not, so the emphasis on supervising local government loan procedures needs to be increased again.

4.2.5 Service Level Flexibility relationship has no significant effect on Fiscal Stress

The fourth hypothesis states that service level flexibility partially reduces Fiscal Stress in Regency/City in North Sumatra Province. With a significance level of 5%, this indicator partially has an insignificant effect on Fiscal Stress. Flexible service levels can allow these entities to better adjust budgets and resource allocations in the face of Fiscal Stress. Thus, local governments that have good service level financial flexibility may be better able to manage stressful financial situations without having to reduce essential services. However, there are factors that can cause flexibility to have no partial effect on the researchers revealed that the existence of policies in service level flexibility where in the period studied the expenditure used by local governments did not lead to the existence of Fiscal Stress. Finally, service level flexibility policies must also be carefully managed to ensure that crucial and important services are not significantly disrupted. The choice of budget reduction or service restructuring must consider the impact on society and the public interest.

5. Conclusions

Based on the results of the study, it can be concluded that local revenue, debt use and service level flexibility simultaneously have a positive effect on Fiscal Stress in Regencies/City in North Sumatra Province. Regional income with an indicator of the independence ratio partially has a negative effect on Fiscal Stress and the intergovernmental ratio partially has a positive effect on Fiscal Stress in the Regency/City in North Sumatra Province. The use of debt partially has a negative effect on Fiscal Stress in the Regency/City in North Sumatra Province. And service level flexibility partially has no significant effect on Fiscal Stress in the Regency/City in North Sumatra Province.

The results of this study can be used in determining policies, especially for district and city governments in North Sumatra Province. Regional independence can help reduce Fiscal Stress so, focus on efforts to increase revenue through sources such as taxes, levies, and others need to be increased while reducing central government transfer income. Matters to support the increase in regional income need to diversify sources of income, namely investing in diverse economic sectors such as agriculture, industry, tourism, and services. Also, it can build infrastructure that supports economic growth such as roads,

ports, airports, and other means of transportation, it should be noted that based on data obtained from BPS there are still around 60% of roads in poor condition, of course this is the right input to encourage regional income in North Sumatra. Then, it is important to use debt wisely and pay attention to debt repayment capacity and its intended use in order to avoid Fiscal Stress.

The researcher's study only focuses on Regency/City local governments in North Sumatra Province, thus limiting the ability to generalize to other local governments in Indonesia. However, further research can limit the sample to be studied such as assessing indications of local governments that may experience fiscal difficulties. The limitation of this study is the difficulty of the authors in finding relevant theories and journals to support the hypotheses proposed by the researchers. Regarding the service level flexibility variable, it can be suggested to use fiscal decentralization which involves the transfer of economic and fiscal policy responsibilities from the central government to local governments. For future researchers, it can be suggested to use other variables such as demographic characteristics and economic growth of local governments.

References

Abdullah, S., Ansori, A., Nasir, N., & Diantimala, Y. (2021). The Role of Revenues in Reducing Local Government Fiscal Distress: An Empirical Study in Indonesia. *Asian Journal of Finance Economics and Business*, *8*(6), 597-607. https://doi.org/10.13106/jafeb.2021.vol8.no6.0597

Aikins, S. K. (2023a). Effects of intergovernmental revenue on local government draw on fiscal reserves: evidence from COVID-19 fiscal stress. *Local Government Studies.* https://doi.org/10.1080/03003930.2023.2212586

Aikins, S. K. (2023b). Effects of intergovernmental revenue on local government draw on fiscal reserves: evidence from COVID-19 fiscal stress. *Local Government Studies*, 1-20. https://doi.org/10.1080/03003930.2023.2212586

Alam, A. M., Alam, M., & Hoque, A. (2019). Spending pressure, revenue capacity and financial conditon in municipal organizations: An empirical study. *The Journal of Developing Areas*, *53*(1).

Aldag, A. M., Warner, M. E., & Kim, Y. (2017). *WHAT CAUSES LOCAL FISCAL STRESS? WHAT CAN BE DONE ABOUT IT?*

Arnett, S. (2011). *FISCAL STRESS IN THE U.S. STATES: AN ANALYSIS OF MEASURES AND RESPONSES*.

Azzahra, M., Arifin, K. Z., & Dwitayanti, Y. (2023). The Effect of Local Revenue, Capital Expenditure, and Fiscal Decentralization on Fiscal Stress in Regency / City in Sumatra. *Journal of Economics, Management, and Accounting*, *9*(5), 2243-2254. https://doi.org/10.35870/jemsi.v9i5.1595

Chung, I. H., & Williams, D. (2021). Local governments' responses to the fiscal stress label: the case of New York. *Local Government Studies*, *47*(5), 808-835. https://doi.org/10.1080/03003930.2020.1797693

Funashima, Y. (2017). Wagner's law versus displacement effect. *Applied Economics*, *49*(7),

619-634. https://doi.org/10.1080/00036846.2016.1203063

Himawan Kusnadhi, F., & Taufiq Ritonga, I. (2017). FINANCIAL CONDITION OF LOCAL GOVERNMENT IN INDONESIA. *Accounting and Business Information Systems Journal*, *5*(1), 1-19.

Huang, B., Wu, J., & Ye, L. (2023). Fiscal decentralization, intergovernmental mobility, and the innovativeness of local governments' policy response in COVID-19: Evidence from China. *Public Administration and Development*, *43*(2), 196-206. https://doi.org/10.1002/pad.2007

Jospriady, A. (2020). THE AUTHORITY OF REGIONAL GOVERNMENT AND CENTRAL GOVERNMENT IN HANDLING COVID-19 PANDEMIC. *National Conference For Law Studies: Legal Development Towards the Era of Digital Society*, 1206-1215.

Kim, Y., & Warner, M. E. (2021). Pragmatic municipalism or austerity urbanism? Understanding local government responses to fiscal stress. *Local Government Studies*, *47*(2), 234-252.

Krisnawati, T., & Elly, M. I. (2022). Fiscal Stress and Fiscal Decentralization Affect Economic Growth in Bali Province. *Journal of Economic Education and Entrepreneurship)*, *6*(2), 505. https://doi.org/10.29408/jpek.v6i2.6928

Leiser, S., Wang, S., & Kargman, C. (2021). Perceptions of Local Government Fiscal Health and Fiscal Stress: Evidence From Quantile Regressions With Michigan Municipalities and Counties. *State and Local Government Review*, *53*(4). https://doi.org/10.1177/0160323X211038356

Lhutfi, I., Ritchi, H., & Yudianto, I. (2019). How do local governments respond to Fiscal Stress? *JOURNAL OF GLOBAL ECONOMIC SCIENCE*, *10*(2), 76-81.

Lhutfi, I., Ritchi, H., & Yudianto, I. (2020). Do the Growth of Original Local Government Revenues and the Growth of Capital Expenditure Affect Fiscal Stress? *Journal of Economics, Business, & Accountancy Ventura*, *23*(1). https://doi.org/10.14414/jebav.v23i1.1727

Magazzino, C., Giolli, L., & Mele, M. (2015). International Journal of Economics and Financial Issues Wagner's Law and Peacock and Wiseman's Displacement Effect in European Union Countries: A Panel Data Study. *International Journal of Economics and Financial Issues*, *5*(3), 812-819.

Maher, C. S., Hoang, T., & Hindery, A. (2020). Fiscal Responses to COVID-19: Evidence from Local Governments and Nonprofits. *Public Administration Review*, *80*(4). https://doi.org/10.1111/puar.13238

Maher, C. S., Hoang, T., & Hindery, A. (2020). Fiscal responses to COVID-19: Evidence from local governments and nonprofits. *Public Administration Review*, *80*(4), 644-650.

Maher, C. S., Oh, J. W., & Liao, W. J. (2020). Assessing fiscal distress in small county governments. *Journal of Public Budgeting, Accounting & Financial Management*, *32*(4), 691-711.

Malinowska-Misiąg, E. (2018). Possibilities of using in Poland the foreign models of predicting the fiscal distress in local government units. *Optimum. Economic Studies*, *3(93)*, 115-125. https://doi.org/10.15290/oes.2018.03.93.10

Mamun, T. M., & Chowdhury, S. (2022). Assessing fiscal health of local governments in Bangladesh: evidence from some south-western municipalities. *Public Administration*

and Policy, *25*(1), 50-63. https://doi.org/10.1108/PAP-04-2021-0027

Mead, D. M. (2006). A Manageable System of Economic Condition Analysis for Governments. In H. Frank (Ed.), *Public Financial Management* (Vol. 14). CRC Press.

Rowley, C. K., & Tollison, R. D. (1994). Peacock and Wiseman on the growth of public expenditure. *Public Choice*, *78*(2). https://doi.org/10.1007/BF01050389

Septi Suryani, S. (2023). DETERMINANTS OF FISCAL STRESS ON LOCAL GOVERNMENT FINANCES IN EAST JAVA. *Journal of Social Research*, *2*(4), 1195-1203.

Septira, F., Farida, I., & Prawira, A. (2019). Analysis of Factors Affecting Fiscal Stress. *Journal of Accounting and Finance Education*, *7*(1), 57-64. https://doi.org/10.17509/jpak.v%vi%i.15949

Su, M. (2020). Taxation by citation? Exploring local governments' revenue motive for traffic fines. *Public Administration Review*, *80*(1), 36-45.

Subanti, S., & Hakim, A. R. (2014). *Econometrics* (1st ed.). Graha Ilmu.

Sugiyono. (2017). *Business research methods: quantitative, qualitative, combination, and R&D approaches* (S. Y. Suryandari (ed.); 1st ed.). Alfabeta.

Surachman, E. N., & Handayani, D. (2020). *Public Sector Financial Report Analysis Module*.

Syifa, A., Suhendar, D., & Purnama, D. (2021). THE GROWTH OF LOCAL REVENUE, CAPITAL EXPENDITURE GROWTH AND ECONOMIC GROWTH ON FISCAL STRESS IN DISTRICT / CITY GOVERNMENTS IN WEST JAVA. *Journal of Finance and Accounting Research*, *7*(2), 76-86.

Trussel, J. M., & Patrick, P. A. (2009). A PREDICTIVE MODEL OF FISCAL DISTRESS IN LOCAL GOVERNMENTS. In *ACCOUNTING & FINANCIAL MANAGEMENT* (Vol. 21, Issue 4).

Ulfa, M., Haryadi,), & Gowon, M. (2021). THE EFFECT OF REGIONAL ORIGINAL INCOME (PAD), AND GENERAL ALLOCATION FUNDS ON FISCAL STRESS IN JAMBI PROVINCE. *Jambi University Journal of Accounting and Finance*, *6*(3), 189-198.

Warner, M. E., Aldag, A. M., & Kim, Y. (2021). Privatization and intermunicipal cooperation in US local government services: balancing fiscal stress, need and political interests. *Public Management Review*, *23*(9), 1359-1376. https://doi.org/10.1080/14719037.2020.1751255

Young, I. (2012). VARIABLES THAT AFFECT FISCAL STRESS IN THE DISTRICT / CITY OF NORTH SUMATRA. *Journal of Finance & Business*, *4*(1), 27-46. https://doi.org/10.13140/2.1.3934.2888