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Fiscal Determinants of Stress in the Maluku Islands Region

By:
Izaac Tonny Matitaputty
Faculty of Economics and Business, Pattimura University
Corresponding Author: tonnymatitaputty@gmail.com

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ABSTRACT: This study identifies and assesses the impact of transfers to regions, local-own source revenue (*Pendapatan Asli Daerah, PAD*), gross regional domestic product, population, and construction cost index (CCI) on fiscal stress in regencies / cities in Maluku Province in 2015-2022. The data was obtained from Statistics Indonesia and Directorate of Financial Balance of the Ministry of Finance, analyzed quantitatively using panel data regression analysis and a fixed effect model obtained through Hausman test. The results indicate that the transfers to regions and PAD have a negative and significant impact on the fiscal stress, in contrast to the CCI. They suggest that higher transfers to regions and PAD would decrease the fiscal stress, and the CCI was a determinant in the local expenditure to increase regional growth and community services. The stress caused by limited PAD might be alleviated by the availability of potential regional resources and readiness of human resources.

Keywords: Fiscal Stress, Transfer, Local Own-Source Revenue.

***ABSTRAK**: Penelitian ini bertujuan untuk mengidentifikasi dan menganalisis pengaruh transfer ke daerah, pendapatan asli daerah, produk domestik regional bruto, jumlah penduduk dan indeks kemahalan konstruksi terhadap fiskal stres pada kabupaten/kota di Provinsi Maluku. Metode analisis berupa metode kuantitatif dengan analisis regresi data panel berupa model fixed effect hasil penerapan uji Hausman. Data bersumber dari Direktorat Perimbangan Keuangan Kementerian Keuangan dan Badan Pusat Statistik Provinsi Maluku tahun 2015-2022. Hasil analisis menunjukkan bahwa transfer ke daerah dan PAD berpengaruh signifikan terhadap fiskal stres dengan arah negatif. Dimana jika transfer ke daerah dan PAD meningkat berdampak pada menurunnya fiskal stress. Sementara indeks kemahalan konstruksi berpengaruh positif terhadap fiskal stres artinya sebagai wilayah kepulauan, indeks kemahalan konstruksi menjadi faktor penting belanja daerah dalam meningkatkan pertumbuhan daerah dan pelayanan kepada masyarakat. Tekanan yang terjadi akibat keterbatasan penerimaan PAD dalam membiayai pelaksanaan pembangunan dapat ditanggulangi dengan ketersediaan potensi sumber daya daerah dan kesiapan SDM bagi wilayah kepulauan.*

***Kata Kunci:** Fiscal stress, Transfer, Pendapatan Asli Daerah.*

INTRODUCTION

The realization of regional autonomy in a new dimension through amendments to Law Number 23 of 2014 concerning regional government, followed by Law Number 1 of 2022 concerning financial between the central government and regional governments, has implications for increasing regional governments' authority and responsibility in regional management and development, as well as serving community needs. Decentralization within the framework of regional autonomy aims to manifest regional independence extensively and equally, assuming that each region fully comprehends their socioeconomic conditions and the potential of local resources that can be advantages for the region, resulting in more effective and efficient government performance. The regional independence is demonstrated in the ability of regions to carry out development and governance functions without relying on the central government funds. One indicator of regional independence is the ratio of local income from own sources to regional income Yoda & Febriani (2019). In terms of the regional income, Arpani (2020) argued that the higher the ratio of Local Own-Source Revenue, the less reliant the region is on the central government support.

Good regional financial governance should ideally lead to successful regional autonomy, as evidenced by an increase in areas that are able to identify and capitalize on local resource potential, which has a substantial effect on growing the local income from own sources. A higher proportion of local income from own sources in the regional income shows that the region is approaching the financial independence. The government's efforts are followed by the enactment of Law Number 1 of 2022, where this law regulates the scope of financial relationships between the central government and local government, including: 1) the provision of regional revenue sources in the form of taxes and levies; 2) the management of Transfers to Regions (Transfer ke Daerah, TKD); 3) the management of regional expenditure; 4) granting the authority to conduct regional financing; and 5) the implementation of national fiscal policy synergies. In order to allocate the national resources more efficiently, the Government gives the authority to the Regions to collect taxes and levies by strengthening through restructuring the types of taxes, providing new sources of regional taxation, simplifying the types of levies, and harmonizing with Law Number 11 of 2020 concerning Job Creation. In addition, the simplification of retribution is carried out through rationalization of the number of retributions. The retribution is classified into 3 (three) types, namely General Service Retribution, Business Service Retribution, and Specific Licensing Retribution.

Shamsub & Akoto (2004) classified government inabilities that might cause the fiscal stress into three categories: 1) disruption of economic conditions, such as recession; 2) absence of business climate incentives, such as high taxes; and 3) political reasons, such as corruption. According to Havesi (year, as cited in Lhutfi et al., 2020), the fiscal stress refers to a financial condition characterized by inadequate financing and budget growth issues. In addition to the inability to increase the Local Own-Source revenue, Arnett (2011) stated that the fiscal stress develops as a result of the government inability to fulfill financial commitments both now and in the future, as well as poor provision of products and services required by the community.

Dinapoli (year, as cited in Krisnawati & Elly, 2022) defined the fiscal stress as a state of local government inability to generate sufficient income to finance expenditure in the same year. Septira & Prawira (2019) interpreted the very low ratio of Local Own-Source Reveue to the local expenditure as an imbalance between what the government gives and what the community desires. It is possible to conclude that the budget is the locomotive required as the foundation for financial decisions in driving regional growth.

Further, the fiscal stress is the inverse of fiscal independence. This indicates that when a region has a high level of fiscal independence, it is anticipated that the reliance on central transfers may be minimized because the government expenditure obligations can be met to a considerable extent by the Local Own-Source Revenue. On the other hand, if the region's fiscal independence is low, it can be assumed that the region is heavily reliant on the central government transfers. Maluku province is one of the autonomous regions in eastern Indonesia that strives to increase their fiscal independence by using their current fiscal potential in order to accelerate the growth of local income from own sources.

Furthermore, Maluku province is categorized as a "not-yet-independent" region that tends to stagnate due to its high reliance on the central government transfers. This is reflected in the ratio of Local Own-Source Revenue to the central government transfers of 20%, indicating that the ability to finance their local expenditure is met by the central government by 80%. The following Figure 1 depicts the development of Maluku province's regional financial funding capacity.

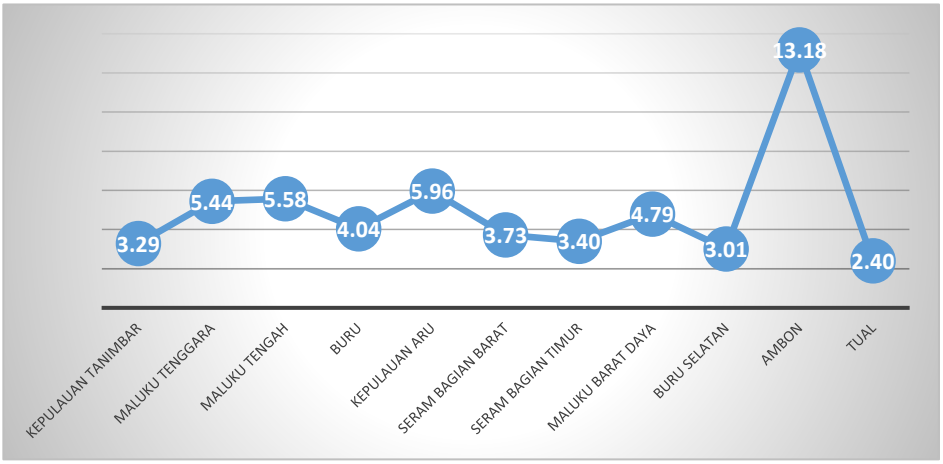

Figure 1. Average local income from own sources to Local Expenditure by Regencies / Cities in Maluku Province in 2020-2022.

The ratio illustrated in Figure 1 above reflects the ability of Maluku province's regencies / cities to support the local expenditure. In 2022, the average level of regional capacity to meet their expenditure is 4.9%. Ambon city has the highest level of capacity (14.63%), while Tanimbar Islands regency has the lowest (2.55%). Tasri (2019) and Cruz & Silva (2020) mentioned that inefficient utilization of transfer funds to regions happens when the influence of transfers to regions is stronger on the local expenditure than on the local income from own sources.

The regional capacity in funding their development is considered very low, which is evident in the region's substantial reliance on the transfers made by the federal government. The percentage of central government transfers to the regions is one approach to quantify the amount of dependency. Figure 1 shows that in 2022, the average reliance ratio for the regencies/cities in Maluku province is 89%, with West Seram regency having the greatest dependency ratio at 95.16% and Central Maluku regency having the lowest at 78.39%. According to Susilawati et al (2018) and Abdullah & Hasan (2022), the high level of dependency is caused by regional administrations failing to maximize their initial local income from own sources, resulting in the transfers to regions remaining the primary priority. Initiatives to enhance the local income from own sources are done to strengthen local fiscal capacity and achieve a higher level of fiscal independence. The high level of regional dependency and insufficient financial capacity indicates the low regional fiscal independence. Maluku province has an average level of fiscal independence of 4.9%, suggesting that most of the regencies/cities are not yet independent and are still static.

The financial relationship between the central and regional governments is manifested in the transfers to regions with the goal of financing government affairs that fall under the regional authority, such as reducing fiscal inequality between regions and increasing regional financial capacity. As a result, budget management frequently puts pressure on the regions to keep exploring the potential of local resources in increasing the local income from own sources. Shamsub & Akoto (2004) explained that the fiscal stress is induced by low-income regions' high aggregate expenditure. Gorina et al (2018) and Thompson (2017) added that the fiscal stress is linked to the local governments' incapacity to meet the fiscal needs for the provision of public services.

Similarly, Skidmore & Scorsone (2011) discovered that the causes and consequences of the rise of fiscal stress can influence the government's budgeting decisions. Chen (2016) stated that the fiscal stress affects road infrastructure development, suggesting that a high fiscal stress influences the

government decisions on financial stress on the road infrastructure development. The fiscal stress has emerged as a critical topic for experts and scholars to investigate.

It was found to have a negative and significant effect on changes in the regional government budgets, according to Junita & Abdullah (2016) and Ratifah & Nuraeni (2021), demonstrating that the fiscal stress can change regional government policy regarding the expenditure. Muryawan & Sukarsa (2016) and Dwitayanti et al (2019) studied regional finances and economic growth and discovered that the fiscal stress had a strong direct effect on financial performance and economic growth. In addition, Lhutfi et al (2020), Suryani & Windijarto (2023) and Syifa et al (2021) all agreed that the local income from own sources, capital expenditure, and balancing funds all had a significant effect on the fiscal stress, and that increasing the Local Own-Source Revenue was necessary to control or reduce high levels of fiscal stress.

The regional income must be enhanced in order to reduce the reliance on the central government. This disorder is associated with the higher levels of financial stress. According to Meta et al (2017), diversifications of the local income from own sources had a negative influence on the fiscal stress, suggesting that increasing the local income from own sources potential by diversifying the types of funds from the taxes or levies enhancing the regional cash could lower the fiscal stress.

Various findings in the studies presented show that the fiscal stress can have an impact on the government policy, economic growth, and regional income. However, archipelagic regions, such as Maluku province, have different conditions. There are discrepancies in the current price levels between Maluku province in eastern Indonesia and other regions in western Indonesia. These conditions will result in a high level of regional dependence (Maluku province) on the central government financing, making establishing the regional independence within this decentralization framework challenging.

For these reasons, the Construction Cost Index (CCI) as a variable is significant in this study. Therefore, the research question of this study is "What factors influence the fiscal stress in The Maluku Islands Region?"

METHODS

This study employed a quantitative method with panel data regression analysis, aiming to determine whether or not there is a relationship between dependent variables, namely transfer, local own-source revenue and fiscal stress in Maluku Province. After conducting the Hausman test, this study employed a fixed effect model. The data was obtained from the Directorate of Financial Balance of Ministry of Finance and Statistics Indonesia of Maluku Province. This study analyzed a panel data with time series data from a period of 2015-2022 and a cross section data of 11 regencies/cities. This study employed a panel data regression analysis method, by selecting the optimal panel regression model during the analysis stage by comparing three approaches, namely the common effect, fixed effect, and random effect models.

According to Gujarati (2003), the benefits of employing the panel data regression included solving the problem of individual heterogeneity, displaying more information and fluctuations in the dynamics of data changes, and being efficient in eliminating bias. Hsiao (2014) added that the benefits also included a higher degree of freedom, more data variability, and less collinearity between independent variables. This study employed the following equation:

$$\boldsymbol{FS_{it} = \alpha_0 + \alpha_1 TTR_{it} + \alpha_2 LOSR_{it} + \alpha_3 GRDP_{it} + \alpha_4 POP_{it} + \alpha_5 CCI_{it} + e_{it}}$$

In the above equation, FS represents the fiscal stress; TTR represents the transfer to regions; LOSR represents the Local own-source revenue; GRDP represents the Gross Regional Domestic Product; POP is the population's representative; CCI represents the Construction Cost Index; α0 represents constana; α1, α2, α3 α4, and α5 represents the regression coefficients; and e represents the error term. Arnett (2011) explained that there were no general standards for measuring fiscal stress indicators, therefore the definition can be modified to the research objectives. In this study, the

fiscal stress is defined by Brown (1993) who used the ratio of local income from own sources to the local spending.

In this study, the fiscal stress is a dependent variable, referring to the ratio of Local Own-Source Revenue to the local spending – a figure that might be used as a reference to quantify the degree of financial stress suffered by a region in IDR unit.

Meanwhile, independent variables of this study consist of the transfer to regions, Local Own-Source Revenue, Gross Regional Domestic Product (GRDP), population, and Construction Construction Index. The transfer to regions is defined as the funds provided by the central government, consisting of profit sharing funds, general allocation funds, and special allocation funds which aim to expand the equality within regions, overcome the disparities in the financial capacity between regions, and implement national priority programs or policies in Maluku province.

Further, the local income from own sources refers to the income acquired under the law by exploiting regional potential. In addition, the GRDP refers to a measure of regional economic development. Furthermore, the population refers to the number of people who live in a given region. Meanwhile, the Cost Construction Index refers to a price index measuring the cost of construction in Maluku province. These variables are measured in IDR unit, except the population which is measured in a unit of person.

This study conducted the panel data regression using one of the three approaches of common effect, fixed effect dan random effect models. The results were then compared to obtain the best model. First, this study performed the Chow Test by comparing the common effect model and fixed effect model. Second, the Lagrange Multiplier was also performed to compare the panel regression results of the common effect model and random effect test, if LM test. Third, the Hausman test was performed to obtain the best results between the panel regression results of fixed effect model and random effect model, if Uji Hausman. Further, this study also examined the classical assumptions to acquire better estimation results, although its significance was still debated. Fourth, the Glesjer test was performed to identify heteroscedasticity in the research model. Lastly, the Durbin-Watson test was also performed to identify autocorrelation, and the correlation matrix was implemented to identify multicollinearity.

RESULTS AND DISCUSSIONS

This study compared the panel data method to previously specified tests in order to identify the best model which had completed the test and was ready to be implemented. A regression analysis was performed to determine whether the common effect model, fixed effect model, and random effect model was the best. If the probability value was smaller than α of 5%, then the fixed effect model was better than the common effect model; and vice versa. The results of Chow test show that it has a chi-square and probability value of 45.50 and 0.0000, respectively. This shows that the probability value is smaller than α of 5%, thus the results of Chow test indicate that the fixed effect model was better. Further, in comparing the common effect model and random effect model, the results of Lagrange Multiplier show that the Breusch-Pagan value is 0.000 – smaller than α of 5%, thus the random effect model was better.

Further, to obtain the best model, the fixed effect model and random effect model was compared through the Hausman test. The results show that it has a chi-square statistics of 13.03 and a probability value of 0.02%. This shows that the probability value is smaller than α of 5%, indicating that the best model out of the three was the fixed effect model. The results of panel regression can be seen in the following Table 1:

Table 1. Results of Panel Regression

Testing Criteria	Chi-sq Statistics	Prob.
Chow Test	45.502167	0.0000 < 0.0500 (FE)
LM (B-P) Test	8.297942	0.0040 < 0.0500 (RE)
Hausman Test	13.038228	0.0230 < 0.0500 (FE)

Source: Processed data.

The results of this study conclude that the fixed effect model was the best. The regression results can be seen in the following Table 2:

Table 2. Results of Fixed Effect Regression Estimation

Variable	Coefficient	t-statistics	Prob.
C	-28.62224	-0.229530	0.8191
TKD	-0.766581	-6.591594	0.0000
PAD	-2.847060	-3.863054	0.0002
PDRB	1.06E-05	0.503791	0.6159
POP	0.000216	0.625396	0.5337
IKK	1.898215	2.347298	0.0217
R-squared	0.950172	F-statistic	91.53196
Adj. R-squared	0.939792	Prob. (F-stat.)	0.000000
D-W stat.	1.558256		

Source: Processed data.

Table 2 demonstrates that the transfer to regions, Local Own-Source Revenue, and CCI all have a significant effect on the fiscal stress with α of 5%. Meanwhile, the GRDP and population do not. In addition, the classical assumption test was performed to obtain the best, consistent / linear, and unbiased estimator. The heteroscedasticity was identified using the Glesjer test. If the probability value of each independent variable is higher than α of 5%, then there was no heteroscedasticity, and vice versa. The results of Glesjer test can be seen in the following Table 3.

Table 3. Results of Glesjer Test

Variable	Prob.	Description
C	0.1180	> α of 5 %
TKD	0.4505	> α of 5 %
PAD	0.3607	> α of 5 %
PDRB	0.8164	> α of 5 %
POP	0.7684	> α of 5 %
IKK	0.4351	> α of 5 %

Source: Processed data

Table 3 confirms that heteroscedasticity was not found in all variables used in this study, since their probability values are higher than α of 5%. The collinearity matrix in the model between independent variables shows no values more than 0.80, implying that no multicollinearity existed. To identify the autocorrelation in the regression results, this study performed the Durbin Watson test and the results show that its statistical value, dL value, and dU value are 1.558, 1.5356 and 1.774, respectively.

This indicated that there was no autocorrelation in the model. Table 2 also presents the result of significance test (t-test) for individual observations, and there are three variables that significantly influence the fiscal stress. Meanwhile, the results of F-test show a probability value of 0.000, showing that all variables have an effect on the fiscal stress when combined. The R-square value of 95 indicates that the model utilized could adequately explain variances in the fiscal stress.

Determinants of Fiscal Stress in Maluku Province

As part of the territory of the Republic of Indonesia, the government of Maluku Province had implemented the regional autonomy since 2001, which certainly required financing in the governance administration. The economic equality between the districts / cities in Maluku Province was still a joint work between the provincial and district / city governments. In connection with the development in Maluku Province which continued to be promoted, the financial capacity of Maluku Province was the

main reason that showed the ability to be autonomous. Indeed, the government of Maluku Province had been given the authority by the central government to explore every potential of its region aiming to provide sources of regional revenue that could be used to finance the development expenditures for Maluku regions.

In reality, the regions with a big number of income and were independent could have a better position than those that depended on the central government funds, triggering a fiscal stress. The fiscal stress was defined as an increasing disparity / inequality between available resources and desired needs. It happened when there was a short-term imbalance between income and expenditure. According to the estimation results, the transfer to regions have a significant negative impact on the fiscal stress, implying that increasing the transfer to regions would lower the fiscal stress. In the regencies / cities in Maluku province, the average transfer to regions reached 90%, indicating a high reliance on the central government assistance in the form of transfer to regions to close the gap between the local income from own sources and local expenditure, which, if not met, would result in the fiscal stress. Skidmore & Scorsone (2011) intergovernmental transfers were such a cause of fiscal stress.

The development financing should be based on the characteristics of the region and the potential of the region. The characteristics of archipelagic regions consisting of islands, such as Maluku Province whose sea area was 92% percent larger than the land area, had an impact on the development financing that should be greater than the continental areas. In terms of regional characteristics, the fiscal stress will greatly affect infrastructure development and access to the islands. It must be acknowledged that the government had made efforts to ensure equitable development throughout Indonesia through various policies and programs, including the financial assistance to regions, such as the General Allocation Fund (Dana Alokasi Umum, DAU) and etc. The DAU was a fund sourced from the State Budget (Anggaran Pendapatan dan Belanja Negara, APBN) allocated to the regions, aiming to equalizing the financial capacity between regions to fund the regional needs in the context of implementing decentralization. The DAU was allocated in the form of a block grant, the use of which was left entirely authorized to the regional government.

On the other hand, Icih et al (2021) noted that the general allocation funds, which significantly contributed to the transfer to regions, had a substantial impact on the fiscal stress. Historically, public spending had risen in response to efforts to boost the welfare and economic growth. The transfer to regions were issued by the central government in an effort to raise the local expenditure, but the regional government used them without making the best efforts to maximize the potential of Local Own-Source Revenue. According to Shi (2019), and Kim & Warner (2020) the government's approach to the fiscal stress was to minimize the government expenditure, which could be accomplished by cutting or postponing the budget intended at meeting urgent demands. Chung & Williams (2021) and Sun et al (2022) discovered that regions with low levels of fiscal stress could improve their financial conditions more quickly than those with high levels of fiscal stress.

Further, this study finds that the Local Own-Source Revenue has a negative and significant influence on the fiscal stress, implying that an increase in the Local Own-Source Revenue reduced the fiscal stress. According to Skidmore & Scorsone (2011), the regions with poor tax income growth tended to face severe fiscal stress. The ability of regencies/cities in Maluku province to discover and enhance the Local Own-Source Revenue was still poor, as evidenced by their Local Own-Source Revenue contribution of roughly 5%. This inverse relationship demonstrated that the regency/city government could increse its Local Own-Source Revenue through the taxes and levies.

This could also be done by creating a favorable economic climate by offering incentives and convenience to economic actors, as well as developing policies that boosted the interest in the business world by streamlining administrative procedures. The government used tax diversifications to improve the revenue collection. The carbon tax was one of the tax diversifications that several governments had implemented. Apart from reducing air pollution caused by carbon emissions, it might also induce an increase in the government revenue. According to Shamsub & Akoto (2004), it was critical to diversify the income sources so that the income could be increased by reducing the aggregate consumption, hence minimizing gaps that caused the fiscal stress (Nurhayati, 2020; Rupilu et al., 2023;

Syifa et al., 2021) revealed that the local income from own sources had an effect on the fiscal stress in the regions where their revenue was low and had an impact on the regional government attempts to close the local expenditure gaps.

Furthermore, this study also finds that the CCI has a positive and significant effect on the fiscal stress. This indicated that the higher the CCI, the higher the fiscal stress. The ratio of CCI in the regencies / cities in Maluku province was higher than the national avergae, which was due not only to the type of building and heavy equipment utilized, but also to the topographical characteristics of the regions. Maluku province could be described geographically as a tough island in terms of accessibility and mobility, necessitating additional work and funding. According to Hahury et al (2020), This condition had an impact on boosting the regional government expenditure in developing their regions in accordance with the national strategic goals in order to reduce regional inequality, increase regional equality, reduce regional financial inequality, and improve community services.

CONCLUSIONS

The panel regression results of this study confirm that the transfer to regions, local income from own sources, and CCI all have an impact on the fiscal stress in the regencies / cities in Maluku province. The transfer to regions dominated by the general allocation funds have a significant impact on the percentage of local expenditure because they filled the gaps in it. The decrease in the Local Own-Source Revenue contributed to increased fiscal stress. Meanwhile, the CCI was the indicator that the government should pay attention to, because it could put pressure on rising the fiscal stress which occured when the government expenditure exceeded the regional income.

Implications of this research show that the government of Maluku Province must be able to take strategic steps in an effort to increase the local revenue by optimizing the economic potential of the region, especially through the enactment of Law Number 1 of 2022. In addition, the central government also needs to pay attention to the provision of financial assistance to the regions, not only based on the number of inhabitants with a large land area, but also need to consider the regions that have a larger sea area than the land area. These regions have faced the main problem of limited access to transportation, which can trigger an extreme increase in the prices of goods. For this reason, the implementation of regional finance between the continental and archipelagic regions must be considered in the future.

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