



Social Transfers and Fiscal Resilience in Resource-Dependent Regions: Dynamic Evidence from Indonesia's Nickel Economy

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Abstract

Fiscal capacity in natural resource-dependent regions is often constrained by fiscal persistence, structural inequality, and economic shocks. This study examines whether social assistance strengthens local fiscal capacity through local tax revenue while controlling for inflation and fiscal persistence. Using balanced panel data from 17 districts/municipalities in Southeast Sulawesi, Indonesia, for 2014–2023, the study applies two-step System GMM with Windmeijer-corrected standard errors to address dynamic persistence and potential endogeneity. The final estimation comprises 136 observations and 12 internal instruments. The results show that lagged local tax revenue positively and significantly affects current tax revenue ($\beta = 0.3401$; $p < 0.001$), confirming fiscal persistence. Social assistance also has a positive and significant association with local tax revenue ($\beta = 0.0706$; $p = 0.0186$), suggesting that social transfers may strengthen fiscal capacity through household purchasing power and local economic activity. Inflation is positively associated with local tax revenue ($\beta = 0.0524$; $p = 0.0086$), indicating nominal expansion of the tax base rather than necessarily improved real fiscal capacity. The study contributes by conceptualizing social assistance as a potential component of fiscal resilience, with implications for integrating social protection, local economic development, and tax administration in resource-dependent regions.

A. Introduction

Rapid economic growth does not necessarily produce resilient local public finances, particularly when regional economies depend heavily on extractive industries. Fiscal resilience is fundamental to sustaining regional development and ensuring effective public-service delivery (Besley & Persson, 2014; J. Song et al., 2025). Targeted local policies can reduce regional disparities and strengthen economic cohesion (Distor & Khaltar, 2022; Grbić, 2026). Within this process, local tax revenue strengthens fiscal autonomy and provides resources for improving public governance amid economic uncertainty (Kluza & Wójtowicz, 2025; Pandoyo, 2024). Its sustainability, however, becomes more difficult when fiscal performance is exposed to commodity cycles and structural economic shocks (Sakar et al., 2025; Umar et al., 2019). Resource-dependent regions therefore face the challenge of sustaining revenue capacity while managing the vulnerabilities generated by their underlying economic structure (Zainuri et al., 2025; Besley & Persson, 2014).

Indonesia's fiscal decentralization system makes local tax revenue a crucial component of Locally-Generated Revenue. Under Law Number 1 of 2022, local taxation is closely connected to economic activities and transactions generated within regional economies. Consequently, the strength of the local tax base depends partly on economic structure and the capacity of local governments to administer taxation effectively, while institutional and governance conditions can substantially influence tax performance (Arif & Ahmad, 2020; Ervina et al., 2025). Fiscal resilience therefore requires more than formal taxation authority; it also depends on sustainable economic transactions and institutional capacity to translate economic activity into revenue (Pal, 2023; W. Song & Zhao, 2024; Wardatun, 2024). This relationship becomes particularly important where extractive-driven growth expands economic activity without necessarily creating stable and broadly distributed local fiscal capacity.

This tension creates a fundamental fiscal paradox in resource-dependent economies. On the one hand, natural-resource development can generate economic activity, employment, investment, and regional revenue. On the other hand, dependence on extractive industries can increase exposure to external shocks and produce uneven patterns of regional development (Ville & Wicken, 2013; Muhamad et al., 2020). Resource-based revenues can consequently remain vulnerable to external shocks and commodity volatility despite substantial economic activity (Alemu et al., 2025; Rezki Akbar Norrahman, 2024). Fiscal vulnerability may therefore persist during periods of rapid commodity-

This fiscal paradox is particularly relevant to Indonesia's nickel-producing regions, especially Southeast Sulawesi, where economic transformation has been closely associated with nickel mining and industrial downstreaming. The region provides an important empirical context because resource-driven economic expansion must be translated into sustainable local revenue across areas with different economic structures and fiscal capacities. In such a setting, resource abundance alone cannot guarantee fiscal resilience; its fiscal significance depends on whether extractive activity generates broader local economic linkages, supports taxable transactions, and strengthens the capacity of local governments to sustain revenue over time (Pal, 2023; W. Song & Zhao, 2024). Southeast Sulawesi therefore provides a relevant setting for examining how fiscal resilience can be maintained within a regional economy shaped by intensive resource-based development.

Macroeconomic conditions may further shape this relationship between social assistance and fiscal resilience. Inflation is particularly relevant because changes in the general price level can affect household purchasing power, business transactions, and

both the nominal and real performance of tax revenue. Although inflation may erode the real value of government revenue, empirical evidence indicates that its relationship with tax performance varies across economic contexts and over time (Serin & Demir, 2025; Garg et al., 2025). More broadly, tax performance is shaped by macroeconomic and institutional conditions rather than by price movements alone (Bati, 2025; Dabla-Norris & Lima, 2023), while fiscal outcomes in resource-dependent economies may also be exposed to commodity-price volatility (Majumder et al., 2022; Pappas & Boukas, 2025). Inflation is therefore considered here not as an isolated determinant of fiscal resilience, but as an important macroeconomic condition when examining the relationship between social assistance and local tax revenue.

Existing studies have examined the determinants of fiscal capacity from several perspectives, but the relevant evidence remains fragmented. Research on regional taxation emphasizes the importance of economic structure, institutional quality, governance, and administrative capacity in shaping tax performance (Arif & Ahmad, 2020; Ervina et al., 2025; Pal, 2023; W. Song & Zhao, 2024). Studies of resource-dependent economies, meanwhile, highlight commodity-price volatility, structural vulnerability, and uneven development as major constraints on sustainable fiscal performance (Alemu et al., 2025; Arellano-Yanguas, 2019; Muhamad et al., 2020; Ville & Wicken, 2013). A separate body of scholarship examines social assistance primarily through poverty reduction, redistribution, household welfare, and consumption, with comparatively limited attention to its relationship with local revenue capacity (Barrientos, 2012; Hanna & Olken, 2018; Balasoiiu et al., 2023; Guo & Gong, 2024). These strands of research provide important explanations of fiscal capacity, resource dependence, and social protection. However, they have rarely been brought together to explain whether social assistance is systematically associated with fiscal capacity within resource-dependent regional economies.

Despite these advances, an important gap remains in understanding the relationship between social assistance and fiscal capacity in resource-dependent regions. Conceptually, social assistance continues to be treated predominantly as redistributive expenditure, while its potential relationship with local fiscal capacity through household purchasing power and local economic circulation remains insufficiently examined. Contextually, research on resource-dependent economies has focused largely on commodity volatility, structural vulnerability, and uneven development, with limited attention to how social policy may relate to subnational revenue capacity. Methodologically,

the persistence of local tax revenue and the potential endogeneity between fiscal variables also complicate this relationship, yet these dynamic characteristics are not always adequately addressed in static empirical models (Fan & Shi, 2025; Panzaru et al., 2025). Consequently, it remains unclear whether social assistance is associated with local tax revenue after fiscal persistence and relevant macroeconomic conditions are taken into account.

To address this gap, this study connects social protection with fiscal-capacity formation within the dynamic fiscal structure of a resource-dependent regional economy. Its novelty lies in examining social assistance not only as redistributive expenditure but also as a fiscal variable whose relationship with local tax revenue can be assessed after accounting for revenue persistence and macroeconomic conditions. In this way, the study brings together three dimensions that have largely developed separately in previous research: social protection, resource-dependent fiscal vulnerability, and dynamic local fiscal capacity. Southeast Sulawesi provides the empirical setting for testing this relationship within a nickel-dependent regional economy characterized by substantial differences in local economic structures and fiscal capacities.

Accordingly, this study aims to examine the relationship between social assistance and local fiscal capacity in a resource-dependent regional economy after accounting for fiscal persistence and inflation. Using panel data from 17 districts and municipalities in Southeast Sulawesi during 2014–2023 and a dynamic Generalized Method of Moments (GMM) approach, the study assesses whether social assistance is systematically associated with local tax revenue while controlling for previous tax performance and macroeconomic conditions. Through this analysis, the study seeks to clarify whether social transfers have fiscal relevance beyond their conventional redistributive function and to contribute to a broader understanding of fiscal resilience in resource-dependent regions.

B. Method

This study employed a quantitative approach using secondary panel data from 17 districts/municipalities in Southeast Sulawesi Province for 2014–2023 ($N = 17$, $T = 10$) (Creswell & Creswell, 2018; Plonsky, 2019; Silver & Upenieks, 2021). The 2024 observations were excluded because verification against the Budget Realization Report of *Bapenda* Southeast Sulawesi showed that the available figures did not represent a complete fiscal-year realization and were therefore not comparable with earlier years. The resulting balanced dataset comprised 170 observations. Data were obtained from the Regional

Revenue Agency (*Badan Pendapatan Daerah*) of Southeast Sulawesi Province and the relevant *Southeast Sulawesi Province in Figures* publications issued by Statistics Indonesia (*Badan Pusat Statistik/BPS*). Data preparation included formatting, unit-consistency, and completeness checks. Inflation data for 2019–2023 were converted from decimal to percentage form ($\times 100$) to ensure consistency with the 2014–2018 series, and no missing values were identified. Because the dynamic model incorporates the first lag of the dependent variable and corresponding instrument requirements, the final estimation sample consisted of 136 observations.

Local Tax Revenue (Y) and Social Assistance (X1) were transformed into natural logarithms to reduce scale differences and right-skewness and to facilitate proportional interpretation. Because both variables contained zero-valued observations in the early years, a floor value of 0.01 was applied before transformation: $LN_Y = \ln[\max(\text{Tax Revenue}, 0.01)]$ and $LN_X1 = \ln[\max(\text{Social Assistance}, 0.01)]$. Consequently, the estimated coefficients are interpreted as proportional associations rather than unconditionally as conventional elasticities. Inflation (X2) remained untransformed because it was expressed in percentage units and included negative values representing deflation. Local tax revenue represents regionally administered taxes whose bases are closely associated with household consumption and local business activity, providing the institutional basis for examining its relationship with social assistance.

The principal analysis used the two-step System GMM estimator of Blundell and Bond (1998), with Windmeijer (2005) finite-sample-corrected standard errors. System GMM was selected because the model incorporates a lagged dependent variable, potential endogeneity between social assistance and local tax revenue, and unobserved individual effects in a short-T panel where N (17) exceeds T (10) (Arellano & Bover, 1995; Blundell & Bond, 1998; Bun & Windmeijer, 2010; Roodman, 2009). Internal instruments were constructed from the second to ninth lags of the dependent variable and collapsed following Roodman (2009) to limit instrument proliferation and keep the number of instruments below the number of cross-sectional units. Estimation was performed in Python using *pydynpd*. Model validity was evaluated using the Arellano–Bond serial-correlation tests and the Hansen test of overidentifying restrictions (Hansen, 2012; Windmeijer, 2005). Significant AR (1) is expected after first differencing, whereas failure to reject AR (2) is consistent with the absence of second-order serial correlation. Failure to reject the Hansen null is interpreted cautiously as evidence consistent with the validity of the specified moment conditions rather than definitive proof of instrument validity.

This study adhered to research ethics by using aggregated secondary data obtained from official public institutions, namely the Regional Revenue Agency of Southeast Sulawesi Province and Statistics Indonesia (BPS). The data contained no personally identifiable information and involved no direct human participation. Therefore, formal human-subject ethical clearance and informed consent were not applicable to this study.

C. Results and Discussion

This section presents the empirical findings from 17 districts/ municipalities in Southeast Sulawesi for 2014–2023, including descriptive statistics, regional heterogeneity, System GMM estimates, and diagnostic tests. The findings are subsequently interpreted in relation to theory, previous studies, and their broader implications.

1. Results

The average local tax revenue across the sample is IDR 17.56 billion, with a standard deviation of 30.61 ($N = 170$), reflecting substantial dispersion across districts (Table 1). The magnitude of the standard deviation indicates considerable variation in local tax revenue within the observed sample, which is also reflected in the wide range of values, from IDR 0.00 billion to IDR 193.04 billion.

Table 1. Descriptive Statistics of Original Data (2014–2023, $N = 170$)

Variable	Mean	Std. Dev	Min	Max
Local Tax Revenue (Billion IDR)	17.56	30.61	0.00	193.04
Social Assistance (Billion IDR)	2.06	2.97	0.00	14.81
Inflation (%)	3.95	2.11	-0.09	11.39

The average tax revenue rose from IDR 13.28 billion in 2014 to IDR 26.00 billion in 2023, peaking at IDR 29.00 billion in 2022 (Table 2), broadly tracking the inflation spike of that year.

Table 2. Annual Averages of Tax Revenue, Social Assistance, and Inflation (2014–2023)

Year	Tax Revenue (Bn IDR)	Social Assistance (Bn IDR)	Inflation (%)
2014	13.28	3.11	4.78
2015	15.58	3.66	5.97
2016	10.99	0.75	3.99
2017	13.62	1.88	3.51
2018	14.07	1.50	3.06

Year	Tax Revenue (Bn IDR)	Social Assistance (Bn IDR)	Inflation (%)
2019	16.26	1.60	2.67
2020	17.20	1.44	1.20
2021	19.56	1.59	2.39
2022	29.00	3.00	6.59
2023	26.00	2.05	5.34

Table 3 shows that all pairwise correlations remain below 0.80, indicating no serious multicollinearity concern; tax revenue is significantly and positively correlated with both social assistance ($r = 0.3445$, $p < 0.01$) and inflation ($r = 0.2788$, $p < 0.01$).

Table 3. Correlation Matrix of Variables (N=170)

Variable	LN_Y (Tax)	LN_X1 (Social Assistance)	X2 (Inflation)
LN_Y (Tax)	1.0000	–	–
LN_X1 (Social Assistance)	0.3445***	1.0000	–
X2 (Inflation)	0.2788***	0.3618***	1.0000

Note: *** $p < 0.01$. All correlation coefficients are below 0.80 (no indication of multicollinearity).

Table 4. Descriptive Statistics of Data After Transformation and Centering (N = 170)

Variable	Mean	Std. Dev	Min	Max
LN_Y Centered	0.0000	0.8899	-5.2350	1.6141
LN_X1 Centered	0.0000	2.2628	-4.8239	5.5374
X2 Centered	0.0000	2.0565	-4.6150	6.5300

Table 4 reports the same variables after logarithmic transformation and grand-mean centering, which recenters each series at zero prior to interaction and GMM estimation.

Table 5 decomposes total variance into between- and within-region components. For local tax revenue, 68.3% of total variance occurs between regions and 31.7% within regions over time, whereas social assistance (70.8%) and inflation (95.2%) vary predominantly within regions across years because the resulting variance-difference matrix was not positive definite, a condition common in short-T panels ($T = 9$) relative to the number of parameters; the formal Hausman test statistic could not be computed.

Table 5. Variance Decomposition of Panel Data (N = 170)

Source of Variation	Tax Revenue (LN_Y)	Social Assistance (LN_X1)	Inflation (X2)
Between (across region)	68.3%	29.2%	4.8%
Within (across time)	31.7%	70.8%	95.2%
Total Variance	100%	100%	100%

Table 6 groups districts into four regional typologies. The disparity in average tax revenue between urban-mining regions and archipelagic districts reaches 12.95-fold (IDR 62.17 billion versus IDR 4.80 billion), the largest gap in the sample.

Table 6. Heterogeneity Characteristics by Regional Economic Typology (2014–2023)

Region Category	N	Mean Tax (Bn IDR)	Mean Social Assistance (Bn IDR)	Mean Inflation (%)
Urban-Mining	3	62.17	3.98	4.20
Mining District	5	14.61	1.98	3.99
Agrarian District	6	4.08	1.01	3.88
Archipelagic District	3	4.80	2.38	3.77

Table 7 presents the two-step System GMM estimates. All three coefficients lagged tax revenue, social assistance, and inflation are statistically significant at the 1%, 5%, and 1% levels, respectively.

Table 7. System GMM Estimation Results (Blundell-Bond, Two-Step; N = 136, 17 groups, 12 instruments)

Variable	Symbol	Coefficient (β)	Std. Error	z-Statistic	P-Value	Sig.
Constant	α	1.3193	0.2770	4.762	<0.0001	***
LN_Y(t-1)	β_1	0.3401	0.0327	10.387	<0.0001	***
LN_X1 (Social Assistance)	β_2	0.0706	0.0300	2.354	0.0186	**
X2 (Inflation, %)	β_3	0.0524	0.0200	2.627	0.0086	***

Because dynamic GMM estimators do not produce a conventional R^2 statistic as in OLS, model fit here is evaluated through the Hansen test (instrument validity, Table 9) and the AR (2) test (no autocorrelation, Table 8), both of which yield valid results. As a supplementary check, the correlation between predicted and actual LN_Y values in the estimation sample corresponds to a non-formal coefficient of determination of approximately 0.30–0.35, consistent with the within-variance proportion of local tax revenue (31.7%, Table 5), which theoretically limits the predictive capacity of a purely time-varying dynamic model. In economic terms, the social assistance coefficient ($\beta = 0.0706$) implies that a 10% increase in social assistance is associated with roughly a 0.7% increase in tax revenue, about IDR 123 million per district/municipality at the sample's average tax revenue (IDR 17.56 billion) for each 10% increase in social assistance. The inflation coefficient ($\beta = 0.0524$) indicates that a one-percentage-point rise in inflation is associated with approximately a 5.2% increase in tax revenue, an economically substantial magnitude given that average inflation in the sample is only 3.95%.

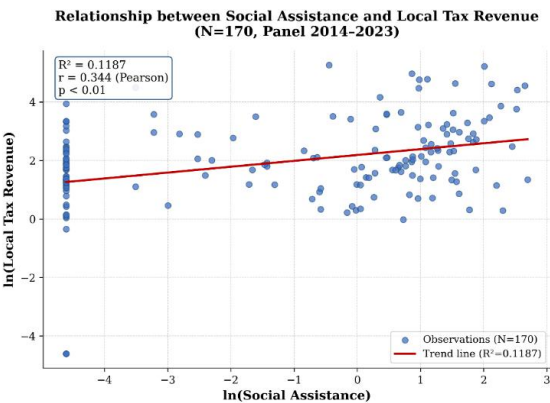


Figure 1. Relationship between Social Assistance and Tax Revenue

Note: The scatter plot shows a positive relationship between $\ln$ (Social Assistance) and $\ln$ (Local Tax Revenue), $N = 170$. The trend line has $R^2 = 0.1187$, consistent with the Pearson correlation reported in Table 3 ($r = 0.345$, $p < 0.01$), since $R^2 = r^2$; R^2 here refers to the variation explained by the simple linear regression line, while r measures the strength and direction of the linear relationship.

Table 8 reports the Arellano-Bond autocorrelation tests. The significant AR (1) result ($p = 0.005$) is mechanically expected under first-differencing and does not indicate misspecification; the decisive test for model validity is AR (2), whose p -value of 0.794 (well above 0.05) confirms the absence of second-order autocorrelation and validates the model's instruments.

Table 8. Arellano-Bond AR (1) and AR (2) Tests

Statistic		AR (1)	AR (2)
z-value	-2.83		0.26
P-Value	0.005		0.794
Conclusion	Significant (as theoretically expected)		VALID ($p > 0.05$, no second-order autocorrelation)

The Hansen test (Table 9) yields a p -value of 0.118, within Roodman's (2009) recommended 0.10–0.25 range, and the ratio of instruments to groups (12:17) remains within accepted thresholds for small- N dynamic GMM panels.

Table 9. Hansen Test (Overidentifying Restrictions)

Statistic		Value
Chi-square (df=8)	12.818	
P-Value	0.118	
Conclusion	VALID ($0.05 < p < 0.25$, instruments neither overidentified nor excessive)	

Because narrowing the observation period to 2014–2023 leaves insufficient degrees of freedom for a formal pre- versus post-pandemic split, a sensitivity test across instrument lag ranges (Table 10) is presented instead as a robustness check. The 2:9 specification was retained as the main model because it produces the most ideal Hansen p-value (0.10–0.25); coefficient magnitudes vary modestly across lag ranges, but their direction and significance remain stable.

Table 10. Coefficient Comparison Across Different Instrument Lag Ranges (Collapsed GMM)

Lag Range	N Instruments	LN_Y (t-1)	LN_X1 (Social Assistance)	X2 (Inflation)	Hansen p-value
2:9 (main model)	12	0.340***	0.071**	0.052***	0.118
2:5	8	0.408***	0.060*	0.076**	0.036
2:4	7	0.426***	0.054(*)	0.080***	0.020
2:3	6	0.366***	0.057(*)	0.071**	0.008

Standardized-residual analysis from a Fixed Effects model (N = 136, used only as a comparison model for outlier detection) shows 9 observations (5.9%) with $|\text{standardized residual}| > 2$ standard deviations, and 3 observations (2.0%) with $|\text{standardized residual}| > 3$ standard deviations, indicating a modest and non-alarming presence of outliers.

2. Discussion

The findings reveal that fiscal resilience in Southeast Sulawesi is shaped less by the presence of resource-driven growth itself than by the capacity of regional economies to transform that growth into durable local revenue. The substantial disparity in tax revenue across regional typologies, together with the persistence of previous tax performance, suggests that fiscal capacity is historically accumulated and structurally embedded. This reflects fiscal path dependence, whereby established economic structures and institutional capacity continue to condition subsequent revenue performance (Besley & Persson, 2014; Khamim et al., 2025). The 12.95-fold difference in average tax revenue between urban-mining and archipelagic regions makes this structural inequality particularly visible. Resource abundance can generate economic expansion without producing equally strong fiscal outcomes across territories, especially where the capacity to capture taxable economic activity differs substantially between regions. Fiscal resilience, therefore, cannot be inferred from economic growth or resource endowment alone.

This interpretation deepens existing arguments that resource-dependent fiscal systems remain vulnerable to external shocks and commodity volatility (Adinugraha et

al., 2024; Alemu et al., 2025; Norrahrman, 2024). The Southeast Sulawesi evidence indicates that the problem is not limited to volatility: resource-driven development can also reproduce spatially unequal fiscal capacity. Differences in tax performance reflect economic structure, governance quality, administrative capacity, and the breadth of locally taxable activity (Arif & Ahmad, 2020; Ervina et al., 2025; Pal, 2023; W. Song & Zhao, 2024). This helps explain why urban-mining areas can capture substantially greater fiscal benefits than peripheral regions even within the same resource-dependent provincial economy. The finding also resonates with evidence that natural-resource development does not automatically generate balanced economic transformation (Muhamad et al., 2020; Ville & Wicken, 2013). What matters fiscally is how deeply extractive activity becomes connected to the wider regional economy.

The persistence of local tax revenue reinforces this structural interpretation. Current fiscal performance remains significantly conditioned by previous revenue capacity, indicating that regional fiscal systems do not adjust independently from their historical trajectories. Developing-country tax systems frequently exhibit inertia because narrow tax bases, administrative constraints, and institutional structures limit rapid fiscal adjustment (Huweish et al., 2025; Fan & Shi, 2025; Panzaru et al., 2025). In Southeast Sulawesi, this persistence operates alongside pronounced territorial inequality, implying that path dependence can reproduce both fiscal strength and fiscal weakness. Regions already supported by broader economic activity and stronger revenue capacity may sustain that advantage, whereas regions with narrower tax bases face greater difficulty moving toward stronger fiscal positions. Fiscal resilience consequently requires more than short-term revenue mobilization; it depends on whether regional economic and institutional structures progressively broaden the activities from which sustainable local revenue can be generated.

Against this background, the positive association between social assistance and local tax revenue becomes particularly meaningful. Social transfers have conventionally been discussed through poverty reduction, redistribution, welfare, and inequality, rather than through their possible relationship with subnational revenue formation (Barrientos, 2012; Hanna & Olken, 2018). Previous evidence nevertheless indicates that redistribution can influence consumption, economic participation, and welfare outcomes (Balasoïu et al., 2023; Guo & Gong, 2024; Jung et al., 2015; Li et al., 2024; Marfiana et al., 2024). The present finding brings these debates closer to fiscal-capacity analysis. The positive association

suggests that transfers may have fiscal relevance when additional household purchasing power circulates through local economic activity connected to taxable transactions. This does not change the primary social-protection function of assistance. However, it suggests that redistribution and revenue formation need not be analytically separated as completely as conventional fiscal classifications imply.

The estimated relationship should nevertheless be interpreted as an association rather than direct evidence of a household consumption-to-tax causal mechanism. The aggregated regional data do not trace individual transfer recipients, their consumption decisions, or the specific transactions through which expenditure becomes local tax revenue. Even so, a local-demand mechanism is economically plausible because transfers can sustain purchasing power and economic circulation, particularly where household expenditure interacts with locally administered tax bases. This interpretation complements evidence that taxation and social expenditure jointly shape efficiency, distribution, and welfare outcomes (Alinaghi & Reed, 2021; Anjarwi, 2025; Benkejjane et al., 2024; Bratta et al., 2025). The important conceptual implication is therefore not that social assistance “pays for itself,” but that social protection may have fiscal spillovers when the economic activity supported by transfers becomes connected to the local taxable base.

This changes how the fiscal role of social assistance can be understood in resource-dependent regions. Rather than conceptualizing transfers exclusively as redistributive expenditure, the findings support a broader view in which social assistance may become a potentially productive component of fiscal resilience when it sustains local economic circulation. Such a proposition extends, rather than rejects, the welfare-centered understanding of social protection developed by Barrientos (2012) and Hanna and Olken (2018). Its significance lies in connecting the social objective of protecting household purchasing power with the fiscal conditions under which local revenue is generated. This connection is especially relevant where extractive growth produces uneven economic opportunities. Social protection can support participation in local economic activity, but whether this translates into fiscal capacity depends on the economic and institutional environment through which transfers circulate.

The differences among urban-mining, mining, agrarian, and archipelagic regions make that qualification essential. The same level of social assistance need not generate equivalent fiscal implications across territories because household spending patterns, business density, economic formalization, taxable activities, and tax-administration

capacity differ. Spatial disparities documented in other settings similarly demonstrate that economic gains and institutional capacities are unevenly distributed across regions (Dragos et al., 2025; Kerrouche & Zehri, 2025; Zhang et al., 2025). In Southeast Sulawesi, this means that the fiscal relevance of social transfers cannot be separated from regional economic structure. The contribution of the findings therefore goes beyond identifying a positive social-assistance coefficient. It shows that social protection can be located within a dynamic fiscal-resilience process in which redistribution, local economic circulation, territorial structure, and revenue capacity interact rather than operate as independent policy domains.

The positive association between inflation and local tax revenue adds another layer to this interpretation. Inflation can raise the nominal value of economic transactions and consequently the nominal value of tax receipts, but this should not be equated with stronger real fiscal capacity. Economic theory emphasizes that inflation can erode the real value of government revenue (Serin & Demir, 2025), whereas empirical evidence shows that its effects on taxation differ across tax structures and time horizons (Garg et al., 2025). The Southeast Sulawesi finding therefore does not imply that inflation is fiscally beneficial. Instead, it demonstrates the importance of distinguishing nominal revenue expansion from the real capacity of local governments to finance public goods and services. Higher nominal tax receipts can coexist with declining purchasing power, meaning that fiscal resilience cannot be assessed adequately through nominal revenue growth alone.

This distinction becomes more consequential in a resource-dependent economy because inflation operates alongside other macroeconomic and commodity-related pressures. Tax performance is conditioned by macroeconomic circumstances, economic structure, and institutional quality (Bati, 2025; Dabla-Norris & Lima, 2023; Dewi et al., 2025), while commodity-price volatility can exert substantial influence over fiscal outcomes in resource-dependent settings (Majumder et al., 2022; Pappas & Boukas, 2025). Fiscal persistence, social assistance, and inflation should therefore not be read as isolated statistical relationships. Together, they reveal a fiscal system in which inherited revenue capacity interacts with policy-supported economic activity and changing macroeconomic conditions. This perspective shifts attention away from the assumption that stronger resource-based growth will automatically strengthen public finances and toward the institutional and economic processes through which growth, consumption,

and transactions are ultimately converted into sustainable local revenue (Mukhlishin et al., 2023; Hakim et al., 2025).

This broader interpretation has important policies and social implications. Social assistance should not be redesigned primarily as an instrument for increasing tax revenue, because its fundamental purpose remains social protection. Nevertheless, treating social expenditure, local economic development, and revenue administration as completely separate policy domains may overlook their economic interdependence. Where transfers sustain household purchasing power, stronger local economic linkages can allow part of that expenditure to circulate within regional markets; where tax administration can capture expanding taxable activity, this circulation may contribute indirectly to fiscal capacity. Fiscal resilience therefore requires coordination rather than substitution between social protection and revenue policy. It also requires economic diversification and stronger local linkages so that the fiscal benefits of resource-driven development extend beyond urban-mining centers and contribute to a broader regional revenue base (Zainuri et al., 2025; Pandoyo, 2024).

The implications extend beyond Southeast Sulawesi because many resource-dependent regions in developing economies confront a similar combination of commodity exposure, territorial inequality, narrow local tax bases, and decentralized fiscal responsibilities. The findings do not imply that the same magnitude of association will occur elsewhere, but they identify a mechanism of broader analytical relevance: resource wealth becomes fiscally resilient only when economic activity circulates through institutions and markets capable of generating durable public revenue. This perspective complements research showing that fiscal decentralization, public services, governance, and local institutional capacity shape economic and fiscal outcomes (Distor & Khaltar, 2022; J. Song et al., 2025; Kluza & Wójtowicz, 2025; Umar et al., 2019; Karimzadeh, 2026). For resource-dependent regions internationally, the central policy challenge is therefore not simply to capture resource revenues, but to build diversified local economies and fiscal institutions capable of converting temporary resource prosperity into sustainable public capacity.

Seen from this perspective, the study connects debates that are often treated separately: resource dependence, social protection, and subnational fiscal capacity. Its contribution lies in showing that fiscal resilience emerges from their interaction rather than from any single fiscal instrument. Resource-driven growth can enlarge economic

opportunities without eliminating territorial fiscal inequality; historical revenue capacity can reproduce existing advantages and disadvantages; social transfers may sustain economic circulation without automatically generating tax revenue; and nominal revenue expansion under inflation need not represent stronger real fiscal capacity. These relationships collectively challenge a narrow understanding of fiscal resilience as simply the ability to collect more revenue. A more substantive conception concerns whether regional institutions can transform economic activity into a stable, sufficiently broad, and socially sustainable revenue base capable of supporting public services through changing economic conditions.

This study nevertheless has several limitations that define the boundaries within which these relationships should be interpreted. The analysis covers 17 districts/municipalities within a single province, so the findings cannot be generalized directly to resource-dependent regions with different institutional and economic structures. The model does not directly incorporate international nickel prices, regional investment, employment, household income, intergovernmental transfers, tax compliance, governance quality, or the informal economy. Although two-step System GMM addresses fiscal persistence and potential endogeneity, the estimates remain conditional on the specified moment conditions and internal instruments, and residual endogeneity or omitted-variable bias cannot be entirely excluded. Aggregated regional data also prevent direct observation of the household-level pathway linking social assistance, consumption, and tax payments, while the 2014–2023 period provides limited degrees of freedom for formally identifying differential pre- and post-pandemic effects. These limitations establish appropriate boundaries for interpreting the study's empirical contribution.

D. Conclusion

This study concludes that fiscal resilience in resource-dependent regions is shaped not simply by the availability of natural resources or the economic growth they generate, but by the capacity of regional fiscal systems to transform economic activity into a stable and sustainable revenue base. Evidence from Southeast Sulawesi demonstrates that local fiscal capacity is persistent over time and remains structurally uneven across regional economic typologies. Within this context, the positive association between social assistance and local tax revenue indicates that social protection may have

fiscal relevance beyond its conventional redistributive function. Inflation is also associated with nominal tax revenue, although this relationship should not be interpreted as an improvement in real fiscal capacity. Taken together, these findings show that fiscal resilience emerges from the interaction of historical revenue capacity, regional economic structure, social policy, and macroeconomic conditions rather than from resource-driven growth alone.

The principal contribution of this study is to bring social protection and fiscal-capacity formation into a common analytical framework. Rather than treating social assistance exclusively as expenditure for redistribution, the study demonstrates its potential relevance to fiscal resilience when transfers support household purchasing power and local economic circulation connected to the taxable economic base. This perspective extends the understanding of fiscal resilience by emphasizing that the sustainability of local revenue depends not only on revenue collection but also on the economic processes that sustain taxable activity. Methodologically, the dynamic System GMM framework further demonstrates the importance of accounting for fiscal persistence and potential endogeneity when examining regional tax performance. From a policy perspective, the findings imply that social protection, local economic development, and tax administration should be approached as complementary components of fiscal strategy, particularly where resource-based growth produces substantial territorial disparities.

The limitations identified in this study also establish a focused agenda for further research. Future studies should examine whether the observed relationship remains robust across other resource-dependent provinces and countries and explicitly incorporate international commodity-price movements, regional investment, employment, household income, intergovernmental transfers, institutional quality, tax compliance, and informal economic activity. Household-level or linked micro-regional data are particularly needed to test directly whether social assistance influences local tax capacity through consumption and taxable transactions. Comparative designs could further establish whether this mechanism varies across mining, agrarian, archipelagic, and other economic structures, while longer time series would allow more rigorous assessment of major economic shocks and structural changes.

Ultimately, the central lesson is that resource wealth becomes fiscally meaningful only when regional economies and institutions can convert economic

activity into durable and broadly distributed fiscal capacity. Social protection may contribute to that process, but its fiscal potential depends on the economic and institutional environment through which transfers circulate. Building resilient resource-dependent regions therefore requires moving beyond the pursuit of resource-driven growth toward the creation of fiscal systems capable of transforming economic prosperity into sustainable public capacity.

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Declaration of Competing Interest

The authors declare that they have no known competing financial or non-financial interests that could have appeared to influence the work reported in this paper.

Declaration of Generative AI Use

During the preparation of this manuscript, the authors used generative artificial intelligence tools solely to assist with language refinement, grammatical correction, and improving the clarity and readability of the text. The AI tools were not used to generate research data, conduct data analysis, interpret the findings, formulate the research conclusions, or create the substantive scientific content of the manuscript. All AI-assisted outputs were carefully reviewed, verified, and revised by the authors, who take full responsibility for the accuracy, originality, integrity, and final content of the manuscript.

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