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Vertical Fiscal Balance and Local Fiscal Discipline in Indonesia

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ABSTRACT

Fiscal discipline is the key value to manage public finance. In term of local government, maintaining fiscal discipline can improve basic services and public confidence provision. The research purpose is to give an input for the government to determine regional expansion policy. The analysis applies fixed effect model to analyze the relationship between vertical fiscal balance and local fiscal discipline in 491 districts/cities in Indonesia for 2010 to 2020. This study found the indication that the lower vertical fiscal balance, the lower the fiscal discipline of the district/city governments to collect local taxes, so regional development highly depends on intergovernmental transfer. The results indicate that the increase of vertical fiscal balance will increase local fiscal discipline. In addition to be driven by a vertical fiscal balance, local fiscal discipline increase is also driven by population density increase, the tertiary sector share, and Gross Regional Domestic Product per capita. It is important for the governments to consider vertical fiscal balance, population density, the share of the tertiary sector, and GRDP per capita, as variables to approve proposed regional expansion so that each regional expansion results in optimal public services.

Keywords: Vertical Fiscal Imbalance, Local Own-Source Revenue, Population Density, Tertiary Sector Share, Gross Domestic Regional Product.

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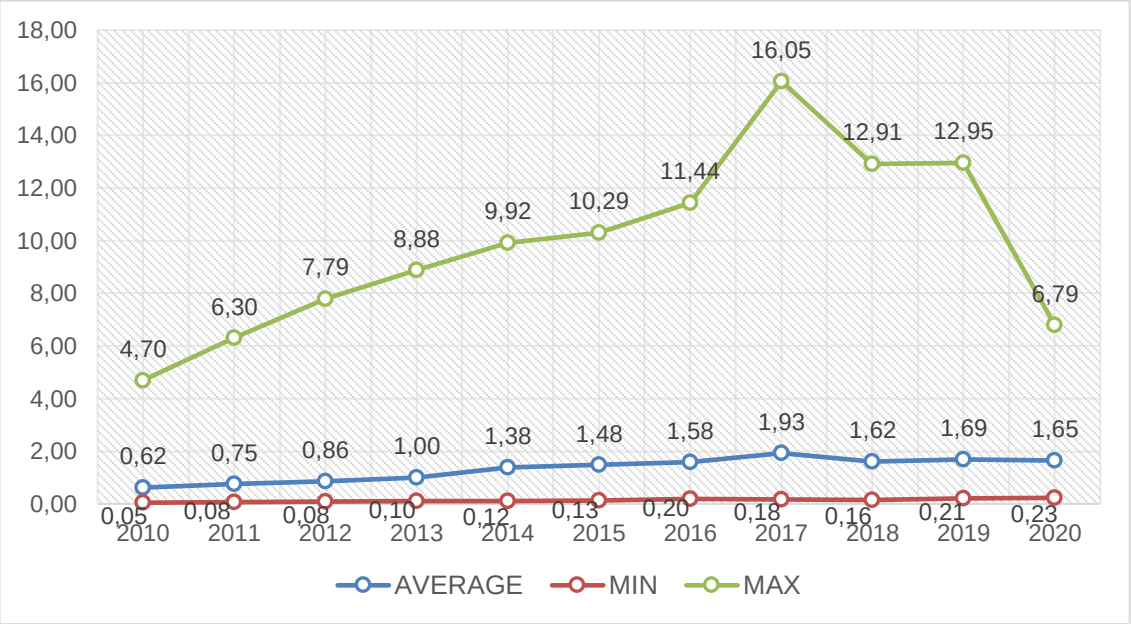
INTRODUCTION

Fiscal discipline is the government's capacity to maintain smooth daily financial operations and long-term fiscal health (Hou, 2003). The empirical literature measures fiscal discipline in a national context as the ratio of taxes to Gross Domestic Product (GDP) (Besley & Persson, 2014; R. M. Bird et al., 2008; Clist & Morrissey, 2011; Crivelli & Gupta, 2014). In the local context (Jia et al., 2021) using the ratio of the total Local Own-Source Revenue (PAD) to the Gross Regional Domestic Product (GRDP) of the district/city as a proxy for local fiscal discipline.

In accordance with the historical data from 2010 to 2020, fiscal discipline of district/city governments in Indonesia measured by the ratio of PAD to GRDP is on average still extremely low, at the range of 0.62% to 1.93%. Some regions have high fiscal discipline, in the range of 4.7% to 16.05%. However, there are also regions with extremely low fiscal discipline (Figure 1). According to (Dollery et al., 2020), low or unmaintained fiscal discipline may disrupt the basic services provision for the community and decline public confidence to local governments.

Figure 1. District/City Fiscal Discipline in Indonesia 2010-2020 (Percent)



Source: DJPK and BPS processed 2022.

According to (Guo, 2008), the vertical fiscal imbalance in the political context in China is very possible for local fiscal indiscipline and opportunist behavior. Then, (Eyraud & Lusinyan, 2013) stated that VFI will cause local fiscal indiscipline in the form of excessive spending or lowering local tax efforts. In line with this matter, (Jia et al., 2021) argue that VFI creates a form of fiscal indiscipline in the form of a local tax collection effort decline.

Based on previous research, it is found that there are not many researchers conducted on the relation between vertical fiscal imbalances with regional fiscal discipline in the context of the Chinese state, one of them is the research by (Guo, 2008; Jia et al., 2021). Because there are differences in the fiscal decentralization system between

China and Indonesia, one of which is that local governments in China are not allowed to make local loans as stated in the study (Jia et al., 2021), while local governments in Indonesia are allowed to make local loans according to the provisions Article 2 Paragraph (1) Government Regulation Number 56 of 2018 Concerning Regional Loans *(Peraturan Pemerintah Nomor 56 Tahun 2018 Tentang Pinjaman Daerah, 2018*), the authors are interested in conducting further research on the relationship between vertical fiscal balance and local fiscal discipline in Indonesia. This research is expected to be able to explain the relationship between vertical fiscal balance and local fiscal discipline in Indonesia as an input for the government in regional expansion policies.

LITERATURE REVIEW

Vertical Fiscal Imbalance in Partial Fiscal Decentralization

Fiscal decentralization has to do with the budgetary authority granted by the central government to selected local governments in the form of authorization to make tax and expenditure decisions (Bahl, 2008). In the implementation of fiscal decentralization, local governments are given the authority to collect taxes/levies (tax assignment) and are given revenue sharing, and financial assistance (grants) commonly known as balancing funds. In addition, local governments are also given the authority to make loans to finance the expenditure needs for the provision of regional facilities and infrastructure (Khusaini, 2018).

According to (Hunter, 1977), the ideal fiscal federalism requires a vertical fiscal balance, with local revenue at each level of government must be sufficient to finance the expenditures it is responsible for without the assistance of intergovernmental fiscal transfers. However, in its application, it is often found that there is an asymmetric nature, namely, a mismatch between the expenditure responsibilities delegated to local governments and the few sources of income submitted by the central government, causing a vertical fiscal imbalance. This process according to some researchers (Borge et al., 2014; Brueckner, 2009; Salinas & Solé-Ollé, 2018) is referred to as partial fiscal decentralization.

Currently, there is no consensus among researchers regarding the specific definition and measurement indicators of vertical fiscal imbalance as previously discussed in the literature (SHARMA, 2012). Among the several indicators for measuring vertical fiscal imbalances, transfer dependence is an indicator that is most frequently used, whether the transfers are measured as spending or regional income. Some authors measure VFI as the difference between original local revenues and expenditures rather than the ratio, bringing the concept closer to fiscal balance (R. Bird & Tarasov, 2004). While others distinguish between fiscal gaps and vertical fiscal imbalances (Boadway, 2006).

To address this problem, the most literature used is actual expenditure and income values instead of statutory levels in force at the time of measurement of VFI. In particular, the share of a region's actual expenditure that is not financed by its income against its expenditure is usually used as a proxy for VFI (Eyraud & Lusinyan, 2013; Jia et al., 2014). Furthermore, (Khusaini, 2019) suggests that measuring vertical fiscal imbalances can be done in two methods. First, observing the local government budget surplus or deficit in the position before the loan was available, that is, after all, revenue sharing and transfers to the regions have been implemented. Second, observing the large portion of local revenue that is used to fund all local government expenditures.

Meanwhile, (Jia et al., 2021) proxies the difference between actual spending and transfers to measure VFI.

Considering that the characteristics of Indonesia's fiscal decentralization are different from those of China, where local governments in Indonesia are allowed to make regional loans according to the provisions of Article 2 Paragraph (1) (Government Regulation Number 56 of 2018 concerning Regional Loans (*Peraturan Pemerintah Nomor 56 Tahun 2018 Tentang Pinjaman Daerah, 2018*), the vertical fiscal imbalance in this study will be measured using the formula used by (Shah et al., 1994), referring to the vertical balance coefficient previously proposed by (Hunter, 1977) as follows.

$$Coefficient\ VB = 1 - \left(\frac{TR_{SP} + TR_{GP} + REV_{SH} + B}{EXP}\right) \quad (1)$$

Where:
VB = Coefficient Vertical Fiscal Balance.
TR_{SP} = Special Allocation Fund (DAK).
TR_{GP} = General Allocation Fund (DAU).
B = Regional Loans.
EXP = Local Government Expenditure.
REV_{SH} = Revenue Sharing Fund (DBH).

The zero vertical fiscal balance coefficient (VB) will indicate absolute central government fiscal control over local governments and a coefficient of one indicates that local governments are truly fiscally autonomous in making decisions. Although a high value on the coefficient is desirable, the one if its values will never be the goal in any countries. A value closer to, but less than one would be consistent with the principle of assignment from the central government to local governments (Shah et al., 1994).

The Relationship between Vertical Fiscal Imbalances towards Local Fiscal Discipline

The theoretical literature on fiscal federalism often emphasizes that partial fiscal decentralization combined with high VFI levels can reduce local government fiscal discipline. According to Soft Budget Constraint Theory (SBC), a concept formulated by (Kornai, 1979) to explain economic behavior in a socialist economy, it is stated that soft budget constraint occurs when the close relationship between expenditure and income has been loosened because expenditures that exceed income will be borne by the other institutions usually by the central government. The soft budget constraint theory implies the influence of VFI on fiscal discipline. Considering that a high level of VFI, characterized by the increasing dependence of local governments on transfers, could soften local government budget constraints by raising expectations of potential bailouts for local governments. This expectation will worsen local fiscal discipline (Pisauro, 2001; Qian & Roland, 1998; Rodden & Eskeland, 2003; von Hagen & Eichengreen, 1996).

According to (Eyraud & Lusinyan, 2013; Köppl–Turyna & Pitlik, 2018; Velasco, 2000), a high level of vertical fiscal imbalance creates a large fiscal dependence on fiscal transfers which may lead to local fiscal indiscipline in the form of excessive spending or reducing tax efforts. Furthermore, (Karpowicz, 2012) identified VFI as a barrier to regional accountability and better fiscal performance. When local government public expenditures are partly sourced from taxes collected by residents outside their territory, it encourages local governments to spend more than they would do when they use

their tax revenues. The results are described as a common problem in the literature (Rodden & Eskeland, 2003; Stein, 1999). One of the literatures also argues that the transfer of fiscal resources does not always lead to the transfer of fiscal authority. For example, when local governments have access to revenues from outside their local tax base (such as fiscal transfers) and a great deal of discretion over how those revenues are spent (fiscal authorities), fiscal transfers to local governments can be likened to a windfall (Morrison, 2009).

RESEARCH METHOD

This study uses panel data of 491 regencies/cities in Indonesia from 2010 to 2020 obtained from the Directorate General of Fiscal Balance (DJPK) of the Ministry of Finance of the Republic of Indonesia and the Central Statistics Agency of the Republic of Indonesia (BPS). To see the consistency of the direction of the relationship between the variables in this study, the data in this study were divided into two sample categories so that data obtained from 130 districts/cities with GRDP per capita were above the average and data from 361 districts/cities with GRDP below the average. The dependent variable in this study is local fiscal discipline. Then, the main independent variable in this study is the vertical fiscal balance with the control variable population density, the share of the tertiary sector in GRDP, and GRDP per capita. The operational definitions of the variables used in this study can be seen in Table 1.

Table 1. Variable Operational Definition

Variable	Definition	Data Source	Reference
Local Fiscal Discipline (*LFD*)	Local government capacity maintains smooth daily financial operations and sound long-term fiscal condition (Hou, 2003). The proxy uses the ratio of local revenue to district/city GRDP and is expressed in percent.	DJPK and BPS	(Jia et al., 2021)
Vertical Fiscal Balance (*VB*)	The value of the VB coefficient that is close to 0 means that it is getting closer to the vertical fiscal imbalance. A coefficient that is closer to 1 means that it is getting closer to the vertical fiscal balance. To facilitate interpretation, the value of the VB coefficient is multiplied by the number 100 and expressed in percent.	DJPK	(Hunter, 1977; Shah et al., 1994)
Population Density (*DEN*)	The number of residents per unit area in a district/city is proxied using the total population divided by the area of the district/city and expressed in units of person/km^2.	BPS	(Ansari, 1982; Marco & Giménez, 2019; Teera & Hudson, 2004)
Share of the Tertiary Sector in GRDP (*TER*)	The share of the business sector in the GRDP of the district/city which is limited by relatively unassisted human skills is proxied using the tertiary sector divided by the GRDP of the district/city and expressed in percent units.	BPS	(Piancastelli & Thirlwall, 2020; Rahim & Asma, 2019)
GRDP per capita (*GRDPC)*	An illustration of the average income received by each resident for one year in a district/city is proxied using GRDP based on constant	BPS	(Ansari, 1982; Bahl, 2008; Fenochietto &

Variable	Definition	Data Source	Reference
	prices divided by the total population and expressed in units of million rupiahs.		Pessino, 2013; Piancastelli & Thirlwall, 2020)

Source: Author 2022.

The inferential analysis technique used in this study is a fixed-effect model with the following equation model.

$$LFD_{it} = \alpha_0 + \alpha_1 VB_{it} + \alpha_2 LnDEN_{it} + \alpha_3 TER_{it} + \alpha_4 LnGRDPC_{it} + \varepsilon_{it} \quad (2)$$

Where:

LFD : Local Fiscal Discipline.
VB : Vertical Fiscal Balance.
$LNDEN$: Natural logarithm of population density.
TER : Share of Tertiary Sector in GRDP.
$LNGRDPC$: Natural logarithm of GRDP per capita.
α : Constant.
ε : *error*.
i : regency/city.
t : year.

RESULTS

Local Fiscal Discipline in Districts/Cities with GRDP per capita above the Average and Its Predictors.

The results of the analysis indicate that the average value of local fiscal discipline in 130 districts/cities in Indonesia with a GRDP per capita above the average throughout 2010-2020 was recorded at 0.99 percent with a standard deviation of 1.05 percent. The lowest local fiscal discipline was recorded at 0.05 percent and the highest was recorded at 12.95 percent (Table 2).

The results of the analysis also show that the average value of the vertical fiscal balance was recorded at 27.52 percent with a standard deviation of 16.31 percent. The lowest vertical fiscal balance was recorded at -66.06 percent and the highest was recorded at 90.38 percent. Meanwhile, the average value of population density was recorded at 1,510.95 people/km^2 with the standard deviation of 2,826.42. The lowest population density was recorded at 0.80 people/km^2 and the highest was recorded at 14,970.50 people/km^2. The average value of the tertiary sector's share in GRDP is 35.94 percent with a standard deviation of 23.27 percent, with the lowest tertiary sector's share of 2.07 percent and the highest being 89.88 percent. Furthermore, the average value of GRDP per capita was recorded at IDR 68.34 million with a standard deviation of 59.01, with the lowest GRDP per capita recorded at IDR 18.65 million and the highest recorded at IDR 394.07 million.

Local Fiscal Discipline in districts/cities with GRDP per capita below the average and its predictors

The results of the analysis indicate that the average value of local fiscal discipline in 361 districts/cities in Indonesia with GRDP per capita below the average throughout

2010-2020 was recorded at 1.44 percent with a standard deviation of 0, 99 percent. The lowest local fiscal discipline was recorded at 0.05 percent and the highest at 16.05 percent (Table 2).

The results of the analysis also indicate that the average value of the vertical fiscal balance was recorded at 24.99 percent with a standard deviation of 12.49 percent. The lowest vertical fiscal balance was recorded at -233.43 percent and the highest was 88.43 percent. Meanwhile, the average value of population density was recorded at 740.43 people/km^2 with the standard deviation of 1,765.55. The lowest population density was recorded at 1.12 people/km^2 and the highest at 15,798.14 people/km^2. The average value of the tertiary sector's share in GRDP was recorded at 44.60 percent with a standard deviation of 13.12 percent, with the lowest tertiary sector's share being 13.58 percent and the highest being 86.29 percent. Furthermore, the average value of GRDP per capita was recorded at IDR 19.31 million with a standard deviation of 6.86, with the lowest GRDP per capita recorded at IDR 3.33 million and the highest at IDR 43.96 million.

The variation in the value of the variables used in this research between one regency/city and another to a certain extent illustrates the differences in the potential and characteristics of each region.

Table 2. Descriptive Statistics

Sample Category	Variable	Obs	Mean	SD	Min	Max
Regencies/cities with above-average GRDP per capita	LFD	1,430	0.99	1.05	0.05	12.95
	VB	1,430	27.52	16.31	-66.06	90.38
	DEN	1,430	1,510.95	2,826.42	0.80	14,970.50
	TER	1,430	35.94	23.27	2.07	89.88
	GRDPC	1,430	68.34	59.01	18.65	394.07
Regencies/cities with below-average GRDP per capita	LFD	3,971	1.44	0.99	0.05	16.05
	VB	3,971	24.99	12.49	-233.43	88.43
	DEN	3,971	740.43	1,765.55	1.12	15,798.14
	TER	3,971	44.60	13.12	13.58	86.29
	GRDPC	3,971	19.31	6.86	3.33	43.96

Note. Obs = Observations, *SD* = Standard Deviation.
Source: 2022 Analysis Results.

Parameter Estimation Results Using Fixed-Effect Model

The results of parameter estimation using a fixed-effect model that has been carried out with robust standard errors can be seen in full (Table 3).

Table 3. Estimation Results Using Fixed-Effect Model

VARIABLES	LFD Districts/Cities with GRDP per capita above the average	LFD Districts/Cities with GRDP per capita below the average
VB	0.00482*** (0.00109)	0.0158*** (0.00416)
LNDEN	0.893***	1.381***
	(0.320)	(0.336)
TER	0.0402***	0.0403***
	(0.0112)	(0.0121)
LNGRDPC	0.927***	1.934***
	(0.184)	(0.170)
Constant	-8.997***	-13.50***
	(1.540)	(1.703)
Observations	1,430	3,971
Number of regencies/cities	130	361
R-squared	0.248	0.417
Prob > F	0.000	0.000

Robust standard errors in parentheses
Note. *** p<0.01, ** p<0.05, * p<0.1
Source: 2022 Analysis Results.

The parameter estimation results in the sample of districts/cities with GRDP per capita above the average (Table 3) indicates that all variables used in this study are significant at the alpha 1% level with a constant recorded at -8.997, the vertical fiscal balance coefficient (VB) was recorded at 0.00482. The population density coefficient (LNDEN) was recorded at 0.893. The coefficient of tertiary sector in GRDP (TER) was recorded at 0.0402, and the coefficient of GRDP per capita (LNGRDPC) was recorded at 0.927.

Meanwhile, the parameter estimation results in the sample of districts/cities with GRDP per capita below the average (Table 3) indicates that all variables used in this study are also significant at the alpha 1% level with a constant recorded at -13.5, the coefficient of vertical fiscal balance (VB) was recorded at 0.0158. The population density coefficient (LNDEN) was recorded at 1.381. The coefficient of tertiary sector in GRDP (TER) was recorded at 0.0403, the coefficient of GRDP per capita (LNGRDPC) was recorded at 1.934.

DISCUSSION

Based on the parameter estimation results, the vertical fiscal balance variable has a positive and significant effect on local fiscal discipline. It means, that if the vertical fiscal balance increases, the local fiscal discipline will be higher. If the vertical fiscal balance decreases (there is an increase in vertical fiscal imbalance), local fiscal discipline will be lower. It is because of a decline in the vertical fiscal balance, which is indicated by the increase of dependence of local governments on transfer funds, which can soften

local government budget constraints and raise expectations of potential bailout funds for local governments. This expectation worsens local fiscal discipline (Pisauro, 2001; Qian & Roland, 1998; Rodden & Eskeland, 2003; von Hagen & Eichengreen, 1996). The results of this study support the research of (Guo, 2008; Jia et al., 2021) concluding that a vertical fiscal imbalance will lead to regional fiscal indiscipline.

Population density has a positive and significant effect on local fiscal discipline. It means that if the population density is higher, the local fiscal discipline will be higher. If the population density is lower, the local fiscal discipline will also be low. According to the stagnation theory (Hansen, 1939), population growth increases aggregate demand, especially investment. The higher the population, the higher the absorption of production so that the higher income is. The income increase also increases tax revenue so that local fiscal discipline increases. The results of this study are in line with research findings of (Marco & Giménez, 2019; Teera & Hudson, 2004) that population density has a positive impact on tax revenue. However, it is in contrary to research (Ansari, 1982) because there is an inverse relationship between high population density and the government's ability to raise taxes.

The share of the tertiary sector in GRDP has a positive and significant effect on local fiscal discipline. It means that if the share of the tertiary sector in GRDP increases local fiscal discipline will be higher. If the share of the tertiary sector in GRDP decreases, local fiscal discipline will be lower. The positive influence of the tertiary sector's share in GRDP on local fiscal discipline in this study is found because taxes from the service/tertiary sector are included in the types of taxes that are under the authority of district/city governments. The results of this study are in line with research (Piancastelli & Thirlwall, 2020; Rahim & Asma, 2019) that the service/tertiary sector share has a positive and significant impact on the ratio of taxes to Gross Domestic Product (GDP).

GRDP per capita has a positive and significant effect on local fiscal discipline. This means that if GRDP per capita increases, local fiscal discipline will be higher. If GRDP per capita decreases, local fiscal discipline will be lower. The results of this study are in line with research (Ansari, 1982; Bahl, 2008; Fenochietto & Pessino, 2013; Piancastelli & Thirlwall, 2020) that GDP per capita has a positive effect on the ratio of taxes to GDP. However, in contrary to the research (Chaudhry & Munir, 2010; Teera & Hudson, 2004) because income per capita harms fiscal discipline (tax ratio to GDP).

CONCLUSION

The increase of the vertical fiscal balance will trigger the increase of local fiscal discipline. In addition to being driven by a vertical fiscal balance, the increase in local fiscal discipline is also driven by an increase in population density, the share of the tertiary sector in GRDP, and GRDP per capita. It is important for the governments to consider vertical fiscal balance, population density, the share of the tertiary sector, and GRDP per capita, as variables to approve proposed regional expansion so that each regional expansion results in optimal public services.

LIMITATION

This study only analyzes the relationship between vertical fiscal balance, population density, the share of the tertiary sector in GRDP, and GRDP per capita on regional fiscal discipline within the regencies/cities in Indonesia.

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DECLARATION OF CONFLICTING INTERESTS
The authors do not have any potential conflict of interest.

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