

DOES INTERGOVERNMENTAL TRANSFERS CAUSE FLYPAPER EFFECT ON LOCAL SPENDING?

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Abstract

The local expenditure in Indonesia either province level or district level rely upon intergovernmental transfers. Theoretically, if the lump sums transfers have more stimulate effect on the local expenditure rather than local private income, they can cause the flypaper effect phenomenon.

This study investigates whether the intergovernmental transfer leads to the flypaper effect in the province level during 1995-2002. By using the panel data, the results demonstrate that intergovernmental transfers cause the flypaper effect. Our findings also show that the flypaper effect exists heavily at east region as a backward area than west region as a well-developed area. This finding supports the previous research in districts and municipalities.

Keyword: *Intergovernmental transfers, Local government, Flypaper Effect, panel data*

INTRODUCTION

According to current institutional classification, the Indonesian public sector has a two-tier structure: national and local level consisting of province and district (municipality). The local public spending either province or district level depends on two components. The first components are those local or own resources such as local tax, local retribution, fee and charges, public utility income. The second component of local government revenue is the intergovernmental transfers including unconditional transfer, conditional transfers and others transfers provided under the principle of horizontal fiscal equalization.

The discussion whether the intergovernmental transfers and local private income have identical effects upon local spending led to an empirical phenomenon that is the well-known flypaper effects to indicate that money stick where it hits. The flypaper effect is a phenomenon that increases in transfers tend to stimulate more

spending than do comparable increases in voter-taxpayer incomes (Turnbull, 1998). The flypaper effects have significant implication for the policy. Flypaper behavior suggests the local authorities seek to expand public spending for their own purposes beyond levels desired by the community.

In the Indonesian government budget system, all potential taxes go to central government and then the central government allocates the tax in terms of intergovernmental transfers with a certain percentage of tax revenue. Therefore, intergovernmental transfers play a central role in understanding the local budget structure. The goal of this study is to investigate whether the intergovernmental transfers in Indonesia supports the flypaper effects at province level. There are two reasons for investigating the validity of the flypaper in the Indonesia case. First, we attempt to get some insights in order to develop better theories of local public spending in the case of Indonesia as a devel-

oping country. Second, we apply the recent methodology in analysis of panel data.

The paper is organized as follows. In Section 2, we will briefly outline the flypaper effect and some previous studies about the flypaper effect. Methodology and data will be presented in section 3. We analyze all provinces except Maluku over 1995-2002 using panel data. Section 4 will covers the empirical results and then conclusion will be drawn in section 5.

Local Government Spending in Indonesia

Fiscal decentralization during the New Order has moved slowly. Indonesia was one of the most centralized countries in the world before 1999. However through framework for fiscal decentralization laid out in law 22 and 25 of 1999 it has been changing. Under the scheme of that law, the new fiscal decentralization in Indonesia is based on the new system of transfers consisting of revenue sharing of natural resource, personal income tax and property taxes, the DAU (Dana Alokasi Umum) as a large unconditional granted intended to fund regional government in an equalizing manner and the DAK (Dana Alokasi Khusus) as asset of conditional grants. (Brodjonegoro, Vazquez, 2002).

Before the new transfer system, Indonesia has a long history of intergovernmental transfer from the central government to the local government. The first is pre SDO period from 1945-1972. Initially, under the scheme the central government gives subsidy to local government to ensure no deficit of local government budget. The central government introduced a tax revenue sharing scheme in which local government received some percentage of central government tax revenue from 1956 – 1964. Then the central government has launched the new scheme called as intergovernmental subsidy system during 1965-1972.

The second is SDO (autonomous region subsidy) period from 1972-2001. The goal of the SDO system was to fully support routine activities of local government. Under the scheme, the intergovernmental transfer comprised of the block grant and the specific grant. The former is the unconditional grant and the later is conditional grant with no discretion at the local government. In addition, the central government also gives additional transfer through INPRES to supports local government activities. Another goal of INPRES was to reduce regional disparities.

However, through the new scheme of law 25 of 1999, intergovernmental transfer consists of three: (1) revenue sharing; (2) general allocation fund (DAU); and (3) Specific allocation fund (DAK). Revenue sharing comes from three sources: (1) the tax revenue sharing consisting of natural resources taxes, personal income tax and property tax; (2) the natural resources revenue sharing; and (3) the revenue sharing from other taxes. The DAU is a kind of transfer giving fully discretion to local government to spend the funds according to their priorities. The DAK is a conditional grant which its goal is help fund important needs which cannot be incorporated in the DAU, to provide funding for activities which relate to national priorities and is a mechanism for intergovernmental sharing of forest exploitation fees.

Table 1 shows local government income in 2002. The most fund of local government either provinces or district/municipalities come from the intergovernmental transfer. The central governmental transfer comes up 53.8%, 87%, and 82.1% on province, district and municipalities level respectively. The local income which is form local taxes and non local taxes still contributes small for local government budget.

Table 1:Regional government income in 2002 (Rp. Trillions)

	Provinces	District	Municipalities
Total Expenditure	31.46	71.24	16.46
Local income (PAD)	10.19 (32.4)	3.79 (5.3)	1.93 (11.7)
• Taxes	8.59	1.41	0.95
• non taxes	1.61	2.38	0.98
Transfers	16.93 (53.8)	61.66(87)	13.52 (82.1)
• Revenue Sharing	7.98	10.70	2.10
• DAU	7.56	50.43	10.49
• DAK	1.39	0.53	0.93

Sources: Financial statistic of Indonesian local government

Note: numbers in parenthesis show % of revenue to total expenditure

LITERATUR REVIEWS

There are two theories that can explain the flypaper effect phenomenon. The first theory is the fiscal illusion and the second theory is bureaucrats' model (Sagbas and Saruc, 2004). The former states that the flypaper effect is a result of voter-taxpayer ignorance of fiscal illusion. In the fiscal illusion model of grants effect, the government produces the output demanded by the median voters, but demand for public goods is based on misperception about how the public goods are financed and their own share of costs. In this case, voters are not assumed to misperceive the actual output of public goods or the benefits derived there from.

In other hand, the bureaucratic model of the flypaper effect incomes from budget maximizing behavior by local politicians (bureaucrats). The flypaper effect happens because the bureaucrats have more information concerning intergovernmental grants and the local budget. The local bureaucrats tend to spend easily an intergovernmental grant rather than asking for an increase in local tax.

There are a number of empirical studies of the impact of intergovernmental transfers on local spending both at developing and developed countries to examine the flypaper effect. Some of them based on cross sectional data and the others used panel data.

Pommerehne and Schneider (1978), Heyndels and Smolders (1994), Turnbull and Djoundourian (1994), Becker (1996), Dollery and Worthington (1999) using cross sectional data show that the flypaper effect exists for municipal data. According to the new methodology in panel data, Melo (2002), Sagbas and Saruc (2004) also find the flypaper for Colombia and Turkey for local government. For complete results of the flypaper effect can be found in Bailey and Connolly (1998).

Haryo Kuncoro studied the effect of the intergovernmental transfer for districts and municipalities in Indonesia. His study was to analyze the contribution of intergovernmental transfers on local revenue, routine and developments expenditures over period of 1988-2002. Using the simultaneous model, he showed that intergovernmental transfers stimulate the increase of the local government expenditures larger than that of the local own revenue. His study supports flypaper effect (Kuncoro, 2004).

Model Specification

To test the flypaper effect at province level in Indonesia, this study follows previous research such as Pommerehne and Schneider (1978), Heyndels and Smolders (1994), Turnbull and Djoundourian (1994), Becker (1996), Dollery and Worthington

(1999), Melo (2002) Sagbas and Saruc (2004). The expenditure function for publicly provided goods by central government or local government may be expressed as follow:

$$E = f(Y, Tr, Pop) \dots\dots\dots (1)$$

Where :

E = the total expenditure of local government

Y = the local income

Tr = the intergovernmental transfers

Pop = population

This study has been made on the basis of panel data models to investigate the flypaper effect on the local government expenditure. The type of model specification, linear or log linear, will determine the flypaper effect for local government spending (Bailey and Connolly (1998). In order to overcome this problem, this study uses both Log linear and liner specification and both the model can be written as follows:

$$\log E_{it} = (\alpha + u_i) + \beta_1 \log Y_{it} + \beta_2 \log Tr_{it} + \beta_3 \log Pop_{it} + e_{it} \dots\dots\dots (2)$$

$$E_{it} = (\alpha + u_i) + \beta_1 Y_{it} + \beta_2 Tr_{it} + \beta_3 Pop_{it} + e_{it} \dots\dots\dots (3)$$

Population is included to control statistically for the influence of this variable on local expenditures. Subscripts i denotes local government and t is time. The intercept of the ith local government is equal to $\alpha + u$ where $E(u) = 0$. The crucial issue relate to panel estimation is about estimation technique using fixed model or random model. The Hausman test is applied to determine the model. The Hausman test specification test is computed and compared to a Chi square distribution with degree of freedom according the number of independent variable in the model.

Theory of public spending suggests that an increase the income raises expendi-

ture so we expect β_1 is positive. The estimated value of β_2 is expected to be positive too. When the intergovernmental transfer rises, the local government tends to increase its expenditure. The last variable total population is expected to be positive. An increase in population will be responded by local government to increase its spending.

In the conventional approach, the flypaper effect is examined under the assumption that local government faces linear budget constraints. The flypaper effect is investigated by comparing the effect of income (β_1) and the transfers on local expenditure (β_2). In equation (2) the flypaper effect is observed if the transfer elasticity exceeds the income elasticity ($\beta_2 > \beta_1$). In other hand, if $\beta_2 < \beta_1$ indicate no the flypaper effect. When the linear form specification is employed the flypaper effect is indicated if coefficient $\alpha_2 > \alpha_1$ but if coefficient $\alpha_2 < \alpha_1$ shows no the flypaper effect.

Per capita gross regional domestic Product (GRDP) at constant price 1993 is used to proxy for per capita local income since per capita income data at province level are not available. Per capita GRDP and population data are from Indonesian statistics, while total expenditure of province and total transfers from the central government are taken from financial statistics of Indonesian local government. Because the data are not available for whole period, this study did not include Maluku and the new province such as Bangka- Belitung, Banten, Gorontalo and North Maluku.

THE EMPRICAL RESULTS

In analyzing cross-section data in Indonesia, it is essential to classify regional province according to type: west region and east region. This method tries to capture differences between well-developed areas (west Indonesia) and backward areas (east Indonesia). There are three results for all

Indonesian provinces, west region including Sumatra and Java Island, and east region consisting of Kalimantan, Sulawesi, Bali, Nusatenggara and Irian Island. Because the government focus on developing economy at west region, comparing the flypaper effect between west and east region is very interesting.

Before evaluating the empirical results as noted earlier, the appropriate model

of panel data must be determined. The selection of the best type of estimator is made according to the Hausman test. Table 2 and table 3 report the Fixed Effect for both linier and log linier model respectively. Meanwhile the results of Random Effect for both models are presented at Table 4 and 5 respectively. The results of Hausman test are shown at Table 6.

Table 2. The results of Panel data estimation with Fixed Effect: the log linear Model

Variables	All provinces	West Region	East Region
C	A	A	A
Log(Y)	-0.046429 (-0.118032)	-0.320048 (-0.509556)	0.154933 (0.305155)
Log (Tr)	0.606985* (10.21989)	0.391336* (5.026768)	0.861444* (8.950842)
log (Pop)	1.100139** (2.291533)	3.805959* (3.447147)	0.196064 (0.368557)
Adjusted R-squared	0.857312	0.903281	0.672096
Total Panel estimation	200	104	96

Note:

Figures in parenthesis are t statistics

*, ** and *** are coefficient significant at 1%, 5% and 10% significant level respectively

A denotes that the constant of provinces are not reported to save space.

Table 3. The results of Panel data estimation with Fixed Effect: the linear Model

Variables	All provinces	West Region	East Region
C	A	A	A
Y	-0.004120 -0.015607	0.122152 (0.238370)	-0.009145 (-0.085659)
Tr	1.202174* 7.986208	1.240643* (5.473207)	1.033213* (11.29090)
Pop	150.4810*** 1.423013	171.8379 (1.097055)	55.24011 (0.702454)
Adjusted R-squared	0.681357	0.648343	0.696518
Total Panel estimation	200	104	96

Note:

Figures in parenthesis are t statistics

*, ** and *** are coefficient significant at 1%, 5% and 10% significant level respectively

A denotes that the constant of provinces are not reported to save space.

Table 4. The results of Panel data estimation with Random Effect: the log linear Model

Variables	All provinces	West Region	East Region
C	A	A	A
Log(Y)	0.278326* (3.609920)	0.463132* (3.806438)	0.113867*** (1.350758)
Log (Tr)	0.681448* (13.10934)	0.580173* (8.402323)	0.792487* (10.04776)
log (pop)	0.391143* (7.414600)	0.494663* (7.030002)	0.075661 (0.661459)
Adjusted R-squared	0.853784	0.882437	0.669220
Total Panel estimation	200	104	96

Note:

Figures in parenthesis are t statistics

*, ** and *** are coefficient significant at 1%, 5% and 10% significant level respectively

A denotes that the constant of provinces are not reported to save space.

Table 5. The results of Panel data estimation with Random Effect: the Linear Model

Variables	All provinces	West Region	East Region
C	A	A	A
Y	0.053866*** (1.423233)	0.201335** 2.193462	0.003112 (0.301711)
Tr	1.472676* (11.04891)	1.342507* (6.233410)	1.023573* (12.67211)
Pop	33.81544* (1.423013)	38.33430* (3.772793)	3.998664 (0.336179)
Adjusted R-squared	0.664260	0.649900	0.703761
Total Panel estimation	200	104	96

Note:

Figures in parenthesis are t statistics

*, ** and *** are coefficient significant at 1%, 5% and 10% significant level respectively

A denotes that the constant of provinces are not reported to save space.

Table 6. The results of the Hausman test

Chi Squares	All Province	West Region	East Region
Log linear Model	8.628624	3.920047	6.058742
Linear Model	15.85296	2.477956	0.755490

The Critical Chi squares with $\alpha=5\%$ and $df=3$ is 7.81473

The Hausman test indicates that the Fixed Effect model is better estimation for all provinces for both the log linier and the linier model. In other hand, the Random Effect model is chosen for West Region as well as East Region the. In general, however, the Random Effect Model is favor than the Fixed Effect for both log linear and linear model according to the Hausman test. Taking this into account, the interpretation of the results is based on this procedure.

Before analyzing the flypaper effect, the impact of explanatory variables on local public spending for is summarized. For all provinces, west region and east region, the sign of coefficient of local income, intergovernmental transfer and population are positive as expected before except for fixed effect model and are statistically significant except local income for all provinces and population in the east region. Local authorities will respond an increase in intergovernmental transfers, local income and population by increasing the local public expenditure.

The number of elasticity of intergovernmental transfer is greater that the number of elasticity of local income for all regions. Therefore these findings indicate that the flypaper effect exists for all provinces, west region and east region. The intergovernmental transfers produce a greater increase in local expenditure at province level than per capita local GDP as a proxy for local income.

This finding also shows that the flypaper effect differs according to the geographical area. The flypaper effect exists heavily on east region rather than on west region. It is shown by the greater difference between the transfer elasticity and local income elasticity. This finding explicitly indi-

cates that the flypaper effect happen mostly at poor area than wealth area. Poor local government depends upon the intergovernmental transfer for providing public goods and services.

The flypaper effect exists at province level which support the study of Kuncoro at districts/municipalities. The flypaper effect can be explained by using bureaucrats' model. The flypaper effect may be a result of the budget maximizing behavior of local bureaucrats (politicians). As we know the amount of local government budget is set up based on expenditure approach rather than income approach. As a result, the outcome will be excessive spending. The unconditional transfers or grants also provide significant discretion because of almost half of local revenue from intergovernmental transfers.

CONCLUSION

Our analysis of public expenditure in the context of the province level for the period 1995-2002 indicates that the flypaper effect exists. The bureaucratic model could better explain the cause of the flypaper effects because local bureaucrats have significant discretion over the spending side of the local budget.

If the flypaper effect does exists, then the local government relies on its expenditure form grants without making good effort to increase local income by stimulating local economy. What kind of economic policy does the central government to eliminate the flypaper effect? There are two scenarios to reduce the flypaper effect: cutback in grants or an increase in local taxes. A cutback policy may be more effective since transfers increase expenditure more than increases in private income.

REFERENCE

- Ashworth, J. and Gemmell, N. (1996). "Local Government's Monopoly Power and local Tax Reform: Theory and Evidence from the UK," *Public Choice*, Vol. 89: 398-417
- Bailey, Stephen J. and Stephen Connolly (1998). "The Flypaper Effect: Identifying Areas for Further Research," *Public Choice*, Vol. 95: 335-61
- Barnett, R. Levaggi, R and Smith P (1991). "Does the Flypaper model Stick? A test of the Relative Performance of the Flypaper and Conventional Models of Local Government Budgetary Behavior," *Public Choice*, Vol. 69:1-18.
- Becker, E (1996). The Illusion of Fiscal Illusion: Unsticking the Flypaper Effect," *Public Choice*, Vol. 86: 85-102.
- Brojonegoro, Bambang and Jorge Martinez-Vazquez (2002). "An Analysis of Indonesia's transfer system: Recent Performance and Future Prospects", *Working Paper 02-13*, May. Andrew Young School of Policy Studies. Georgia State University.
- Dougan, W.R and Keynon, D.A (1988). "Pressure groups and public expenditure: the flypaper effect reconsidered", *Economic Inquiry* 26: 159-70
- Dilorenzo, Thomas J (1982). "Utility Profits, Fiscal Illusion and Local Public Expenditures," *Public Choice*, Vol. 38: 243-52.
- Gemmell, N, Morrissey, O and Pinar A (2002). Fiscal Illusion and Political accountability: Theory and evidence from two local tax regimes in Britain" *Public Choice* 110: 199-224.
- Holcombe, R.G (1989). "The Median Voter Model in Public Choice Theory," *Public Choice*, Vol. 61: 115-125.
- Hammes L. David and Douglas T. Wills (1987). "fiscal Illusion and the grantor government in Canada", *Economic Inquiry*, Vol. 25:707-13.
- Hines, J.R and Richard H. T (1995). "Anomalies: The Flypaper Effect," *Journal of Economic Perspectives*, Vol. 9, No. 4: 217-26.
- Hewit, Daniel (1986), "Fiscal Illusion from Grants and the Level of State and Federal Expenditures," *National Tax Journal*, Vol. 39, No.4: 47183.
- Heyndels, Bruno and Carine Smolders (1994). "Fiscal Illusion at the Local Level: Empirical for the Flemish Municipalities," *Public Choice*, Vol. 80: 325-38.
- O'Brein, J. Patrick and Yeung-Nan Shieh (1990). "Utility Function and Fiscal Illusion from Grants," *National Tax Journal*, Vol.32, No.2: 201-05.
- Melo, Ligia (2002). The flypaper Effect Under different institutional contexts: The Colombian Case", *Public Choice* 111: 317-45.
- Misiolek, Walter S and Harold W. Elder (1988). "Tax Structure and the Size of Government: An Empirical Analysis of the Fiscal Illusion and Fiscal Stress Arguments," *Public Choice*, Vol. 57: 233-45.

- Munley Vincent, G and Kenneth V. Greene (1978). "Fiscal Illusion, The Nature of Public Goods and Equation Specification," *Public Choice*, Vol. 33: 95-100.
- Pommerehne, W. and Friedrich S (1978). "Fiscal Illusion, Political Institutions and Local Public Spending," *Kyklos*, Vol. 31: 381-408.
- Sacbas, Isa and N.T. Saruc (2004). "Intergovernmental Transfers and the Flypaper Effect in Turkey," *Turkis Studies*, Vol. 5, No.2: pp.79-92.
- Schneider, M and Ji, B.M (1987). "The Flypaper Effect and Competition in the Local Market for Public Goods", *Public Choice*, Vol. 54: 27-39.
- Turnbull, Geoffrey K and Peter M. Mittias (1995). "Which Median Voter?" *Southern Economic Journal*", Vol.62, No. 1: 183-91.
- Turnbull, Geoffrey K and Djoundourian SS (1994), "The Median Voter Hypothesis: Evidence from General Purpose Local Government," *Public Choice*, Vol. 81: 223-40.
- Turnbull, Geoffrey K (1998). "The Overspending and Flypaper Effects of Fiscal Illusion: Theory and Empirical Evidence," *Journal of Urban Economics*, Vol. 44. p.1
- Wagner R.E. (1976). "Revenue Structure, Fiscal Illusion and Budgetary Choice," *Public Choice*, Vol. 25: 45-61.
- Worthington, C. Andrew and Brian E. Dollery (1999). "Fiscal Illusion and the Australian local government grants process: How sticky is the flypaper effect", *Public Choice*, 99:1-13.
- Worthington, C. Andrew and Brian E. Dollery (1999). "Fiscal Illusion at the Local Level: An Empirical Test Using Australian Municipal Data", *The Economic Record*, Vol. 75, No. 228: 37- 48.