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Local government spending and service delivery in Indonesia: the perverse effects of substantial fiscal resources

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ABSTRACT

Local government spending and service delivery in Indonesia: the perverse effects of substantial fiscal resources. *Regional Studies*. This study examines the impact of local government expenditure on service delivery in Indonesia. District spending positively influences education, health and infrastructure service access – but only up to a point, after which the relationship becomes negative. The quadratic spending effects disappear for districts managed by directly elected executives and those that perform well on their financial audits. For these arguably less corrupt districts the impact of spending on services is positive across the entire range of expenditure. The consistently beneficial impact of less corrupt district spending on service access is mitigated, however, by rising dependence on intergovernmental transfers.

KEYWORDS

decentralization; local government spending; local service delivery; corruption; vertical fiscal imbalances; Indonesia

摘要

印尼的地方政府支出与服务供给：大量财政资源的反效果，区域研究。本研究检视印尼地方政府支出对服务供给的影响。行政区的支出，正向影响了教育、健康和基础建设服务的获得管道—但到某一限度后，上述关係便转为负面关係。二次方的支出效应，在直接由选举产生、且在财务审核上表现良好的行政官员所管理的区域中消失。在这些被认为是较少贪腐的行政区中，支出对于服务的影响在整体支出中是正面的。但较少贪腐的行政区支出对于服务取得的持续有益之影响，却随着对跨政府（财政）转移的依赖的增加而有所减缓。

关键词

去中心化; 地方政府支出; 地方服务供给; 贪腐; 垂直财务不平衡; 印尼

RÉSUMÉ

Les dépenses des collectivités locales et la prestation de services en Indonésie: les effets pervers des ressources fiscales importantes. *Regional Studies*. Cette étude examine l'impact des dépenses des collectivités locales sur la prestation de services en Indonésie. Les dépenses à l'échelle des districts influent positivement sur l'éducation, la santé et l'accès aux services d'infrastructure – mais seulement jusqu'à un certain point, au-delà duquel le rapport devient négatif. Les effets quadratiques des dépenses disparaissent dans les districts administrés par des pouvoirs exécutifs élus au suffrage universel et par ceux qui fonctionnent bien en termes de leurs audits financiers. Pour les districts qui sont possiblement moins corrompus, l'impact des dépenses pour les services s'avère positif, tous postes de dépenses confondus. Cependant, l'impact toujours bénéfique des dépenses des districts moins corrompus pour l'accès aux services est atténué par une dépendance accrue des transferts intergouvernementaux.

MOTS-CLÉS

décentralisation; dépenses des collectivités locales; prestation de services; corruption; déséquilibres fiscaux verticaux; Indonésie

ZUSAMMENFASSUNG

Ausgaben von Kommunalbehörden und Erbringung von Leistungen in Indonesien: die perversen Auswirkungen umfangreicher fiskaler Ressourcen. *Regional Studies*. In diesem Beitrag wird die Auswirkung der Ausgaben von Kommunalbehörden auf die Erbringung von Leistungen in Indonesien untersucht. Die kommunalen Ausgaben haben

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einen positiven Einfluss auf die Erhältlichkeit von Leistungen im Bereich der Bildung, des Gesundheitswesens und der Infrastruktur – allerdings nur bis zu einem bestimmten Punkt, nach dem die Beziehung negativ wird. Die quadratischen Ausgabeneffekte verschwinden für Bezirke, die von direkt gewählten Führungskräften geleitet werden oder bei ihren Rechnungsprüfungen gut abschneiden. Für diese offenbar weniger korrupten Bezirke wirken sich die Ausgaben im gesamten Ausgabenspektrum positiv auf die Leistungen aus. Allerdings wird die gleichmäßig positive Auswirkung von Ausgaben in weniger korrupten Bezirken auf die Erhältlichkeit von Leistungen durch die zunehmende Abhängigkeit von Finanzzuweisungen zwischen Regierungen abgeschwächt.

SCHLÜSSELWÖRTER
Dezentralisierung; Ausgaben von Kommunalbehörden; Erbringung kommunaler Leistungen; Korruption; vertikale fiskale Ungleichgewichte; Indonesien

RESUMEN
Gastos de administraciones locales y prestación de servicios en Indonesia: los efectos perversos de los recursos fiscales cuantiosos. *Regional Studies*. En este estudio se analizan los efectos del gasto de las administraciones locales en la prestación de servicios en Indonesia. El gasto comarcal influye positivamente en el acceso a la educación, la salud y los servicios de infraestructura, pero solo hasta cierto punto, porque después la relación es negativa. Los efectos cuadráticos de los gastos desaparecen en los distritos gestionados por ejecutivos directamente elegidos y los que obtienen buenos resultados en las auditorías financieras. Para estos distritos sin duda menos corruptos, el efecto de los gastos en los servicios es positivo en todo el espectro de gastos. Sin embargo, el efecto coherentemente beneficioso de los gastos en distritos menos corruptos en lo que respecta al acceso a los servicios se mitiga al aumentar la dependencia de las transferencias intergubernamentales.

PALABRAS CLAVES
descentralización; gastos de administraciones locales; prestación de servicios locales; corrupción; desequilibrios fiscales verticales; Indonesia

JEL H71, H72, H77
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INTRODUCTION

How does public spending affect service outcomes? This key policy question has generated a significant amount of academic work over the years. Some research indicates that spending has an insubstantial impact, if any, on outcomes. Hanushek (1995) reviews the experience of many developing countries across major regions of the world and finds an unsystematic relationship between public spending and education outcomes of various kinds. Mingat and Tan (1992, 1998) also discover little association between public expenditure and education outcomes across a large sample of developed and developing countries. Filmer and Pritchett (1999) demonstrate that public spending is only very weakly correlated with important health outcomes for an international cross-section of 100 developing countries.

Other empirical work suggests more positive and robust effects related to the influence of public spending on service delivery. Or (2000) shows that the share of public spending in total health expenditure is significantly associated with improved health outcomes for both men and women in a sample of 21 Organisation for Economic Co-operation and Development (OECD) countries over time. Gupta, Verhoeven, and Tiongson (2002) find a strong correlation between public spending and education and health outcomes for a cross-section sample of 50 transition and developing countries. Finally, Jackson, Johnson, and Persisco (2015) discover a very significant relationship between public education spending and a variety of school outcomes in the United States for a nationally representative panel of children born between 1955 and 1985.

Perhaps the safest conclusion in this context is that public spending may, in fact, positively influence service outcomes – but only if other conditions are also met. Filmer, Hammer, and Pritchett (2000) argue that spending will only have a positive impact on service delivery in developing countries if the institutional capacity of service providers is sufficiently strong and market failure is relatively pronounced. Baldacci, Guin-Siu, and De Mello (2003) show for 94 transition and developing countries that public spending is more effective in improving education and health outcomes if underlying problems related to income and gender inequality are resolved. Finally, Rajkumar and Swaroop (2008) examine a panel of 90 developed and developing countries and conclude that the effect of spending on human development outcomes is significantly improved as the quality of governance rises.

This article investigates the impact of local government spending on education, health and infrastructure outcomes in Indonesia. The study employs a dynamic panel data (DPD) model to examine the relationship between spending and service outcomes. In this framework, service outcomes in one period depend, in part, on service outcomes in the previous period, a seemingly reasonable assumption (and one that the model tests). The use of a dynamic model to examine the impact of local government spending on service outcomes would appear to be a first.

The empirical model is also able to treat spending as endogenous in the determination of service outcomes.

While it is well recognized that spending may be endogenous in this context (resulting from 'reverse causality'), the realization has posed significant challenges for studies of this type. Many examinations have simply ignored the complication. This is not surprising given the usual difficulty of finding suitable (external) instruments; but that does not make it correct. The model employed here overcomes the obstacle via the use of internal instruments, i.e., lagged values of endogenous variables.

The study finds an inverted 'U'-shaped relationship between local government spending and education, health and infrastructure outcomes. That is, local government spending positively influences service delivery – but only up to a point, after which the relationship turns negative. The critical point in the association between local government expenditure and public service access is reached at about the 75th percentile of spending. Interestingly, the quadratic expenditure effects disappear for local governments that are managed by directly elected executives and for those that perform relatively well on their external financial audits. For these arguably less corrupt local governments the impact of spending on service access is strictly positive across the entire range of expenditure.

At the same time, the study provides some evidence to suggest that the consistently beneficial impact of less corrupt local government spending on services is mitigated to a certain extent by rising dependence on intergovernmental transfers. This latter outcome supports a significant amount of research that finds that vertical fiscal imbalances (VFIs) can have a variety of negative effects on local government fiscal and service delivery outcomes.

BACKGROUND

Indonesia is a unitary country comprising central, provincial and local (district) levels of government. Throughout most of its history, Indonesia's public sector was counted among the most centralized in the world. In 2001, however, Indonesia initiated a very ambitious programme of administrative, fiscal and political decentralization (Lewis, 2014).

The Indonesian decentralization effort had its genesis in two laws, both promulgated in May 1999, one on administrative matters (Law 22/1999) and the other on fiscal and finance issues (Law 25/1999). In December 2000, the national parliament (Dewan Perwakilan Rakyat – DPR) passed an additional and essential piece of decentralization legislation on sub-national government taxation (Law 34/2000). The three laws all began implementation in 2001.[1]

The legislative framework outlines major service responsibilities of sub-national governments and the resources to which they have access. District service assignments focus on education, health and infrastructure functions and also include tasks related to social protection, environment, low-income housing, security and law and order, and support for economic development, among others. Sub-national government responsibility for service delivery is considerable. Provincial and local government expenditure makes up about half of total public sector spending net of subsidies and interest payments; local government expenditure comprises about 75% of the sub-national total (Lewis, 2014).

Local government revenues encompass those from: own sources, shared taxes, shared non-taxes, the general-purpose grant, the specific-purpose grant and other transfers. Shared taxes include the property tax (through 2013, now decentralized) and personal income tax. Shared non-taxes derive from national forestry, fisheries, mining and, most importantly, gas and oil revenues. Shared non-tax revenue is heavily concentrated in a relative few provinces: Aceh, Riau, Riau Islands, East Kalimantan, Papua and Papua Barat. The general-purpose grant, the largest source of funding for most local governments, is a fiscal equalization mechanism that allocates funds based on a fiscal gap formula. The specific-purpose transfer is a matching capital grant, spanning numerous sectors but concentrated in education, health and infrastructure. Other district transfers include special autonomy funds for Aceh, Papua and Papua Barat; additional grants from the central government for teacher certification; and transfers from provinces. Taken together, intergovernmental transfers comprise about 90% of local revenue budgets (Lewis, 2014).

Local governments manage their fiscal resources rather poorly, in general. Lewis (2015a) shows, for example, that between 2005 and 2010 only 2.3% of local governments were awarded an unqualified opinion on their external financial audits. Most local governments received qualified opinions – 68.5%; and 7.9% and 21.3% of local governments received adverse opinions and disclaimers, respectively.

The overall impact of decentralization on service delivery in Indonesia is uncertain. Lewis (2014) concludes that service performance has been mixed, at best; some aspects of service delivery in key sectors have improved (service access) while others have shown less progress (service quality). Inferences regarding local government spending effects on service delivery are perhaps more controversial. The World Bank (2012) has argued that the level of spending matters little for service outcomes and that spending efficiency is more important. On the other hand, Patunru and Rahman (2014) and Schulze and Sjahrir (2014) provide evidence to suggest that the amount of local government spending directly and positively influences service outcomes.

Administrative and fiscal decentralization of the public sector in Indonesia has been complemented by active developments in local democracy. Representatives of sub-national parliaments (Dewan Perwakilan Rakyat Daerah – DPRD) have been popularly elected since 1999; parliaments, in turn, (indirectly) elected sub-national government executives. Since 2005, however, district heads have been directly elected by citizens. Direct elections were implemented in a gradual manner, as indirectly elected executives' terms expired. At the end of 2005 just fewer than 40% of local governments had directly elected heads; by the end of 2010 direct elections had been nearly fully phased in (Sjahrir, Kis-Katos, & Schulze, 2014).

There is a growing body of literature on the impact of direct local government elections in Indonesia. Sjahrir, Kis-Katos, and Schulze (2013) find evidence that local incumbents running for re-election reallocate budgets in ways designed to increase their popularity, but not necessarily to improve fiscal outcomes. In a study of local government administrative expenditure, Sjahrir et al. (2014) show that direct elections have not constrained districts' spendthrift behaviour. Skoufias, Narayan, Dasgupta, and Kaiser (2014) find that direct elections seem to have had no impact on human development outcomes; the authors also demonstrate that in the run-up to elections, district expenditure patterns for those local governments with incumbents running for re-election shift towards spending that is designed to encourage votes in their favour but not improve citizen welfare. More positively, Lewis (2015b) shows that local governments with directly elected heads deliver services in a more (technically) efficient manner than those districts with indirectly elected executives.

Finally, it is important to highlight that corruption has been a significant problem among Indonesian sub-national governments since decentralization began in 2001. According to the Ministry of Home Affairs (MoHA), between 2004 and 2014, 290 provincial and district heads and 2960 DPRD members were implicated in graft cases (*Jakarta Post*, 27 September 2014). Recent empirical research shows the damaging effects of corruption on service delivery in Indonesia. Suryadarma (2012) demonstrates that the positive impact of local government expenditure on education disappears for districts with significant levels of corruption. Lewis (2015a) shows that districts that perform relatively poorly on their financial audits – a major cause of which is corrupt budget practices (Sacks, Rahman, Turkewitz, Buehler, & Saleh, 2014) – deliver services much more inefficiently than their counterparts with comparatively better audit outcomes.

Corruption is not a problem unique to Indonesia, of course. There is a significant amount of theoretical and empirical research demonstrating the existence and harmful effects of local corruption in decentralizing developing countries (e.g., Kyriacou, Muinelo-Gallo, & Roca-Sagales, 2016; Rodriguez-Pose, 2013; Rajkumar & Swaroop, 2008; Bardhan & Mookherjee, 2006; Bardhan, 2002).

DATA AND EMPIRICAL STRATEGY

Data

The main outcome variables of interest in this study relate to local public service access.[2] Particular service access variables used in the analyses that follow span the key sectors of education, health and infrastructure: junior secondary and senior secondary school net enrolment rates; per cent of births attended by a health professional and per cent of children under five years of age who have received basic immunizations; and percentage of households with access to protected water and sanitation. Data on all six variables come from the Central Bureau of Statistics (BPS) annual household expenditure survey (SUSENAS). The selection of these six variables is based on the availability of data. The services proxied by the selected variables are all fully under the control of local governments, according to law. District spending on education, health and infrastructure services dominates local budgets.

Local government expenditures and the proportion of spending financed by transfers constitute the main explanatory variables of interest in this investigation and relevant data come from the Ministry of Finance (MoF). It is perhaps useful at this stage to stress that this study uses total local government spending as a determinant of local service access in education, health and infrastructure, and not just expenditure on those three functions.

This approach is adopted for two reasons. First, some local government spending on functions other than education, health and infrastructure directly affects outcomes in the latter three sectors. For example, expenditure on social protection (especially health insurance and subsides to the poor), environment (including the protection of clean water from pollutants), low-income housing (particularly where linked to clean water and sanitation access), security and law and order (provision of a safe environment for the delivery of local public services), and even administration (which includes supply of back office functions for local government and its service delivery units) influence service access in education, health and/or infrastructure.

Second, and more indirectly, outcome effects in any one particular function of interest – education, health or infrastructure – may spill over to other functions of concern as well. Improved access to water and sanitation facilities may positively affect child health, for example, which in turn may facilitate higher school enrolments. Higher enrolments may positively influence health (including attended births and child immunizations) and infrastructure outcomes (access to clean water and sanitation) because schools provide training on good health practices to both students and their parents, for instance. These outcome spillovers add to the education, health and infrastructure impact of other functional spending.

SUSENAS data are used to measure other variables employed in the various examinations as well: population size, per cent of total households with access to electricity,[3] per cent of the population that is poor, the poverty gap, the level of personal consumption, and the Gini coefficient of personal consumption. These variables are used as exogenous controls in the regression analyses carried out below. Their selection is based on the availability of data over the time frame of the study and their potential significance in explaining outcomes of interest.

Finally, data on whether the head of the local government is directly or indirectly elected come from the National Elections Commission (KPU), and local government audit results were accessed through the Indonesian Supreme Audit Agency (BPK). These two variables are used to divide the sample of districts into subsamples with a view to exploring possible underlying causal mechanisms that drive the main results.

There were 490 local governments operating during the study period. The number of local governments varies across years because of district splitting (*pemekaran*), thus necessitating an unbalanced panel set-up.[4] Summary statistics on all variables used in the different analyses that follow can be found in Table A1 in Appendix A in the supplemental data online.

Empirical strategy

The time frame of the analysis is 2006–10. This period is purposefully chosen. Although data on most of the variables of interest to this study are available starting in 2001 (but not later than 2010), three important events occurred during the decade that may suggest structural breaks in local spending and service delivery and that perhaps make variables of principal interest incomparable across the longer time horizon. First, as previously mentioned, the legal architecture for fiscal decentralization was revised in 2004 and the changes took effect in 2005. Second, direct elections of local government heads also began in 2005. Third, and perhaps most importantly, new budget rules were applied beginning in 2006 that forced a large increase in the general-purpose grant starting in that year.[5] All things considered, it is argued here that the examination is best carried out starting in 2006.

The analyses below employed a general index of service access. The index is constructed via the first principal component of the six service access variables discussed just above. The covariance matrix is used (i.e., instead of the correlation matrix) to form the principal component score since the range and scale of the individual variables are quite similar.

As noted above a DPD model is employed to examine the impact of local government spending on public service access. The DPD model is ideally suited to the investigation of service access over time. The model specifies that the level of service access in one period depends on the level of service access in the previous period, along with other variables. The estimated coefficient of lagged service access shows the degree to which conditional convergence in service access is being achieved over time.

The DPD analysis below also considers the possibility that local government spending may be an endogenous determinant of service access. Endogeneity may derive from reverse causality, for example, in which exogenous shocks to service access may also affect local government spending. DPD instrumental variable procedures can accommodate such endogeneity and allow for the identification of causal effects. The methods used here are based on a long line of research (e.g., Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998) and are discussed more fully below.

LOCAL GOVERNMENT SPENDING AND SERVICE ACCESS

The main objective of the analysis in this section is to explain local service access, focusing on the influence of local government spending. The following hypothesis is tested.

> *Hypothesis: Local government spending directly determines access to district services. More specifically, increases in local government spending lead to consistently rising district service access.*

Methods

The following empirical model is used to test the above hypothesis.

$$s_{it} = \alpha\, s_{it-1} + w_{it}\beta_1 + x_{it}\beta_2 + v_i + \varepsilon_{it} \qquad (1)$$

where i and t are subscripts for local government and year, respectively; s is service access; w is a collection of endogenous variables; x are strictly exogenous variables; v are unobserved (fixed) effects, which may be correlated with w or x; ε is the error term, which is identically and independently distributed (with mean zero and variance σ^2); and α, β_1 and β_2 are the parameters to be estimated.

Service access in the present period is posited to be a function of service access in the previous period. Lagged service access is therefore related to past values of the error term and, as such, the variable is predetermined. Local government per capita spending is specified as endogenous in the determination of service access (in the preferred model). The square of local government spending, incorporated to test for possible quadratic effects, is included as an endogenous variable as well. Per capita spending and its square, both in log form, are the only variables in w. Exogenous (control) variables in x comprise log of population, percentage of households with access to electricity, per cent of the population that is poor, the poverty gap, the Gini coefficient for personal consumption per capita, and the log of personal consumption per capita. Time dummies are also included in the model.

The parameters in equation (1) are estimated by difference-generalized method of moment (GMM) techniques. Difference-GMM estimation proceeds by taking first differences of equation (1) to purge the unobserved effects. Derived moment conditions imply that lagged levels (second lags and beyond) can serve as instruments for the current first differences of the dependent variable. Lagged levels (second and beyond) of any other variables specified as endogenous (i.e., in w) may also serve as instruments. Differenced exogenous variables serve as instruments for themselves. In order to avoid over-instrumentation, estimation of the models below employs only the second to fourth lags to construct instruments and collapses those instruments to reduce their number further (Roodman, 2009).[6]

RESULTS

Four versions of the difference-GMM model are initially estimated.[7] The dependent variable in each case is the service access index, as previously defined. The first model uses only total spending as an explanatory variable and

the second adds the square of spending as a determinant. Both of these first two models treat spending as exogenous. The third and fourth versions repeat these first two specifications but specify spending variables as endogenous. All models include exogenous controls as enumerated above and time dummies.

Table 1 presents the output of the robust two-step estimation (where results for time dummies have been suppressed). The top part of Table 1 shows the estimated coefficients, associated standard errors and an indication of the statistical significance of the estimated coefficients. The middle section shows the number of observations, the number of cross-section units and the number of instruments employed in the estimation. The bottom part of Table 1 provides various diagnostic statistics: the Wald statistic, the Arellano–Bond test for second-degree autocorrelation, the Hansen test statistic for instrument exogeneity and the difference-in-Hansen statistics for testing the exogeneity of instrument subsets.

Initial attention focuses on the sign and statistical significance of spending variable coefficients. As Table 1 shows, neither spending nor its square (where included) is a significant determinant of service access in any of the first three models. However, both spending and its square are statistically significant regressors in the fourth model. The results highlight the importance of specifying the impact of spending on service outcomes as non-linear (in logs) and of treating spending as endogenous. The favoured model suggests that spending positively influences service access up to a point and negatively affects services thereafter. The critical point is reached at approximately the 75th percentile of local government expenditure.

These results imply that the stated hypothesis should be rejected. That is, increases in spending do not seem to lead to consistently rising service access – the positive relationship between spending and services breaks down at higher levels of local government expenditure. The conclusion that spending negatively affects service access when expenditure is relatively high is no doubt controversial. While it might be easily accepted that increases in spending at some point could lead to decreasing marginal improvements to service access, it is perhaps harder to understand how expenditure increases could lead to deteriorating service access. This key point will be taken up in more depth below.

Note also in Table 1 that current service access is significantly related to service access in the previous period in all models. This implies that a dynamic specification may indeed be a reasonable one in the current context. Given that the coefficient of lagged service access is less than 1, the results indicate that service access is conditionally converging across districts.

The various diagnostic tests at the bottom of Table 1 provide information that can be used to judge further the appropriateness of the models. The Arellano–Bond test implies that none of the four models has any problem with second-degree autocorrelation. The Hansen test shows that the null hypothesis that instruments are collectively exogenous cannot be rejected at the 0.05 level of significance in any of the models. The difference-in-Hansen tests imply that instrument subsets (where relevant) can also be assumed to be exogenous.

Robustness of the results

Robustness of the above empirical results – especially as related to the relationship between service access and spending – is now examined in light of the relative dependency of local governments on intergovernmental transfers.[8]

Sub-national governments that are relatively more dependent on intergovernmental transfers as a source of revenue may spend their funds more inefficiently and/or deliver fewer or lower quality public services. The literature offers two main explanations for this argument. First, dependence on intergovernmental transfers weakens the link between citizen tax payment and sub-national government spending on services, thereby diluting horizontal accountability and constraining the delivery of public goods (Weingast, 2009). Second, dependence on transfers limits interjurisdictional competition for fiscal resources and this may also have negative effects on the efficient delivery of public services (Qian & Weingast, 1997).

Both arguments are theoretically compelling and have received a considerable amount of empirical support in the literature. Eyrud and Lusinyan (2013) provide evidence on a panel of OECD countries to suggest that sub-national governments with significant VFIs (i.e., dependence on intergovernmental transfers) perform relatively poorly across a range of fiscal outcomes. Boetti et al. (2012) show that Italian municipalities with more limited revenue autonomy spend less efficiently in the delivery of local public services. Francese et al. (2014) demonstrate that as the share of total spending financed by intergovernmental grants increases, the incidence of (inappropriate) caesarean deliveries rises in Italy. Kyriacou et al. (2016) determine that over-reliance on transfers among sub-national governments in OECD countries – and the attendant weakened interjurisdictional competition – reduces the quality of sub-national governance along a number of dimensions. Finally, Turati et al. (2016) find that student performance in Italian and Spanish schools deteriorates as dependence on funding from government increases.

In order to test the robustness of the initial empirical results presented above to concerns related to the dependence of local governments on intergovernmental transfers, two alternative specifications of the preferred model are estimated: one that examines (only) the direct influence of local government transfer dependence on service access, and another that also investigates possible indirect effects of dependence on service outcomes via interactions with spending. Following Eyrud and Lusinyan (2013), an additional explanatory variable is constructed to proxy transfer dependence, i.e., VFIs, and it is defined as the share of total local government spending not financed by own-source taxes and charges. The variable is treated as endogenous since local governments have some control over the own-source revenues that they generate. Table 2 presents the empirical output.

Table 1. Explaining local service access, 2006–2010.[a]

	Spending exogenous				Spending endogenous			
Independent variables	**Coefficient**	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**
Lagged service access	0.240	0.089**	0.238	0.089**	0.258	0.091**	0.236	0.095**
Log of total local government spending per capita	0.564	0.936	23.709	17.802	–5.173	6.146	189.525	92.056**
Log of total local government spending per capita squared	–	–	–0.802	0.629	–	–	–6.479	3.156**
Log of population	12.344	3.590**	11.459	3.728**	6.901	6.505**	7.529	6.558
Per cent of households with access to electricity	0.423	0.067**	0.421	0.067**	0.433	0.067**	0.407	0.072**
Per cent of population that is poor	–0.009	0.037	–0.011	0.038	–0.012	0.042	–0.026	0.051
Poverty gap	0.865	0.389**	0.875	0.390**	0.855	0.408**	0.801	0.491
Gini for personal consumption per capita	–0.127	0.081	–0.132	0.081	–0.133	0.084	–0.170	0.088**
Log of personal consumption per capita	6.810	2.588**	6.970	2.603**	7.083	2.681**	7.847	2.864**
Constant	–188.4	59.8**	–335.3	124.0**	–44.7	161.1	–1502.9	657.7**
Number of observations	1863		1863		1863		1863	
Number of cross-section units	490		490		490		490	
Number of instruments	20		20		20		20	
	Statistics	***p***	**Statistics**	***p***	**Statistics**	***p***	**Statistics**	***p***
Wald	801.04	0.000	677.33	0.000	813.63	0.000	531.29	0.000
Arellano–Bond test for AR(2) in first differences	0.04	0.964	–0.12	0.904	0.14	0.888	–0.61	0.543
Hansen test of overriding restrictions	3.18	0.204	3.17	0.204	3.32	0.505	6.34	0.386
Difference-in-Hansen tests of exogeneity of instrument subsets								
GMM for service access	–	–	–	–	3.29	0.349	4.29	0.232
GMM for log of total local government spending per capita	–	–	–	–	0.79	0.853	2.66	0.446
GMM for log of total local government spending per capita squared	–	–	–	–	–	–	3.06	0.383

Notes: [a]Dependent variable is service access. All economic and fiscal variables are measured in constant 2010 terms. Standard errors are robust.
** and *Statistical significance at the 0.05 and 0.10 levels, respectively.

Table 2. Explaining local service access, accounting for local government dependency on intergovernmental transfers, 2006–2010.[a]

	VFI only		VFI with interactions	
Independent variables	**Coefficient**	**SE**	**Coefficient**	**SE**
Lagged service access	0.151	0.101	0.179	0.097*
Log of total local government spending per capita	117.583	59.424**	198.773	99.524**
Log of total local government spending per capita squared	–3.966	1.921**	–6.609	3.247**
Vertical fiscal imbalances (VFI)	0.012	0.045	–0.564	5.225
Log of total local government spending per capita*VFI	–	–	0.132	0.767
Log of total local government spending per capita squared*VFI	–	–	–0.007	0.028
Log of population	0.408	0.073	7.587	8.195
Per cent of households with access to electricity	9.223	6.793**	0.383	0.091**
Per cent of population that is poor	–0.013	0.050	–0.036	0.066
Poverty gap	0.741	0.376**	0.762	0.434*
Gini for personal consumption per capita	–0.147	0.087*	–0.173	0.092*
Log of personal consumption per capita	7.920	2.707**	7.404	2.784**
Constant	–1011.17	494.08**	–1598.78	812.78**
Number of observations	1854		1854	
Number of cross-section units	490		490	
Number of instruments	23		29	
	Statistics	***p***	**Statistics**	***p***
Wald	777.70	0.000	600.00	0.000
Arellano–Bond test for AR(2) in first differences	–0.66	0.509	–1.18	0.238
Hansen test of overriding restrictions	6.91	0.546	9.50	0.661
Difference-in-Hansen tests of exogeneity of instrument subsets				
GMM for service access	4.09	0.252	3.27	0.351
GMM for log of total local government spending per capita	2.18	0.537	3.76	0.289
GMM for log of total local government spending per capita squared	2.64	0.451	3.87	0.276
GMM for VFI	1.45	0.693	2.13	0.545
GMM for log of total local government spending per capita*VFI	–	–	2.11	0.549
GMM for log of total local government spending per capita squared*VFI	–	–	2.11	0.550

Notes: [a]Dependent variable is service access. All economic and fiscal variables are measured in constant 2010 terms. Standard errors are robust.
** and *Statistical significance at the 0.05 and 0.10 levels, respectively.

As the results in the first two columns of Table 2 show, the direct effect of VFI on service outcomes has an unexpected positive sign and is statistically insignificant. And the impact of spending on service access retains its statistically significant inverted 'U'-shaped influence. The second specification, in which interaction effects are also considered, yields similar results. Both direct and indirect (i.e., interaction) effects of VFI are unimportant in explaining service outcomes. After accounting for interactions, the marginal impact of VFI (calculated at the point of means) has the expected sign (–0.05) but it is not statistically significant (the *p*-value is 0.259). The marginal effects of spending and spending squared, after accounting for interactions, are 211.38 and –7.24, respectively, and the coefficients are statistically significant at the 0.000 and 0.018 levels, respectively. Thus, even after considering local government dependence on transfers, the influence of spending on outcomes maintains its inverted 'U'-shaped form. Test statistics found at the bottom of Table 2 do not indicate any model specification problems.

These results imply that differences in transfer dependence across local governments do not affect the main outcomes of interest, as initially determined. In particular, less reliance on transfers does not appear to lead to more efficient local spending and/or better quality service delivery, at least for all districts taken as a group. This may be because local governance conditions in Indonesia are so weak, in general, that any spending and service delivery benefits that would normally be expected to accrue to the majority of citizens as a function of greater tax decentralization, enhanced horizontal accountability and/or increased interjurisdictional competition are swamped by the capture of said benefits by local elites (Bardhan, 2002; Bardhan & Mookherjee, 2006). The issue of local government dependence on transfers will be returned to in more detail below.

EXPLORING POSSIBLE CAUSAL MECHANISMS

The purpose of this part of the analysis is to examine possible underlying causes of the apparent inverted 'U'-shaped relationship between local government spending and service access. Two particular causal mechanisms are explored: local executive electoral accountability and district public financial management capability.

The adopted approach is indirect. The entire sample of local governments is first divided into subsamples based on election type and external audit outcomes, respectively. In the first case local governments are split into two groups: those that have directly elected executives and those whose heads were indirectly elected. In the second instance districts are classified into those that have experienced relatively strong external audit results (unqualified and qualified audit opinions) and those that have not (adverse opinions and disclaimers). The model specified in equation (1) is then re-estimated for the various district subsamples with a view to examining the extent to which spending effects on service access differ. All models employ the service access index as the dependent variable and treat spending and spending squared as endogenous, as previous results suggest is appropriate.

It might at first blush seem preferable to directly include dummy variables that denote local governments with direct elected heads and/or districts with good financial management performance as determinants in a regression (and interact them with spending variables); however, this cannot be done because such variables are time-invariant for a large number of districts and this creates difficulties for the estimation procedures (Roodman, 2009).

Table 3 provides the estimation output. Discussion again focuses on the effects of local government spending and spending squared on service access. For the comparison between local governments with indirectly and directly elected executives, the empirical results show that the now expected inverted 'U'-shaped relationship between spending and service access holds for the former but not for the latter. A re-estimation of the model for districts with elected heads including only spending (i.e., and not spending squared) demonstrates that district expenditure directly and positively influences service access across the entire range of spending.

Similar results are found for the comparison between local governments with relatively weak and strong external audit outcomes, respectively. That is, the inverted 'U'-shaped relationship between spending and service access obtains for the first subsample of districts but not for the second. Moreover, a re-estimation of the model focused on those local governments that perform comparatively well on their external audits demonstrates that district expenditure directly and consistently leads to improved service access.

How should these results be interpreted? One strong possibility is that local governments with indirectly elected executives and those with weak audit results are more corrupt than their directly elected and better financially managed counterparts. Other studies have shown that local parliaments are particularly corrupt in Indonesia, in general, and so it seems plausible that local government executives appointed by local legislators might also tend to be relatively more corrupt (Aspinall, 2013; Lewis, 2015b). In addition, as mentioned above, recent work indicates that poor district performance on external audits is often a function of corrupt budget practices, particularly as related to tendering of public works projects (Lewis, 2015a; Sacks et al., 2014).

Among local governments with access to significant fiscal resources, such corruption – waste, fraud and abuse connected to budget implementation – might crowd out actual spending on service delivery to such an extent that service access worsens, *ceteris paribus*. On the other hand, local governments with directly elected executives and those that perform comparatively well on financial audits may be less prone to corruption and consequently increases in expenditure would be more apt to lead consistently to improvements in service outcomes.

The general claim that corruption poses significant challenges for improving service outcomes is consistent with theory and empirical evidence recently supplied by other researchers, both for Indonesia and other countries (Bardhan, 2002; Bardhan & Mookherjee, 2006; Kyriacou et al., 2016; Rajkumar & Swaroop, 2008; Rodriguez-Pose, 2013; Suryadarma, 2012). The specific argument in this study is perhaps somewhat harder-edged. That is, the assertion here is not merely that positive effects of spending become less pronounced as corruption becomes more problematic, but that rising spending eventually leads to deteriorating service outcomes as corruption increases, all else being equal.

Finally, the issue of local government dependence on transfers is taken up again. As demonstrated in the preceding section, such dependence appears to have little impact on local government spending and service delivery, in the typical case, perhaps because of generally weak governance conditions and elite capture. However, transfer dependence might still have some effect on spending and/or service access among local governments that are apparently less susceptible to corruption and capture.[9] To test this hypothesis, the above model specifications for local governments that have directly elected executives and strong audit results – both of which are arguably indicative of less corruption – are re-estimated by including the VFI variable.

Two separate regressions are run for each group: one that contains VFI by itself and another that includes both VFI and its interaction with spending. If transfer dependence has a deleterious effect on service delivery under these more narrow circumstances then it would be anticipated that the estimated coefficient of VFI in the first regression would be negative and statistically significant. In the second specification it might be expected that the influence of the interaction between VFI and spending as well as the overall impact of VFI (i.e., considering both direct and indirect effects) would be negative and statistically significant.

The empirical output is supplied in Table 4. As shown, for the directly elected executive specification, the sign of the coefficient of VFI in the first regression is negative, although it is not statistically significant. And local

Table 3. Explaining local service access, by election type and external audit outcome, 2006–2010.[a]

	Election type						External audit outcome					
	Indirectly elected		Directly elected		Directly elected		Weak audit results		Strong audit results		Strong audit results	
Independent variables	**Coefficient**	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**
Lagged service access	0.200	0.255	0.530	0.139**	0.694	0.158**	0.504	0.376	0.596	0.155**	0.515	0.142**
Log of total local government spending per capita	181.757	88.452**	233.091	195.452	16.408	4.899**	725.195	197.113**	–50.041	145.127	21.974	5.529**
Log of total local government spending per capita squared	–6.956	2.949**	–7.476	6.797	–	–	–24.791	6.674**	2.427	5.022	–	–
Log of population	10.441	40.532	24.621	8.787**	33.422	5.903**	0.515	50.172	38.053	6.850**	37.093	5.388**
Per cent of households with access to electricity	0.063	0.180	0.519	0.109**	0.567	0.092**	0.344	0.190*	0.525	0.103**	0.520	0.102**
Per cent of population that is poor	–0.286	0.344	–0.018	0.054	–0.006	0.046	0.146	0.559	–0.010	0.046	–0.014	0.045
Poverty gap	1.211	1.514	0.898	0.436**	0.920	0.449**	–0.734	1.179	1.081	0.469**	1.083	0.460**
Gini for personal consumption per capita	–0.111	0.202	–0.187	0.130	–0.157	0.122	–0.699	0.293**	–0.131	0.106	–0.127	0.106
Log of personal consumption per capita	3.572	10.713	8.635	4.097**	7.356	3.942*	22.499	9.127**	0.537	3.868	0.266	3.860
Constant	–1253.2	895.2	–2202.0	1326.4*	–757.9	117.9**	–5533.7	1610.2**	–262.3	985.2	–767.2	114.5**
Number of observations	327		1536		1536		525		1324		1324	
Number of cross-section units	180		310		310		269		221		221	
Number of instruments	20		20		17		20		20		17	
	Statistics	***p***	**Statistics**	***p***	**Statistics**	***p***	**Statistics**	***p***	**Statistics**	***p***	**Statistics**	***p***
Wald	50.04	0.000	378.15	0.000	423.12	0.000	60.65	0.000	343.83	0.000	329.25	0.000
Arellano–Bond test for AR(2) in first differences	0.10	0.919	0.17	0.863	0.28	0.781	–1.21	0.227	0.59	0.552	0.32	0.751
Hansen test of overriding restrictions	6.54	0.365	9.81	0.164	9.61	0.087	7.95	0.242	3.32	0.767	2.82	0.588
Difference-in-Hansen tests of exogeneity of instrument subsets												
GMM for service access	5.62	0.132	3.13	0.372	3.39	0.336	6.74	0.081	3.21	0.361	2.28	0.516
GMM for log of total local government spending per capita	3.92	0.370	1.50	0.681	4.39	0.222	0.21	0.975	0.75	0.861	0.88	0.830
GMM for log of total local government spending per capita squared	3.98	0.264	1.88	0.597	–	–	0.31	0.959	0.70	0.874	–	–

Notes: [a]Dependent variable is service access. All economic and fiscal variables are measured in constant 2010 terms. Standard errors are robust.
** and *Statistical significance at the 0.05 and 0.10 levels, respectively.

Table 4. Explaining local service access by directly elected heads and strong audit results, accounting for local government dependency on intergovernmental transfers, 2006–2010.[a]

	Directly elected				Strong audit results			
	VFI only		VFI with interactions		VFI only		VFI with interactions	
Independent variables	**Coefficient**	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**
Lagged service access	0.833	0.266**	0.876	0.219**	0.324	0.208	0.462	0.175**
Log of total local government spending per capita	16.986	6.310**	45.163	25.834*	23.059	4.682**	61.948	24.357**
Vertical fiscal imbalance (VFI)	–0.100	0.246	5.097	4.010	–0.437	0.224**	6.671	`
Log of total local government spending per capita*VFI	–	–	–0.358	0.245	–	–	–0.486	0.268*
Log of population	40.445	13.049**	34.770	13.146**	31.562	9.590**	28.051	10.899**
Per cent of households with access to electricity	0.539	0.102**	0.542	0.105**	0.577	0.117**	0.561	0.119**
Per cent of population that is poor	0.067	0.044	0.065	0.047	0.021	0.033	–0.004	0.044
Poverty gap	0.041	0.507	0.060	0.492	0.035	0.481	0.232	0.546
Gini for personal consumption per capita	–0.041	0.138	–0.070	0.135	–0.022	0.129	–0.044	0.131
Log of personal consumption per capita	–0.114	4.335	1.315	4.333	–5.109	4.587	–4.083	4.693
Constant	–769.71	235.24**	–1131.26	404.09**	–587.42	142.26**	–1141.45	343.10**
Number of observations	1536		1536		1324		1324	
Number of cross-section units	310		310		221		221	
Number of instruments	20		23		20		23	
	Statistics	***p***	**Statistics**	***p***	**Statistics**	***p***	**Statistics**	***p***
Wald	323.63	0.000	396.86	0.000	259.72	0.000	323.31	0.000
Arellano–Bond test for AR(2) in first differences	0.76	0.450	0.99	0.321	0.99	0.323	1.31	0.192
Hansen test of overriding restrictions	6.09	0.413	6.84	0.554	9.77	0.135	12.31	0.138
Difference-in-Hansen tests of exogeneity of instrument subsets								
GMM for service access	1.88	0.599	5.88	0.117	4.62	0.202	5.72	0.126
GMM for log of total local government spending per capita	4.80	0.187	3.25	0.354	4.37	0.224	5.13	0.162
GMM for VFI	0.76	0.859	5.23	0.156	6.54	0.088	4.66	0.198
GMM for log of total local government spending per capita*VFI	–	–	2.83	0.418	–	–	3.54	0.315

Notes: [a]Dependent variable is service access. All economic and fiscal variables are measured in constant 2010 terms. Standard errors are robust.
** and *Statistical significance at the 0.05 and 0.10 levels, respectively.

government spending effects remain positive and statistically significant. In the second regression the coefficient of interaction between VFI and spending is also negative but insignificant. The overall impact of VFI in the second regression is insignificant as well (i.e., at the point of means, with a coefficient –0.11 of and p-value of 0.568). Local government spending retains its positive influence on service access (after considering interactions, the estimated coefficient is 15.51 and $p = 0.004$).

For the strong audit results model, the estimated coefficient of VFI in the first regression is negative and statistically significant. The impact of spending on service access nevertheless remains positive and significant. In the second regression, the coefficient of the interaction term is also negative and statistically significant and the overall impact of VFI is likewise negative and significant (with a coefficient of –0.42 and $p = 0.043$). The overall marginal effect of spending on service access remains positive (with a coefficient of 21.6 and $p = 0.000$).

All things considered, these results may be taken to infer that VFIs may have at least some negative impact on local government spending and the provision of public services for those local governments that are (arguably) less corrupt. This finding does not overturn the general conclusion that the expenditure of less corrupt local governments consistently and positively affects service access but it does imply that the beneficial impact of such spending on services is somewhat mitigated as transfer dependence increases.

SUMMARY AND CONCLUSIONS

This study has investigated the impact of local government spending on service delivery in Indonesia. The empirical examination finds that district spending positively influences access to education, health and infrastructure services – but only up to a point, after which the relationship becomes negative. The critical point in the association between local government expenditure and public service access is reached at about the 75th percentile of spending.

Interestingly, the quadratic spending effects disappear for local governments managed by directly elected executives and for districts that perform relatively well on their external financial audits. That is, for these local governments the impact of spending on service access is strictly positive across the entire range of expenditure. This article argues that direct electoral accountability and strong public financial performance among districts may be indicative of reduced local corruption. Less corrupt local governments spend their resources more efficiently and deliver higher levels of access to key public services.

At the same time, however, the study provides some empirical evidence to imply that the positive impact of (arguably) less corrupt local government spending on service access is moderated to a certain extent as district dependence on intergovernmental transfers rises. This latter result supports a significant amount of research that finds that VFIs can have a variety of negative effects on local government fiscal and service outcomes.

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DISCLOSURE STATEMENT

No potential conflict of interest was reported by the author.

SUPPLEMENTAL DATA

Supplemental data for this article can be accessed at http://dx.doi.org/10.1080/00343404.2016.1216957

NOTES

1. In late 2004, the DPR issued revisions to the two major pieces of legislation on administration and fiscal relations: Law 32/2004 and Law 33/2004, respectively. In 2009, it finalized an amendment to the law on sub-national taxes: Law 28/2009. In 2014, Law 23/14 was promulgated, amending Law 32/2004.
2. Comprehensive data do not exist on the quality of local services. Under such circumstances, the analysis of service access effects would seem to be a reasonable second-best approach.
3. Electricity is provided by the National Electricity Agency (PLN).
4. District splitting (*pemekaran*) refers to the phenomenon of local governments breaking into smaller administrative units, a ubiquitous occurrence in Indonesia (Fitrani et al., 2005).
5. The pool of finance for the general grant is based on planned domestic revenues (net of the amounts to be transferred through the revenue-sharing programmes) as fixed in the state budget. Until 2006 the central government had purposely underestimated such revenues in the budget in order to keep its grant obligations low. In 2006 the centre finally succumbed to pressure from local governments to estimate planned domestic revenues more realistically and, consequently, general-purpose grants significantly increased.
6. Over-instrumentation can result in two main problems. First, use of too many instruments may over-fit the endogenous variables, thus inadequately expunging the endogeneity and biasing coefficient estimates in the process. Second, the employment of an excessive number of instruments may also create problems for the Hansen test of instrument exogeneity; that is, if the number of instruments becomes too large, the test is invalidated.
7. Estimation of the DPD model is carried out using 'xtabond2' developed for Stata by Roodman (2007).
8. The robustness of the main results is also tested along two additional dimensions: (1) geography and access to natural resource-based revenues; and (2) individual service access. The outcomes of these robustness tests are provided in Appendix B in the supplemental data online.
9. The author thanks a reviewer for pressing this line of enquiry.

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REFERENCES

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, *58*(2), 277–297. doi:10.2307/2297968

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68*(1), 29–51. doi:10.1016/0304-4076(94)01642-D

Aspinall, E. (2013). A nation in fragments: Patronage and neoliberalism in contemporary Indonesia. *Critical Asian Studies*, *45*(1), 27–54. doi:10.1080/14672715.2013.758820

Baldacci, E., Guin-Siu, M., & De Mello, L. (2003). More on the effectiveness of public spending on health care and education: A covariance structure model. *Journal of International Development*, *15*, 709–725. doi:10.1002/jid.1025

Bardhan, P. (2002). Decentralization of governance and development. *Journal of Economic Perspectives*, *16*(4), 185–205. doi:10.1257/089533002320951037

Bardhan, P., & Mookherjee, D. (2006). Decentralization and accountability in infrastructure delivery in developing countries. *Economic Journal*, *116*, 101–127. doi:10.1111/j.1468-0297.2006.01049.x

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143. doi:10.1016/S0304-4076(98)00009-8

Boetti, L., Piacenza, M., & Turati, G. (2012). Decentralization and local governments' performance: How does fiscal autonomy affect spending efficiency? *FinanzArchiv/Public Finance Analysis*, *68*(3), 269–302. doi:10.1628/001522112X653840

Eyraud, L., & Lusinyan, L. (2013). Vertical fiscal imbalances and fiscal performance in advanced economies. *Journal of Monetary Economics*, *60*(5), 571–587. doi:10.1016/j.jmoneco.2013.04.012

Filmer, D., Hammer, J., & Pritchett, L. (2000). Weak links in the chain: A diagnosis of health policy in poor countries. *World Bank Research Observer*, *15*(2), 199–224. doi:10.1093/wbro/15.2.199

Filmer, D., & Pritchett, L. (1999). The impact of public spending on health: Does money matter? *Social Science and Medicine*, *49*, 1309–1323. doi:10.1016/S0277-9536(99)00150-1

Fitrani, F., Hofman, B., & Kaiser, K. (2005). Unity in diversity? The creation of new local governments in a decentralizing Indonesia. *Bulletin of Indonesian Economic Studies*, *41*(1), 57–79. doi:10.1080/00074910500072690

Francese, M., Piacenza, M., Romanelli, M., & Turati, G. (2014). Understanding inappropriateness in health spending: The role of regional policies and institutions in caesarean deliveries. *Regional Science and Urban Economics*, *49*, 262–277. doi:10.1016/j.regsciurbeco.2014.02.006

Gupta, S., Verhoeven, M., & Tiongson, E. (2002). The effectiveness of government spending on education and health care in developing and transition economies. *European Journal of Political Economy*, *18*, 717–737. doi:10.1016/S0176-2680(02)00116-7

Hanushek, E. (1995). Interpreting recent research on schooling in developing countries. *World Bank Research Observer*, *10*(2), 227–246. doi:10.1093/wbro/10.2.227

Jackson, C., Johnson, R., & Persisco, C. (2015). *The effects of school spending on education and economic outcomes: Evidence from school finance reforms* (NBER Working Paper No. 20847). Cambridge, MA: National Bureau of Economic Research (NBER).

Kyriacou, A., Muinelo-Gallo, L., & Roca-Sagales, O. (2016). Regional inequalities, fiscal decentralization and government quality. *Regional Studies*. doi:10.1080/00343404.2016.1150992

Lewis, B. (2014). Twelve years of fiscal decentralisation: A balance sheet. In H. Hill (Ed.), *Regional dynamics in a decentralised Indonesia* (pp. 135–155). Singapore: Institute of South East Asia Studies.

Lewis, B. (2015a). *Local public financial management performance in Indonesia: Political and fiscal causes and effects* (Working Paper). Canberra: Arndt-Corden Department of Economics.

Lewis, B. (2015b). *Local government form in Indonesia: Tax, expenditure, and efficiency effects* (Working Paper). Canberra: Arndt-Corden Department of Economics.

Mingat, A., & Tan, J. (1992). *Education in Asia: A comparative study of cost and financing*. Washington, DC: Education Group, Human Development Department, World Bank.

Mingat, A., & Tan, J. (1998). *The mechanics of progress in education: Evidence from cross-country data* (Policy Research Working Paper No. 2015). Washington, DC: Education Group, Human Development Department, World Bank.

Or, Z. (2000). Determinants of health outcomes in industrialized countries: A pooled cross-country time series analysis. *OECD Economic Studies*, *30*, 53–77.

Patunru, A. A., & Rahman, E. A. (2014). Local governance and development outcomes. In H. Hill (Ed.), *Regional dynamics in a decentralised Indonesia* (pp. 156–185). Singapore: Institute of South East Asia Studies.

Qian, Y., & Weingast, B. R. (1997). Federalism as a commitment to preserving market incentives. *Journal of Economic Perspectives*, *11*, 83–92. doi:10.1257/jep.11.4.83

Rajkumar, A., & Swaroop, V. (2008). Public spending and outcomes: Does governance matter. *Journal of Development Economics*, *86*, 96–111. doi:10.1016/j.jdeveco.2007.08.003

Rodriguez-Pose, A. (2013). Do institutions matter for regional development? *Regional Studies*, *47*(7), 1034–1047. doi:10.1080/00343404.2012.748978

Roodman, D. (2007). How to do xtabond2: An introduction to difference and system GMM in Stata. *Stata Journal*, *9*(1), 86–136.

Roodman, D. (2009). A note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics*, *71*(1), 135–158. doi:10.1111/j.1468-0084.2008.00542.x

Sacks, A., Rahman, E., Turkewitz, J., Buehler, T., & Saleh, I. (2014). *The dynamics of centralized procurement reform in a decentralized state* (World Bank Policy Research Working Paper No. 6977). Washington, DC: World Bank.

Schulze, G. G., & Sjahrir, B. S. (2014). Decentralisation, governance, and public service delivery. In H. Hill (Ed.), *Regional dynamics in a decentralised Indonesia* (pp. 186–207). Singapore: Institute of South East Asia Studies.

Sjahrir, B. S., Kis-Katos, K., & Schulze, G. G. (2013). Political budget cycles in Indonesia at the district level. *Economics Letters*, *120*(2), 342–345. doi:10.1016/j.econlet.2013.05.007

Sjahrir, B. S., Kis-Katos, K., & Schulze, G. G. (2014). Administrative overspending in Indonesian districts: The role of local politics. *World Development*, *59*, 166–183. doi:10.1016/j.worlddev.2014.01.008

Skoufias, E., Narayan, A., Dasgupta, B., & Kaiser, K. (2014). *Electoral accountability, decentralisation and service delivery in Indonesia* (Policy Research Working Paper No. 5614). Washington, DC: World Bank.

Suryadarma, D. (2012). How corruption diminishes the effectiveness of public spending on education in Indonesia. *Bulletin of Indonesian Economic Studies*, *48*(1), 85–100. doi:10.1080/00074918.2012.654485

Turati, G., Montolio, D., & Piacenza, M. (2016). Funding and school accountability: The importance of private and decentralised public funding for pupil attainment. *Fiscal Studies*. doi:10.1111/1475-5890.12112

Weingast, B. R. (2009). Second generation fiscal federalism: The implications of fiscal incentives. *Journal of Urban Economics*, *65*, 279–293. doi:10.1016/j.jue.2008.12.005

World Bank. (2012). *Indonesia subnational public expenditure review: Optimizing subnational performance for better services and faster growth*. Jakarta: World Bank.