



## Why does fiscal decentralization negatively affect student dropout rates? Results from Indonesia's National Socioeconomic Survey 2002-2014 and two case studies

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### ABSTRACT

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The consequences of fiscal decentralization on basic education outcomes are always debatable. Yet, its consequences on student dropout rates remain questionable. In this paper, we examine why fiscal decentralization in Indonesia has not effectively reduced student dropout. Mixed method analyses combining the Indonesian National Socioeconomic Survey (*Susenas*) 2002-2014 and two case studies in the districts of Sleman and Yogyakarta are used to explore the reasons for which fiscal decentralization has not reduced student dropout in Indonesia. Instead of reducing student dropout, we found that fiscal decentralization increases the risk of student dropout at the elementary school, transitional and junior secondary school levels. We found lack of fiscal capacity, inefficiency of educational budget allocation, and technical inefficiency in program implementation to be the main challenges that prevent district governments from effectively reducing student dropout.

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### 1. Introduction

High rates of student dropout have become a major challenge in decentralized Indonesia. Despite impressive increases in student enrollment, Indonesia has not been effective at keeping children in school. In 2015, Indonesia achieved enrollment increases of 110% and 101% in elementary and junior secondary schools, respectively (MoEC, 2015). However, approximately 2.4 million of elementary and junior secondary students fail to complete their education. Indonesia is thus 56th among the 127 countries included in the world ranking of student dropout rates (MoEC, 2015).

Indonesia's basic educational system was reformed from a centralized to a decentralized system in 1999. Decentralized education has been in keeping with district decentralization, which is enshrined in two laws:

one regulating regional decentralized government (Law 22/1999 on Regional Government) and one regulating fiscal decentralization (Law 25/1999 on the Fiscal Balance between the Central Government and the Regions). These regulations give district government greater responsibility in managing teachers and schools while the central government retains the responsibility for national policy formulation, curriculum and overall quality assurance. The fiscal framework gives greater autonomy to district authorities in managing basic education expenditures in their jurisdictions. By involving district governments in service delivery, educational decentralization should enable district governments to improve educational access, quality and equity.

Decentralization also transfers abundant fiscal resources from central to local governments. This

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commitment is guaranteed in the 2002 constitutional amendment obliging all decentralized district governments to allocate at least 20% of annual expenditures to education (Suryadarma and Jones, 2013). The resultant Law No. 20/2003 on the National Education System is seen as one of the strongest commitments to education by any country (Nuh, 2013). From 2011 to 2015, educational spending in Indonesia increased 65.3%, from IDR 266.9 trillion to IDR 408.5 trillion (MoF, 2016). Total education spending in 2015 alone rose 20.6%. Moreover, total education spending at the subnational level rose from 59.6% in 2011 to 62.2% in 2015, account for IDR 159 trillion and IDR 254.2 trillion respectively (Ministry of Finance, 2016). This enormous investment is expected to improve both enrollment and student dropout rates.

This study addresses the limitations of prior studies in a number of ways. First, it focuses on student dropout as an outcome of fiscal decentralization in Indonesia at the beginning of decentralization (2002) and after almost one-and-a-half decades of decentralization (2014). Second, based on a national representative sample, we examine the linkage between fiscal decentralization and student dropout rates at the elementary school, transitional, and junior secondary levels. Third, this study combines the results of national survey data (*Susen* 2002 and 2014) and case studies on fiscal decentralization and student dropout in two districts in the province of Yogyakarta. With its use of mixed methods, this study also explores why fiscal decentralization has failed to reduce student dropout in both districts. Fourth, this study uses multilevel regression to account for unobserved heterogeneity of the effect of fiscal decentralization on student dropout rates. This analysis is also able to account for other supply and demand factors of student dropout at the district and individual levels. Thus, the results are more robust than those of prior studies based on ordinary least squares.

## **2. Theory**

Several studies on fiscal decentralization and education outcomes have shown the benefits of decentralization on basic educational outcomes. Faguet and Sanches (2008) demonstrated that school enrollment rose along with the share of total education expenditures in Columbian public schools and Argentinian secondary schools. Rajkumar and Swaroop (2008) found that increased public spending becomes effective in increasing primary education attainment in the presence of good governance. Behrman et al. (2002) measured the effect of fiscal decentralization on cohort survival in

the Philippines and concluded that local government shares in education have a significant and positive effect on primary school assessment scores and cohort survival. Aslam and Yilmaz (2011) also found that educational provisions increased dramatically after decentralization in Pakistan due to improvements in capital investments, school maintenance, and educational services.

However, other studies have contradicted these findings. Inchauste (2009) concluded that educational spending in Bolivia has no impact on educational outcomes due to the country's inefficiency in allocating educational spending. Behrman et al. (2002) found local government educational spending to have a statistically insignificant effect on school assessment score, dropout rates, and enrollment in the Philippines' public secondary schools. They also found that improved enrollment rates in public schools correlated to a decrease in the resources available on a per-student basis. In addition, increased enrollment outstripped the building of new schools. As a result, the nearly doubled number of students in public secondary schools led to overcrowding and worsening conditions. More than one-fourth of students failed to reach their final year of school.

Although the studies provide interesting findings, the studies suffer from several limitations. First, most existing studies examining fiscal decentralization and education measure school enrollment or student test scores (Akai, Sakata, and Tanaka, 2007; Freinkman and Plenakanovs, 2009; Galiani et al., 2008; Diaz-Serrano and Meix-Llop, 2012). Second, research has focused on specific levels of education, whether only primary or only secondary (Akai, Sakata and Tanaka, 2007; Freinkman and Plenakanovs, 2009; Galiani et al., 2008; Diaz-Serrano and Meix-Llop, 2012). Third, most studies are based on either cross-country data or on particular province-level data (Treisman, 2002; Busemeyer, 2008). Fourth, even when studies have used district data as the unit of analysis, they have used the aggregate data and thus ignored the nested structure of educational outcome data. Fifth, most quantitative studies have used fixed-effect or ordinary least squares regression to analyze their data and are therefore unable to capture the nested structure of student dropout data (Aslam and Yilmaz, 2011; Busemeyer, 2008; Faguet and Sanchez, 2008)

## **3. Research Method**

We used national representative survey data, interviews and district government documents to understand the channels by which fiscal decentralization is linked to student dropout. First, Indonesia's National

Socioeconomic Survey (*Susenas* 2002-2014) and official statistics were used to identify the relationship between fiscal decentralization and student dropout rates as well as other supply and demand factors at the district and individual levels that affect student dropout. Second, in order to enrich the findings from the survey data, two case studies were conducted in the districts of Sleman and Yogyakarta.

3.1. National Socioeconomic Survey (*Susenas*) 2002-2014 and official statistics

*Susenas* is a representative survey conducted by Indonesia’s Central Bureau of Statistics. The survey has been fielded since 1993 to collect rich information regarding the socioeconomic status and public service access of individuals and households in all of Indonesia’s districts. Today, it covers 300,000

households or nearly 1.2 million individuals (BPS, 2015). The education section of the survey asks whether children have access to schools, whether they drop out, why they drop out, whether the poor benefit from appropriate governmental educational programs (i.e. a nine-year compulsory education program), and who is able to take advantage of government subsidies in education (Surbakti, 1995). *Susenas* also contains information about the sociodemographic characteristics of parents and households, including their income, education, and occupations. In addition, *Susenas* provides information regarding the unemployment and child labor rates in each district. We used *Susenas* 2002 and 2014 to capture the conditions of student dropout at the beginning of decentralization and after almost one-and-a-half decades of decentralization. Table 1 describes the detailed quantitative data used in this study.

Table 1. Variables, definitions and sources

Variables	Definition	Source
<i>District</i>		
Local tax ratio	The ratio of local tax to total own-source revenue	MOF 2002, 2014
Intergovernmental transfer ratio	The ratio of intergovernmental transfer to total district revenue	MOF 2002, 2014
Education expenditure ratio	The ratio of education expenditure to total district expenditure	MOF 2002, 2014
Education expenditure per student	The share of education expenditure per student	MOF and MOEC 2014
Number of schools	The number of elementary and junior secondary schools in a district	MOEC 2002, 2014
School ratio	The ratio of students to schools	MOEC 2014
Teacher ratio	The ratio of students to teachers	MOEC 2014
Unemployment	The rate of people aged 19-35 who have no job and are not enrolled in school	<i>Susenas</i> 2002, 2014
Child labor	The rate of children aged 7-18 who work and are not enrolled in school	<i>Susenas</i> 2002, 2014
<i>Household</i>		
Poor	A household with consumption of less than 1.5 USD per day	<i>Susenas</i> 2002, 2014
Rural	Household in a rural area	<i>Susenas</i> 2002, 2014
Single parent	Child raised by one of her/his parent	<i>Susenas</i> 2002, 2014
Siblings	Number of siblings	<i>Susenas</i> 2002, 2014
<i>Individual</i>		
<i>Father</i>		
Income	Father’s monthly income	<i>Susenas</i> 2002, 2014
Formal job	Father works at a formal job (i.e. factory labor, low-level civil servant)	<i>Susenas</i> 2002, 2014
<i>Education</i>		
Elementary	Father educated at elementary school	<i>Susenas</i> 2002, 2014
Junior secondary	Father educated at junior secondary school	<i>Susenas</i> 2002, 2014
Senior secondary	Father educated at senior secondary school	<i>Susenas</i> 2002, 2014
College and university	Father educated at college or university	<i>Susenas</i> 2002, 2014
<i>Mother</i>		

Income	Mother's monthly income	Susenas 2002, 2014
Formal job	Mother works at formal job (i.e. factory labor, low civil servants)	Susenas 2002, 2014
<i>Education</i>		
Elementary	Mother educated at elementary school	Susenas 2002, 2014
Junior secondary	Mother educated at junior secondary school	Susenas 2002, 2014
Senior secondary	Mother educated at senior secondary school	Susenas 2002, 2014
College and university	Mother educated at college or university	Susenas 2002, 2014
<i>Children/students</i>		
Age	Age of children	Susenas 2002, 2014
Female	A girl	Susenas 2002, 2014
Subjective reasons for dropout	A dummy variable indicating reason for dropping out: cannot afford school costs, works to help parents, attained education is sufficient, shame at being poor and school is far.	Susenas 2014

Student dropout data and socioeconomic characteristics from *Susenas* were linked with official statistics. First, we linked student dropout data with district total own-source revenue, intergovernmental transfer, district education expenditure, and total district expenditure datasets from the Ministry of Finance 2002 and 2014. Second, in order to examine the effect of supply factors on student dropout, we linked it with district number of schools and with teacher and student datasets from the Ministry of Education and Culture 2002 and 2014.

### 3.2. Case studies

Case studies were conducted in Sleman and in Yogyakarta. Both districts are located in Yogyakarta Province, which is recognized as center of education in Indonesia. However, Sleman and Yogyakarta have contrasting conditions. While most of Sleman's district areas are rural, most of Yogyakarta's municipalities are urban. The purpose of these case studies was to discover how Sleman and Yogyakarta performed their roles following fiscal decentralization and to learn of the challenges they face in reducing student dropout. Interviews were conducted with the head of each district's education agency and staff. Interviews were also conducted with eight dropouts and/or their parents to learn what caused them to leave school. Interviews were held from June to August 2016.

### 3.3. Mixed method analyses

Mixed method analyses were applied using the following steps. First, multilevel regression analyses were applied to analyze the *Susenas* datasets. These analyses were chosen to examine the linkage between fiscal decentralization and student dropout. The model

equation of multilevel regression analyses, considering a dropout student and family *i* nested in district *j*, is:

$$E_{ij}^* = \beta_0 + \sum \beta_j W_j + \beta_{ij} X_{ij} + \mu_j + \epsilon_{ij}$$

With:  $E_{ij}^*$  = logit (P ( $E_{ij}^* = 1$ )),  $W_j$  as a set of district characteristics (e.g. fiscal decentralization, etc.),  $X_{ij}$  as a set of dropout students and household characteristics (e.g. age, gender, etc.),  $\mu_j$  as a random intercept varying over districts with mean zero and variance  $\sigma_\mu^2$ , and  $\epsilon_{ij}$  normally distributed with zero and variance  $\sigma_\epsilon^2$ . Generalized Linear Latent and Mixed Models (GLLAMM) were used to estimate the models.

In the models, our dependent variable ( $E_{ij}$ ) is student dropout, which is measured by: (1) A dummy variable indicating elementary school dropout. Based on Indonesia's educational system, an elementary school (SD) dropout is defined as a school-age child between 7 and 15 who once enrolled in elementary school (SD) but dropped out before finishing 6<sup>th</sup> grade or receiving an elementary school certificate; (2) a dummy variable indicating transitional period dropout. Based on Indonesia's educational system, a transitional period dropout is defined as a school-age child between 12 and 15 who graduated from elementary school but did not continue to junior secondary school; (3) a dummy variable indicating junior secondary school dropout. Based on Indonesia's educational system, a junior secondary school (SMP) dropout is defined as a school-age child between 12 and 15 who graduated from elementary school (SD) but dropped out before finishing 9<sup>th</sup> grade or receiving a junior secondary school certificate.

The characteristics of a district ( $W_j$ ) include fiscal decentralization and other supply and demand factors at the district level. Fiscal decentralization is measured by (1) district fiscal capacity, measured by the ratio of local tax to local own-source revenue; (2) district financial efficiency, measured by the ratio of intergovernmental

transfer to total district revenue, the ratio of district education expenditure to total district expenditure, and the ratio of overall educational expenditure to number of students.

We include the number of schools and the ratio of schools to teachers as supply factors at the district government level. District unemployment rates and child labor rates are included to capture demand side factors at the district government level (Liu, 2004; Peraita and Pastor, 2000). At the individual and household level, we include socioeconomic characteristics of dropouts and their parents.

Second, we elaborated the results of multilevel regression analyses with results from the case studies. This was done for two primary reasons: to elucidate the challenges faced by Sleman and Yogyakarta district governments in reducing student dropout and to explore the socioeconomic characteristics of dropouts and their parents.

**4. Results and Discussion**

*4.1. Results*

*4.1.1. Descriptive statistics and multilevel logistic regression results*

Table 2 shows the *Susenas* 2002 and 2014 datasets used in this study. Elementary school and transition dropouts decreased, but junior secondary school dropout increased substantially after one-and-a-half decades of decentralization.

The lack of capacity of most district governments to mobilize their resources is illustrated by the low fiscal ratio (mean of fiscal ratio at 0.33-0.34). Likewise, the lack of financial efficiency in most districts is illustrated by the high ratio of central government transfer to district revenue. The share of district education spending increased substantially, from 3% to 35% of total district expenditure. The average number of schools decreased over the twelve-year period studied.

Unemployment and child labor rates also decreased, but the rates remained relatively high. Household poverty increased by 1%. The number of children with single parent increased by 1-2%. The number of children receiving financial assistance decreased substantially, especially for transition-period students and junior secondary school students. Parents' education improved over the twelve-year period, and mothers' access to formal jobs increased. The main reason for student dropout was an inability to afford school costs.

Table 2. Descriptive statistics of sample

Variables	Mean					
	DO from elementary education		DO transition		DO from junior secondary education	
	2002	2014	2002	2014	2002	2014
School dropouts	0.04	0.01	0.13	0.02	0.13	0.02
District Level						
FD: ratio of local tax to own revenue	0.33	0.33	0.34	0.33	0.34	0.33
FD: ratio of transfer to district revenue	0.85	0.76	0.84	0.75	0.84	0.75
FD: ratio of education to district expenditure	0.03	0.34	0.03	0.35	0.03	0.35
education expenditure per student (log)	<i>n.d</i>	6.90	<i>n.d</i>	6.75	<i>n.d</i>	6.75
number of schools	535	340	649	439	649	439
ratio of student to school	<i>n.d</i>	172	<i>n.d</i>	698	<i>n.d</i>	698
ratio of student to teacher	<i>n.d</i>	14	<i>n.d</i>	33	<i>n.d</i>	33
unemployment rate	0.38	0.30	0.38	0.30	0.38	0.30
child labor rate	0.08	0.05	0.08	0.05	0.08	0.05
Household Level						
live in rural area	0.63	0.60	0.54	0.58	0.54	0.58
being poor	0.05	0.15	0.04	0.13	0.04	0.13
being orphan	0.07	0.09	0.10	0.11	0.10	0.11
number of siblings	2	2	2	2	2	2
getting financial assistance	0.13	0.14	0.15	0.09	0.15	0.09
father's characteristics						
income (log)	3.49	12.08	3.91	11.87	3.91	11.87
work at formal job	0.26	0.29	0.29	0.28	0.29	0.28
education						
elementary	0.32	0.27	0.31	0.27	0.31	0.27

junior secondary	0.13	0.16	0.13	0.15	0.13	0.15
senior secondary	0.17	0.23	0.18	0.23	0.18	0.23
college and university	0.05	0.07	0.07	0.08	0.07	0.08
mother's characteristics						
income (log)	1.11	6.2	1.44	6.44	1.44	6.44
work at formal job	0.09	0.13	0.11	0.13	0.11	0.13
education						
elementary	0.36	0.31	0.36	0.32	0.36	0.32
junior secondary	0.13	0.17	0.13	0.17	0.13	0.17
senior secondary	0.13	0.19	0.14	0.19	0.14	0.19
college and university	0.03	0.07	0.04	0.07	0.04	0.07
Individual Level						
child's age	10	11	14	14	14	14
female	0.48	0.48	0.51	0.49	0.51	0.49
reason for drop out						
cannot afford school-cost	<i>n.d.</i>	0.0100	<i>n.d.</i>	0.0100	<i>n.d.</i>	0.0100
works to help parents	<i>n.d.</i>	0.0014	<i>n.d.</i>	0.0026	<i>n.d.</i>	0.0026
education is enough	<i>n.d.</i>	0.0006	<i>n.d.</i>	0.0018	<i>n.d.</i>	0.0018
shame of being poor	<i>n.d.</i>	0.0003	<i>n.d.</i>	0.0004	<i>n.d.</i>	0.0004
school is far	<i>n.d.</i>	0.0010	<i>n.d.</i>	0.0020	<i>n.d.</i>	0.0020
<i>n</i> district	310	497	310	497	310	497
<i>n</i> household	83,452	137,713	41,179	52,742	41,179	52,742
<i>n</i> individual	117,029	200,541	45,643	56,318	45,643	56,318

Source: *Susenas 2002, Susenas 2014, and official statistics, n.d.* means no data available

Table 3. Results of multilevel logistic regression

	DO from elementary education		DO transition				DO from junior secondary education					
	2002		2014		2002		2014					
	Coef.	se	Coef.	se	Coef.	se	Coef.	se				
<i>District</i>												
Ratio of local tax to own revenue	0.44**	0.18	0.78***	0.26	0.01	0.19	-0.04	0.37	0.13	0.27	1.02***	0.38
Ratio of transfer to district revenue	0.69*	0.39	1.10**	0.50	-0.75	0.39	-0.21	0.67	1.00*	0.55	0.89	0.74
Ratio of education to district expenditure	-0.71	1.51	-0.13	0.47	5.39***	1.55	0.94	0.69	0.45	2.20	1.52**	0.71
Education expenditure per student (log)	<i>n.d.</i>		-0.39**	0.18	<i>n.d.</i>		-0.05	0.25	<i>n.d.</i>		-0.47	0.32
Number of schools	0.00***	0.00	0.00**	0.00	0.00***	0.00	0.00	0.00	0.00**	0.00	0.00	0.00
Ratio of students to schools	<i>n.d.</i>		-0.01***	0.00	<i>n.d.</i>		0.00	0.00	<i>n.d.</i>		0.00***	0.00
Ratio of students to teachers	<i>n.d.</i>		0.04*	0.02	<i>n.d.</i>		0.01	0.01	<i>n.d.</i>		0.08	0.05
Unemployment rate	2.63***	0.46	2.06***	0.57	4.42***	0.47	1.63	0.83	1.65***	0.61	3.51***	0.89
Child labor rate	6.26***	1.05	5.54***	1.65	15.25***	1.10	16.32***	2.29	8.93***	1.48	9.02***	2.72
<i>Household</i>												
Living in rural area	-0.18***	0.05	0.29***	0.09	0.75***	0.04	0.13	0.12	0.39***	0.08	0.44***	0.13
Being poor	0.39***	0.06	0.32***	0.07	0.67***	0.06	0.52***	0.11	0.51***	0.14	0.24*	0.13
Being single parent	0.01	0.05	-0.01***	0.11	-0.02	0.05	-0.41**	0.18	-0.11	0.11	0.06	0.18
Number of siblings	0.08***	0.01	0.12***	0.02	0.10***	0.01	0.12***	0.03	0.14***	0.02	0.05	0.03
Receiving financial assistance	-0.63***	0.06	-0.22**	0.09	-0.97***	0.05	0.06	0.14	-0.68***	0.10	-1.33***	0.25
<i>Father's characteristics</i>												
Income (log)	-0.18***	0.06	0.00	0.01	-0.22***	0.06	0.01	0.01	-0.13	0.11	0.01	0.01

Working at formal job	2.34*** 0.83	0.18** 0.09	2.62*** 0.79	-0.04 0.13	1.62 1.43	-0.03 0.14
Education:						
Elementary	-0.56*** 0.05	-0.28*** 0.08	-0.33*** 0.04	-0.12 0.11	-0.24*** 0.08	-0.22* 0.13
Junior secondary	-0.76*** 0.08	-0.59*** 0.12	-1.15*** 0.07	-0.53*** 0.17	-0.57*** 0.12	-0.52*** 0.18
Senior secondary	-0.93*** 0.10	-1.00*** 0.15	-1.58*** 0.10	-0.89*** 0.21	-0.82*** 0.15	-0.82*** 0.21
College and university	-0.52*** 0.17	-1.74*** 0.39	-1.07*** 0.16	-1.02** 0.44	-1.26*** 0.31	-1.23*** 0.45
<i>Mother's characteristics</i>						
Income (log)	-0.18** 0.08	0.00 0.00	-0.22*** 0.08	-0.02** 0.01	-0.11 0.14	0.00 0.01
Working at formal job	2.21** 1.02	-0.10 0.13	3.01*** 0.92	0.13 0.18	1.32 1.79	0.21 0.19
Education:						
Elementary	-0.65*** 0.05	-0.62*** 0.07	-0.36*** 0.04	-0.10 0.11	-0.50*** 0.08	-0.33*** 0.12
Junior secondary	-0.71*** 0.09	-0.96*** 0.12	-1.16*** 0.09	-0.65*** 0.18	-0.85*** 0.14	-0.81*** 0.19
Senior secondary	-0.84*** 0.12	-1.28*** 0.17	-1.26*** 0.12	-1.21*** 0.25	-1.16*** 0.20	-1.00*** 0.22
College and university	-0.62*** 0.23	-1.24*** 0.34	-0.68*** 0.20	-0.90 0.46	-0.67 0.37	-1.19*** 0.43
<i>Children's characteristics</i>						
Child's age	0.52*** 0.01	0.25*** 0.01	0.18*** 0.02	-0.03 0.05	0.32*** 0.04	0.63*** 0.06
Female gender	-0.25*** 0.03	-0.73*** 0.06	0.03 0.03	-0.31*** 0.09	-0.20*** 0.06	-0.64*** 0.10
Reason for dropping out						
Cannot afford school costs	<i>n.d.</i>	3.56*** 0.08	<i>n.d.</i>	6.02*** 0.13	<i>n.d.</i>	<i>n.d.</i>
Works to help parents	<i>n.d.</i>	3.61*** 0.15	<i>n.d.</i>	6.22*** 0.24	<i>n.d.</i>	<i>n.d.</i>
Attained education is sufficient	<i>n.d.</i>	-18.49 7537	<i>n.d.</i>	5.74*** 0.27	<i>n.d.</i>	<i>n.d.</i>
Shame at being poor	<i>n.d.</i>	4.59*** 0.29	<i>n.d.</i>	5.06*** 0.46	<i>n.d.</i>	<i>n.d.</i>
School is far	<i>n.d.</i>	3.36*** 0.18	<i>n.d.</i>	5.73*** 0.26	<i>n.d.</i>	<i>n.d.</i>
<i>Variances</i>						
Individual	0.44*** 0.03	0.48*** 0.05	0.49*** 0.03	0.58*** 0.07	0.53*** 0.03	0.59*** 0.08
District	0.06*** 0.01	0.66*** 0.11	0.07*** 0.01	0.09*** 0.02	0.08*** 0.01	0.10*** 0.02
Log likelihood	-13678	-5986	-14056	-2500	-4664	-2290
N districts	310	497	310	497	310	497
N households	83,452	137,713	41,179	52,742	35,875	44,626
N children	117,029	200,541	45,643	56,318	39,709	47,565

\*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

Table 3 presents the results of multilevel logistic regression. Most fiscal decentralization indicators show positive and insignificant associations with student dropout at all levels. District fiscal capacity increases student dropout at elementary and junior secondary schools. District fiscal capacity is not associated with dropout at transition. Likewise, district fiscal efficiency as measured by the ratio of intergovernmental transfer to district revenue increases dropout at elementary and junior secondary schools. This measure is also not associated with dropout at transition. Increasing the efficiency of education spending, as measured by a higher ratio of district education expenditure to overall district expenditure, is likely to increase dropout at junior secondary school and at the elementary to junior secondary school transition. Districts that spend more per student are able to reduce student dropout rates, but only at the elementary level. The insignificant association of number of schools and teachers shows

ineffectiveness of educational decentralization, as the main basic educational services transferred to local governments, to drop out.

Student dropout is strongly associated not with supply factors but with demand factors both at the district and individual family levels. We found higher district unemployment and child labor rates to increase the risk of student dropout. Having poor families, having more siblings and living in rural areas increase the risk of dropout. Scholarships help children stay in school.

Parental human and economic capital are the main factors in student dropout rates. We found children whose parents have more income and more education to be less likely to drop out of school. However, children whose parents work at formal jobs (i.e. factory labor and lower level civil service) are more likely to leave school. Older children are more likely to leave school than

younger children; female children are less likely leave school than male children. Inability to afford school costs, working to help parents, shame at being poor, and school distance are also associated with higher dropout risk at elementary schools and in the transitional period.

4.1.2. Case study results

We found confirmation that fiscal decentralization has not been effective in reducing school dropout in Indonesia. Our findings were based on interviews with key informants and the study of official government documents at Sleman and Yogyakarta.

Inefficient budgeting

Table 4. Components of educational expenditure in Sleman and Yogyakarta (in millions of USD)

Year	Sleman expenditure			Yogyakarta expenditure		
	Personnel	Project	Total	Personnel	Project	Total
2012	66,9	6,3	73,2	42,2	6,8	49,0
2013	57,1	6,2	63,3	33,9	9,3	43,1
2014	59,6	8,5	68,1	37,9	12,0	49,9
2015	58,7	7,3	66,0	37,1	13,1	50,2
2016	55,8	7,2	63,0	35,3	13,8	49,0
Mean	59.62	7.10	66.72	37.28	11.00	48.24
%	89%	11%		77%	23%	

Sources: Sleman and Yogyakarta district educational agencies, 2016

Priorities in budget allocation

Local officials have not always prioritized education in their allocations of budget. Although Indonesia’s constitution states that district governments should allocate at least 20% of annual budget to education, both Sleman and Yogyakarta spent less than this. Table 5 illustrates local government direct expenditures in both districts.

When education is not a priority for local officials, this is reflected in its budget allocation. Although Sleman enjoys relatively high revenues, an informant who works at Sleman’s local finance office explained that:

We found inefficiency in budget allocations in both districts. As seen in Table 4, the majority of district education expenditures went toward personnel, mainly civil service salaries (both personnel and teacher) and teacher allowances. Eighty-nine percent of total annual education expenditures in Sleman and 77% in Yogyakarta went to personnel.

The high proportion of personnel expenditures may appear in almost all district governments in Indonesia, given that teachers comprise the largest number of government officials. This means that routine expenditures in each district government dwarf the expenditures assigned to development projects

*The regulation to allocate 20% of annual budget to the education sector has been fulfilled by the local government. The problem, then, is when local government has to match the allocation of its budget, not only to central government regulations, but also to the priorities of local leaders.*

Although this qualitative data cannot be generalized for all district governments in Indonesia, it can begin to explain the positive association between fiscal decentralization, as measured by the ratio of local tax to total own revenue, and school dropout rates.

Table 5. Local government direct expenditures in Sleman and Yogyakarta (in millions of USD)

Year	Sleman direct expenditure			Yogyakarta direct expenditure		
	Total	Education	%	Total	Education	%
2012	44.4	6.3	14.2%	43.2	6.8	15.7%
2013	48.0	6.2	12.9%	46.6	9.3	19.9%
2014	61.3	8.5	13.9%	61.3	12.0	19.6%
2015	66.7	7.3	11.0%	65.7	13.1	20.0%
2016	80.2	7.2	9.0%	77.2	13.8	17.9%
Mean	60.1	7.1	12.2%	58.8	11.0	18.6%

Sources: Sleman and Yogyakarta district education agencies, 2016



*Projects mandated by central government*

The central government requires district governments to carry out many specific educational projects. As a result, the remaining budget for local initiatives is tightened accordingly. As stated by an informant who works in the Sleman district education agency:

*Authority delegation is a mandate based on law. It means that we are still under regulation. [...] We have a special project to keep students from poor families in school by giving financial assistance at the senior secondary school level. We have not reached the lower levels of education because of the minimal budget.*

*Technical inefficiency in program implementation*

Technical instructions and guidelines for implementing programs and projects are often published near year's end, resulting in the delay of programs, reduced time to finish, and, often, considerably reduced budgets. Additionally, the central government may reduce budgets during the year. This necessitates changes in project execution and decreases revenues. As stated by an informant, an official in district education who works at the Sleman local finance office:

*Local government has to be ready for things like this. Then we need to rearrange the new priorities and decide which programs to size down.*

Central government regulations sometimes fail to fulfill local needs. As explained by an informant:

*The central government, both the budget and the use, determines conditional grants in the education sector. [...] Let the school itself decide its needs [...] whether the school needs to build a new classroom, or a library, or something else.*

It is principally because of a lack of allocative efficiency that decentralization has been ineffective in reducing Sleman and Yogyakarta's school dropout rates. Fiscal decentralization works only if district governments have budgets for development projects to improve educational accessibility and quality. Local officials must also create proper policies and execute projects that reflect citizens' needs, particularly those of targeted groups such as students from poor families.

*Other supply factors*

The availability of adequate budgets, facilities, and adequate numbers of schools and teachers is expected to decrease student dropout. Based on our quantitative findings, this has not been the case. However, one strategic policy that does effectively reduce school dropout is providing financial assistance for students from poor families. We found such financial assistance to be effectively implemented in Yogyakarta but not in Sleman. Yogyakarta's district government offers a special unit to assist students from poor families, even if their schools are outside Yogyakarta's jurisdiction. This assistance covers not only school operational costs, but also students' personal costs. It is also available to children who have dropped out and wish to return to formal or non-formal schooling, whether or not they come from poor families. As stated by an informant from Yogyakarta's district education agency:

*The children are motivated and guided to go back to school [...] and those retrieved children who are willing to go to school are financially assisted even if they do not have KMS [an official card issued by Yogyakarta district government for poor families].*

Confirming the finding that scholarships help to reduce school dropout rates, Table 6 presents data on educational performance in Sleman and Yogyakarta.

Table 6. Educational performance in Sleman and Yogyakarta

Indicators	Sleman					Yogyakarta				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
<i>Elementary education</i>										
Dropout percentage	0.044	0.040	0.032	0.045	0.031	0.020	0.013	0.009	0.009	0.005
Dropout numbers	40	36	29	42	29	9	6	4	4	2
Number of students*	906	899	913	929	942	457	447	442	438	433
Student : school ratio	174	173	173	175	177	263	270	263	262	261
Student : teacher ratio	14	15	15	15	15	16	16	17	16	15
Student : classroom ratio	25	24	24	24	24	27	27	26	26	25
Net enrollment (%)	102	101	100	102	103	135	131	129	133	129

Gross enrollment (%)	116	117	115	117	117	153	149	146	148	146
<i>Junior secondary</i>										
Dropout percentage	0.080	0.074	0.034	0.041	0.031	0.028	0.028	0.031	0.022	0.004
Dropout numbers	32	30	14	18	14	6	7	7	5	1
Number of students*	399	407	414	443	450	215	246	226	230	224
Student : school ratio	314	317	313	324	336	370	416	382	391	379
Student : teacher ratio	12	12	12	13	13	13	14	14	107	14
Student : classroom ratio	31	31	30	30	30	30	31	30	32	30
Net enrollment (%)	80	82	81	82	84	101	98	106	110	106
Gross enrollment (%)	114	114	109	111	112	131	136	147	148	147

Sources: Sleman and Yogyakarta official government documents, \* Numbers in hundreds

The number of student dropouts in Yogyakarta is substantially lower than that in Sleman, although supply factors are more favorable in Sleman than in Yogyakarta. Sleman has offered scholarship assistance for poor students only at the senior secondary level, while Yogyakarta offers scholarship assistance for poor students and attempts to retrieve children who have dropped out at all educational levels. It is likely that the school dropout numbers in Yogyakarta government are smaller than in Sleman because of scholarship assistance.

*Demand factors*

Our quantitative findings have shown robust results indicating demand-side factors as the influencing factors in school dropout. In order to offer a more comprehensive explanation of those results, this article reports the qualitative findings gathered from interviewing members of eight families whose children dropped out of elementary or junior secondary school or did not continue to the junior secondary level.

*Household factors*

All eight children came from middle-income and poor families as indicated by the conditions of their homes, the equipment in their homes, and parental income.

The first family interviewed consisted of two parents and their son. The father was a construction laborer with no fixed income who had graduated from elementary school, while the mother was a housewife who had graduated from junior secondary school. In the following transcript describing the son’s reasons for leaving school, A represents the researcher, B1 represents the father, and B2 represents the mother.

- B2: *It is because of our financial problems.*
- B1: *No, it is not. It is because our son did not perform well in school.*

A : *If later your son wants to return to school, are you willing to pay the school costs?*

B1: *Honestly, it is hard for us to pay. We only have a little money. Yes, I admit that I cannot afford to pay. I asked my son: ‘Do you really want to continue going to school or not, you get to have an opinion, so that it will be useful for me to pay.’ However, my son has no clear answer.*

The second interviewee, the father of a boy who did not continue to junior secondary school, was unemployed and had no educational background; his wife sold second-hand goods. The family home had no solid wall; rather, it was covered with cloth.

A : *What is your son’s reason for not continuing to go to school?*

B1: *He likes playing internet games. Actually, we can still afford to pay his school, but this child had often gone to play internet games during school time. Therefore, I do not want to pay anymore.*

In addition to poor conditions, parents’ educational backgrounds also appear to influence their children’s decisions to drop out of school. All parents, regardless of their own educational backgrounds, say that they want their children to complete at least a junior secondary education. The third interviewee, the father of a child who dropped out of junior secondary school, worked part-time at a sugar cane plantation and had graduated from junior secondary school. He stated:

*I had persuaded my son to go back to school and finish junior secondary school, since he was in ninth grade and just needed a little more time to finish. However, my son insists on leaving school again. I actually want him to keep going to school.*

The fourth interviewee was a mother working as a “serabutan” or daily laborer with no fixed income; she had graduated from elementary school, and her son dropped out of elementary school. The boy’s father had

no job and no part in raising their three children. The mother stated:

*As a parent, I have hope that all my children will have at least an elementary school certificate. So that when people ask what our educational background is, we can answer. ...I also want them to graduate and have a school certificate to apply for jobs in factories.*

It is likely that children whose parents have weak educational backgrounds tend to drop out, even if their parents have persuaded and motivated them to go back to school.

#### *Individual factors*

We found that children, who are older than their classmates are, tend to drop out due to shame. The fifth interviewee was a mother worked alongside her husband as a construction laborer. Neither parent had any educational background. They had four children, of which the son in question was the third. He was in the same grade as his younger sister before dropping out.

*B1: About three months ago, he suddenly told me, 'Mom, I don't want to go to school anymore'. I asked, 'Why?' and he only answered, 'I'm ashamed for being older'. Just like that. It was also because his younger sister was in the same grade at the same school.*

*A : Was he ever held back a grade?*

*B1: Yes, he was, several times.*

*A : What is he doing now?*

*B1: Construction labor with his father.*

*A (to the child): Where did you get the money to buy the cigarettes?*

*B1: His own money from work.*

*A : Do you prefer work to school?*

*B2: Yes.*

*A : Why is that?*

*B2: [drooping his head and smiling a little]*

*A : As his parent, do you prefer that he stay in school or work?*

*B1: I actually want him to finish school. If he graduated from junior secondary education, then it would be his decision to work or to continue to high school. The important thing is that he get the school certificate. That is what I hope.*

*A : What is his brother's education?*

*B : He graduated from elementary school, and works in building construction.*

This boy seems to have had several reasons for dropping out. Among them was that his older brother had graduated only from elementary school. Children tend to imitate the choices of their family members and peers.

The sixth interviewee dropped out of seventh grade in the middle of year after her family moved to a hilly, remote area. Her father worked as a building construction laborer, while her mother worked as housekeeper in town. Her headmaster said that she scored very high on tests, but that she only wanted to go to school when there was a test and finally dropped out.

*A : Why are you lazy about going to school? Are you bored because the school day is long?*

*B2: Yes.*

*A : Why? What do you do at school?*

*B2: Only sit and read books.*

*A : What do you do when you are not at school?*

*B2: Nothing, I am just at home.*

*A : Do you still want to go to school?*

*B2: Yes, I do.*

This girl was simply bored with the teaching methods in her class, perhaps more so because she compared them with the conditions in her more urban elementary school. Teaching methods that fail to motivate students may also account for the fact that adequate numbers of teachers do not consistently reduce student dropout. Teacher competency is also important in the learning process.

#### *4.2. Discussion*

By comparing conditions in 2002 and 2014, this study examines the relationship between fiscal decentralization and student dropout rates in Indonesia. We found that fiscal decentralization, rather than reducing student dropout from elementary and junior secondary school, has increased it. Fiscal decentralization is not associated with school dropout in the transitional period between elementary and junior secondary school.

Our research came to several conclusions as to why fiscal decentralization in Indonesia has an undesirable association with student dropout rates. First, districts allot the majority of their educational budgets to salaries rather than improving basic education services and implementing programs for reducing student dropout. Second, technical inefficiency in program implementation results in delays and budgetary issues. Mid-year reductions in funding from central government also affect project execution and harm revenues. These findings confirm that central and local incapacity to manage fiscal decentralization in the education sector contributes to the failure of decentralization (Tanzi, 1996). Third, programs mandated by the central government may not serve local needs. Fourth, local

officials have not always prioritized the education sector in allocating their budgets.

Other main findings also point to the inefficiency of public education spending allocation. Adequate numbers of schools have decreased student dropout only at the elementary level. The case study findings confirm this evidence. In both Sleman and Yogyakarta, the number of schools and teachers have no association with student dropout rates. Rather, scholarship assistance significantly reduces student dropout.

Most demand-side factors are significantly associated with school dropouts, as confirmed by the results of multilevel regression and case studies. Poverty appears to weaken the demand for schooling, not only because it affects the ability of households to pay school fees, but also because it is associated with a high opportunity cost. As children grow older, the opportunity cost of education becomes even larger, hence increasing the pressure for children to earn income for their households. These findings highlight prior studies that explore the reasons of students to drop out both in developed and developing countries. For example, studies on school dropout rates in rural areas of Spain and China indicate that labor market conditions, poor socioeconomic status, residence in rural areas, and large family size are the determinant factors in primary school dropout behavior (Liu, 2004; Pearita and Pastor, 2000). Parents' human capital is also strongly associated with their children's chances of staying in school. Regardless of parental educational backgrounds, it is important for parents, especially fathers, to support their children's education.

Children with many siblings are at increased risk of dropping out of school, likely because of poverty. Children who are older than their classmates are tend to drop out due to feelings of shame. Studies on school dropout in Malawi, India, and China also confirm that the likelihood of student dropout increases with age (Jukes et al., 2014; Yi et al., 2012). Boys are more likely to drop out than girls are. Low motivation to study, particularly common among male students, causes poor academic performance, which, in turn, leads to the need to repeat grades. Students held back more than once are considerably older than their classmates are and may drop out because of shame. Older children also wish to support their own personal needs but are unable to think of their long-term futures. They may then drop out and become unskilled laborers in order to earn quick cash.

This study has a number of limitations that should be addressed in future research. First, with cross-sectional data we see the results as associations. The causal effect of fiscal decentralization and school

dropout is something which future research, using available panel data, should seek to establish. Second, this study explores the conditions of fiscal decentralization in Indonesia only at its beginning and after one-and-a-half decades without providing information about the intervening years. Future studies may use time series data to capture fiscal decentralization and student dropout in all years or to compare results before and after decentralization. Third, fiscal decentralization and school dropout in Indonesia's basic education system is only one measure of the relationship between decentralization and educational outcomes. Future studies may also question the effect of all three aspects of decentralization on, for instance, children not attending school at all educational levels.

Despite these limitations, this study presents a number of implications for both the educational outcome and the decentralization literature as well as for the practice of decentralization in terms of development. School dropout rates are truly dominated by demand-side factors, but government behaviors are part of these demand-side factors. Government responsibility and responsiveness to local needs, especially targeting poor households, is essential. From an empirical perspective, this study therefore suggests that it is crucial to consider the mechanism of fiscal decentralization in Indonesia's educational sector. Second, our findings support the hypothesis that fiscal decentralization can undermine efficiency when local government officials fail to provide for citizens' basic needs (Bardhan, 2002; Prud'homme, 1998; Tanzi, 1999). Additionally, fiscal decentralization can increase disparities because of district officials' incapacity in managing financial resources, particularly in poorer areas (Oates, 2005). Our findings also suggest that, in order to effectively reduce school dropout, district governments must improve their efficiency in allocating educational expenditures through implementing strategic policies that directly purposed to help poor children.

## **5. Conclusion**

This research concludes that fiscal decentralization in Indonesia has an undesirable association with student dropout rates. Four possible reasons for the null findings. First, districts allot the majority of their educational budgets to salaries rather than improving basic education services and implementing programs for reducing student dropout. Second, technical inefficiency in program implementation results in delays and budgetary issues. Third, programs mandated by the central government may not serve local needs. Fourth,

local officials have not always prioritized the education sector in allocating their budgets.

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