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The Impact of School Voucher Program on School Dropouts in Indonesia

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Abstract: The Indonesian government implemented a school voucher program called *Program Indonesia Pintar* (PIP) to prevent students from dropping out. PIP is a development of *Bantuan Siswa Miskin* (BSM). This study empirically analyzes the impact of PIP in reducing the possibility of dropping out at every level of education. The estimation method used in this research is Probit Regression and Marginal Effect. This study compares BSM and PIP's effectiveness and includes PKH (*Program Keluarga Harapan*) as one of the control variables. The estimation results show that the PIP policy is more effective than BSM in reducing the possibility of dropping out of school at every level of education, both for the full sample and for the subsample of students from families with expenditure levels below the poverty line. PIP has a more significant effect on the subsample of students from poor families than the full sample. Students from poor families who received PIP were 1.9 percent less likely to drop out of school for elementary school. Meanwhile, at the junior high school level, it was 5.1 percent, and at the senior high school level, it was 2.8 percent. In general, PKH has no impact on reducing school dropouts.

Keywords: Education, PIP, school dropouts, marginal effect

INTRODUCTION

The Unesco Institute for Statistics Database (2019) stated that the achievement of education indicators globally has not shown satisfactory results. Data for 2018 shows that around 258.4 million children and adolescents experience a lack of access to education or represent one-sixth of the global population in the school-age group. Despite the global decline, data shows that this progress has stopped in recent years and is considered to reflect the stagnation of recent years. Although education indicators in Indonesia show better results, children from poor families still face challenges in completing 12 years of basic education. The gap between economic groups in accessing education is widening along with the higher level of education. School participation from the poor is still low compared to non-poor groups. The dropout rate is increasing along with the higher level of education. The increasing cost of education also affects household members' opportunity to receive an education. It can cause the risk of dropping out of school. In addition, the dropout rate for junior and senior high schools has not yet reached the target set in the Strategic Plan of the Ministry of Education and Culture for 2015-2019.

A prior study by Adelman and Székely (2017) noted that poor households, unemployed heads of household, and children who are the main breadwinners are negatively correlated with school enrollment in Central America. Pastore (2012) found that children from poor families are more likely to drop out of school and

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become working poor. This condition is exacerbated by the increasing cost of education, which can lead to the risk of dropping out of school. When the household economy falters, the need for education is no longer a priority. Moreover, when the cost of daily necessities increases, households with low economies will find it increasingly difficult to meet the education costs of their household members (Indonesian Education Statistics, BPS, 2019). In this regard, the state has an important role to play in ensuring equal opportunity in accessing education for the entire population so that Government intervention in education is needed to improve the quality of individuals in the future, enable a more equitable distribution of wealth and reduce poverty (Mukherjee, 2007).

To prevent students from dropping out of school, the Government implemented PIP as a form of demand-side intervention given to school-age children from poor and vulnerable families. PIP is expected to help reduce personal education costs such as transportation costs, pocket money, and book fees, which aims to prevent students from dropping out. The amount of the PIP benefit depends on the student's education level. Educational assistance provided by the government to elementary school student is Rp450,000 per year, junior high school student is Rp750,000 per year, and senior high school student is Rp1,000,000 per year. Previous literature shows various findings regarding the effect of educational assistance on dropout rates. For instance, Churchill et al. (2021) revealed that government assistance in the short term had no impact on dropout rates but significantly in the long term. In addition, it is mentioned that the Bolsa Escola/Familia program could increase school enrollment (Glewwe & Kassouf, 2012) and reduce dropouts (De Janvry et al., 2012).

In the context of Indonesia, only a few studies analyze the effect of BSM on dropout rates and the effect of PIP on dropout rates. For example, Yulianti (2015) found that BSM can reduce the likelihood of dropping out at all levels of education for children in the poorest quartiles of the expenditure distribution. Additionally, Setyadharma (2018) remarked that PIP significantly reduces the likelihood of students dropping out of school in rural Central Java. Other studies, such as that conducted by Setiyono and Pradoto (2019); Nikmah et al. (2020); Bahri (2020); Suprastowo (2014) have examined descriptively and evaluated from the implementation side.

PIP is a development of BSM, which was implemented in 2008 and was refined to become PIP at the end of 2014. What distinguishes BSM from PIP is the change in the mechanism for distributing aid which was originally handed over directly in cash to students and then changed through the KIP-ATM card. Although the operational costs of distribution using KIP-ATM cards are higher than those of direct submissions, the achievement targets are clearer. This change in the distribution mechanism was motivated by several evaluation results from the Ministry of Education and Culture (2014), which found that direct distribution had not been effective in reaching its targets, and there were still delays in the distribution of BSM so that the distribution system needed to be improved. On the other hand, BSM is considered to still have a low reach to the poor, so its coverage was expanded when the policy was developed into PIP.

Furthermore, this study includes the characteristics of individuals, households, and regions as control variables. Numerous previous studies have

stated that the characteristics of individuals, households, and regions affect educational outcomes, including dropping out of school (Hidayatina & Ozzane, 2019; Mandic et al., 2017; Khiem et al., 2020; Yulianti, 2015). This study also analyzes the supply side of education services to capture variations in the availability of educational facilities between regions in Indonesia. The reason for using the supply side of education is because studies related to PIP on school dropouts that include the supply side are still limited. Preliminary studies have proven that the supply side of education has an impact on improving educational outcomes. For example, Duflo (2001) documented that opening schools increased years of schooling. Indeed, Handa (2002); Burde and Linden (2013) noted that opening schools increased the enrollment rates. Similarly, Duflo et al. (2015) found that reducing class size could increase test scores. Concerning Indonesia, the use of supply-side education is carried out by Suryadarma et al. (2006), who remarked that the number of schools could significantly increase school participation. However, the student-teacher ratio did not significantly influence school participation at the junior high school level.

Based on these research gaps, it is encouraged to conduct empirical research and analyze the effect of PIP in reducing dropout rates at every level of education by looking at the effectiveness of policies from BSM to PIP. To conduct this research, the authors estimate two-time points of the cross-section, namely 2014 at the time of BSM and 2019 at the time of PIP. Estimates were made for the full sample of students and a subsample of poor students. This study contributes to the literature on how policy developments from BSM to PIP reduce the possibility of dropping out of school in Indonesia. The results of this study are expected to provide input and information to the government in conducting a policy review on the provision of conditional cash transfers in education to reduce dropout rates.

METHODS

Education Production Function

Hanushek (2020) defines the education production function as connecting various educational inputs to student achievement. Commonly used inputs include school resources, teacher quality, and family attributes, while the most frequently used educational outcome is student achievement, but test scores do not always measure it. The education production function can be used to consider policy alternatives and assess the effectiveness and efficiency of the public services provided. Glewwe et al. (2020); Glewwe et al. (2011) state that everything that determines learning, which is referred to as “factors” or “inputs” in the production process, consists of school variables, child variables, and household variables.

The educational production function can be applied to analyze other educational relationships. In this study, the Government’s intervention from the demand side is PIP, while the supply side intervention is the number of schools and students-teachers ratio. The educational outcome used in this study is a probability of dropout. The education production function due to an increase in income transfer (intervention of variable H) can be expressed as follows:

$$D = a\ (Q, C, H, I) \quad (1)$$

Where D: Dropouts, Q: characteristics of schools and teachers, C: characteristics of students, H: characteristics of households, I: Educational inputs owned by households such as school attendance, purchase of textbooks, and school uniforms.

PIP is a conditional cash transfer that assists households only if their children are enrolled in school. The transmission of the impact of PIP on the possibility of dropping out of school can be explained as follows:

1. PIP is an income transfer that can directly increase parents' income (variable H).
2. With the increase in parents' income, the household budget constraints become more flexible.
3. The additional income of parents is expected to be spent on children's education expenses (variable I).

An increase in income transfer can also affect the price or cost of education (variable P). This relationship can be expressed as follows:

$$D = h\ (Q, C, H, P) \quad (2)$$

From equation (2), it can be shown that the additional income of people due to PIP can indirectly reduce the cost of education (variable P). Through the transmission of the production function in equations (1) and (2), PIP as the demand side intervention is expected to affect the possibility of dropping out of school.

The supply-side intervention used in this study is the number of schools and students-teachers ratio at each level of education. The construction of new schools can reduce the distance between households to the nearest school, which is expected to reduce the possibility of individuals dropping out of school. Furthermore, the smaller student-teacher ratio will have an impact on the learning process in schools to be more effective so that it is expected to encourage students not to drop out of school.

Empirical Model

The possibility of dropping out of school at each level of education is formulated as a function of PIP and some of the control variables (X). This study uses probit regression because this model is a binary outcome model, namely a model that has a binary dependent variable, namely a variable that has values 0 and 1 (Cameron & Trivedi, 2005). The use of probit regression in analyzing educational assistance on educational outcomes was also carried out by Dearden et al. (2008); Cameron et al. (2002); Hidayatina and Ozzane (2019); De Silva and Sumarto (2015); Yulianti (2015). Individuals who have dropped out of school will be given a code of 1, while a code of 0 is given if the individual is still in school. Individuals who make decisions are rational, where each individual will make decisions that provide the highest or positive net utility.

Furthermore, in addition to estimating the parameter β, this study also estimates the marginal effect. This study wants to determine if β changes, then what is the impact on the probability of dropping out of school ($y_i = 1$) or not dropping out ($y_i = 0$). The empirical model in this study is provided in Equation 3-5.

$$Dropout\_Elementary_i = \beta_0 + \beta_1 PIP\_Elementary_i + \lambda X_i + \varepsilon_i \quad (3)$$
$$Dropout\_Junior_i = \beta_0 + \beta_1 PIP\_Junior_i + \lambda X_i + \varepsilon_i \quad (4)$$
$$Dropout\_Senior_i = \beta_0 + \beta_1 PIP\_Senior_i + \lambda X_i + \varepsilon_i \quad (5)$$

The estimation of the impact of PIP on the probability of dropping out of school is carried out by comparing 2-time points of the cross-section, namely 2014 and 2019, to capture the development of policy effectiveness from BSM, which was last implemented in 2014 to PIP which has been implemented to date. The study was conducted with two stages of estimation. First, estimates are made at the entire recipient (full sample) level, namely individuals from poor and non-poor families. This is because PIP recipients are not only individuals from poor families but also individuals from non-poor families. Even the portion of recipients is dominated by non-poor individuals. Second, to overcome the problem of endogeneity in the model, this research resamples by grouping individual data from poor families (subsample) based on the poverty line approach as a benchmark for a family, whether the family is poor or non-poor so that the estimate is made at the individual level of the poor family.

Research Variables

The dependent variable in this study is the incidence of dropping out of school. This study uses the definition of dropout recommended by Unicef and the Unesco Institute for Statistics (2016) and BPS. Unicef and the Unesco Institute for Statistics define dropouts as students who have previously enrolled in school and have not attended school at all in the current school year. BPS defines dropout as a condition where a group of school-age children is no longer in school or has not completed a certain level of education. No longer in school are those who have been registered and actively participate in education at a level of formal or non-formal education, but at the time of enumeration, they are no longer registered and are not actively participating in education.

The independent variable used that can influence the decision to drop out of school or not is PIP as government intervention. PIP variables are school-age children 6-21 years who receive and do not receive PIP. Based on the theory that underlies this research, this study hypothesizes that the coefficient of PIP in the empirical model is negative. It means that PIP can reduce the probability of dropouts at each level of education, namely elementary school, junior high school, and senior high school. The educational input used in this study follows the education production function theory, which consists of individual characteristics, household characteristics, demand-side intervention, and supply-side intervention. Parental intervention greatly influences educational outcomes (Mandic et al., 2017; Camilo and Zuluaga, 2020). In this case, the child's decision to drop out or stay in school is also strongly influenced by intervention from parents. Therefore, several household characteristics are included as control variables in this study.

Furthermore, the independent variables that function as control variables consist of:

1) PKH is school-age children 6-21 years who receive and do not receive PKH. PKH is used as a control variable because this program is also an aid program that includes educational assistance provided to poor households
2) Individual characteristics consist of gender, age, and marital status
3) Household characteristics consist of the head of the household age, head of the household gender, head of the household marital status, head of the household field of work, the number of family members, the number of school-age children in the household, the average expenditure per capita, and education head of household
4) Regional characteristics include whether the family lives in a city or village and a dummy of island groups (Sumatra, Kalimantan, Java, Sulawesi, Bali-Nusa Tenggara, Papua-Maluku)
5) Supply side education consists of the number of schools and students-teachers ratio at each level of education

Data

This study uses cross-sectional data sourced from the National Socio-Economic Survey (Susenas) and Provincial data in Figures published by the Central Statistics Agency (BPS). The data used is data at the individual level. The sample used is limited to individuals of school age 6-21 years, consisting of individuals at the elementary school, individuals at the junior high school, and individuals at the senior high school. Susenas data is used to retrieve information on educational outcomes for dropping out, students receiving PIP and PKH, individual characteristics, household characteristics, and regional characteristics. Provincial data in figures is used to retrieve information regarding the supply side of education, namely the availability of educational facilities in each individual's area.

This study also involves the number of schools and the students-teachers ratio at each level of education as an intervention from the supply side. Data on the number of schools and students-teachers ratio were obtained from Provincial Data in Figures. This data is at the district/city level so that every child in one district/city will have the same supply side. The limitation of this research is that each individual does not have variations in the availability of different educational facilities. The availability of data in Provincial Data in Figures is the most likely data to be used in this study. Furthermore, the school dropout data is validated by excluding individuals who have graduated from school or graduated from school at each certain level of education because individuals who are no longer in school may have graduated from a certain level of education.

RESULTS & DISCUSSION

PIP and Dropouts in 2019

Table 1 presents descriptive statistics of full sample data and subsample categories of poor recipients of PIP obtained from the March 2019 in Susenas data. Based on the age criteria 6-21 at the elementary school, junior high school, and senior high school levels, there are 322,945 individuals, consisting of 53,835 or 16.7 percent of individuals who received PIP and 269,110 or 83.3 percent of individuals who did

not receive PIP. PIP recipients are mostly dominated by non-poor families at 81.2 percent, while individuals from poor families are only 18.8 percent. Based on the Province of Rural City's poverty line, 46,832 or 14.5 percent of individuals are in the poor category, and 276,113 or 85.5 percent of individuals are in the non-poor category. PIP recipients from the poor were 10,117 or 21.6 percent, while the majority did not receive PIP, amounting to 36,715 individuals or 78.4 percent.

Table 1. Descriptive Statistics of PIP Recipients in 2019

Description	Full Sample		Sub Sample ≤ poverty line		Sub Sample > poverty line	
	Obs	Column %	Obs	Column %	Obs	Column %
Received PIP	53,835	16.7%	10,117	21.6%	43,718	15.8%
Row %	100%		18.8%		81.2%	
Not Received PIP	269,110	83.3%	36,715	78.4%	232,395	84.2%
Row %	100%		13.6%		86.4%	
Total	322,945	100%	46,832	100%	276,113	100%
Row %	100%		14.5%		85.5%	

Source: Susenas (2019), processed by the authors.

The data shown above shows that PIP still has a relatively low reach because most individuals categorized as poor do not receive PIP. On the other hand, non-poor individuals receive a much larger percentage of PIP. This finding is in line with Kusumawati (2019) who found that based on Susenas data 2018, inclusion and exclusion errors still occur in the PIP programs. Exclusion error is the eligible population who are not receiving the program, and inclusion error is the non-eligible population who enrolled in the program.

The estimation results show that in the full sample, PIP is significantly correlated and has a negative relationship to the probability of individuals dropping out of school at each elementary school, junior high school, and senior high school. In other words, PIP can significantly reduce the possibility of dropping out at each level of education. This finding is in line with the hypothesis of the study. Individuals who received PIP were less likely to drop out at elementary school by 1.0 percent, at junior high school by 2.8 percent, and at senior high school by 0.9 percent compared to individuals who did not receive PIP. From the estimation results, it can be shown that PIP has the greatest influence in reducing the possibility of dropping out of school at the junior high school level. The strong influence of PIP at the junior high school level is likely due to the strong influence of the average per capita expenditure and the education of the head of household on the reduction of dropouts at the junior high school level.

Furthermore, the estimation results in the poor category subsample show that individuals who receive PIP are less likely to drop out of school by 1.9 percent at the elementary education level, at the junior high school level by 5.1 percent, and at the senior high school education level by 2.8 percent compared with individuals who did not receive PIP. From the estimation results, it can be shown that PIP has the greatest influence in reducing the possibility of dropping out of poor individuals at the junior high school level. The estimation results show that the PIP policy has a greater and more effective impact in reducing the possibility of dropping out of school in the subsample of the poor category. This finding is in line with the PIP policy's design, which aims to reduce the possibility of dropping out of school for

poor students at every level of education. The estimation result is also in line with the hypothesis of the study and study from Setyadharma (2018) who found that based on Primary data collected from rural areas in Central Java Province, PIP significantly diminish the rural students' likelihood of dropping out.

Table 2. Effect of PIP on Dropouts in 2019

Description	Full Sample			Sub-sample Poor Students		
	Elementary school	Junior high school	Senior high school	Elementary school	Junior high school	Senior high school
Probit						
PIP	-0.475 ***	-0.470 ***	-0.173 ***	-0.613 ***	-0.631 ***	-0.454 ***
PKH	-0.012	0.122 ***	0.069 ***	-0.003	0.112 **	0.233 ***
Marginal effect after Probit (dy/dx)						
PIP	-0.010 ***	-0.028 ***	-0.009 ***	-0.019 ***	-0.051 ***	-0.028 ***
PKH	-0.0002	0.007 ***	0.004 ***	-0.0001	0.009 **	0.014***

Note(s): *** p<0.01, ** p<0.05, * p<0.1
Source: Susenas (2019), processed by the authors

The PKH policy is not significantly correlated with the possibility of dropping out of school at the elementary education level but has a negative relationship. On the other hand, the PKH policy is significantly correlated with the probability of dropping out of school at the junior and senior high school levels but has a positive relationship. The estimation results show that the PKH policy has not been able to reduce the possibility of dropping out of school at each level of education. This study has not been able to provide an argument as to why PKH has not been able to reduce dropouts.

The initial justification is that the data on PKH recipients in the Susenas does not contain information on whether the individual specifically received PKH Education only or other PKH benefits such as PKH Health, PKH social welfare, or receiving all PKH benefits simultaneously. Therefore, information on PKH recipients in this study is assumed to be varied, meaning that it is possible for individuals only to receive PKH Education, and there is also the possibility that individuals will receive part or all of the benefits of PKH at the same time.

It should be noted that the benefits obtained from the PKH include health assistance for pregnant/breastfeeding mothers and children aged 0-6 years, education assistance for children aged 12 years with compulsory education, and social welfare assistance for family members aged over 60 years, and or persons with disabilities. Each family can obtain PKH for a maximum of 4 household members in each household, so even though the data set up in this study were individuals of school age 6-21 years, it is possible that these individuals received PKH not only because they received PKH Education but also because their parents get the PKH Health or get the PKH Health and PKH social welfare at the same time. The authors realize this is a limitation in this study where this study has not been able to provide an argument for why PKH has not been able to reduce dropouts.

For the supply side of education, the estimation results in the full sample show that at the elementary school level, the number of elementary schools is not significantly correlated with the probability of dropping out but has a negative relationship. The students-teachers ratio has a significant correlation but has a positive relationship with the likelihood of dropping out. For poor individuals, the

number of schools and students-teachers ratio are not correlated and have a positive relationship with the probability of dropping out of school.

In the full sample, the number of junior high schools has a negative relationship to the probability of dropping out, meaning that as the number of junior high schools increases, the probability of dropping out at the junior high school level decreases. This finding is in line with the Suryadharma et al. (2006) who remarked that number of junior high schools is statistically significant in increasing enrollment. Duflo (2001) found that opening schools increased years of schooling. Handa (2002); Burde and Linden (2013) mentioned that opening schools increased the enrollment rates. The students-teachers ratio is correlated with the probability of dropping out of school but has a positive relationship. On the other hand, in the subsample of poor students, the number of junior high schools and students-teachers ratio are not correlated with the probability of dropping out of school.

For the senior high school education level in the full sample, the number of senior high schools is correlated and has a negative relationship to the probability of dropping out, meaning that as the number of schools increases, the probability of dropping out at the senior high school level decreases. This finding is in line with the Suryadharma et al. (2006) which remarked that number of schools is statistically significant in increasing enrollment. Duflo (2001) noted that opening schools increased years of schooling. Handa (2002); Burde and Linden (2013) mentioned that opening schools increased the enrollment rates. The students-teachers ratio is not correlated with the probability of dropping out of school but has a negative relationship. On the other hand, for poor students, the number of schools is correlated and has a negative relationship with the probability of dropping out of school with a weak significance. The students-teachers ratio is not correlated with the probability of dropping out of school but has a negative relationship with the probability of dropping out of school.

BSM and Dropouts in 2014

Table 3 presents descriptive statistics for full sample data and subsample categories of poor recipients of BSM obtained from Susenas data for March 2014. Based on the criteria for ages 6-21, there are 217,444 students. Students who received BSM amounted to 34,290 or 15.8 percent, and those who did not receive BSM amounted to 183,154 or 84.2 percent. Non-poor students mostly dominated students who received BSM amounted to 78.8 percent, while only 21.2 percent of students from poor families received BSM. Based on the poverty line in the province of rural and urban areas, there were 28,196 students or 13.0 percent of students in the poor category and 189,248 students or 87.0 percent in the non-poor category. In the poor student category, there were 7,277 students or 25.8 percent of students who received BSM, while most did not receive BSM of 20,919 individuals or 74.2 percent.

The data shown above shows that BSM still has a relatively low reach because most individuals categorized as poor do not receive BSM. On the other hand, non-poor individuals receive a much larger percentage of BSM. This finding is in accordance with Yulianti (2015) who found that based on Susenas data 2013, BSM has a very low reach and a number of eligible households are excluded. There are

inclusion errors and depending on the level of education, 50 to 70 percent of the beneficiaries are ineligible.

Table 3. Descriptive Statistics of BSM Recipients in 2014

Description	Full Sample		Sub Sample ≤ poverty line		Sub Sample > poverty line	
	Obs	Column %	Obs	Column %	Obs	Column %
Received BSM	34,290	15.8%	7,277	25.8%	27,013	14.3%
Row %	100%		21.2%		78.8%	
Not Received BSM	183,154	84.2%	20,919	74.2%	162,235	85.7%
Row %	100%		11.4%		88.6%	
Total	217,444	100%	28,196	100%	189,248	100%
Row %	100%		13.0%		87.0%	

Source: Susenas (2014), processed by the authors.

In summary, the estimation results of the BSM policy can be seen in Table 4. The estimation results in the full sample show that BSM policies are significantly correlated and have a negative relationship to the probability of individuals dropping out of school at each elementary school, junior high school, and senior high school level. The estimation results show that individuals who receive BSM are less likely to drop out of school by 0.05 percent compared to individuals who do not receive BSM at the elementary level. Individuals at the junior high school level who received BSM were 0.4 percent less likely to drop out of school than individuals who did not receive BSM. Individuals at the senior high school level who receive BSM are 0.5 percent less likely to drop out of school than individuals who do not receive BSM. This finding is in line with Yulianti (2015) who found that the estimation result of the full sample found the children who live with the BSM household recipient are less likely to dropout at every level of eduation.

Furthermore, the estimation results in the poor category sample show that BSM significantly correlates with reducing the likelihood of individuals dropping out of school at the elementary and senior high school levels. In contrast, BSM is not correlating at the junior high school level. The estimation results show that individuals with primary education who receive BSM are 0.2 percent less likely to drop out of school than those who do not receive BSM. Senior high school students who received BSM were 2.0 percent less likely to drop out of school than individuals who did not receive BSM. From the estimation results, it can be shown that BSM has the most significant influence in reducing the possibility of dropping out of school at the senior high school level. This finding is in line with Yulianti (2015) who found that BSM has a significant effect on reducing the probability of dropping out of school at all levels education for children in the poorest quartile of the expenditure distribution.

The estimation results show that the BSM has a more significant and effective impact in reducing the possibility of dropping out of poor students, especially at the senior high school level. The strong influence of the head of household education affects the effectiveness of BSM in reducing dropouts at the senior high school level. The PKH can only reduce the possibility of dropping out of elementary school. The estimation results for poor students also show that the PKH is significantly correlated and has a negative relationship to the probability of dropping out of school at the elementary level. On the other hand, the PKH policy does not correlate

with the probability of dropping out of school at the junior and senior high school levels but has a positive relationship.

For the supply side category of Education, the estimation results in the full sample indicate that the number of elementary schools is not significantly correlated and has a positive relationship to the probability of dropping out of elementary school. The students-teachers ratio is also not correlated with dropping out but has a negative effect on the probability of dropping out of school. For poor individuals, the number of elementary schools and the students-teachers ratio are not correlated and have a positive effect on the probability of dropping out of school.

Table 4. Effect of BSM on Dropouts in 2014

Description	Full Sample			Sub-sample Poor Students		
	Elementary school	Junior high school	Senior high school	Elementary school	Junior high school	Senior high school
Probit						
BSM	-0.318 ***	-0.089 ***	-0.086 **	-0.243 ***	-0.069	-0.271 ***
PKH	-0.128 **	0.068	0.028	-0.194 **	0.128	0.161
Marginal effect after Probit (dy/dx)						
BSM	-0.0005 ***	-0.004 ***	-0.005 ***	-0.002 ***	-0.006	-0.020 ***
PKH	-0.0002 **	0.0029	0.001	-0.002 **	0.010	0.012

Note(s): *** p<0.01, ** p<0.05, * p<0.1
Source: Susenas (2014), processed by the authors.

For junior high school education in the full sample, the number of junior high schools and students-teachers ratio are not correlated and have a positive impact on the probability of dropping out, meaning that the higher the number of schools and students-teachers ratio, the probability of dropping out at the junior high school level is higher. In the sample of poor individuals, the number of junior high schools is not correlated and has a positive impact on the probability of dropping out of school, while the students-teachers ratio is not correlated but has a negative impact on the probability of dropping out of school.

For the senior high school education level in the full sample, the number of senior high schools is uncorrelated and has a negative relationship to the probability of dropping out, meaning that as the number of schools increases, the probability of dropping out at the senior high school level decreases. The students-teachers ratio is correlated with the probability of dropping out of school but has a positive relationship. In the sample of poor individuals, the number of senior high schools and students-teachers ratio are not correlated and have a positive relationship to the probability of dropping out.

In general, the findings on supply side education show that number of schools and students-teachers ratio are not correlated and have a positive relationship to the probability of dropping out. These findings are not in line with the Suryadharma et al. (2006) who mentioned that number of schools is statistically significant in increasing enrollment. Duflo (2001) found that opening schools increased years of schooling. Handa (2002); Burde and Linden (2013) which remarked that opening schools increased the enrollment rates. Additionally, Duflo et al. (2015) pointed out that reducing class size could increase test scores.

Comparison Between BSM and PIP

In summary, the comparison of the estimation results of BSM and PIP policies can be seen in Table 5. The estimation results show that the BSM and PIP have a more significant and effective impact in reducing the possibility of dropping out for poor students than the full sample at every level of education. This finding is in line with the design of the PIP policy and hypothesis of this study. PIP aims to reduce the possibility of dropping out of school for poor students at each level of education. The estimation result is also in line with previous studies. Setyadharma (2018) mentioned that based on Primary data collected from rural areas in Central Java Province, PIP significantly diminish the rural students' likelihood of dropping out. Yulianti (2015) found that BSM has a significant effect on reducing the probability of dropping out of school at all levels education in the full sample and children in the poorest quartile of the expenditure distribution.

This finding is also in accordance with the education production function theory, where PIP as a government intervention from the demand side can directly increase parents' income and indirectly reduce education costs. This additional income can be used for spending on children's education to encourage children to stay in school and reduce the possibility of school dropout. Furthermore, the estimation results show that the 2014 PKH policy can significantly reduce the probability of dropping out at the elementary education level. However, it is not significantly correlated and has a positive relationship to the probability of dropping out at the junior and senior high school levels. On the other hand, the 2019 PKH policy was not significantly correlated with the possibility of dropping out at the elementary education level but had a negative relationship. It was significantly correlated at the senior high school level but had a positive relationship. The estimation results show that in 2014 and 2019, in the full sample and subsample of poor individuals, the PKH policy has not been able to reduce the possibility of dropping out of school at each level of education, but the performance of PKH is quite good at the elementary education level in 2014.

Table 5. Marginal Effect Between BSM and PIP

Description	2014			2019		
	Elementary school	**Junior high school**	**Senior high school**	**Elementary school**	**Junior high school**	**Senior high school**
Full Sample						
BSM/PIP	-0.0005 ***	-0.004 ***	-0.005 **	-0.010 ***	-0.028 ***	-0.009 ***
PKH	-0.0002 **	0.0029	0.001	-0.0002	0.007 ***	0.004 ***
Sub Sample Poor Students						
BSM/PIP	-0.002 ***	-0.006	-0.020 ***	-0.019 ***	-0.051 ***	-0.028 ***
PKH	-0.002 **	0.010	0.012	-0.0001	0.009 **	0.014 ***

Note(s): *** p<0.01, ** p<0.05, * p<0.1
Source: Susenas (2014; 2019), processed by the authors.

The authors realize that this study has not been able to provide an argument as to why PKH has not been able to reduce dropouts. In comparison with other studies, Lee and Hwang (2016) noted that PKH could not significantly increase school participation and reduce child labor. The financial returns of PKH recipients who attend primary school are lower than those of children who do not participate in PKH in the short and medium term. but in the long term, the financial returns are

greater than those who do not participate in PKH. In the full sample and subsample of poor students, the estimation results show that the effect of PIP in reducing the possibility of students dropping out of school at each level of education is better than BSM. This finding shows that the change in the mechanism of distribution, which was initially handed over directly in cash into the KIP-ATM card, and beneficiary expansion, effectively reduced dropout rates.

CONCLUSIONS

Overall, the estimation results show that the PIP policy has a better effect and is more effective in reducing the possibility of dropping out at each level of education compared to the BSM policy. Referring to the estimation results of the BSM and PIP policies, it can be concluded that the reform of the distribution mechanism and the increase in coverage significantly reduce the dropout rate, especially for students from poor families. The evolution of the BSM policy into PIP has contributed significantly to the Government's efforts to provide universal education.

Referring to the findings, the Government needs to continue to improve monitoring and evaluation quality sustainably so that PIP policies remain relevant. PIP is also expected to reach more poor students, especially junior and senior high school students. On the other hand, equitable access to quantity and quality of education services also needs to be improved in order to reduce educational barriers. The authors realize that this research is not free from limitations. This research is limited to using cross-section data to capture the effectiveness of the policy from BSM to PIP. Using panel data will provide more variation and capture the behavior of the same observations from year to year. Another limitation is that the data on supply-side education is at the district level, so every child in one district will have the same supply side.

This study has not been able to provide an argument why PKH has not been able to reduce dropouts. The initial justification that the authors can provide is that the data on PKH recipients available in the Susenas does not contain information on whether the individual only received PKH Education or other PKH such as PKH Health, PKH social welfare, or receiving all PKH benefits simultaneously. Therefore, information on PKH recipients in this study is assumed to be varied, meaning that there is a possibility that individuals only receive PKH Education, and there is also the possibility that individuals receive part or all of the benefits of PKH at the same time. The use of PKH recipient data that contains information related explicitly to PKH education will be able to provide more precise estimation results.

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