Factors Affecting the Rate of Child Dropout from Multiple Angles

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Abstract. The research background of this study is based on the phenomenon of children out of school worldwide. In the 21st century when the economy is highly developed, the problem of children out of school still exists. In order to protect children's right to education, it is of great significance to reduce the rate of children out of school. The research theme of this study is "Factors affecting the rate of child dropout from multiple perspectives", and the main research methods are literature analysis, comparative analysis and statistical analysis. The results show that the country's economic level, education expenditure and the proportion of public education investment all have a significant impact on the child dropout rate, and the child dropout rate is significantly correlated with it, while gender has no significant impact on the child dropout rate, and the child dropout rate is higher in poor areas, and the lack of education investment seriously affects the improvement of the level of education development and the popularization of compulsory education. The conclusion of this study is that implementing the compulsory education system and increasing the economic investment in the field of education can reduce the dropout rate of children and protect children's right to education.

Keywords: Child dropout rate; Education inequality; Teachers; Education expenditure; GDP.

1. Introduction

In recent years, people have paid increasing attention to the inequality of children's education worldwide. To solve the popularization rate of primary education, the out-of-school population is a very important contradiction point. If we can pay attention to the problem of out-of-school children and solve it, it will have a positive impact on the popularization of primary education. Scholars at home and abroad, as well as UNESCO and UNICEF have explored the impact and causes of the global child dropout rate and achieved a lot of research results. In recent years, scholars at home and abroad have been on the rise in such aspects as "factors affecting the global child dropout rate"[1], "issues related to the education of disadvantaged children facing poverty"[2], and "the shortage of qualified teachers and insufficient investment in education in underdeveloped areas"[3]. Globally, especially in less developed areas, children will face more serious out-of-school phenomena. The imbalance of the out-of-school population is closely related to the level of national economic development. Ignoring the fair opportunities that hundreds of millions of children deserve not only threatens the future of children, but also the future of society by creating intergenerational transmission of hardship.

As national economic development, educational input, and other aspects are closely related to the dropout rate, and international organizations have pointed out that not only developing countries have to face the problem of children out of school but also developed countries. Therefore, this topic has particular research values and practical significance. Children's absence from school had a worrying and far-reaching impact. Children should have the right to education, and the international community should take measures. To focus on children's education is to focus on the future of humankind, and to reduce the number of children out of school is to save the future of children. This study is based on the concern of children's education, and its significance is to provide ideas for reducing the dropout rate of children.

In order to analyze the affecting factors of global child dropout, the study collects data on the most vulnerable groups, analyzes the collected data, develops integrated solutions to the challenges, and develops innovative ideas to address the problem. In addition, this study compares total public

spending on education, total (as a percentage of GDP), trained primary education teachers (as a percentage of total teachers), and GDP per capita. These three data are used as independent variables. As dependent variables, the dropout rate of boys, the dropout rate of girls, and the total dropout rate of children were analyzed. Finally, this study attempts to provide a reference value for finding the factors affecting the global child dropout rate and how to reduce the global child dropout rate.

2. Method

2.1. Data Sources

Data for this study are mainly derived from the UNESCO Data Platform and the World Bank. The data used in this study are macro data, recording the impact of education expenditure (including GDP per capita, teacher ratio, and teacher expenditure) and child gender on child dropout rate in 266 countries including Afghanistan, Argentina, and Australia from 2011 to 2021.

2.2. Variable Setting

In this study, education expenditure (including per capita GDP, teacher ratio, and teacher expenditure) and child gender were set as independent variables. The child dropout rate was set as the dependent variable, and the COVID-19 epidemic was set as the control variable.

2.3. Research Methods

In this research, literature analysis, comparative analysis, and statistical analysis are adopted as the main research method to examine the affecting factors the global child dropout rate.

Firstly, through the analysis of keywords in the literature, such as "changes in the rate of dropout of children before and after COVID-19", "dropout", "teachers", "public education expenditure", "distribution of dropout population", "education for all". The ideological content reflected in the literature, such as positions, views, and values, goes from the surface of the text to the deep level of the text. Explore the content nature of the message in turn. The key information in the literature, such as "the phenomenon of children out of school", "international aid strategies", "the distribution of the population out of school", and "teachers and public education expenditure", is also the key text analysis content. These will be used as highlights in the paper. These are mainly related to the level of educational equity. The "Education for All Global Testing Report" released by UNESCO points out that educational equity is mainly reflected in educational opportunity equity, educational process equity, and educational outcome equity. Equality of educational opportunities mainly includes enrollment rate, child dropout, literacy rate and literacy, gender equality, vocational and technical education, and training; Educational process equity mainly includes educational environment, educational means, educational guarantee, and educational input. This study mainly elaborates on gender and educational input (including the number and qualification of teachers, teacher-student ratio, and financial resources).[4]

By using the comparative analysis method, data from 266 countries between 2011 and 2021 are divided into several groups to analyze the status and problems of education in various countries in adapting to the national economic level and the development of education itself and explain the problems and development trend of education development in various countries. Tests show that 94 percent of out-of-school children are in developing countries, with one-third in the least developed countries [5].

In the quantitative analysis phase, the panel data and information obtained through the survey were sorted out statistically and analyzed by mathematical means, and the different changes in the dropout rate in multiple years in multiple countries under the influence of different variables were analyzed to form quantitative conclusions. This study mainly uses macro data for analysis. Various data found in the UNESCO data platform and the World Bank are imported into Stata for calculation and analysis. Descriptive analysis and t-tests were conducted on the rate of child dropout. Regression analysis is conducted on the dropout rate and education expenditure to study the impact of per capita GDP,

teacher proportion, and teacher expenditure on the dropout rate of children. In addition, according to the global impact of the COVID-19 epidemic in recent years, the study added the epidemic as a control variable.

2.4. Research Hypothesis

Based on the data and literature searched, this study proposed the following hypothesis:

H1: The factor of gender has a significant impact on the dropout rate of children. There are gender differences in the number of children out of school, with some regions having more girls out of school than boys, while others have the opposite effect. There is something to do with differences in social attitudes [6].

H2: Per capita GDP, teacher ratio, and education expenditure have a significant impact on the rate of child dropout.

3. Result

According to table 1 Among the overall dropout rates girls account for half of the school dropout rate.

Table 1. Descriptive analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
Dropout-child	1426	6.378913	9.464148	0	62.36
Dropout-girl	925	9.099924	10.18155	0	57.84

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
2	925	9.554205	.3666417	11.15097	8.834658	10.27375
3	925	9.099924	.3347673	10.18155	8.442932	9.756917
combined	1,850	9.327065	.2482305	10.6768	8.840223	9.813906
diff		.4542811	.4964829		-.5194453	1.428007

diff = mean(2) - mean(3) t = 0.9150
Ho: diff = 0 degrees of freedom = 1848

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.8198 Pr(|T| > |t|) = 0.3603 Pr(T > t) = 0.1802

Fig. 1 T -test (2-Represents the dropout rate of girls，3-Dropout rate of boys)

According to Fig.1 the average out-of-school rate for boys is 9.10, the average out-of-school rate for girls is 9.55, the t-value = 3.60, and the p=0.0003<0.01, indicating that there is a significant difference between the out-of-school rate of boys and girls at the 1% level.

Table 2. Variable settings

Variable	Variable name	Compute mode
Dropout-rate	Dropout-child	
Dropout-boy	Dropout-boy	
Dropout-girl	Dropout-girl	
Expenditure	Expenditure	Total educational public expenditure/GDP
GDPPC	rgdp	
Teacher ratio	teacher 1	Total number of education teachers/teachers who have been trained

Table 3. Regression model-drop-out child

Source	ss	df	MS.	Number of obs	=597
Model1	3803.96423	3	1267.98808	F (3,383)	=18.22
Residual	41261.2072	593	69.5804507	Prob>F	=0.0000
Total	45065.1715	596	75.6127038	R-squared	=0.0844
				Adj R-squared	=0.0798
				Root MSE	=8.3415
Source	ss	df	MS.	Number of obs	=597

Table 4. The influence of per capita GDP, teacher ratio and education expenditure on the total dropout rate

Dropout child	Coef.	Std.Err	t	P>|t|	[95%Conf.Interval]	
expenditure	-.7564693	.1842956	-4.10	0.000	-1.118421	-.3945179
rgdp	-0.000106	.000022	-4.83	0.000	-.0001492	-.0000629
Teacher1	-.0877507	.0226484	-3.87	0.000	-.1322316	-0.432699
_cons	18.55088	2.147504	8.64	0.000	-14.33324	-22.76851

According to table 2, 3 and 4, GDP per capita, teacher ratio, and education expenditure have a significant impact on the overall out-of-school rate.

Table 5. Regression model-drop-out boy

Source	ss	df	MS.	Number of obs	=387
Model1	1969.03679	3	656.3455596	F(3,383)	=8.48
Residual	29659.5418	383	77.440057	Prob>F	=0.0000
Total	31628.5786	386	81.9393228	R-squared	=0.0623
				Adj R-squared	=0.0549
				Root MSE	=8.8

Table 6. Impact of GDP per capita, teacher ratio, and education expenditure on boys' out-of-school rate

Dropout-boy	Coef.	Std.Err	t	P>|t|	[95%Conf.Interval]	
expenditure	-.7108939	.243346	-2.92	0.004	-1.189355	-.2324325
rgdp	-.000087	.000033	-2.63	0.009	-.0001519	-.000022
Teacher1	-.0800109	.0286463	-2.79	0.005	-.1363347	-.0236872
_cons	20.04692	2.657224	7.54	0.000	-14.82234	25.27149

According to table 5 and 6, dropout-boy =20.0469 - 0.7109 × expenditure – 0.0001 × rgdp – 0.0800 ×teacher1. The per capital GDP, the proportion of teachers, and education expenditure have a significant impact on boys' absence rate.

Table 7. Regression model-drop-out girl

Source	ss	df	MS.	Number of obs	=387
Model1	3671.49621	3	1223.83207	F(3,383)	=12.40
Residual	37796.77	383	98.6860836	Prob>F	=0.0000
Total	41468.2662	386	107.430742	R-squared	=0.0885
				Adj R-squared	=0.0814
				Root MSE	=9.9341

Table 8. Impact of GDP per capita, teacher ratio, and education expenditure on girls' out-of-school rates

Dropout-girl	Coef.	Std.Err	t	P>|t|	[95%Conf.	Interval]
expenditure	-.9251128	.2747068	-3.37	0.001	-1.465235	-.3849905
rgdp	-.0001179	.0000373	-3.16	0.002	-.0001912	-.0000446
Teacher1	-.1140401	.0323381	-3.53	0.000	-.1776224	-.0504577
_cons	24.95536	2.999669	8.32	0.000	19.05748	30.85324

According to table 7 and 8, the proportion of teachers and education expenditure have a significant impact on girls' out-of-school rates.

Consider the context of the Covid-19, as dropout rates have been affected in different places since the pandemic. In order to control the impact of the epidemic on the dropout rate and alleviate the problem of missing variables in the model, the epidemic should be added as the control variable. The results after adding epidemic control variables are shown in the fig.2 below. It can be seen the inclusion of three variables in expenditure, rgdp, and teacher 1 can reduce dropout rates.

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. esttab m1 m2 m3,r2
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	(1) dropout_ch~d	(2) dropout_boy	(3) dropout_girl
expenditure	-0.751***	-0.698**	-0.908**
	(-4.06)	(-2.86)	(-3.30)
rgdp	-0.000106***	-0.0000864**	-0.000117**
	(-4.81)	(-2.61)	(-3.14)
teacher1	-0.0873***	-0.0796**	-0.113***
	(-3.85)	(-2.78)	(-3.51)
covid	-0.496	-1.585	-2.050
	(-0.44)	(-1.09)	(-1.25)
_cons	18.53***	20.11***	25.04***
	(8.62)	(7.57)	(8.35)
N	597	387	387
R-sq	0.085	0.065	0.092

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Fig. 2 Control variable t-test

4. Discussion

4.1. Conclusion of research hypothesis

In the process of analysis, the team obtained the following enlightenment through the research on the theme of "factors affecting the dropout rate of children from multiple perspectives". From the research and analysis, it can be seen that in the world, per capita GDP, the proportion of teachers, and education expenditure have a significant impact on the overall out-of-school rate of children.

Therefore, the research hypothesis is true. The discussion will start from the above three different factors.

4.2. Three influencing factors

4..2.1. GDP per capita（Economic development factors）

In terms of economic development, the economic development level of the country has a significant impact on the out-of-school rate of children. The more backward the economic development level is, the more the out-of-school population will be distributed. All countries should follow the path of economic development suitable for their own countries, especially the underdeveloped countries and regions, and should strive to overcome the impact of their own countries under the unbalanced trend of world economic development and strive to improve the level of per capita GDP and increase the overall economic income. The earliest monitoring report pointed out that almost all out-of-school children came from developing countries which accounted for 94%, and the least developed countries accounted for 1/3 of them [5]. Poverty is the main obstacle to access to education. In low-income and middle-income countries, adolescents from the wealthiest 20% of families are three times more likely to complete secondary education than those from the poorest families. Among students who have completed junior high school education, students from the families are twice as likely to have basic reading and math skills as students from the poorest families [10]. At the same time, countries should also note the important role of international assistance in reducing dropouts. The distribution scheme of international aid to control out-of-school needs to be improved in fairness. The existence of such a large and unevenly distributed out-of-school population often makes a country or region face great pressure in achieving the popularization of primary education, especially in areas with backward economic development, and the relatively weak economic and social foundation is difficult to bear such a heavy responsibility. Countries should implement different aid models in combination with their own. For example, in some regions, the "cash transfer payment" aid model can extend children's schooling time and give them the opportunity to receive higher education [9].

4.2.2. Proportion of teachers

More attention should be paid to the training of teachers and ensure that we have qualified and sufficient teachers. Countries with backward economic development should realize that insufficient investment in education will seriously affect the improvement of education development levels and the popularization of compulsory education [5]. In terms of teachers, countries with high dropout rates should supplement a large number of qualified teachers and gradually change the sexism of parents towards teachers. Taking Asia as an example, women teachers account for 50% of teaching staff in less developed countries and regions in Asia. However, the proportion of men and women teachers varies significantly from country to country. Only quarter of primary school teachers in Nepal are women. Almost nine out of ten primary school teachers in Macao, China, are women. The UNESCO Institute of Statistics believes that this data is important because it is in preschool and primary education. Women as teachers can be the driving factor for parents to send their daughters to school [7].

4.2.3. Education expenditure

In terms of education expenditure, the country should be aware of the significant relationship between education investment and children's out-of-school. The increase of the country's investment in public education will reduce the out-of-school rate to a certain extent. The proportion of public education expenditure to government expenditure is also an important indicator to measure education investment [7]. In general, the investment in education in less developed countries and regions in Asia is seriously insufficient. The insufficient investment in education has seriously affected the improvement of education development level and the popularization of compulsory education [7]. UNICEF also pointed out in the report that there is evidence that investing in the most vulnerable children can not only achieve immediate results, but also have far-reaching significance. Generally,

children's income will increase by 10% for each additional year of education. However, the poverty rate of a country will drop by 9% for every year that the youth of that country complete their studies. Regardless of the shortcomings in any aspect, this study believes that this educational system should be maintained. Education and politics, economy, society, and culture interact. If a country has a lack or fault of education, the negative impact will be long and heavy.

4.3. Contrast

At the same time, compared with China's education system, because China implements the compulsory education system, there is no significant impact on the dropout rate of children in China's GDP level, the proportion of teachers, and education expenditure. After 70 years of efforts, China's compulsory education and related universal education have made great achievements. China has changed from a weak country with a primary school enrollment rate of only about 20% and an illiteracy rate of more than 80% to an educational power with a comprehensive popularization of nine-year compulsory education, basic popularization of high school education, and popularization of higher education. Accordingly, China's national quality has changed greatly since the founding of the People's Republic of China [8]. Therefore, this study believes that China should maintain this system for a long time. Education has a great impact on the development of the country and is related to the rise and fall of a country. Education makes the country prosperous and the country strong. Many countries have lost a large number of children from school due to the lack of corresponding means, so safeguarding the right of every child to education is still a common problem for most countries in the world.

5. Conclusion

According to this study, globally, there is a significant relationship between the child dropout rate and the total public expenditure on education, the trained primary education teachers, and the per capita GDP. But there was no significant relationship with gender. In the world, most countries have the problem of children being out of school, which is serious in less developed areas and less severe in developed countries. China regards compulsory education as a basic state policy and strictly implements it. Therefore, GDP level, teacher ratio and education expenditure have no significant impact on the dropout rate of children. This study believes that adhering to the compulsory education system is an important system to reduce the dropout rate of children and protect children's right to education, which should be implemented for a long time. Education has a great influence on the development of a country. Education is closely related to the rise and fall of a country. Education and politics influence each other, and education cannot ignore politics. Education and the economy influence each other, and education cultivates talents for economic development. Education has an impact on society, and education and society complement each other. The influence of education on culture, education itself is a special cultural phenomenon. Education is a practical activity to improve people's comprehensive quality. The talent shortage is a major obstacle to productivity and economic development, and education is an important way to solve it. With the development of science and technology, people are more and more aware of the importance of talents. This study believes that education should be promoted to the first place in social development. The significance of this study lies in that it provides a way of thinking and perspective for the development of education, the reduction of the dropout rate of children, and the protection of children's right to education: to develop the domestic economy and improve the national economic level; Increase spending on education; Quality training for teachers. At the same time, this study still has certain limitations and shortcomings. The novel coronavirus pandemic, an event with a small probability and far-reaching impact on the world, will have an impact on the rate of child dropout. However, the methodology obtained after data analysis in this study cannot eliminate the impact of the epidemic on children out of school. Look for ways to minimize the impact of low-probability events. In the future, this study will consider more influencing factors, such as the influence of national economic aggregate, social

environment and cultural customs on the dropout rate of children. It is hoped that more findings can be made in future studies to make a complete complement to this study.

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