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Threshold Effect of Poverty Alleviation Funds on Human Capital Accumulation: A Case Study of Impoverished Counties in China

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Abstract: Studies have shown that the effectiveness of poverty alleviation funds is not always as intended; hence, there is an urgent need for researchers and policy makers to study the relationship between such funds and their impact on endogenous growth dynamics. This study focuses on the impact of these funds on human capital accumulation, which is an important driver of endogenous economic growth, and analyzes whether there is a threshold level for the efficacy of funds in countering poverty. This study examines the relationship between the Chinese government's fund transfers to key poverty-stricken counties and the level of human capital in these regions by employing a fixed-effect threshold panel regression model on data from 592 counties from 2002 to 2015. Our study finds that the Chinese government's fund transfers for poverty alleviation display a significant threshold effect. When funds are less than RMB 1291 per capita, there is a significant effect on local economic development; once this threshold is exceeded, there is a significant inhibitory effect instead. When the amount exceeds RMB 4469 per capita, fund transfers once again stimulate economic growth. This study enriches the theoretical understanding of the complex relationship between the use of funds in poverty-stricken areas and their impact on endogenous growth dynamics. It also provides useful suggestions for the effective use of poverty alleviation funds.

Keywords: threshold effect; poverty alleviation funds; impoverished counties; human capital accumulation; China

1. Introduction

This paper raises and examines the question of whether a threshold effect exists in the effectiveness of poverty alleviation funds. In anti-poverty programs, intergovernmental cash transfers are commonly used to aid poor regions [1]. However, their effectiveness has been mixed. Some studies suggest that such transfers can effectively alleviate poverty as they enable local governments to increase spending on public goods such as education and health care [2]. However, other studies show that such transfers are inefficient or even create distortionary effects due to weak local accountability [3]. Although it is necessary to transfer cash to help poor regions, especially under a decentralized institutional and fiscal system, some regions have become worse-off after receiving funds. The reasons for this vary from corruption [4,5] to the waste of public services [6]. This mixed evidence indicates the existence of complex interactions between fiscal transfers and their beneficiaries [7]. Recently, researchers have argued that if the amount of funds transferred is too high, the funds may be detrimental to the poor regions where they are sent, as they may introduce corruption as well as induce a reluctance to participate in industrious work and increase dependence on assistance [8]. In this situation, it becomes critical to examine whether there is a threshold level for the effectiveness of transfer funds.

It is also increasingly important to examine the effectiveness of poverty alleviation funds from the perspective of their impact on endogenous growth dynamics. Instead of focusing on improved

income or other living-condition indicators, a more important issue for researchers and policy makers is securing a permanent exit from poverty by helping poor regions build and improve their capacity for economic development, rather than depending on short-term gains from subsidies [9]. To achieve this, examining the impact on human capital (HC) provides a better perspective on the outcomes of the utilization of fund transfers. The developmental implication of HC is derived from the endogenous growth theory in economics, which captures investments in people that augment their abilities and widen the range of choices available to them to generate higher economic rewards [10]. In poverty-aid programs, an increase in HC implies that the transfer funds have a higher trickle-down effect. Many regions and programs are dedicated to HC-related development, such as investments in nutrition, education, and health, with the explicit aim of breaking the intergenerational persistence of poverty [11]. A large body of research also reveals positive links between educational attainment and the economic status of individuals, regions, and countries [12,13]. In general, regions with higher proportions of better educated people perform better in achieving economic development and higher living standards [14]. Although there has been awareness of the important role HC plays in lifting people out poverty, few studies examine the relationship between poverty alleviation funds and changes in the HC of poor regions.

If poverty alleviation funds are considered an external resource, then the level of HC would be one of the most important indicators for measuring the endogenous dynamics of regions [15,16]. The endogenous growth theory holds that HC is the driving force for regional economic growth and social development. Based on existing research on fund transfers, we assume that such funds have a threshold effect on the future economic development of subsidized regions, that is, only when the subsidy reaches a certain amount will it begin to promote the accumulation of HC. However, as the subsidy increases, the poverty alleviation policy will become inefficient due to obstacles such as a lack of economic scale or the laziness of officials, which may, in turn, produce an adverse impact on the accumulation of HC. Through testing this threshold effect, this study provides an in-depth theoretical understanding of the complex relationship between the use of funds and changes in endogenous dynamics. It also proposes evidence-based suggestions on when to use poverty alleviation funds to ensure optimal effectiveness.

Therefore, the paper investigates the relationship between fiscal transfers and HC development using a case study of impoverished counties in China. Since the Chinese economic reform, rural poverty alleviation has achieved great success. The rural poor population has decreased from 250 million in 1978 to 30.46 million in 2017, and the incidence of poverty has dropped from 30.7% to 2.3% during that same period. For many years, the main battlefield for poverty alleviation efforts in China was the 592 key poverty-stricken counties, with more than 50% of the poor population of China located in these counties [17]. Certain counties were deemed to be poverty stricken based on the following considerations. First, the reduction of regional poverty (in poor counties) and group poverty (among the rural population) could be carried out at the same time; and second, as counties are characterized by the integration of administrative divisions and geographical conditions, this is favorable for top-down policy implementation and resource integration within the counties. The selection criteria can be broadly divided into economic factors (e.g., per capita net income, per capita grain production, share of industrial income in total income, per capita GDP, etc.), political factors (e.g., whether a region is an old revolutionary base area or a minority region), and geographical factors (e.g., western regions, border regions, or mountainous regions) [8]. Though the selection criteria and their rationale are still open to debate, under the Chinese political system, poverty alleviation funds are transferred to the county level. Therefore, regional and group poverty alleviation has become an important feature of China's poverty alleviation policy. This study examines whether fund transfers can promote the economic development of poor areas.

The paper is structured as follows. Section 2 further theorizes the relationship between poverty alleviation funds and HC. Section 3 introduces the fiscal support for anti-poverty policies in China. Section 4 describes the econometric model and data. The results are summarized in Section 5,

and Section 6 discusses the threshold effect of poverty alleviation funds. The paper concludes in Section 7 by highlighting the novelty of this study and discussing the direction of future research.

2. Poverty Alleviation Funds and Human Capital

In the context of fiscal decentralization, fiscal transfers are usually adopted in anti-poverty programs [2,18] as an instrument for tackling poverty, while building human and physical capital to enhance developmental capacity [1]. Litschig et al. (2013) found that fiscal transfer payments in Brazil helped increase HC in the country's poor regions and reduce poverty rates. Wang, et al. [19] found that from 1998–2001, poverty alleviation investment had a significant impact on raising the incomes of rural households in the short run. Fiscal transfers are expected to help correct failures during the fiscal decentralization process by enabling poor regions to improve their living standards and establish necessary provisions, such as infrastructure, for development.

However, this expectation is not always achieved. Using provincial panel data and spatial econometrics, Gao, et al. [20] found that the fiscal agricultural support policy had an insignificant effect on rural poverty reduction in the province, and significantly inhibited poverty reduction efforts in the neighboring provinces. Chen and Shen [21] found that government subsidies had very limited effects on poverty reduction in the rural areas of Tianjin. Lv [18] discussed the impact of intergovernmental transfers from China's large-scale poverty alleviation projects on local education expenditure from 1994 to 2000. A regression analysis returned no systematic evidence indicating that poverty alleviation programs had any significant effect on local education or a reduction in illiteracy rates. Recent studies have pointed out that the lagged reform and path dependence of poverty-stricken counties would lead to the inefficient operation of poverty alleviation policies (Xu, 2014; Guo, 2016). To a certain extent, such efforts will even aggravate poverty in these counties (Guo, 2016). These studies showed that poverty alleviation funds do not always affect the local economic development positively. Their effectiveness is closely related to factors such as the amount of funds transferred and the stage of implementation.

Whether regions can develop endogenous growth momentum with the help of poverty alleviation funds has become a subject of increasing concern [22]. Examining changes in the level of HC provides a way to interpret this issue. HC can be understood as the overall level of knowledge, competence, and health of all individuals in a specific region. HC improvement is a way of investing in people, who are then expected to generate and augment opportunities and rewards for themselves. HC investment, such as education, health care, and even recreation, enables people with more work-related choices and opportunities for higher rewards [10]. Alongside the importance of knowledge economies, the quality of HC implies the potential for innovation and level of productivity. More importantly, HC, especially education, is often intergenerationally financed, which is studied by overlapping-generation models, justifying monetary inputs among generations as a medium for the continuous cultivation of education or HC [23]. Therefore, there is a big difference in the level of HC between poor and non-poor regions, which in return becomes an obstacle to helping the region escape the poverty.

Schultz (1961) conducted a comprehensive review of Western developed economies, pointing out that HC, represented by knowledge and skills, is a distinctive characteristic of developed economies, and that growth in HC should be much faster than that of physical capital in developed economies. An increase in knowledge and an improvement in qualities, skills, and health conditions play a more important role in economic growth than a quantitative increase in physical capital or the labor force. The level of HC determines the economic and social sustainability of a region. Education is one of the most important means of boosting the level of HC [24,25]. Since the mid to late 20th century, the concept of HC has stimulated extensive discussions among Western economists and has become an important subject of research in endogenous growth theory. P. Romer believes that HC is an inherent and lasting source, and it is the driving force for regional economic development [16,26]. This has provided an important theoretical perspective for understanding the dynamics of regional economic development.

Increasing the level of HC also injects vitality into the sustained development of backward areas. Schultz (1961) believed that the root cause of poverty is the shortage of HC, and that investing in HC is the key to poverty reduction. Davis [14] suggested that education is the strongest factor in explaining human development activities in Sub-Saharan Africa. Overall, the Sub-Saharan nations with the lowest levels of poverty had higher levels of HC in terms of educational attainment [14]. Gao [27] also agreed that what really limits the development of poverty-stricken areas is inefficient production caused by a lack of HC; farmers with a lower quality of labor are more likely to become poverty-stricken. Jiang and Han [28] found that in poverty-stricken rural areas, improving education levels has the most significant effect on poverty alleviation; He, et al. [29] also concluded in his study that increasing investment in HC will promote poverty reduction in poor regions. Meanwhile, others in the field of development economics are of the view that it is necessary to improve fundamental factors that constitute "human capability", such as education, health, social security, and social exclusion [30,31]. However, problems like corruption and the misallocation, or non-allocation, of poverty alleviation funds require an in-depth investigation of their complex relationship with HC formation.

3. Fiscal Support for Anti-Poverty Policies in China

Although China has made remarkable reductions in poverty, it remains a top issue in promoting societal development [32]. In recent years, the Chinese government has committed to ensuring that no Chinese household lives beneath the national poverty line by 2020. In general, the decline in poverty since China's reform and opening up has largely been due to sustained high rates of economic growth and rapid urbanization. This growth has allowed the nation to accumulate ample wealth, enabling the establishment of anti-poverty programs. Additionally, due to urbanization, individuals can now gain opportunities by moving to urban areas. A consequence of this growth pattern, however, is that some areas suffer from severe poverty, so promoting development in these areas is critical.

In 1985, most poor households (average per capita annual income of less than 200 RMB) lived in 18 extensively poor areas. Although not formally recognized until 2010, two of these areas were in Eastern China (32 counties), seven in Central China (206 counties), and nine in Western China (172 counties). In June 1986, in order to tackle the poverty problem in these areas, the State Council for the Economic Development of Poverty-stricken Areas (subsequently renamed several times and at present is called the State Council Leading Group Office for Poverty Alleviation and Development (SCLGOP)) was established, an initial list of 331 key counties for poverty alleviation was drawn up, and the development of characteristic local industries (to produce, process, and commercialize higher value-added crop cultivation, aquaculture, and animal raising) was the main policy instrument. In this phase, China's impoverished population fell from 125 to 80 million by 1992 (from 14.8% to 8.8%).

Against this backdrop, poverty alleviation measures largely involve area development policies for poor counties and poor villages, and cash transfers are quite often adopted. Cash transfers can be targeted on the basis of poverty or vulnerability, or by specific social categories, for example, age or gender [1]. They can also be allocated to particular areas, although this does not always translate into all people receiving the funds. Perhaps, one of the most distinctive characteristics of the poverty reduction scheme in China is that, through identifying the key counties for poverty alleviation, the policies are directed toward these counties [17,21].

The establishment of the Leading Group for the Economic Development in Poverty-stricken Areas marked the beginning of a large-scale, planned anti-poverty initiative at the national level. In 1994, the State Council formulated the Seven-Year Poverty Alleviation Program, which proposed a plan to solve the problem of providing food and clothing for 80 million poor people in rural areas within seven years. During this period, the central government's special fund for poverty alleviation totaled RMB 124.2 billion [33]. In 1993 and 2001, 592 key counties for poverty alleviation were identified; the detailed list remained relatively consistent despite slight adjustments. Although the consistency in the choice of poverty-stricken counties has been a matter of widespread concern [33,34], being listed as a key county for poverty alleviation has earned these regions a substantial amount of state funds.

These resources may have an enormous impact on the original economic growth pattern of newly listed counties, thus changing local poverty conditions.

Studies on the effectiveness of transfers on poverty alleviation in these key counties have found that, from 1985 to 1992, such policies led to an average annual increase of 2.28% in rural household incomes (Park, Wang et al. 2002). From 1992 to 1995, the average annual growth rate was 0.91%. These policies had led to an increase of 6.1% and 9.2%, respectively, in the income and consumption levels of richer households in the covered regions, but failed to increase the income and consumption levels of poorer households (Park and Wang 2010). Liu [35] used data from 592 key counties from 1990 to 1997 to establish a production function model, discovering that such investments could significantly improve the underdevelopment of poverty-stricken areas. Shuai, et al. [36] compared the performances of different types of poverty alleviation funds in the key counties. The focus of such research is limited to the internal performance of fund transfers in the counties, but it does not address the problem of HC or endogenous growth dynamics.

Poverty-stricken counties have been given substantial support from a large number of poverty alleviation policies and funds (Figure 1). From 1998–2010, a total of RMB 406.7 billion funds were used, and the spending increased to RMB 628.2 billion from 2014–16. Since 1992, nearly 70% of the three central government funds for poverty alleviation have flowed to the nationally designated poverty-stricken counties. According to data released by the *Rural China Poverty Monitoring Report*, the different types of poverty alleviation investments received by the 592 counties totaled RMB 19,289 million in 1997, equivalent to an average of RMB 32.58 million per county. In 2000, each county received funds of RMB 41.04 million on average. The large amount of investment in poverty alleviation funds has effectively increased the income levels of farmers in these areas (Figure 2).

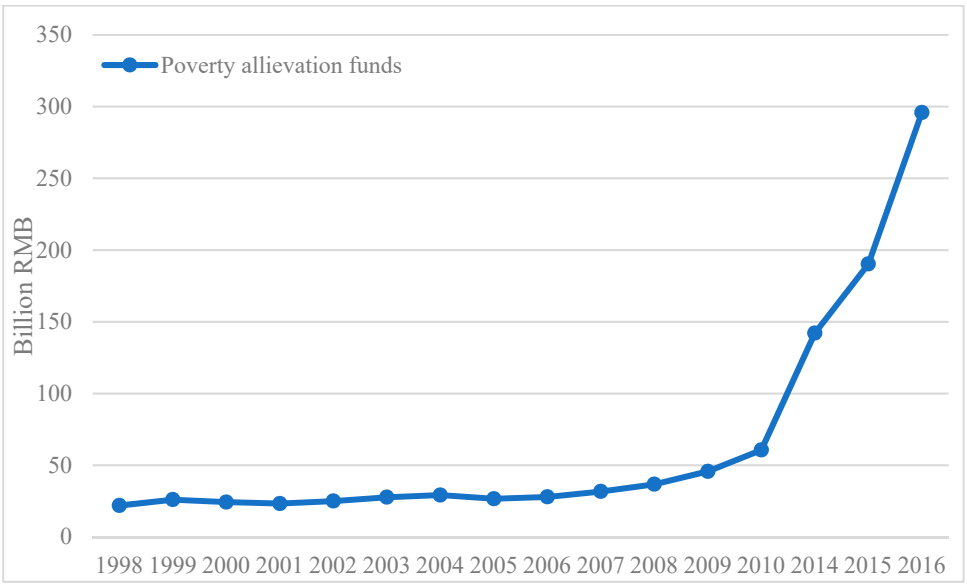


Figure 1. Total Poverty Alleviation Funds to the National Key Poverty Alleviation counties from 1998 to 2016. Source: Rural China Poverty Monitoring Report.

The impact of these measures has been significant. As poverty has declined, however, some of the remaining problems have been increasingly difficult to resolve through development-oriented poverty alleviation and area development policy, for instance, a continuous decline in the targeting accuracy of poverty alleviation programs. These policies also encourage local governments to think that they can simply wait for, rely on, and ask for assistance. Since 2000, none of these poverty-stricken counties have been lifted out of poverty [37]. Therefore, whether fiscal fund transfers can increase the level of HC in poverty-stricken areas and turn donation into production has become a particularly important subject.

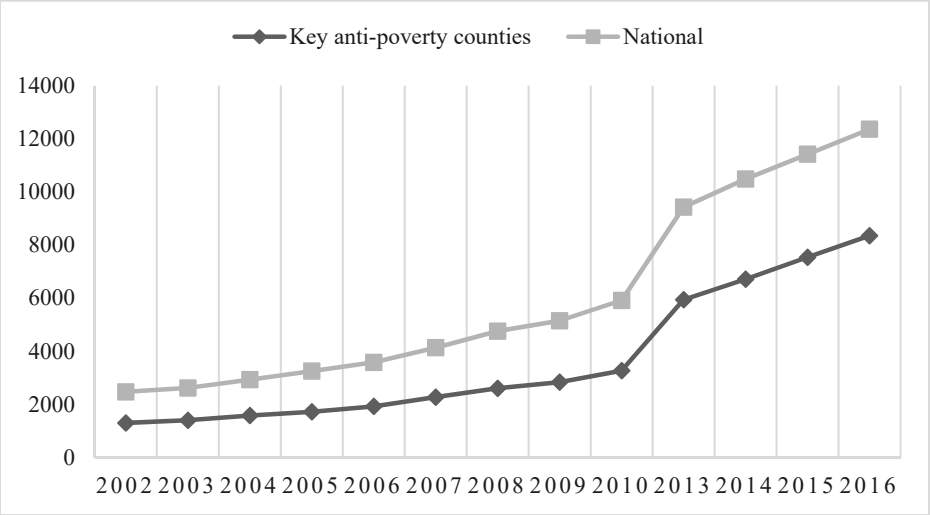


Figure 2. Trends in per Capital Income of Key Poverty Alleviation Counties and Farmers Across the Country. Source: Rural China Poverty Monitoring Report and the website of the National Bureau of Statistics.

4. Methods and Data

4.1. Econometric Model

To establish the relationship between government funds for poverty alleviation and local HC, the following panel model is constructed for an Ordinary Least Square (OLS) regression:

$$HCL_{it} = \beta_0 + \beta_1 avetrans_{it} + \sum_{j} \beta_j X_{jit} + year_t + id_i + \varepsilon_{it}, \quad (1)$$

where the dependent variable, HCL_{it}, denotes the level of local HC. HC is used as the dependent variable because it is the source of local endogenous growth dynamics and can reflect the potential for future local economic growth. $avetrans_{it}$ is the per capita fiscal subsidy provided by the government to the key counties, X_{jit} is the set of control variables, $year_t$ and id_i represent the fixed effects of year and region respectively, and ε_{it} is the stochastic disturbance term.

Based on this model, to further examine whether a threshold effect exists in the per capita fiscal subsidy, this study employs the fixed-effect threshold panel regression model and assumes that the sample individuals are all independent and identically distributed. The regression model with only one threshold value is as follows:

$$\begin{aligned} HCL_{it} = \beta_0 + \left(\beta_{11} avetrans_{it} + \sum_{j} \beta_{j1} X_{jit}\right) I(avetrans \le \gamma) + \\ (\beta_{12} avetrans_{it} + \textstyle\sum_{j} \beta_{j2} X_{jit}) I(avetrans > \gamma) + year_t + id_i + \varepsilon_{it}, \end{aligned} \quad (2)$$

where the indicator function $I(\cdot)$ is added:

$$I(avetrans, \gamma) = \begin{cases} 0, \; if \; avetrans \le \gamma \\ 1, \; if \; avetrans > \gamma \end{cases}. \quad (3)$$

The per capita fiscal subsidy (avetrans) is used as the threshold value. When the amount of the subsidy is less than the threshold γ, then the indicator function is 0; if it exceeds the threshold γ, then the indicator function is 1.

The dependent variable, HC, includes factors such as education level, work experience, and technical skills. In relevant literature, HC is usually measured by the average maximum years of schooling [38,39].

4.2. Data

The lack of data availability severely constrains the assessment of the long-term social transfers of poverty-aid funds in developing countries [11]. Owing to the difficulty in obtaining detailed, national-scale county-level data for education, the level of HC (*HCL*) in a given county is measured by the product of the number of students attending local secondary schools in the county (students) and the average maximum years of secondary school education (10 years), divided by the total local population (pop).

$$HCL = \text{students} * 10\text{yrs}/\text{pop} \quad (4)$$

This study uses the per capita transfer payment—the difference between per capita fiscal expenditure and income—for calculation. Control variables include social and economic status, which may affect HC accumulation. The calculation methods of the other control variables are listed in Table 1.

Table 1. Key variables in National Poverty Counties: measurement and descriptive statistics, 2002–2015.

Abbreviation	Variable	Calculation Method	Unit	Min	Max	Std
HCL	The level of human capital in a county	Multiplied by the average maximum years of secondary school education (10 years) and then divided by the total local population (pop).		6.694	1507.000	224.979
avetrans	Average government transfer's financial subsidies	(Local financial expenditure − Local fiscal revenue)/total population	RMB/person	−6655.118	34,405.000	3228.071
lGDP	Local gross domestic product	Logarithm of the local GDP.	Thousand RMB	873.392	1537.205	100.616
GDP per capita	GDP per capita	Gross domestic product/total population.	RMB/person	765.574	102,542.400	8788.034
struc	Non-agricultural industrial structure	(Manufacturing output value + services output value)/agricultural output value.	%	0.054	99.867	22.015
healthcare	Healthcare services capacity	Number of beds in local hospitals and health centers/total population.	Beds/thousand persons	0.114	121.327	14.004
lnfinansize	Financing capacity of local banks agencies	Difference between the residents' deposit and the loans of banks at the end of the year, in the logarithm term.	Thousand RMB	23.026	149.213	15.365
avegrain	Grain production per capita	Local grain production/total population.	Ton/thousand persons	157.143	1,577,933.000	53,897.530
aveindustry	Industrial production per capita	Local industrial production/total population.	RMB/person	0.182	153,571.600	12,405.110
avedhh	Telephone per capita	Number of telephone/total population.	Number/thousand persons	19.091	157,142.900	6579.381
aveny	Machine for agricultural use per capita	Number of machine for agricultural use/total population.	KWT/person	0.000	15,455.760	658.762

There are 592 counties designated as national poverty-stricken areas. Panel data on the 592 counties from 2002 to 2015 were used in this study. All the data were derived from the Rural China Poverty Monitoring Report and the National Bureau of Statistics. Owing to the severe loss of data in some regions, particularly in Tibet, data on 518 counties were used for the analysis. Preliminary

analysis shows that these countries had varied situations in terms of economic output value, level of HC, and other socioeconomic status indicators (Table 1).

5. Results

To test the role of poverty alleviation funds on local HC, the model robustness, and the threshold effect, OLS and threshold panel regressions were performed. Table 2 illustrates the results of the five regressions. The OLS regression indicates that at the national level, the government's fund transfers had a significant inhibitory effect on the growth of local HC; in other words, it was unfavorable to future local economic development. After adding the fixed effects of year and region as well as the scale of local financial institutions as control variables, the coefficient of fund transfers shows little or no change. The results are robust.

Table 2. OLS Regression and Threshold Panel Regression Results and Test Statistics for National Poverty Alleviation Key Counties.

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) Panel Threshold
avetrans	−0.00497 ***	−0.00483 ***	−0.00281 *	−0.00387 ***	
	(−6.69)	(−6.47)	(−2.56)	(−3.54)	
struc	−0.154 *	−0.177 **	−0.167	0.0515	0.141 **
	(−2.33)	(−2.75)	(−1.65)	(0.50)	(2.82)
lGDP	1.883 ***	2.010 ***	2.002 ***		−1.353 ***
	(7.86)	(8.35)	(5.26)		(−4.83)
Healthcare	−1.080 ***	−1.077 ***	−1.055 ***	−1.047 ***	−0.0301
	(−105.51)	(−97.67)	(−61.37)	(−61.27)	(−0.51)
avegrain	−0.00815	−0.00781	−0.00939	−0.00563	0.00514
	(−1.20)	(−1.22)	(−1.10)	(−0.70)	(1.09)
aveindustry	−0.00285	−0.000744	0.00378	0.00617 *	−0.00686 ***
	(−1.65)	(−0.44)	(1.43)	(2.29)	(−4.53)
avedh	0.0244 ***	0.0222 ***	0.0140 *	0.0132 *	0.0121 ***
	(6.33)	(5.85)	(2.54)	(2.42)	(4.03)
aveny	0.000378 ***	0.000380 ***	0.000344 ***	0.000318 ***	0.0000798
	(9.97)	(9.25)	(6.77)	(6.55)	(1.96)
year		−8.877 ***	−7.126 ***	−6.987 ***	
		(−18.24)	(−9.47)	(−9.17)	
id		−0.00637	−0.0927 ***	−0.108 ***	
		(−0.44)	(-4.02)	(−4.76)	
lfinansize			7.364 ***	10.90 ***	
			(3.50)	(5.30)	
GDP per capita				0.00000179	
				(0.00)	
<Threshold1					0.00751 *
					(2.27)
Thresholds 1~2					−0.00605 ***
					(−5.15)
>Threshold 2					0.000214
					(0.41)
_cons	345.1 ***	18,161.8 ***	14,584.6 ***	14,503.3 ***	666.8 ***
	(12.33)	(18.51)	(9.60)	(9.46)	(20.22)
Statistics					17.43
Prob					0.0033
10% threshold					10.6765
5% threshold					12.6111
1% threshold					14.9520
N	7252	7252	2922	2922	7252

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

According to the threshold panel regression model proposed above, regressions are performed with one, two, and three thresholds, respectively. Based on the F test (F = 17.43), the results from the double threshold regression reject the null hypothesis, which are more reasonable compared to the other results. Therefore, only the results of the double threshold regression are reported in this study (Table 3).

Table 3. Result of Number of Thresholds for National Key Poverty Alleviation Counties.

	Statistics	Prob	5% Threshold	Whether Reject Null Hypothesis
1 threshold	26.02	0.0033	12.4786	reject
2 thresholds	17.43	0.0033	12.6111	reject
3 thresholds	9.19	0.6100	22.7231	not reject

6. Discussion

The threshold panel regression results show that fund transfers to the key counties for poverty alleviation across China display a significant threshold effect (Tables 2 and 4). When the per capita funds are between RMB 1291 and RMB 4469, they fail to promote future local economic development. Each additional unit of funds will have an inhibitory effect on local exogenous economic development, with a coefficient of 0.006. Nevertheless, when the per capita fund transfers are low (below RMB 1291), or when the transfer of funds is large enough (more than RMB 4469), they have a growth-promoting effect on future economic development. From 2002 to 2015, the per capita fund transfers to China's key counties for poverty alleviation increased from RMB 1571 to RMB 1940, which is within the range of funds that have an inhibitory effect on future economic development. In fact, from 2002 to 2015, the number of national poverty-stricken counties in China did not decrease. Guo et al. (2016) also confirmed that the title of national poverty-stricken counties has a ratchet effect; poorer counties receive larger poverty alleviation funds but still cannot get rid of the "poverty-stricken" title. The reason behind this is complicated. It may be partially due to unfavorable natural and socioeconomic conditions for supporting economic development, and perhaps the transfer funds introduce corruption and increase dependence on assistance [8]. In addition, some people with higher educations may migrate away if they are unable to find higher-paying jobs locally.

Table 4. Estimation of Thresholds for National Key Poverty Alleviation Counties.

	Thresholds	Lower	Upper
Threshold-1	1291.4576	873.5177	1215.2341
Threshold-2	4469.2104	4376.5203	4511.6030

When the per capita fund transfer is over RMB 4469, a positive effect occurs again in terms of the accumulation of HC due to stronger fiscal support for local economic development and the dramatic increase and pool effect of HC. From 2012 to 2016, the incidence of poverty in the rural areas of Hebei dropped from 7.8% to 3.3% due to massive investments of poverty alleviation funds. Among these areas, Laishui county adopted the concept of "advertising poor villages for their scenic areas and improving households by talents" in their poverty alleviation work. A positive feedback loop is forged between fiscal investment, economic growth, and HC accumulation. In 2016, the county received an investment of over RMB 5 billion, which not only achieved remarkable success in poverty reduction but also opened new paths for the exploration of poverty alleviation models.

This finding enriches existing research, which has largely focused on testing the effects of fund transfers on the per capita income in poverty-stricken regions and has concluded that these funds could promote future economic development by increasing the per capita incomes of the local people. Jiang (2015) found that the coefficient of the effect of per capita fund transfers on the regional per capita income in China is 1.0039. Shuai (2008) analyzed national data from 2001–2015 and found that

the effects of central and provincial fiscal support on the net income of farmers in the national key counties for poverty alleviation and development had coefficients of 3.227 and 0.905, respectively, both at significant levels. However, the impact assessment of fund transfers on per capita income, or farmers' net income, in the national poverty-stricken counties focused on short-term effects, which very likely exhibited collinearity, thereby affecting the analytical results. To avoid this problem, the endogenous driver of economic development—HC—is used as the dependent variable in this study; hence, the obtained results are more reliable. In addition, as the existing literature only analyzes linear regressions and neglects the threshold effect of poverty alleviation funds, the threshold effect hypothesis is examined in this study to produce more comprehensive conclusions, which might be of greater significance to political practices.

In terms of the effect of national poverty alleviation funds on the potential of future regional development, the findings of this study enrich the existing literature by showing the inhibitory effect of funds falling between the two thresholds. One possible explanation is that when the amount of poverty alleviation funds provided by the government is smaller, the utility increase brought by the funds is not shared by every individual. This is especially true due to the threshold effect of HC. It is only when the average maximum years of schooling per person exceeds a certain threshold that the returns on physical capital and Foreign Direct Investment (FDI) will increase significantly. Therefore, when the funds are relatively small, their effect on enhancing the potential of local economic development cannot be fully realized. However, as funds are increased, the construction of infrastructure continues to improve, and government subsidies will benefit an increasing number of people; meanwhile, the level of HC will also exceed the threshold value. This highlights the role of fund transfers in promoting the future economic development of poverty-stricken regions, but the effect is insignificant. This indicates that the effect of government subsidies on the future economic development of these regions will not continue to increase; there is a certain amount of convergence effect. Another possible explanation for why poverty alleviation funds have an inhibitory effect on future regional development is that development is impaired due to the laziness of local officials; yet, when the subsidies reach a certain amount, the probability that such passive governance will be detected increases significantly. After receiving a substantial amount of funds from the central government, the local officials would promote the implementation of poverty alleviation policies to meet the central government's expectations, thereby promoting the future economic development of the region.

7. Conclusions

Anti-poverty is an important issue in many countries and regions. Though it is necessary to provide aid funds to lift out poor conditions due to various reasons, there are disputes about the effect of the fund in literature and practice [2,3], and it is important to shape endogenous drivers of development. In this paper, we propose that a threshold effect exists for the amount of funds provided to subsidized regions. To the best of our knowledge, this study is the first to investigate such an effect on HC in poor regions. Empirically, using threshold panel regression, this study finds that smaller government subsidies have a positive effect in promoting local economic development; after exceeding a certain threshold, the effect will turn negative in impoverished counties in China. Specifically, for the poverty-stricken counties across China, smaller government subsidies (less than RMB 1291 per capita) can promote future economic development to a certain extent. Nevertheless, the development promoting effect becomes inhibitory when subsidies are increased. Eventually, after reaching a certain threshold (over RMB 4,469 per capita), the positive effects will resume.

The results also encourage poverty alleviation studies to pay closer attention to the transition from simple assistance to the development of endogenous growth dynamics in poverty-stricken areas, which further articular the importance of education or training in anti-poverty schemes. Given the huge regional disparity in China, the findings in this paper strongly suggest that transfer fund schemes meant to combat poverty should be targeted to the individual regions, and subsidies in the middle range of aid funds should be avoided.

However, it is necessary to realize that this study focuses on poor regions, rather than poor individuals. To improve the accuracy of poverty alleviation targeting, following studies can conduct social (follow-up) surveys of poor populations, to further verify whether there is a threshold effect in the increase in HC. The research in the future can also investigate the role of HC in lifting regions out from the poverty. Nevertheless, this paper is meaningful for understanding how to continuously promote regional development through the enhancement of HC, which is not only useful in China but also applicable worldwide.

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