

# Institutional quality, FDI inflows, human capital development and poverty: a case of Indonesia

Institutional  
quality and  
poverty

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## Abstract

**Purpose** – The objective of this paper is to investigate the impact of institutional quality, foreign direct investment (FDI) inflows and human capital development on Indonesia's poverty rate.

**Design/methodology/approach** – The quantile regression on data ranging from 1984 to 2019 was used to capture the relationship between the impact of the independent variables (FDI inflows, institutional quality and human capital development) on Indonesia's poverty rate at different quantiles of the conditional distribution.

**Findings** – The empirical results reveal that low-quantile institutional quality is detrimental to poverty eradication, whereas FDI inflows and human capital development are significant at higher quantiles of distribution. This implies that higher-value FDI and advanced human capital development are critical to lifting Indonesians out of poverty.

**Practical implications** – Policymakers should prioritise strategies that advance human capital development, create an enticing investment climate that attracts high-value investments and improve institutional quality levels.

**Originality/value** – This study contributes to the existing literature because, compared to previous studies that focussed on estimating the conditional mean of the explanatory variable on the poverty rate. It rather provides a more comprehensive understanding of the quantiles of interest of FDI inflows and institutional quality on the Indonesian poverty rate, allowing for more targeted policies.

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**Keywords** Poverty, Institutional quality, FDI inflows, Human capital development, Quantile regression

**Paper type** Research paper

## 1. Introduction

Despite policymakers' efforts to alleviate poverty, it remains one of the world's most challenging problems. The global poverty rate has decreased significantly since 1981 (from 66.4% in 1981 to 42.90% in 2018). However, global poverty remains enormous. According to recent World Bank data (2022), sub-Saharan Africa has continued to be the most vulnerable region, with 38.9% (420 million people) of the total population living in extreme poverty (living on less than US\$ 2.15 per day) and 85.3% (920 million people) living on less than US\$ 5.50 per day, followed by the Middle East and North Africa regions, with 7% (27 million people) living in extreme poverty and 44.0% (170 million people) living on less than US\$ 5.50 per day. Furthermore, East Asia and the Pacific are the third most vulnerable regions, with 7% (25 million people) of the population living in extreme poverty and 26.4% (552 million people) living on less than US\$ 5.50 per day.



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Prior to the COVID-19 pandemic, it was estimated that approximately 650 million people worldwide, or one in every 12, were living in extreme poverty. However, owing to the disruption caused by the pandemic, the number of people living in extreme poverty escalated to more than 700 million (increased to 9.3% in 2020 from 8.4% in 2019), [Hasell et al. \(2022\)](#). Although many empirical studies have suggested that increasing nation's gross domestic product (GDP) ([Mulok et al., 2012](#); [Hasan et al., 2009](#); [UNU-WIDER, 2015](#); [Zhu et al., 2022](#)) and cash transfer payments ([Kyophilavong, 2011](#); [Hagen-Zanker et al., 2016](#); [Saeed et al., 2020](#); [Habimana et al., 2021](#)) would help reduce poverty, however, with the global poverty rate remaining high, the effectiveness of these policies remains debatable. This outcome has signified that the United Nations' Sustainable Development Goal (SDG) 1—"End Poverty" in all its forms everywhere—remains challenging for policymakers worldwide.

According to the World Bank, Indonesia's updated poverty calculation, which now considers a daily income of less than US\$ 2.15 as the poverty threshold (previously US\$ 1.90), has led to an additional 13 million people falling below the poverty line, making Indonesia the Asian country with the second most significant increase in poverty, trailing only China. As of March 2022, Indonesia's poverty rate stood at 9.54% of the population, equivalent to 26.16 million people. However, it was not the highest amongst Association of Southeast Asian Nations (ASEAN) countries, with Myanmar, Laos, the Philippines and Cambodia indicating higher rates. However, Indonesia houses over 80% of ASEAN's impoverished population, which numbered 36 million in 2018, according to the [Asian Development Bank \(2018\)](#). This situation has underscored the urgent need for policymakers to devise effective strategies for poverty eradication in Indonesia.

[North \(1991\)](#) highlighted the theoretical importance of good institutional quality in enhancing economic performance by improving political, economic and social interactions, reducing leakages and increasing efficiency. Empirical evidence has supported these assertions ([Recuero Virto et al., 2009](#); [Ozegbe and Kelikume, 2022](#); [Chong and Gradstein, 2007](#); [Gasparyan, 2014](#); [Sun et al., 2021](#)). Higher institutional quality, associated with increased efficiency ([Abri and Bulushi, 2022](#); [Abaidoo and Agyapong, 2022](#)), has significantly reduced poverty. [Solow and Swan's \(1956\)](#) Neoclassical Growth Theory proposed that higher foreign direct investment (FDI) inflows could lead to economic growth, job creation and poverty eradication. However, although FDI inflows have tripled in Indonesia since 1996 (from US\$ 6.19 billion in 1996 to US\$ 20.08 billion in 2021), poverty remains high, challenging the empirical notion that FDI mitigates poverty ([Magombeyi and Odhiambo, 2018](#); [Ahmad et al., 2019](#); [Gnangnon, 2022](#)). The observed contradiction might be attributed to heteroscedasticity in poverty data and deviations from the assumed error term normality.

Further, as highlighted by [Schultz \(1961\)](#), human capital development, which would benefit individuals by increasing their earning potential and overall well-being and contribute to overall economic development, would lead to poverty eradication. Given that the Indonesian human capital index has shown an upward trend since 1980 ([PWT 10.1 \(2023\)](#)), with 1.53 in 1980 and increasing to approximately 2.3 in 2019, it may have contributed to the eradication of the number of Indonesians in poverty from 40.60 million in 1984 to 25.47 in poverty in 2019. Therefore, most existing studies have overarchingly focussed on the direct impact of economic growth ([Mulok et al., 2012](#); [Perera and Lee, 2013](#); [Kousar et al., 2022](#)) or the unemployment rate ([Tafran et al., 2020](#); [Ngubane et al., 2023](#)) on poverty eradication. In contrast, the present study focussed on the impact of institutional quality, FDI inflows and human capital development on Indonesia's poverty rate. This study also examined the interactive impact of institutional quality on FDI inflows and human capital development on poverty eradication, offering valuable perspectives for policymakers and highlighting the critical interplay of FDI inflows, institutional quality and human capital development factors in shaping poverty dynamics. The present research, therefore, has offered new insights into effective poverty eradication strategies.

Additionally, employing quantile regressions, as [Koenker and Bassett \(1978\)](#) advocated, allowed this study to dissect the impacts of institutional quality, FDI and human capital development on Indonesia's poverty rate. Hence, this study's findings have contributed to the broader discourse on global poverty eradication, providing timely insights in the context of the World Bank's revised poverty thresholds and the recent demographic and economic shifts in Indonesia, especially in light of the COVID-19 pandemic. The remainder of this paper is structured as follows. The next section presents empirical evidence from the existing literature. [Section 3](#) describes the study's methodology and data. The main findings of the analysis are summarised in [Section 4](#). Finally, [Section 5](#) discusses the findings and policy implications.

## 2. Literature review

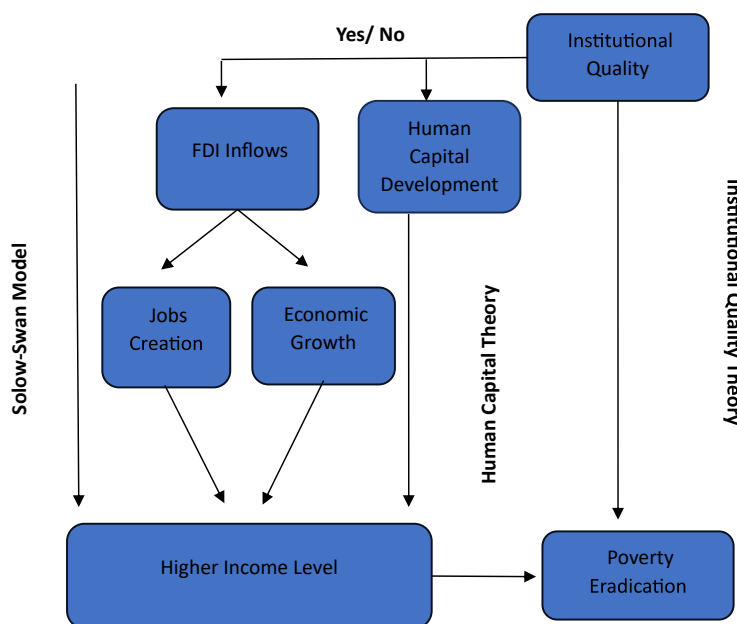
This section introduces the theoretical framework foundational to developing this study's empirical model, followed by a literature review from previous empirical studies.

### 2.1 Theoretical framework

The following section explains the theory underpinning the framework depicted in [Figure 1](#). Specifically, the present study drew upon the Institutional Quality Theory ([North, 1991](#)), the Solow-Swan Model ([Solow, 1956](#); [Swan, 1956](#)) and the Human Capital Theory ([Becker, 1964](#); [Rosen, 1989](#)). These theories collectively explain the interconnections between institutional quality, FDI and human capital development in the context of poverty eradication.

#### (1) Institutional quality theory

As [North \(1991\)](#) eloquently described, institutions play a pivotal role in shaping economic landscapes. These entities comprise informal elements such as societal norms and customs and



Source(s): Author's simulation

Figure 1.  
Theoretical framework

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formal components like laws and property rights. Together, they orchestrate economic interactions and mitigate uncertainty in financial exchanges. This dual framework influences costs, profitability and the viability of economic endeavours and also steers the direction of economic growth or decline. Institutions are not static; they evolve, bridging the past and the future, and as such, historical economic performance can be viewed as a mirror of institutional evolution. North's insights have highlighted the critical impact of institutional quality on guiding economic development and eradicating poverty, reinforcing their essential role in the broader economic discourse. Any economy's path is continuously shaped by the fabric of its institutional quality, highlighting the formidable influence of these structures on economic outcomes when seen through this perspective. Consequently, enhancing institutional quality is essential as it fosters efficiency and productivity, leading to increased income and poverty eradication.

### (2) Solow-Swan model (endogenous growth theory)

The Solow-Swan model, independently developed by economists [Solow \(1956\)](#) and [Swan \(1956\)](#), presents a pivotal analytical framework for studying long-term economic growth. This model innovatively integrates labour, capital and technological progress into a neoclassical production function, offering insights into the determinants of national output. It notably introduced the "conditional convergence" hypothesis, proposing that economies with lower initial capital per worker grow faster than their more capitalised counterparts, subject to similar savings rates and technological access. It, therefore, highlighted the pivotal role of technological progress and the limitations of capital accumulation in driving sustainable long-term growth. Therefore, the model's implications extend to FDI in developing countries like Indonesia. It suggests that FDI inflows are expected to stimulate economic growth and create job opportunities, playing a crucial role in poverty eradication in such nations.

### (3) Human capital theory

Human capital development plays a pivotal role in poverty eradication, a theory strongly supported by the works of economists such as [Becker \(1964\)](#) and [Rosen \(1989\)](#). Becker's model likened human capital to physical means of production, emphasising that investing in human capital involves embedding resources in people to influence future income. This investment, often in the form of education, requires time and the sacrifice of current earnings for the promise of higher returns in the future. Like any prudent investment in physical capital, the decision to invest in human capital is driven by the expectation that the internal rate of return will exceed the prevailing market interest rates. This perspective was echoed by [Rosen \(1989\)](#), who asserted that human capital comprised skills and productive knowledge within individuals. The return on this investment is not just in terms of enhanced skills and earning power but also in improved efficiency in economic decision-making both inside and outside the market economy. By elevating productivity and wages, investments in human capital are expected to have a direct, positive impact on poverty eradication. Developing human capital is an investment in individual skills and knowledge and a strategic approach to uplift entire communities from poverty by enhancing their ability to generate sustainable income and make more informed economic decisions.

[Figure 1](#) depicts how the institutional quality, Solow-Swan Model and Human Capital theories have been used to examine their impact on poverty eradication in Indonesia. This theoretical integration substantiated the present study's hypotheses on the role of institutional quality, FDI inflows and human capital development on poverty eradication and has contributed to academic and practical understandings of poverty eradication strategies.

## 2.2 Literature review

In the poverty eradication field, the nuanced role of institutional quality has garnered significant attention across diverse studies. [Aracil et al. \(2021\)](#) provided pivotal insights into

how institutional quality enhanced the positive impact of financial inclusion on poverty rates in 75 developing countries and, more emphatically, poorer nations. This situation underscores a critical dimension of economic policy where targeted improvements in institutional frameworks could yield disproportionately more significant benefits in more impoverished regions. [Singh \(2021\)](#) further explored this concept in the context of the Brazil, Russia, India, China and South Africa (BRICS) nations, revealing the rule of law as a pivotal factor in poverty eradication. This specific emphasis on legal structures, as opposed to broader governance measures such as political stability or corruption control, suggested a more nuanced understanding of institutional impacts on poverty. [Chong and Calderón \(2000\)](#) corroborated these findings, linking higher institutional quality with decreased poverty levels and reinforcing that robust institutions form the backbone of effective poverty eradication strategies.

However, the relationship between institutional quality and poverty is complex and multifaceted, as evidenced by the contrasting findings of various studies. [Kaidi et al. \(2019\)](#) brought a different perspective by indicating that institutional quality, whilst significantly influencing poverty rates in 132 countries, overshadowed the role of financial development. This situation highlighted the intricate balance between institutional reforms and economic strategies in poverty alleviation. [Perera and Lee \(2013\)](#) contributed to this discourse by examining the differential impacts of various dimensions of institutional quality in nine developing Asian countries. Their findings suggested that government stability and law and order improvements positively impacted poverty, whereas enhancements in other areas, such as corruption and democratic accountability, might have unintended adverse effects. [Zhuang et al. \(2010\)](#) and [Deolalikar et al. \(2002\)](#) further expanded on these themes, discussing the broad spectrum of institutional quality's impact on poverty, ranging from influencing government policies to economic growth and distribution, thereby shaping poverty eradication rates.

Several studies have explored the relationship between FDI and poverty eradication in different regions. [Ahmad et al. \(2019\)](#) illuminated the positive correlation between FDI inflows and poverty eradication in ASEAN and South Asian Association for Regional Cooperation (SAARC) countries, proposing FDI as a critical lever for economic growth and poverty alleviation. This perspective was echoed by [Klein et al. \(2001\)](#) and [Gnangnon \(2022\)](#), who advocated for FDI as a catalyst for development in low-income countries. Conversely, the study by [Magombeyi et al. \(2018\)](#) introduced a complex dynamic, suggesting that whilst FDI can have short-term benefits in reducing poverty, its long-term implications might be less straightforward, particularly when considering broader indicators such as life expectancy. This situation introduces a critical need for a balanced and long-term view of FDI's role in sustainable poverty eradication strategies.

The impact of human capital development on poverty eradication has been another focal point of research. [Janjua and Kamal \(2011\)](#) emphasised the critical importance of income growth and education in reducing poverty, aligning with the consensus that human capital investment is a cornerstone of sustainable poverty alleviation. [Olopade et al. \(2019\)](#) and [Awan et al. \(2011\)](#) reinforced this viewpoint, highlighting the positive correlation between human capital development and poverty eradication. The study by [Moyo et al. \(2022\)](#) further bolstered this argument, showing that improvements in education and high-technology exports have significantly reduced poverty levels. These findings have collectively underscored the transformative power of education and skill development in breaking the cycle of poverty.

Despite this extensive body of research, a significant gap remains in understanding these factors' collective impact, particularly in Indonesia's context. Whilst individual studies have explored the effects of FDI inflows, human capital development and institutional quality on poverty alleviation, an integrative approach examining these elements in concert has been

notably absent. This situation presented an opportunity for a ground-breaking study that could offer a comprehensive view of how these factors interact and influence poverty eradication in Indonesia. Such a study would fill a critical research void and provide valuable insights for policymakers and development practitioners aiming to formulate more effective and integrated poverty eradication strategies in similar contexts.

### 3. Data and methodology

This section provides a comprehensive overview of the empirical model, outlines the methodologies utilised and details the data sources used in the study.

#### 3.1 Empirical model

The basic model of this study was based on the framework presented in [Figure 1](#), as follows:

$$POV_t = \alpha + \beta_1 IQ_t + \beta_2 FDI_t + \beta_3 HC_t + \beta_4 RGDP_t + \beta_5 EMP_t + \mu_t \quad (1)$$

where *POV* refers to poverty (in millions of people), *IQ* represents institutional quality, *FDI* represents FDI net inflows, *HC* represents human capital development and *RGDP* and *EMP* refer to real gross domestic product per capita and the employment rate, respectively, and serve as the control variables. Additionally, countries with good institutional quality are more likely to attract *FDI* because investors perceive them as stable, transparent and less risky. Such countries are better equipped to develop their human capital as effective institutions foster education, innovation and skill-building opportunities ([Ostrom, 2015](#)). Consequently, as [Equation \(2\)](#) shows, the second model included the institutional quality variable as an interactive term for *FDI* inflows and human capital development.

$$POV_t = \alpha + \beta_1 IQ_t + \beta_2 FDI_t \times IQ_t + \beta_3 HC_t \times IQ_t + \beta_4 RGDP_t + \beta_5 EMP_t + \mu_t \quad (2)$$

In contrast, *FDI x IQ* captures the role of *FDI*, influenced by institutional quality, in poverty eradication. Similarly, *HC x IQ* highlights the role of human capital development, influenced by institutional quality, in poverty eradication in Indonesia.

In the estimation of [Equations \(1\) and \(2\)](#), the ordinary least squares (OLS) and generalised least squares (GLS) methods are widely applied, focussing primarily on the conditional expectation function  $E(y/x)$ . However, the OLS method's vulnerability to outliers, as highlighted by [Choi \(2009\)](#), can significantly skew the regression line. Addressing this issue, this study employs quantile regression, a method championed by [Koenker and Bassett \(1978\)](#) and [Allen et al. \(2012\)](#). Unlike traditional approaches, quantile regression not only estimates various quantiles of the response variable's distribution but also offers enhanced resilience to outliers. This characteristic notably enhances the precision of quantile regression in handling outliers, as it effectively captures the dynamics between independent variables—*FDI* inflows, institutional quality and human capital development—and Indonesia's poverty rate across different quantiles of the conditional distribution. This approach enriches our understanding of these relationships. The quantile regression models for [Equations \(1\) and \(2\)](#) are presented as [Equations \(3\) and \(4\)](#), respectively.

$$Q_\tau(POV_t | INS_t, FDI_t, HC_t, RGDP_t, EMP_t) = \alpha(\tau) + \beta_1(\tau) IQ_t^\tau + \beta_2(\tau) FDI_t^\tau + \beta_3(\tau) HC_t^\tau + \beta_4(\tau) RGDP_t^\tau + \beta_5(\tau) EMP_t^\tau + F_{ei}^{-1}(\tau) \quad (3)$$

where  $\tau$  specifies the quantile in the distribution of the poverty rate, *IQ* represents institutional quality, *FDI* represents FDI inflows (Nett), *HC* denotes human capital



development, *RGDPC* and *EMP* denote the real gross domestic product per capita and the employment rate variables, respectively, and  $\beta_i(\tau)$  Indicates the varying effect of the regressors at different quantiles of the poverty rate's conditional distribution. Finally,  $F_{\epsilon_i}^{-1}(\tau)$  denotes the inverse of the cumulative distribution function of  $\epsilon_i$ .

$$\begin{aligned}
 & Q_{\tau}(POV_i|IQ_t, FDI_xIQ_t, HC_xIQ_t, RGDPC_t, EMP_t) \\
 & = \alpha(\tau) + \beta_1(\tau)IQ_t^{\tau} + \beta_5(\tau)(FDI_xIQ_t)^{\tau} + \beta_5(\tau)(HC_xIQ_t)^{\tau} + \beta_2(\tau)RGDPC_t^{\tau} + \beta_i(\tau)EMP_{it}^{\tau} \\
 & \quad + F_{\epsilon_i}^{-1}(\tau)
 \end{aligned} \tag{4}$$

where *FDI x IQ* captures the role of FDI that is influenced by institutional quality, *HC x IQ* highlights the role of human capital development that is influenced by Indonesia's institutional quality,

In summary, quantile regression is particularly effective for analysing the complex interplay between poverty and its determinants in Indonesia. Unlike traditional methods such as the Ordinary Least Squares (OLS) and Generalised Least Squares (GLS) methods, quantile regression is robust to outliers, a critical feature in poverty research where outliers can lead to skewed OLS results. As [Allen et al. \(2012\)](#) indicated, quantile regression offers a detailed view of the data, examining different segments of the response variable's distribution and avoiding the influence of extreme values. It also provides insights into how institutional quality, foreign direct investment, human capital development, etc. impact various segments of the poverty spectrum, offering valuable guidance for policymaking.

### 3.2 Data sources

Owing to data availability constraints, this study focussed on annual data from 1984 to 2019. Poverty data were obtained from the Badan Pusat Statistik (BPS), Indonesia. Institutional quality was obtained from the International Country Risk Guide (ICRG) Researchers Dataset. In contrast, FDI inflows, human capital development, real GDP per capita, and the unemployment rate data were obtained from the Penn World table, World Bank indicators and the International Monetary Fund database. [Table 1](#) presents the descriptive statistics of the variables used in this study. A standard deviation greater than 0.2 indicated that the data points are spread out from the average value, implying variability amongst the data points.

## 4. Empirical results

The findings of Model 1, which examined the relationship between institutional quality and poverty in Indonesia, showed that institutional quality significantly influences poverty levels in the lower quantiles. Lower levels of institutional quality were associated with increased

|   | Mean    | Max      | Min     | Standard deviation |
|---|---------|----------|---------|--------------------|
| Poverty ( <i>Pov</i> )                  | 32.2356 | 49.5000  | 22.5000 | 6.1757             |
| Poverty rate ( <i>PovR</i> )            | 14.7653 | 26.9000  | 9.4100  | 4.4205             |
| Institutional quality ( <i>IQ</i> )     | 3.4947  | 4.5167   | 2.1000  | 0.6864             |
| FDI inflows rate (FDIR)                 | 1.1074  | 2.9161   | -2.7574 | 1.3026             |
| Human capital development ( <i>HC</i> ) | 2.1459  | 2.4168   | 1.6817  | 0.2248             |
| Employment ( <i>EMP</i> )               | 92.5789 | 131.1707 | 54.8181 | 20.4984            |

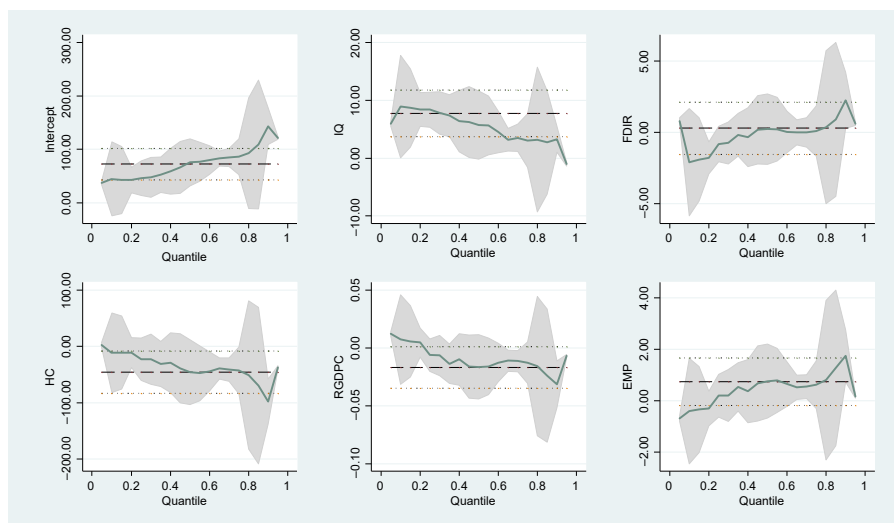
**Source(s):** Authors' own calculations

**Table 1.**  
Summary statistics

poverty in Indonesia, with coefficients of 8.9172, 8.3828 and 5.7058 at the 10th, 25th and 50th quantiles, respectively. However, institutional quality in the 75th and 90th quantiles did not affect poverty. This situation suggested that poverty rates rose when institutional quality in Indonesia was low. On the other hand, FDI inflows had a significant impact only at the 90th quantile, with a coefficient of  $-2.2495$ , implying that a 1% increase in FDI inflows at this level would reduce poverty by 2.2495%. As a result, high-value FDI inflows were critical for poverty eradication in Indonesia, whereas low-value inflows had no effect.

Additionally, the present study revealed that human capital development, particularly advanced education, skills and health, played a critical role in poverty eradication in Indonesia, with a significant impact observed at higher quantiles (50th, 75th and 90th). For example, a 1% increase in human capital development at the 90th quantile was associated with a staggering 97.95% reduction in poverty. In comparison, increases at the 50th and 75th quantiles were associated with 45.70% and 42.81% reductions, respectively. Higher quantiles of real GDP per capita were also associated with poverty eradication, implying that improving the economic well-being of the more prosperous segments of the population can lift more people out of poverty. In Indonesia, however, the employment rate was found to have no significant effect on poverty eradication across all quantiles. Figure 2 graphically depicts these findings, with the dotted line representing coefficient values and the shaded areas indicating 95% confidence intervals.

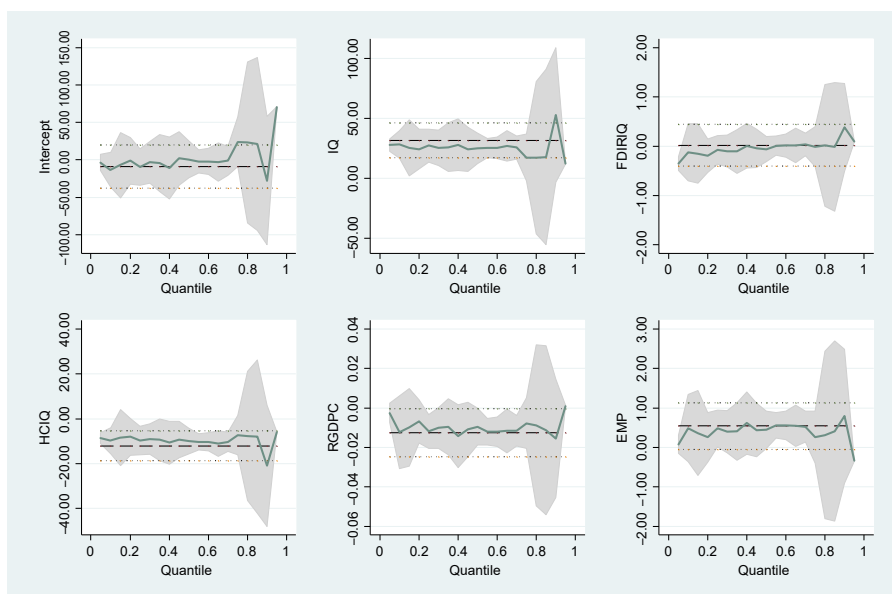
Meanwhile, Table 3 shows that institutional quality in Indonesia significantly impacted both FDI inflows and human capital development. Lower institutional quality, as manifested by weaker governance, rule of law and increased corruption and political instability, was linked to higher poverty levels. Interestingly, the interaction between institutional quality and human capital development was significant across all quantiles, implying that a 1% increase in human capital development, influenced by institutional quality, can lift at least 7% and up to 21% of Indonesians out of poverty, with poverty eradication being more effective at higher levels of human capital development. Figure 3 graphically illustrates the findings discussed above.



**Figure 2.**  
Effects of determinants  
of model 1 throughout  
quantiles

**Source(s):** Authors own creation





Source(s): Authors own creation

**Figure 3.**  
Effects of determinants  
of model 2 throughout  
quantiles

Based on the results obtained from [Tables 2 and 3](#), institutional quality negatively impacted poverty eradication in Indonesia. Despite their surprising nature, these findings were consistent with [North's \(1991\)](#) theory, highlighting the critical impact of institutional quality on guiding economic development and eradicating poverty. The study showed that lower institutional quality in Indonesia, particularly at the 10th and 25th quantiles, increased the number of people living in poverty, supporting the notion that poor institutional quality has exacerbated poverty in the country. However, significant effects of FDI inflows on job creation and economic growth were only observed at the 90th quantile, implying that high-value FDI can raise general income and alleviate poverty in Indonesia, consistent with previous research by [Miyamoto \(2003\)](#), [Goh et al. \(2018\)](#) and [Siedschlag et al. \(2021\)](#). Notably, the insignificance of FDI as a variable called into question the applicability of [Solow and Swan's \(1956\)](#) neoclassical growth theory in the Indonesian context.

Human capital development was found to have a corrective effect on Indonesian poverty at higher quantiles, consistent with the human capital theory proposed by both [Becker \(1964\)](#) and [Rosen \(1989\)](#). Hence, this suggested that improving and optimising the population's skills, knowledge, health and overall capabilities would drive economic, social and technological progress, resulting in lower poverty. Similarly, real GDP per capita could only lift Indonesians from poverty in the 90th quantile. This situation implied that only an increase in the income of the population segment that enjoys relatively higher levels of economic prosperity than the rest of the population would assist in lifting a more significant number of people out of poverty. Finally, employment was found to be an insignificant determinant of poverty eradication in Indonesia, a surprising finding given that the existing literature ([Gutierrez et al., 2007](#); [Sinha and Ahmed, 2011](#)) argued that employment played a significant role in poverty eradication.

This study found that the impact of FDI inflows on poverty eradication in Indonesia was not significant when considering institutional quality. In contrast, the interaction between

**Table 2.**  
Quantile regression  
estimates

|                       | Q(0.10)             | Q(0.25)            | Q(0.50)              | Q(0.75)              | Q(0.90)               |
|-----------------------|---------------------|--------------------|----------------------|----------------------|-----------------------|
| Const.                | 44.5593** (20.0503) | 45.8102* (22.5307) | 75.6340*** (19.3161) | 86.2571*** (30.4010) | 143.2650*** (34.7249) |
| IQ <sub>t</sub>       | 8.9172** (3.3362)   | 8.3828*** (2.6705) | 5.7058** (2.5647)    | 3.0568 (1.9079)      | -0.8896 (7.5541)      |
| FDIR <sub>t</sub>     | -2.0802 (1.7756)    | -0.8076 (1.4459)   | = 0.2426 (1.0629)    | -0.1024 (1.1758)     | -2.2495** (1.0333)    |
| HC <sub>t</sub>       | -11.2092 (27.3588)  | -22.8819 (29.7570) | -45.7001* (24.4791)  | -42.8128** (19.6629) | -97.9475*** (65.5188) |
| RGDPC <sub>t</sub>    | 0.0073 (0.0150)     | -0.0062 (0.0159)   | -0.0163 (0.0115)     | -0.0140* (0.0072)    | -0.0315* (0.0020)     |
| EMP <sub>t</sub>      | -0.4022 (0.7393)    | 0.1943 (0.8154)    | 0.7636 (0.6509)      | 0.6202 (0.8979)      | 1.7426 (1.1404)       |
| Pseudo R <sup>2</sup> | 0.3217              | 0.2973             | 0.3986               | 0.4692               | 0.4758                |

**Note(s):** IQ represents the institutional quality, FDIR represents the level foreign direct investment net inflows rate, HC represents the human capital index, RGDP represents the real gross domestic product per capita, EMP refers to the number of people engaged in employment (in millions). Symbols \*\*\*, \*\* and \* denote the significance at the 1, 5 and 10% levels, respectively  
Dependent variable poverty in numbers  
**Source(s):** Authors' own creation

|                      | Q(0.10)             | Q(0.25)             | Q(0.50)             | Q(0.75)           | Q(0.90)             |
|----------------------|---------------------|---------------------|---------------------|-------------------|---------------------|
| Const.               | -13.2827 (22.6989)  | -9.4974 (15.9449)   | 0.3688 (21.3847)    | 24.0118 (24.6903) | -27.9320 (49.0638)  |
| $IQ_t$               | 28.2942*** (8.2257) | 27.2072*** (6.6870) | 24.8451 (20.2872)   | 17.1155 (15.0871) | 52.6938 (45.9531)   |
| $FDIR_t \times IQ_t$ | -0.1184 (0.3064)    | -0.0723 (0.2321)    | -0.0594 (0.1778)    | -0.0082 (0.2245)  | 0.3820 (0.4476)     |
| $HC_t \times IQ_t$   | -9.7957** (3.8960)  | -9.6807*** (3.1754) | -9.8699*** (3.5278) | -7.4109* (4.4745) | -21.0043** (9.7360) |
| $RGDP_t$             | -0.0129 (0.0107)    | -0.0119* (0.0065)   | -0.0093 (0.0066)    | -0.0077 (0.0058)  | -0.0155*** (0.0034) |
| $EMP_t$              | 0.4915 (0.5229)     | 0.4836 (0.3448)     | 0.4456 (0.3654)     | 0.2592 (0.3431)   | 0.7913 (0.6715)     |
| Pseudo $R^2$         | 0.4161              | 0.4075              | 0.4884              | 0.4977            | 0.5021              |

**Note(s):** IQ denotes the quality of institutions,  $FDIR \times IQ$  denotes the level of foreign direct investment net inflows rate subjected to the role of Institutional Quality,  $HC \times IQ$  denotes human capital/development subjected to the role of Institutional Quality,  $RGDP$  stands for real gross domestic product per capita, and  $EMP$  stands for the number of people employed (in millions). Symbols \*\*\*, \*\*, \* and \* denote significance at the 1, 5 and 10% levels, respectively

Dependent variable poverty in numbers

**Source(s):** Authors' own creation

**Table 3.**  
Quantile regression  
estimates

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institutional quality and human capital development significantly affected poverty eradication. This situation suggested that improving human capital development, influenced by the country's institutional quality, could effectively reduce poverty, whilst institutional quality failed to uplift the impact of FDI inflows. These findings aligned with the [World Bank \(2022\)](#) emphasis on investing in human capital to eradicate poverty. As a result, the robustness tests further supported the importance of human capital development as a critical determinant of poverty in Indonesia, regarding the number of people in poverty and the poverty rate.

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#### *4.1 Robustness check*

This analysis re-estimated Models 1 and 2 using an alternative poverty measure, the poverty rate in percentages, to test the robustness of the abovementioned main results. The estimation results are presented in [Tables 4 and 5](#). According to the findings in [Table 4](#), institutional quality significantly negatively impacted Indonesia's poverty rate reduction in the lower quantiles. In contrast, human capital development positively impacted poverty rate reduction in the 25th and 90th quantiles. Similarly, in [Table 5](#), institutional quality was significant in the lower quantiles, whereas the interactive term of human capital development with institutional quality mattered only in the 25th quantile. This situation implied that the results obtained are consistent with the leading results presented in [Tables 2 and 3](#), where poverty was proxied by the number of Indonesians living in poverty. Thus, the results of the robustness check provided prominent evidence that human capital development was a critical determinant of poverty eradication in Indonesia. As in the main results, the employment rate was insignificant in explaining Indonesian poverty. Thus, the robustness check results were consistent with the main findings and theories in [Section 2.1](#).

## **5. Conclusion**

Theoretical perspectives have suggested the significant impacts of institutional quality ([North, 1991](#)), FDI inflows ([Solow, 1956](#); [Swan, 1956](#)) and human capital development ([Becker, 1964](#); [Rosen, 1989](#)) on poverty eradication. In Indonesia, despite a tripling of FDI inflows from US\$ 6.19 billion in 1996 to US\$ 20.08 billion in 2021, ranking the nation second in the ASEAN region after Singapore and an increase in its human capital index from 1.53 in 1980 to 2.3 in 2019, poverty persists. As of March 2022, the poverty rate stood at 9.54%, representing 26.16 million people, over 80% of ASEAN's poor ([Poverty Rate Declined in March Central Statistics Agency Reports, 2022](#)). Utilising the quantile regression method proposed by [Koenker and Bassett \(1978\)](#), the empirical findings indicated that low-quantile institutional quality hindered poverty eradication. In contrast, FDI inflows and human capital development showed significant positive effects at higher quantiles, underscoring the importance of high-value FDI and advanced human capital in reducing poverty in Indonesia.

Furthermore, this study revealed that real GDP per capita significantly influenced poverty eradication at higher quantiles, whereas the employment rate had a negligible impact. This finding suggested that strategies to increase general real GDP per capita and job creation may not effectively alleviate poverty in Indonesia. The foremost policy implication should be the necessity for comprehensive of human capital development which could be done through education reforms. These reforms must concentrate on enhancing the quality and ensuring the accessibility of education. Policymakers are advised to make education universally available, irrespective of socioeconomic status, by offering scholarships, subsidies and aid to marginalised communities. Equally important should be enhancing curriculum quality, encompassing academic subjects and skills like critical thinking, problem-solving, communication and digital literacy. Integrating technology into education is imperative to

|              | Q(0.10)             | Q(0.25)             | Q(0.50)             | Q(0.75)              | Q(0.90)              |
|--------------|---------------------|---------------------|---------------------|----------------------|----------------------|
| Const.       | 32.4151*** (7.4951) | 35.4237*** (8.0884) | 42.7529*** (8.4636) | 50.7719*** (11.6162) | 73.3516 (13.4640)    |
| $IQ_t$       | 3.9104*** (1.1229)  | 3.7411*** (1.3316)  | 1.6087 (1.0095)     | -0.1613 (1.0056)     | 1.7758 (1.5189)      |
| $FDIR_t$     | -0.9915 (0.6472)    | -0.3484 (0.5730)    | -0.3322 (0.5432)    | -0.0055 (0.5414)     | 0.6907 (0.8603)      |
| $HC_t$       | -8.4720 (9.6024)    | -16.2828* (7.4077)  | -12.1555 (11.6734)  | -13.933 (15.9564)    | -35.8844** (17.1827) |
| $RGDPC_t$    | 0.0039 (0.0068)     | -0.0033 (0.0045)    | -0.0007 (0.0067)    | -0.0029 (0.0076)     | -0.0074 (0.0087)     |
| $EMP_t$      | -0.2449 (0.3209)    | 0.0786 (0.2236)     | -0.0611 (0.3495)    | 0.0235 (0.4247)      | 0.3303 (0.4688)      |
| Pseudo $R^2$ | 0.4486              | 0.4723              | 0.5890              | 0.5964               | 0.6894               |

**Note(s):** IQ represents the institutional quality, FDIR represents the level foreign direct investment net inflows rate, HC represents the human capital index, RGDP represents the real gross domestic product per capita, EMP refers to the number of people engaged in employment (in millions). Symbols \*\*\*, \*\* and \*denote the significance at the 1, 5 and 10% levels, respectively

Dependent variable poverty rate

**Source(s):** Authors' own creation

**Table 4.**  
Quantile regression  
estimates

**Table 5.**  
Quantile regression  
estimates

|                                     | Q(0.10)             | Q(0.25)             | Q(0.50)            | Q(0.75)           | Q(0.90)           |
|-------------------------------------|---------------------|---------------------|--------------------|-------------------|-------------------|
| Const.                              | 2.4727 (12.4239)    | 6.6437 (8.3342)     | 20.1008* (10.4763) | 20.9741 (14.0658) | 22.2090 (19.3816) |
| IQ <sub>t</sub>                     | 13.2922*** (4.2378) | 12.1801*** (2.5093) | 8.4922 (7.3043)    | 7.3130 (7.6981)   | 13.6399 (11.4830) |
| FDIR <sub>t</sub> × IQ <sub>t</sub> | -0.0903 (0.1598)    | -0.1031 (0.1693)    | -0.0944 (0.1361)   | -0.0035 (0.1026)  | 0.1000 (0.1617)   |
| HC <sub>t</sub> × IQ <sub>t</sub>   | -4.6745 (3.8496)    | -4.3642*** (1.1398) | -3.4098** (1.4079) | -3.3871 (3.0304)  | -5.6748 (4.4685)  |
| RGDPC <sub>t</sub>                  | -0.0034 (0.0056)    | -0.0020 (0.0051)    | -0.0001 (0.0039)   | -0.0027 (0.0040)  | -0.0012 (0.0055)  |
| EMP <sub>t</sub>                    | 0.0801 (0.2547)     | 0.0236 (0.2164)     | -0.0926 (0.1898)   | 0.0107 (0.2108)   | -0.0755 (0.2728)  |
| Pseudo R <sup>2</sup>               | 0.5293              | 0.5498              | 0.6226             | 0.5060            | 0.6950            |

**Note(s):** IQ denotes the quality of institutions, FDIR × IQ denotes the level of foreign direct investment net inflow rate subject to the role of Institutional Quality, HC × IQ denotes human capital development subject to the role of Institutional Quality, RGDP stands for real gross domestic product per capita, and EMP stands for the number of people employed (in millions). Symbols \*\*\*, \*\* and \* denote significance at the 1, 5 and 10% levels, respectively

Dependent variable poverty rate

**Source(s):** Authors' own creation

improve learning experiences and prepare students for the digital era. These measures are crucial for advancing human capital development, as emphasised in Mhlongo *et al.* (2023).

Secondly, policymakers must develop various strategies to foster a welcoming investment environment. This approach is vital for attracting substantial, long-term international investment. Key investment areas include physical and digital infrastructure sectors like transportation, energy, telecommunications and logistics. As Götz (2019) and Ha and Huyen (2022) highlighted, such modern and efficient infrastructure is vital in drawing long-term investor commitment. Moreover, broadening market opportunities through trade agreements and economic alliances, such as the Regional Comprehensive Economic Partnership (RCEP), is essential. Additionally, there should be a focus on sustainable practices and environmental responsibility. Chipalkatti *et al.* (2021) noted that these aspects have become increasingly important to investors keen on projects that align with social and environmental goals.

Lastly, addressing the issue of Indonesian poverty, which is exacerbated by lower-quantile institutional quality, requires significant attention. As of 2021, Indonesia's ranking in TheGlobalEconomy.com's (2022) Government Effectiveness Index was sixty-one globally and fourth in the ASEAN region, trailing behind Singapore, Brunei and Malaysia. Policymakers should explore methods to enhance transparency and accountability in institutions, strengthen the rule of law, reform the legal framework and promote policies centred on merit-based hiring and continuous professional development. The present study posits that implementing these strategies will substantially elevate the quality of Indonesia's institutions.

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