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Foreign direct investment, human capital, and financial development in emerging markets

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ABSTRACT

This study examined the influence of FDI on human capital development in emerging markets. It also explored the role of financial development in FDI-led human capital development in emerging markets. The study used the dynamic generalized methods of moments (GMM) and fully modified ordinary least squares (FMOLS). It also utilized panel data ranging from 2004 to 2019. Models 2 and 3 of FMOLS (fully modified ordinary least squares) indicate a significant enhancing impact of FDI on the development of human capital, while model 1 of FMOLS and all three models of the dynamic GMM (generalized methods of moments) show an insignificant influence of FDI on human capital. Models 1, 2, and 3 under the dynamic GMM and models 1 and 3 under FMOLS demonstrate a significant enhancing influence of the complementarity variable on human capital development. This implies that financial development improved FDI's chances of contributing to the significant development of human capital. The study indicates that FDI is an important pillar in improving human capital development in emerging markets. Policies aimed at improving FDI inflows and deepening the financial sector should be implemented by emerging markets to significantly develop the human capital base of their economies.

Contribution/ Originality: It is the first study to examine whether financial development is a channel through which FDI influences human capital development. It uses emerging markets as a focal point, which is an important economic grouping that all related empirical studies have ignored. It addresses the endogeneity problem by using the dynamic GMM.

1. INTRODUCTION

Three subsections constituting this section are background, contribution, and organization of the study.

Background information: The positive effect of FDI on the economy is a finding that the majority of theoretical and empirical work has unanimously agreed (Akinlo, 2004; de Mello Jr, 1999; Herzer & Donaubauer, 2018; Seetanah & Khadaroo, 2007). However, Henok and Kaulihowa (2022) argued that in the FDI-growth nexus, the augmenting role of human capital development through technology-related spillovers is a subject not yet resolved. The theoretical views on FDI-human capital development exist and they are quite divergent, mixed, and unrelated, but they all agree that human capital development is improved by the inflow of FDI. The authors who agreed on the FDI-led human capital development include (Borensztein, De Gregorio, & Lee, 1998; Javorcik, 2004; Markusen & Trofimenko, 2007; Nguyen, 2020; Nimesh, 2016; Osano & Koine, 2016; Solow, 1956). What these theoretical views or explanations are silent on is that FDI does not directly influence human capital development, as argued by Kotrajaras, Tubtimtong,

and Wiboonchutikula (2011). The latter further noted that governance, financial development, and institutional quality are the channels through which human capital development is influenced by FDI.

Few empirical researchers on FDI's influence on the development of human capital have found conflicting and divergent results. The majority of them noted that human capital development is enhanced by FDI (Azam, Khan, Zaina, Karuppiah, & Farah, 2015; Cleeve, Debrah, & Yiheyis, 2015; Henok & Kaulihowa, 2022; Kar, 2013; Mbang, 2022; Miyamoto, 2003; Nguyen, 2020; Ramushu, 2021; Salim et al., 2014; Sharma & Gani, 2004; Soltanpanah & Karimi, 2013). A few of them observed that FDI negatively affected human capital development (Ibarra-Olivo, Neise, Breul, & Wrana, 2024; Mbang, 2022; Sattar et al., 2022; Zhuang, 2017). Another group observed that the availability of absorption capacities in the host country is necessary before human capital development can be significantly enhanced by FDI (Kotrajaras et al., 2011). A negligible influence of FDI on human capital was supported by Gupta (2017); Gunja (2016) and Tsaurai (2015). A feedback effect was observed by Kheng, Sun, and Anwar (2017); Bayar, Remeikiene, Androniceanu, Gaspareniene, and Jucevicius (2020) and Su and Liu (2016). This lack of a conclusive relationship between FDI and the development of human capital triggered the author to carry out this study.

The only study quite like this one was conducted by Kotrajaras et al. (2011). Alongside similar empirical work, the methodological deficiencies observed include (1) the data used is now quite outdated (Kar, 2013; Kotrajaras et al., 2011; Miyamoto, 2003; Salim et al., 2014; Sharma & Gani, 2004; Soltanpanah & Karimi, 2013) (2) ignored the endogeneity problem and (3) overlooked human capital data affected by its own lag (Azam et al., 2015; Cleeve et al., 2015; Gupta, 2017; Henok & Kaulihowa, 2022; Ibarra-Olivo et al., 2024; Kar, 2013; Kheng et al., 2017; Kotrajaras et al., 2011; Nguyen, 2020; Ramushu, 2021; Sattar et al., 2022; Sharma & Gani, 2004; Su & Liu, 2016; Zhuang, 2017) and (4) did not use emerging markets as the focus area (Mbang, 2022; Miyamoto, 2003; Tsaurai, 2015). This paper fills in the gaps.

Organization of paper: The literature review is discussed in the second section. The third section presents the theoretical influence of financial development on the development of human capital. The fourth section explains the research methodology. The fifth section presents the findings, discusses, and interprets them. The sixth section summarizes the study.

2. LITERATURE REVIEW

Few theoretical rationales explain the human capital development-FDI nexus. Borensztein et al. (1998) opined that FDI economically contributes more than domestic investment by helping with the flow of advancements in technology, human capital development, and the transfer of skills into the host country. Nguyen (2020) noted that the strength of the human capital development programs of poor nations largely depends on the flow of financial resources, technology, physical capital, and training that flows alongside FDI. Consistent with Solow (1956), FDI is a form of foreign savings or additional physical capital stock that enhances technological development and consequently the development of human capital.

According to Osano and Koine (2016), FDI addresses the human capital deficiency in developing nations through its ability to bring organizational management, enhanced entrepreneurship skills, technical know-how, and new technology adoption skills. The argument was supported by Nimesh (2016), whose study noted that the skills transfer brought in by FDI is crucial in enhancing the development of human capital because people's productivity tends to increase when they are surrounded by more skilled and smarter people to learn from. Javorcik (2004) agreed that managerial skills, new and unique technology, and knowledge spillovers into the recipient country of FDI facilitate the development of human capital. FDI has the influencing power for recipient nations to adopt resource allocation efficiency, improve know-how, and absorb new technology (Markusen & Trofimenko, 2007).

The theoretical literature wrongly assumed that FDI has a direct impact on human capital development. Consistent with Kotrajaras et al. (2011), FDI affects human capital development indirectly through institutional quality, governance, and financial development. The theoretical literature totally ignored the endogeneity problem,

which normally characterizes the development of human capital data, consistent with Azhar and Mahmood (1995), who argued that increased investment in education and skills development is made by more enlightened and educated people.

Several researchers attempted to add their voices to the FDI-human capital development nexus, and their findings fall into four categories. The positive view, which argues that FDI drives the development of human capital, was supported by Ramushu (2021); Nguyen (2020); Azam et al. (2015); Cleeve et al. (2015); Kar (2013); Sharma and Gani (2004); Henok and Kaulihowa (2022); Zhuang (2017); Sattar et al. (2022); Soltanpanah and Karimi (2013); Mbang (2022); Salim et al. (2014) and Miyamoto (2003).

The negative view, which states that human capital development is negatively affected by FDI, was supported by Ramushu (2021); Zhuang (2017); Ibarra-Olivo et al. (2024), and Sattar et al. (2022). The feedback view, which posits that human capital development and FDI affect each other, was supported by Kheng et al. (2017); Su and Liu (2016), and Bayar et al. (2020).

The neutrality view, which argues that there is negligible or no relationship between human capital development and FDI, was supported by Gupta (2017); Gunja (2016); and Tsaurai (2015). The absorption capacity view, which argues that certain variables should be present in the host country to enable FDI's influence on human capital, was supported by Kotrajaras et al. (2011).

Empirical research is extensively discussed, described, and critiqued in the next few paragraphs. Ramushu (2021) and Cleeve et al. (2015) investigated the linkage between FDI and human capital development in Sub-Saharan Africa (SSA). Using two-stage panel regression analysis with data spanning from 1996 to 2019, Ramushu (2021) observed that FDI significantly improved human capital development. However, a negatively insignificant influence of FDI on human capital development was noted when the study employed the two-stage spatial Durbin model. Cleeve et al. (2015) employed pooled panel ordinary least squares with data between 1980 and 2012 to examine the nexus between FDI and human capital development in the SSA group of nations. FDI significantly improved human capital development when the model was controlled for education level.

Five empirical research works (Ibarra-Olivo et al., 2024; Kotrajaras et al., 2011; Nguyen, 2020; Sattar et al., 2022; Zhuang, 2017) focused on Asian countries to investigate the linkages between FDI and human capital development. Employing panel data (1990-2019) analysis, Nguyen (2020) explored the influence of FDI on human capital development in Southeast Asian nations (ASEAN). An enhancing influence of FDI on the development of human capital was observed. Zhuang (2017) also used panel data (1985-2010) analysis to examine the influence of FDI on human capital development in East Asian nations. Tertiary education was negatively affected while primary education was enhanced by FDI in East Asian countries.

Ibarra-Olivo et al. (2024) examined the FDI-human capital development nexus in Southeast Asian economies using panel data (2006-2016) analysis. Technical skills declined in response to an increase in FDI in sales, logistics, and marketing in Southeast Asia. Employing panel data (1990-2009) analysis, Kotrajaras et al. (2011) also examined the human capital development-FDI linkage in East Asia. Host country variables, including financial development, better governance, and institutional quality, influenced the relationship between the two variables.

Using fully modified ordinary least squares (FMOLS) with panel data spanning from 2005 to 2018, Sattar et al. (2022) studied the impact of FDI on human capital development in the Belt and Road countries. FDI negatively affected human capital development in the Middle East and North African region. In Eastern and Central Europe and East Asia Pacific, the development of human capital was improved by FDI. All these empirical studies that focused on Asian countries are characterized by methodological weaknesses such as the use of outdated data, being narrowly focused in their choice of proxies for variables, failure to consider endogeneity issues, and the fact that human capital development can be influenced by its own lag.

Three empirical research works studied developing countries. For example, Azam et al. (2015) used panel data (1981-2003) analysis to explore the FDI-human capital development nexus in developing countries. Fixed effects

noted that education in host countries was enhanced by FDI. Kheng et al. (2017) employed a fixed effects approach with panel data (1980-1990) to also analyze the FDI-human capital development relationship in developing countries. The study observed that FDI and human capital development (education enrollment proxy) influenced each other. On the other hand, Miyamoto (2003) employed descriptive statistics with panel data (1991-2001) to examine the relationship between human capital development and FDI in developing nations. FDI was found to have brought in skills, technology, training, and experience into the host countries. In all three cases, the data used are outdated, the methods employed did not have the capacity to address endogeneity issues, and they ignored the lag of human capital development in influencing the dependent variable.

Kar (2013); Gupta (2017) and Gunja (2016) empirically tested the influence of FDI on human capital development in India. Kar (2013) used the Granger causality test with time series data (1990-2009) and found that FDI significantly improved the development of human capital. Gupta (2017), using panel regression analysis with panel data ranging from 1975 to 2013, explored the FDI-human capital development nexus in Indian states. No relationship at all between the two variables was noted in Indian states. Gunja (2016) employed dynamic panel data (2001-2015) estimation methods to study the FDI-human capital development nexus in Indian states. The effect of FDI on the development of human capital was not found in this study. The methodological weaknesses of the three empirical research works include the fact that the data sets used are now outdated. The endogeneity issue and the dynamic characteristics of human capital data were also completely ignored.

Su and Liu (2016) employed panel data (1991-2010) analysis to establish FDI's impact on human capital development in Chinese cities. The two variables complemented each other in enhancing economic growth, especially for technology-oriented FDI. The data used is now outdated for current policy-making decisions. The dynamic nature of human capital development and the endogeneity problem prevalent in the FDI-human capital development nexus were not captured in this study.

Two empirical studies were conducted in Malaysia. Soltanpanah and Karimi (2013) used the system GMM (generalized methods of moments) with panel data spanning from 1985 to 2005 to establish the influence of FDI on human capital development in Malaysia, Indonesia, and Thailand. FDI promoted the accumulation of human capital. The study is commendable because it addressed the endogeneity issue and considered the lag of human capital development. Using the autoregressive distributive lag (ARDL) with time series data (1982-2011), Salim et al. (2014) studied the linkage between human capital development and FDI in Malaysia. A positive influence of FDI on human capital development was observed. The lag of human capital development and the endogeneity issue were both disregarded by Salim et al. (2014). Both empirical studies utilized outdated data sets.

Two empirical research works focused on European countries. Firstly, Tsaurai (2015), using an error correction model with time series data (1981-2012), focused on the relationship between human capital development and FDI in Austria. The null hypothesis was rejected, which states that FDI enhanced the development of human capital, measured by the pupil-teacher ratio size. Bayar et al. (2020), using European Union countries as a focal point, examined the FDI-human capital development nexus. The study, focusing on the period between 1995 and 2015, using literature review analysis, found that FDI and the development of human capital complemented each other in improving economic growth. These European-centric research works have methodological weaknesses. Firstly, they used an outdated data set. Secondly, the research methods used ignored the endogeneity issue, and thirdly, how the lag of human capital development influences the development of human capital.

Using low- and middle-income countries as a focal point, Sharma and Gani (2004) examined the relationship between human capital development and FDI using a fixed effects model with panel data spanning from 1975 to 1999. The study produced findings that show that FDI significantly enhances human capital development. Apart from the fact that the data used are outdated and no longer relevant for current decision-making for policy formulation, the study ignored the role of the lag of human capital development and endogeneity in the human capital development-FDI nexus.

Two empirical studies focused on Africa. Henok and Kaulihowa (2022) employed panel general least squares to investigate how human capital development was influenced by FDI in Southern African Customs Union (SACU) countries, with data ranging from 1990 to 2018. When primary school enrollment was employed to measure human capital development, FDI enhanced the development of human capital. Using a vector error correction model (VECM) approach, Mbang (2022) explored the FDI-led human capital development in Cameroon with time series data (1995-2019). FDI promoted the development of human capital in the long run, while in the short run, the reverse was true. The data for these two studies is now outdated in 2025 for making up-to-date decisions. The two studies ignored endogeneity and the importance of the lag of human capital development in the FDI-human capital development nexus.

What is quite clear from the empirical literature review is that there is a lack of consensus; the findings are divergent, mixed, conflicting, and quite far from concurring on the nexus between the two variables. This means that many empirical research studies can still emerge on this topic to address these glaring gaps in the subject matter.

3. FINANCIAL SECTOR'S IMPACT ON DEVELOPMENT OF HUMAN CAPITAL

Kilic (2018) argued that a strong financial sector is more capable of offering small educational loans and skills development-oriented financial products, hence overall enhancing human capital development. It was also noted that more credit aimed at skills development, education, and health is more likely to be available when a financial sector is developed (Kargbo, Ding, & Kargbo, 2016). The latter also noted that effective and efficient usage of financially related products aimed at improving the development of human capital can only be achieved in an economy characterized by a developed financial system. Dutta and Sobel (2018) also argued that economic development, growth, and productivity of human capital are significantly enhanced by the financial sector through its ability to channel capital towards investment projects. Ali Bare, Bani, Ismail, and Rosland (2022) explained that financial development is critical because it channels remittances from citizens based in other countries into the economy for use by households towards education, health, and skills training.

4. METHODOLOGY

Using panel secondary data (2004-2019) from the International Monetary Fund, South African Reserve Bank, and World Bank Indicators, the study explored the relationship between FDI, financial, and human capital development in emerging markets. The time frame was carefully selected for two reasons: (1) data availability concerns and (2) the period during which most emerging markets underwent significant economic, financial, FDI, and human capital development. Countries involved in this study include Mexico, Colombia, Brazil, South Africa, Indonesia, Singapore, Turkey, Thailand, the Philippines, Malaysia, the Republic of Korea, India, Peru, the Czech Republic, China, and Argentina. These emerging markets were chosen for inclusion in the sample because data for all the variables used in this study could be found in the above-mentioned international databases. The human capital development function is next.

$$HCD = f(FDI, FIN, OPEN, TR, GROWTH, POP, URBAN) \quad (1)$$

HCD (development of human capital) is measured by the human capital development index, FDI is proxied by net FDI as a ratio of GDP, FIN (financial development) is measured using domestic credit to the private sector (% of GDP), while tax revenue (TR) is measured by tax revenue as a ratio of GDP. Economic growth (GROWTH) is represented by per capita GDP, population growth (POP) is proxied by annual population growth (%), while urbanization is proxied by the urban population as a percentage of the total population. The choice of explanatory variables and their proxies follows empirical studies such as Ramushu (2021); Nguyen (2020); Gupta (2017); Henok and Kaulihowa (2022); Zhuang (2017); Ibarra-Olivo et al. (2024); Sattar et al. (2022); Bayar et al. (2020); Su and Liu (2016); Mbang (2022) and Salim et al. (2014).

Binder and Georgiadis (2011) opined that high levels of trade openness facilitate easy skills exchange, technology transfer, and management skills between and among countries; therefore, improving the development of human capital. This research, therefore, expects trade openness to positively affect human capital development.

Increased tax revenue generation enables the government to spend more financial resources on capital expenditure projects such as enhancing human capital development, technology, and skills development (Trostel, 1993). Lucas Jr (1990) noted that income taxation hinders the development of human capital as it discourages workers from being innovative, in addition to discouraging hard work and productivity. A positive or negative effect of tax revenue on human capital development is expected.

According to Shuaibu (2016), higher levels of economic growth provide a favorable climate for businesses to grow and make a profit. Apart from the resultant increased tax revenue base and size, which can lead to more financial resources being directed towards human capital development, these firms are better positioned to provide educational scholarships and training. Economic growth, therefore, enhances human capital development.

Jorgenson (1963) argued that higher levels of population growth increase the market size, which in turn lures FDI that flows into the host country alongside skills, physical capital, technology, and human capital development. On the other hand, Rosenzweig (1990) noted that an increased population size makes the government divert financial resources away from projects such as human capital development and other capital expenditure items towards food procurement and other consumption expenditure focus areas. Population growth can therefore affect human capital development in either direction.

People are more likely to upgrade their skills, education, and knowledge in a more efficient manner if they are in an environment where there are more skilled people (urban areas) than in rural areas, where interaction with peers is quite minimal (Arouri, Youssef, Nguyen-Viet, & Soucat, 2014). The development of human capital is therefore expected to be improved by urbanization.

$$HCD_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 FIN_{it} + \beta_3 (FDI_{it}.FIN_{it}) + \beta_4 OPEN_{it} + \beta_5 TR_{it} + \beta_6 GROWTH_t + \beta_7 POP_{it} + \beta_8 URBAN_{it} + \mu + \varepsilon \quad (2)$$

Equation 2 is an econometric expression of the human capital development function. The inclusion of the complementarity term (FDI x FIN) follows an argument by Kotrajaras et al. (2011); Bayar et al. (2020) and Su and Liu (2016). FMOLS was employed to estimate the econometric Equation 2, and its choice was largely due to its ability to use panel data characterized by few countries across many years.

$$HCD_{it} = \beta_0 + \beta_1 HCD_{it\_1} + \beta_2 FDI_{it} + \beta_3 FIN_{it} + \beta_4 (FDI_{it}.FIN_{it}) + \beta_5 OPEN_{it} + \beta_6 TR_{it} + \beta_7 GROWTH_t + \beta_8 POP_{it} + \beta_9 URBAN_{it} + \mu + \varepsilon \quad (3)$$

Equation 3 included the dynamic element of human capital data (HCD_{it-1}) to address endogeneity problem. Human capital development enhanced by its own lag is an argument promoted by Azhar and Mahmood (1995) which says that educated and skilled people tend to allocate more resources towards developing human capital resources. This argument also is in line with Tsaurai (2020). Significant positive value of β_4 in Equation 3 indicates that development of human capital is improved by a combination between FDI and the financial sector. Dynamic GMM estimated Equation 3 and was chosen because of its superiority in addressing the endogeneity problem.

5. MAIN DATA ANALYSIS AND FINDINGS

The range statistic in Table 1 shows that extreme values exist in the financial development, trade openness, and economic growth data. Skewness and the Jarque-Bera statistics also indicate a failure to follow a normal distribution curve.

Table 1. Descriptive statistics.

Variables	HCD	FDI	FIN	OPEN	REV	GROWTH	POP	URBAN
Mean	0.76	3.76	69.30	87.72	13.93	10 965.42	1.13	68.37
Median	0.76	2.57	49.97	55.84	13.56	7 271.88	1.18	73.58
Maximum	0.94	32.17	165.39	437.33	25.05	66 679.05	5.32	100.00
Minimum	0.52	0.06	9.68	22.11	8.14	640.60	0.03	28.90
Standard deviation	0.09	4.95	44.10	82.90	3.34	12 010.9	0.60	18.49
Skewness	0.01	3.60	0.48	2.55	1.39	2.60	1.89	-0.37
Kurtosis	2.62	16.24	1.71	9.33	5.51	10.23	13.77	2.26
Jarque-Bera	1.52	2422.47	27.71	703.61	149.39	846.17	1388.39	11.61
Probability	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 2 presents the correlation results of the study.

Table 2. Analysis of correlation.

Variable	HCD	FDI	FIN	OPEN	REV	GROWTH	POP	URBAN
HCD	1.00							
FDI	0.44***	1.00						
FIN	0.17***	0.15**	1.00					
OPEN	0.51***	0.80***	0.37***	1.00				
REV	-0.04	-0.09	0.29***	-0.01	1.00			
GROWTH	0.72***	0.76***	0.33***	0.76***	0.01	1.00		
POP	-0.14**	0.22***	-0.17***	0.33***	0.05	0.05	1.00	
URBAN	0.74***	0.45***	-0.07	0.34***	0.10*	0.63***	0.10	1.00

Note: *, ** and *** respectively denote 10%, 5% and 1% significance levels.

Multi-collinearity problem exists between economic growth and human capital development, urbanization and human capital development, trade openness and FDI, economic growth and FDI and economic growth and trade openness, consistent with Stead (1996). Transforming data into natural logarithms, consistent with Tsaurai (2020) addressed issues of multi-collinearity, abnormal distribution of data and extreme values.

Data is integrated of order 1, according the results presented in Table 3, hence allowing panel co-integration tests to happen.

Table 3. Stationarity tests of panel data –Individual intercept.

Level	Levin, Lin, and Chu (2002)	Im, Pesaran, and Shin (2003)	Augmented dick fuller fisher chi square	Phillip Peron
HCD	-4.12***	-3.00***	54.59***	89.47***
FDI	-3.99***	-3.63***	65.98***	119.39***
FIN	-5.24***	-2.31**	55.34***	84.01***
OPEN	-1.97**	-0.36	33.20	42.77*
REV	-1.10	-0.61	36.81	36.94
GROWTH	-7.49***	-3.69***	63.32***	145.32***
POP	-3.78***	-2.28**	67.31***	25.29
URBAN	-5.18***	0.96	30.90	76.13***
First difference				
HCD	-19.51***	-16.69***	242.63***	398.27***
FDI	-11.13***	-10.84***	162.27***	337.04***
FIN	-4.98***	-3.73***	66.65***	94.77***
OPEN	-8.32***	-5.96***	94.88***	200.18***
REV	-4.77***	-4.74***	78.79***	139.61***
GROWTH	-6.23***	-3.27***	60.83***	93.82***
POP	-3.05***	-2.69***	58.34***	83.52***
URBAN	-5.16***	-5.92***	85.06***	189.80***

Note: *, ** and *** respectively denote 10%, 5% and 1% significance levels.

Table 4. Johansen Fisher's approach.

Hypothesised number of co-integrating equations	Fisher's trace test	Probability	Fisher's max-eigen test	Probability
None	77.15	0.0000	434.28	0.0000
At most 1	433.32	0.0000	234.67	0.0000
At most 2	214.54	0.0000	109.43	0.0000
At most 3	144.02	0.0000	89.33	0.0000
At most 4	46.16	0.0000	45.29	0.0001
At most 5	54.39	0.0000	37.43	0.0010
At most 6	44.29	0.0000	29.25	0.0010
At most 7	21.03	0.0219	21.77	0.0081
At most 8	13.29	0.0708	12.03	0.0277

Results in Table 4 confirm the existence of a long-run relationship between variables.

In the main data analysis, Model 1 used the Human Capital Development Index, Model 2 employed total government expenditure on education as a percentage of GDP, while Model 3 used total government expenditure on education as a ratio of government expenditure as measures of the development of human capital.

Table 5 presents the results of the dynamic GMM approach.

Table 5. Dynamic GMM.

Variable	Model 1	Model 2	Model 3
HCD_{it-1}	0.74***	0.81***	0.89***
FDI	0.02	0.04	0.03
FIN	0.01*	0.02	0.01**
FDI.FIN	0.46***	0.24**	0.002*
OPEN	0.02**	0.04***	0.02**
REV	0.03	0.03	0.02
GROWTH	0.06***	0.02*	0.07***
POP	0.001	0.002	0.01
URBAN	0.16***	0.02	0.07*
Adjusted R-squared	0.79	0.75	0.67
J-statistic	247.00	247.00	247.00
Prob (J-statistic)	0.00	0.00	0.00

Note: *, ** and *** respectively denote 10%, 5% and 1% significance levels.

Consistent with Azhar and Mahmood (1995), all three models (dynamic GMM) show that the development of human capital was significantly enhanced by its own lag. The dynamic GMM (models 1, 2, and 3) and FMOLS (model 1) show that FDI non-significantly improved the development of human capital, while FMOLS (models 2 and 3) indicates that the development of human capital was significantly enhanced by FDI. The findings are in line with Osano and Koine (2016), Borensztein et al. (1998), and Javorcik (2004).

Models 1 and 2 under the dynamic GMM and model 1 (FMOLS) noted that the development of human capital was significantly enhanced by the financial sector. Model 2 of the dynamic GMM and models 2 and 3 of the FMOLS approach indicate an insignificant effect of financial development on the development of human capital. These results generally mean that financial development enhanced human capital development in support of the theoretical arguments put forward by Kilic (2018); Kargbo et al. (2016); Dutta and Sobel (2018) and Ali Bare et al. (2022).

Model 2 of the FMOLS noted that the development of human capital was non-significantly improved by the complementarity variable (FDI x financial development). The complementarity between FDI and financial development significantly improved the development of human capital in models 1, 2, and 3 of the dynamic GMM and models 1 and 3 of the FMOLS approach. These findings resonate with Kotrajaras et al. (2011), whose study noted the important impact of the financial sector in helping FDI enhance human capital development.

Table 6 presents the results of the FMOLS methodology.

Table 6. FMOLS.

Variables	Model 1	Model 2	Model 3
FDI	0.02	0.03***	0.25**
FIN	0.05*	0.11	0.09
FDI.FIN	0.002**	0.05	0.16*
OPEN	0.05	0.13	0.03
REV	0.03	0.18	0.79
GROWTH	0.01**	0.25***	0.17***
POP	0.01	0.09***	0.08**
URBAN	0.53***	0.17**	0.28
Adjusted R-squared	0.71	0.67	0.73

Note: *, ** and *** respectively denote 10%, 5% and 1% significance levels.

Models 1, 2, and 3 of the dynamic GMM noted an enhancing effect of trade openness on the development of human capital, which was significant, while models 1, 2, and 3 of FMOLS show that the development of human capital was insignificantly enhanced by trade openness. These results generally agree with Binder and Georgiadis (2011), who stated that high levels of trade openness facilitate easy skills exchange, technology transfer, and management skills between and among countries, thereby improving human capital in the countries involved.

All three models (dynamic GMM and FMOLS) indicate an insignificant positive influence of tax revenue on human capital development, in agreement with Trostel (1993), who states that increased tax revenue generation enables the government to spend more financial resources on capital expenditure projects such as enhancing human capital development, technology, and skills development.

Both FMOLS and dynamic GMM (all three models) show that the development of human capital was significantly improved by economic growth, supporting an argument by Shuaibu (2016), which argues that economic growth provides a favorable climate for businesses to grow, make a profit, and invest in human capital development projects.

Models 1, 2, and 3 of the dynamic GMM and model 1 of FMOLS indicate a non-significant enhancement influence of population growth on the development of human capital, while models 2 and 3 under FMOLS show that human capital development was significantly spurred by population growth. These results generally support an argument put forward by Jorgenson (1963) on the intricate relationship between human capital development, population growth, and FDI.

Model 2 of the dynamic GMM and Model 3 under the FMOLS indicate an enhancing influence of urbanization on the development of human capital, which was insignificant, while Models 1 and 3 under the dynamic GMM and Models 1 and 2 under FMOLS show that urbanization significantly improved the development of human capital. The results resonate with Arouri et al. (2014), whose argument is that people are more likely to upgrade their skills, education, and knowledge in a more efficient manner if they are within an environment where there are more skilled people (urban areas) than in rural areas, where interaction with peers is quite minimal.

The results of the study helped to add value to the existing literature. Unlike existing literature, this study shows that FDI indirectly influences human capital development through financial sector strength. This study demonstrates that taking into account the endogeneity issues prevalent in human capital development, the FDI and human capital development nexus is non-linear in emerging markets. Results also indicate that the omitted variable bias existing in several empirical research studies on this subject makes the relationship between human capital development and FDI incomplete.

Consistent with both panel methods of data analysis, the lag of human capital development, FDI, financial development, the interaction between FDI and the financial sector, trade openness, urbanization, and economic

growth significantly improve human capital development. Such results are quite crucial in helping emerging markets develop tailor-made policies aimed at improving the development of human capital.

6. CONCLUSION

This study explored the influence of FDI on the development of human capital using emerging markets as a focal point. Panel data (2004-2019) was used with econometric methods such as dynamic GMM and FMOLS. Financial development as a conduit through which the development of human capital was improved by FDI in emerging markets was also tested. Models 2 and 3 of FMOLS indicate a significant enhancing influence of FDI on the development of human capital, whilst model 1 of FMOLS and all three models of the dynamic GMM show an insignificant causality from the former to the latter. Models 1, 2, and 3 under the dynamic GMM and models 1 and 3 under FMOLS show a significant positive effect of the complementarity variable on the development of human capital. Results mean that financial development improved FDI's chances of contributing towards significant development of human capital in emerging markets. FDI retention and improvement policies and financial sector development, growth, and transparency need to be implemented by emerging markets if they intend to improve their human capital development base. Policies aimed at improving FDI inflows and deepening the financial sector should be implemented by emerging markets to significantly develop the human capital base of their economies. Further studies should investigate threshold levels of various financial sector variables important to allow FDI to significantly influence the development of human capital.

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