Analyzing The Effect of Foreign Capital Movements on Human Development in Developing Countries: A System GMM Approach

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ABSTRACT

Foreign Capital Inflows (FCIs) have been contributing to economic growth and development of the capital-deficient developing economies. The FCIs to developing economies include Foreign Direct Investment (FDI), remittances, and Official Development Assistance (ODA). Previous empirical studies have concluded mixed impacts of FCIs on Human Development (HD) in recipient economies. Present study examines the impacts of FDI, remittances, and ODA flows on human development in a larger panel of 71 developing economies from 2001 to 2019 using the system GMM econometric technique. The results show a positive and significant influence of FDI and remittances on HD measured by the Human Development Index (HDI). Whereas, ODA have a negative impact on human development in selected developing economies. In addition, the study also concludes the positive impact of GDP and governance indicators on the human development of these economies. The findings of the study provide a comprehensive insight into the roles of FCIs in setting the human development trajectory of the developing economies. It provides guidelines for the policymakers and the governments to frame feasible and efficient policies to achieve the objective of human development in capital-starved developing countries.

Introduction

Foreign Capital Flows (FCIs) have been impressively contributing to economic growth and development of the economies. Consequent upon unprecedented expansion and adoption of globalization, the FCIs has also been playing their productive role economic globalization, economic integration, regional and global development. FCIs provide additional financial resources for such economies and help them to set their growth trajectories (Ali, 2014). Since most of the developing economies are capital-starved and characterized with lower levels of domestic supply of loanable funds. FCIs such as FDI, workers’ remittances, net official development assistance (ODA), external debt have been welcomed to add to the domestic financial
resources. The experience from the newly industrialized economies in Southeast Asia has provided strong reasons to believe that foreign capital helped in filling the resource gap in capital-starved economies (Ali, 2014).

There is an enriched theoretical and empirical literature on FCIs and their role in economic growth especially in developing economies (Mosley & Hudson, 1987; Paul Mosley, 1980; Yaseer, 2016). Some studies focused on aid-growth relationship especially in the perspectives of policies (Burnside & Dollar, 2000, 2004; Easterly et al., 2004; Khaliq et al., 2016). Some studies examined the aid-saving relationship in developing economies (Razzaque & Ahmed, 2000). Since human development is pivotal objective in the perspective of SDGs, some of the empirical studies endeavoured to explore the impacts of FCIs on human development. For instance some of the studies examined the effect of FDI on HD (Arcelus et al., 2005; Baškot & Ba, 2020; Gökmenoğlu et al., 2018; Mbang, 2022; Reiter & Steensma, 2010; Sahoo & Sethi, 2017). Some studies focused on theoretical and empirical investigation on aid and growth linkage (Bowen, 2019). Some empirical studies explored the impacts of ODA on human development (Akinbode & Bolarinwa, 2020; Kotsadam et al., 2018; Okoyeuzu & Kalu, 2022; Sarpong & Bein, 2021). Since workers’ remittances are one of the key capital flows to the developing economies. Some empirical studies such as (Arshad et al., 2021; Azizi, 2018; Mohammed, 2021; Ustubici & Irdam, 2012; Yiheyis & Woldemariam, 2020; Zhunio et al., 2011) analyzed how remittances effect HD in developing countries. There is still a dire need to explore the impacts of FCIs on human development especially in the perspectives of developing economies.
The aim of the current paper is to scrutinize the impact of FCIs on HD in large sample of developing economies. For this purpose to serve a sample of 71 developing countries have been developed. Firstly, the objective of the paper is to examine the impact three major component of FCIs – FDI, remittances, and net official development assistance (ODA) on human developed in developing economies. Secondly, the study also analyses the impact of size of the economy measured by GDP on human development in developing countries. Thirdly, it also examines the impact of governance indicators such as government effectiveness and regulatory effectiveness of the government. System GMM econometric technique has been employed to estimate effects of FCIs variables, GDP, and government effectiveness indicators. The conclusions of the study would provide profound guiding principles for the policy makers and the governments to frame out comprehensive and productive strategies to best utilize the FCIs for the human development and SDGs to achieve.

Literature Review

FDI and Human Development Relationship

Arcelus et al. (2005) explored the relationship between FCIs and efficiency of various HDI dimensions. The latter included Life Expectancy at Birth (LEB), educational achievement, and wealth. The efficiency analysis revealed that FCIs affected LEB, educational achievement, and wealth but the effects were different for each dimensions of HDI. The decomposition analysis opened the avenues for future research into how differential effects of the different FCFs on HDI dimensions. Since FDI has been playing important role in developing economies. Considering this, Reiter & Steensma (2010) attempted to explore the association between FDI, economic and human development. The authors find FDI was positively and strongly related to human development. However, it was also examined how the FDI policy restricts the international investors to enter in
some sectors of the economy. It also consider an important variable in the analysis - corruption. The analysis showed that the FDI and human development are positivity and strongly related at low levels of corruption.

Some of the empirical studies concentrated on the analysis of FCIs and their impact on HD in single country cases. Sahoo & Sethi (2017) evaluated the long run connection between FCI and economic development in India. Annual time series data for 1991-2014 was used. The authors used cointegration and VECM techniques for the analysis. The result of the study showed that investment measured had a positive impact on government expenditure on education. However, FDI, ODA, and economic growth measured by GDP showed negative and significant impact on HD in India. The findings of the study implied that the both domestic and external capital should be productively utilized along with the emphasis on effective growth transformation that would pave the way towards development. Gökmenoğlu et al. (2018) aspired from the notion that economic growth may be a necessary condition for human development but not a sufficient one to guarantee it. The authors stressed the need to explore and examine the other dimension of human development. In their study, the authors investigating the effects of FDI on HDI in Nigerian economy used Johansen cointegration analysis to show a relationship between FDI and HDI indices such as gross national income (GNI), LEB, and school enrollment. In addition, Toda-Yamamoto test estimations revealed a two-way causality between FDI and LEB. There was also a unidirectional causality from FDI to GNI. Though the study found a significant association between FDI and HDI, yet the influence of FDI on HDI was termed to be complicated. The study also pointed out that the policy makers should consider the pros and cons of FDI and its impacts on different characteristics of HD.
Examining the impact of the capital flows of FDI and remittances on employment of youth in Bosnia and Herzegovina, Baškot & Ba (2020) showed that FDIs were not so noteworthy regarding total and technological and human capital spill overs. The study asserted that the overall importance of remittances as these capital flows are important to maintain the macroeconomics balances. The authors concluded that FDIs and remittances had profound structural employment repercussions if the current policy framework and situations persisted. The previous studies recognized the lack of systematic policy approach regarding remittances. Baškot & Ba (2020) confirms the same in remittances-your employment relationship. Mbang (2022) explored the impact of FDI on HD in Cameroon. The author used autoregressive distributed lagged (ARDL) model, Johansen cointegration and VECM. The estimates indicated the positive and significant FDI-HD relationship. It implied that trade openness enhance the access to larger markets and improve the HDI. However, the relationship between the two variables is negative. The author support the results with the argument that export revenues were not being used for human capital development. It might be due the fact that the spending on education was not productive enough the influence HDI. The findings of the study stressed the need to encourage the FDI and diversify its investment in social infrastructure. Moreover, it also proclaimed that investment should be directed to labour-intensive sectors of the economy.

**Remittance and Human Development**

Ustubici & Irdam (2012) contributed to the literature on remittances and their impacts on human development through and quantitative analysis. Furthermore, the study extended the analysis and elaborated the findings of the quantitative analysis in theoretical and policy domains. The authors measured the effect of remittances and HD and compared these results with the impacts of FDI and ODA. Remittances showed positive association with HD. The study asserted the role of
remittances to be productive in improving the HD in MICs in the medium term. The authors supported the argument that remittances had the most human development boosting impact of remittances in countries where the migration was perceived to be an effect labor export strategy. In another study, Zhunio et al. (2011) examined the impact of foreign remittances on aggregate educational and health outcomes in low and middle income economies. The study showed that remittances played pivotal role in successful primary and secondary school attainment, increasing LEB and decreasing infant mortality rate (IMR).

In another study, Chauvet et al. (2013) examined the respective effect of aid, remittances, and medial brain drain on HD indicated by IMR. The outcomes of the study showed that remittances stimulate human development by reducing CMR. However, medical brain drain reduces human development as it increases CMR. It was also found that remittances were more effective in reducing CMR in household belonging to upper classes. In addition, the study found health aid neither showed pro-poor nor anti-poor impact the developing economies. In a panel of 122 developing economies, Azizi (2018) studied the effect of remittances on human capital and labor supply for the period of 1990-2015. The author used estimated bilateral remittances to address the endogeneity problem of the remittances and created weighted indicators remittances-sending economies. These weighted-indicators were utilized as instruments for remittances inflow recipient economies. The results showed that remittances raised health expenditure, reduced incidence of undernourishment and IMR. Moreover, the remittance also increased school enrollment and completion rate, and private school enrollment. In addition, it was also found that the remittances increased the educational outcomes of female students than the educational outcomes in male students. Furthermore, the analysis also revealed that remittances decreased the female labor force participation rate (LFPR) but remittances had no impact on LFPR for males.
Considering remittances as an vital source of finances and foreign exchange in most of the developing economies, Yiheyis & Woldemariam (2020) examined the impact of remittances and ODA in stimulating human development measured by HDI. The authors used a panel data of 35 African economies. The study suggested that both remittances and ODA exerted modest positive impact on HD. The association between the two foreign capital inflows remained positive across different sample groups. However, the authors observed differences in their magnitude of the coefficients. The study also concluded that the recipient would benefit from the remittances and ODA with the improved quality of institutions in the economies. Mohammed (2021) examined the association between remittances, institutions, and HD in SSA economies for the period of 2004-2018. The authors using system GMM model attempted to explore whether remittances on HD. The study also examined whether the impact of remittances on HD varies with the levels of institutional quality. The findings of study uncovered that the remittances positively affected HD in SSA economies. The study also reveals further those remittances and institutional quality substantially stimulate human development. In a single country study, Arshad et al. (2021) endeavored to understand the relationship between social, demographic, and economic factors such as population growth, foreign remittances, government social spending, on HD in Pakistan. The ARDL based econometric results confirmed the relationship between the variables.

**Official Development Assistance and Human Development**

Some studies focused on examination of the criteria by which ODA flows from donor to recipient economies. For instance, Wall (1995) developed a theoretical model based-on donor-optimization and applied it to net ODA allocations of three time periods. The estimated model indicated that GDP per capita and population were associated with ODA receipts, whereas, IMR/civil rights were not. The study also revealed that the associate between ODA and income enhanced through the
1980s. ODA is one of the most productive financial source of stimulating development in LICs. Not only had the composition of the ODA but also the idea of development also changed significantly over time. One of the important streams of ODA flows is thorough human rights approach to development. Human rights approach has recognition advantage as the rights are universal and fulfilment of such rights is the responsibility universally (Sengupta, 2002). In an empirical study examining the relationship between ODA and human and educational development in Southeast Asia, Moe (2008) found out ODA targeted to socio-economic development has shown negative association with HD. ODA allocated to unspecified education levels, or post-secondary education have significant relationship with education development.

Afoakwa (2016) exploring the impact of ODA and FDI on HD in SSA, concluded that ODA positively affected the HD in SSA in short run but negative impact on the latter in the long run. The results implied that the ODA was not sustainable in the long run. The SSA economies should focus on the alternative sources of foreign capital such as FDI to stimulated HD in the economy. Ozigbu (2018) empirically examined the aid fungibility hypothesis with a special focus on net ODA effectiveness. The results show that technical cooperation grant have significant positive effect on HD in short and long run. It was found that freestanding funds from external sources aimed to develop technical and managerial skills or technology driven HD and standards of living. The results also showed that net ODA had adverse impact on HD indicators. The results in studies on effect of foreign aid on population level outcomes is inconclusive. Some studies have shown that project-based aid have demonstrated on both economic and health outcomes (Hsiao & Emdin, 2015). In (Hsiao & Emdin, 2015), the authors examined whether ODA for health and foreign aid were associated with changes in malaria, HIV, and TB mortality. The country and time-period fixed-effect and control variable based regression analysis showed that malaria and HIV related
development assistance were associated to reduction in malaria and HIV mortality. However, TB related development assistance was not linked to reductions in TB mortality. The study stressed the need to development assistance of health to have positive health outcomes and improvement in human development.

Kotsadam et al. (2018) considered that there was a vast literature concentrated on the analysis of effects of ODA on economic growth, but there was a little literature on how aid affected health outcomes in recipient economies. Moreover, the authors found it necessary to scrutinize the impact of ODA on health outcomes indicated by the infant mortality at subnational levels. The results of the quasi-experimental approach signposted that geographical proximity to active aid projects reduces IMR. Moreover, it was also found that aid reduced IMR in less privileged groups. In addition, the evidence that aid projects established in areas characterized with lower IMR than non-aid areas suggested biases in resulting aid. Using a panel data of 47 countries of SSA region, Akinbode & Bolarinwa (2020) examined the impact of external aid on HD. The authors used system GMM approach for the analysis. The study revealed that aid had no effect on HD in SSA. However, the corruption reduced HDI. Moreover, trade openness showed HD improvement impact in SSA economies. The findings of the research implied that there was a dire need of effective framework to utilize foreign aid effectively and reduce corruption. Anetor et al. (2020) showed that foreign aid and FDI had a negative impact on poverty reduction in 29 SSA economies. The results disclosed that levels of FDI has not reached the levels to show poverty alleviating impact. Moreover, the foreign aid was not properly channelled which might resulted in negative impact of foreign aid in poverty alleviation.

Sarpong & Bein (2021), in an empirical study, reconnoitred the effects of ODA, governance, and sustainability and macroeconomic variables on HDI on selected SSA economies. Analyses based-
on multiple different panel data techniques provided insightful empirical results showed that the roles of governance on HDI is significant. Moreover, the macroeconomic variables including trade openness, growth, wealth and opportunity creating factors such as urbanization and electrification rate were important. The estimations showed that ODA negatively and significantly associated with HDI. In an recent study, Okoyeuzu & Kalu (2022) explored the impact of economic policy uncertainties and trade conflict between China and the US. The bivariate test for linear association revealed co-movement of the war with ODA. These results implied that aid could increase even ongoing war between the two economic giants. It shed light on the matter that aid would be used as diffusion strategy for trade and other economic objectives.

**Theoretical Underpinnings of Human Development-FCI Relationship**

There multiple FCIs. In the current study, the analyses primarily focusses on examination of such as aid, remittances, and FDI on HD in developing countries. The foreign capital flows such as remittances, FDI, and ODA has theoretical and empirical underpinnings that are summarized in the following subsections.

**Foreign Aid and Human Development: Theoretical Underpinnings**

Over the years, the primary focus of several studies on aid and its effectiveness on macroeconomic variables. Most of it include economic growth, savings, and investment. The first strand related literature on the aid and its effectiveness sourced from the theoretical background of Harrod-Domar Growth (HDG) model (Rosenstein-Rodan, 1961). The HDG model being a reference model in 1960s, asserted that economic growth was directly linked to the saving level and inversely related to the capital-output ratio of the economy. Whereas, the latter measured the absorptive capacity of capital. The growth model such as HDG perceived savings as an exogenous factor. The shortage of domestic supply of loanable funds is a reason for giving foreign aid to the capital
starved and capital deficient economies (Weisskopf, 1972). This links the savings directly to foreign aid in the sense that foreign aid fulfills the saving-investment gap, increases investment, and promotes economic growth. Some of the empirical studies such as (Griffin, 1973; Papanek, 1972) indicated a positive and significant association between foreign aid, savings, and economic growth. However, some studies unveiled a negative but insignificant link between aid and growth (Gupta, 1970).

The neo-classical growth model, in recent empirical findings, have become important. In the neo-classical framework, the Solow growth model serves as a reference model. This model shows how growth in labor, capital accumulation, and growth in productivity explains economic growth. The economists have strong reasons to believe that the modified neo-classical model could deliver the required structure for empirical analysis of foreign aid and economic (human) development (Burnside & Dollar, 2000). It is important to consider the economic development while reaching the higher levels of output growth or economic growth. The policy makers and the governments, in the modern world, are now mainly concerned with the economic growth leading to improved living standards of living and human development (Akinbode & Bolarinwa, 2020). Considering recent trends in empirical research regarding the foreign capital flows and their impacts on human development. The current study drawing insights from the economic literature focusses on the analyses of impact of foreign capital flows such as FDI, remittances, and ODA on HD in developing economies.

**Remittances and Human Development Theoretical Underpinnings**

The positive relationship between the migrant’s remittances and human development stems from the theories based-on the perspectives of New Economics of Labor Migration (NELM) (Ustubici & Irdam, 2012). The NELM perspective considers migration as a dependable strategy to negotiate
the risks in local and international markets. This provides favorable provisions for the developing economies in which cash credits and health insurances are costly and less available. Remittances are very important as such financial flows are the only income sources for many households in developing economies (Massey et al., 1993). The NELM also posit that remittances reduce production and market limitations for the households in developing economies. In this way, remittances may be a pivotal element in economic development. However, this impact of migration and remittances on development may vary across locations, migrants’ remittance behavior, and economic contexts (Taylor, 1999). The studies have also shown poverty alleviating impacts of remittances (Giannetti et al., 2009; King & Levine, 1993; Frank et al., 2013). Increased levels of remittance flows open the opportunities of increase in better nutrition and healthcare facilities (Airola, 2007). Remittance play positive role as remittances flows directly to the recipient households without any political obstacles. Such resources can be the only source of income for the politically or socially excluded people (Barham & Boucher, 1998; Keely & Tran, 1989). For instance, in some remote areas, remittance are the only source of finances for the living in rural areas in developing economies. Such contributions of the workers’ remittances in spending and investment in developing economies puts the remittances to have great importance in the economy. The research framework is displayed in Figure 1.

![Fig. 1. Framework of Research](image-url)
Data and Methodology

Human Development-FCI Model

Since the objective of this paper is to analyze the impact of FCIs on HD in a panel of developing economies, a HD-FCI model has been developed for the analysis. Multiple indicators can be used as HD variables in the model. For instance, in previous empirical studies, child mortality rate (CMR) in (Chauvet et al., 2013) used per capita education expenditure on education in (Sahoo & Sethi, 2017), adult literacy (Reiter & Steensma, 2010) and life expectancy at birth in (Gökmenoğlu et al., 2018; Reiter & Steensma, 2010) and school enrolment in (Gökmenoğlu et al., 2018) were used as variable for human development. Some studies (Mbang, 2022; Reiter & Steensma, 2010; Ustubici & Irdam, 2012; Yiheyis & Woldemariam, 2020) used HDI as dependent variable in the model to assess the impact of various FCI variables. In the current model, the authors used HDI as dependent variable and the following model has been developed to assess the impact of FCIs on HD:

\[
HD_l,t = \gamma_0 + \gamma_1 FDIG_{l,t} + \gamma_2 RMT_{l,t} + \gamma_3 ODA_{l,t} + \gamma_4 GDPC_{l,t} + \gamma_5 RQE_{l,t} + \gamma_6 GEE_{l,t} + \mu_{l,t}
\]  

(1)

Here, HDI is Human Development Index, FDIG is FDI as ratio of GDP, RMT is foreign remittances, ODA is net official development assistance, GDPC is GDP per capita, RQE is regulatory quality estimated, and GEE is government effectiveness estimate. Different studies used different variables of FCIs to assess their impacts on HD in a panel of countries and single country studies. For instance, Ustubici & Irdam (2012), Sahoo & Sethi (2017), Gökmenoğlu et al. (2018), and Mbang (2022) used FDI as an FCI variable in the model. Ustubici & Irdam (2012), Sahoo & Sethi (2017), and Yiheyis & Woldemariam (2020) included workers remittances and official development assistance in the model. Whereas, Chauvet et al. (2013) considered health aid and
remittances as FCI flow indicators in the model. As for as control variables are concerned, there are various variable that have been used in the empirical studies. For instance, gross capital formation and GDP were used in (Sahoo & Sethi, 2017) and trade in (Yiheyis & Woldemariam, 2020) as control variables. In the current model, FDI, workers’ remittances, and net official development assistance has been used as main variables of FCIs. Economy size measured by GDP per capita, governance indicators such as government effectiveness (GEE) and regulatory quality estimates (RQE) have been used as control variables in the estimated model.

**Data Sources**

The panel data from 2001 to 2019 of 71 developing countries were used for the econometric analysis in the present chapter. The countries in the panel have been selected based on data availability for the variables. The classification of the variables and data sources are given in Table 1. The data for HDI has been collected from the various Human Development Reports of the United Nations Development Programme (UNDP, 2005, 2008, 2009, 2022). The data for FDI as ratio of GDP, personal remittances, net official development assistance received, GDP per capita at constant prices (GDPC) have been obtained from the WDI (World Bank, 2022b).

The variable of institutional quality regulatory quality estimated (RQE) and good governance indicator measured by Government Effectiveness (GEE) are sourced from the Worldwide Governance Indicators (WGI) of the World Bank (World Bank, 2022c). RQE shows the perceptions of the government to articulate and implement robust policies and regulations that helps in the economies to provide permission and promotion to private sector development. GEE estimates indicate the perceptions of public services quality, civil service quality and degree of political pressure independence, quality of policy formulation and implementation, and the credibility of the governments’ commitment to these policies (World Bank, 2022a). The value of
RQE and GEE ranges from -2.5 to 2.5. The RQE and GEE value of -2.5 indicates weak governance performance. Whereas, the value of RQE and GEE of 2.5 shows the strong governance performance (World Bank, 2022c). The variables of logged values of FDIG, RMT, ODA, and GDPC have been used in the model estimations.

Table 1. Description of Variables and Data Sources

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDIG</td>
<td>Foreign Direct Investment as a ratio of GDP</td>
<td>(World Bank, 2022b)</td>
</tr>
<tr>
<td>RMT</td>
<td>Personal remittances, received (current US$)</td>
<td>(World Bank, 2022b)</td>
</tr>
<tr>
<td>ODA</td>
<td>Net official development assistance received (constant 2015 US$)</td>
<td>(World Bank, 2022b)</td>
</tr>
<tr>
<td>GDPC</td>
<td>GDP per capita (constant 2015 US$)</td>
<td>(World Bank, 2022b)</td>
</tr>
<tr>
<td>RQE</td>
<td>Regulatory quality estimate</td>
<td>(World Bank, 2022c)</td>
</tr>
<tr>
<td>GEE</td>
<td>Government Effectiveness, Estimate</td>
<td>(World Bank, 2022c)</td>
</tr>
</tbody>
</table>

Econometric Methodology

Since the present study involves few periods and many individuals, the system Generalized Methods of Moments (GMM) is a suitable estimation method to be used as it has been designed to deal with “small T” and “large N” panels (Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998; Gök & Sodhi, 2021). It provides better estimates in situations when the independent variables are not strictly exogenous. It means they are associated with the past and possibly current error terms. Moreover, the system GMM also deals with the problems of fixed effects (Fes), autocorrelation, and heteroscedasticity (Arellano & Bover, 1995; Blundell & Bond, 1998; Nasir et al., 2017). The system GMM estimates can be obtained by using the equations as given in (Roodman, 2009):

\[
Y_{it} = \gamma Y_{i,t-1} + X_{it}' + \epsilon_{it} \tag{2}
\]

\[
\epsilon_{it} = u_i - v_{it} \tag{3}
\]

\[
E(u_i) = E(v_{it}) = E(u_i v_{it}) = 0 \tag{4}
\]
The error term $\epsilon_{it}$ contains FEs ($u_i$) and idiosyncratic shocks ($v_{it}$) that are orthogonal to each other.

$$\Delta Y_{it} = (\gamma - 1)\Delta Y_{i,t-1} + \Delta X'_{it}\beta + \Delta v_{it}$$

(5)

$$E[\Delta w_{it}u_i] = 0$$

(6)

In equation (6), $w_{it}$ is instrumental variables that are supposed to be uncorrelated with $u_i$ (i.e. fixed effects). This implies that $E[\Delta w_{it}u_i]$ is time-invariant.

The system GMM estimates in Arellano & Bover (1995) and Blundell & Bond (1998) are better than those given in (Arellano & Bond, 1991). It is because it includes an additional equation (5) other than the equation (2). In this way, the efficiency of the estimator is improved. It is also worth noting that Arellano & Bond (1991) use instruments differences with levels in difference GMM but Blundell & Bond (1998) instruments levels with the difference in system GMM (Gök & Sodhi, 2021; Roodman, 2009). It also considers an additional assumption of no correlation between Fes and the first difference of IVs in equation (6). It provides to use of more instruments in the model. Moreover, it is also assumed that $v_{it}$ is serially uncorrelated. In the case, if it is correlated of order 1, then $Y_{i,t-1}$ is endogenous to the in error term in differences $v_{it}$, $\Delta \epsilon_{it} = \epsilon_{it} - v_{i,t-1}$, which may invalidate it as an instrument and it would require to lagged by 3 or more. Even longer lags will be required if there is a 2nd order correlation (Gök & Sodhi, 2021; Roodman, 2009).

The reduced form equation for the effect of foreign capital flows (FDIG, RMT and ODA) on HDI with control variables can be written as:

$$HDI_{i,t} = \alpha_1 FDIG_{i,t} + \alpha_2 RMT_{i,t} + \alpha_3 ODA_{i,t} + \pi CONT_{it} + \epsilon_{i,t}$$

(7)

$$\epsilon_{it} = u_i - v_{it}$$

(8)
\[ E(u_i) = E(v_{it}) = E(u_i v_{it}) = 0 \]  
\[ \Delta \text{HDI}_{i,t} = \delta \Delta \text{HDI}_{i,t-1} + \theta_1 \Delta \text{FDIG}_{i,t} + \theta_2 \Delta \text{RM}_{i,t} + \theta_3 \Delta \text{ODA}_{i,t} + \varphi \Delta \text{CON}_{i,t} + \Delta v_{it} \]  
\[ E[\Delta w_{it} u_i] = 0 \]  
Here, \( \text{HDI}_{i,t} \) and \( \text{HDI}_{i,t-1} \) indicate human development index and its first lag for the county in time \( t \) (which is the year in this study). \( \text{FDIG}_{i,t} \), \( \text{RM}_{i,t} \) and \( \text{ODA}_{i,t} \) are foreign capital flow variables that are, FDI, remittances and net official development assistance respectively. Whereas, \( \text{CON}_{i,t} \) designate the control variables including GDP per capita, RQE, and GEE.

Results of the Human Development-Foreign Capital Flows Model

Descriptive Statistics of Variables in FCI-Human Development Model

Descriptive statistics are given in Table 2. As the panel data of 71 developing countries from 2001 to 2019 have been used for the analysis, so total number of observations is 1349. The summary values of HDI show that the mean value of the HDI in the panel is 0.6288 with standard deviation of 0.1348. However, the minimum values of HDI is 0.268 that is very low. Digging deeper in the data for countries it has been found that Niger showed 0.268 in 2001. The maximum value of HDI in the panel is 0.919 that is the highest in the panel of developing economies. Israeli economy showed the HDI value of 0.919 in 2019. The variables FDIG, RMT, ODA and GDPC were taken in the logged form.

The governance indicators such as RQE and GEE are taken as it they are measured. The values of these indicators range from -2.5 to 2.5. In the current panel, the minimum value of RQE is -2.23624. This RQE value was estimated for Zimbabwe in 2004. Closer the value RQE to -2.5, which shows the weak regulatory quality of the government. The maximum value of RQE is found
to be 1.538509, which belongs to Chile in 2011. The value of RQE closer to 2.5 shows the strong regulatory quality of the government.

The minimum value of government effectiveness index is -2.30766 that is from Yemen in 2019. The RQE value closer to -2.5 shows the weak effectiveness of the government. The maximum value of GEE is 1.391275 which belongs to Israel showing the stronger effectiveness of the government as the value of GEE closer to 2.5 refers to the strong government effectiveness.

### Table 2. Descriptive Statistics of Variables in FCI-Human Development Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDI</td>
<td>1,349</td>
<td>0.62888</td>
<td>0.1348</td>
<td>0.2680</td>
<td>0.9190</td>
</tr>
<tr>
<td>FDIG</td>
<td>1,349</td>
<td>9.915228</td>
<td>1.209225</td>
<td>1.2308</td>
<td>13.61474</td>
</tr>
<tr>
<td>RMT</td>
<td>1,349</td>
<td>6.586919</td>
<td>2.107893</td>
<td>-5.10968</td>
<td>11.33059</td>
</tr>
<tr>
<td>ODA</td>
<td>1,349</td>
<td>6.10551</td>
<td>1.372634</td>
<td>1.156881</td>
<td>10.15314</td>
</tr>
<tr>
<td>GDPC</td>
<td>1,349</td>
<td>7.885289</td>
<td>1.060067</td>
<td>5.555394</td>
<td>10.57119</td>
</tr>
<tr>
<td>RQE</td>
<td>1,349</td>
<td>-0.31346</td>
<td>0.630631</td>
<td>-2.2362</td>
<td>1.538509</td>
</tr>
<tr>
<td>GEE</td>
<td>1,349</td>
<td>-0.34835</td>
<td>0.608618</td>
<td>-2.30766</td>
<td>1.391275</td>
</tr>
</tbody>
</table>

N = number of observations, and SD = Standard Deviation.

### Pairwise Correlation Matrix of Variables in Human Development-FCI Model

The pairwise correlations of variables in Human development- FCI model is given in Table 3. The correlation between the FDIG and HDI is 0.2105, which is positive showing a weak correlation between the variables. RMT also shows positive but week correlation with HDI with the smaller correlation coefficient of 0.0799. However, the other FDI variable ODA shows negative but weak correlation with HDI in the panel of selected countries. The GDP per capita shows positive but moderate correlation than the FCI variables with 0.4631 value of correlation coefficient. The
governance indicators RQE and GEE also have positive correlation with HDI but the value of correlation coefficient is 0.3704 and 0.40 showing moderate correlation. It is also notable that all the explanatory variables showed significant correlation at 95 percent confidence interval.

Table 3. Pairwise Correlation Matrix of Variables in FCI-Human Development Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>HDI</th>
<th>FDIG</th>
<th>RMT</th>
<th>ODA</th>
<th>GDPC</th>
<th>RQE</th>
<th>GEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDI</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDIG</td>
<td>0.2105*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.0000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RMT</td>
<td>0.0799*</td>
<td>-0.0365</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.0035)</td>
<td>(0.1809)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ODA</td>
<td>-0.3075*</td>
<td>-0.0501</td>
<td>0.3153*</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.0000)</td>
<td>(0.0725)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDPC</td>
<td>0.4631*</td>
<td>0.1199*</td>
<td>0.0875*</td>
<td>-0.5225*</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td>(0.0013)</td>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RQE</td>
<td>0.3704*</td>
<td>0.2657*</td>
<td>-0.0312</td>
<td>-0.3098*</td>
<td>0.5567*</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td>(0.2527)</td>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEE</td>
<td>0.4000*</td>
<td>0.1723*</td>
<td>0.0385</td>
<td>-0.3271*</td>
<td>0.6393*</td>
<td>0.8494*</td>
<td>1.0000</td>
</tr>
<tr>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td>(0.0158)</td>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td></td>
</tr>
</tbody>
</table>

Note: p-values in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Short Run and Long Run Coefficient Estimates

The short run and long run estimates of human development-FCI model are summarized in Table 4. The estimated coefficients show that the FDI have positive impact on HD measured by HDI in the panel of selected countries in both shot run and long run. The short run coefficient of FDI is positive and significant. Similarly, the FDI coefficient in long run is also positive and significant at 0.01 level of significance. The short run and long run coefficients of FDI are 0.015 and 0.022 respectively. The other FCI variable remittances also have positive impact on human development in developing economies both in short and long run. The coefficients of remittances are 0.00424 and 0.00616 in short and long run respectively. These coefficients are significant at one percent level. It worth noting that official development showed negative impact on human development in assistance receiving developing economies. The short run and long run ODA elasticity’s are -0.00661 and -0.00962 respectively and these elasticity’s are significant with p<0.01. The economy size (GDP per capita) has also shown positive impact on human development measured by HDI.
with elasticity values of 0.01265 and 0.01843 in short run and long run respectively. Both ODA elasticities of human development are statistically robust with $p$-value <0.01. The results summarized in Table 4 show that size of the economy that is the GDP have positive impact on HD in developing economies. The GDP elasticity of HDI is positive, i.e. 0.01265 and 0.01843 both in short run and long run with $p$-value <0.01. This shows that increase in economic growth in developing economies is necessary to achieve human development in the underdeveloped and developing economies. An Addition to this, the researchers also included the governance indicators such as government effectiveness and regulatory quality as control variables. The results show that both governance indicators have positive impact on HD in short run and long run. The governance positively and significantly affects HDI in developing economies.

Post-estimation analysis shows that Arellano-Bond test of autocorrelation used in GMM methodology are AR(1) and AR(2) tests with the null hypothesis of no autocorrelation show that AR(1) and AR(2) have p-value of 5.05e-07 and 0.0602 respectively. The AR(1) test rejects the null hypothesis at 0.05 level of significance. The AR(1) should reject the null hypothesis for the validity of GMM results (Arellano & Bond, 1991). Whereas the AR(2) test could not accept the hypothesis which corroborates to the econometric theory. So both AR(1) and AR(2) test confirm the validity of estimates of the system GMM. Hansen test validates the consistency of the GMM estimates depending on the validity of IVs. Hansen test tests the $H_0$ of the overall validity of the instruments used in the estimations. The Hansen test has the p-value of 0.498, which indicates the robustness of the IVs in the estimation process.
Table 4. Estimates of HDI-FCI Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Short Run Coefficients</th>
<th>Long Run Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagged HDI (L.HDI)</td>
<td>0.3132*** (0.0001)</td>
<td>-</td>
</tr>
<tr>
<td>Foreign Direct Investment (FDI)</td>
<td>0.01513*** (0.000)</td>
<td>0.0220*** (0.0000)</td>
</tr>
<tr>
<td>Remittances (RMT)</td>
<td>0.00424*** (0.000)</td>
<td>0.00616*** (0.0000)</td>
</tr>
<tr>
<td>Official Development Assistance (ODA)</td>
<td>-0.00661*** (0.0000)</td>
<td>-0.00962*** (0.0000)</td>
</tr>
<tr>
<td>GDP per capita (GDPC)</td>
<td>0.01265*** (0.0000)</td>
<td>0.01843*** (0.0000)</td>
</tr>
<tr>
<td>RQE</td>
<td>0.02526*** (0.0000)</td>
<td>0.03679*** (0.0000)</td>
</tr>
<tr>
<td>GEE</td>
<td>0.00799*** (0.0000)</td>
<td>0.01164*** (0.0000)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.38412*** (0.0007)</td>
<td>0.55931*** (0.0000)</td>
</tr>
</tbody>
</table>

Observations 1,195  
Number of C_ID 70  
ar1p 5.05e-07  
ar2p 0.0602  
hansenp 0.498  
j 78

Note: p-values in parentheses, $j$ = number of instruments, $k$ = no. of groups  
* p<0.1, ** p<0.05, *** p<0.01

Results and Discussions

The findings of the current study are opposite to that in (Mbang, 2022) which concluded a negative impact of FDI on human development in Cameroon. According to Mbang (2022), the negative impact of FDI on HDI might be due to the discrepancy and difficulty to define and calculate the HDI in the less developed economies. However, the findings in (Mbang, 2022) may be generalized to all developing economies. As the current study contains a comprehensive data of 71 development economies from 2001 to 2019. Therefore, the positive impact of remittances on HD finds support from the theoretical and empirical literature. (Gökmenoğlu et al., 2018) is also of the opinion that FDI has its health and education outcomes. The authors revealed that FDI increases the school enrollment in long run. Moreover, FDI also have positive effects public health by reducing the life expectancy at birth.
Whereas, Sahoo & Sethi (2017) shows that with the increase in FDI inflows the public expenditure on education declines. The positive impact of workers’ remittances on HD supports the argument in the economic literature that the formers provides additional support to the recipient families and economies. The recipient economies use the remitted money on education of their kids. Moreover, such inflows also increase the financial cushion of the households and provides them freedom to choose. In addition to this, the results also support arguments that remittances incur benefits to non-migrant household members. Remittances enhance the benefit the long run benefits of migration through the channels of investment in human capital (Ustubici & Irdam, 2012). Increase in the latter increases the productivity and thereby income of the household. This results in human development in the economy. Yiheyis & Woldemariam (2020) believes that remittances are important sources of foreign exchange especially in developing economies. In another study, remittances and aid reduce child mortality. Which is also an indicator the reducing the child mortality is a way forward to achieve the objectives of human development.

The results show that net ODA in the sample of selected developing economies reduces HDI, which suggests that ODA has undesirable impact on HD in these countries. The health outcomes are also one of the major dimensions of human development in the recipient economies. However, the flows of aid towards healthcare services and health outcomes may be different in different economies. For instance, the health related aid flows are related to decreased disease mortality as concluded in (Hsiao & Emdin, 2015). However, some studies have shown no relationship between health aid and mortality rates (Wilson, 2011). But some studies showed significant association between health related aid and IMR (Mishra & Newhouse, 2009). One of the major streams of aid or official development assistance is directed towards the health sector mostly targeting infant mortality rate (IMR). However, mere infant mortality focused aid may not have positive impact
on IMR outcomes. For instance, White (2007) considering the specific health interventions in Bangladesh showed that health outcomes not specifically linked to health aid but former were mainly related to aid flows towards other sectors of the economy. This provides the strong reasons to believe that determinants of aid in developing economies should be provided broadly in other sectors rather than only health sector. This calls for aid flows to the projects focusing on education and literacy, female empowerment, safe water, infrastructure, electricity, and agricultural productivity that are likely to affect child health positively (Kotsadam et al., 2018). Yiheyis & Woldemariam (2020) also support the results in the current study. In their study, (Yiheyis & Woldemariam, 2020) show that HDI effect of ODA is affected by the GDP per capita, size and degree of instability of ODA inflows, and the quality of institutions.

However, the donor’s demands regarding the compliance of their funding conditions leave a litter room for the recipient governments to manoeuvre the directions of aid and it utilization according to the needs of the recipient economies (Green & Curtis, 2005). The negative impact of foreign aid on HD in developing economies may be due to the fact that the ODA may negatively affect the economic policy uncertainty (Okoyeuzu & Kalu, 2022). That may hamper ODA flows may create uncertainty in aid flows that in turn have consequences of development trajectory of the recipient economies. The negative impact of aid on human development in the current analysis is supported by the findings in previous studies. The finding in these studies showed diverse views on aid effectiveness. Finding in (Adedokun, 2017; Bilbao-Ubillos, 2012; Boone, 1996; Kosack, 2003; P. Mosley & Hudson, 1987) challenged the impact of aid in recipient economies. According to these studies, the aid flows have tendency to create inefficiencies, increase the government size, and decrease the general progress for the people in poor and developing economies such as in SSA especially. In another study, Akinbode & Bolarinwa (2020) showed positive impact of foreign aid
on human development measured by HDI however, the results were found to insignificant. It implied that foreign aid did not affect the human development. This findings corroborated with the findings in (Boone, 1996) that foreign aid did not affect development. In the same study, the authors argued that even the interaction of foreign aid with government effectiveness and/or its interaction with corruption index was significant. However, the corruption was revealed to significant and negative impact on human development. This implied that corruption significantly hampered human development in SSA. It strengthened the reason that embezzlement due to the high levels of corruption while spending money and resources in development projects reduces the human development.

In addition, the studies also conclude that, owing to their incompetence to capitalize in human capital, aid has not been productive in developing economies due to poor decision making in utilization of aid. But some studies such as (Lee et al., 2019; Loxley & Sackey, 2008; Yogo, 2017) has different opinion and show that aid has positive impact in the economy as it helps in creating jobs, increases access to education, generates income, and increase the living standards in the recipient economies. The positive impact of economic growth on HD in developing economies is a good sign. It points out that the developing economies should promulgate the strategies to stimulate the economic growth to achieve the objectives of SDGs such as human development. Positive impact of GDP on human development is also supported by the other studies. For instance, Omar (2020) points out that economic growth is a necessary condition for HD though still it may not be the sufficient condition to achieve HD goals. In addition, the authors also shed lights on the factors, which affect the economic growth and human development relationship. The accumulation of human capital consequent upon investment in healthcare, education, and training skills affects the growth-human development linkage. Moreover, the opportunities for individuals to economic
development are important. It is important how the individuals in the economic find opportunities to benefit from the increased growth and how they could play their role in HD (Omar, 2020). Some empirical studies showed negative impact of growth on human development measured by the per capita government expenditure on education (Sahoo & Sethi, 2017). Human developing increasing impact of governance indicators implies that governments in developing economies should focus on increase in government effectiveness and their regulatory authority in productively utilization of FCIs for human development. The results of the study are in agreement with that in (Sarpong & Bein, 2021) that better quality of government institutions are productive in stimulating sustainability in economic, social, and environmental development.

**Conclusion and Policy Implications**

Since the FCIs have increased unprecedentedly in the modern globalized economies of the world. These financial flows have been contributing to the growth and development of the economies especially in the developing world. The global efforts are underway to achieve the objectives of SDGs set in the 2030 global development Agenda. The governments especially in the capital-deficient economies have been doing their best to attract FCIs to stimulate economic growth and development. This chapter focused on the analysis of the impact of FCIs – FDI, workers’ remittance, and ODA. Moreover, it also considered the GDP per capita as economy size, government effectiveness and regulatory effectiveness showing measures of good governance as control variables. System GMM estimations on a panel data of 71 economies from 2001 to 2019 have shown positive and statistically robust impact of FDI and remittances on HD in sample countries. ODA has found to have negative impact on HD. The GDP per capita, and governance indicators have positive and significant impact on human development. The estimated model are statistically robust as all of the diagnostics confirm the robustness.
The empirical analysis in the present study reveals positive impact of remittances on HD in developing economies. However, not every country is likely to equally benefit from the remittances sent by the migrants to their country of their origin. However, the governments should frame out and introduce some strategies or policies to ensure and maximize the socio-economic benefits of remittances. There may be number of policy options that governments and policy makers should consider. The governments should improve the investment environment in their economies. For this purpose to serve, the government should incentivize the savings of the migrant workers abroad. In this regard, the governments could introduce some small-denominated treasury bonds so that the migrant workers’ saving is increased the saved earning abroad is sent back to their families in the country of origin. The governments especially characterized as agrarian economies should direct the inflows of remittances in agriculture sector. These flows to agriculture sector would help in improving the available agricultural technology making the agriculture sector more productive. This would help in creating new job opportunities and increased levels of income thereby opening the avenues toward the objectives of human development.

The required information and education of the households to manage the remittances is indispensable for the productive use of remittances in the economy. The governments and policy makers should enhance the information, education, and capacity of the remittance receiver household members for productive and efficient management of the remittances. It is also important to note that remittances should be treated as auxiliary financial resources rather that substitute for public expenditure in the economy. It is more likely that economy with robust migration and higher levels of remittances, the government might fall in trap by considering remittances as final means of development.
The remittances play pivotal role in the recipient economies if such financial flows are invested in productive activity. For this purpose to serve the government should increase public expenditure to public healthcare, education and training whereas the strategies should be introduced to direct the remittances flows to contribute to the development. The remittance flows should be used to invest in labour-intensive industries or sectors to increase production. In addition, the results also showed that the governance indicators also play positive role in human development. Therefore, the good governance approach could be a successful strategy to take productive advantage of workers’ remittances for HD. This could be carried out to attract the remittances through the official channels. Comprehensive strategies should be formulated and pursued to increase the easier migration regime along with the increased investment opportunities for migrants’ remittances. Since the official development assistance has been found to have negative impact on HD in developing economies, the governments in these economies should increase their domestic capacity and should drive towards self-reliance rather than increasing their reliance on foreign aid. The results of the study imply that the good governance could be productive in positive role of foreign aid for human development. However, it is also notable that the governments should increase the governance effectiveness and regulatory quality to eliminate the potential of corruption in utilization of foreign financial resources such as foreign aid into development projects such as hospitals, educational institutions constructions, infrastructure development, and development and maintaining of the stable power supply to stimulate development in the economy. The positive impact of governance indicators imply that the governments should promulgate the policies and regulations to strengthen the institutions. The government should enhance the capacity and capability of the institutions. The governments should digitalize the institutions and the economy to better regulate and manage the projects funded by the FCIs.
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