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Effects of Foreign Direct Investment Inflows on Economic Growth and Human Capital in VISTA Countries

Leward Jeke,[a] Sandisiwe Matitiba,[b] and Richard Apau[c]

Abstract: *This study examines the effect of foreign direct investment (FDI) on the economic growth and human capital of VISTA (Vietnam, Indonesia, South Africa, Turkey, and Argentina) countries. Using time series data spanning from 1990 to 2017, the study employs the autoregressive distributed lag (ARDL) technique to analyse the short and long-run relationships between the interacting variables. The analysis finds a long-run relationship between economic growth, FDI, trade openness, capital formation, primary school enrolment, and inflation over the sampled period. Specifically, FDI drives the direction of growth of VISTA countries' economies, where it is positive for Indonesia but negative for the rest of the countries in the sample. This implies that optimisation of the benefits of FDI flows is dependent on country-specific and systemic characteristics, where economies with sophisticated financial structures benefit positively compared to less sophisticated economies. In addition, the results indicate that FDI has a long-run positive impact on human capital in most VISTA countries, except for South Africa and Turkey, while it has shown a short-run negative effect on human capital in Vietnam. Policy initiatives should be focused on addressing systemic inefficiencies to optimise the benefits of FDI inflows on economic growth and human capital development.*

Keywords: Economic growth; Human capital; FDI; VISTA countries; ARDL model
JEL Classification: E00, E22, E24

[a] Department of Economics, Nelson Mandela University, Port Elizabeth, South Africa. *Email: leward.jeke@mandela.ac.za*. ORCID ID: 0000-0002-8145-4324
[b] Department of Economics, Nelson Mandela University, Port Elizabeth, South Africa. *Email: s215150988@mandela.ac.za.*
[c] Corresponding author. Department of Economics, Nelson Mandela University, Port Elizabeth, South Africa. *Email: owura.apau@yahoo.com.* ORCID ID: 0000-0003-2712-3169

1. Introduction

The flow of foreign direct investment into emerging economies continues to assume ascending trajectories, following the implementation of trade liberalisation policies around the world (Bose & Kohli, 2018). This has resulted in the elimination of restrictive investment regulations, which allows for fluidity of liquidity across international borders. In the span of five years, between 2015 and 2019, the volume of capital flows into emerging economies increased from USD671.47 million to USD680.23 million (UNCTAD, 2021). In 2015, the influx of FDI to emerging markets stood at USD671.47 million but declined by 2.23% at the end of 2016 to USD656.47 million. The volume of investor capital in emerging markets recovered from the previous year's decline and rose by 3.97% to USD682.53 million in 2017. This declined by 0.65% to USD678.08 million the following year, after which it rose again by 0.32% to USD680.23 million in 2019 (UNCTAD, 2021).

FDI is generally expected to exert a significant positive impact on the economic and human development of emerging markets, particularly for the VISTA countries—namely Vietnam, Indonesia, South Africa, Turkey, and Argentina. This is because these emerging economies have been major beneficiaries of FDI flows over the specified period. However, the macroeconomic and human development outlooks of VISTA countries continue to be on a declining trajectory. These emerging markets exhibit identical traits in terms of labour skill level, unemployment, wealth and income distribution levels, and general standard of living. These dynamics imply that the effect of FDI flows on economic growth and human capital is largely dependent on country-specific characteristics, in terms of financial system robustness and trends in socio-economic indicators, such as unemployment and access to basic social amenities.

The unemployment rate in South Africa continues to be on the rise, standing at 33.9% at the end of Q2 2022, while the gross domestic product rate declined within the same period by 0.7% (Statssa, 2022). These statistics reflect the growing levels of social inequality among various segments of the population, relative to basic social amenities, like a regular supply of water, electricity, and food. Turkey's unemployment rate was 9.60% as of the end of August 2022, dropping from 10% the month prior, and its GDP contracted because of minimal FDI inflow because of the uncertainties surrounding a

structural adjustment framework in the financial sector (CEIC Data, 2022; OECD, 2018). Argentina, on the other hand, is ranked the fourth-highest inward FDI stock in the region but has been experiencing high levels of corruption (Guiterrez, 2015). Poverty is still a major challenge in the country, affecting one-third of the population, coupled with insufficient skills, low labour income, poor access to quality public services, and informal employment (OECD, 2017). This evidence shows the prevalence of similar developmental challenges across the various VISTA economies which requires strategic policy interventions.

Managers of these economies have implemented significant deregulation policies as a means of attracting major foreign investors to boost economic growth. VISTA countries share similar characteristics, such as a diverse and dynamic economy and a young growing labour force (Uyar & Gokce, 2017). The combined economies of the countries are considered an important market structure for a paradigm shift in the global context relative to wealth distribution across advanced and developing nations because of their potential for rapid growth (Uyar & Gokce, 2017). Prior studies of the effects of FDI on macroeconomic dynamics are generally focused on the economies of developing countries. Also, the analyses of FDI effects on emerging markets do not consider the unique characteristics of the countries involved. However, VISTA countries exhibit distinct characteristics that may influence the direction of FDI impact; and given that the literature is limited in terms of the dynamics between FDI and economic growth, further investigation is warranted.

Moreover, the existing literature on the influence of FDI on the macroeconomic dynamics of VISTA countries does not capture its impact on human capital, although investors' trading decisions may determine the level of human resource development, especially in emerging economies (Ali & Mingque, 2018; Nguyen et al., 2018). As such, this study analyses the effects of FDI on the economic growth of VISTA countries while accounting for its effect on human capital. The findings of the study will serve as important reference to drive policy regarding financial market regulations and trade liberalisation, thus making a significant contribution to the literature on FDI growth dynamics.

The remainder of the paper is organised as follows. Section 2 presents the literature, Section 3 details the data sources and methodology, Section 4 discusses the results, and Section 5 concludes with policy recommendations.

2. Literature review

2.1 Theoretical framework

FDI continues to remain an important source of foreign capital for emerging market economies, including VISTA countries, where its effect is visible through the direction of macroeconomic dynamics and human development metrics. Emerging economies are thus expected to reflect the benefits of sustained FDI inflow in terms of improved standards in education, technology, infrastructure, and health (OECD, 2002). This anticipation of FDI flow has culminated in the emergence of different theories to explain the dynamic relationship between FDI, macroeconomic trends, and social development across various countries in different regions of the world. Based on the literature, the Harrod-Domar model and endogenous growth theories are suited for explaining the effect of FDI on economic growth and human capital.

Explanations posited under the Harrod-Domar theory (Tarasov & Tarasova, 2019) suggest that increasing investment not only promotes total demand, which leads to increased national income, but includes total supply, which leads to increased productivity. In this way, this theory is applicable in holistic development planning about the determination of the requisite resources for the achievement of high growth and is useful in establishing frameworks for the inclusion of technology in national development strategy (Chetty & Pradhan, 2020). Furthermore, this theory demonstrates that financial markets are characterised by unstable equilibrium growth, thus requiring strategic policy interventions to engender sustained growth momentum (Hotamisli, 2009). Capital flows to emerging economies are expected to stimulate growth through increased savings and high productivity. However, most emerging economies are unable to accumulate savings because they largely depend on external funding to finance domestic development projects (Thong & Hao, 2019). As such, the inclusion of technological innovation in critical sectors of the economy is essential to ensure efficiency and rapidity in production and service delivery while enabling human capital development.

Based on the preceding discussion, the endogenous growth theory is likewise relevant in explaining the dynamics between FDI, economic growth, and human capital development. According to Jones (2019), the

theory implies that technological change is the result of researchers and entrepreneurs who respond to economic incentives. Knowledge is derived from human capital, while knowledge drives technical renovation and improves quality of life. As a result, investment in knowledge exerts a long-run positive impact on economic growth as the flow of new technology from advanced economies to their developing and emerging counterparts support employment creation and labour skill enhancement. Essentially, the theory asserts the importance of improving productivity to obtain faster innovation and more investment in human capital. In this context, the study analyses the dynamics of FDI within the framework of endogenous growth theory to provide explanations for its effect on the economies and human capital of VISTA countries.

2.2 Review of empirical studies

Kaulihowa and Adjasi's (2019) nonlinear analysis of the interaction between FDI and human capital using a generalised method of moments (GMM) model show that FDI inflows constitute a major financing source for the sustenance of human resource development and skill training programmes of host countries, through increased primary and tertiary education enrolment and learning facility provision. This implies that an increase in the inflow of FDI promotes the transfer and development of critical knowledge and technical skills necessary for human capital improvement and economic growth. Similarly, findings from Elboiashi (2015) on the effect of FDI on economic growth vis-à-vis host country characteristics suggest that FDI inflows in general exert a positive impact on economic growth and sustainable development. The analysis shows that specific macroeconomic dynamics, including human capital, infrastructure development, trade openness, and institutional quality drive positive influence in the interaction between FDI and economic growth and thus, represent important determinants of macroeconomic stability.

However, evidence from Awolusi and Adeyeye (2016) does not support the results of Elboishi (2015), which posit a significant effect of increased flow of FDI on host economies. Through ordinary least squares (OLS) and GMM models, Awulusi and Adeyeye (2016) find that the influence of FDI on the direction of growth of African countries is generally insignificant. Nonetheless, the impact of FDI is significant and positive only on the

economy of South Africa, which implies that emerging and advanced countries exhibit significant degrees of responsiveness to the impact of FDI than developing countries. South Africa is recognised as an emerging economy and has relatively more advanced infrastructural systems compared to its African counterparts.

In a related study of the relationship between FDI inflow and GDP growth of Turkey, Temiz and Gökmen (2013) apply the Johnsen cointegration test and Granger causality analysis. Their study documents evidence like the results of Awulusi and Adeyeye (2016), which imply that there is no significant relationship between FDI and GDP (a proxy for economic growth). Temiz and Gökmen's (2013) results thus run contrary to the FDI implications for South Africa, which, like Turkey, is also considered an emerging economy. The researchers find that the insignificant impact of FDI on economic growth can be explained by its mode of entry into host economies, which is mainly through mergers and acquisitions. For the most part, international business takeovers through mergers and acquisitions do not demonstrate commitment towards the improvement of offshore acquired firms' existing facilities and technology. In this way, the ultimate objective of foreign investors to expand business operations on the wheels of enhanced technology is hampered, as outmoded technology and managerial strategies cannot engender the achievement of global competitiveness.

In analysing the relationship between FDI, energy consumption, and economic growth in Argentina, Mavikela et al. (2018) employ the vector error correction model (VECM) and autoregressive distributed lag (ARDL) bounds technique. The results suggest the existence of unidirectional causality in the relationship between FDI flow and energy consumption, while an interactive relationship exists between energy consumption and economic growth. This evidence indicates that the predictive influence of FDI on economic growth is limited if other macroeconomic variables are not accounted for. This is confirmed by Thanh et al. (2019), who investigate the role of economic institutions and economic openness in Vietnam using a system GMM model and find that the impact of FDI on economic growth is more significant when it is driven by trade openness, while a positive effect of each of the two variables on economic growth exists when they are analysed separately. Besides, economic institutions have significant influence on the interaction between FDI and economic growth while accounting for trade openness. In the above context, there exist uncertainties surrounding

the direction of impact in the relationship between FDI, human capital, and economic growth, which calls for further analysis.

3. Methodology

3.1 Data sources and sampling

This study employs time series data spanning from 1990 to 2017 of VISTA countries' FDI, human capital, and economic growth (proxied by GDP), trade openness, inflation, capital formation, and labour data are sourced from the website of the World Bank, while primary school enrolment (a proxy for human capital) data is obtained from the websites of the United Nations Educational Scientific and Cultural Organisation (UNESCO) and the UNESCO Institute for Statistics (UIS). Table 1 provides the variables and their definitions.

Table 1: Definition of Variables

Variable	Definition
FDI	This variable denotes foreign direct investment (FDI). It is measured as the flow of foreign capital and business into a foreign country
Economic growth	This refers to the expansion or contraction in the national productivity of a country. It is proxied by the value of the gross domestic product (GDP) and the base year of this variable for the analysis is 1990
Trade openness	This is defined as the ratio of a country's exports and imports (combined) over GDP. This ratio shows the country's level of receptiveness to international trade
Inflation	This is a measurement of the consumer price index (CPI) of the economy which shows the rate of increase in the prices of general goods and services in the country
Capital formation	This refers to the mobilisation of funds and tangible assets by individuals or corporate organisations for investment and business startup
Labour	This is defined as the rate of employment of persons of active age and employability segment of the country
Human capital	This is measured by the rate of primary school enrolment in a country. This shows the level of literacy and human resource development of the country's population

3.2 Empirical model

Following Nkoro and Uko (2016), this study conducts a co-integration analysis to test the interactive responses between economic growth FDI and human capital using an ARDL model. The co-integration technique is applied to determine the long-run relationship between series that are non-stationary. From the literature, the application of an ARDL approach to co-integration gives a realistic and efficient estimate and helps in identifying the co-integrating vector(s) (Nkoro & Uko, 2016; Pesaran et al., 2001; Pesaran & Shin, 1999). The ARDL has several advantages, such as its applicability regardless of the stationarity properties. It applies irrespective of whether the regressors are purely I(1), purely I(0), or mutually co-integrated as opposed to the Engle-Granger and Johansen co-integration tests, which require that all the variables be integrated of order 1 (Moyo et al., 2017).

Furthermore, this technique is suitable for small or finite samples, which does not apply to the Johansen procedure (Makhetha & Rantaoleng, 2017). The adopted ARDL for the co-integration analysis of FDI, economic growth, human capital, and control variables is represented below. The first equation is the ARDL formulation of the co-integration relationship between economic growth and FDI, followed by the co-integration equation for the relationship between human capital and FDI:

$$\begin{aligned}\Delta GDP_t = {} & \alpha_1 + \alpha_T T + \alpha_{GDP} GDP_{t-1} + \alpha_{FDI} FDI_{t-1} + \alpha_{TO} LTO_{t-1} + \alpha_K LK_{t-1} \\ & + \alpha_{PSE} LPSE_{t-1} + \alpha_{INFL} INFL_{t-1} + \alpha_{LL} LL_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta GDP_{t-i} \\ & + \sum_{J=0}^{q} \alpha_j \Delta FDI_{t-j} + \sum_{k=0}^{r} \alpha_k \Delta LTO_{t-k} + \sum_{l=O}^{s} \alpha_l \Delta LK_{t-l} \\ & + \sum_{m=0}^{t} \alpha_m LPSE_{t-m} + \sum_{n=0}^{u} \alpha_n INFL_{t-n} + \sum_{o=0}^{v} \alpha_o LL_{t-0} + \varepsilon_{I_t}\end{aligned} \tag{1}$$

$$\begin{aligned}\Delta PSE_t = {} & \alpha_1 + \alpha_T T + \alpha_{PSE} PSE_{t-1} + \alpha_{FDI} FDI_{t-1} + \alpha_{GDP} GDP_{t-1} + \alpha_{TO} LTO_{t-1} \\ & + \alpha_K LK_{t-1} + \alpha_{INFL} INFL_{t-1} + \alpha_{LL} LL_{t-1} + \sum_{i=0}^{p} \alpha_i LPSE_{t-i} \\ & + \sum_{j=0}^{q} \alpha_j \Delta FDI_{t-j} + \sum_{k=1}^{r} \alpha_k \Delta GDP_{t-k} + \sum_{l=0}^{s} \alpha_l \Delta LTO_{t-l} \\ & + \sum_{m=O}^{t} \alpha_m \Delta LK_{t-m} + \sum_{n=0}^{u} \alpha_n INFL_{t-n} + \sum_{o=0}^{v} \alpha_o LL_{t-0} + \varepsilon_{I_t}\end{aligned} \quad (2)$$

Where Δ is defined as the first difference operator; T is the time trend; GDP_t is the GDP per capita; FDI_t is FDI; $LnTO_t$ is the natural logarithm of trade openness; LnK_t is the natural logarithm of capital formation; $LnPSE_t$ is the natural logarithm of primary school enrolment; $INFL_t$ is inflation; and LL_t is the natural logarithm of labour. It is assumed that the residuals are normally distributed and white noise.

This study employs the augmented Dicky-Fuller (ADF), Phillips and Perron (PP), and the Dickey-Fuller generalised least squares (DF-GLS) techniques to test the stationarity of variables employed in the analysis, to avoid spurious regression results (Makhethe & Rantaoleng, 2017). Table 2 presents the unit root results of all variables for all sampled countries. As can be observed from the tables, some of the series are stationary at levels (I(0)) while others are stationary at first difference I(1), implying the non-existence of unit root issues in the variables used for the analysis.

Table 2: Unit Root Test Results

	ADF		**PP**		**DF-GLS**	
	I (0)	**I (1)**	**I (0)**	**I (1)**	**I (0)**	**I (1)**
			Vietnam			
GDP	-2.46	-4.46***	-2.59	-4.43***	-2.18**	-4.27***
FDI	-2.62	-4.75***	-2.57	-4.75***	-2.27**	-4.72***
TO	-0.85	-4.30***	0.22	-11.34***	-0.56	-0.26
K	-4.66*	-3.30**	-4.20***	-3.19**	-1.63*	-2.81***
PSE	-0.25	-2.50	-0.51	-3.62**	-0.50	-2.73***
INF	-4.44***	-0.65	-4.20***	-1.80	-1.40	-0.00
L	-3.48**	-2.08	-2.89*	-2.07	-0.84	-2.08**

	ADF		PP		DF-GLS	
	I (0)	**I (1)**	**I (0)**	**I (1)**	**I (0)**	**I (1)**
			Indonesia			
GDP	-2.30	-5.75***	-2.25	-5.92***	-2.34**	-4.97***
FDI	-3.71**	-6.37***	-3.68**	-11.65***	-3.67***	-6.50***
TO	-2.07	-7.32***	-2.07	-8.44***	-2.14**	-7.31***
K	-1.18	-4.35***	-1.38	-4.34***	-1.15	-4.38***
PSE	-2.31	-6.38***	-2.31	-7.19***	-1.24	-5.83***
INF	-4.45***	-8.61***	-4.45***	-15.20***	-4.49***	-8.79***
L	-2.56	-3.30**	-2.29	-3.18**	0.58	-2.82***
			South Africa			
GDP	-2.79*	-5.53***	-2.60	-6.23***	-2.47**	-5.59***
FDI	-4.55***	-6.16***	-4.54***	-16.71***	-4.18***	-6.29***
TO	-1.51	-5.55***	-1.45	-5.87***	-1.22	-4.77***
K	-1.84	-4.30***	-1.84	-4.23***	-1.85*	-4.33***
PSE	-1.40	-3.66***	-1.51	-3.58**	-2.06**	-3.53***
INF	-2.56	-7.87***	-2.52	-7.79***	-1.29	-8.03***
L	-0.83	-2.72*	-1.51	-2.75*	0.38	-2.63**
			Turkey			
GDP	-5.45*	-8.87***	-5.45***	-19.00***	-4.95***	-7.57***
FDI	-2.02	-4.58***	-2.02	-4.57***	-1.94*	-4.68***
TO	-2.33	-3.96**	-2.38	-4.89***	-1.51	-3.28***
K	-2.29	-7.86***	-2.10	-7.95***	-2.36**	-7.69***
PSE	-1.16	-3.33**	-1.34	-3.64**	-1.64*	-3.82***
INF	-1.60	-7.10***	-1.37	-7.64***	-1.60	-7.22***
L	1.94	-2.15	2.49	-4.92***	-1.38	-2.35**
			Argentina			
GDP	-4.17***	-7.10***	-4.17***	-15.97***	-3.93***	-0.09
FDI	-4.06***	-7.43***	-4.06***	-12.65***	-3.97***	-7.55***
TO	-1.74	-5.39***	-1.73	-5.39***	-1.28	-5.19***
K	-2.84*	-4.59***	-2.94*	-4.73***	-2.43**	-4.61***
PSE	-1.71	-0.44	-1.80	-4.21***	-1.46	-1.45
INF	-2.30	-157.99***	-90.27***	-269.50***	-0.33	-0.05
L	-2.38	-4.63***	-2.68*	-4.63***	0.89	-4.42***

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

4. Empirical results and discussion

4.1 Descriptive analysis

Table 3 presents the descriptive statistics of variables employed in the analysis. From the table, Vietnam reports the highest average economic growth (6.77%) among VISTA countries, followed by Indonesia at 4.93%, Turkey at 4.79%, Argentina at 3.02%, and South Africa at 2.35%. Vietnam reports the highest average FDI inflows as a percentage of GDP at 5.94% followed by Argentina at 2.22%, South Africa at 1.22%, Turkey at 1.19%, and Indonesia at 1.18%. The Jarque-Bera test is used to determine whether the series is normally distributed or not. The null hypothesis of the normal distribution for FDI is rejected at 5% and 1% levels of significance for all countries except for Vietnam.

Table 3: Descriptive Statistics

		GDP	FDI	TO	K	PE	INFL	L
Vietnam	Mean	6.77	5.94	2.08	1.45	2.02	13.51	7.65
	Std. Dev.	1.29	2.28	0.14	0.01	0.02	15.03	0.08
	Skewness	0.60	0.82	-0.32	-1.52	-0.08	2.50	-0.20
	Jarque-Bera	1.95	3.14	1.86	17.04	0.11	83.75	1..92
	Probability	0.38	0.21	0.39	0.00	0.95	0.00	0.39
	Observations	28	28	28	28	28	28	28
Indonesia	Mean	4.93	1.18	1.73	1.46	2.03	12.18	8.00
	Std. Dev.	3.82	1.43	0.08	0.07	0.01	13.29	0.07
	Skewness	-3.95	-1.15	0.70	-0.52	-0.07	3.98	-0.28
	Jarque-Bera	381.51	6.88	5.95	2.56	0.03	393.52	1.36
	Probability	0.00	0.03	0.05	0.28	0.98	0.00	0.51
	Observations	28	28	28	28	28	28	28
South Africa	Mean	2.35	1.22	1.72	1.27	2.02	8.38	7.24
	Std. Dev.	2.02	1.32	0.08	0.04	0.01	3.11	0.07
	Skewness	-0.49	1.99	-0.35	-0.13	0.13	1.18	-0.29
	Jarque-Bera	1.22	36.35	1.40	0.35	0.52	6.56	1.33
	Probability	0.54	0.00	0.50	0.84	0.77	0.04	0.51
	Observations	28	28	28	28	25	28	28

		GDP	FDI	TO	K	PE	INFL	L
Turkey	Mean	4.79	1.19	1.65	1.41	2.01	38.48	7.37
	Std. Dev.	4.66	0.92	0.07	0.06	0.01	37.09	0.06
	Skewness	-1.07	1.11	-1.13	-0.47	-1.07	1.02	0.86
	Jarque-Bera	5.41	6.08	6.02	1.17	9.03	5.00	3.61
	Probability	0.07	0.05	0.05	0.56	0.01	0.08	0.16
	Observations	28	28	28	28	26	28	28
Argentina	Mean	3.02	2.22	1.42	1.24	2.05	92.68	7.23
	Std. Dev.	5.69	1.43	0.15	0.06	0.01	390.08	0.05
	Skewness	-0.58	3.01	-0.22	-1.42	-0.37	4.97	-0.33
	Jarque-Bera	2.07	187.31	1.62	17.30	1.60	721.04	1.70
	Probability	0.35	0.00	0.45	0.00	0.45	0.00	0.43
	Observations	28	28	28	28	25	28	28

4.2 Correlation analysis

Table 4 presents the correlation matrix of variables employed in the analysis for all sampled countries. The results in Table 3 show that among the countries sampled, Argentina is the only country that reports a negative relationship between economic growth (GDP) and FDI, with a value of at value of -0.03. This confirms the theoretical expectations that FDI supports economic growth. This evidence is consistent with Sunde (2017), who argues that the effect of FDI on economic growth varies from country to country as different countries exhibit different characteristics in terms of market regulations and trade policies.

Table 4: Correlation Matrix

		GDP	FDI	TO	K	PE	INFL	L
Vietnam	GDP	1.00	0.45	-0.44	0.03	0.42	-0.01	-0.41
	FDI	0.45	1.00	0.10	0.21	0.28	-0.14	-0.06
	TO	-0.44	-0.10	1.00	0.54	-0.73	-0.56	0.98
	K	0.03	0.21	0.54	1.00	-0.21	-0.70	0.57
	PE	0.42	0.28	-0.73	-0.21	1.00	0.07	-0.70
	INFL	-0.01	-0.14	-0.56	-0.70	0.07	1.00	-0.58
	L	-0.41	-0.06	0.98	0.57	-0.70	-0.58	1.00

		GDP	FDI	TO	K	PE	INFL	L
Indonesia	GDP	1.00	0.38	-0.61	0.23	-0.05	-0.87	-0.06
	FDI	0.38	1.00	-0.52	0.70	-0.27	-0.31	0.21
	TO	-0.61	-0.52	1.00	-0.67	0.44	0.74	-0.43
	K	0.23	0.70	-0.67	1.00	-0.19	-0.25	0.23
	PE	-0.05	-0.27	0.44	-0.19	1.00	0.22	-0.85
	INFL	-0.87	-0.31	0.74	-0.25	0.22	1.00	-0.20
	L	-0.06	0.21	-0.43	0.23	-0.85	-0.20	1.00
South Africa	GDP	1.00	0.13	0.29	-0.14	0.13	-0.32	0.15
	FDI	0.13	1.00	0.36	-0.03	-0.10	-0.16	0.17
	TO	0.29	0.36	1.00	0.49	-0.40	-0.58	0.88
	K	-0.14	-0.03	0.49	1.00	0.14	-0.14	0.41
	PE	0.13	-0.10	-0.40	0.14	1.00	0.23	-0.46
	INFL	-0.32	-0.16	-0.58	-0.14	0.23	1.00	-0.78
	L	0.15	0.17	0.88	0.41	-0.46	-0.78	1.00
Turkey	GDP	1.00	0.05	0.13	0.62	-0.03	-0.26	0.13
	FDI	0.05	1.00	0.48	0.55	-0.07	-0.65	0.38
	TO	0.13	0.48	1.00	0.40	-0.38	-0.53	0.64
	K	0.62	0.55	0.40	1.00	-0.34	-0.60	0.61
	PE	-0.03	-0.07	-0.38	-0.34	1.00	0.04	-0.35
	INFL	-0.26	-0.65	-0.53	-0.60	0.04	1.00	-0.69
	L	0.13	0.38	0.64	0.61	-0.35	-0.69	1.00
Argentina	GDP	1.00	-0.03	0.14	0.55	-0.05	-0.19	-0.06
	FDI	-0.03	1.00	-0.01	0.23	0.17	-0.16	-0.12
	TO	0.14	-0.01	1.00	0.00	0.75	-0.41	0.61
	K	0.55	0.23	0.00	1.00	-0.06	-0.32	0.15
	PE	-0.05	0.17	0.75	-0.06	1.00	-0.42	0.37
	INFL	-0.19	-0.16	-0.41	-0.32	-0.42	1.00	-0.47
	L	-0.06	-0.12	0.61	0.15	0.37	-0.47	1.00

From the table, trade openness (OT) reports a negative correlation with economic growth for Vietnam and Indonesia. Capital formation in South Africa is negatively correlated with economic growth. Primary school enrolment is negatively correlated to economic growth in Indonesia, Turkey, and Argentina. However, in South Africa and Vietnam, primary school enrolment is positively correlated with economic growth. This result is expected, and it is consistent with Kaulihowa and Adjasi (2019), which document a positive relationship between human capital and economic

growth. Inflation reports a negative correlation with growth across all sampled countries. For inflation, all countries are negatively correlated to economic growth. This implies that an increase in inflation deteriorates macroeconomic stability as explained by Vo et al. (2019). Lastly, labour is negatively correlated to economic growth for Vietnam, Indonesia, and Argentina, while it reports positive correlations for South Africa and Turkey.

4.3 Co-integration test results

Table 5 reports the results of the ARDL bound test for VISTA countries. The analysis involves the testing of the null hypothesis of the existence of no co-integration between the two variables. As can be observed from the table, the F-statistic for VISTA countries are greater than the upper and lower critical bounds. As such, the null hypothesis is rejected, implying that there is co-integration for VISTA countries. These results are consistent with Su and Liu (2016), which find a positive relationship between GDP and FDI rate in China, and Choi and Baek (2017), who note that there exists a long-run relationship between FDI and economic growth. The results show that there is evidence that there is a long-run relationship between human capital and FDI in Vietnam, Indonesia, and Argentina. The ARDL test indicates no long-run relationship between human capital and FDI in South Africa and Turkey because the F-statistics is less than the lower bound critical value for both countries.

Table 5: ARDL Bounds Test Results

Country	F-statistic	Conclusion
Vietnam		
F_{GDP} (GPD/FDI, TO, K, PSE, INFL, L)	5.39	Co-integration
F_{FDI} (FDI/GDP, TO, K, PSE, INFL, L)	4.72	Co-integration
F_{TO} (TO/GDP, FDI, K, PSE, INFL, L)	15.71	Co-integration
F_{K} (K/GDP, FDI, TO, PSE, INFL, L)	5.49	Co-integration
F_{PSE} (PSE/GDP, FDI, TO, K, INFL, L)	8.78	Co-integration
F_{INFL} (INFL/GDP, FDI, TO, K, PSE, L)	7.73	Co-integration
F_{L} (L/GDP, FDI, TO, K, PSE, INFL)	121.88	Co-integration

Country				F-statistic	Conclusion
Indonesia					
F_{GDP} (GPD/FDI, TO, K, PSE, INFL, L)				22.30	Co-integration
F_{FDI} (FDI/GDP, TO, K, PSE, INFL, L)				5.05	Co-integration
F_{TO} (TO/GDP, FDI, K, PSE, INFL, L)				5.44	Co-integration
F_{K} (K/GDP, FDI, TO, PSE, INFL, L)				9.75	Co-integration
F_{PSE} (PSE/GDP, FDI, TO, K, INFL, L)				4.99	Co-integration
F_{INFL} (INFL/GDP, FDI, TO, K, PSE, L)				41.68	Co-integration
F_{L} (L/GDP, FDI, TO, K, PSE, INFL)				6.45	Co-integration
South Africa					
F_{GDP} (GPD/FDI, TO, K, PSE, INFL, L)				10.57	Co-integration
F_{FDI} (FDI/GDP, TO, K, PSE, INFL, L)				5.20	Co-integration
F_{TO} (TO/GDP, FDI, K, PSE, INFL, L)				3.36	Co-integration **
F_{K} (K/GDP, FDI, TO, PSE, INFL, L)				6.05	Co-integration
F_{PSE} (PSE/GDP, FDI, TO, K, INFL, L)				2.38	Co-integration *
F_{INFL} (INFL/GDP, FDI, TO, K, PSE, L)				4.20	Co-integration
F_{L} (L/GDP, FDI, TO, K, PSE, INFL)				3.83	Co-integration **
Turkey					
F_{GDP} (GPD/FDI, TO, K, PSE, INFL, L)				33.43	Co-integration
F_{FDI} (FDI/GDP, TO, K, PSE, INFL, L)				3.49	Co-integration **
F_{TO} (TO/GDP, FDI, K, PSE, INFL, L)				3.06	Co-integration *
F_{K} (K/GDP, FDI, TO, PSE, INFL, L)				24.66	Co-integration
F_{PSE} (PSE/GDP, FDI, TO, K, INFL, L)				3.75	Co-integration **
F_{INFL} (INFL/GDP, FDI, TO, K, PSE, L)				4.65	Co-integration
F_{L} (L/GDP, FDI, TO, K, PSE, INFL)				3.17	Co-integration *
Argentina					
F_{GDP} (GPD/FDI, TO, K, PSE, INFL, L)				13.82	Co-integration
F_{FDI} (FDI/GDP, TO, K, PSE, INFL, L)				4.36	Co-integration
F_{TO} (TO/GDP, FDI, K, PSE, INFL, L)				5.36	Co-integration
F_{K} (K/GDP, FDI, TO, PSE, INFL, L)				9.62	Co-integration
F_{PSE} (PSE/GDP, FDI, TO, K, INFL, L)				5.48	Co-integration
F_{INFL} (INFL/GDP, FDI, TO, K, PSE, L)				4.17	Co-integration
F_{L} (L/GDP, FDI, TO, K, PSE, INFL)				4.02	Co-integration
K				6	
Critical values					
10%		**5%**		**1%**	
I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
1.99	2.94	2.27	3.28	2.88	3.99

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

4.4 The relationship between economic growth and FDI

Table 6 presents the short-run and long-run estimation results of the interaction between economic growth and FDI. As can be observed from the table, the error correction term is negative and significant at 1% for all VISTA countries. This supports the existence of long-term relationships among the variables, which implies a slow-paced adjustment to equilibrium for all sampled countries. The short-term deviations from the long-term equilibrium in Vietnam, Indonesia, South Africa, Turkey, and Argentina are corrected by -0.98%, -0.82%, -0.65%, -1.81%, and -1.12% respectively towards the long-term equilibrium. The short-run estimates show that FDI has a negative impact on economic growth in Vietnam, Turkey, and Argentina, while it reports a positive impact on economic growth in Indonesia. In South Africa, the effect of FDI on economic growth is significantly negative, which indicates that increases in FDI exert deteriorating impacts on economic growth. Similar evidence is documented by Sunde (2017).

Table 6: Results of Long- and Short-Run Relationships between GDP and FDI

Variables	Vietnam (1, 0, 2, 0, 2, 2, 2)	Indonesia (1, 0, 0, 0, 0, 0, 0, 0)	South Africa (1, 0, 1, 0, 1, 1, 1, 1)	Turkey (3, 0, 0, 0, 0, 0, 0, 0)	Argentina (1, 1, 1, 1, 0, 1, 1, 1)
Dependent variable: GDP					
Long run					
FDI	-0.09 (-1.00)	0.47 (1.14)	-1.98 (-2.00) *	-1.02 (-1.38)	-0.59 (-1.26)
TO	-32.74 (-2.81) **	-5.07 (-0.39)	22.58 (0.86)	5.88 (0.51)	16.27 (2.37) **
K	7.01 (1.80)	-12.12 (-0.93)	-31.73 (-1.87) *	55.18 (5.18) ***	42.48 (3.68) ***
PSE	-41.02 (-1.66)	-13.30 (-0.13)	-9.60 (-0.13)	58.61 (2.02) *	15.23 (0.24)
INF	0.01 (0.11)	-0.29 (-4.42) ***	-0.19 (-0.74)	-0.01 (-0.52)	-0.04 (-0.59)
L	26.48 (1.13)	-16.39 (-1.51)	-10.73 (-0.42)	-18.23 (-1.57)	-22.10 (-1.07)
Constant	-49.99 (-0.26)	192.71 (0.70)	108.05 (0.45)	-64.73 (-0.65)	56.73 (0.33)

Variables	Vietnam (1, 0, 2, 0, 2, 2, 2)	Indonesia (1, 0, 0, 0, 0, 0, 0, 0)	South Africa (1, 0, 1, 0, 1, 1, 1)	Turkey (3, 0, 0, 0, 0, 0, 0)	Argentina (1, 1, 1, 1, 0, 1, 1)
Dependent variable: GDP					
Short run					
Δ (GDP (-1))	-0.99 (-5.33) ***	-0.82 (-7.18) ***	-0.65 (-2.90) **	0.55 (2.13) **	-1.12 (-8.16) ***
Δ (FDI)	-0.09 (-1.05)	0.39 (1.10)	-0.64 (-2.34) **	-1.85 (-1.66)	-0.01 (-0.03)
Δ (TO)	21.77 (3.23) *	-4.14 (-0.40)	47.04 (3.38) **	10.66 (0.54)	18.15 (2.19) **
Δ (K)	6.93 (1.75)	-9.89 (-0.97)	-20.49 (-1.88) *	100.07 (6.84) ***	47.39 (2.77) **
Δ (PSE)	6.57 (0.41)	-10.85 (-0.13)	88.41 (1.90) *	106.29 (1.95) *	16.99 (0.24)
Δ(INF)	0.03 (1.42)	-0.24 (-5.29) ***	-0.12 (-0.72)	-0.02 (-0.54)	-0.05 (-0.60)
Δ(L)	-292.51 (-2.55) **	-13.38 (-1.42)	-205.49 (-2.68) **	-33.05 (-1.85) *	-24.66 (-1.05)
ECM (-1)	-0.98 (-8.56) ***	-0.82 (-15.62) ***	-0.65 (-7.60) ***	-1.81 (-11.41) ***	-1.12 (-13.04) ***
R-squared	0.91	0.86	0.83	0.82	0.92
DW-test	2.45	1.59	2.29	1.42	2.21

Short-run diagnostic test

Country	Normality	Serial correlation	Heteroscedasticity
Vietnam	1.49 [0.47]	2.35 [0.16]	0.60 [0.82]
Indonesia	2.47 [0.29]	0.64 [0.54]	0.91 [0.52]
South Africa	1.44 [0.49]	1.38 [0.30]	0.62 [0.77]
Turkey	1.73 [0.42]	1.18 [0.34]	0.77 [0.64]
Argentina	1.11 [0.58]	1.41 [0.28]	0.58 [0.81]

Notes: ***, **, and * indicate significance at 1%, 5%, and 10% levels of significance respectively. T-statistics values are in square brackets [ ], while p-values are in parentheses, ( ).

From the table, trade openness shows a significant positive impact on the economic growth of Vietnam, South Africa, and Argentina. This evidence suggests that increased trade liberalisation and market connectivity by these countries promote macroeconomic stability and enhanced productivity. This finding is consistent with Raghutla (2020), who documents a positive predictive influence of market openness on the economic growth of developing and emerging economies. Beyond trade openness, capital formation also exerts a predictive influence on economic growth. As seen in Table 6, capital formation exerts a significant negative impact on the economic growth of South Africa, whereas its effect on the macroeconomic trajectory of Turkey and Argentina is positive. Guru and Yadav (2019) explain that increases in individual and corporate savings activity promote investment activities that support job creation, enhanced productivity, and economic growth.

The table also shows that human capital has a significant positive effect on the economic growth of South Africa and Turkey. This result is consistent with Cooray (2009), who finds a significant positive relationship between economic growth and primary school enrolment in lowand middle-income countries. It can also be seen above that inflation has a significant negative impact on economic growth in Indonesia, while it is insignificant for the other VISTA countries. This is corroborated by Aydin and Esen (2016), who indicate that increased inflation-driven macroeconomic uncertainties hamper economic growth. Lastly, labour reports a significant negative impact on economic growth in Vietnam, South Africa and Turkey. From the literature, increases in employment opportunities reflect increased productivity and consequently positive trends in economic growth (Doran et al., 2018). Based on the results, it can be explained that a conducive socio-economic environment and institutional robustness of a country have positive implications for sustained FDI inflows and enhance national productivity.

4.5 The relationship between human capital and FDI

Table 7 presents the results of the long-run and short-run estimates for the relationship between human capital and FDI. In the long run, the impact of FDI on human capital is significantly positive for Argentina, while it is insignificant for the rest of the sampled countries. This result is in line with Gittens and Pilgrim (2013), who suggest a positive influence of

FDI on human capital in developing countries. From the table, economic growth exerts a significant negative effect on human capital in Vietnam and Argentina. This is inconsistent with Altiner and Toktas (2017), whose results indicate that expansionary trends in macroeconomic dynamics impact positively on human development in developing and emerging countries through the availability of employment opportunities, skill acquisition, and the provision of quality health infrastructure.

Table 7: Results of Relationship between Human Capital and FDI

Variables	Vietnam (1, 0, 2, 0, 2, 2, 2)	Indonesia (1, 0, 0, 0, 0, 0, 0)	South Africa (1, 0, 1, 0, 1, 1, 1)	Turkey (3, 0, 0, 0, 0, 0, 0)	Argentina (1, 1, 1, 1, 0, 1, 1)
Dependent variable: PSE					
Long run					
FDI	-0.00 (-1.66)	-0.00 (-1.37)	0.00 (0.49)	0.02 (1.08)	0.01 (4.48) *
GDP	-0.00 (-1.96) **	8.14 (0.06)	0.00 (1.42)	0.03 (1.44)	-0.00 (-3.55) *
TO	0.09 (1.91) *	-0.04 (-0.56)	-0.21 (-2.62) **	-0.08 (-0.30)	0.12 (14.33) ***
K	-0.02 (-1.44)	-0.01 (-0.13)	0.25 (4.61) ***	-0.14 (-0.59)	0.03 (1.60)
INF	-0.00 (6.06) ***	0.00 (1.00)	0.00 (1.62)	0.00 (0.65)	0.00 (2.95) *
L	-0.44 (-4.23) *	-0.04 (1.12)	0.00 (0.03)	-0.53 (1.11)	-0.11 (-1.49)
Constant	5.23 (7.35) ***	2.46 (7.84) ***	2.02 (3.78) **	6.08 (1.84)	2.64 (5.08) **
Short run					
Δ (PSE (-1))	1.52 (3.80) *	-0.47 (-2.18) **	-1.32 (-3.67) **	-0.43 (-1.52)	-4.15 (-5.24) **
Δ (FDI)	-0.00 (-1.84) ***	0.00 (1.45)	0.00 (0.51)	0.01 (1.23)	0.00 (2.55)
Δ(GDP)	-0.00 (-1.47)	3.80 (0.06)	0.00 (1.50)	0.01 (4.14) **	0.01 (4.04) ***
Δ (TO)	0.19 (1.45)	-0.02 (-0.70)	-0.28 (-2.17) ***	0.12 (1.03)	0.36 (4.36) **
Δ (K)	-0.05 (-1.23)	0.03 (0.74)	0.33 (2.86) **	-0.63 (-2.97) **	-1.02 (-3.37) ***
Δ(INF)	-0.00 (-3.36) **	0.00 (1.30)	0.00 (1.41)	0.00 (0.67)	-0.00 (-3.56) ***

Variables	Vietnam (1, 0, 2, 0, 2, 2, 2)	Indonesia (1, 0, 0, 0, 0, 0, 0, 0)	South Africa (1, 0, 1, 0, 1, 1, 1)	Turkey (3, 0, 0, 0, 0, 0, 0)	Argentina (1, 1, 1, 1, 0, 1, 1)
Dependent variable: PSE					
Short run					
Δ(L)	10.45 (2.74) **	0.38 (2.38) **	0.00 (0.03)	0.49 (1.09)	-11.94 (3.40) ***
ECM (-1)	-1.99 (-10.93) *	-0.47 (-7.74) *	-1.32 (-6.17) **	-0.43 (-9.08) *	-4.15 (-14.05) *
R-squared	0.97	0.91	0.79	0.92	0.99
DW test	2.18	2.13	2.16	3.35	2.46

Short-run diagnostic test			
Country	**Normality**	**Serial correlation**	**Heteroscedasticity**
Vietnam	1.33 (0.51)	0.41 (0.54)	0.56 (0.84)
Indonesia	1.73 (0.42)	0.79 (0.48)	1.24 (0.35)
South Africa	0.26 (0.88)	1.92 (0.24)	0.63 (0.77)
Turkey	0.81 (0.67)	23.11 (0.15)	1.42 (0.40)
Argentina	0.88 (0.65)	0.37 (0.65)	1.51 (0.47)

Notes: ***, **, and * indicate significance at 1%, 5%, and 10% levels of significance respectively. T-statistics values are in square brackets [ ], while p-values are in parentheses ( ).

It can be seen from the table that trade openness has varied effects on human capital in Vietnam and South Africa. While it exerts a significant positive effect in Vietnam, its impact on human capital is negative in South Africa. According to scholars, the implementation of trade liberalisation policies avails opportunities for economic expansion and job creation to develop the human resources of a country (Maryam & Hassan, 2013). Regarding the effect of capital formation, it has a significant positive effect on human capital in South Africa, while its effect in the other VISTA countries is insignificant. Increases in capital mobilisation through savings and investments engender higher productivity and job creation. These dynamics impact positively on skill and knowledge development (Guru & Yadav, 2019). As can be observed above, inflation exerts a significant negative effect on human capital in Vietnam and a positive effect in Argentina. This suggests that the impact of inflation on human capital is

country-specific, where countries with robust macroeconomic fundamentals can withstand the shocks induced by the high rate of inflation compared to their less robust counterparts. In the long run, labour exhibits a significant negative impact on human capital only in Vietnam, implying that the long-run influence of labour on human capital is limited across VISTA countries.

The short-run estimates in Table 7 indicate that the coefficients of the error correction term are negative and significant at 1% for Vietnam, Indonesia, Turkey, and Argentina. For South Africa, the error correction term is negative and significant at 5%. The short-term deviations from the long-term equilibrium in Vietnam, Indonesia, South Africa, Turkey, and Argentina are corrected by -1.99%, -0.47%, -1.32%, -0.43%, and -4.15% respectively towards the long-term equilibrium. The results suggest that FDI has a negative impact on primary school enrolment and is significant at the 10% level in Vietnam.

The short-run results also show that economic growth has a significant positive impact on human capital in Turkey and Argentina. This implies short-term expansion in macroeconomic dynamics drives improvement in human capital, in line with Sultanuzzaman et al. (2019). In South Africa and Argentina, trade openness shows a significant negative impact on human capital, while it is significantly positive for Turkey. This suggests that generally, short-run market liberalisation impacts positively on human capital development, consistent with Stein and Yannelis (2020). Capital formation has a significant positive effect on human capital in South Africa, while its effect on human capital is limited in other VISTA countries. From the table, inflation reports a negative impact on human capital for Vietnam and Argentina. This suggests that significant increases in the rate of inflation impact adversely education and human development programmes, as explained by Omodero (2019). Lastly, labour reports a short-run positive impact on human capital in Vietnam and Indonesia, while it exerts a significant negative impact on human capital in Argentina. This implies that in the short run, the impact of labour dynamics on human capital is consequent on country-specific characteristics, such as demographic distribution and population size. Overall, it can be concluded that the direction of the impact of FDI flows on human capital is largely dependent on the country-specific institutional quality and macroeconomic robustness, as different markets respond differently to the influx of foreign capital.

5. Conclusion and policy recommendations

This study analysed the effect of FDI on human capital and economic growth of VISTA countries with the application of an ARDL frame on a time series covering 1990 to 2017. It was found that FDI exerts both long-run and short-run predictive influences on the economic growth of VISTA countries, where it is positive in Indonesia but negative in Vietnam, South Africa, Turkey, and Argentina. The negative impact of FDI on the economic growth of the VISTA countries except Indonesia can be linked to low levels of market openness, human capital development, and institutional robustness to ensure the retention of a significant proportion of FDI profits to support economic growth. Generally, this implies that sustained FDI inflows to VISTA countries do not promote economic expansion. This evidence contradicts the theoretical expectation that FDI boosts economic growth through capital accumulation, technology transfer, and enhancement of human capital through skills transfer. As such, this study verifies that factors other than FDI drive the direction of growth of VISTA countries. These factors include trade openness, capital formation, inflation, and labour.

Also, it was found that generally, FDI influences long-run improvement in the human capital of VISTA countries. However, its short-run impact on human resources is statistically marginal, thus implying that the benefits of FDI inflows to emerging economies in terms of human resource development is gradual and requires strategic policy interventions to anchor its impact. These dynamics, relative to the relationship between human capital and FDI, are underpinned by the endogenous growth model, which explains that FDI promotes R&D and human capital development that support macroeconomic stability in the long run.

Based on the findings, policy efforts should be focused on ensuring financial system robustness to respond to changing global market dynamics, as the optimisation of FDI inflow benefits is dependent on country-specific macroeconomic characteristics. Future studies can test the relationship between FDI and economic growth under transitioning macroeconomic conditions, as the interaction between economic factors may change under different market conditions. This study is limited in this regard because of the focus and scope of the current analysis.

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