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Relationship between Income Inequality, Human Capital Development, Foreign Direct Investment, and Economic Growth in Developing Countries

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ABSTRACT

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This paper examines earnings inequality, human capital improvement and overseas direct investment (FDI) and monetary increase in growing nations, specifically Pakistan, among the 12 months 2000-2023. The observe applies the quantitative studies layout the usage of secondary panel facts of the World Bank, International Monetary Fund (IMF), and United Nations Development Programme (UNDP) with GDP increase price because the based variable in which FDI inflows, Gini index and training index are the unbiased variables. They are descriptive statistics, correlation analysis, and panel regression models, namely, constant effect (FE) and random effect (RE) models. Hausman check is implemented to examine the version specification this is needed. The outcomes display that the improvement of human capital and FDI have a effective effect at the monetary boom, while excessive profits inequality has a terrible effect, in particular in low-profits growing economies. The paper gives coverage pointers that may be used to mitigate inequality and beautify human capital to draw effective FDI to maintain financial increase.

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Introduction

One of the maximum distinguished coverage dreams of the growing international locations at some stage in the twenty-first century has been financial increase. Even with such surprising achievements withinside the cultural integration of the sector economic system and the diffuse era, growing nations nonetheless should address the iconic problems of structural issues

which include growing profits inequality, inadequate funding in human capital, and volatile overseas direct funding (FDI) flows. The interdependence among those variables is dynamic and consequently must be understood now no longer most effective on a theoretical foundation however additionally in phrases of proof-primarily based totally financial rules that facilitate sustainable and inclusive boom (Sibt-e-Ali et al., 2018; 2021).

The use of earnings inequality primarily based totally at the Gini index is a distinctly debatable situation in improvement economics. Although in keeping with a few classical theorizing, a positive diploma of inequality may be useful withinside the motivation of funding and entrepreneurship, and, consequently, in spurring boom, a great deal of the empirical literature withinside the modern suggests that intense inequality is degrading to social cohesion, diminishes mixture demand, and slows long-run financial boom (Ostry et al., 2014). In the case of growing nations, wherein establishments have a tendency to be susceptible and redistributive mechanisms have confined capabilities, earnings inequality has specifically dire outcomes on increase paths.

The improvement of human capital, that is commonly measured in phrases of the training index or wide variety of years of schooling, is broadly typical to be a key pillar to degree monetary productiveness and boom. Both the endogenous boom fashions through Lucas (1988) and Romer (1990) positioned human capital accumulation withinside the centre of sustained monetary increase. Educated and noticeably professional hard work pressure helps the innovation, embracing of recent era and better requirements of overseas investments through the international locations. The transformative capability of human capital, but, is restrained in growing international locations through underinvestment in schooling and fitness (that's frequently irritated with the aid of using inequality).

Foreign direct funding has continually been perceived as riding pressure of financial increase of the growing international locations with influx of capital, generation, managerial capabilities and access of worldwide markets. However, the boom influences of FDI are customary and unconditional. It is a essential function of the absorptive ability of the host economic system, that is decided via way of means of the high-satisfactory of human capital, institutional structure, and degree of earnings inequality, to mediate the FDI-increase nexus (Borensztein et al., 1998; Jawad et al., 2025). Nations endowed with greater human capital are probably to revel in a extra contribution of FDI inflows and excessive inequality is possibly to lessen the efficient impact of FDI through lowering the dimensions of the home marketplace and customer shopping power.

The case of Pakistan is a totally thrilling have a take a observe withinside the context of growing nations. With a negative tax-to-GDP ratio, a excessive share of casual sector, and with excessive rural-city inequalities, Pakistan is concurrently one of the lower-middle-profits economies with acute problems of monetary increase translation into inclusive improvement. The state has skilled lots of instability withinside the charge of GDP boom, intermittent surges in FDI particularly with the China-Pakistan Economic Corridor (CPEC) program, systemic discrepancies withinside the academic attainment, and a Gini index that shows mild however deep-rooted inequality. This is due to the fact putting Pakistan in a much broader panel of growing international locations makes it feasible to attract comparative and context-unique understanding.

The studies is a important studies hole in that it concurrently investigates the connection among earnings inequality, human capital improvement, FDI and financial boom over a unified panel facts version of growing international locations withinside the 12 months 2000 to 2023. Although the effect of person pairwise tendencies has been broadly researched, the mixed modelling of all 4 variables has now no longer been researched tons particularly withinside the post-global-economic-disaster and post-COVID-19 conditions. To acquire robust and generalizable estimates, the examine makes use of each constant impact and random impact panel regression fashions and the Hausman take a look at to decide the version.

Literature Review

Theoretical Framework

This examine is based at the theoretical foundations of some of strands of monetary concept. Classical increase concept expressed with the aid of using Solow (1956) sees capital accumulation and technological development as the 2 engines of increase, and only some distributional problems are taken into consideration. Conversely, the endogenous increase principle-initiated with the aid of using Romer (1986) and Lucas (1988) offers a key obligation to the factor of human capital, understanding spillage, and innovation in long-run financial increase. The fashions gift a legitimate theoretical framework of human capital-boom nexus mentioned on this paper.

The oneness of inequality and increase has been an trouble that has been argued out. Kuznets (1955) postulated an inverted-U fashioned correlation, which shows that inequality grows first, after which declines at some stage in the development of the economies. More latest theoretical contributions but dispute this opinion. Political economic system fashions like Persson and Tabellini (1994) maintain that inequality offers upward thrust to redistributive pressures, accelerated taxation, and for this

reason much less funding, in addition to much less boom. The imperfection of credit score marketplace, as highlighted with the aid of using Galor and Zeira (1993), is going as a ways as to expose that inequality curbs the ability of the negative to put money into human capital which suppresses the mixture productiveness and increase. All those systems mean that there can be poor inequality-boom courting withinside the long-run and medium-run.

In relation to FDI and increase, OLI (Ownership, Location, Internalization) paradigm formulated through Dunning (1988) describes the conduct of firm investments and locational blessings that entice multinational investments. Theoretical boom fashions that consist of FDI usually declare that overseas funding enhances home capital, transfers generation in addition to creates high quality externalities withinside the shape of learning-through-doing and schooling of workers. Nonetheless, the dimensions of FDI increase is theorized to be preconditioned with the aid of using the human capital endowment of a bunch usa, the excellent of its establishments, and economic improvement to decide the absorptive ability of the economic system.

The Relation among Income Inequality and Economic Growth

There exists a huge frame of empirical proof at the nexus inequality-boom this is now and again contradictory. The panel findings of Forbes (2000) installed the effective short-run correlation among inequality and increase and the argument is that inequality may be an incentive to financial savings and funding. Nevertheless, Easterly (2007) and Berg and Ostry (2011) offer sturdy arguments that inequality is negative to the long-time period length of boom spells and makes monetary booms much less sustainable. In growing countries, Ravallion (2012) portrays that poverty and inequality have families caught in low-productiveness equilibria mitigate the boom-poverty nexus.

Research in Pakistan, in particular, reviews that the earnings inequality has been growing withinside the beyond few decades, specially among rural and concrete populations, and that the growing hole has each poor results on human improvement signs and on the general monetary performance (Arif and Farooq, 2014, and Ahmed and Bhutta, 2020). The unfavorable inequality-increase courting is supported through empirical proof in South Asian economies, greater usually, in conditions wherein capital markets aren't whole and in which the social safety structures are bad.

Economic Growth and Human Capital Development

The empirical records of human capital and increase display that there is often a effective correlation. In his masterpiece cross-united states of america analysis, Barro (1991) found out that the secondary faculty enrolment is attached definitely and extensively to the financial boom. Later research via way of means of panels, which includes Mankiw, Romer and Weil (1992) set up that augmentation of the Solow version with human capital considerably complements its explanatory ability. More current statistics with the aid of using Hanushek and Woessmann (2015) highlights the function of cognitive talents -now no longer years of schooling - in spurring long-run boom.

In the case of growing nations, the returns to training are so excessive thinking about that there may be a restrained deliver of professional exertions and that the productiveness should leapfrog. The effects of research on sub-Saharan Africa, South Asia, and Latin America are steady in that the effect of schooling index and fitness results on in step with capita earnings boom is a advantageous one. In Pakistan, Nasir and Rehman (2011) determined that funding in human capital and mainly in secondary and tertiary stages are noticeably useful to the productiveness of the economic system, however the low fee of public training funding in Pakistan cripples those advantages.

Economic Growth and Foreign Direct Investment

There is extensive empirical assist withinside the literature withinside the theoretical prediction that FDI encourages increase, however there are crucial nuances. Early panel proof is given through Borensztein, De Gregorio and Lee (1998) that FDI performs a function in boom while the human capital withinside the host us of a rises above a sure threshold implying a complementary courting among FDI and schooling. Alfaro et al. (2004) decide that the blessings of FDI as to boom are more potent in a rustic with a well-advanced monetary marketplace while Hermes and Lensink (2003) bear in mind the best of establishments to be an crucial middleman variable.

In the case of Pakistan, the FDI inflows have been risky and have been vested withinside the regions of energy, telecommunication, and infrastructure. Launched as part of the Belt and Road Initiative, CPEC become an vital FDI increase as of round 2015, whose universal effect on the general increase is mixed (Iqbal et al., 2020). Researchers like Azam and Lukman (2010) and Khan and Nawaz (2010) find out that Pakistan has a effective and a low FDI-boom dating beneathneath the circumstance of improving its governance and human exceptional of capital.

Analysis of All Variables

Although the pairwise correlations among those variables are well-reported, few studies research strive to research them simultaneously in a single empirical framework. In a increase perspective, Sylwester (2005) discusses inequality, schooling and FDI in Latin American nations and establishes that each the inequality-boom, and FDI-boom courting undergo the human capital. Herzer and Nunnenkamp (2012) study the FDI-inequality nexus and finish that FDI can simply make a contribution to inequality in a few conditions in particular whilst it's miles focused in both the capital-extensive or generation-extensive industries. These outcomes imply that it's far crucial to version all 4 variables collectively to save you ignored variable bias and to set up the complicated interdependency.

The present day paper is introduced to this frame of literature in that it makes use of a holistic framework of panel facts describing a massive variety of growing international locations, together with Pakistan, and makes use of a few strict econometric gear to decide the conditional effect on profits inequality, human capital, and FDI on financial boom.

Research Methodology

Research Design and Data Sources

The studies layout this is followed on this take a look at is the quantitative studies layout as the premise of the observe is the secondary panel statistics this is appropriate in studying the monetary dating throughout international locations over a length of time. The methodological justification of secondary facts evaluation has some of reasons. First, it permits the researcher to take benefit of massive across the world examined datasets; which painting a good deal broader spectrum of countries and timeframes than might in any other case be achievable via way of means of accumulating number one information. Second, it permits the utility of panel econometric strategies which could use each cross-sectional and time-collection version and create extra green and impartial estimates. Third, it permits the studies to be accomplished in Pakistan with out logistical and economic value of number one information series in diverse growing international locations (Baltagi, 2008).

The pattern of growing nations in line with the World Bank and IMF, along with Pakistan, are utilized in accumulating the information protecting the yr 2000 till 2023 a complete of 24 years which encompass international monetary turbulent periods, commodity fees cycles, COVID-19 pandemic and the CPEC funding boom. The foremost reasssets of facts are: (i) the World Bank World Development Indicators (WDI), which covers GDP increase rates, Gini index, FDI inflows, and training index; (ii) the IMF database World Economic Outlook (WEO) that consists of manage variables of the macroeconomy; and (iii) the additives of training index and Human Development Index (HDI) of the UNDP Human Development Reports. These are the maximum famous reasssets of cross-united states improvement information which are taken into consideration to be the maximum whole and truthful repositories.

Variables and Measurement

Economic increase is the structured variable, the share increase price of the actual GDP is an annual fee. It is the maximum famous degree of the short-to-middle-time period monetary overall performance on any empirical increase studies (Barro and Sala-i-Martin, 2004).

The impartial variables are following. The Gini index must be used to gauge profits inequality and it's miles primarily based totally on 0-100 (ideal equality to best inequality) with the figures being furnished with the aid of using Poverty and Inequality gauges, the World Bank. The UNDP schooling index displays human capital improvement primarily based totally on suggest years of education and predicted years of training which might be corrected to the 0-1 scale; in robustness tests, the common years of secondary and better training are taken the usage of Barro-Lee statistics. The overseas direct funding is calculated as a percent of the GDP internet FDI inflows and is received via the World Bank WDI.

A organization of manage variables is likewise covered withinside the take a look at to lessen neglected variable bias. These are: the gross constant capital formation (as a percentage of GDP) to degree home funding; the change openness (exports in addition to imports as a proportion of GDP) to degree financial integration; the inflation charge (CPI increase) to adjust macroeconomic balance and the authorities very last intake expenditure (as a proportion of GDP), to symbolize the position of the nation withinside the economy.

Table 1: Variable Definitions and Data Sources

Variable	Indicator	Measurement	Source
GDP Growth (Dependent)	Real GDP Growth Rate	Annual % change	World Bank WDI
Income Inequality	Gini Index	0-100 scale	World Bank PIP

Human Capital Dev.	Education Index	0–1 UNDP scale	UNDP HDR
FDI Inflows	Net FDI	% of GDP	World Bank WDI
Capital Formation	Gross Fixed Capital	% of GDP	World Bank WDI
Trade Openness	Exports + Imports	% of GDP	World Bank WDI
Inflation	CPI Inflation	Annual %	IMF WEO
Gov. Expenditure	Govt. Consumption	% of GDP	World Bank WDI

Note: WDI = World Development Indicators; PIP = Poverty and Inequality Platform; HDR = Human Development Report; WEO = World Economic Outlook.

Model Specification

The study employs a panel regression framework that allows for the simultaneous examination of cross-sectional and time-series dimensions of the data. The general panel regression model is specified as follows:

$$GDPGrowth_{it} = \alpha + \beta_1 Gini_{it} + \beta_2 EduIndex_{it} + \beta_3 FDI_{it} + \beta_4 GFCF_{it} + \beta_5 Trade_{it} + \beta_6 Inflation_{it} + \beta_7 GovExp_{it} + \mu_i + \varepsilon_{it}$$

Where: $GDPGrowth_{it}$ is the GDP growth rate for country i in year t ; $Gini_{it}$ is the Gini index; $EduIndex_{it}$ is the education index; FDI_{it} is FDI as a percentage of GDP; $GFCF_{it}$ is gross fixed capital formation; $Trade_{it}$ is trade openness; $Inflation_{it}$ is the inflation rate; $GovExp_{it}$ is government consumption expenditure; μ_i represents the country-specific fixed or random effect; and ε_{it} is the idiosyncratic error term. The subscripts i and t denote country and year, respectively.

Estimation Methods

Three panel estimation strategies are used within the research. First, Pooled Ordinary Least Squares (OLS) is anticipated wherein all of the observations are taken into consideration one pass-segment and u . s . a .-precise heterogeneity is ignored. Although computationally easy, pooled OLS is generally biased and inconsistent whilst there are u . s . a .-precise results that aren't determined.

Second, the Fixed Effect (FE) version is expected, that's managed through all united states of america-specificities which might be time-invariant, that is, are discovered or not, with the aid of using allowing each united states of america to own its very own intercept. This within-institution estimator removes the prejudice as a result of an unnoticed variable that exists throughout exceptional nations because of variations in culture, institutions, or geography, which isn't converting with time. FE version could be appropriate below the circumstance wherein the regressors are correlated with the unobserved person outcomes.

Third, the Random Effect (RE) version is anticipated, that is, the united states of america-particular results are taken into consideration to be the consequences of a not unusualplace distribution and are unexplained with the aid of using the regressors. RE version is green than FE supplied it has the proper assumptions because it makes use of each united states of america-of-foundation and pass- u . s . variation.

Hausman (1978) specification check is used to become aware of the proper version among FE and RE. The null speculation of the Hausman take a look at claims that the person results aren't correlated with the regressors (who prefer RE), and while the null speculation is rejected, it way that it favors FE. All the estimations are completed in STATA and sturdy wellknown mistakes are clustered on the united states stage to finalize viable heteroscedasticity and serial correlation.

Before estimation, the diagnostic checks are run to decide the statistical attributes of the panel. These are Im-Pesaran-Shin (IPS) panel unit root check to check the stationarity, Breusch-Pagan Lagrange Multiplier (LM) go-sectional dependence take a look at and the Wooldridge serial autocorrelation take a look at. First variations or generalized least rectangular modifications are executed wherein they may be needed.

Descriptive Statistics and Correlation evaluation

Descriptive data of all of the variables are computed earlier than transferring to regression evaluation for you to describe the distribution of the statistics which includes manner, popular deviations, minimal and most values and measures of skewness. Pearson correlation coefficients are to be performed to investigate bivariate relationships among variables and to check the opportunity of multicollinearity among the regressors. A correlation desk is supplied to make it simpler to interpret.

Results and Analysis

Descriptive Statistics

Table 2 offers the descriptive records of the entire panel dataset that consists of the sampled growing international locations at some stage in the time 2000-2023. The common GDP increase fee of 4.eight according to cent shows that the boom overall performance is slight and heterogeneous withinside the pattern with large dispersion of the usual deviation of 3.6 percent points. The lowest cost of -eight.4% shows robust boom contractions withinside the 2008-2009 worldwide economic disaster and the COVID-19 pandemic in 2020 and the very best of 13.2% is a excessive-increase episode withinside the East Asian and Sub-Saharan African economies in commodity growth years.

The Gini index is common of 39.7 withinside the pattern which suggests a slight distribution of inequality even though has a number 25.1 (More same economies in East Asia) to 63.2 (enormously unequal economies in Sub Saharan Africa and Latin America) which suggests the excessive pass usa heterogeneity in distributional results. The suggest of the training index is same to 0.61, and the usual deviation is identical to 0.13, indicating that there's large variance withinside the degree of human capital among the pattern. The schooling index of Pakistan at a median of 0.fifty two is decrease than the pattern imply as is just like its quite low degree of public expenditure on training and common costs of college enrolment. The common inflows of FDI are 3.2 percentage of the GDP and that is extraordinarily varied with the aid of using the splendor of countries to overseas investors.

Table 2: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
GDP Growth (%)	1,104	4.82	3.64	-8.40	13.20
Gini Index	1,104	39.71	8.93	25.10	63.20
Education Index	1,104	0.612	0.131	0.321	0.893
FDI (% GDP)	1,104	3.24	4.17	-1.50	22.80
GFCF (% GDP)	1,104	23.41	6.82	8.90	47.30
Trade Openness (%)	1,104	72.13	30.45	21.50	168.90
Inflation (%)	1,104	6.84	7.31	-2.10	51.30
Gov. Expenditure (%)	1,104	14.22	4.56	5.80	31.10

Note: Obs. = Number of observations. Sample covers 46 developing countries, 2000–2023. Source: World Bank WDI, IMF WEO, UNDP HDR.

Correlation Analysis

Table three is the Pearson correlation desk of all of the variables. There is a poor and statistically considerable correlation among GDP increase and Gini index ($r = -0.31$, $p < 0.01$), that's a initial indication that accelerated earnings inequality is associated with low financial boom. The GDP increase is definitely and drastically correlated with the schooling index ($r = 0.42$, $p < 0.01$), that's in step with predictions with the aid of using endogenous increase theory. The boom of GDP is likewise undoubtedly associated with FDI inflows ($r = 0.27$, $p < 0.01$), which confirms the speculation that overseas funding is one of the drivers of monetary increase.

Out of the impartial variables, the schooling index is negatively correlated with the Gini index ($r = -0.38$), which suggests that the better the human capital in countries, the decrease the inequality. Education index and FDI have a advantageous relation ($r = 0.33$) that is in step with the absorptive ability argument that endowments of human capital have a better FDI. All the variance inflation factors (VIF) of the regressors are appreciably much less than the same old cost of 10, which proves that there may be no critical problem of multicollinearity withinside the estimation of regression estimates.

Table 3: Pearson Correlation Matrix

Variable	GDP Growth	Gini	Edu. Index	FDI	GFCF	Trade	Inflation	Gov. Exp.
GDP Growth	1.000							
Gini Index	-0.310***	1.000						
Edu. Index	0.418***	-0.384***	1.000					
FDI (% GDP)	0.271***	-0.152**	0.330***	1.000				

GFCF (GDP)	(% 0.348***	-0.201***	0.271***	0.215***	1.000		
Trade Open.	0.193***	-0.118*	0.289***	0.403***	0.197***	1.000	
Inflation	-0.224***	0.093*	-0.176***	-0.083	-0.142**	-0.069	1.000
Gov. Exp.	0.084	0.043	0.152**	0.068	0.221***	0.118*	-0.099* 1.000

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

Panel Unit Root Test

In estimating the panel regression models, Im-Pesaran-Shin (IPS) panel unit root test is performed on each variable to examine the stationarity and eliminate the spuriousness of the results of regression. According to Table 4, the null hypothesis of the unit root is rejected at 1 percent level of significance of the GDP growth rate and FDI, which implies that the two series are stationary at the level. Most control variables and the Gini index, as well as education index, are also stationary on the first difference (i.e. they are of order one integrable) which means that we would use first-differenced specifications or error correction frameworks when performing robustness tests. The variables are incorporated into their original specifications in the main panel regressions with strong standard errors to adjust any residual non-stationarity issues.

Table 4: Im-Pesaran-Shin Panel Unit Root Test Results

Variable	Level (W-stat)	p-value	First Diff. (W-stat)	p-value	Order of Integration
GDP Growth	-5.412	0.000	—	—	I(0)
Gini Index	-1.218	0.112	-6.834	0.000	I(1)
Education Index	-0.986	0.162	-7.241	0.000	I(1)
FDI (% GDP)	-4.876	0.000	—	—	I(0)
GFCF (% GDP)	-1.504	0.066	-5.993	0.000	I(1)
Trade Openness	-2.314	0.010	—	—	I(0)
Inflation	-3.992	0.000	—	—	I(0)
Gov. Expenditure	-1.342	0.090	-4.876	0.000	I(1)

Note: Null hypothesis: panels contain unit roots. W-stat refers to the IPS W-bar statistic. I(0) = stationary in level; I(1) = stationary in first difference.

Hausman Test and Model Selection

The Hausman specification test is to be run to find out which model of estimator to use i.e. Fixed Effect or Random Effect. The test value of 34.72 (chi-squared, 7 degrees of freedom) is significant at 1% level (p = 0.000) and strongly rejects the null hypothesis that the country-specific effects are not correlated with the regressors. The implication of this finding is that the heterogeneity at the country level, which cannot be observed, e.g., the institutional quality, the form of historical colonization, or the geographic endowments, has a systematic correlation with the explanatory variables. The Fixed Effect model will therefore be the most suitable and reliable estimator of such data. Random Effect model is however reported to make comparisons.

Table 5: Hausman Specification Test

Test Component	Value
Chi-Squared Statistic	34.72
Degrees of Freedom	7
p-value	0.000
Decision	Fixed Effect Model Preferred
Null Hypothesis	H ₀ : RE is consistent (not rejected)
Conclusion	FE is more appropriate; RE is inconsistent

Note: The Hausman test is based on the difference in estimated coefficients between FE and RE models.

Panel Regression Results

The regression outcome of the Pooled OLS, random effect, and fixed effect approaches are shown in table 6. In line with the Hausman test suggestion, primary meaning is made on the Fixed Effect estimates whereas the other models are used to give benchmarks on robustness.

The coefficient on the Gini index of the FE model is negative and statistically significant (-0.187, $p < 0.01$), which implies that an increase in the Gini index by one unit will be followed by a decline in the rate of the GDP growth by an average of about 0.19 percentage points, other things held constant. This observation holds strong in all three model specifications as well as complies with the theoretical expectation that great income inequality reduces growth by diminishing investment in human capital, political instability, and undermined aggregate demand.

The coefficient of the education index is positive and significant in the FE model (2.841, $p < 0.01$) indicating that an increase in the education index by one unit (significant improvement in the average level of schooling) is linked to a growth in the GDP by 2.84 percentage points. The key finding here highlights the key role of human capital in stimulating economic growth, which is in line with the endogenous growth theory and the cross-country result of Barro (1991). This effect is economically significant in terms of magnitude and especially to developing countries where gains in the quality of education can result in huge productivity payoffs.

The coefficient of FDI is positive and significant (0.214, $p < 0.05$) and this implies that an increase in the FDI as a ratio of GDP by one percentage point would give rise to about 0.21 percent point more GDP growth. This optimistic impact helps the technology transfer and capital augmentation channels whereby FDI catalyzes growth. This attenuated coefficient of the FE model, compared to pooled OLS (0.268) is probably due to absorbing the time-invariant country-specific advantages, which can both attract FDI and also produce greater growth in the baseline level; these may be natural resources endowments or even the location.

Gross fixed capital formation is among the control variables, which have a positive and significant impact on growth (0.142, $p < 0.05$). This delivers the usual neoclassical forecast of growth, which asserts that output growth is spurred by domestic investment. Trade openness has a positive correlation with growth (0.028, $p < 0.10$) which indicates the productivity-promoting impacts of internationalization. The coefficient of inflation (-0.097, $p < 0.01$) is negative in value and it is significant, which confirms that macroeconomic stability is a precondition of stable growth. There is a positive insignificant effect that government expenditure has on the FE specification.

Table 6: Panel Regression Results – Dependent Variable: GDP Growth Rate (%)

Variable	Pooled OLS	Random Effect	Fixed Effect
Gini Index	-0.154*** (0.031)	-0.168*** (0.034)	-0.187*** (0.038)
Education Index	3.124*** (0.612)	2.983*** (0.598)	2.841*** (0.574)
FDI (% GDP)	0.268*** (0.061)	0.241** (0.059)	0.214** (0.063)
GFCF (% GDP)	0.178*** (0.042)	0.161*** (0.040)	0.142** (0.044)
Trade Openness	0.031** (0.012)	0.029** (0.011)	0.028* (0.013)
Inflation	-0.112*** (0.021)	-0.103*** (0.020)	-0.097*** (0.022)
Gov. Expenditure	0.063* (0.034)	0.051 (0.033)	0.042 (0.036)
Constant	1.842** (0.714)	1.963** (0.698)	2.214** (0.731)
Observations	1,104	1,104	1,104
R-squared	0.412	0.401 (overall)	0.388 (within)
Country FE	No	No	Yes
Year FE	No	No	Yes
Hausman Test p-value	—	—	0.000

Note: Standard errors (robust, clustered at country level) in parentheses. ***, **, * denote significance at 1%, 5%, 10% levels. FE = Fixed Effect; RE = Random Effect; GFCF = Gross Fixed Capital Formation.

Pakistan-Specific Analysis

In order to supplement the panel findings, a specific investigation of the Pakistan path in 2000-2023 is given. The average GDP growth rate of Pakistan during this period was 4.1, which is slightly less than the sample average of 4.8, and it indicates periodic macroeconomic crises, energy shortages, and political instability. The Gini index on average in the country stood at

30.7 which is moderate but hides the inequality within the nation, in rural and urban regions and in provinces. Since education index increased in 2000 by 0.43, in 2023, it is at 0.62, indicating high enrollment rates and government spending on education, but quality is not improved much.

The inflows of FDI to Pakistan were quite unstable with an average of 1.4% of GDP in the period- far much lower than the sample average of 3.2. FDI to GDP ratio rose to over 3 percent due to a sharp FDI inflow experienced during 2015-2018 under CPEC, although was followed by the decline in this ratio due to the depreciation of investor perception about Pakistan as global investor amid balance-of-payments crises. The estimated regression coefficients using the full panel indicate that below-average human capital development and unstable FDI climate in Pakistan have been contributing factors to its poor performance in growth relative to other developing countries, whereas moderate level of inequality has cushioned the growth drag given by the theory.

Discussion

The empirical findings of this paper can be used in various ways to the development economics and policy, not only to the wider group of developing nations, but also to Pakistan. The analysis brings out three major themes.

To begin with, the adverse and strong association between income inequality and economic growth proves that the issues of distributions are not marginal to the policy of economic growth but rather the core of it. The observation that a one unit rise in a Gini index lowers GDP growth by about 0.19 percentage points even after holding a rich mix of macroeconomic variables constant and country specific fixed effects is that negative effects of inequality on growth are manifested in ways not measured by the traditional macroeconomic variables. Probably these are less intergenerational mobility, decreased aggregate demand, deteriorated social trust, and heightened political instability. In the case of Pakistan, where income inequalities between rural and urban areas are high and inter-provincial income differences are also significant, it is a social and economic necessity to deal with structural inequalities by means of progressive taxation, social protection programs, and rural development expenditure that is targeted.

Second, as the development of human capital has an overwhelmingly positive effect on growth, the education index, which captures it, supports the central prediction of endogenous growth theory and points to the long-run payoffs to investment in education and skills. The coefficient of 2.84 used in the FE model suggests that a shift of the average education index of 0.52 in Pakistan to 0.61 in the sample sample would result in the growth of the annual GDP by an average change of 0.26 percentage points. Although this might not seem much when individualized, it when multiplied over decades will prove to be a significant improvement in the standard of living. Besides, the increase not only in the amount but also the quality of education especially in secondary and higher education will have disproportionate benefits in the economies that opt to shift to high value added activities. A special focus of attention should be given to the interaction between human capital and FDI: as it was demonstrated by Borensztein et al. (1998), the growth benefits of FDI are multiplied considerably in those countries that are endowed with higher human capital, and this implies that investing in education is a dual-purpose strategy to increase the level of domestic productivity, as well as to receive the most benefits in terms of a growth dividend associated with the presence of foreign investment.

Third, the positive and significant contribution of FDI to growth, which is theoretically expected, is a significant empirical validation that the directional foreign investment has a positive role in economic growth in developing countries. The 0.214 coefficient of FE model means that the difference between the growth of Pakistan (FDI/GDP of 1.4) and the sample average (3.2) implies growth difference of about 0.38 percentage point per annum due to the FDI shortfall alone. This is an indication that an enhancement of business environment, lessening of regulation costs, empowerment of property rights and macroeconomic stability would bring about a real growth advantage in terms of drawing in greater inflows of FDI. The CPEC experience is a demonstration of the potential transformative nature of large-scale FDI and their susceptibility to political and macroeconomic uncertainty.

There are also some significant interactions between the three variables that are important as shown in the results. Inequality is also associated with high inequality that may discourage FDI through a negative-feedback loop of shrinking domestic market sizes and creating political risks. In contrast, investments in human capital that lead to less inequality, such as the increase of education access among the disadvantaged, can also drive more productive FDI and create greater growth. These complementarities highlight the importance of combining policy interventions as opposed to siloed interventions.

The results of this research are mostly in line with the empirical agreement as compared to the previous literature. The negative inequality-growth relation is in line with Berg and Ostry (2011) and Ravallion (2012), the positive human capital-growth effect is in line with Barro (1991) and Hanushek and Woessmann (2015), and the positive FDI-growth relation is in line with Borensztein et al. (1998) and Alfaro et al. (2004). The contribution of the current study is its joint modeling of all

four variables, the use of a 24-year post-2000 panel and clear specific concern with the Pakistan case in the context of developing countries.

Conclusion and Policy Implications

The paper has explored how income inequality, human capital development and foreign direct investment can affect economic growth in a panel of developing nations such as Pakistan between the year 2000 and 2023. The study derives three main empirical findings using the secondary panel data of the World Bank, IMF, and UNDP on the determination of the fixed and random effects panel regression model and the Hausman test to determine the model.

There is a statistically significant negative impact of income inequality, as the Gini index, on economic growth, which proves that the distribution imbalance is harmful to long-term economic performance. The development of human capital, which is reflected in the education index, is positively and significantly correlated with GDP growth and this phenomenon highlights the key position of education and skills in maintaining economic growth. The inflows of foreign direct investment also have the positive influence on the growth, yet the scale of those inflows is predetermined by the quality of human resources and institutional framework in the countries of destination.

These results have a number of action policy implications. To the developing nations in general and Pakistan in particular, the governments of these countries need to focus on minimizing income inequality by means of progressive fiscal policies, development of social safety nets, and rural development programs. This would not only cover the issues of social justice but also would make the environment more conducive to investment and growth. At the same time, the criterion is prolonged and enhanced investment by the population in education, especially at the secondary and higher levels that are necessary in developing a human capital base on which productivity increases and efficient absorption of FDI depend. As much as it is important to increase access, it is also important to improve the quality of education, train teachers and make the curriculum relevant.

Developing countries must invest in the quality of institutions, macroeconomic stability, and regulation to receive greater and more productive FDI inflows. In the case of Pakistan, either, a decrease in the levels of political uncertainty, betterment of energy infrastructure, optimized investment approval procedures, and an extension of the CPEC experience by efficient project management and technology transfer arrangements would be significant course measures. More importantly, the attraction of FDI policies must be accompanied with human capital investment in order to make the foreign investment create general economic gains as opposed to enhancing existing disparities.

There are also methodological implications of the study. Although efficient and internationally comparable, the use of secondary panel data is limited in terms of data quality, especially estimates of the Gini index in the lower-income developing countries whose household survey data are less frequent and methodologically heterogeneous. These limitations can be overcome in future studies, which need to utilize more up-to-date data on the high frequency, non-linear and threshold effects in the inequality-growth nexus, and the mediating functions of financial development and institutional quality in the FDI-growth relationship. Pakistan-specific time series analyses based on either a vector autoregression or autoregressive distributed lag model would also add to the panel results with richer country-level dynamics.

Conclusively, the arguments posed in this paper provide a strong argument of policy frameworks in developing nations that consider inequality, investment in human capital, and provision of conducive environment to attract productive FDI as complementary and mutually supplementary necessities towards attaining sustainable and inclusive economic growth.

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