TESTING BHAGWATI HYPOTHESIS: DOES ICT CONTRIBUTE TO ECONOMY?

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ABSTRACT

Nowadays the effects of global commerce and technological spillover has gained power in developing countries. Empirical data demonstrates that although some nations benefit from international commerce and technical innovation to compete in the global market, others suffer. Bhagwati Hypothesis postulates that Foreign Direct Investment positively related to economic growth. To test empirically the Bhagwati postulates, this study considers time series data-set 1972 to 2018 along with modern era driver, ICT, of economy. Autoregressive Distributive Lag model results signify a direct linkage between employment, investment, ICT, and economic growth, respectively. Capital accumulation and high employment rate indicate better economic performance, whereas increment in foreign direct investment has an inverse effect on growth. The estimated empirical results are contradictory to the "Bhagwati Hypothesis". Underdeveloped infrastructure, worse law & order situation due to war on terror and inconsistency in Government policies regarding FDI may explain this negative FDI growth effect. This study suggests investing in economic activities, human capital enhancement, ICT infrastructure and FDI-friendly policies to boost economic growth, create job opportunities, and create a competitive business environment, thereby attracting global investors.

Keywords: Bhagwati hypothesis; employment; FDI; ICT; economic growth

1. INTRODUCTION

Foreign direct investment (FDI) is defined as "a sum of equity capital, reinvestment of earning, and other short and long-term capital" (WDI, 2015). It is now a well-known reality that FDI is anticipated to be a catalyst for an increase in the economic activities of a country. It directly affects the labor market, factor productivity and technical change of an economy through

several factors. The technology transfer and addition of domestic capital give rise to manufacturing sectors to promote economic growth.

Attracting the FDI is generally the prime motive of any developing economy because it increases the readily available capital stock. FDI has a positive relationship with economic growth. In this regard countries normally devise such policies which draw the attention of international investors. Pakistan, in this view, is no exception and has made some serious legislative and policy efforts. It has devised a range of new rules and regulations to attract foreign individuals and organizations from all over the world, for example, Foreign Private Investment Act 1976, Protection of Economic Reforms Act 1992 and Ordinance 2001 of Foreign Currency Account". It explored the long-term impact of information and communication technologies on a nation's capacity to manufacture and export high-tech products. It focuses on the development and significance of these technologies in enhancing macroeconomic indicators and forecasting future economic development (Oumbé, H. T et al, 2023). Industrialized nations, particularly those impacted Epidemic, may rely on ICTs to rebuild their economy (Stanley et al. 2018). The internet is the most significant technology, with China and Japan leading the pack with 854 and 118 million users respectively in 2021. (IUT 2021).

ICT can directly (indirectly) influence the economic growth through several channels; i) the production of goods and services within the ICT sector directly contribute to the creation of value-added goods and services in the economy, ii) use of new methods of production, the utilization of inputs in good manners and latest researcher-based methods of production. In this study, we try to explore the linkages among economic growth, employment, gross fix capital formation and FDI, regarding Pakistan. The Bhagwati Hypothesis used to compute the real impact of Foreign Direct Investment on economic growth. That's why this study test empirically the Bhagwati hypothesizes, and considers time series data along with modern era driver, ICT, of economy.

1.1 Transmission mechanisms

The following transmission mechanisms depict the direct and indirect channels of FDI and employment that influence economic growth. The first channel in light of different theoretical and empirical studies [See, for example; Ali et al. (2014); Dritsaki et al. (2004); Habib et al. (2013); Tasneem and Aziz (2011) and Trufin (2010)] is presented as FDI increase the capital accumulation, with this High-tech progress and industrial development take place and ultimately the level of exports gone up. Through this channel economic growth gone high up. The second channel discussed in various research studies is:- FDI increase the level of employment and develop managerial skills which raise productivity and ultimately Economic growth of an economy[See, Hafeez et. al (2017), Kumar and Divya S. (2015), Dritsaki et al. (2004), Zakaria et al. (2014), Anwar and Sun (2011), Tasneem and Aziz (2011), M. Abual-Foul and M. Soliman (2008), Ghosh Roy and H.F.Van (2006) Agosin and Maayer (2000)] is presented this channel. Various theoretical and empirical studies illustrate the following third channel FDI develop the human capital and high ups the positive externalities and finally economic growth [See, Abubakar (2014), Gudaro et al. (2012), Ghazali (2010), Lamine and.Yang (2008), Zhang (2006), Toulaboe et al. (2004)].
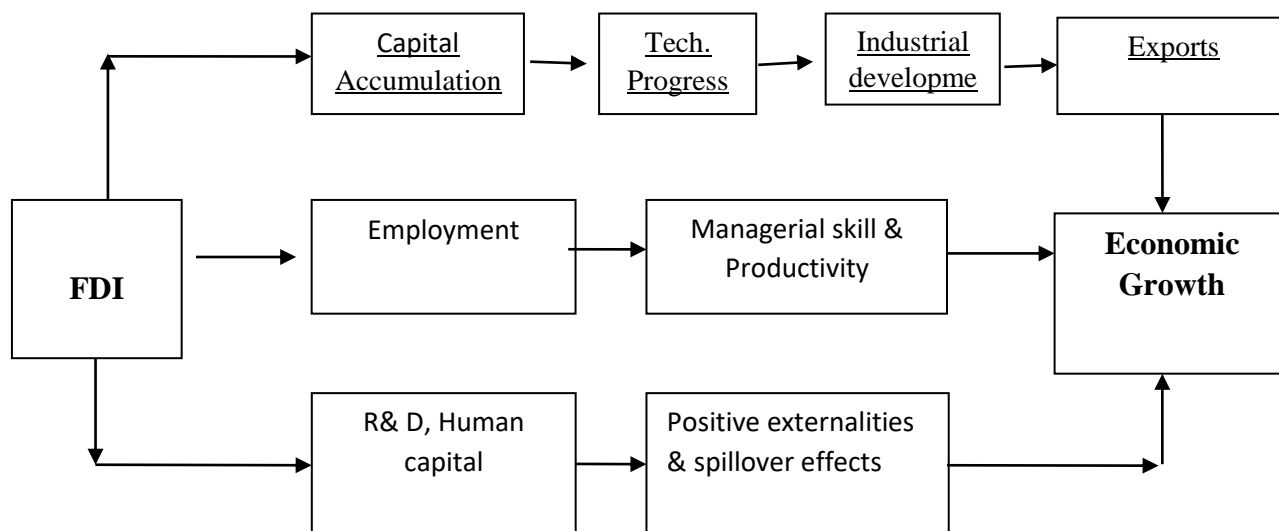
Fig.1. Transmission mechanisms

2. LITERATURE REVIEW

Sufficient literature is available on ICT, FDI-economic growth Nexus in both the theoretical and the empirical aspects. FDI could be fruitful or unfruitful for the economic growth of the host country and examined through the existing literature that researchers focused more on empirical aspects as compared to the theoretical ones.

2.1 Investment, Foreign Direct Investment, ICT and economic growth

We highlight several theoretical studies followed by the empirical-based studies that are related to different transmission mechanism regarding Nexus among employment, FDI, and economic growth. Most of the theoretical literature follows the Solow growth model and endogenous growth model in their studies. Agosin and Mayer (2000) explored that FDI supports the host country for building up its capital level and modern technology. It is also investigated in theoretical literature that FDI makes more positive rotations in the wheel of the economy that are elaborated by them as "positive externalities, research and development, domestic capital enhancement and positive spillover effects" [See, Hafeez et. al (2017), Loungani and Razin (2001), Grossman and Helpman (1991), and Romer (1990)]. In empirical studies, it is concluded that a positive linkage exists among Economic growth and FDI in respect of analysis of the single economic country, cross-country or specific group of countries analysis, respectively [See, Ali et al. (2014), Insah (2013), Sghaier and Abida (2013), Behname (2012), Anwar and Sun (2011), Tasneem and Aziz (2011), Ghazali (2010), Ghosh Roy and H.F. Van (2006), Borensztein et al. (1998), Shabbir and Mahmood (1992)] while some studies provide that an inverse link is also examined between FDI and economic growth [See, Falki (2009), Agrawal (2000), Fry (1992) for analysis].

2.2   Other variables of our model and Economic growth

The factors that determine a nation's economic sophistication have been the subject of numerous studies to date. These studies have highlighted a variety of factors, including intellectual property, intelligence, Economic development, remittances, birthplace diversity, human capital, foreign direct investment, innovation, Trade openness, occupation, individualism, IMF programs or conditionality, and gender equality [See, Sweet and Maggio 2015; Coccia 2017, 2020, 2021; Valette 2018; Lapatinas and Litina 2019; Chu 2020; Kannen 2020; Bahar et al. 2020; Nguyen et al. 2020; Saadi 2020; Njangang et al. 2021; Keneck-Massil and Nvuh-Njoya 2021; Nguyen 2021; Kamguia et al. 2022; Vu 2022; Demir 2022; Maurya and Sahu 2022]. There aren't many studies, nevertheless, looking at how ICTs are used.

FDI has a direct impact on employment and its productivity that enhances the economic growth [See, Habib et al. (2013), Malik et al. (2011), and Sodipe et al. (2011)] while Keynes explained in his general theory that economic growth enhances employment and also affirmed that FDI exerts a positive pressure on-demand elasticity employment or intensity of employment [See, Cheema and Ambreen Atta (2014)]. Another aspect regarding FDI investigates that if the host countries have abilities and potentials such as "economic stability, human capital, liberal markets, and trade liberalization, absorbability of new technology and domestic firms, can participate in a competitive environment", then they can be beneficiaries of FDI otherwise these are worse off [See, Kotrajaras et al. (2011), Toulaboe et al. (2004), and Boreriszteın et al.(1998)].

It is also observed that the host country attracts foreign individuals and organizations to invest for the sake of a higher rate of inflow within the country by providing politically stable and FDI friendly government Industrialized countries can achieve higher growth rates through FDI by having less inflation and low tax rate [See, Seward (2008)].

3. METHODOLOGY AND DATA
3.1. *Data:*

Data of GDP, FDI, ICT, Gross fix capital formation, Exports and Imports are calculated from World Development Indicators (WDI) while data of employment labor force from various issues of Pakistan Economic Survey (PES) for 1972-2018. Trade openness is computed as: *[{(export+ import)/real GDP} *100] (*Zakaria et al (2014). The data was different in measurement. Log was taken to equalized measurement. So, log log model was used.

3.2 *EMPIRICAL MODEL*
In this study, we attempt to explore the linkages among economic growth, ICT and FDI in the presence of other macroeconomic variables [as proposed by Jun (2015) and Ali et al. (2014), Hafeez et al, 2017]. FDI positively affects the growth of an economy. The inclusion of ICT in the model is because with connectivity, new information, ideas and innovations are widely spread and can be utilized for improving production techniques and cost minimization. It also helps to improve trade and commerce through e-commerce, e-trading, e-banking, establishing new markets, new products and R&D. This paper utilizing Cobb-Douglas production function along with and without FDI and then compare the changes in the growth of the economy of Pakistan. Along with ICT another important determinant of growth is technology advancement, labor force participation and increase in investment. Empirical findings will be helpful for policymakers and officials to devise policies. The aforementioned modification is illustrated as follows. The equations for employment, FDI, and economic growth linkages are given as:

$$Y = T\ L^a\ K^b \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ (1)$$

$$Y = T\ L^{a1}\ K^{b2}\ FDI^{3c}\ ICT^{d4} \ldots\ldots\ldots\ (2)$$

By taking the natural log of both equations the econometric expression is given as follows:

$$lnY = lnT + alnL + blnK + \epsilon_t \ldots\ldots\ldots\ldots.(1)$$

$$lnY = lnT + a_1 lnL + b_2 lnK + c_3 lnFDI + d_4 ICT + \mu_t \ldots\ldots\ldots..\ (2)$$

Where **a, b** are (coefficients) parameters of equations (1) and **a_1, b_2, c_3 and** $d4$ of equation *2*, ϵ_t and μ_t error term in equation *1*, &*2*, respectively and the expected impression of parameters (coefficients) of both equation as **$a > 0$, $b > 0$, $a_1 > 0$, $b_2 > 0$ and $c_3 > 0$ and $d_4 > 0$**, *ln Y*= logarithm of real GDP, *ln A*= log of technology improvement, *ln L*= logarithm form of labor force, *ln K*= log of gross fix capital formation, ICT = logarithmic form of information and communication technology and *ln FDI*= foreign direct investment in logarithmic form.

Trade policy regimes, a key determinant of an economy can be measured through trade openness that influences FDI and economic growth. So, we introduce an interaction term *FD*OP* to capture the effect of trade policy regime to explore the real impact of FDI. Our third model is given as:

$$lnY = lnT + a_4\ lnL + b_5\ ln\ K + c_6\ ln\ FD + d_7\ ln\ (FD*OP) + e_8 lnICT + \mu_{3t} \ldots\ldots\ldots\ (3)$$

OP = a ratio of summation of exports and imports to GDP as trade openness. *$\mu 3t$*error term and *a_4, b_5, c_6, d_7*are parameters of equation *3*. The expected impacts are presented as*$a_4 > 0$, $b_5 > 0$, $c_6 > 0$ or $c_6 < 0$, $d_7 > 0$, $e_8 > 0$*. The real impact of FDI is explained by the "**Bhagwati Hypothesis**" that provide the real FDI impacts where it is concluded that FDI has positive impacts on the economy even if the sign of FDI parameter would be observed as negative [See, Bhagwati, J.N (1994)]. The Impact of ICT on economic growth is also being examined in this study.

3.3   M*ethodology*:

To avoid spurious results, unit root test, ADF-Test, is used to identify the integration order. As a pre-requisite of the Johansen Co-integration test, all considered series have the same order of integration. Then, we applied the Autoregressive Distributive Lag Model test to estimate long-run estimates and Error Correction Model (ECM) to evaluate the speed of adjustment towards long-run equilibrium [See, Asteriou and Hall (2011)].

4.   EMPRICIAL OUTCOMES

Table 1 illustrates the ADF-Test results i.e. the order of integration of variables. The results confirm that some variables i.e. ln Y, trade*FDI are found stationarity at a level whereas, ln L, ln K, FDI and ICT are stationary at the 1st difference.

Table 1 ADF-Test Results

Variable	At level			At 1st difference			Integration Order
	"None"	"Constant"	"Both"	"None"	"Constant"	Both	
"ln Y"	0.376 (-1.948)	-3.83* (-2.93)	----	----			I(0)
"ln emp"	2.55 (-1.95)	1.32 (-2.93)	-0.75 (-3.51)	-5.93* (--1.94)			I(I)
"ln K"	2.15 (-1.94)	2.30 (-2.92)	1.02 (-3.51)	-3.38* (-1.94)			I(I)
"FDI"	-1.78 (-2.62)	-1.82 (-3.59)	-1.92 (-4.19)	-4.39* (-2.62)			I(I)
"trade*fdi"	-1.09 (-1.95)	-2.75 (-2.92)	-3.73* (-3.51)	---			I(0)
"Ict"	-0.21 (-1.95)	-1.21 (-2.92)	0.17 (-3.51)	-5.03* (-1.94)			I(I)

At "Critical Value" 1% level of significance

4.1. Autoregressive Distributive Lag Model (ARDL) Results:

From ADF-Test, it is affirmed that some of our under-consideration variables are integrated at the level and some are integrated at 1st difference. Then, we applied the Ordinary Least Squared based Autoregressive Distributive Lag Model. We run unrestricted VAR to choose lag selections based on "AIC", "LR", "FPE", "HQ" and "SC" criteria to estimate the long run normalized coefficients. The number of co-integrated equation(s) in each case is determined on the basis "Maximum Lag Length" is selected 2. Long-run results are presented in Table no.3. Where lag selection is given as 1972 -2018 at lag [2, 2] in each case.

Table 2. VAR Lag Order Selection-Test Results

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-277.92	NA	0.19	12.57	12.77	12.65
1	-34.86	421.21	1.24	2.88	4.09	3.33
2	20.23	83.25*	3.39*	1.54*	3.75*	2.37*

Based on Table 2 results, lag 2 is the selected level. It is so because on level two all criteria showed minimum value. Firstly, we estimated the following model:

$$lnGDP = lnict + \alpha_1 lnL + b_2 K + c_3 lnFD + \mu_t \text{ -------------------------------- Model 1}$$

Gross Domestic Product, Capital, FDI, ICT and Employment level has a significant correlation with dependent variable growth with the coefficient of 0.20, 2.15, 0.25, 0.55 and 0.02 respectively. ICT affect growth with lags. This might be due to the time in installation of equipment.

Normalized coefficients of the estimated long-run equation is given as

lnY = 4.46 - 0.0.30L+2.15ln K+ 0.26ln FD- 0.55ln (ICT)

Table 4 concluded that there is no problem of residuals uncorrelated, and homoscedastic. It infers the estimated model is robust. While bound testing for Model 1, and 2 are reported in Table 5. Both bound testing values are greater than upper bound values which infers a long relationship among the concern variables for Model 1, and 2, respectively.

Table 3. Autoregressive Distributive Lag Model Results

Variable	Coefficient	Standard Error	t-Statistics	Prob.
LGDP (-1)	0.11	0.09	1.09	[0.29]
LGDP (-2)	0.20	0.11	1.90	[0.07]
LGDP (-3)	-0.41	0.09	-4.46	[0.00]
LGDP (-4)	-0.46	0.16	-2.88	[0.01]
LnK	2.15	0.91	2.35	[0.03]
LnK (-1)	-3.22	0.87	-3.70	[0.00]
LnK (-2)	2.10	0.75	2.79	[0.01]
FDI	0.25	0.12	2.14	[0.04]
FDI (-1)	-0.07	0.14	-0.46	[0.65]
FDI (-2)	0.10	0.17	0.63	[0.53]
FDI (-3)	0.24	0.18	1.40	[0.18]
FDI (-4)	-0.14	0.14	-0.99	[0.33]
ICT	-017	0.13	-1.34	[0.19
ICT (-1)	-0.19	0.18	-1.07	[0.30]
ICT (-2)	0.55	0.13	4.09	[0.00]
ICT (-3)	-1.22	0.14	-8.62	[0.00]
ICT (-4)	1.06	0.17	6.16	[0.00]
EMPL	0.02	0.01	1.60	[0.12]
EMPL (-1)	-0.01	0.02	-0.41	[0.68]

EMPL (-2)	-0.33	0.02	-1.72	[0.10]
EMPL (-3)	-0.00	0.02	-0.04	[0.97]
EMPL (-4)	-0.03	0.01	-2.41	[0.03]
C	4.46	1.13	3.93	[0.00]

R^2	0.98	DW-Statistics		2.58
Adjusted R^2	0.96	F-Statistics 52.00		Prob. [0.00]

Table 5 indicates the long run results of ARDL. In the long run Capital, Foreign Direct Investment and Employment are significant but Information and Communication Technology are not significant.

Table 4. Diagnostic Statistics

Diagnostics/Serial Correlation LM-Test			
		Probability	
F-Calculated	0.96	F (4, 16)	0.45
Observation*R-squared	8.35	Chi-Square (4)	0.08
Heteroscedasticity-Tests			
F-Calculated	0.50	F(22, 20)	0.93
Observation*R-squared	15.32	Chi-Square (22)	0.84
Scaled explained SS	5.80	Chi-Square (22)	0.99

Table 5A. Bounds Testing

Test Statistic	Value	K
Model-1		
F-Calculated	12.57	4
Model-2		
F-Calculated	13.69	5

Table 5B. Critical Value Bounds

Significance	I0 Bound	I1 Bound	I0 Bound	I1 Bound
Model-1			Model-2	
10%	2.45	3.52	2.26	3.35
5%	2.86	4.01	2.62	3.79
2.5%	3.25	4.49	2.96	4.18
1%	3.74	5.06	3.41	4.66

Table 6. Long Run Coefficient Results

Variable	Co-efficient	Standard Error	t-Statistics	Probability
Capital	0.66	0.13	5.23	[0.00]*
FDI	0.25	0.08	3.22	[0.00]*
ICT	0.02	0.05	0.32	[0.75]
Employment	-0.03	0.01	-4.75	[0.00]*
Constant	2.85	0.39	7.36	[0.00]*

Table 7. Short Run Estimation Test - Results

Variable	Co-efficient	Std. Error	t-Statistics	Probability
D(LGDP (-1))	0.67	0.26	2.61	[0.02]
D(LGDP (-2))	0.87	0.22	3.90	[0.01]
D(LGDP (-3))	0.46	0.16	2.88	[0.01]
D(LnK))	2.15	0.92	2.35	[0.03]
D(LnK (-1))	-2.10	0.75	-2.79	[0.01]
D(FDI)	0.25	0.12	2.14	[0.04]
D(FDI (-1))	-0.10	0.17	-0.63	[0.53]
D(FDI (-2))	-0.25	0.18	-1.40	[0.18]
D(FDI (-3))	0.14	0.14	0.99	[0.33]
D(ICT)	-0.17	0.13	-1.34	[0.20]
D(ICT (-1))	-0.55	0.13	-4.09	[0.00]
D(ICT (-2))	1.22	0.14	8.62	[0.00]
D(ICT (-3))	-1.06	0.17	-6.16	[0.00]
D(EMPL)	0.02	0.01	1.60	[0.12]
D(EMPL (-1))	0.03	0.02	1.72	[0.10]
D(EMPL (-2))	0.00	0.02	0.04	[0.97]

D(EMPL (-3))	0.03	0.01	2.41	[0.02]
CointEq(-1)	-1.56	0.30	-5.14	[0.00]

Table 8 is showing the short-run results of model -1. In said model previous year Information and Communication Technology (ICT (-1)), Capital, FDI of the current year and Labour force (-3) have significant influence over GDP of Pakistan with coefficient value of -0.55, 2.15, 0.03 respectively.

CointEq(-1) = LGDP – (0.66*K + 0.25*FDI + 0.02*ICT – 0.03*EMPL + 2.85)

4.2 Estimation of Full Model

Table 8. Autoregressive Distributive Lag Model - Results

Variable	Coefficient	Standard Error	t-Statistics	Prob.
LGDP (-1)	0.30	0.09	3.49	[0.00]
LGDP (-2)	0.28	0.09	3.10	[0.01]
LGDP (-3)	-0.42	0.09	-4.66	[0.00]
LGDP (-4)	-0.52	0.17	-3.12	[0.01]
ICT	-0.19	0.13	-1.41	[0.17]
ICT (-1)	-0.06	0.19	-0.34	[0.75]
ICT (-2)	0.48	0.16	3.02	[0.01]
ICT (-3)	-0.99	0.20	-5.01	[0.00]
ICT (-4)	0.91	0.16	5.55	[0.00]
LIM	1.17	0.96	1.23	[0.23]
LIM (-1)	-3.27	0.88	-3.73	[0.00]
LIM (-2)	1.92	0.75	2.55	[0.02]
LIM (-3)	1.22	0.79	1.53	[0.14]
EMPL	0.01	0.01	0.50	[0.62]
EMPL (-1)	0.00	0.02	0.28	[0.78]
EMPL (-2)	-0.04	0.01	-2.91	[0.01]

Trade*FDI	2.09	0.94	2.22	[0.04]
Trade*FDI(-1)	-0.06	0.36	-0.16	[0.87]
Trade*FDI(-2)	-0.16	0.42	-0.39	[0.70]
Trade*FDI(-3)	1.03	0.39	2.63	[0.02]
Trade*FDI(-4)	-0.96	0.27	-3.56	[0.00]
FDI	-0.61	0.38	-1.58	[0.13]
C	2.99	1.20	2.50	[0.02]
R^2	0.98	DW-Statistics		2.47
Adjusted R^2	0.96	F-Statistics 56.93		Prob. [0.00]

LGDP = Employment, ICT, FDI, Trade*FDI, Capital ---------------------- Model – 2

Gross Domestic Product, Capital (-1), Trade*FDI, FDI and Employment (-2) level have a significant correlation with dependent variable growth with the coefficient of 0.30, -3.27, 2.10, -0.61, -0.04 respectively. Table 9 concluded that there is no problem of residuals uncorrelated, and homoscedastic. It infers the estimated model is robust.

Normalized coefficients of the estimated long-run, incorporated in equation *is* given as

lnY = 2.98 -0.48ICT + 0.30K – 3.27ln Trade*FDI + 2.09lnFDI – 0.04*L

Table 10 indicates the long run results of ARDL. In the long run Capital, Information and Communication Technology and Employment ate significantly but Foreign Direct Investment is not significant. Table 11 is showing the short-run results of model -1. In said model previous year Information and Communication Technology (ICT (-1)), Capital, FDI of the current year and Labor force (-3) have significant influence over GDP of Pakistan with coefficient value of -0.55, 2.15, 0.03 respectively.

Cointeq = LGDP – (0.11*ICT + 0.77*K – 0.02*EMPL + 1.43*Trade-FDI – 0.45*FDI + 2.20)

Table 9. Diagnostic Statistics

Diagnostics/Serial Correlation LM-Test				
		Probability		
F-Calculated	1.25	F(2, 18)	0.31	
Observation*R-squared	5.24	Chi-Square (2)	0.07	
Heteroscedasticity-Tests				
F-Calculated	01.02	F(22, 20)	0.48	
Observation*R-squared	22.74	Chi-Square (22)	0.41	
Scaled explained SS	09.61	Chi-Square (22)	0.99	

Table 10. Model-2-Long Run Coefficient Results

Variable	Coefficient	Std. Error	t-Statistics	Prob.
Capital	0.77	0.17	4.57	[0.00]*
FDI	-0.45	-0.02	-1.43	[0.17]
ICT	0.11	0.05	2.09	[0.05]*
Employment	-0.02	0.01	-4.00	[0.00]*
Trade*FDI	1.43	0.75	1.90	[0.07]*
Constant	2.20	0.59	3.73	[0.00]*

Table 11. Short Run Estimation

Variable	Coefficient	Standard Error	t-Statistics	Prob.
D(LGDP (-1))	0.66	0.25	2.61	[0.02]
D(LGDP (-2))	0.94	0.23	4.14	[0.00]
D(LGDP (-3))	-0.52	0.17	3.12	[0.01]
D(ICT)	0.19	0.13	-1.41	[0.17]
D(ICT(-1))	-0.48	0.16	-3.01	[0.01]
D(ICT(-2))	0.99	0.20	5.00	[0.00]
D(ICT(-3))	-0.91	0.16	-5.55	[0.00]
D(K)	1.17	0.96	1.23	[0.23]
D(K(-1))	-1.92	0.75	-2.55	[0.02]
D(K(-2))	-1.21	0.80	-1.54	[0.14]
D(EMPL)	0.01	0.01	0.50	[0.62]
D(EMPL(-1))	0.04	0.01	2.91	[0.01]
D(TRADE*FDI)	2.10	0.94	2.22	[0.04]
D(TRADE*FDI(-1))	0.16	0.42	0.39	[0.70]
D(TRADE*FDI(-2))	-1.03	0.39	-2.63	[0.02]
D(TRADE*FDI(-3))	0.96	0.27	3.56	[0.00]
D(FDI)	-0.61	0.38	-1.58	[0.13]
CoineEq (-1)	-1.36	0.29	-4.70	[0.00]

5. Results Discussion:

Our findings reflect that 1 percentage increase in employment will enhance GDP by 0.76, 0.68 and 0.29 percentage1 in each model. As the first transmission, the mechanism demonstrates that employment intensity or aggregative demand elasticity of employment is directly associated with the economic growth of Pakistan, while the power of employment intensities or inelastic aggregate demand elasticities of employment are 0.76, 0.68 and 0.29, respectively. The results indicate that as we increase the arguments in the GDP model the labor elasticity of output declines. A one percent increase in investment in our three models will lead to a 0.80%, 1.04%, and 0.70% increase in GDP, respectively. Investment is directly linked to economic growth as proposed by the 2nd transmission mechanism.

FDI has a positive linkage with economic growth as claimed by Bhagwati Hypothesis. As we tested the "**Bhagwati Hypothesis**" stated as real FDI has a positive impact even if coefficients of FDI would be noted negative and real impacts of FDI demonstrated as $FDI = C_6 + d_7*OP$. In the 2nd model, we found that FDI hurts economic growth along with magnitude "-0.06". In the 3rd model, FDI is positively linked with economic growth under trade regimes. The nature of the real impact of FDI can be computed as $FDI = 0.68 + (-1.90) = -1.22$, which provides negative results in both cases that either we consider trade regimes policy or not. Our results are paradoxical to the "**Bhagwati Hypothesis**" due to two reasons. The first one, Pakistan faced bottlenecks such as war & terror, energy shortage, the political uncertainty that created hurdles in the competitive environment [See, "Pakistan Economic Survey, 2014" and Mbulawa (2015)]. These bottlenecks generated the declining trend in the market share of Pakistani products in the international market in addition to investment out flowing [See, "Pakistan Economic Survey, Annex-IV War on Terror, 2014"].

The economy of Pakistan bearded a loss of11.16 billion US $ in the recent war and terrorist attacks which includes the loss of FDI and exports of 2.10 billion US $ and 1.26 billion US $, respectively [See, "Pakistan Economic Survey, 2014"]. The second reason, Pakistan cannot acquire beneficiaries of FDI due to lack of human capital, liberal markets, absorbability of new technology and domestic competitive environment [See, Zakaria et al. (2014), Kotrajaras et al. (2011), and Toulaboe et al. (2004)].

VECM results inform us about the speed of adjustment towards a long-run equilibrium that elaborates either convergence pattern or divergence pattern due to the occurrence of a shock to the economy. VECM estimates are presented in Table no.3. In our study, all error correction terms of models show convergence pattern. If any shock occurred in the economy then the speed of adjustment of error correction terms "*D(ln Y)*" would be 3.95%, 10.07% and 15.21% (in each period) towards long-run equilibrium in model *1*, *2* and *3*, respectively which are statistically significant at 1% level of significance.

6. Conclusion and Policy suggestions:

The study reveals that a one-percent increase in employment leads to a 0.76, 0.68, and 0.29 percentage increase in GDP in Pakistan. Employment intensity is directly associated with

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1 Since all the series are in log-form, thus the estimated coefficients represent the long-run elasticities.

economic growth, while investment directly links to economic growth. The Bhagwati Hypothesis suggests that foreign direct investment (FDI) has a positive linkage with economic growth. However, the study found that FDI can negatively impact economic growth, with a magnitude of -0.06 in the second model and -1.22 in the third model. Pakistan's economic situation is paradoxical due to bottlenecks such as war and terror, energy shortages, and political uncertainty. The study also found that Pakistan cannot acquire FDI beneficiaries due to lack of human capital, liberal markets, absorbability of new technology, and domestic competitive environment. The study also found that VECM results show convergence patterns in error correction terms, suggesting a slow adjustment towards long-run equilibrium.

In this paper, we have tested the relevance of the Bhagwati Hypothesis with special emphasis on the spread of ICT by using the Autoregressive Distributive Lagged Model test and VECM for estimating normalized long-run coefficients and short-run dynamics in term of speed of adjustment, respectively regarding Pakistan. We also revisited the "Bhagwati Hypothesis" to investigate the real impact of FDI on economic growth along with trade regimes. The demand elasticities of employment and capital are presenting a positive trend that reflects the positive impact on economic growth. We found that FDI has an inverse relationship with economic growth as claimed by Falki (2009) and Agrawal (2000).

On the other hand, our results are contradictory to the "Bhagwati Hypothesis" that FDI caused negative results to the economic growth of Pakistan only due to bottlenecks of war on terror and lack of human capital, uncompetitive domestic environment, not the existence of liberal markets less absorbability to modern technology and relying on primary exports. In the light of our findings, some policy suggestions are given as follows: Employment and capital are positively linked with economic growth. Therefore, we have to invest in such economical activities along with manufacturing units that could create new job opportunities and a competitive business environment. Government should enhance the human capital and also need to provide a competitive environment. The government is required to make FDI-friendly policies that could remove the bottlenecks and attract global investors. In this study time series data only for Pakistan is used. It can also be checked for Asian countries panel data for analysis as (Owolabi OA et al 2023) explored nexus between Growth, ICT and FDI for sub-Saharan Countries.

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