

Impact of WTO on Pakistan and Indian Economies

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Abstract The present study revealed the impact of WTO on Pakistan and Indian economies. Yearly data were used from 1980 to 2010 for estimation. The main objective of this study was to measure the impact of WTO on economies of Pakistan and India. GDP, production of agriculture, production of industry, services, per capita income and FDI were used as dependent variables. Exchange rate, terms of trade and financial liberalization were used as the explanatory variables. Dummy variable was used for WTO. Augmented Dickey Fuller (ADF) test was applied to check the stationarity level of each variable included in the model. Johansen Cointegration Test was applied to find empirical results. Some policies were suggested on the base of empirical findings.

Keywords: WTO, GDP, production of agriculture, production of industry, services, per capita income, FDI, exchange rate, terms of trade, financial liberalization

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1. Introduction

Developing countries are currently more globally integrated than they were in 1995, however, they are the least globally integrated region in the world. World Trade Organization (WTO) supports trade between member countries and controls worldwide trade contracts. This organization gives training and methodological aids for underdeveloped economies. WTO collaborates with worldwide institutes. WTO contributes or facilitates the developing countries through the international trading system. It was established on January 1st, 1995. It is the modification of the General Agreement on Tariffs and Trade. Currently 159 countries are members of the World Trade Organization [21].

Pakistan is a member of WTO since 1st January 1995 and its forerunner organization the GATT (1948). Agriculture was first time given the full consideration in the WTO, although agriculture was included in the original GATT in 1947. The WTO Agreement on Textiles and Clothing (ATC) planned to join together clothing and textiles according to the WTO regulations that control trade in industrialized merchandise. Pakistan is an Agri-based country. A large quantity of the agricultural production of the country is consumed by the local population. While remaining part of agricultural goods are exported as primary or value added products. The agricultural growth of Pakistan was calculated at 1.2 percent in 2010-11. Cotton, Wheat, Rice, Sugarcane, Gram, Maize are major Crops while potato, onion and mash are minor crops of Pakistan (Economic survey, 2011). In the world economic system, services sector is biggest and rapidly growing sector. In low income countries its portion of the overall Gross Domestic Product

is 47%. GDP in average income states is 53% and in large income states 73%. In case of Pakistan the contribution of services is growing in each division of the economy. The growth rate of industry and agriculture is less than the services sector. 54 percent of GDP comes from the services sector. In Pakistan services are classified into these sectors railways, air transport, pipeline transport, water transport, mechanized communications, road transport, non-mechanized, storage, wholesale retail trade and hotels and restaurants purchase and sale agents and brokers, commercial and State Bank of Pakistan, education, medical and health services, financial Institution [1].

India is an initiative follower of GATT since 1947 and its replacement WTO. A lot of trade disagreements of India are settled through WTO with other countries. By being an affiliate of WTO, presently India is trading with numerous states. India has improved manufacturing, services, standard of living and maximum use of the resources. India is estimated to take most of the trade contracts including the main service based manufacturing [20] India is a typical country for the fast growth of its service sector, communication, advanced info technology, and enterprise services. Even so, the service sector supplies a path for poverty reduction and economic improvement. In India services sector development is broad-based. India is a gross exporter in the agribusiness thus it is liable to be profited by commissariat of the Agreement on Agriculture (A-o-A). Even so, it is essential that the advantages from agribusiness exports may not outwit the financial loss received on compromising the marketplace entree in commercial enterprise and services. For India to take benefit of the decrease in tariff in the commercial enterprise sector and concession access to services, needs to create relative benefit in these fields speedily. The improvement schedule of the WTO is a

creative instrument in this respect and ways of upcoming discussions are captious for its attainment. The current dialogues are liable to fruit adequate flexibility in commodity and tariff option. A many-sided trading scheme is in favor of India. Thus, India should try to make the Doha round successful and fully use this chance to improve its internal marketplace [11].

The study has following objectives

1. To measure the impact of WTO on the economies of Pakistan and India.
2. To estimate the impact of WTO on different sectors of both economies.
3. To evaluate the impact of WTO on investment in Pakistan and Indian economies.
4. To suggest policy recommendations.

1.1. Review of Literature

[6] revealed that stability in exchange rate is necessary to improve FDI. Annual data from 1975-1998 has been used by categorizing countries into different geographical regions. Exchange rate volatility was found to be negatively associated with the FDI to developing countries. [8] Evaluated the accomplishable channels through which China's growth to the WTO affected East Asia. They used a dynamic computable general equilibrium model to measure the consequences. The outcomes showed that China would be the largest beneficiary of growth to the WTO. Most of the welfare was connected with China's trade liberalization. [19] Provided proof that the WTO had a positive and authoritative effect on the trading system. [2] Examined the effect of WTO accession on poverty and inequality in Ethiopia. They applied a sequential dynamic micro simulation computable General Equilibrium (CGE) model. The consequences of this study had a connection to the judgment of government related the accession to the WTO. [5] Examined the global trade and food security as the response of the WTO in economies of South Asia. He found that WTO causes severe concern to the role of food security and agriculture region due to greater reliance on imports of food and decrease in self capability in agricultural sector after WTO. [14] Studied advantages for agriculture sector as a WTO member for Pakistan. They also suggested that strong policies and planning should be adopted by the government to keep advantage of WTO membership. [3] Examined the domestic assistance being supplied presently to the Pakistan's agriculture sector and its upcoming extent under the WTO. They concluded that in resource allocation to the agricultural sector in Pakistan is far behind. [16] Examined growth execution of GDP of Indian economic system. He also examined India's exports with respect to the effect of prima structural modification after 1991 due to the agreement of WTO in 1995. The results of the study showed India's GDP and export had reduced in terms of per Annam growth after the economical improvement reforms of 1991. Once again it has decreased after WTO arrangements were introduced (1995). [17] Assessed the impact of WTO on local prices, production and consumption of main food items as wheat and rice and their effect on the producer's and consumer's excesses. It was concluded that along with affecting the producer and consumer surpluses, internal demand, supply and consumption would also be affected by the openness

of the economy. [12] Analyzed the trade volume of South Asian countries before and after WTO. To determine the impact of explanatory variables on trade volume before and after WTO, the Ordinary Least Square (OLS) method was used. From statistical analysis it was concluded that trade of south Asian countries had not been improved up to the expectations because benefits gained from world trade were low. [15] described the challenges of Pakistan's textiles industrial sectors before and after MFA regime. This study also prescribed laws and regulations of WTO agreements and their implementation. They concluded that the main challenges for Pakistan's textile industry was to compete with its rivals, moreover it should increase its share in world exports. [18] Examined the impact of WTO on foreign direct investment (FDI), growth and trade in South Asia. Econometric techniques used in this study showed that the WTO has a significant impact on foreign direct investment (FDI), growth and trade. Moreover imports and exports were also increased under WTO.

2. Material and Methods

The purpose of this study is to find out the impact of WTO on Pakistan and Indian economies. For analysis purposes time series data from 1980-2010 is used. Data is obtained from World Development Indicator (WDI).

In this study following models will be estimated.

$$GDP_{it} = f(ER_{it}, TOT_{it}, FL_{it}, D) \quad (1)$$

$$PAGR_{it} = f(ER_{it}, TOT_{it}, FL_{it}, D) \quad (2)$$

$$PIND_{it} = f(ER_{it}, TOT_{it}, FL_{it}, D) \quad (3)$$

$$SER_{it} = f(ER_{it}, TOT_{it}, FL_{it}, D) \quad (4)$$

$$PCI_{it} = f(ER_{it}, TOT_{it}, FL_{it}, D) \quad (5)$$

$$FDI_{it} = f(ER_{it}, TOT_{it}, FL_{it}, D) \quad (6)$$

Where GDP is gross domestic product, PAGR is production of agriculture, PIND is production of industry, SER is the services, PCI is per capita income, FDI is foreign direct investment, ER is exchange rate, TOT is terms of trade, FL is financial liberalization and liberalization is measured by subtracting currency in circulation from m_2 and divided by GDP e.i. m_2 -currency in circulation/GDP, t is the time period for ith country. D = 0 (before WTO), D = 1 (after joining WTO).

Model 1 is used to find the impact of WTO on whole economies of Pakistan and India. While others on different sectors of both economies.

2.1. Johansen and Juselius's Cointegration Method

Johanson and Jusilious co-integration test shows the long run relationship among the variables. JJ cointegration is used when integrated order of each variable is same, say all variables are integrated of order I (1) or I (2).

To check whether the long run equilibrium holds or not, two tests were used.

- i. Trace test

ii. Maximum Eigen value test

Hypothesis

Ho: No cointegration among the variables

H₁: Cointegration among the variables

If trace value > critical value then we reject Ho and accept H₁. After the long run relation, error correction model (ECM) is used to find the short run relation.

3. Empirical Findings

Empirical results found by using the Johansen Juselius Co-integration test. Since time series data frequently are of non stationary nature. The results drawn from non

stationary data are spurious and could not be used for future projection. Therefore in order to apply any econometric model upon such data, it is necessary to make it stationary.

Stationarity results of ADF exposed the unit root problem and different stationary level for all the variables. All variables were not stationary at level. At first difference all the variables were stationary or integrated of order I (1). Augmented Dickey Fuller results showed Johansen Juselius (JJ) Co-integration technique was suitable to find the empirical results because JJ Co-integration provides better results when order of integration was same. Probability showed the different significance level for all the variables.

Table 1. Stationary Test of Variables for Pakistan, Using Augmented Dickey Fuller Test

VARIABLES	AT LEVEL		AT 1 ST DIFFERENCE	
	Test Stat	Prob.	Test Stat	Prob.
GDP	-0.650	0.967	-3.362**	0.076
Production of Agriculture (PAGR)	-2.101	0.524	-6.227*	0.000
Production of Industry (PIND)	-2.673	0.254	-4.156**	0.014
Services (SER)	-0.999	0.929	-4.241**	0.012
Foreign Direct Investment (FDI)	-0.349	0.983	-4.584*	0.005
Per Capita Income (PCI)	-1.558	0.784	-3.470**	0.061
Exchange Rate (ER)	-2.101	0.519	3.593**	0.049
Terms of Trade (TOT)	-2.987	0.683	-6.679*	0.000
Financial Liberalization (FL)	-3.107	0.038	-4.411*	0.008

* denotes significance at 1%, 5% and 10% and ** denotes significance at 5% and 10%.

Table 2. Stationary Test of Variables for India, Using Augmented Dickey Fuller Test

VARIABLES	AT LEVEL		AT 1 ST DIFFERENCE	
	Test Stat	Prob.	Test Stat	Prob.
GDP	4.126	1.000	-3.759**	0.076
Production of Agriculture (PAGR)	-0.448	0.815	-10.103*	0.000
Production of Industry (PIND)	1.969	1.000	-3.536**	0.054
Services (SER)	-0.999	0.929	-4.241**	0.012
Foreign Direct Investment (FDI)	-3.178	0.983	-6.645*	0.000
Per Capita Income (PCI)	3.066	1.000	-3.443**	0.065
Exchange Rate (ER)	-0.570	0.973	-4.414*	0.007
Terms of Trade (TOT)	1.094	0.999	-5.356*	0.000
Financial Liberalization (FL)	-3.118	0.038	-4.570*	0.005

* denotes significance at 1%, 5% and 10% and ** denotes significance at 5% and 10%.

Table 3. Johansen Juselius Co-integration Test results for GDP in Pakistan

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	87.19*	47.86	48.19*	27.58
r = 1	r = 2	38.67*	29.79	23.68*	21.13
r = 2	r = 3	15.30	15.49	14.52*	14.26
r = 3	r = 4	0.79	3.84	0.79	3.84

i. Critical values are given at p = 0.05 levels for co-integration.

ii. "r" stands for the number of co-integration vector.

iii. "***" denotes significant at 5% level of significance (reject the null hypothesis of no co-integration).

From the analysis (Table 3), it is concluded that trace statistics test indicates one co-integrating equation and maximum Eigen value statistics indicate three co-integrating equations are possible at 0.05 significance level.

Table 4 represented the estimates of co-integrating vectors for GDP in Pakistan. Exchange rate showed negative sign and has significant impact on GDP. Empirical findings of [9] also showed the significant effect of exchange rate on gross domestic product. Terms of trade and financial liberalization also exposed significant impact on GDP. Positive and Significant value of dummy variable revealed the positive impact of WTO on GDP. In short run dynamics ECM coefficient with (-ve) sign showed the convergence towards equilibrium. The value of R^2 and adjusted R^2 indicated the variation of dependent variable caused by independent variable.

The analysis (Table 5) explained that trace statistics test indicates three co-integrating equations and maximum Eigen value statistics indicate four co-integrating equations are possible at 0.05 significance level.

Table 6 explained the estimates of co-integrating

vectors for production of agriculture in Pakistan. Exchange rate positively correlated with production of agriculture. Terms of trade and financial liberalization insignificantly but positively correlated with production of agriculture. Coefficient value of dummy variable revealed that positive impact of WTO on production of agriculture. An error correction coefficient sign indicated the convergence towards equilibrium in within a specific time period.

The analysis (Table 7) exposed that trace statistics test indicates three co-integrating equations and maximum Eigen value statistics indicate two co-integrating equations are possible at 0.05 significance level.

Table 8 revealed the estimates of co-integrating vectors for production of industry in Pakistan. Exchange rate inversely correlated with production of industry. Terms of trade and financial liberalization significantly but positively correlated with production of industry. Dummy variable has significant and positive coefficient value which showed positive impact of WTO on production of industry. ECM sign denoted the convergence towards equilibrium.

Table 4. Long run and short run dynamics for GDP in Pakistan

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	-0.27*	-7.78	ΔER	-0.01	-0.10
TOT _t	5.61*	4.23	ΔTOT	5.28	1.19
FL _t	26.8*	7.97	ΔFL	-30.26**	-1.83
			Constant	-0.91**	-1.77
			D	3.28*	3.23
			ECM	-0.90*	-2.46
			R ²	0.53	
			Adjusted R ²	0.40	

Note: * denoted significance at 1%, 5%, ** at 10% level of significance.

Table 5. Johansen Juselius Co-integration Test results for Production of Agriculture in Pakistan

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	84.91*	47.86	32.16*	27.58
r = 1	r = 2	52.75*	29.79	24.75*	21.13
r = 2	r = 3	28.00*	15.49	21.43*	14.26
r = 3	r = 4	6.56	3.84	6.56*	3.84

Table 6. Long run and short run dynamics for Production of Agriculture in Pakistan

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	0.00023	0.69	ΔER	2.62	-0.10
TOT _t	0.0034	0.26	ΔTOT	0.00068	1.19
FL _t	0.031	1.02	ΔFL	0.0004	-1.83
			Constant	0.0002	-1.77
			D	0.0002	3.23
			ECM	0.01	-2.46
			R ²	0.65	
			Adjusted R ²	0.45	

Note: * denoted significance at 1%, 5%, ** at 10%, respectively.

Table 7. Johansen Juselius Co-integration Test results for Production of Industry in Pakistan

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	73.06*	47.86	41.01*	27.58
r = 1	r = 2	32.06*	29.79	21.67*	21.13
r = 2	r = 3	10.39	15.49	10.32	14.26
r = 3	r = 4	0.06	3.84	0.06	3.84

Table 8. Long run and short run dynamics for Production of Industry in Pakistan

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	-0.0002	0.45	ΔER	-0.001*	-4.38
TOT _t	0.07*	3.91	ΔTOT	-0.02	-1.37
FL _t	0.21*	4.61	ΔFL	-0.14**	-1.68
			Constant	0.02*	4.85
			D	0.01*	2.55
			ECM	-0.67*	-3.73
			R ²	0.76	
			Adjusted R ²	0.63	

Note: * indicated significance at 1%, 5%, ** at 10%, respectively.

Table 9. Johansen Juselius Co-integration Test results for Services in Pakistan

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	54.94*	47.86	29.07*	27.58
r = 1	r = 2	20.39	29.79	13.97	21.13
r = 2	r = 3	6.41	15.49	5.87	14.26
r = 3	r = 4	0.54	3.84	0.54	3.84

Table 10. Long run and short run dynamics for Services in Pakistan

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	0.008*	6.42	ΔER	0.0003	0.35
TOT _t	-0.35*	6.57	ΔTOT	-0.02	-1.50
FL _t	0.78*	5.75	ΔFL	-0.03	-0.47
			Constant	0.002	0.57
			D	0.002	0.58
			ECM	0.03	0.38
			R ²	0.42	
			Adjusted R ²	0.23	

Note: * denoted significance at 1%, 5% and 10%, respectively.

Table 11. Johansen Juselius Co-integration Test results for PCI in Pakistan

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	77.75*	47.86	49.22*	27.58
r = 1	r = 2	28.92	29.79	19.34	21.13
r = 2	r = 3	6.78	15.49	6.62	14.26
r = 3	r = 4	1.58	3.84	1.58	3.84

The results (Table 9) explained that trace statistics test indicates one co-integrating equation and maximum Eigen value statistics indicate one co-integrating equations are possible at 0.05 significance level.

Estimates of co-integrating vectors for services in Pakistan are represented in Table 10. Exchange rate and financial liberalization showed significant and positive relationship with services. Services are significantly and negatively related with terms of trade. Dummy variable has significant and positive coefficient value which revealed positive impact of WTO on services. ECM sign indicated the divergence from short run equilibrium to long run equilibrium.

The analysis (Table 11) explained that trace and maximum Eigen value statistics indicate one co-integrating equation is possible at 0.05 significance level.

Table 12 described the estimates of co-integrating vectors for per capita income in Pakistan. Exchange rate, terms of trade and financial liberalization have significant

impact on per capita income. Coefficient value of dummy variable revealed the positive impact of WTO on per capita income. An error correction coefficient sign indicated the convergence towards equilibrium in within a specific time period.

From the analysis (Table 13), it is concluded that trace and maximum Eigen value statistics indicate two co-integrating equations are possible at 0.05 significance level.

Table 14 represented the estimates of co-integrating vectors for FDI in Pakistan. Exchange rate showed negative sign and has significant impact on FDI. Terms of trade and financial liberalization also exposed significant impact on FDI. Positive and Significant value of dummy variable revealed the positive impact of WTO on FDI. In short run analysis ECM coefficient with (-ve) sign showed the convergence towards equilibrium.

The results (Table 15) explained that trace and maximum Eigen value statistics indicate one co-integrating equation is possible at 0.05 significance level.

Table 12. Long run and short run dynamics for PCI in Pakistan

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	-0.002*	-7.00	ΔER	-1.87	-0.51
TOT _t	-0.08*	-8.33	ΔTOT	0.0003	0.34
FL _t	0.30*	10.06	ΔFL	-0.008*	-2.00
			Constant	0.0004*	2.72
			D	0.0005*	2.91
			ECM	-0.01	-1.57
			R ²	0.44	
			Adjusted R ²	0.29	

Note: * showed significance at 1%, 5% and 10%, respectively.

Table 13. Johansen Juselius Co-integration Test results for FDI in Pakistan

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	82.63*	47.86	50.93*	27.58
r = 1	r = 2	31.70*	29.79	23.67*	21.13
r = 2	r = 3	8.63	15.49	6.31	14.26
r = 3	r = 4	1.71	3.84	1.71	3.84

Table 14. Long run and short run dynamics for FDI in Pakistan

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	-0.07*	-4.14	ΔER	0.08*	2.15
TOT _t	2.74*	4.11	ΔTOT	-0.38	-0.46
FL _t	12.23*	7.21	ΔFL	3.80	1.07
			Constant	-0.34*	-2.42
			D	0.17	1.02
			ECM	-0.79*	-5.24
			R ²	0.65	
			Adjusted R ²	0.55	

Note: * denoted significance at 1%, 5% and 10% level of significance.

Table 15. Johansen Juselius Co-integration Test results for GDP in India

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	49.25*	47.86	30.49*	27.58
r = 1	r = 2	15.76	29.79	10.52	21.13
r = 2	r = 3	5.23	15.49	3.72	14.26
r = 3	r = 4	1.50	3.84	1.50	3.84

Table 16. Long run and short run dynamics for GDP in India

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	0.09	1.35	ΔER	-0.23	-1.50
TOT _t	13.70*	2.34	ΔTOT	-3.95	-0.61
FL _t	-8.25*	-2.05	ΔFL	-95.28*	-3.75
			Constant	2.37*	4.35
			D	6.93	1.02
			ECM	-0.01	0.83
			R ²	0.79	
			Adjusted R ²	0.74	

Note: * indicated significance at 1%, 5% and 10% level of significance.

Table 17. Johansen Juselius Co-integration Test results for Production of Agriculture in India

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	62.46*	47.86	33.94*	27.58
r = 1	r = 2	28.36	29.79	16.58	21.13
r = 2	r = 3	12.47	15.49	8.95	14.26
r = 3	r = 4	3.51	3.84	3.51	3.84

Table 18. Long run and short run dynamics for Production of Agriculture in India

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	0.11	1.46	ΔER	0.0022	0.80
TOT _t	14.57	0.69	ΔTOT	0.02	0.17
FL _t	-6.81	1.63	ΔFL	-0.44	-0.97
			Constant	-0.10*	-4.80
			D	0.04	1.50
			ECM	-0.02*	-5.02
			R ²	0.79	
			Adjusted R ²	0.67	

Note: 1%, 5% and 10% significance level denoted by **.

Table 19. Johansen Juselius Co-integration Test results for Production of Industry in India

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	55.95*	47.86	32.61*	27.58
r = 1	r = 2	23.34	29.79	13.77	21.13
r = 2	r = 3	9.57	15.49	7.21	14.26
r = 3	r = 4	2.35	3.84	2.35	3.84

Table 16 represented the estimates of co-integrating vectors for GDP in India. Exchange rate and terms of

trade showed positive relationship with GDP. Financial liberalization exposed significant impact on GDP. Positive

and Significant value of dummy variable revealed the positive impact of WTO on GDP. In short run dynamics ECM coefficient with (-ve) sign showed the convergence towards equilibrium. The value of R^2 and adjusted R^2 indicated the variation of dependent variable caused by explanatory variable.

The analysis (Table 17) explained that trace and maximum Eigen value statistics indicate one co-integrating equation is possible at 0.05 significance level.

Table 18 revealed the estimates of co-integrating vectors for production of agriculture in India. Exchange

rate and terms of trade positively correlated with production of agriculture. Financial liberalization insignificantly but negatively correlated with production of agriculture. Coefficient value of dummy variable exposed the positive effect of WTO on production of agriculture. An error correction coefficient sign indicated the convergence towards equilibrium in within a specific time period.

The trace and maximum Eigen value statistics (Table 19) indicate one co-integrating equation is possible at 0.05 significance level explained by analysis.

Table 20. Long run and short run dynamics for Production of Industry in India

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER_t	0.02*	3.28	ΔER	-0.003*	-3.00
TOT_t	-1.35*	-3.34	ΔTOT	0.07**	1.81
FL_t	-0.88*	-3.09	ΔFL	0.11	0.72
			Constant	-0.02*	-4.77
			D	0.01*	2.25
			ECM	-0.11*	-6.45
			R^2	0.60	
			Adjusted R^2	0.49	

Note: * denoted significance at 1%, 5%, ** at 10%, respectively.

Table 21. Johansen Juselius Co-integration Test results for Services in India

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
$r = 0$	$r = 1$	50.54*	47.86	34.01*	27.58
$r = 1$	$r = 2$	16.53	29.79	11.09	21.13
$r = 2$	$r = 3$	5.44	15.49	4.61	14.26
$r = 3$	$r = 4$	0.83	3.84	0.83	3.84

Table 22. Long run and short run dynamics for Services in India

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER_t	-0.01*	-2.11	ΔER	0.0002	0.08
TOT_t	0.23	0.44	ΔTOT	-0.25*	-2.92
FL_t	-1.53*	-4.50	ΔFL	0.40	0.89
			Constant	-0.07*	-2.43
			D	0.04*	2.08
			ECM	-0.07**	-1.85
			R^2	0.94	
			Adjusted R^2	0.93	

Note: *,** showed significance at 1%, 5% and 10% respectively.

Table 23. Johansen Juselius Co-integration Test results for PCI in India

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
$r = 0$	$r = 1$	57.34*	47.86	27.78*	27.58
$r = 1$	$r = 2$	29.55	29.79	17.90	21.13
$r = 2$	$r = 3$	11.65	15.49	10.34	14.26
$r = 3$	$r = 4$	1.31	3.84	1.31	3.84

Table 20 revealed the estimates of co-integrating vectors for production of industry in India. Exchange rate, terms of trade and financial liberalization significantly correlated with production of industry. Dummy variable has significant and positive coefficient value which showed positive impact of WTO on production of industry. ECM sign denoted the convergence towards equilibrium.

The results (Table 21) explained that trace and maximum Eigen value statistics indicate one co-integrating equation is possible at 0.05 significance level.

The estimates of co-integrating vectors for services in India are represented in Table 22. Exchange rate and financial liberalization showed adverse relationship with services. Terms of trade negatively related with services. Dummy variable has significant and positive coefficient value which revealed positive impact of WTO on services. ECM sign indicated the divergence from short run equilibrium to long run equilibrium.

The analysis (Table 23) explained that trace and maximum Eigen value statistics indicate one co-integrating equation is possible at 0.05 significance level.

Table 24 described the estimates of co-integrating vectors for per capita income in India. Exchange rate and terms of trade have significant impact on per capita income. Financial liberalization insignificantly and negatively correlated with per capita income. Coefficient value of dummy variable revealed the positive impact of WTO on per capita income. An error correction coefficient sign indicated the convergence towards equilibrium in within a specific time period.

From the results (Table 25), it is concluded that trace and maximum Eigen value statistics indicate one co-integrating equation is possible at 0.05 significance level.

The estimates of co-integrating vectors for FDI in India are presented in Table 26. Exchange rate showed positive sign and has significant impact on FDI. Terms of trade and financial liberalization also exposed significant impact on FDI. Positive and Significant value of dummy variable revealed the positive impact of WTO on FDI. In short run analysis ECM coefficient with (-ve) sign showed the convergence towards equilibrium.

Table 24. Long run and short run dynamics for PCI in India

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	0.0002**	1.68	ΔER	-8.24	-1.19
TOT _t	0.05*	3.06	ΔTOT	0.001	0.50
FL _t	-0.008	-0.48	ΔFL	0.005	0.52
			Constant	0.001*	2.89
			D	0.00042	0.85
			ECM	-0.06**	-1.89
			R ²	0.68	
			Adjusted R ²	0.59	

Note: * denoted significance at 1%, 5%, ** at 10%, respectively.

Table 25. Johansen Juselius Co-integration Test results for FDI in India

Hypothesis		Trace Test		Maximum Eigen-value Test	
Null	Alternative	Statistic	Critical Value	Statistic	Critical Value
r = 0	r = 1	49.89*	47.86	28.47*	27.58
r = 1	r = 2	21.41	29.79	14.69	21.13
r = 2	r = 3	5.74	15.49	5.16	14.26
r = 3	r = 4	0.57	3.84	0.57	3.84

Table 26. Long run and short run dynamics for FDI in India

Variables	Long run dynamics		Variables	Short run dynamics	
	Coefficient	t-values		Coefficient	t-values
ER _t	0.06*	4.09	ΔER	-0.13*	-3.12
TOT _t	-7.61*	-6.35	ΔTOT	1.36	0.76
FL _t	-5.63*	-6.63	ΔFL	-3.32	-0.44
			Constant	0.33**	1.93
			D	0.08	0.21
			ECM	-0.08	-0.27
			R ²	0.36	
			Adjusted R ²	0.19	

Note: * denoted significance at 1%, 5% and 10% level of significance.

4. Conclusion

Empirical results showed that WTO has positive impact on Pakistan and Indian economies. In case of Pakistan exchange rate has a significant impact on GDP, services, per capita income and foreign direct investment but impact on production of agriculture and production of industry is insignificant. Terms of trade and financial liberalization have significant impact on GDP, production of industry, services, per capita income and foreign direct investment. In case of Indian economy the impact of exchange rate on production of industry, services, per capita income and FDI is significant. While the effect of exchange rate on production of agriculture and GDP is insignificant. There exists significant impact of terms of trade on GDP, production of industry, per capita income and FDI where as insignificant impact of production of agriculture and services. Financial liberalization has significant impact on GDP, production of industry, services and foreign direct investment. The findings revealed that WTO has positive impact on Indian and Pakistan economies, as reported by [18].

It is recommended that Pakistan and India should take some incredible activities by liberalizing economy and changing its laws on anti-dumping, intellectual property protection, balancing and safeguard based on the principles of their competition. Their planning should be cleared and compatible with WTO agreement. The Government of both countries should make policies to up-grade the present marketing system so that they can enhance their export by searching new markets.

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