

Full Length Research Paper

A comparative study on the effect of telecommunication sector investment on foreign and domestic trade in Pakistan

Shumaila Hashim^{1*} and Khair-Uz-Zaman²

¹Department of Business Administration, Gomal University, D. I. Khan, Pakistan.

²Department of Economics, Gomal University, D. I. Khan, Pakistan.

Accepted 17 December, 2010

This paper empirically investigates the effect of telecommunication sector's investment in trade enhancement by using time series data for the period from 1950 - 1951 to 2006 - 2007. Foreign trade and domestic trade were two dependent variables while investment in telecommunication sector was taken as an independent variable for both situations. By using the regression models in log-linear form we obtained the positive and significant impact of investment in telecommunication sector on both foreign and domestic trade. This study shows that in Pakistan with the increase in telecom facilities trading activities have gained boost.

Key words: Pakistan, telecommunication sector, foreign trade, domestic trade.

INTRODUCTION

Trade plays an essential role in the economic development of the country. Not only it indicates strong trading relations with other countries but also helps to raise living standard of the inhabitants of the country. Although year by year both imports and exports have increased but except in few years (1947 - 1948, 1950 - 1951, 1972 - 1973) Pakistan has always showed negative trade balance. Table 1 is showing the details of trade performance of Pakistan in the last 62 years:

In trade enhancement, role of telecommunication is substantial and it is increasing day by day. In start telecom sector was not advance and well developed but after 90 s with the entry of foreign investors not only advance technology has introduced but also the use of mobile, fax, internet etc has become common. These advanced telecommunication tools have helped to minimize transaction cost. The main purpose of this paper is to study the effect of investment in telecommunication sector in both domestic and foreign trade

enhancement from Pakistan's view point.

This study is organized as follows: Section II reviews the literature by including the theoretical and empirical findings; section III describes research methodology and about dependent and independent variables while section IV interprets regression results and analyses. Finally section V provides some concluding remarks. Results are presented in the appendix.

LITERATURE REVIEW

Let we take the review of few important research studies: Bruckner (2003) described the relationship between trade and telecommunication. He found positive impact of telecommunication on economic growth. He was in view that improvement in telecommunications infrastructure and reducing costs lead to a higher growth in trading other than non-trading sectors. He also emphasized the importance of FDI in telecommunication sector. Restriction on licensing rules and excessive interconnection tariffs are major barriers to trade.

Freund and Weinhold (2004), studied the effect of internet as a communication tool in the promotion of international trade. He observed positive impact of

*Corresponding author. E-mail: shs_1234@hotmail.com.

Table 1. Trade figure in Pakistan (Rs. in million).

Years	Exports	Imports	Trade balance
1947-1948	444	319	125
1950-1951	1343	1,167	176
1960-1961	540	2,173	(1,633)
1970-1971	1,998	3,602	(1,604)
1980-1981	29,280	53,544	(24,264)
1990-1991	138,282	171,114	(32,832)
2000-2001	539,070	627,000	(87,930)
2001-2002	560,947	634,630	(73,683)
2002-2003	652,294	714,372	(62,078)
2003-2004	709,036	897,825	(188,789)
2004-2005	854,088	1,223,079	(369,621)
2005-2006	984,841	1,711,158	(726,317)
2006-2007	1,029,312	1,851,806	(822,494)
2007-2008	1,196,638	2,512,072	(1,315,434)
2008-2009 (July-April)	1,147,435	2,247,049	(1,099,614)

Source: Economic Survey of Pakistan (1987-88, 2008-09).

internet in trade promotion and concluded that 10% increase in web hosts in a country leads to rise in 0.2% increase in export growth.

Hirschman (1967) examined various development projects. He found that a credit market for the coffee trade developed in Ethiopia after the installation of a long distance telephone networks. So he recognized the importance of telecom infrastructure in trade development.

Saunders et al. (1994), in his micro level studies observed that investment in telecom firms normally generate internal rate of return approximately 20%. At their macro level studies they examined the economies of Hong Kong, Singapore, Korea and Taiwan and found that these countries gave more attention to the development of telecom infrastructure and now they are in strong position in the world trade market.

RESEARCH METHODOLOGY

For the empirical analysis data has been taken for the period from 1950 - 1951, 2006 - 2007. The functional equation is based on theoretical formulation, developed earlier in this section. The equation is given in log –linear form as:

$$L FT = \alpha + \beta_1 LIT + \beta_2 ut \quad (1)$$

$$L DT = \alpha + \beta_1 LIT + \beta_2 ut \quad (2)$$

Where:

IT = Investment in the telecommunication sector

FT = Foreign trade.

DT = Domestic trade.

Ut = Error term.

Specification of variables

Independent variable

Investment in telecommunication sector (IT) is taken as an independent variable. Investment in transport and communication sector is taken as a proxy for investment in telecommunication sector. Data for investment in transport and communication sector has been taken from various issues of Economic Survey of Pakistan.

Dependent variables

(I) Foreign trade is dependent variable which is the sum of exports and imports. Data for imports and exports have been taken from various issues of Economic Survey of Pakistan (1987 - 1988, 2006 - 2007).

(II) In equation 2, dependent variable is the domestic trade. It is measured by the investment in wholesale and retail trade. Data for the investment in wholesale and retail trade have been taken from various issues of Economic Survey of Pakistan (1987 - 1988, 2006 - 2007).

DATA ANALYSES AND INTERPRETATION

The empirical investigation on the effect of investment in telecommunication sector on both domestic and foreign trade uses time series data has been taken for the period from 1950 – 1951 – 2006 - 2007 on annual basis. (Results are given in appendix). First to determine the order of integration of variables, Augmented Dickey Fuller (ADF) tests (Table 2) for unit roots was employed to find

Table 2. Results of ADF test.

Variables	Level/Difference	Without trend	Conclusion
IT	Level	0.95038	I(1)
	First difference	-4.0354	
FT	Level	0.88634	I(1)
	First difference	-6.0565	
DT	Level	1.2824	I(1)
	First difference	-7.1119	

95% critical value for ADF Statistics for all variables: -2.9157 (without trend).

Table 3. Ordinary least squares estimation.

Dependent variable is LFT			
58 observations used for estimation from 1950-51 to 2006-07			
Regressor	Coefficient	Standard Error	T-Ratio [Prob]
A	1.5683	0.45131	3.4749 [.001]
LIT	0.99446	0.048168	20.6455 [.000]
R-Squared	0.88571	R-Bar-Squared	0.88363
S.E. of regression	84134	F-stat. F (1, 55)	426.2367 [.000]
Mean of dependent variable	10.5973	S.D. of dependent Variable	2.4663
Residual sum of squares	38.9315	Equation log-likelihood	-70.0139
Akaike info. criterion	-72.0139	Schwarz Bayesian criterion	-74.0570
DW-statistic	0.15405		

out that the variables were concluded to be integrated of the same order. ADF tests showed that all variables had stationarity in the levels of 95% critical values without trend. All variables were in first difference. From the Unit Root tests we conclude that all of the variables in all cases were integrated of order I (1).

Ordinary Least Square (OLS) estimation (Table 3) shows that the impact of investment in telecommunication sector on foreign trade was positive and significant at 1% level of significance. R^2 was at 0.88 but serial correlation lies so an ECM was applied. After applying ECM (Table 4) again results indicated positive and significant impact of both independent variable as well as residual. Residual indicated 91% rate of adjustment. R^2 was also improved, that is, 0.98 and no serial correlation lies.

Again OLS estimation (Table 5) was done to empirically test the effect of investment in telecommunication sector on domestic trade. Here the impact of independent variable was positive and significant at 1% level of significance. R^2 was at 0.98 but serial correlation lies so an ECM was applied. After applying ECM (Table 6) results indicated again the positive and significant impact of both independent variable as well as residual. Residual indicated 45% rate of adjustment and no serial correlation lies.

Conclusion

The main attention area of this research paper is to study the role of telecom sector in trade promotion. There are of a lot studies in the world to see this relationship but still no substantial work has been done in Pakistan. This study covers 58 years period to cover all types of rise and fall in Pakistan's economy. These results help to conclude that although effect of investment in telecommunication sector is looking significant on both dependent variables however its impact is comparatively stronger in case of foreign trade than on domestic trade.

Telecom sector has also greatly developed in the last 56 years. Foreign direct investment has also enhanced. Due to this heavy investment teledensity have greatly increased, number of PCOs also enhanced. Availability of these telecom tools in far-flung areas of the country has helped the local traders to finalize their business deals efficiently. Internet facility has also helped in foreign trade promotion by minimizing transaction cost and time. Nowadays almost all large companies in Pakistan are using this advance telecom tool for their trading activities, but its use is not much common at domestic level due its insufficient availability in far-flung areas of Baluchistan and N.W.F.P. However in future it is expected that with

Table 4. Apply error correction model.

Dependent variable is LFT			
57 observations used for estimation from 1950-1951 to 2006-2007			
Regressor	Coefficient	Standard Error	T-Ratio [Prob]
A	1.7711	0.17718	9.9961[.000]
LIT	0.97315	0.018825	51.6935[.000]
G(-1)	0.91947	0.052162	17.6272[.000]
R-Squared	0.98303	R-Bar-Squared	0.98239
S.E. of regression	0.32477	F-stat. F(2, 53)	1535.1[.000]
Mean of dependent variable	10.6566	S.D. of dependent variable	2.4473
Residual sum of squares	5.5903	Equation log-likelihood	-14.9396
Akaike info. criterion	-17.9396	Schwarz Bayesian criterion	-20.9776
DW-statistic	1.8982		

Table 5. Ordinary least squares estimation.

Dependent variable is LDT			
58 observations used for estimation from 1950-1951 to 2006-2007			
Regressor	Coefficient	Standard error	T-Ratio [Prob]
A	1.3080	0.13888	9.4180 [.000]
LIT	0.91591	0.014823	61.7912 [.000]
R-Squared	0.98580	R-Bar-Squared	0.98554
S.E. of regression	0.25890	F-stat. F(1, 55)	3818.2 [.000]
Mean of dependent variable	9.6238	S.D. of dependent variable	2.1531
Residual sum of squares	3.6866	Equation log-likelihood	-2.8369
Akaike info. criterion	-4.8369	Schwarz Bayesian criterion	-6.8800
DW-statistic	1.0978		

Table 6. Apply error correction model.

Dependent variable is LDT			
57 observations used for estimation from 1950-51 to 2006-07			
Regressor	Coefficient	Standard error	T-Ratio [Prob]
A	1.2924	0.12843	10.0633 [.000]
LIT	0.91766	0.013645	67.2530 [.000]
P(-1)	0.45078	0.12318	3.6595[.001]
R-Squared	0.98843	R-Bar-Squared	0.98799
S.E. of regression	0.23556	F-stat. F(2, 53)	2263.3[.000]
Mean of dependent variable	9.6654	S.D. of dependent variable	2.1495
Residual sum of squares	2.9408	Equation Log-likelihood	3.0463
Akaike Info. Criterion	0.046315	Schwarz Bayesian Criterion	-2.9917
DW-statistic	2.1592		

the spread of internet facility and availability of electricity, villagers will also prefer to use this cheapest telecom tool.

REFERENCES

Bruckner (2003). 28-30 October. ITU/ESCAP/WTO Joint Seminar on Telecommunication and Trade Issues. Bangkok.
Economic Survey of Pakistan (1987-1988, 2006-2007). Finance division. Economic adviser's wing. Islamabad, Pakistan.

Freund LC, Weinhold (2004). "The Effect of the Internet on Int. Trade". *J. Int. Econ.* 62: 171-189.
Hirsch-man A (1967). "Development Projects Observed". Washington DC: Brookings Institutions.
Saunders J, Warford J, Wellenius B (1994). "Telecommunication and Economic Development". Baltimore. (MD: John Hopkins University Press.