The Impact of Industrial Policy on Export Performance of Pakistan

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Theory Article

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ABSTRACT

The current study highlight the relationship between industrial policy and export performance in Pakistan from period 1980-2017 keeping the determinants of export performance indicators i.e. Export Sophistication, Export Diversification and Export Competitiveness constant while focusing only on the instruments of Industrial Policy i.e. Import Tariff, Export Subsidy, Rebate, Export Processing Zones, R&D expenditures and industrial expenditure using Co-Integration and ECM. The study confronted that there is significant relationship exists between industrial policy and export performance both in short run and long run with different rate of speed of adjustment. Import tariff have negative significant relationship with export performance while Export Subsidy and Export Rebate play insignificant role and R&D expenditure, Export Processing Zones and Industrial Expenditures play significant positive role and Industrial Policy work more effectively in Democracy as compare to military regimes.

Keywords: Industrial Policy, Export Performance, Autocracy, Democracy

INTRODUCTION

The 21st century is observing many challenges and emerging paradigms that have turned industrialization and industrial policy into one of the important debating and interesting issue all over the world. Industrial policy can make plausible contribution in the achievement of efficiency in both local and international market if the lessons from Past and the challenges of future are sufficiently undertaken into consideration (Naude & Szirmai, 2013). Economy of Pakistan has observed many ups and down in its journey from independence 1947 to 2017. The economy has adopted different industrial policies either to response the crises or as part of the medium-term development plan, among which some never have seen their actualization. Pakistan has experienced 5 different waves of significant industrial Policy i.e. the trade embargo after independence with India, than following the industrial policy of development package programs focused made on export promotion and Import Substitution Industrialization (ISI), with a third wave of industrial policy of nationalization by Bhutto government followed by the Structural Adjustment program of IMF and World Bank after 1988 and the last wave has seen in the era of Musharaf's Regime where the major focus has been given to Trade Liberalization and Foreign Direct Investment Promotion (Hussain & Ahmad, 2012)

The history tells that the Industrial planning in Pakistan was formulated arbitrarily in response to some crisis or other the country faced with, was short to medium-term, and lacked a long-term vision. Ferraz, et al. (2010) argued that an industrial policy for economic transformation could be able discern and act upon various competitive issues and challenges in different sectors aiming for further progress as defined by any nation's competitive frontier, that incase of Pakistan has been limited only for rising or ongoing issues and challenges without having a long term visionary policy. Noman (2015) claimed that Pakistan does very poorly on the assorted indicator of industrial development i.e. sophistication of export, International Standard Organization certification, Availability of key high-level skills, Patents, R&D development and so on in its entire journey. So, the Industrial Policy followed by Government of Pakistan unable to meet the requirement of Long run initiative. Mahmood & Ahmad (2017) concluded in their study that the export performance of Pakistan has exposed the vulnerability of our exports to global shocks and Industrial policy is a major tool that directly deals with export performance, hence it needs to deeply analyze the impact of Industrial policy on Export Performance. So, in the current study, the following questions will be addressed to take attention from Government of Pakistan that how to promote a long visionary Industrial Policy.

1. How the Instruments of Industrial Policy of Pakistan is different from that of neighboring competing Asian Economies?
2. How Industrial Policy instruments affect Export Performance in Pakistan?

Through this study it will try to find out the impact of Industrial Policy by controlling the determinants of Export Performance indicators as control focusing only Export Sophistication, Export Diversification and Export Competitiveness and Industrial Policy Instruments under consideration in the study will be Import Tariff Rate, Export Subsidy, Export Rebate, Industrial Expenditures, Research and Development Expenditures and Economic Processing Zones with a time series data from 1980-2017

Previous Studies

John, (2015) focused on the importance of Industrial Policy explaining that the role of Industrial Policy is to facilitate structural change in favor of higher productivity growth where the focus should be on expansion or creation of activities with manufacturing sector with its application to be based on a consultative process between public and private parties. Gyroff (2014) elaborated that an industrial policy is the tool of existing government to achieve her certain objectives usually consisting of basic instruments like regulatory which is use to manage framework conditions through regulations necessary to put industrial manufacturing towards certain areas of considered of importance with balancing the game between industrial actors fostering envisaged developments.

Iftikhar & Chaudhry (2009) stated that Economic growth and Economic Development of developing economies mainly depends on political and economic system but international trade contributes significantly in the development because Ahmad (2000) international trade may act as an engine of growth to drive rapid development and growth in developing economies where the perfection is how good you are in exporting to global market. Saleem & Sial (2015) elaborated that export performance stimulates the production of goods and services in a variety of different possible channels. Ghani & Din (2006) stated that Pakistan has adopted different tools and polices to expand its export but failed to get a large share in the world market because of many reasons i.e. less diversification of exports, semi manufactured goods narrow export base, out dated technology and machinery, devaluation in the sick industrial units, technical barriers, political instability, Low level of FDI, small amount of domestic savings, MPC on basic needs are high, the failure of adoption of new policies and specially the unavailability of coherent and long term visionary industrial policy.

There is variety of measures and determinants employed in the export performance studies are reflection of the complexity of the export performance itself (Madson, 1989). Tookey (1946) argued that a superior export performance is a result of a firm/s successful strategic response to the external factors and these factors influences are defied as environmental specific and hence untroubled and generally categorized as industry specific and market specific Nazeer & Rasiah (2016 argued that Pakistan is facing pre-mature deindustrialization because the country experienced wild swings during 50's and 60's with a fair growth in 2000-10 followed by contractions in other periods. Periods of manufacturing growth was associated with pro-manufacturing and import substitution policies while the slump were characterized by deregulation and relatively high exchange rate which shows that the relative stagnation of manufacturing sector, the diversification of good and market and competitive nature can be explained by the lack of a dynamic Industrial policy targeting technological catch-up and leapfrogging (Nazeer & Rasiah, 2016).

Jehle (2013) in his paper on international trade discussed the instruments of industrial policy that can be used to promote industrial sector in the economy that can be use as alternative of trade policy with promoting manufacturing sector and balancing international trade. He discussed both qualitative and quantitative instruments where he pointed out that in quantitative side any economy can use trade related measures of import tariff (nominal and Ad volarem), Custom Duty, Import and Export Quota, Free goods list, Export Subsidy, Investment Expenditure made by government to promote special economic zones and industrial promotion, the expenditure made by the government on Research and Development and some qualitative measure to promote industrial sector include clustering in the domestic economy, List of importable and exportable commodities, Import licensing, Guarantee to the importers and exporters, better infrastructure etc. all matters to be use as industrial promoting instruments. Analyzing the Impact of Industrial Policy on Economic Development, Kharel, (2014) conducted study on Nepal using simple Regression model taking Industrial registration as dependent variable and Economic Openness Index as Independent variable for post and pre liberalization period and also combined period of time from 1973 to 2010, concluded that before the liberalization the impact of independent variables have been observed showing positive results while in case of Post liberalization it has been observed inverse relationship between dependent and independent variables, so the further policies have to be designed to meet the rising issues and challenges. Khan & Saqib (1993) analyzed the export growth in Pakistan by using Simultaneous equation Model and found a stronger correlation between Industrial Policy Instruments and Export Performance Indicator and empirical results confirmed the presence of co integration between exports and output growth, Export Growth performance and diversification and structural change in exports for Pakistan over the Period 1973-98. Argosin et al. (2011), conducted a study on the determinants of export diversification around the world by their conclusion they summed up that export concentration using Gini coefficient as dependent variable with trade openness, Human Capital, Remoteness, Terms of Trade, import of Technology, Domestic credit and Exchange rate volatility, among which Exchange Rate Volatility plays insignificant role while other variables positively influencing the dependent variable.. About the importance of competitiveness (Kankanen, et al. 2013) stated that Competitiveness in manufacturing sector and export diversification plays a key role. The history witnessed that those economies that were competitive in their goods and market passed through the chain of under develop nation to Newly Industrialized Countries because of their long-term industrial policies and strategies.

Gap and Contribution

There are certain indicators that is use to describe the export Performance and there are many Industrial policy Instruments and there has been made least contribution in the studies to see the Impact of Industrial Policy Instruments on Export Performance Indicators i.e. Export Sophistication, Export Diversification and Export Competitiveness. The literature seeks that some of the instruments of Industrial policy have been used as independent variable and their impact shows that there exists

significant relationship between dependent and independent variables of our study and the desired objective of the study can be fulfilled by deeply and carefully analyzing the relevant data available on the given variables. It can be expected that the Industrial policy instrument Import tariff rate has inverse relationship with Export Performance while other instruments Export subsidy, R&D Expenditures, Economic Processing Zone's, Industrial Expenditures and Rebate paid by the government on export will have significant and positive relationship with dependent variable Export Performance.

Research Methodology

Theoretical Framework

Gyroff (2014) elaborated that an industrial policy is the tool of existing government to achieve her certain objectives usually consisting of the basic instrument like regulatory which is use to manage framework conditions through regulations necessary to put industrial manufacturing towards certain areas of considered of importance with balancing the game between industrial actors fostering envisaged developments. Spasova (2014) elaborated a brief discussion on the determinents and indicators of Export Performance where he stated that, Export Diversification and Competitiveness reveal the overall direction of Export Performance and Edward (1993) states that any economy before looking towards Diversification and competition looks towards Export Sophistication because it encourage the domestic economy to transform from low sophisticated goods to high sophisticated. Weldemicael (2012) stated that by measure of Export Sophistication we aim that to find from oberved trade pattern that which products or goods required more sophistication. Edward (1993) propped that Newly Industrilized Countries of East Asia able to make High Sophisticated Goods and make transition to Capital Intensive goods. About determinants of Export Sophistication (Hausmann, et al. 2007) said that Per Capita Income in Purchising Power Parity, FDI, Export to GDP Ratio, Trade Openness, Human Capital and share of Manufactruing in total exports matter the most.

Argosin et al. (2011), conducted a study on the determinants of export diversification around the world in their conclusion they summed up that export concentration using Gini coefficient as dependent variable with trade openness, Human Capital, Remoteness, Terms of Trade, import of Technology, Domestic credit and Exchange rate volatility, among which Exchange Rate Volatility plays insignificant role while other variables positively influencing the dependent variable. Siudek & Zawojska (2014) deeply analyzed the term of competitiveness in Economics perspective and stated that the phenomenon of competitiveness is a complex theory that deals with the comparability of a nation with the rest of the world or within the economy's industries about their productivity level which depends on division of labor and specialization, the market share, cost to price ratio and productivity that influenced by government through public expenditures, taxes, exchange rate, interest rate and regulatory activities.

Brenton, et al. (2007) stated that Sophistication and Diversification of export is positive trade objective and make a country less vulnerable to adverse terms of trade and through instruments of greater expenditure by the government on industrial and human capital development, the promotion and attraction of Foreign investors and financers to invest in the economy, effective export growth, competitiveness strategies need to be shaped in context of global economy will encourage to expand the economy both at domestic and international level. So, through the export subsidy, rebate and minimizing duty drawbacks and encouraging the research and development expenditures the desired Sophisticated, a competitive and diversified economy can be sustaining and promote further.

Econometric Technique

The presence of unit root cause spurious regression, Engle & Granger (1987) stated that trended time series data can create major problems in empirical estimation due to spurious regression and the estimated values are insignificant in reality and the problem can be resolve by taking the difference of variables until the time series get stationary and then running the regression analysis. Asteriou (2007) argued that it is also not an ideal solution to the problem of spurious regression rather it not only differences the error term in the estimation but also gives no long run solution. For general equation, the following relationship can be obtained through simple regression model.

$$Yt=\beta1+\beta2\ I.P+\beta3Xt+\varepsilon t \qquad (3.1)$$

where Yt denotes dependent variable that in our study is Export Sophistication, Export Diversification and Export Competitiveness and Xt show determinants of dependent variable and I.P represents the Industrial Policy instruments which in case we are taking Import Tariff, Export Subsidy, Industrial Expenditures, Rebate, Export Processing Zones and Research and Development Expenditures, while □t denotes the error term. To avoid spurious regression, we will rely on difference of both dependent and independent variables.

$$\Delta Yt= \beta o+\beta1\Delta Xt+\beta2\Delta I.P+\varepsilon t \qquad (3.2)$$

So, from the above equation we will be able to draw significant conclusion from this equation because both variables now have been transferred into difference equation and making it stationary through which we can draw short run relationship. But we are not only interested in short run relationship; we are also interested in long run relationship through which we can forecast a long run visionary policy. Since we pointed out that Yt and Xt are both first order integrated and their combination gives I(0), than it means our dependent and independent variables are co-integrated, thus in case of regression from equation 3.1 has now no

more problem of spurious regression and now it provide us linear combination of dependent and independent variables.

$$\varepsilon t=Yt-\beta 1-\beta 2Xt-\beta 3I.P \quad (3.3)$$

Here our error term connects dependent and independent variables in the long run.

Since Yt, Xt and I.P showed co-integration εt is stationary at level, therefore we can introduce Error Correction Model between dependent and independent variables.

$$\Delta Yt= \beta 0+\beta 1\Delta I.P+\gamma \Delta Xt+ \beta 3\varepsilon t-1+\varepsilon t \quad (3.4)$$

The equation (3.4) has now the advantage of both short run and long run information. In the given equation β1 and β2 shows the relationship between dependent and independent variable in short run while the parameter of (εt-1), shows the adjustment among the dependent and independent variables in long run. So, our general equation for all our dependent and independent variable is given below:

$$E.S^*= \beta 0^*+\beta 1I.P^*+\beta 2PCI^*+\beta 3EXP^*+\beta 4FDI^*+ \beta 5T.O^*+\beta 6M.E^*+\beta 7H.C^*+\varepsilon t \quad (3.5)$$

$$E.D^*= \alpha 0^*+\alpha 1I.P^*+\alpha 2O.E.R^*+\alpha 3R\&D^*+\alpha 4Tariff^*+ \alpha 5GDP^{**}+\alpha 6\ D.C\varepsilon t \quad (3.6)$$

$$COM^*= \gamma 0^*+\gamma 1I.P^*+\gamma 2GFC^*+\gamma 3R\&D^*+\gamma 4O.E.R^*+ \gamma 5E.H.T^*+\gamma 6To.T^*+\varepsilon t \quad (3.7)$$

Where E.S shows Export Sophistication, PCI is Per Capita Income, EXP is Export over GDP Ratio, M.E is share of Manufacturing in Export, T.O is Trade Openness, FDI is Foreign Direct Investment, H.C is human Capital, O.E.R is Official Exchange Rate, , D.C domestic Credits, E.H.T Export of High Technology and R&D is Research and Development Expenditures made by government of Pakistan and the satiric (*) denotes the transformed form of the equations.

Since we are interested to see the impact of Industrial Policy on Export Performance, therefore we will use two different options to see the impact. First we will regress only the instruments of Industrial Policy keeping the determinants of dependent variables constant, while in second method we will make an index that will represent all of the instruments of Industrial Policy using Principal Component Analysis (PCA), which will compile all the variables to create a single index representing all the Instruments of Industrial Policy and then will regress this Index as alternative of Industrial Policy with the control variable and see the impact on dependent variable. So, the long run elasticity between Export Sophistication, Export Diversification and Export Competitiveness and Industrial Policy instruments are captured by βs, αs and γs.

Descriptive Analysis

Export Performance of Pakistan and Competing Asian Economies

According to State Bank of Pakistan, the export performance of Pakistan has remained weak and unstable over the past few decades. Pakistan's exports share in global market has declined from 18% in 1991 to 0.14% in 2017, while in the same period the Export Performance of competing Asian economies have depicted substantial increase specifically the share of Bangladesh in world exports have increased from 0.06% to 0.19% and that of India have jumped from 1.64% to 2.5% respectively in the same era. The overall exports of the economy have shown substantial growth that have increased from $3.2 billion in 1980 to 26.8 billion in 2016 with a peak of $ 31.4 billion in 2011 and $3.2 billion in 1980's. The average growth has been recorded 6.17% from 1980 to 2017 respectively; however, it will be a mistake to look at this growth in isolation. When we carefully analyze the assess performance of Pakistan's export sector, it is necessary to see how the sector has performed relative to world exports, that has shown that Pakistan's export sector seems to have performed poorly as its share of world exports is declining as discussed above.

The below table shows the exports share of Pakistan and competing Asian economies in terms share in world exports.

Table 1: Share of Pakistan's Export in World Exports

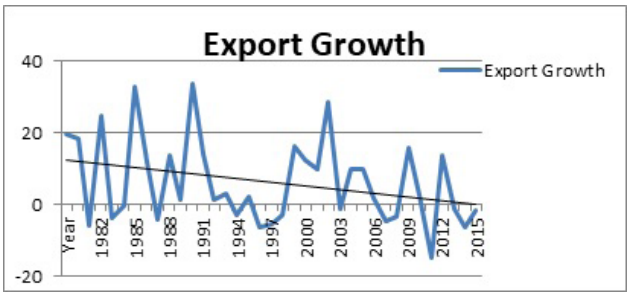
Country	1980	1990	2000	2010	2016
Bangladesh	0.04	0.05	0.09	0.12	0.19
India	0.43	0.57	0.7	1.56	2.5
Pakistan	0.15	0.18	0.15	0.15	0.14

(Source: World Bank)

Pakistan's exports have grown at an average rate of 9% from 1980 to 2017, with considerable fluctuations in performance. The economy performed well during 80's with an average growth rate of 10%, however fell sharply in 90's where the growth rate falling to 5% on average, but since then there has been observed improvement with average annual growth rate reaching a historical peak of 12% in 2000's but since 2014 the economy is facing decline in export Growth. The overall growth performance

since 1980's shows not satisfactory results when we compare it with South Asian Economies because India's Exports Grew at an annual rate of 20% while that of Bangladesh is 14% since 2000.

Figure 1: Pakistan's Export Growth from 1980-2017



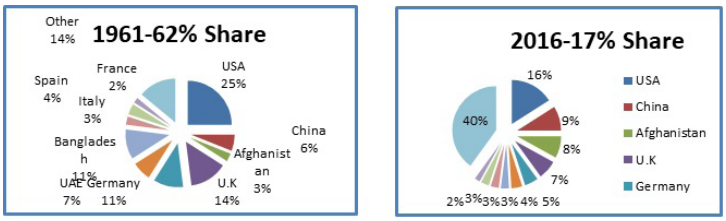
From figure 1, we can see that the economy has observed that there is instability in Export Growth of the Economy specifically since 1990's the economy has seen declines in Export Growth. There are two possible reasons either the economy failed to diversify in global and goods market or either the economy is not so much competitive such that could not compete in global market.

It is believed that the lack of Product and Market Diversification are reasons for Pakistan's poor Export performance.

Market Diversification:

The market diversification is usually measured by different index showing that how much an economy is open or restricted for international trade, higher the barriers in international trade lower will be the diversification. Historically the market base of Pakistan has been fairly diversified and the market concentration index remained below 0.25, that is encouraging to compare this with the market concentration in other countries which stands 0.20 to India, 0.24 to Bangladesh and 0.37 of Sri Lanka and the export performance of Pakistan is doing quite well in market diversification of exports because this shown that 90% of Pakistan's exports were going to 51 countries showing the broad market base instead of wasting resources trying to break into new markets but still have enough potential to diversify its market more as it is now.

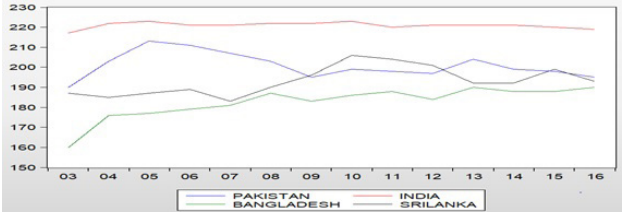
Figure 2: Country wise Distribution of Pakistan's Exports



From Figure 2, it is cleared that Pakistan's economy able to diversify its market because in 1960's 86% of Pakistani exports were going to only 10 countries that has been limited to only 60% in 2016 but top 45 countries are contributing 90% share of Pakistan's total exports. The total number of countries whom Pakistan was trading her goods and services reached at peak in 2005 where Pakistan's market partner were 213 countries that has been reduced to 195 in 2016. Only India in the region have higher number of exporting countries that stands 223 in 2005 while in 2016 the number of countries that were importing Indian goods and services were 219, while Bangladesh is exporting to 190 and Sri Lanka making exports to 193 countries. The trend shows that Bangladesh Economy is more rapidly growing in world market because in 2001 Bangladesh was exporting to 160 countries that reached to 190 in 2016. From 2001-2016 the average number of countries who was exporting Pakistan, India, Bangladesh and Sri Lanka was 200, 220, 182 and 193, respectively. The below diagram shows the number of countries to whom Pakistani and competing Asian Economies goods were exporting.

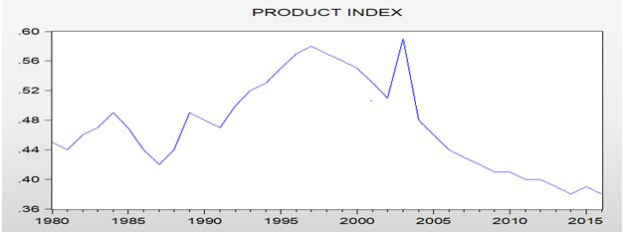
Product Diversification

Figure 3: Total Number of Countries Asian Economies is Exporting



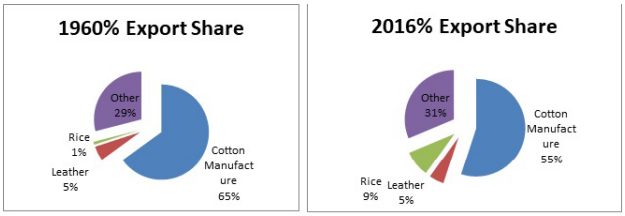
To make better export performance either we need to diversify the market of exports or either we must diversify the products. When we clearly analyze the pattern of Product concentration in Pakistan, we can see that product concentration have increased significantly in the early 90, but then followed a declining trend since 2003 and reached a minimum score of all time 0.43. The Economy of Pakistan performed quite well in broadening its product export base but the index of product concentration shows that its remains substantially higher than that of neighboring competing economies India, (0.25), Bangladesh (0.32) and Sri Lanka 0.35) that shows Pakistan suffers from a fairly concentrated product mix which is also evident from the data that only 14 Products accounted for 90% of total exports which shows the needs to focus on Product diversification. The major products which contribute more than 65% of our total exports are textile and rice.

Figure 4: Product Diversification Index or Pakistan Economy: 1980-2017



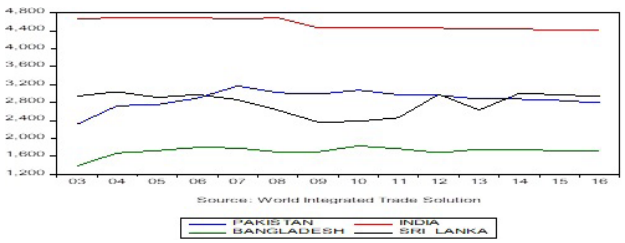
From figure 4 we can see that the diversification Index of Pakistani Products have sharply risen during the period of 90's but since 2003 the concentration falls substantially. Increase in concentration index shows more reliance on few products while the lower or decline in concentration index means that a greater number of goods is exporting to global market. The comparison of 1960's major exporting goods with that of 2017's shows that still we are more relying on the goods that we were exporting in 1960's is still dominant in 2017. The below table tells us about the changing pattern of Goods we are exporting to global market.

Figure 5: Top 4 Goods share to Total Exports of Pakistan



From figure 5 we can see that we are still highly relying on cotton manufacture, cotton raw materials and cotton semi products with rice and leather as major contributors of Pakistani exporting commodities. The numbers of exporting goods since 2000 have been substantially changed.

Figure 6: Total Number of Goods Pakistan and Asian Countries Exporting



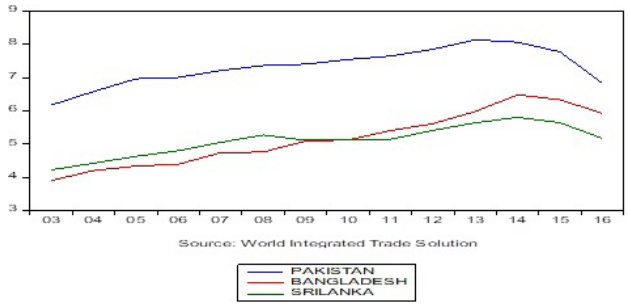
In figure 6 we can see that Indian Economy is ahead from all other Asian economies currently exporting 4411 goods in global market. Sri Lank has performed very well since 2011 and now is ahead from that of Pakistan. The number of goods Pakistan is exporting have shown substantial increase from 2003-2006 but after the great financial crises of 2007-8, the economy is facing declining in number of goods exporting and since that its decreasing and currently Pakistan is exporting 2778 number of Goods while the number of importing goods is increasing and currently Pakistan is importing 4155 number of goods.

Competitiveness

Figure 7: Global Competitiveness Index: 1980-2017

A country's export competitiveness depends on its domestic producers such than their ability to expand and sustain their position in international markets directly or indirectly by supplying quality products in desired quantities on time and at competitive prices and by responding quickly to changes in demand through development of innovative capacities and market strategies. Every year since 1979 World Economic Forum publish Global Competitiveness Index that ranked different countries of the world according to their competitive ability. From the recent report of Global Competitiveness Index, Pakistan stands 122/138 countries with Competitiveness score of 3.5/7. Only 16 countries in the world have worse condition as compare to that of Pakistan. India stands 39, Bangladesh 106 and Sri Lanka 71 with Competitiveness scores 4.52, 3.80 and 4.19 out of 7, respectively. The trends of Global Competitiveness Index for Pakistan from 1980-2017 shows not any good satisfactory results about the growth in the index because we can see that from 1980-1988, there is smooth growth in Index while in the period from 1989-1999 there is fluctuation in the Index number but from 1999-2008 there is slight positive change in the index but after 2008 there can be seen again fluctuations in the index. This may be because of the internal political instability and insecurity of foreign investors in the economy.

Figure 8: Market Penetration of Asian Economies



With a good competitive position, it is also important that what is the market penetration for an exporting economy in global market? Market Penetration describes that how many customers are willing to purchase the goods a country is exporting. From the data World Integrated Trade Solution, we can see that the market penetration of Pakistan's economy is so far behind as compare to that of India and very close to that of Sri Lanka and Bangladesh.

Figure 10: Export Subsidies of South Asian Economies (Current Log LCU)

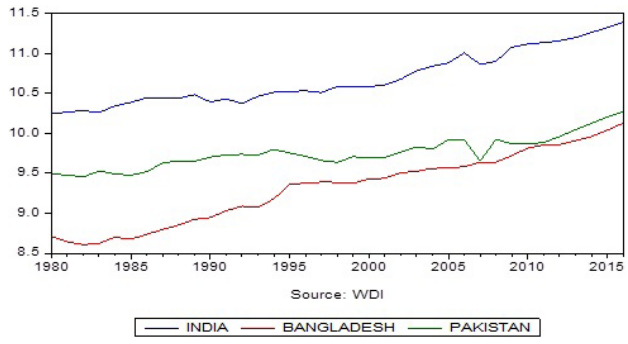


Figure 10 tells us that since 2010, Pakistan is facing decline in market penetration. Out of 100 customers there are only 6.83 customers they have accessed and willing to buy Pakistani exported goods. This shows that we have enough space to reach the customers and increase our exports if we make sure the good quality and lower cost price to compete the Asian economies.

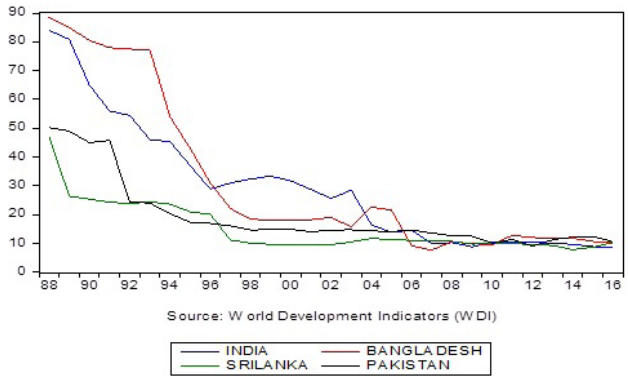
Industrial Policy Instruments of Pakistan and Competing Asian Economies

Our focus in this section will be on six major instruments of Industrial Policy i.e. Import Tariff Rate, Export Subsidy, Industrial

Expenditures, Export Rebates, Research and Development Expenditures and Export Processing Zones. We will compare and elaborate the performance of above-mentioned instruments used in Pakistan with that of competing Asian Economies.

Starting from Import Tariff Rate, we can see from the view of most of the Development Economist, Umer & Alam, 2013; Sousa & Lopez, (2008) the Import Tariff Rate is one of the biggest barriers in International Trade. Import Tariff Rate reduces the imports of goods and services we are getting from abroad. There are two possibilities of using Import Tariff Rate in any economy either the government want to protect its infant industry or either government is facing current account deficit (Akkemik, 2009), therefore using Import tariff rate government make sure the capability and ability of domestic economy with competing economies. When we analyze the historical data of South Asian Economies we can see that mostly the economies were highly protected in 80's but after the adoption of Structural Adjustment Program they have cut the import tariff rate at huge level on average they cut the tariff rate from 90% in 1980 to 10% in 2017, that boosted up not only the imports of the goods and services but the export have also risen tremendously. Many of the authors have argued that Pakistan was more liberalize and open for international trade as compare to other competing Asian Economies in early 90's and its share in world export was higher than Bangladesh and Sri Lanka but lower than India, but after the adoption of Structural Adjustment Program Bangladesh and Sri Lanka have brought down their import tariff rate more fastly as compare to Pakistan and now the share of Pakistan's export in global market is less than Sri Lanka and Bangladesh. Figure 9 give a quick look of decreasing growth rate in import tariff rate of South Asian Economies.

Figure 9: Trends in Growth of Import Tariff Rate of South Asian Economies

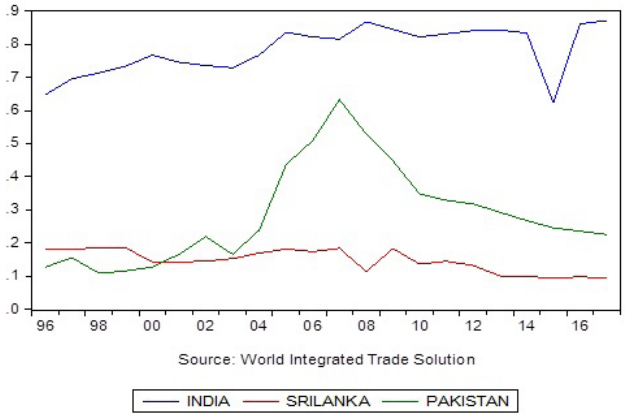


By carefully analyzing the historical data we can see that all four Asian Economies were subsidizing their industries to promote their industrial Production. The largest sector is different according to provision for example Pakistan mostly used to provide subsidies on energy provision, raw materials and cotton industry while India focused on crude oil, import of raw materials and metal sector while Bangladesh government mostly subsidezed the ceramic industries tht now comprises more than half of total Bangladesh's export. The below table gives a short description of the export subsidies in local currency

In Asian Economies the Export Processing Zone of Kandala, India was the first EPZ established in 1965, that attracted other Asian Economies to promote EPZ's, but the success of China, Taiwan and Malaysia increased the importance of EPZ's. Government of Pakistan passed EPZ ordinance in 1980 for promotion of EPZ's in Pakistan. The first Export Processing Zone in Pakistan established in Karachi in 1995 and up to now $6983 million dollars exports have been made from different EPZ's since their inceptions. The largest EPZ of Pakistan in Karachi that has contributed $4900 million since its inception followed by Saindak $1953 million and Duddar $46.62 million dollars in 2016-17. When we compare the total Exports from EPZ's of Pakistan with that of neighboring Asian Economies, we are much far behind from that of India and Bangladesh. Since its inception, the EPZ's of India have contributed more than $120 billion in total exports of India while that of Bangladesh the EPZ's have contributed $12 billion while in Pakistan it has contributed only $6.9 billion. Table 1 in appendix give a short overview of total export from different EPZ's of Pakistan in 2010-11 and 2016-17.

Research and Development expenditures are considered as the important part of government expenditures and government fixed a specific amount or share from its total expenditures for Research and Development. South Asian economies also keep a lump sum amount of their annual expenditures on research and development.

Figure 11: R&D Expenditures made by Competing Asian Economies



From the figure 11, there is changing pattern R&D expenditures made by the different economies. India expend higher amount than Pakistan and Sri Lanka while Pakistan is also increasing its R&D expenditures in recent years especially in 2003-2006 but after the Global Financial Crises Pakistan reduced its R&D expenditures.

Results and Findings

Unit Root Analysis of Dependent and Industrial Policy Instruments

The first step before moving or applying any econometric model is to check the problem of unit root to see the stationary of variables that confirms the best suitable method. Before moving to check the long run relationship we will check the unit root problem of the variables and below table gives a quick look to the unit root analysis of dependent Variables and Industrial Policy Instruments.

From table 7 (appendix), we can see that most of our dependent and independent variables are first order integrated. So here in this case we cannot apply Ordinary Least Square (OLS) method. To find the long run and short run relationship we need to check the co-integration between the dependent, independent and control variables. The process of co-integration depends on two conditions i.e.

The error term of the dependent and independent variables should be first order integrated i.e. e ☐ I (0)

The coefficient of lag of the error term should be negative and significant.

Relationship between Industrial Policy Instruments and Dependent Variables

To check the possibility of co-integration first we will check the difference level of our error terms, if the error terms are first order integrated than we will proceed to Engle-Granger steps of finding co-integration. The below table tell us about the relationship between dependent and Industrial Policy instruments treated as independent variables. The t-statistics and significance are highlighted in parenthesis and satiric, respectively.

Table 2: Regression Results of Dependent and Independent Variables

Variables	Export Sophistication	Export Diversification	Export Competitiveness
Industrial	-0.0175*	-0.196	-0.000960
Expenditures	(-2.22)	(-1.58)	(-0.14)
Export Subsidy	-0.0183	-0.938***	-0.0402***
	(-1.58)	(-5.15)	(-3.87)
R&D	0.144	1.203	0.134*
Expenditures	(2.01)	(1.07)	(2.08)
Import Tariff	-0.00681**	0.102***	-0.0009
	(-7.02)	(6.68)	(-1.04)
Rebate	-0.045	-0.717	0.0200
	(-1.40)	(-1.34)	(-0.65)
Constant	4.601***	56.60***	3.635***
	(25.59)	(23.09)	(25.99)

(t statistics in parentheses, * p<0.05, ** p<0.01, *** p<0.001)

From the above table we can see that some of the variables are giving significant results at 1%, while some of the variables have no significant relationship with that of dependent variables. From the above calculation the error terms have been calculated

and the results of unit root analysis of error terms showing the problem of unit root or not are given in the below table.

From the findings of table3 we can see that the error terms of first equations are zero order integrated showing the possibility of co-integration while the last model error term is first order integrated have no possibility of co-integrations. So, to estimate the relationship between dependent and independent variables now we will rely on Error Correction Model that will clarify the speed of Adjustment.

Principal Component Analysis of Industrial Policy of Pakistan

Table 4 shows the composition of different variables in the newly created index of Industrial Policy Instruments into IP index. The Eigen values shows the decompositions of covariance matrix or correlation of the variables that describes series of uncorrelated linear combination of variables which contain most of the variance and the data reduction Eigen Vectors from Principal Component Analysis are usually inspected to know more about the structure of data. The Composition section highlights the share of different variables in constructing the index. We can see that Industrial Expenditures contributes the most in constructing the Industrial Policy Index with a proportion of 51.32% followed by Export Subsidy 24.66%, R&D 14.38%, Import Tariff 7.3 and Rebate 2.3% respectively.

ECM Model Estimation

Error Correction Model is used to show the speed of adjustment when there exist Co-Integration between dependent and independent variables. The below table gives a quick look of ECM model findings in the study.

Table 3: ECM on Export Sophistication

Export Sophistication				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
d(PCA)	0.022902	0.008715	2.627956	0.0138*
d(EXPTOGDP)	0.014441	0.003348	4.313013	0.0002*
d(PCI)	0.517036	0.143852	3.594214	0.0012*
d(DC)	-0.00211	0.002034	-1.03565	0.3092
d(FDI)	3.13E-06	1.15E-05	0.272872	0.787
d(TO)	0.215394	0.16116	1.336519	0.1921
d(MSE)	0.20926	0.045844	4.564652	0.0001*
d(EXPEDU)	0.026238	0.013258	1.978999	0.0577**
(E-1)	-0.21744	0.110415	-1.96926	0.0589**
R-squared	0.989658	Mean dependent	3.902224	
Adjusted R-squared	0.986703	S.D. dependent	0.220063	
S.E. of regression	0.025376	Sum resid^2	0.01803	
Log likelihood	88.59179	Durbin-Watson	1.911395	

The above table shows the results of Error Correction Model of Export Sophistication with Industrial Policy, Export to GDP, Per Capital Income, Domestic Credits, Foreign Direct Investment, Trade Openness, Share of Manufacturing in Export, Expenditures on Education with their difference respectively and the lag of error terms. We can see that most of the variables are significant and showing positive relationship with Export Sophistication. The focused variable industrial Policy can be seen that it has positive relationship with Export Sophistication at 1% significant level showing that if Industrial Policy Instruments are focused one percent there will be on average 2.29% growth can be achieved in Export Sophistication. The second most important point in the analysis is the significance and sign of lag of error term because it tells us about the speed of adjustment in long run relationship. We can see that the lag of Error term giving negative sign with significance at 5% showing convergent mode of adjustment in long term at the speed of 0.21%.

Table 4: ECM on Export Diversification

Variable	Coefficient	Std. Error	t-Statistic	Prob.
d(PCA)	1.912198	0.208382	9.176398	0.0004*
d(OER)	-0.00208	0.015454	-0.13445	0.8939
d(RD)	-3.13283	0.736982	-4.25089	0.0007*
d(IT)	0.165143	0.008999	18.35095	0.0000*
d(GDP)	4.054342	0.174553	23.22697	0.0004*
d(DC)	0.045504	0.043873	1.037183	0.3079
(EE-1)	-0.87701	0.087921	-9.97498	0.0009*
R-squared	0.960375	Mean dependent var		48.15082
Adjusted R^2	0.95245	S.D. dependent var		2.651156
S.E. of regression	0.578109	Sum squared resid		10.02631
Log likelihood	-28.3452	Durbin-Watson stat		1.942082

From the above table of ECM model on Export Diversification, we can see that the Instruments of Industrial Policy are highly significant with high impact on export diversification. We can see that the instruments of industrial policy in case of Pakistan giving highly significant value showing that increase in industrial instruments by one percent the export diversification will boost up by 1.91 indices units. The lag of error terms shows a divergent value of greater than 0.8 with negative sign and highly significant value showing that in long run there is divergent possibility of high reluctant on Industrial Policy Instruments. From the time series features of the above model we can see that value or r2 is 0.960, showing that 96% variation in export diversification is due to the independent variable showing the goodness of model while the Durban Watson statistics confirms that there is no problem of autocorrelation in the data.

Table 5: ECM on Export Competitiveness

Variable	Coefficient	Std. Error	t-Statistic	Prob.
d(PCA)	-0.03997	0.014252	-2.80438	0.011*
d(GFC)	0.341615	0.02204	15.49947	0.001*
d(RD)	-0.04019	0.045603	-0.88129	0.3886
d(OER)	0.003434	0.001435	2.39306	0.0266*
d(TOT)	0.008685	0.001441	6.027676	0.0079*
d(EHT)	0.004088	0.018174	0.224951	0.8243
(EEE-1)	0.451908	0.124682	3.624492	0.0017*
R^2	0.926755	Sum	0.018481	
S.E. of regression	0.030398	Durbin-Watson stat		1.845147
Log likelihood	60.06098			

From the given above table of ECM estimation on Export Competitiveness and other independent variables we can see that Instruments of Industrial Policy are giving negative relationship with Export competitiveness at high significant value of 1.1% showing that increase in industrial instruments will cause to lower the export competitiveness by 0.039 units. The coefficient of Lag of error term shows negative sign with probability of 0, showing high significant value with convergent possibility in the equation. the other variables i.e. Official Exchange Rate and Gross Capital Formation gives significant and positive relationship with export competitiveness at less than 5% significance level while R&D expenditures and Export of High Technology gives negative relationship with Export Competitiveness. The time series features show that dependent variable's variation is 92% explained by the independent variables while there is no problem of autocorrelation in the data.

Conclusion and Policy Recommendation

The Pakistan's export performance has changed significantly over the years with the improvement in the share of primary and semi manufactured export because the shares of primary goods and semi manufactured goods with final manufactured goods in total export has declined and manufactured goods has been increased. Undoubtedly the pattern of Export performance has changed substantially in response to export reforms and the transition from primary manufactured products to finished manufactured goods, but the overall performance is not so promising showing declining trend. We have observed different policies that have been designed either to meet current issues and challenges or either to respond the crises but overall history tell us

that we are unable to design a long term visionary policy to support and to promote export promotions, because the countries that were competitor in 1960's and 1970's are now left so much back in terms of export and other economic indicators. The economy suffered huge that is why in international market its export share went down from 0.19 to 0.14 in 1990 and 2017, respectively. After the 18th Amendment in Pakistan's constitution, the State decided to handover the industrial policy making to the provincial level and now the provinces design industrial policies according to their interest.

Analyzing the Industrial Policy instruments performance of Pakistan competing with Asian economies, we can see that before the Structural Adjustment Program, the economy of Pakistan was more liberalize and open for international trade as compare to other competing Asian economies because the average tariff rate was 50.2% which was very low as compare to India and Bangladesh have 84% and 88% respectively but Sri Lanka have import tariff rate a little lower than Pakistan which was 47% in 1988. After joining Structural Adjustment Program the Asian economies let the import tariff more quickly to get down to make economies for international trade and in 1999 the average tariff rate in India, Bangladesh, Sri Lanka and Pakistan were 33%, 19%, 14% and 18% respectively that further brought down to 8.7%,11%, 12% and 10.4% in 2017. The export rebates data shows that India have increased its export subsidies much more than Pakistan during 1980-2005 but after the great financial crises of 2007, it brought its export subsidies to down but Pakistan still providing subsidies and protect some industries that are being subsidized and protected since long ago and the estimates of the study shows that the subsidies have no significant impact on Export Sophistication, Export Diversification and Export Competitiveness in Pakistan and the reality also accepts it because of subsidizing and protecting textile industry make other sectors to contribute less than the expected and new firms hesitate to invest in other sectors. The R&D expenditures show a significant positive relationship with the export performance. When we carefully analyze the industrial expenditures impact on export performance we can see over the time its impact is significant but when we compare the significance in military and democratic regimes, it gives unsatisfactory results of insignificant results of military regimes showing that military regime is not so good for industrial development.

One of the important debating phenomena after Shenzhen Export Processing Zone and the success of Taiwan, Malaysia and Philippine, the economic processing zone sometimes refer to Export Processing Zones are getting much interest. Many of the developing nations are focusing to promote and stabilize these EPZ's with several benefits to investors. Comparing performance of EPZ's of Pakistan with neighboring Asian economies, we can see that India is more far ahead from us because India started to promote EPZ's in 1960 while Pakistan established her first Economic Processing Zone in 1990's in Karachi and now there are 9 different EPZ's are functioning in the economy and the share in total export is not much so satisfactory as compare to other competing Asian economies. Government of Pakistan is proving huge amount on export subsidy, Export Rebate and Grants to the exporters to promote the export sectors but when we deeply analyze the impact on export performance, we get unsatisfactory results because either they are giving negative impact on export performance or either they are giving insignificant results showing no impact on export performance. The speed of adjustment in export performance we can see that shocks and changes have more qualities of convergence but at low speed for example if there comes shocks or crises or we make policy change than it takes -0.24, -0.89, -0.45 in Export Sophistication, Export Diversification and Export Competitiveness, means that it takes less time for adjusting Sophistication and Competitiveness as compare to Diversification because once the economy is diversified it will bring him under competition and that promote competitiveness that help economy to produce more sophisticated goods.

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