

DETERMINANTS FOR THE DEMAND AND SUPPLY OF TEXTILE EXPORTS OF PAKISTAN

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INTRODUCTION

- Exports are “**engine of growth**” in economy.
- Successful experience of NIC’s have encouraged other DC’s to adopt export promotion strategies.
- T&C sector has vital role in the economic development of Pakistan.
- T&C industries of Pakistan produces all categories of products (from raw material to finished products).
- It adds around **46%** in manufacturing output, **60%** to export earnings & **39%** to labor force (*Eco. Survey of Pak 2010-11*).
- Climate is suitable for the production of inputs (cotton & wool).
- Advantage has not been much taken by converting inputs in value added products.
- Therefore, its share in world exports is very small.

INTRODUCTION

- Trade in T&C sector has been subject to restriction in the form of;
 - **Multi Fiber Agreement (MFA) 1974-94**
 - Quota restrictions by importing countries (Canada, EU & USA etc.).
 - MFA has provided rules for importing T&C products.
 - Textile Surveillance Body monitors the functioning of MFA.
 - **Agreement on Textile and Clothing (ATC) 1995-2004**
 - ATC replaced MFA on 1st January 1995.
 - Uruguay Round (1994) decided to bring T&C trade under GATT rules.
 - Ten years time period had been given to remove quota restriction and to adjust for new phase of trade.
 - Textile Monitoring Body ensures the implementation of ATC rules.

BACKGROUND OF THE STUDY

- Several changes have been observed in the structure of T&C trade i.e.
 - Decrease in protection for more access to international market.
 - Increased share of developing countries in world T&C exports.
 - Change in the pattern of consumer's expenditures &
 - Incentives provided by the Govt. to encourage producers.
- It influenced the magnitude of T&C industry.
- T&C exports are given less attention being Pakistan economy's major sector.
- Therefore, proper understanding of demand & supply side factors of this sector is required.

BACKGROUND OF THE STUDY

○ Contribution of the study in existing literature:

- Incorporated policy variables in the demand & supply side equations.
- Simultaneous equation model have been specified for the country wise analysis of T&C exports.
- Highlights important demand & supply side factors of T&C exports.

this study is carried out to attain the following **OBJECTIVES**.

- To analyze the impact of demand & supply side determinants on T&C exports of Pakistan.
- To evaluate the relative importance of demand and supply side factors in export performance of T&C products.
- To see the impact of real devaluation on T&C exports of Pakistan.
- To examine whether the removal of MFA restriction encourages domestic suppliers to expand their exports supply or not.

TEXTILE AND CLOTHING EXPORTS 2010

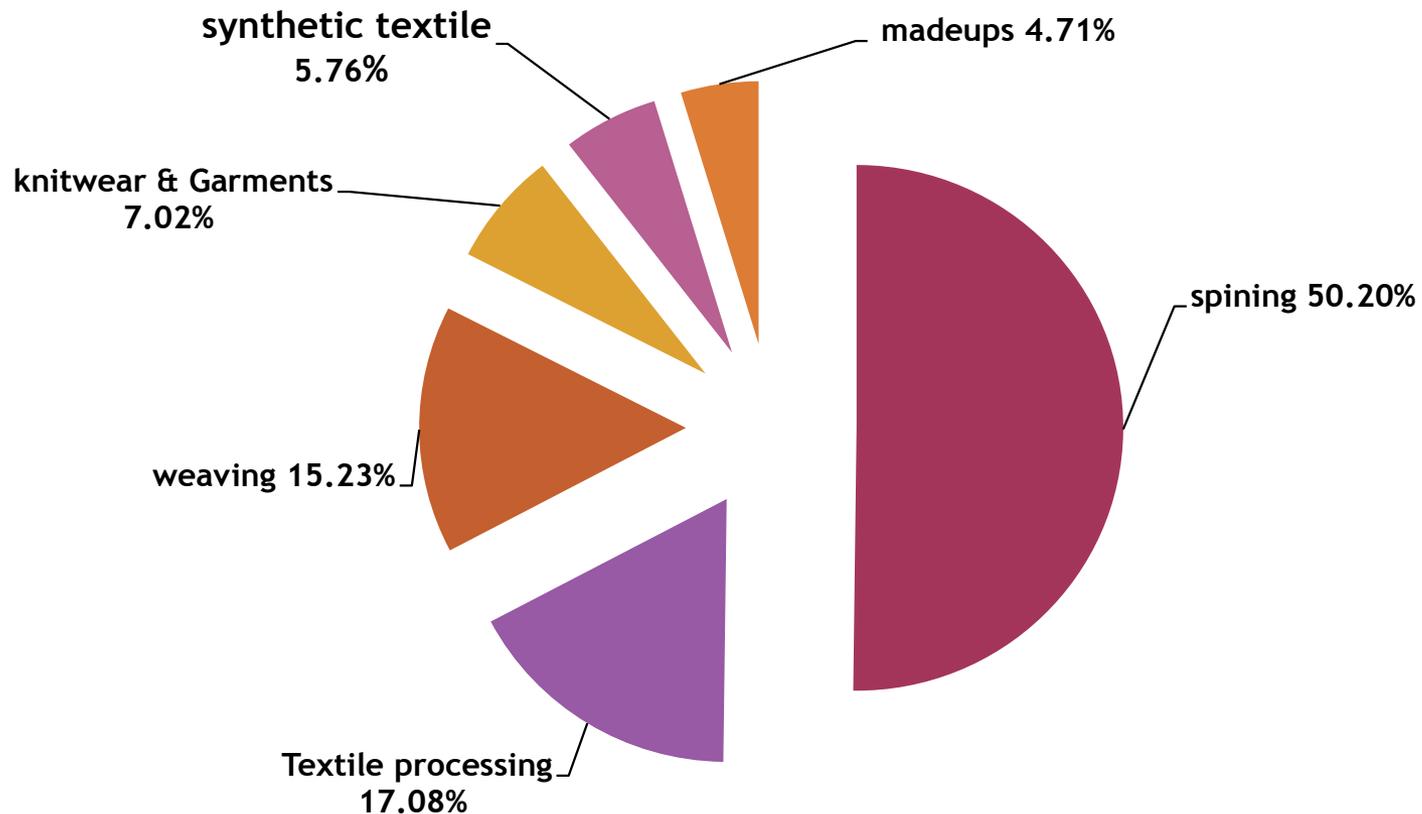
	World	% Share	Pakistan	% Share
Textile	250.7	41.63	7.8	66.10
Clothing	351.5	58.36	3.9	33.05
Total	602.2		11.8	

US\$ million

Source: Pakistan Economic Survey

REVIEW OF TEXTILE AND CLOTHING INDUSTRY OF PAKISTAN

Sector wise share in total investment 1999-2008



Source: PBS (2008-09)

REVIEW OF TEXTILE AND CLOTHING INDUSTRY OF PAKISTAN

- 521 yarn producing mills from 150 in past
- Effect of MFA, especially for production of cloth in unorganized mill sector.
- More than 50% of cotton cloth is produced using power looms with poor technology, unskilled labor, low production capacity and unavailability of good quality yarn.
- Grey fabric contributes more than 50% of the total cloth production as compared to other categories (blended, bleached and dyed & printed fabrics).

REVIEW OF TEXTILE AND CLOTHING INDUSTRY OF PAKISTAN

- Dyeing & printing adds more value to the grey fabric.
- 50-80% of total cloth production is used in domestic market and rest is exported.
- Major share of readymade garment is produced in small and medium scale units.
- Demand of synthetic fiber is increasing in production of T&C products in local and international market.
- Share of cotton consumption is more than 70% over the review period.

PAKISTAN'S TEXTILE EXPORTS

	2006-07	2007-08	2008-09	2009-10
Cotton & Cotton Textile (%ge)	94.00	93.45	95.25	94.36
<i>Synthetic Textile (%ge)</i>	3.89	4.55	3.26	4.31
Wool & woolen Textile (%ge)	2.11	2.00	1.48	1.33
Total Textile	100	100	100	100

Source: Economic Survey of Pakistan 2011-12

COMPARISON WITH COMPETITORS IN ASIA

Countries / years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Growth Rate per annum%
world	341166	356870	405301	453786	478405	525465	583302	612028	525336	602116	
Bangladesh	5238	5314	6067	6893	7595	9812	9739	12010	13411	16923	20.99
Share in world exp. (%)	<i>1.54</i>	<i>1.49</i>	<i>1.50</i>	<i>1.52</i>	<i>1.59</i>	<i>1.87</i>	<i>1.67</i>	<i>1.96</i>	<i>2.55</i>	<i>2.81</i>	
china	53475	61864	78961	95284	115213	144057	171552	185772	167088	206738	29.60
Share in world exp. (%)	<i>15.67</i>	<i>17.34</i>	<i>19.48</i>	<i>21.00</i>	<i>24.08</i>	<i>27.42</i>	<i>29.41</i>	<i>30.35</i>	<i>31.81</i>	<i>34.34</i>	
India	11011	11645	12750	14332	17070	18444	19547	21340	21116	24118	10.86
Share in world exp. (%)	<i>3.23</i>	<i>3.26</i>	<i>3.15</i>	<i>3.16</i>	<i>3.57</i>	<i>3.51</i>	<i>3.35</i>	<i>3.49</i>	<i>4.02</i>	<i>4.01</i>	
Pakistan	6661	7018	8521	9151	10691	11376	11177	11092	9867	11778	7.64
Share in world exp. (%)	1.95	1.97	2.10	2.02	2.23	2.16	1.92	1.81	1.88	1.96	

US\$ million

Source: World Trade Organization (WTO)

CONCENTRATION OF EXPORTS

	1972-1980		1981-1990		1991-2000		2001-08	
	%Share	Growth	% Share	Growth	% Share	Growth	% Share	Growth
Raw Cotton	8.76	23.03	12.80	8.35	3.00	-6.06	0.51	-11.81
Cotton Waste	0.19	-4.83	0.26	304.21	0.67	5.03	0.31	1.08
Cotton Yarn	12.53	0.62	10.71	77.40	16.60	10.80	8.79	3.65
Cotton Thread	0.42	14.01	0.20	-3.56	0.04	-1.31	0.01	74.79
Cotton Cloth	12.99	11.72	10.67	40.20	13.50	27.34	12.22	13.57
Synthetic Textile	0.49	-0.65	3.60	25.81	6.57	20.35	3.41	-2.51
Readymade Garments	2.27	81.70	7.99	182.49	16.66	36.00	19.04	13.11

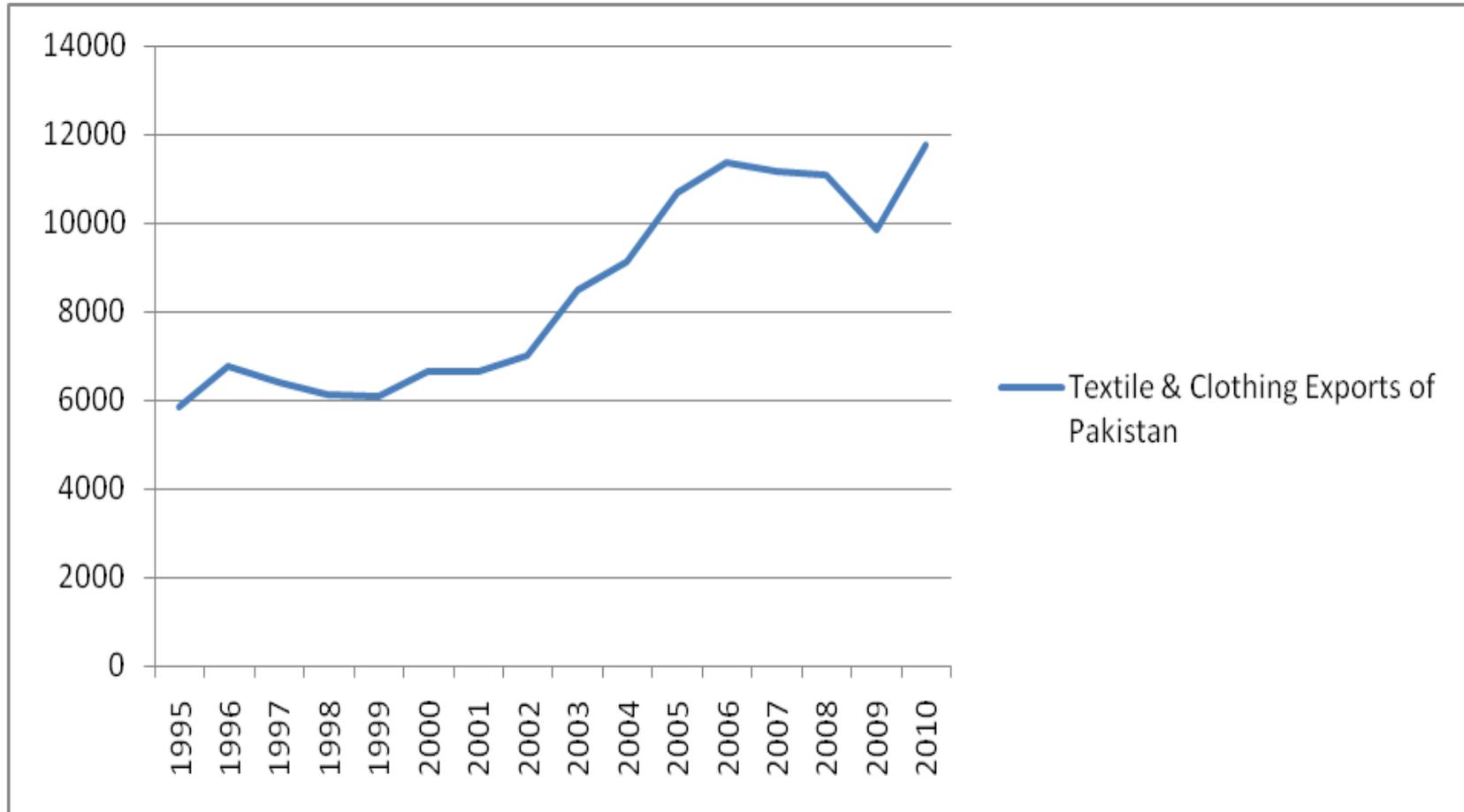
Source: Statistical Supplement and Economic survey of Pakistan

PRINCIPAL BUYERS OF T&C EXPORTS FROM PAKISTAN

	2007-08 (Textile & Clothing Exports) US\$M		2008-09 (Textile & Clothing Exports) US\$M	
	Value	percentage in Total	Value	percentage in Total
U.S.A.	3,303,455	31.2	2,925,545	30.6
UK	783,749	7.4	678,592	7.1
GERMANY	598,549	5.7	547,440	5.7
CHINA	368,437	3.5	457,414	4.8
ITALY	471,616	4.5	385,168	4
BANGLADESH	255,319	2.4	334,342	3.5
SPAIN	422,085	4	327,980	3.4
UAE	379,852	3.6	324,872	3.4
BELGIUM	319,601	3	321,600	3.4
TURKEY	331,915	3.1	304,380	3.2
NETHERLANDS	352,777	3.3	293,778	3.41
HONG KONG	397,900	3.8	282,674	3
FRANCE	260,659	2.5	228,946	2.4
SAUDI ARABIA	135,919	1.3	169,618	1.8
SOUTH AFRICA	200,604	1.9	136,218	1.4
CANADA	149,197	1.4	132,530	1.4
PORTUGAL	150,139	1.4	113,480	1.2
SRI LANKA	127,023	1.2	105,405	1.1
SOUTH KOREA	91,041	0.9	91,182	1
AUSTRALIA	95,123	0.9	84,768	0.9
REST WORLD	1,376,857	13	1,318,458	13.8
TOTAL	10,571,817	100	9,564,390	100

Source: APTMA

TEXTILE AND CLOTHING EXPORTS OF PAKISTAN 1995-2010



Source: WTO

LITERATURE REVIEW

<i>Author</i>	<i>Time Period</i>	<i>Objective</i>	<i>Variables</i>	<i>Methodology</i>	<i>Results</i>
Hassan and Khan (1994)	1972-91	Aggregate(Pri mary&Manuf acturing)	P^x , P^w , Y^w , ER and GDP	3SLS(Simultane ous Equation)	Price, world GDP and ER are significant
Akhtar & Malik (2000)	1982(1)- 1996(4)	Aggregate	P^x , P^d , Y^w , ER, GDP, WPI, Exports incentive index.	3SLS	Y^w & real devaluation have most important & significant coefficients for all trading partners.
Malik (2000)	1973-1996	Textile exports	P^x , P^w , Y^w , REER, ER	Co-integration technique	Role of supply side is stronger than demand side in product diversification.
Atique & Ahmed (2003)	1972-2000	Aggregate	RP, Y^d , REER, Predicted values of real GDP, Wage rate.	Almon approach	Demand & supply side variables are significant except RP. domestic production capacity & Y^w are impotent determinants.
Naseeb(2012)	1975-2008	Aggregate	P^x , P^w , P^d , Y^w , GDP, Import of inputs, D.	GMM & Empirical Bayes	Only P^x play important role on supply side & Demand side factors are more important.

LITERATURE REVIEW

<i>Author</i>	<i>Time Period</i>	<i>Objective</i>	<i>Variables</i>	<i>Methodology</i>	<i>Results</i>
Riedel <i>et al</i> (1984)	1978(11)-1984(11)	Aggregate	P^x , P^w , Y^w , ER, PM, W, Trend Variable.	2SLS	Supply side factors play more imp. role in exp. Growth.
Goldar (1989)	1960-79	Engineering Exports	P^x , P^w , Y^w , total factor prod., ER, Domestic dd, T	OLS	World income & ER has important & significant role.
Roy (1991)	1976-87	Aggregate	ER, Y^w , Effective rate of assistance, Domestic Demand Pressure (DD), CGDP.	OLS	Y^w & ER plays has important role in boosting Bangladesh exports.
Virmani (1991)	1961-86	Aggregate	P^x , P^w , Y^w , ER, rate of exports subsidy and price of non-exported commodities.	OLS and TSLS (Simultaneous Equation)	World income & RER plays important role in exports growth.
Muscattelli <i>et al.</i> (1992)	1972-84	Aggregate	P^x , P^w , Y^w , price of raw material inputs(PM) and index of nominal wages in manufacturing.	Modified OLS & FIML(Simultaneous Equ.)	All demand & supply side variables are significant except wage rate.
Arize (1999)	1973(2)-1997(1)	Aggregate	P^x , P^w , Y^w , Exchange rate volatility.	ECM, Dynamic OLS	All variables play significant & important role in the SR & LR except p^d .

LITERATURE REVIEW

<i>Author</i>	<i>Time Period</i>	<i>Objective</i>	<i>Variables</i>	<i>Methodology</i>	<i>Results</i>
Ahmed (2000)	1974-1995	Aggregate	P^x , P^d , REER, GDP, D	ECM	All variables are significant, REER has important role in exports growth of Bangladesh.
Roy (2002)	1960-1997	Aggregate	P^x , P^w , Y^w , ER, GDP	FIML	All demand & supply side play significant role except GDP of exporting countries.
Narayan & Narayan (2004)	1970-99	Aggregate	P^x , P^w , Y^w	ARDL, Dynamic OLS & FMOLS	P^x & P^w are significant & important determinants but Y^w has inelastic coefficient.
Gunawardana (2006)	1970-1999	Textile Exports	P^x , P^d , Dom. Prod. Capacity & Effective Rate of assistance.	Unrestricted ECM	All variables are significant in the SR & LR except CAPT in SR, elastic coefficients in LR.
Rijesh(2007)	1980-2005	Machine tool Exports	REER, Y^d , RP, DD, technological capability, D.	3SLS	Demand side factors play more important role in exports growth.
Roy (2007)	1960-2000	Disintegrated manufacturing	P^x , P^w , P^d , Y^w , ER, GDP, Dummy (D)	ECM & FIML	P^x , P^w , Y^w , are significant for all categories except iron&steel. GDP is only significant for the supply of iron & steel only.

MODEL SPECIFICATION

◉ Demand and supply equations for T&C export:

➤ Logarithmic form of demand equation:

$$\ln X^d_t = a_0 + a_1 \ln REER_t + a_2 \ln WY_t + \varepsilon_t$$

X^d shows demand for T&C exports

REER is real effective exchange rate and

WY represents GDP of trading partners

$$REER_t = \prod_{j=1}^n (Z_{j,t})^{V_j}$$

$Z_{j,t}$ shows real exchange rate relative

V_j shows normalized weights

➤ Logarithmic form of Supply equation:

$$\ln X^S_t = \beta_0 + \beta_1 \ln RP_t + \beta_2 \ln W_t + \beta_3 \ln Y_t + \beta_4 D + V_t$$

X^S shows supply for T&C exports

RP represents relative price = $(UVI_{\text{pak}}/CPI_{\text{pak}})$

W is real wage of textile sector

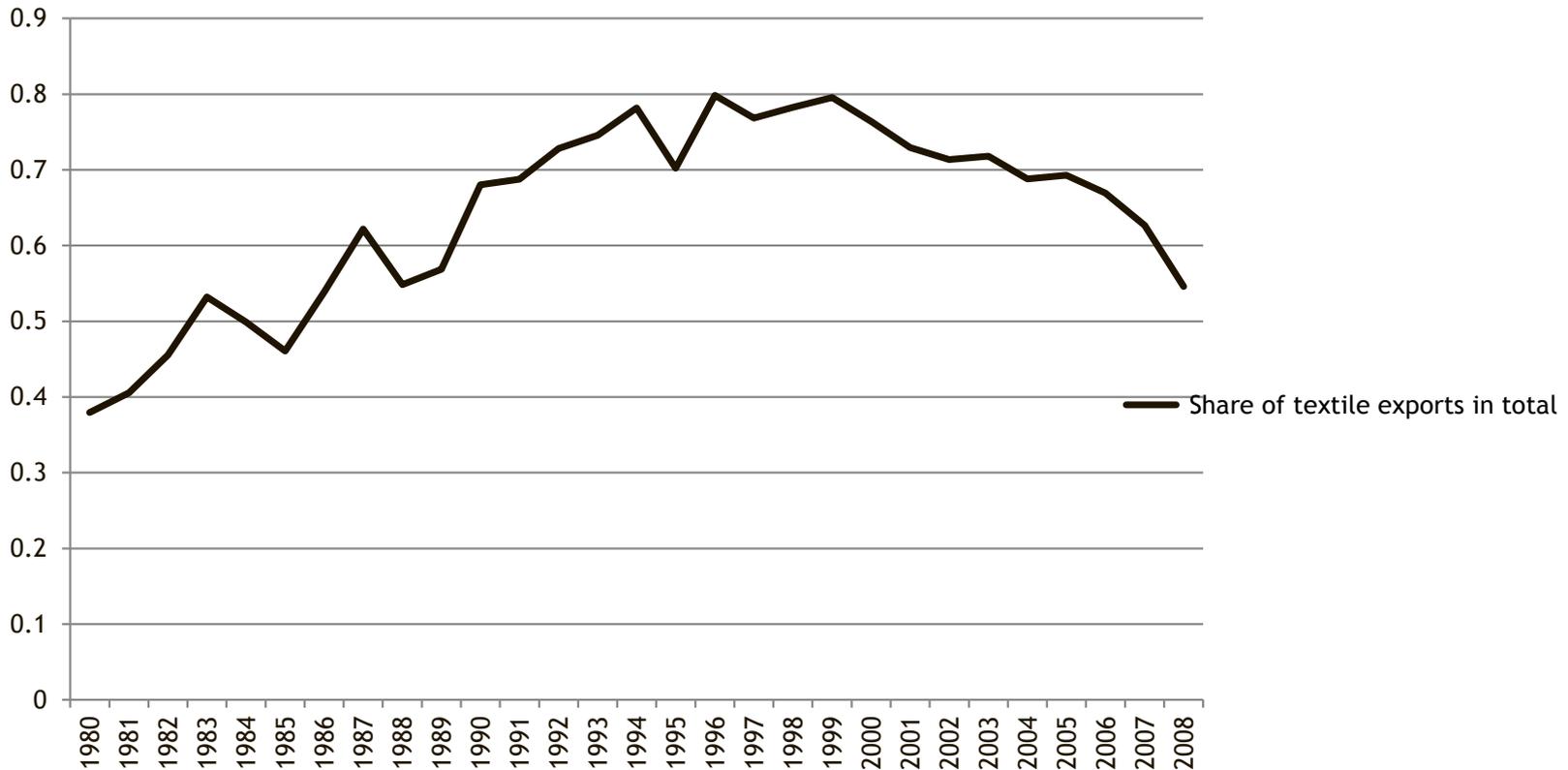
Y denotes GDP of Pakistan economy

D is dummy variable

& $X^d = X^S = X$

[Goldstein and Khan (1978), Muscatelli et al. (1992), Hassan and Khan (1994), Atique and Ahmed (2003) and Naseeb (2012)]

Share of textile exports in total exports



During the specified period, share of textile exports in total exports is more than 50% , any change in textile exports bring change in total exports. Because of data limitations, study use relative prices of exports as a proxy for relative prices of textile exports.

METHODOLOGY/ESTIMATION TECHNIQUE

- Demand & supply equation for the T&C exports are estimated simultaneously

using $X^d = X^s = X$

- The exports quantity is considered as a dependent variable for the estimation of both supply and demand equations [*Joshi & Little (1994)*].
- Instrumental variable technique GMM is employed here for the simultaneous equations.
- Empirical Bayesian technique is used to get unbiased and consistent estimates.

METHODOLOGY/ESTIMATION TECHNIQUE

◉ *The Estimation Technique*

- Riedel (1988) have examined exports demand & supply equations independently using 2SLS.
- Goldstein & Khan (1978) have estimated exports demand and supply equations simultaneously by using FIML.
- Some other studies have used 3SLS technique for simultaneous equations to generate consistent and efficient estimates (*Hassan & Khan 1995, Akhter & Malik 2000*)

METHODOLOGY/ESTIMATION TECHNIQUE

- Following estimation procedure has employed here;

(a) Generalized Method of Moment (GMM)

GMM is employed here as it takes into account the endogeneity problem & heteroscedasticity.

(b) Empirical Bayes (EB) Technique

- EB technique have been used to generate more consistent and robust estimates.
- Bayesian technique assumes the density of unknown parameter as:

$$\tilde{\beta}_j / \beta_j \sim N(\beta_j, \gamma_j)$$

- β_j shows true coefficient, $\tilde{\beta}_j$ values of GMM estimates
- Estimated values of parameters has normal distribution with β_j (mean) & γ_j (variance).

METHODOLOGY/ESTIMATION TECHNIQUE

➤ Prior Density

- True parameter values are related and clustered around a centralized point. so

- β_j has prior normal distribution given of the form as:

$$(\beta_j | \theta, \delta) \sim N(\theta, \delta)$$

- β_j is normally distributed given mean θ and variance δ
- variance of prior density is calculated as:

$$\delta = \left[\sum_{j=1}^n \gamma_j^{-1} \right]^{-1}$$

- It is computed from the variance covariance matrices γ .
- The formula for the mean of prior density is:

$$\theta = \delta^{-1} \left(\sum_{j=1}^n \gamma_j^{-1} \tilde{\beta}_j \right)$$

- The mean of prior density which is calculated from the γ & δ .
- Here, more precise estimates gain more weights and vice versa.

METHODOLOGY/ESTIMATION TECHNIQUE

➤ Posterior Density

$$\tilde{\beta}_j / \beta_j = \sim N(\mu, \varphi)$$

- ◉ μ and φ represents the mean and variance of posterior density.

$$\varphi = (\gamma_j^{-1} + \delta^{-1})^{-1}$$

- ◉ The variance of posterior density is calculated from γ and δ .
- ◉ Standard errors of EB can be calculated from the variance.
- ◉ Next step is to calculate mean of posterior density, it is also considered as Empirical Bayes formula:

$$\hat{\beta}^{EB} = \varphi (\gamma_j^{-1} \tilde{\beta}_j + \delta^{-1} \theta)$$

Where, φ is the posterior variance,

θ and δ shows mean and variance of prior density respectively

$\tilde{\beta}_j$ is the estimates coefficient of GMM.

DATA DESCRIPTION AND SAMPLE SIZE

- ◉ Annual data has been used for the period 1972-2010 for eight trading partners.
- ◉ Selected countries are US, UK, Canada, Italy, France, Japan, Spain and UAE.
- ◉ The data for GDP has been taken from the World Development Indicators (WDI).
- ◉ Exports prices, CPI and exchange rate has been taken from IFS.
- ◉ Textile wage has been taken from ILO.
- ◉ T&C exports have been taken from (UN COMTRADE).
- ◉ Data from the UN COMTRADE is extracted according to SITC Rev.1.

GMM ESTIMATES FOR THE DEMAND EQUATION:

$$\ln X_t^d = \alpha_0 + \alpha_1 \ln REER_t + \alpha_2 \ln WY_t + \varepsilon_t$$

Trading Partners	α_0	α_1	α_2	R ²
USA	3.29 (0.54)	-5.02 (-2.56) **	1.38 (4.44) *	0.95
UK	-0.69 (-0.29)	-1.56 (-1.66)	1.02 (11.16) *	0.95
Canada	8.23 (2.76) *	-5.51 (-4.94) *	0.78 (4.84) *	0.87
Italy	1.42 (0.50)	-2.91 (-2.93) *	1.07 (7.57) *	0.95
France	1.13 (0.19)	-2.01 (-1.04)	0.79 (2.28) **	0.81
Japan	-16.73 (-1.25)	4.54 (0.89)	1.51 (2.94) *	0.75
Spain	21.49 (2.27) **	-13.12 (-3.72) *	1.13 (2.78) *	0.90
UAE	19.96 (2.87) *	-9.51 (-3.46) *	0.27 (0.87)	0.80

t-ratios are given in parenthesis, (*), (**) and (***) represents 1%, 5% and 10% significance respectively.

GMM ESTIMATES FOR THE SUPPLY EQUATION:

$$\ln X_t^S = \beta_0 + \beta_1 \ln RPT_t + \beta_2 \ln W_t + \beta_3 \ln Y_t + \beta_4 D + \varepsilon_t$$

Trading Partners	β_0	β_1	β_2	β_3	β_4	R^2
USA	-1.01 (-0.33)	5.44 (4.56) *	-1.01 (-1.50)	0.78 (1.21)	-0.15 (-0.49)	0.85
UK	-2.49 (-1.46)	5.31 (1.82) ***	-0.06 (-0.15)	1.05 (2.79) *	-0.15 (-0.35)	0.79
Canada	-2.52 (-2.46) **	4.23 (2.12) **	-0.86 (-1.77) ***	0.96 (4.27) *	-0.58 (-1.98) **	0.78
Italy	-4.68 (-2.93) *	2.45 (3.23) *	0.41 (0.68)	1.40 (4.30) *	0.21 (0.73)	0.91
France	-4.28 (-1.35)	2.98 (1.94) ***	-0.18 (-0.16)	1.35 (2.16) **	-0.33 (-0.59)	0.79
Japan	-0.73 (-0.36)	6.43 (4.08) *	-0.50 (-0.73)	0.73 (1.72) ***	-1.09 (-3.52) *	0.37
Spain	-3.82 (-2.01) ***	2.19 (1.18)	-1.48 (-1.90) ***	1.01 (2.38) **	0.29 (0.50)	0.77
UAE	-6.24 (-1.80) ***	1.96 (1.52)	-1.25 (-0.96)	1.83 (2.60) **	-0.77 (-1.26)	0.67

t-ratios are given in parenthesis, (*), (**) and (***) represents 1%, 5% and 10% significance respectively.

EMPIRICAL BAYES ESTIMATES FOR THE DEMAND EQUATION:

$$\ln X_t^d = \alpha_0 + \alpha_1 \ln REER_t + \alpha_2 \ln WY_t + \varepsilon_t$$

Trading Partners	α_0	α_1	α_2
USA	0.07 (0.36)	-0.33 (-2.18) **	0.81 (14.41) *
UK	0.06 (0.32)	-0.33 (-2.23) **	0.85 (17.65) *
Canada	0.11 (0.53)	-0.39 (-2.64) **	0.79 (14.66) *
Italy	0.07 (0.38)	-0.36 (-2.41) **	0.83 (15.67) *
France	0.07 (0.35)	-0.31 (-2.06) **	0.79 (14.02) *
Japan	0.06 (0.32)	-0.29 (-1.96) ***	0.80 (14.08) *
Spain	0.08 (0.39)	-0.32 (-2.15) **	0.79 (14.09) *
UAE	0.06 (0.31)	-0.31 (-2.01) ***	0.84 (15.04) *

t-ratios are given in parenthesis, (*), (**) and (***) represents 1%, 5% and 10% significance respectively.

EMPIRICAL BAYES ESTIMATES FOR THE SUPPLY EQUATION:

$$\ln X_t^S = \beta_0 + \beta_1 \ln RPT_t + \beta_2 \ln W_t + \beta_3 \ln Y_t + \beta_4 D + \varepsilon_t$$

Trading Partners	β_0	β_1	β_2	β_3	β_4
USA	-2.87 (-4.64) *	3.68 (8.43) *	-0.52 (-2.48) **	1.06 (7.99) *	-0.31 (-2.63) **
UK	-2.90 (-4.89) *	3.46 (7.46) *	-0.37 (-1.93) ***	1.07 (8.39) *	-0.33 (-2.64) **
Canada	-2.83 (-5.29) *	3.45 (7.56) *	-0.53 (-2.66) **	1.04 (8.98) *	-0.38 (-3.23) *
Italy	-3.19 (-5.43) *	3.14 (7.88) *	-0.36 (-1.76) ***	1.12 (8.96) *	-0.25 (-2.11) **
France	-3.01 (-4.85) *	3.37 (7.51) *	-0.45 (-2.10) **	1.08 (8.19) *	-0.34 (-2.71) **
Japan	-2.75 (-4.57) *	3.65 (8.13) *	-0.47 (-2.24) **	1.04 (8.06) *	-0.46 (-3.81) *
Spain	-3.04 (-5.07) *	3.33 (7.33) *	-0.54 (-2.55) **	1.06 (8.26) *	-0.31 (-2.47) **
UAE	-3.06 (-4.92) *	3.24 (7.35) *	-0.49 (-2.24) **	1.10 (8.26) *	-0.36 (-2.86) *

t-ratios are given in parenthesis, (*), (**) and (***) represents 1%, 5% and 10% significance respectively.

CONCLUSION

- ◉ Both GMM and Empirical Bayes give similar results regarding determinants of demand and supply.
- ◉ The Empirical Bayesian technique provides better estimates with expected sign as compare to GMM estimates.
- ◉ World demand is a major source of T&C exports demand from Pakistan.
- ◉ Devaluation is less effective to improve T&C exports.
- ◉ Relative prices & domestic capacity plays important role in the supply of T&C exports.
- ◉ Results reveals that supply side factors play more important role in the determination of T&C exports.

POLICY IMPLICATIONS

- Producer needs to adopt new techniques for the production of value added products i.e. readymade garments and cloths.
- Exporters should go for 'demand of market oriented strategies' by producing high quality fashion cloths.
- Devaluation should be aligned with exports of high quality products and diversification in exports market, to make it effective.
- Price incentives encourage domestic producers to increase exports supply. Govt. should provide infrastructure facilities and duty free imports incentives to encourage T&C producers.

POLICY IMPLICATIONS

- Producers should focus on converting good quality yarn into cloth and readymade garments.
- Organized mill sector should also be encouraged to produce good quality fabric.
- Demand for man-made fiber is increasing at international level therefore, T&C producers should increase synthetic fiber content in T&C production.
- Incentives should be provided to the producers in the form of low energy cost and easy capital availability with reduction in wage rate.

thank

you