Thank You for the Opportunity to present in the 38th VDF-Tokyo Monthly Workshop

Impact of Components of Trade Costs on Export Growth: an Empirical Measurement

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Presentation Outline

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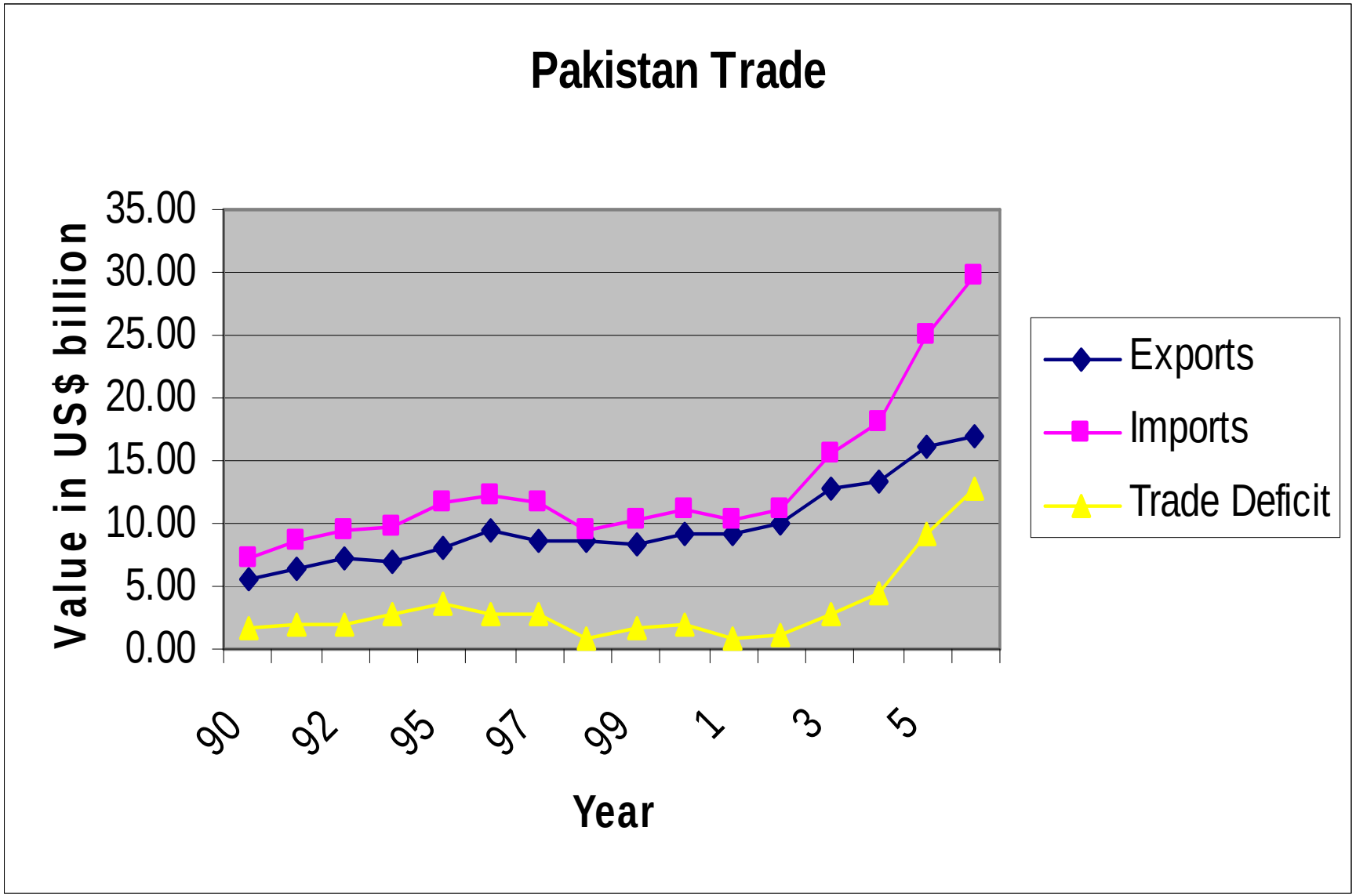
- Background: Pakistan Exports
- Objective of the Study
- Analytical Framework
- Estimation Issues and proposed Method
- Export growth decomposition
- Results of estimation for 1999 and 2004
- Impact of Behind, and Beyond the Border
- Summary of the Results
- Policy Implications
- Contribution to the literature

Introduction

- The links mainly between trade and growth; trade and poverty reduction; trade and income distribution; and trade and gender have occupied the attention of researchers and policymakers around the world.
- However, the above links can only be analyzed meaningfully, only if the determinants of trade are identified correctly.
- A major determinant is ‘trade costs’, which are usually proxied by geographical distance.
- How important is the correct specification of trade costs have recently been emphasized in the literature.

- For example, McCallum's (1995) study of Canada-US trade is still a great puzzle.
- What is the puzzle?
- McCallum finds that trade between Canadian provinces are less restricted than trade between Canada and USA, though these two countries are NAFTA members.
- Anderson and van Wincoop (2003), and Balisteri and Hillberry (2007) attempted to solve the puzzle, though with limited success.
- In the light of this ongoing debate, we would like to propose a method to measure the impact of trade costs in trade analysis meaningfully.

Pakistan Exports



Pakistan Exports

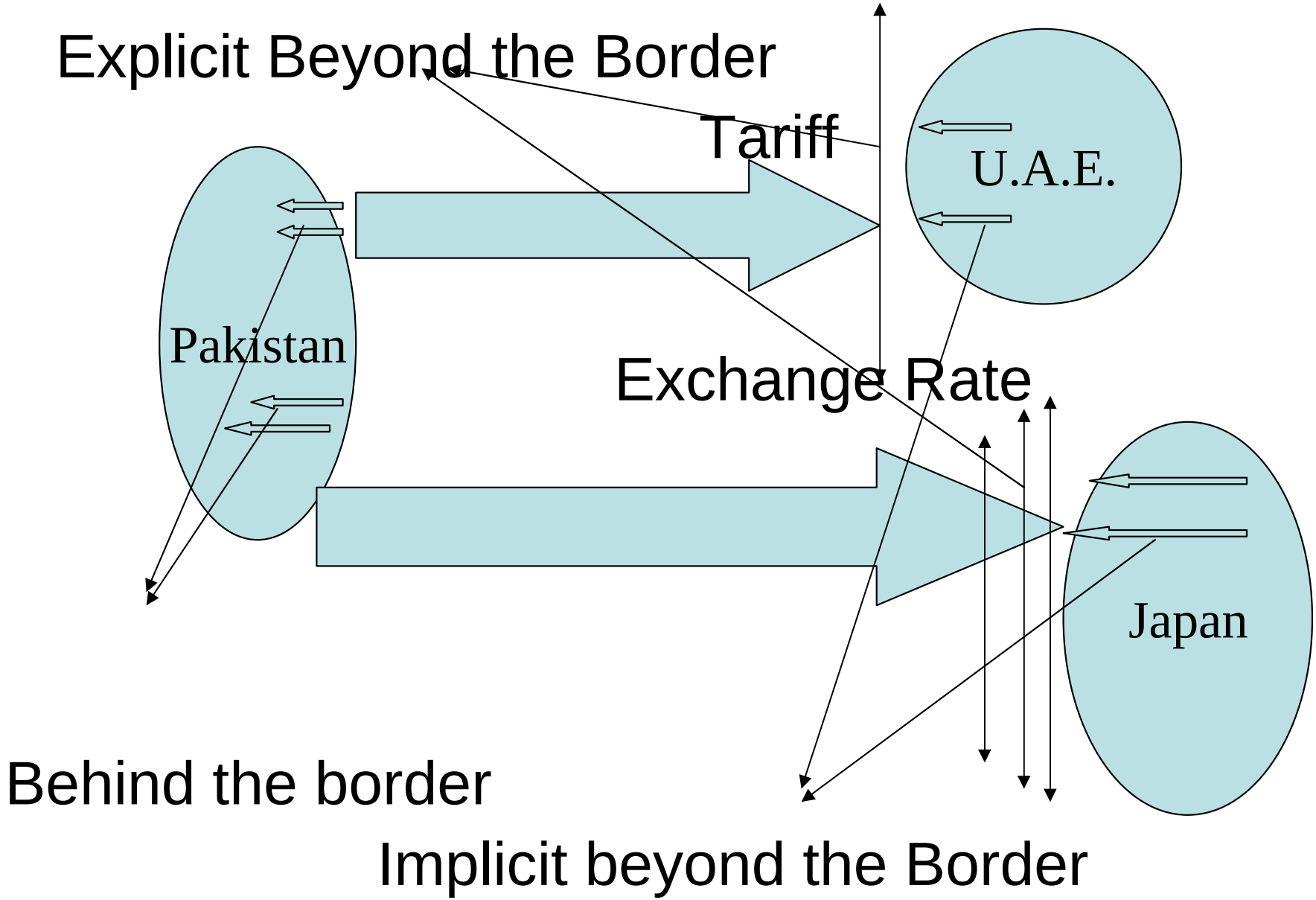
Objective of the Study

- To develop an analytical framework to explain growth in exports
- To find an appropriate methodology which can be used for this purpose
- To apply this framework and methodology to Pakistan's export growth during 1999-2004
- To use the results for policy proposals

Analytical Framework: Trade Costs

- What is Trade Cost? The difference between the marginal cost of production and the price paid by end user.
- Feenstra (1998) Mattle's Barbie Doll-900%
- Anderson and van Wincoop (2004)- estimated 170% of tariff equivalent
- Border related barriers result in 22 times larger domestic trade in Canada (McCallum 1995)
- These are some of the evidences on how large can be trade costs, and how significant can be their impact on the flow of goods.

Analytical Framework:Trade Costs



Analytical Framework:Trade Costs

- Natural Constraints-Distance
- Behind the Border Constraints- transaction costs, trade infrastructure, port and custom procedures, licensing, taxes and duties, bank procedures etc.
- Explicit Beyond the Border Constraints- tariffs, exchange rate policies
- Implicit Beyond the Border Constraints- similar to behind the border+Marketing and Retailing etc.

Behind the Border Constraints

Behind the Border constraints refer to cost affecting factors like institutional rigidities, port and customs operations, export licensing and duties, internal and external transaction costs, transport costs etc. These costs may vary due to

- Cost efficiency of exporters may vary (e.g. export licensing or state corporations)
- Large fixed costs on search and information for small distant partners (inability of commercial sections of embassies to coordinate)
- Goods or country specific policies
- Post production handling varies across goods
- TBTs/SPS, standards, quality control.

Comparative Statics

Export Growth results from

- change in income/size of the partner
- Change in explicit beyond the border resistance factors
- Change in the behind the border resistance factors
- Change in the implicit beyond the border resistance factors

Estimation Method

- Direct Measure: Tracking a good down to the end user and see the price at each stage, calculate the tariff equivalent and include in the estimation.
- Indirect Measure: We use indirect measure-instead of measuring the cost we measure the impact of higher internal trade costs on the exports relative to the most efficient exports in terms of internal trade costs.

Estimation Issues

Gravity model of international trade OLS or GLS

$$\ln Ex_{i,j} = B0 + B1 \ln Pop_j + B2 \ln GDPPC_j + B3 \ln Dist_j + B4 \ln(1+T_{j,i}) + B5 \ln RER_{i,j} + v_j$$

Two problems

1. Multilateral resistance terms (Anderson and Wincoop 2003). We can not model all the factors.
2. Biased results in the presence of heteroskedasticity.

Estimation Issues

- To include the impact of all factors, one possibility is to take %age change in price at each stage, and include in the model. However, price data is not always available.
- Or use Fixed Effects with panel (Matyas 1997). In this method, the resistance factors are taken as fixed over time. Implausible for long panels.
- Include proxy variables like infrastructure index, port efficiency index, customs efficiency index etc (Otsuki 2003, Prabhir 2006, Rose 2002). However, the data is not available for all the observations over time.

Suggested Estimation Method

Drawing on the literature on production economics (Aigner *et al*. 1977), we can measure the impact of trade resisting factors using the gravity model with composed error term (Kalirajan 2007)

$$\ln Ex_{i,j} = B0 + B1\ \ln Popj + B2\ \ln GDPPCj + B3\ \ln Distj + B4\ \ln(1+Tj,i) + B5\ \ln RERi,j - uij + vij$$

Where uij is positively distributed and vj is normally distributed.

Export Growth Decomposition

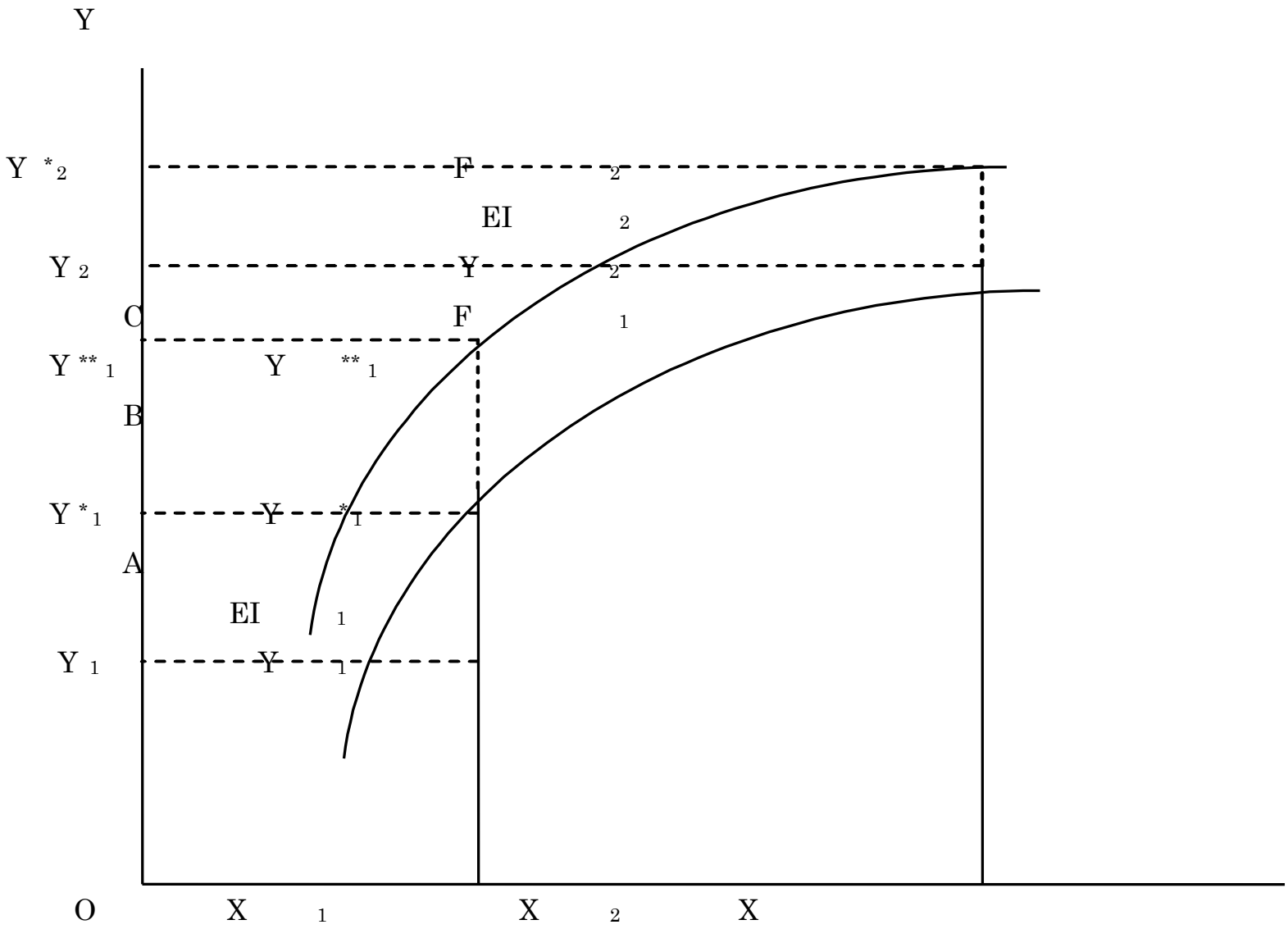


Fig 1: Export Growth Decomposition

Export Growth Decomposition

- D= Y2-Y1
- = A+B+C
- = [Y1*-Y1]+[Y1**- Y1*]+[Y2- Y1**]
- = [Y1*-Y1]+[Y1**- Y1*]+[Y2*- Y1**]-[Y2*- Y2]
- = {[Y1*-Y1]-[Y2*- Y2]}+[Y1**- Y1*]+[Y2*- Y1**]
- = {EG1-EG2}+TF+y(x)

Where:

- Y2-Y1= Export Growth
- EG1-EG2= Export Growth due to change in behind the border export restrictions
- TF= Export Growth due to change in implicit beyond the border export restrictions among the trading partners.
- y(x)= Export growth due to the growth of core determinants of trade.

Estimation Results

Independent Variables	Estimation for 1999	Estimation for 2004
Log of Population	0.798043	0.8514847
	(0.0732453)***	(0.0769822)***
Log of per capita GDP	0.5721636	0.5279272
	(0.1178764)***	(0.1153071)***
Log of Distance	-0.6782446	-0.6775326
	(0.2254659)***	(0.2028684)***
Log of tariff	-5.595105 (1.965947)***	-2.848032 (1.913066)”
Log of Real Exchange	0.0876627 (0.05947)”	0.1117691 (0.0561262)**
Rate		
Constant	6.527939 (2.74861)**	5.994246 (2.62489)**

Export Losses 1999: Top 10 Countries

Countries	Export losses
Austria	130964303
Spain	175954246
Switzerland	193300278
Turkey	296772697
France	324241880
Germany	337403300
Italy	374926408
India	618665342
China	712618939
Japan	717585620

Export Losses 2004: Top 10 countries

countries	Export losses
Spain	221076092
Poland	227142342
Brazil	278736990
Turkey	280775722
Italy	364182630
France	557705978
Germany	595608024
Japan	985592113
India	2120290392
China	2425978345

Change in Losses, 1999-2004

Countries	change	countries	change
Turkey	15996975	China	-1713359406
Belgium	17180958	India	-1501625050
Netherlands	24381584	Japan	-268006493
Kenya	35483257	Germany	-258204724
South Africa Customs Union	43277106	France	-233464098
United Kingdom	56024070	Brazil	-149042572
Iran	72627184	Canada	-121906122
Hong Kong	97876027	Indonesia	-107502408
Nigeria	236912036	Poland	-104253744
USA	250298981	Egypt	-86309206

Note: Positive sign shows reduction in losses/additional exports during the two periods; and the negative sign shows the increase in losses.

Impact of Changes in Beyond the Border

Countries	Gain	Countries	Loss
Spain	76359230	Switzerland	-33888315
Turkey	113470694	Hong Kong	-30170735
Brazil	115772875	Norway	-3837860
Italy	143991160	Czech Rep.	-3223599
France	144282928	Estonia	-2825774
United Kingdom	157317072	Luxembourg	-1333228
Germany	220732670	Malta	-121409
USA	565960357	Maldives	-68449
China	716816186	New Zealand	-51478
India	1067980374		

Note: Negative sign shows reduction in export potential due to more restrictive trade environment facing Pakistan to these countries.

Impact of Explicit and Core Determinants

countries	change	countries	change
Poland	75598146	Argentina	-34133504
Saudi Arabia	110430540	Iran	-28008347
Spain	144762616	Kenya	-5832815
Italy	166265062	Zimbabwe	-3916231
Germany	175472054	Georgia	-3451577
France	179181170	Uruguay	-2502218
United Kingdom	191658859	El Salvador	-2138310
USA	373740662	Venezuela	-1801404
India	511100612	Rep. of Korea	-1685504
China	1116543220	Honduras	-717086

Summary

Total Exports 1999	8383172608
Total Exports 2004	13379014624
Exports 1999	7151553153
Exports 2004	10917302238
Exports Growth	3765749085
Change in Inefficiency	-4519025733
Ch. In Beyond border	4246599216
Ch. In Core and Explicit	4038175601

Policy Implications

- Pakistan's exports growth has been mainly input driven, and due to the trade facilitation of its trading partners. The negative impact of the behind the border constraints is inhibiting the export expansion.
- Pakistan's losses due to behind the border resistance factors are largest for the fast growing economies of China and India. The producers and exporters in Pakistan are unable to show dynamism, diversity and change. This may be due to lack of market knowledge, lack of close links between producers and exporters, etc.

Contribution to Literature

- An analytical framework and methodology has been developed for the measurement of impact of trade costs related with behind the border and beyond the border constraints, in the total export growth.
- An empirical application of the model has been conducted for Pakistan's export growth during 1999-2004. The results show that the framework and methodology give plausible estimates with strong policy implications.

Thank You

Comments and Suggestions are Welcome!