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Pakistan-India Trade: Analysis of the Health Sector

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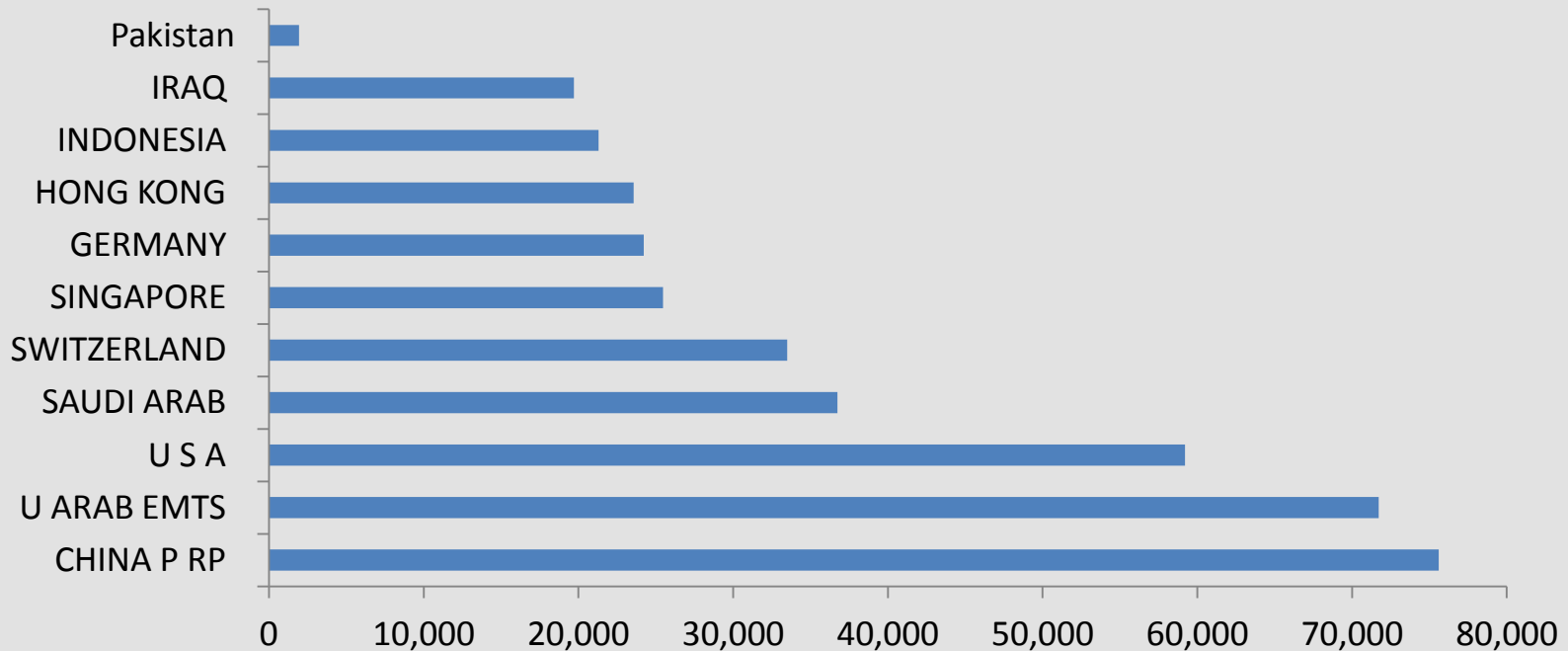
Pak-India Trade: Background

- Despite sharing a border of about 1800 miles, trade between India and Pakistan has been low
- The primary reason for this poor trade performance is not economic but is largely due to the two nations' fractious history



Pak-India Trade: Background

India's Total Trade - Apr '11 to Mar '12
(US \$ Millions)



Data source: Department of Commerce, India



Pak-India Trade: Background

- India's trade with Pakistan totaled \$1.9 billion in 2011-2012
- Pakistan ranked 52 among trading partners, with the top slot going to the People's Republic of China



Pak-India Trade: Background

- There has been some move towards stabilizing trade relations between the two nations.
 - MFN status
- The bid to improve the environment for bilateral trade and investment is rooted in the economic and political gains from greater market integration
 - Gains from trade in the health sector



Outline

- Why Focus on the Health Sector?
- Our Study Focus
 - Commodities
 - Services
- Existing Patterns of Trade
- Potential



Health Sector Commodities

- We focus on
 - Pharmaceutical products
 - Antibiotics, pro-vitamins, hormones & steroids, medicament for therapeutic use
 - Surgical goods
 - Medical equipment
 - Breathing apparatus, orthopedic appliances, medical furniture, medical dummies



Health Services

- We focus on
 - Research and collaborative work in medicine and pharmaceuticals
 - Documented movement of medical personnel and patients at the institutional level
 - Student exchange or training programs



The State of the Health Sector in Pakistan

- A wide gap between the population's needs and the existing supply of infrastructure and trained medical personnel
 - 1,183 individuals per licensed/registered doctor
 - 1,592 persons per hospital bed



The State of the Health Sector in Pakistan

- Several health intervention programs and strategies to raise the nutritional and health status of the population

BUT

- Public expenditure on health remains low
 - Pakistan public health expenditure as percent of GDP was 0.86 in 2009 (Source: World Bank data)
 - Public expenditure on health was 38.5% of total health expenditure in 2010 (Source: World Bank data)



The State of the Health Sector in Pakistan

- In contrast, health-related commodities have been performing well
 - Pakistan has exhibited strong performance in surgical goods' industry and pharmaceutical products in 2011-12
 - There is a large (and growing) market for medical devices and equipment
- National policy of deregulation of prices along with easier registration and import policies



Health Sector Commodities in Pakistan

- Pharmaceutical and surgical goods' manufacturing have been performing well.
 - Pharmaceutical industry displayed a 10.9 percent growth in 2011-12
 - The surgical goods industry, which is largely export oriented, saw its exports grow by 13.7% in 2010-11
 - Pakistan's medical devices market is small in value terms given its population size. The market is heavily supplied by imports



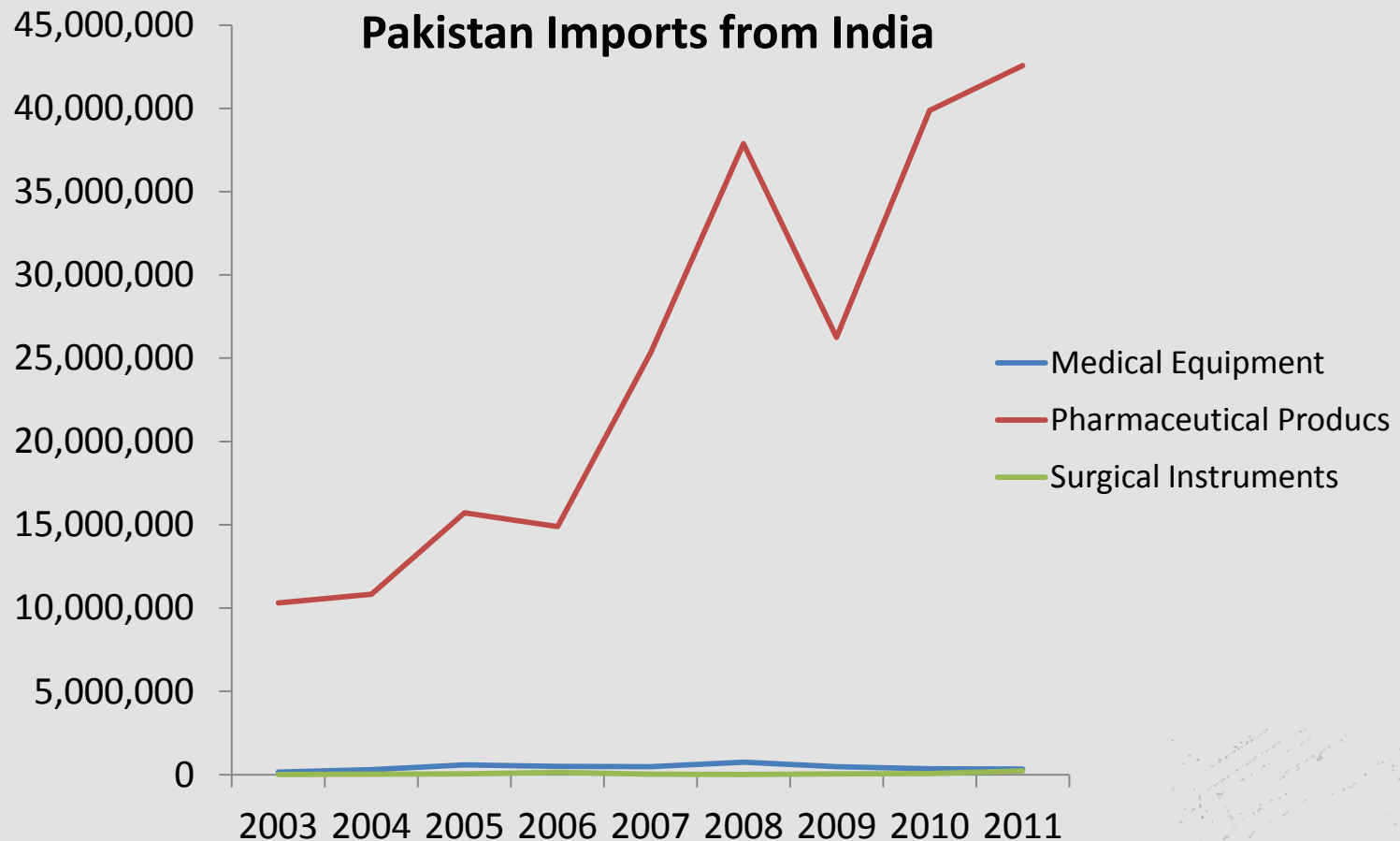
Trade Trends: Health-Related Commodities



Data source: UN Comtrade data



Trade Trends: Health-Related Commodities



Data source: UN Comtrade data



Putting the Figures in Context

- Examining the countries which Pakistan traded with in the three commodities in 2011-12

	Share of Total EX		Share of Total IM	
	India	Top Country	India	Top Country
Surgical Instruments	2%	USA: 29%	0.2%	China: 22.7%
Pharmaceuticals	3%	Afghanistan: 16%	4.9%	China: 15%
Medical Equipment	0%	Sri Lanka: 13%	0.2%	USA: 14%

Data source: UN Comtrade data

Analyzing Relative Strengths

- Estimate Revealed Comparative Advantage to ascertain the relative strengths and competitiveness of each country

$$RCA_{ik} = \frac{x_{ik}/x_i}{x_{wk}/x_w}$$

where the RCA of country i in commodity k is given by the share of commodity k in the country's total exports relative to the share of this commodity in world trade

- If the commodity's share in total national exports is higher than the commodity's share in the total world exports, the RCA value is greater than 1
 - The country is then considered to have a revealed comparative advantage in the particular commodity



RCA: Results

Table 1- Revealed Comparative Advantage

	Pakistan			India		
	Med Equip	Pharma	Surgical	Med Equip	Pharma	Surgical
2003	0.092	0.152	2.130	0.362	1.378	0.430
2004	0.020	0.176	2.285	0.389	1.305	0.395
2005	0.029	0.202	2.155	0.408	1.253	0.367
2006	0.036	0.207	1.952	0.372	1.281	0.407
2007	0.032	0.247	2.742	0.311	1.328	0.398
2008	0.022	0.236	2.833	0.295	1.324	0.346
2009	0.040	0.248	2.207	0.206	0.872	0.268
2010	0.038	0.227	2.159	0.279	1.254	0.378
2011	0.018	0.223	2.244	0.217	1.368	0.371
Average	0.036	0.213	2.301	0.316	1.262	0.373

Data source: UN Comtrade data

Relative Strengths

- Pakistan has a revealed comparative advantage in surgical instruments
- India has a revealed comparative advantage in pharmaceutical products



Analyzing the Existing Patterns of Trade

- Inter- or Intra-Industry Trade?
- Degree of trade intensity
 - Imports
 - Exports



Inter- or Intra-Industry Trade?

- Calculated the Grubel-Lloyd Index

$$GL_k = 1 - \frac{|X_k - M_k|}{X_k + M_k}; 0 \leq GL_i \leq 1$$

where X_k and M_k denote the export and the import of commodity k respectively

- $GL_i = 1$, there is only intra-industry trade, and no inter-industry trade implying that there is exchange of similar products belonging to the same industry.
- $GL_i = 0$, there is no intra-industry trade, only inter-industry trade.



Inter- or Intra-Industry Trade?

Table 2- Grubel-Lloyd Index: Pakistan-India

	Pakistan – India Trade		
	Med Equip	Pharma	Surgical
2003	0.351	0.021	0.140
2004	0.046	0.012	0.080
2005	0.061	0.006	0.090
2006	0.039	0.006	0.194
2007	0.046	0.019	0.017
2008	0.025	0.004	0.011
2009	0.014	0.001	0.040
2010	0.050	0.002	0.032
2011	0.038	0.001	0.065
Average	0.074	0.008	0.074

Data source: UN Comtrade data

Inter- or Intra-Industry Trade?

- Trade between Pakistan and India in surgical instruments, pharmaceutical products and medical equipment is predominantly inter-industry in nature
 - Simultaneous exchange of similar but differentiated goods is largely absent



Inter- or Intra-Industry Trade?

- Less than 1 percent of intra-industry trade in pharmaceuticals
 - The Pakistan pharmaceutical industry has been growing at a 10 percent rate and so could gain from exchange with the Indian pharmaceutical industry which India has RCA in
- Reservations of the pharmaceutical industry
- The lack of a streamlined drug certification process between the countries which would make trade of, particularly finished, products easier may be a significant contributing factor



Trade Intensities

$$m_{ijk} = \frac{M_{ijk}}{M_{ik}} \bigg/ \frac{X_{jk}}{(X_{wk} - X_{ik})} \quad \text{and} \quad x_{ijk} = \frac{X_{ijk}}{X_{ik}} \bigg/ \frac{M_{jk}}{(M_{wk} - M_{ik})}$$

Kojima (1964) quoted from Rahman (2012)

where import trade intensity is the share of imports of country i from country j in commodity k in total imports of commodity k as a fraction of share of exports of country j in rest of world exports

- The value of each index ranges from 0 to 100
 - If the value is zero, it implies that there is no trade relationship between partner countries



Trade Intensities

Table 3- Trade Intensities: Pakistan-India

	Import Trade Intensity			Export Trade Intensity		
	Med Equip	Pharma	Surgical	Med Equip	Pharma	Surgical
2003	1.227	4.440	0.101	0.609	0.877	0.225
2004	1.715	4.551	0.146	0.562	0.426	0.521
2005	2.059	4.833	0.156	0.665	0.176	0.659
2006	1.336	4.023	0.290	0.235	0.144	0.721
2007	0.902	4.385	0.054	0.259	0.525	1.126
2008	1.308	5.142	0.035	0.285	0.137	0.962
2009	1.049	3.009	0.096	0.046	0.010	1.003
2010	0.840	4.258	0.104	0.119	0.053	1.499
2011	0.659	3.249	0.283	0.154	0.026	1.853
Average	1.233	4.210	0.140	0.326	0.264	0.952

Data source: UN Comtrade data

Trade Intensities

- While intra-industry trade is low in pharmaceuticals, import trade intensity in pharmaceuticals is consistently higher than that for any other product (and is higher than export trade intensity)
 - May be driven by the size of the Indian pharmaceutical industry: India is among the top five manufacturers of bulk drugs in the world



What Do the Results Suggest?

- Low levels of import and export trade intensities as well as intra-industry trade indicate that there is potential to improve bilateral trade between India and Pakistan
- Calculate estimates on trade complementarities



Trading Potential

- Trade complementarity index between countries i and j for commodity k

$$TCI_{ijk} = 1 - 0.5(|m_{ik} - x_{jk}|); 0 \leq TCI_{ijk} \leq 1$$

Based on Pasha and Imran (2012)

where m_{ik} denotes the share of the k^{th} commodity in the total imports of country i and x_{jk} denotes the share of the k^{th} commodity in the total exports of country j

- The higher the magnitude of TCI, the greater the trade complementarity between the two countries



Trading Potential

Table 4 – Trade Complementarity Indices

	India EX & Pakistan IM			Pakistan EX and India IM		
	Med Equip	Pharma	Surgical	Med Equip	Pharma	Surgical
2003	0.9993	0.9917	0.9986	0.9968	0.9972	0.9966
2004	0.9994	0.9910	0.9989	0.9969	0.9981	0.9962
2005	0.9994	0.9918	0.9981	0.9969	0.9985	0.9967
2006	0.9996	0.9865	0.9999	0.9972	0.9987	0.9973
2007	0.9706	0.9386	0.9795	0.9971	0.9990	0.9955
2008	0.9987	0.9893	0.9991	0.9975	0.9995	0.9948
2009	0.9988	0.9941	0.9987	0.9980	0.9988	0.9946
2010	0.9992	0.9897	0.9988	0.9973	0.9994	0.9958
2011	0.9987	0.9900	0.9990	0.9976	0.9995	0.9957
Average	0.9960	0.9848	0.9967	0.9973	0.9987	0.9959

Data source: UN Comtrade data

Conclusions Thus Far

- Low levels of trade but high trade complementarity (and potential) in health commodities
- But what about health services?



The Story is Short and Straight-forward...

- Little to no empirical data to rely on
- No institutional level involvement when it comes to services
- There is people mobility (patients, doctors) and research collaboration (conferences, lectures) but all on individual initiative



Why Is This Troubling?

- India is quickly becoming an important international center for the healthcare industry (medical tourism) yet Pakistan has no institutional access to this industry
- Both countries have a highly respected and well-trained medical diaspora
 - 80 percent of students trained at the top medical students in Pakistan state that they will move abroad (Aga Khan University survey)
- Despite the presence of exceptional medical and nursing colleges and training programs on both sides of the border, there is no student exchange or common training program between India and Pakistan



Concluding Remarks

- Health and consumer welfare
- Commodities' sector is doing well, although trade intensity is low the potential is high
- Healthcare sector is in poor shape but there are synergies which may be realized
 - Medical tourism and organ transplant are on political agenda but no mention of gains in consumer welfare through institutional access to Indian health services



Thank you

