

A dark blue world map is visible in the background of the top half of the slide, showing the continents in a lighter shade of blue.

Trade Liberalization and Income Inequality: The Case for Pakistan

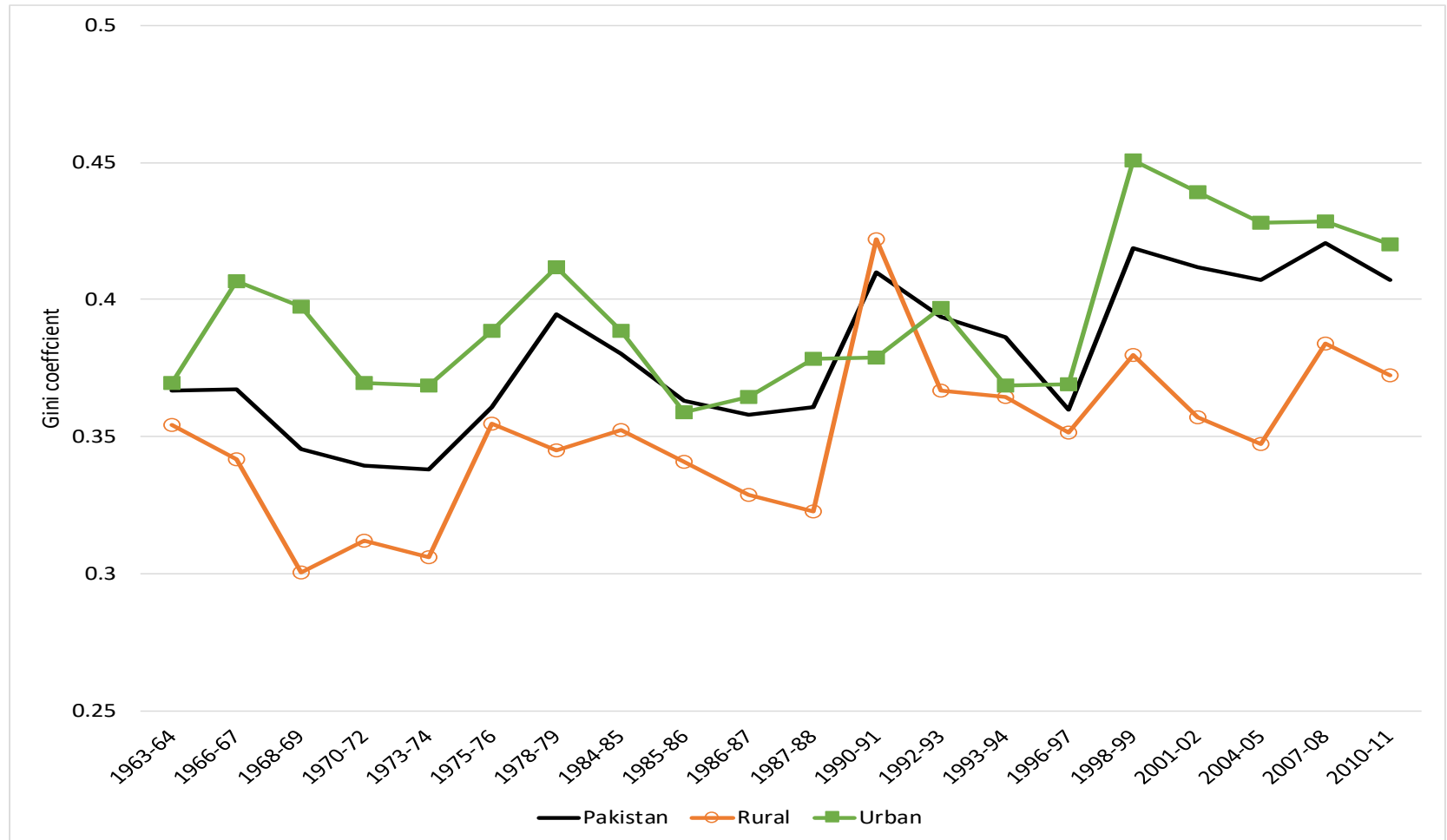
Muhammad Aamir Khan (COMSATS University, Pakistan),
Terrie Walmsley (ImpactECON LLC and University of Southern
California, USA)

Kakali Mukhopadhyay (McGill University, Canada and Gokhale
Institute of Politics and Economics, India)

Aim

- Trade agreements
 - Good for growth, but winners and losers
 - Poverty? Income inequality???
- How do trade agreements impact the incomes of the poor and income inequality in developing countries?
- Trade theory plus real data and real trade agreements

Income inequality in Pakistan over time



MyGTAP Model

- Based on GTAP model
- Publicly available model and program to incorporate household survey data
- GTAP's Representative household separated into:
 - Government
 - Private Household which is then separated into:
 - multiple representative households (16) using income and consumption data from HHLD survey data
- 5 GTAP Factors of Production separated into:
 - multiple factors of production (13) using data on ownership by households and use by sector from HHLD survey data
- Foreign aid and remittances flows also captured

Pakistan: 16 Household Groups

Household Types	Members per group (millions of people)	Income per capita (PKR rupees)	Income (US dollars per day)	
Rural farm worker (quartile 1)	6.3	20,682	0.66	89% rural (50:50 farm and non-farm)
Rural non-farm worker (quartile 1)	12.6	28,571	0.91	
Urban worker (quartile 1)	5.9	38,720	1.23	
Rural farm worker (quartile 234)	8.3	42,379	1.35	
Rural small farm owner (quartile 1)	4.2	43,075	1.37	
Rural farmer operating land (quartile 1)	3.3	46,231	1.47	
Rural non-farm worker (quartile 2)	10.9	49,587	1.58	
Urban worker (quartile 2)	8.8	65,159	2.08	
Rural non-farm worker (quartile 3)	9.1	83,320	2.65	65% urban (plus 24% rural non-farm)
Rural small farm owner (quartile 234)	15.6	84,887	2.70	
Rural medium-large farm owner (quartile 1)	0.2	88,147	2.81	
Rural farmer operating land (quartile 234)	7.3	99,296	3.16	
Urban worker (quartile 3)	11.5	111,089	3.54	
Rural non-farm worker (quartile 4)	6.3	207,343	6.61	
Rural medium-large farm owner (quartile 234)	2.9	220,813	7.03	
Urban worker (quartile 4)	17.1	414,874	13.22	

Income Inequality

- Gini Coefficient (*Gini*):
 - $Gini = \frac{2}{n^2 \bar{y}} \sum_{i=0}^n (y_i - \bar{y})$
 - Between 0 and 1
 - 0 = equal;
 - 1 = unequal
- Also add Theil's T, L & S and Hoover index

Agreements

	Share of world GDP (%)	Share of Pakistan's imports (%)	Share of Pakistan's exports (%)
Pakistan's Existing Bilateral Free Trade Agreements			
Pakistan-China	14.9	26.8	8.7
Pakistan-Malaysia	0.4	0.45	0.84
Pakistan's Potential Free Trade Agreements			
Pakistan-Turkey	1.14	0.92	1.1
Pakistan-Thailand	0.54	1.9	0.54
Pakistan-Korea	1.87	1.5	1.3
Regional Free Trade Agreements			
SAFTA	3.3	4.9	13.6
EU- GSP Plus (EU liberalizes tariffs only)			
EU-28	24.6	9.7	30.0
Mega Trade Agreements (Pakistan not a member)			
RCEP	28.9	41	17.5
CPTPP	14	9	6

Impacts of FTAs on GDP, welfare and Income Inequality

	Real GDP (% change)	Welfare (US\$ Millions)	Gini (% change)
Pakistan-China	-0.04	-459	0.01
Pakistan-Malaysia	0.00	-25	-0.31
Pakistan-Turkey	0.01	131	-0.13
Pakistan-Thailand	0.00	-182	0.07
Pakistan-Korea	0.01	224	0.07
Pakistan-SAFTA	0.04	487	-0.12
EU-28	0.09	840	0.15
All above simultaneously	0.17	948	-0.23

- No relationship between growth/welfare and inequality in short run.

Real Household incomes (ordered by gains in income equality, %)

	Pakistan-Malaysia	Pakistan-Turkey	SAFTA
Rural farm worker (Q1)	0.7	0.07	0.33
Non-farm and urban (Q1)	-0.23	-0.24	0.05
Rural farm (Q234), small (Q1), landless (Q1)	1.29	0.49	0.8
Non-farm and urban (Q2) and non-farm (Q3)	-0.29	-0.24	0.05
Rural small (Q234), med (Q1), landless (Q234)	2.19	1.07	1.34
Urban (Q3) and non-farm (Q4)	-0.26	-0.17	0.15
Rural medium+ farmer (Q234)	3.02	1.58	1.17
Urban (Q4)	-0.25	-0.12	0.21

- Lower income inequality associated with higher farm incomes and lower non-farm and urban households.

Real returns to factors (%)

	Pakistan-Malaysia	Pakistan-Turkey	SAFTA	Pakistan-China	Pakistan-Korea	Pakistan-Thailand	EU GSP+	All FTAs
Labor - farm worker	2.46	0.93	1.29	0.54	-0.31	-0.42	-1.49	2.64
Livestock	1.32	0.05	0	-3.27	-0.6	-3.9	-1.5	-7.03
Labor - non-farm low skilled	-0.24	-0.2	0.1	0.41	0.11	0.24	0.76	1.2
Land – small	2.98	1.57	3.36	1.96	0.25	0.63	-0.26	9.65
Capital – agriculture	3.53	1.92	0.87	1.89	0.31	0.58	-0.11	8.11
Labor - small farmer	2.67	1.25	2.13	0.74	0.04	-0.42	-0.58	5.32
Land – medium	3.26	1.75	2.14	1.93	0.29	0.6	-0.16	8.96
Labor - medium farmer	2.83	1.35	1.25	0.59	0.06	-0.55	-0.51	4.51
Land – large	3.57	1.96	0.8	1.89	0.34	0.57	-0.05	8.2
Labor - non-farm high skilled	-0.19	-0.21	0.04	0.5	0.06	0.3	0.73	1.25
Capital – informal	-0.32	-0.2	0.1	0.47	0.22	0.24	0.65	1.17
Capital – formal	-0.45	-0.2	0.17	0.41	0.35	0.17	0.68	1.14
Natural Resources	1.68	-0.87	-4.18	1.19	-2.65	1.5	-7.89	-10.41

- Agreements that result in a decrease in income inequality have both:
 - gains for farm workers and other agricultural factors; and
 - relative declines in high skilled labor and capital

Sectoral Production (%)

	Pakistan-Malaysia	Pakistan-Turkey	SAFTA	Pakistan-China	Pakistan-Korea	Pakistan-Thailand	EU GSP+	All FTAs
Agriculture	0.02	0.01	0.02	-0.05	0.00	-0.06	-0.01	-0.07
Grain Crops	0.11	0.09	-0.24	0.09	0.04	0.08	0.07	0.19
Vegetables & Fruit	-0.61	-0.41	3.5	0.26	-0.09	0.19	-0.27	2.49
Meat & Livestock	-0.1	-0.14	-0.23	-0.69	-0.11	-0.66	-0.2	-1.94
Light Manufactures	-0.28	0.00	0.21	-0.29	0.15	-0.39	0.82	0.25
Heavy Manufactures	0.38	0.03	-0.15	-0.21	-0.31	0.27	-0.66	-0.66
Services	0.13	-0.01	-0.08	0.06	-0.15	0.07	-0.03	0.00

- Agreements that result in a decrease in income inequality have
 - Higher agricultural production:
 - grains (poor and rich rural) or vegetables and fruit (poor rural)
 - Smaller losses in meat and livestock (poor)
 - Lower light manufactures/services

Mega Agreement

	Real GDP (% change)	Welfare (US\$ Millions)	Gini (% change)
RCEP	-0.06	-406	-0.10
RCEP + Pakistan	0.26	-736	-0.12
CPTPP	-0.01	-65	-0.03
CPTPP + Pakistan	0.17	-140	0.02

- RCEP includes Malaysia, India (SAFTA) and China

Sensitivity Analysis (% change in Gini, income inequality)

	Base Case	Unemployment	Fixed Trade balance	Tax replacement	Mobile factors	Capital accumulation
China	0.01	0.00	-0.18	0.03	-0.03	-0.06
Malaysia	-0.31	-0.26	-0.36	-0.29	-0.09	-0.08
Turkey	-0.13	-0.11	-0.14	-0.12	-0.04	-0.05
Thailand	0.07	0.06	0.01	0.08	-0.01	-0.03
Korea	0.07	0.06	0.03	0.07	0.02	-0.01
SAFTA	-0.12	-0.11	-0.16	-0.05	-0.03	-0.07
EU-28	0.15	0.09	0.12	0.14	0.02	-0.06
All agreements	-0.23	-0.24	-0.59	-0.13	-0.14	-0.33
RCEP + Pakistan	-0.12	-0.13	-0.50	-0.04	-0.15	-0.25
CPTPP + Pakistan	0.02	-0.01	-0.21	0.04	-0.11	-0.16

Sensitive products: agriculture (% change in Gini, income inequality)

	Base Case	Sensitive products (agriculture)
China	0.01	0.00
Malaysia	-0.31	-0.08
Turkey	-0.13	0.02
Thailand	0.07	0.09
Korea	0.07	0.08
SAFTA	-0.12	0.03
EU-28	0.15	0.20
All agreements	-0.23	0.30
RCEP + Pakistan	-0.12	0.13
CPTPP + Pakistan	0.02	0.23

Conclusions

- Income inequality does not always improve with trade liberalization. No clear relationship between growth/welfare impacts and inequality in short run.
- In short run, agreements that improve income inequality:
 - have strong positive impacts on agriculture, which raises the incomes of rural farm workers; and
 - negative impacts on other commodities that lowers the income of non-farm and urban workers.
- In long run, income inequality does fall as a result of trade liberalization – provided factors are mobile and capital accumulates to raise the MPL of labor.
- Policy makers need to focus on increasing the mobility of factors of production so that poor households can take advantage of the gains from trade.
- Agriculture is important for the poor – can't afford to leave it off the agenda