

Trade Expansion, Employment and Inequality in India and South Africa

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ILO/WBI Geneva Dialogue on Trade and Labour
20 April 2009

Overview of Presentation

- I. Some implications of trade theory for labour adjustment policies
- II. Patterns of trade openness and net exports
- III. Method
- IV. Main results
- V. Conclusions and implications for labour adjustment policies

I. Some implications of trade theory for labour adjustment policies

- Theories of comparative advantage have potentially important implications for labour adjustment policies
- Provide a sense of winning and losing sectors and how different workers may fare in terms of employment and earnings

I. Some implications of trade theory for labour adjustment policies

- **Heckscher-Ohlin theorem:** Poorer countries are hypothesized to generally have a comparative advantage in labour-intensive goods, especially those produced by unskilled workers
- African countries are thought to have a comparative advantage in natural resources, but many are also labour abundant
- Women and unskilled workers are disproportionately concentrated in labour-intensive industries; trade expansion should result in higher relative demand for their employment in poorer countries (and the opposite in richer countries)

I. Some implications of trade theory for labour adjustment policies

- However, India and South Africa trade extensively with both richer and poorer countries and have different relative factor endowments with respect to different countries
- **Stolper-Samuelson theorem:** Trade expansion is hypothesized to result in declining earnings inequality in poorer countries, particularly between skilled and unskilled workers (and the opposite in richer countries)

II. Patterns of trade openness and net exports

India

- Average tariffs for manufactured goods declined from 117 to 39 percent between 1990 and 2000
- Share of imports subject to non-tariff barriers declined from 82 to 17 percent between 1990 and 2000
- “[T]he 1991 trade reform in India represented one of the most dramatic trade liberalizations ever attempted in a developing country” – Kumar and Mishra (2008)

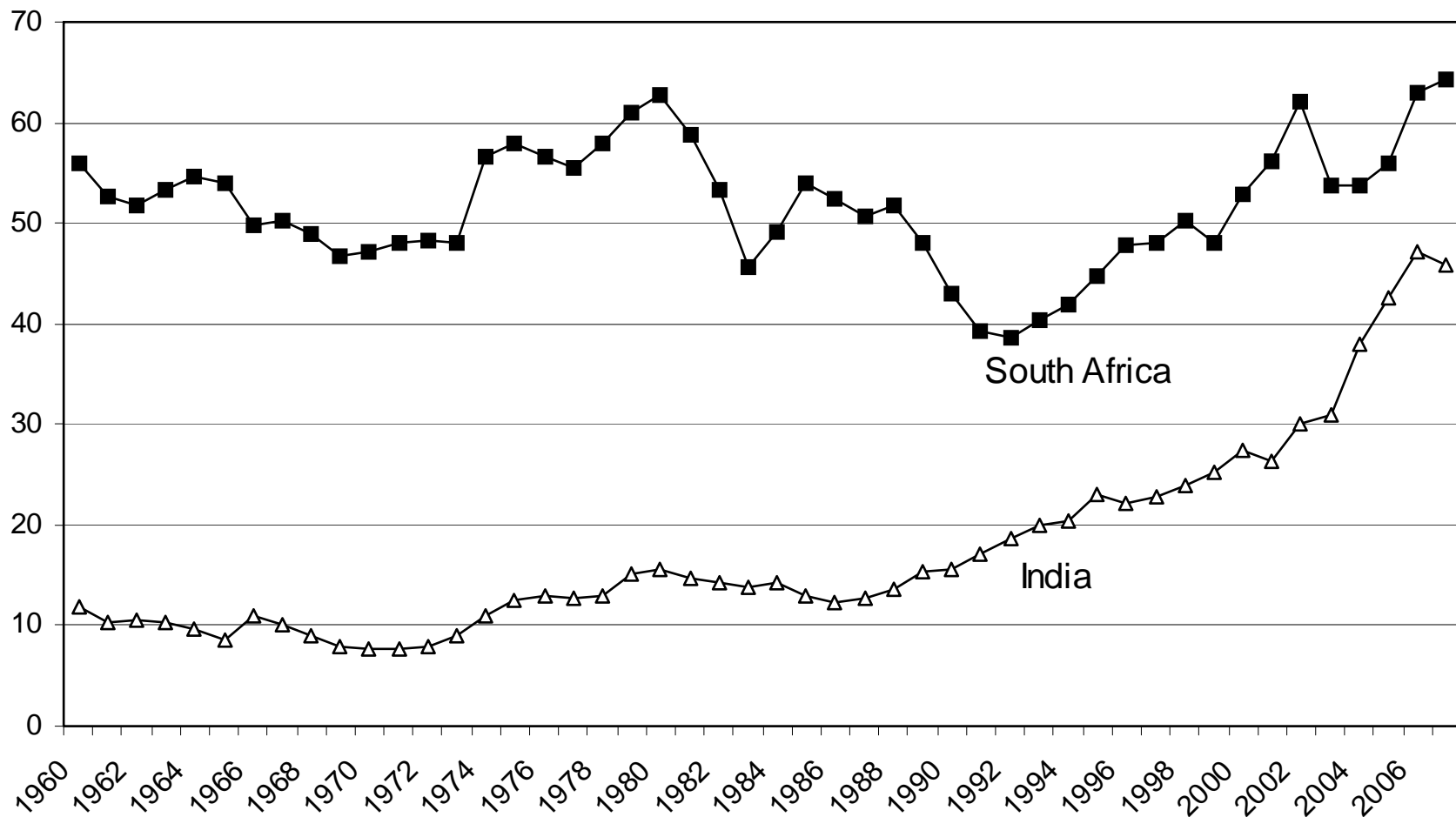
II. Patterns of trade openness and net exports

South Africa

- Average tariffs declined from 28 to 7 percent between 1992 and 2000
- Peak tariffs reduced from 1,390 to 55 percent between 1992 and 2000
- Simplification of tariff structure
- *“South Africa has rapidly opened up its domestic markets over the past decade, both by eliminating non-tariff barriers and by substantially lowering nominal tariffs” – Qualmann (2008)*

II. Patterns of trade openness and net exports

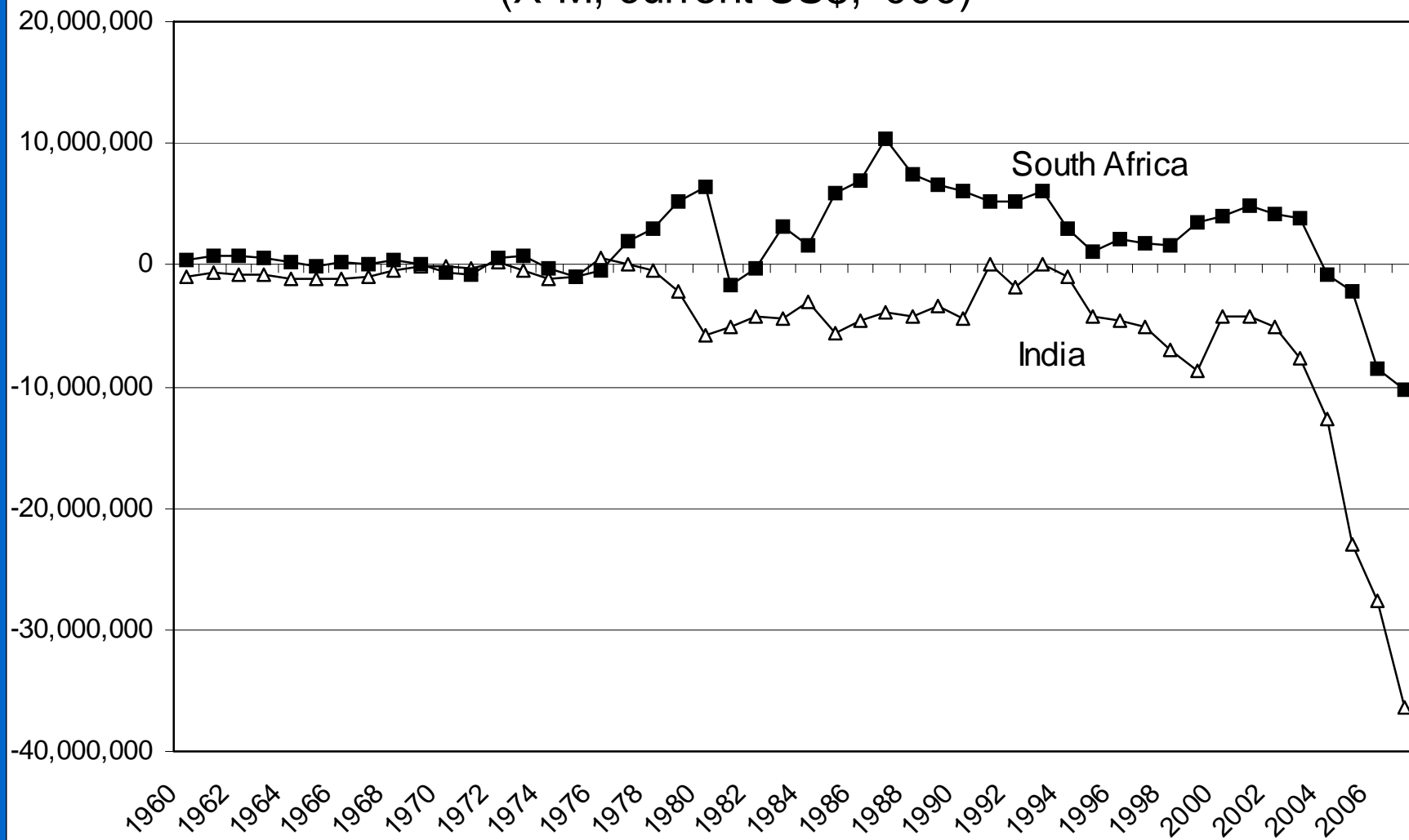
Total Trade as a Percentage of GDP, 1960-2007
($X+M/GDP\%$)



Source: WB, WDI.

II. Patterns of trade openness and net exports

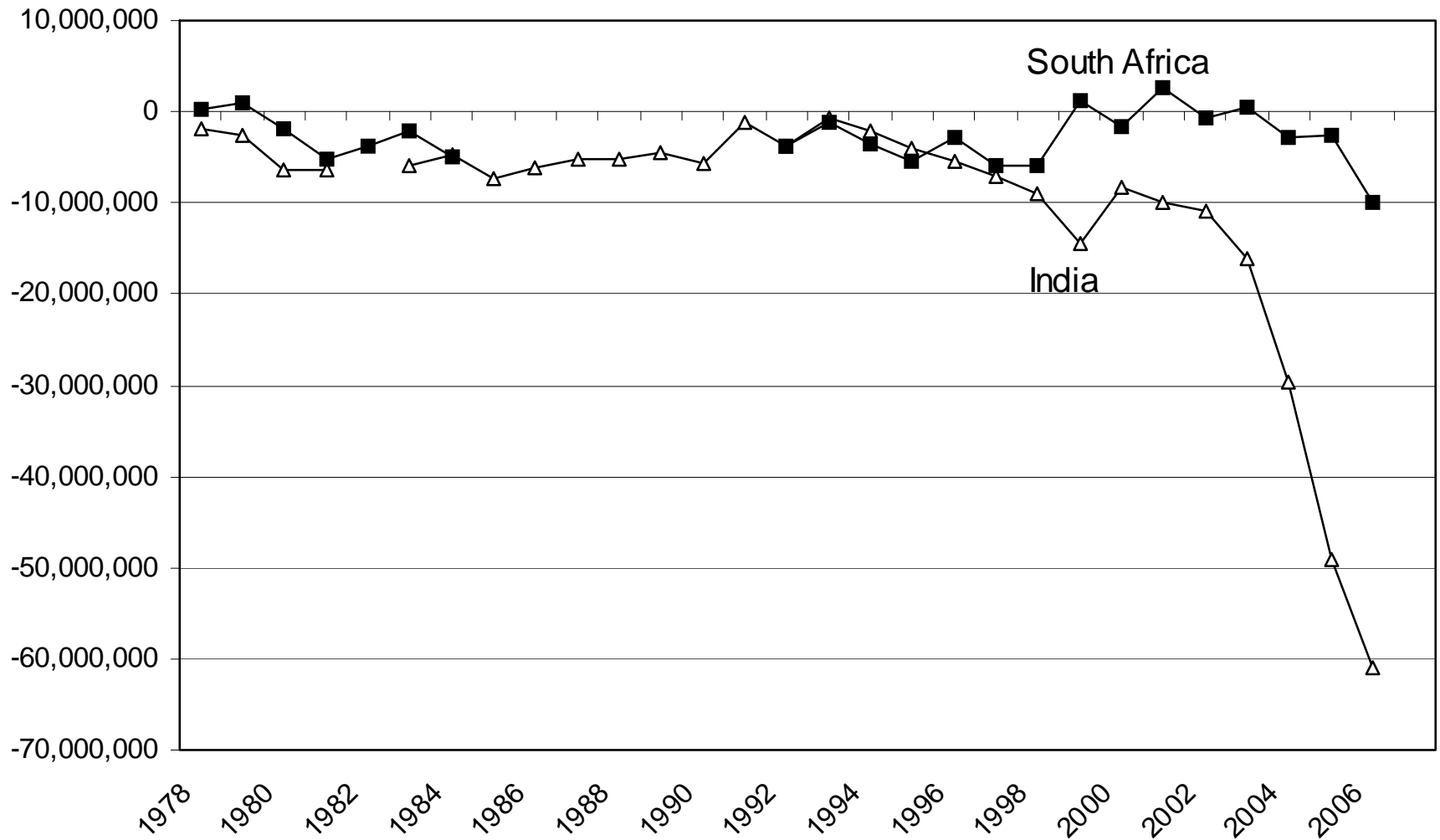
Net Exports of Goods and Services, 1960-2007
(X-M, current US\$, '000)



Source: WB, WDI.

II. Patterns of trade openness and net exports

Net Exports of Goods, 1976-2006
(X-M, current US\$, '000)



Source: WITS.

Social accounting matrix (SAM) analysis

- A SAM is a matrix representation of national accounts showing the flows of all economic transactions for a country
- The analysis provides estimates of direct, indirect and induced effects of trade expansion on employment and household incomes
- SAMs for India and South Africa are for 2000 (base year), and trade expansion is evaluated for 1993-2004 for India and 1993-2006 for South Africa

III. Method

Employment effects of trade expansion are estimated using SAMs in an Leontief multiplier framework:

$$L = [\hat{E} (I-A)^{-1} T]$$

where:

L = vector of changes in employment associated with a change in the structure of trade,

\hat{E} = diagonal matrix of labour coefficients,

I = identity matrix,

A = average propensity to spend matrix...

III. Method

...and **T** is the trade expansion vector, defined as:

$$\mathbf{T} = (\mathbf{X}^1 - \mathbf{M}^1) - (\mathbf{X}^0 - \mathbf{M}^0)(\mathbf{Q}^1/\mathbf{Q}^0)$$

where:

X and **M** are vectors of exports and imports and **Q** is the vector of domestic production.

- Put in words, **T** is the difference between actual net exports at the end of the period and a *counterfactual* level of net exports that would have resulted at the end of the period had the ratio of net exports to domestic production remained constant.
- Trade broken down into world trade and trade with richer and poorer countries (pre-1990s OECD and non-OECD)

IV. Main results: Aggregate

	Worker Years					
	India, 1993-2004			South Africa, 1993-2006		
	World	Richer	Poorer	World	Richer	Poorer
Tradeable goods industries	-7,266,940	-425,102	-6,841,838	-193,982	429,013	-622,995
Other industries	-2,031,241	-263,270	-1,767,971	-289,427	427,574	-717,001
All industries	-9,298,181	-688,372	-8,609,808	-483,408	856,587	-1,339,996

	Percentage of Employment in 2000 (SAMs base year)					
	India, 1993-2004			South Africa, 1993-2006		
	World	Richer	Poorer	World	Richer	Poorer
Tradeable goods industries	-2.86	-0.17	-2.69	-4.54	10.05	-14.59
Other industries	-1.82	-0.24	-1.58	-3.60	5.32	-8.93
All industries	-2.54	-0.19	-2.35	-3.93	6.96	-10.89

IV. Main results: India, industry level

Tradeable goods industries	World	Richer	Poorer
Agriculture	-5,969,734	-504,109	-5,465,625
Forestry and logging	-90,742	8,003	-98,745
Fishing	-121,321	-94,939	-26,382
Coal and lignite, crude petroleum, natural gas	-440,426	-4,180	-436,246
Iron ore, other minerals	182,013	-92,327	274,340
Manufacture of food products	-287,765	9,498	-297,262
Beverages & tobacco products	-135,505	-15,903	-119,602
Cotton textiles	52,617	-25,599	78,216
Wool synthetic, silk fiber textiles	110,267	65,297	44,969
Jute, hemp, mesta textiles	-4,886	794	-5,680
Textile products	81,260	65,970	15,290
Furniture and wood products	-30,937	195,578	-226,515
Paper, paper products, printing and publishing	-69,387	-19,387	-50,000
Leather products	229,365	148,959	80,407
Rubber and plastic products, petroleum products, coal tar products	85,334	8,621	76,713
Chemicals	91,587	60,535	31,051
Other non-metallic mineral products, cement	-6,400	42,346	-48,746
Iron & steel, non-ferrous basic metals	-308,654	-154,745	-153,909
Metal products	-21,041	18,835	-39,875
Non-electrical machinery	-117,695	-2,571	-115,124
Electrical machinery	-360,201	-90,792	-269,409
Rail equipments, other transport equipments	-187,205	-1,533	-185,672
Misc. manufacturing	52,515	-43,454	95,969
Other industries	World	Richer	Poorer
Construction	-75,513	-7,235	-68,279
Electricity, gas	-31,949	-6,164	-25,784
Water supply	-2,008	-154	-1,854
Railway transport services	-39,428	-12,200	-27,228
Other transport services	-301,727	-31,421	-270,306
Storage and warehousing	-2,050	-295	-1,754
Communication	-39,804	-3,754	-36,050
Trade	-785,048	-113,120	-671,928
Hotels and restaurants	-120,195	-13,423	-106,772
Banking	-59,350	-8,682	-50,668
Insurance	-15,123	-1,957	-13,166
Education and research	-159,905	-17,902	-142,003
Medical and health	-71,954	-7,959	-63,995
Other services	-327,188	-39,005	-288,184

IV. Main results: South Africa, industry level

Tradeable goods industries	World	Richer	Poorer
Agriculture	21,718	223,761	-202,043
Coal mining	2,103	19,367	-17,264
Gold mining, other mining	-129,513	40,287	-169,800
Food processing	-17,357	12,992	-30,349
Beverage / tobacco	-250	7,450	-7,701
Textiles	-9,049	6,793	-15,842
Clothing	-40,370	10,755	-51,125
Leather products	-4,260	-119	-4,140
Footwear	-13,423	1,276	-14,698
Wood products	-7,622	4,535	-12,156
Paper products	-1,454	1,874	-3,328
Printing / publishing	-2,330	3,065	-5,395
Petroleum products	-2,971	265	-3,236
Chemicals, Other chemicals	-2,016	3,956	-5,972
Rubber products, Plastic products	-4,438	3,356	-7,795
Glass products	-1,617	1,908	-3,525
Non-metal minerals	-7,470	-698	-6,772
Iron and steel, non-ferrous metals	54,674	63,183	-8,508
Metal products	4,976	16,608	-11,633
Machinery	-9,298	-239	-9,058
Electrical machinery	-5,645	-517	-5,128
Comm. equipment	-3,321	-814	-2,507
Scientific equipment	-651	-254	-398
Vehicles	6,592	14,412	-7,820
Transport equipment	-1,439	-1,510	71
Furniture	-1,105	4,804	-5,909
Other manufacturing	-18,446	-7,481	-10,964
Other industries	World	Richer	Poorer
Electricity, gas and water	-1,037	10,199	-11,236
Construction	-4,468	6,635	-11,103
Trade services, hotels and catering	-144,907	161,865	-306,772
Transport and communication services	-20,737	37,125	-57,862
Financial and business services	-26,475	51,888	-78,363
Other services	-13,594	28,375	-41,969
Other producers	-77,996	131,054	-209,050
Government services	-212	433	-646

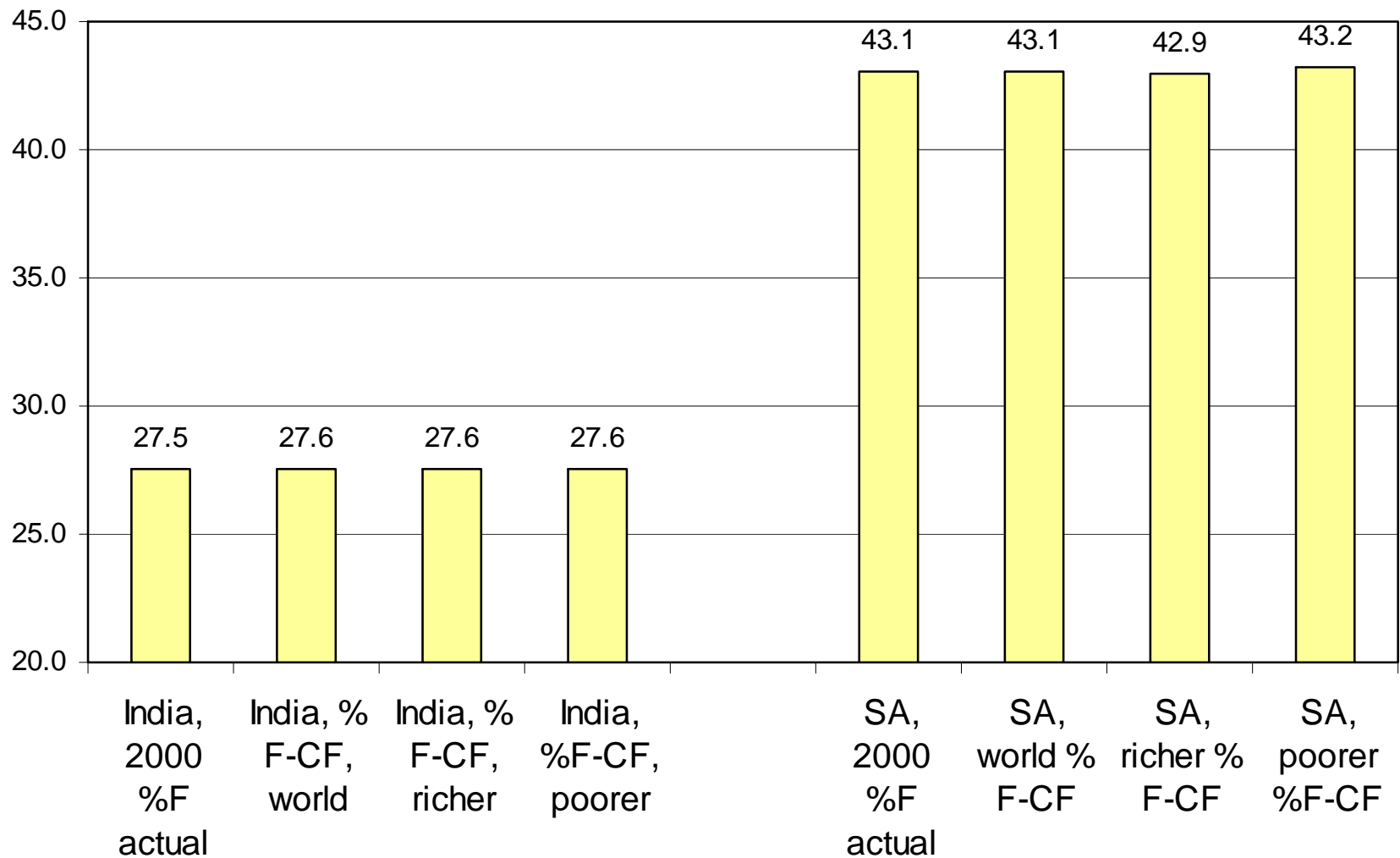
IV. Main results: Concentration of women and less educated workers in labour intensive industries

Pearson Correlation Coefficients with Labour Coefficients in 2000

	India	South Africa
% Female, tradeable goods industries	0.24	0.49
% Female, other industries	0.54	0.71
% Female, all industries	0.30	0.59
% Less educ., tradeable goods industries	0.48	0.60
% Less educ., other industries	0.49	0.37
% Less educ., all industries	0.37	0.47

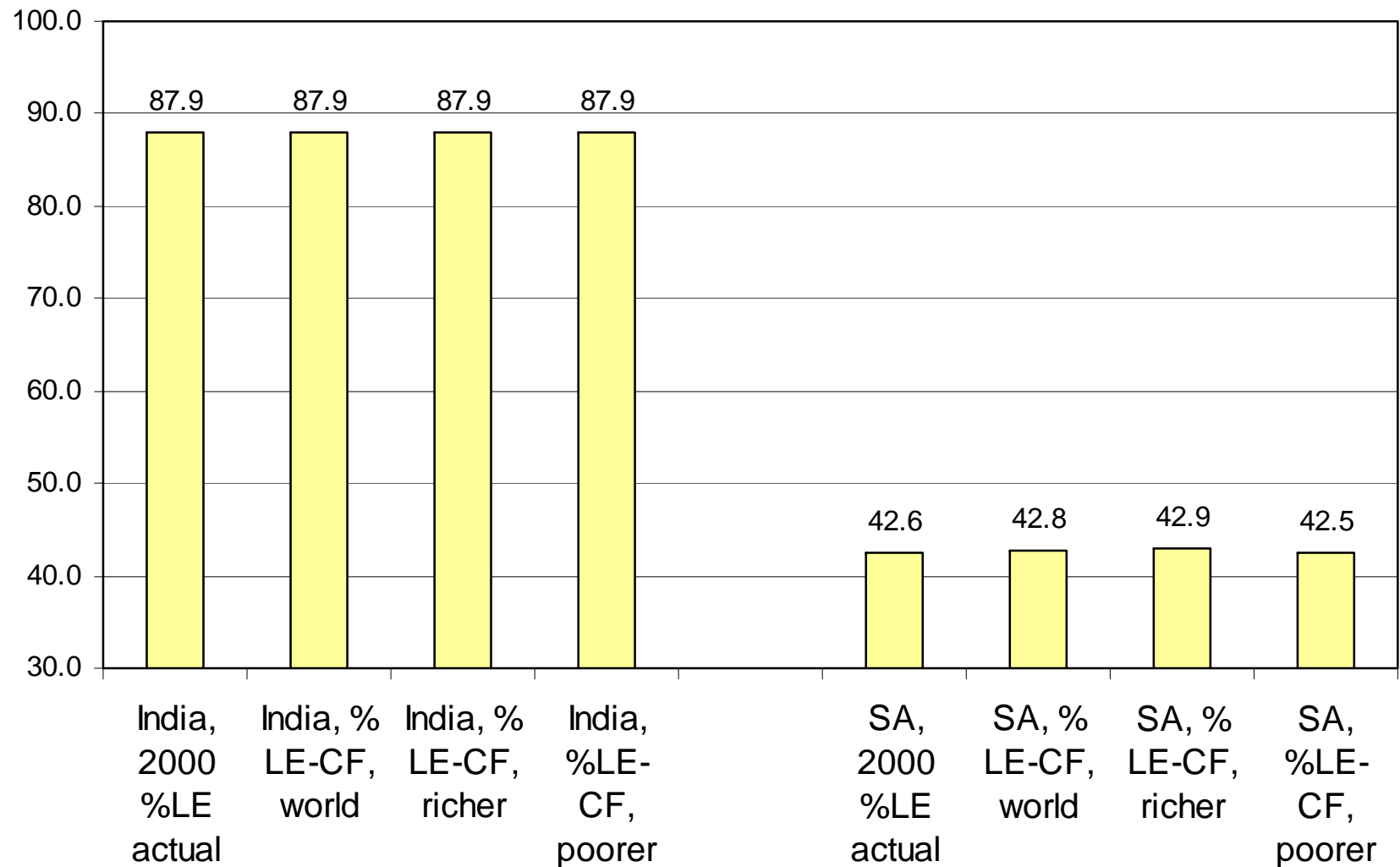
IV. Main results: Gender

Female Percentage of Employment: Actual Vs.
Counterfactual, All Industries



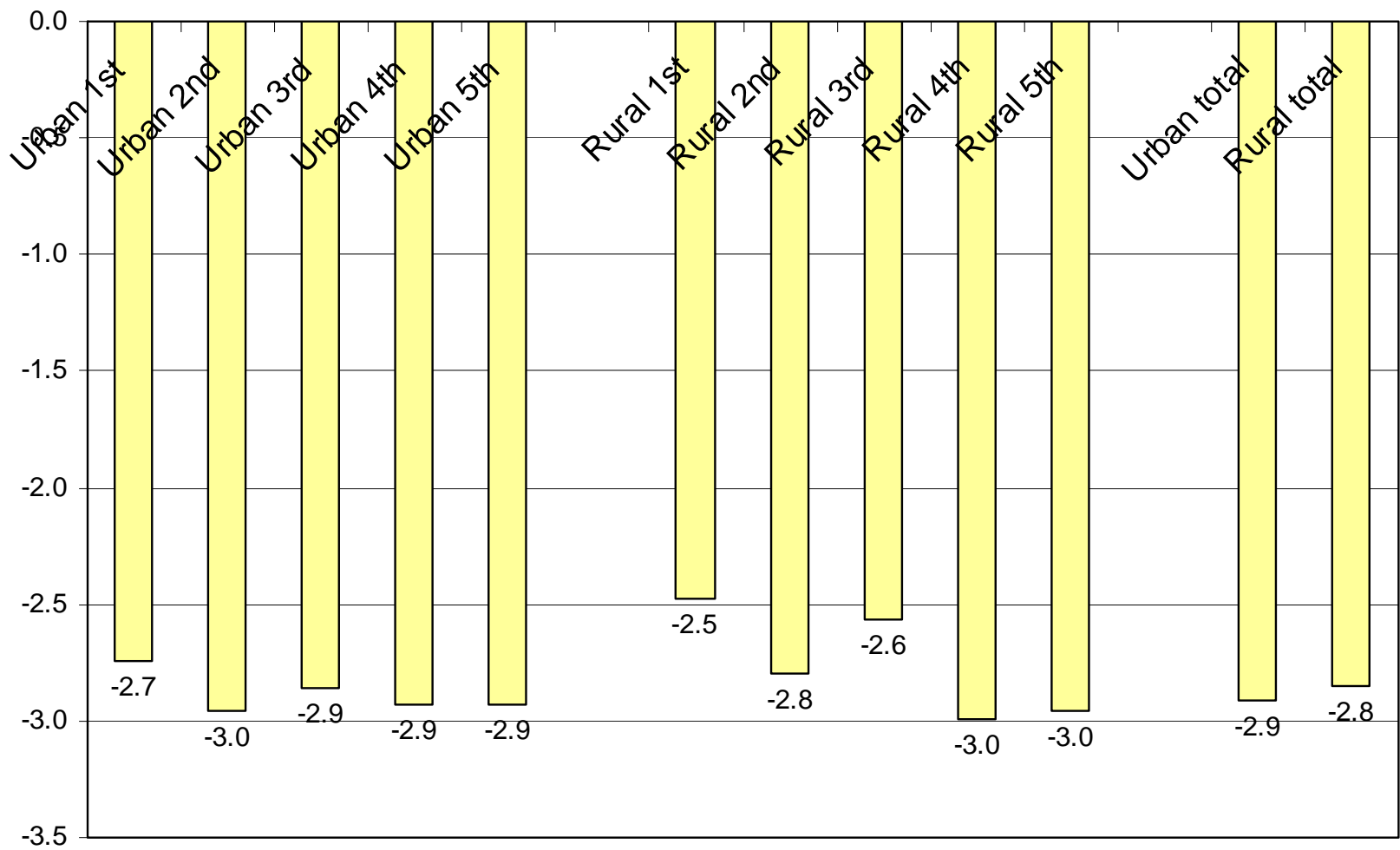
IV. Main results: Education

Percentage of Less Educated Workers: Actual Vs.
Counterfactual, All Industries



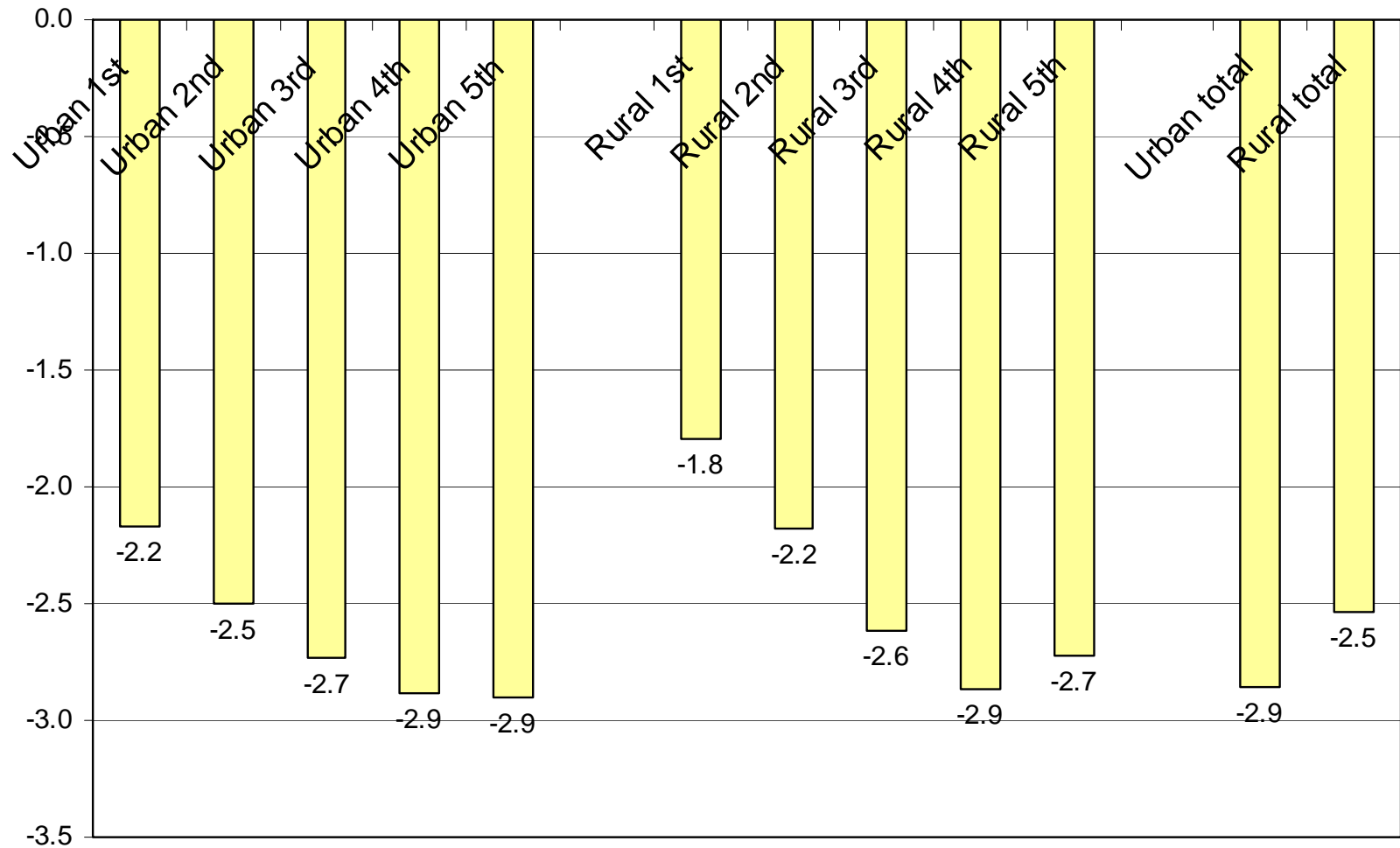
IV. Main results: India, inequality

Impact of World Trade Expansion on Incomes by Urban and Rural Household Income Quintiles, India, 1993-2004
(% of 2000 income)



IV. Main results: South Africa, inequality

Impact of World Trade Expansion on Incomes by Urban and Rural Household Income Quintiles, South Africa, 1993-2006 (% of 2000 income)



V. Conclusions: Aggregate

- Rapid trade opening in India and South Africa was associated with sizeable declines in net exports and accompanying employment losses
- Employment losses driven by trade with poorer countries; South Africa is estimated to have gained employment from trade with richer countries

Limitation: trade also influences employment indirectly (positively and negatively), such as through trade-induced technical change and technology transfer

V. Conclusions: Income inequality

- Evidence of declining household income inequality in South Africa, but only in the sense of smaller negative effects for lower income households

Limitation: Benefits from lower prices on real incomes are not addressed

V. Conclusions: Industry level

- No obvious patterns of “revealed” comparative advantage regarding labour-intensive industries in India and South Africa and natural resource-intensive industries in South Africa (mining).
- As a consequence, no relative growth of the employment of women and less-educated workers resulting from trade expansion. I.e., no gender bias or skills bias.

V. Conclusions: Industry level

- Two South African manufacturing industries with largest estimated employment gains were primary targets of government industrial policy
- Iron, steel and non-ferrous metals –Target of Industrial Development Corporation support, 1993-1997
- Automobiles – Motor Industry Development Programme (MIDP), 1995-present

V. Conclusions: Importance of indirect effects

- Estimated employment losses in India driven by employment losses in agriculture because of weak trade performance of manufacture of food products
- Non-tradeable industries are estimated to have some of the highest employment losses resulting from trade expansion (domestic trade).
- A challenge for labour adjustment policies: How are firms and workers in these industries meant to adapt in the face of trade expansion?