Globalisation and health: impact pathways & recent evidence

by

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1. Mortality trends over 1985-05

- Slower health gains than during prior 20 yers
  - world IMR drops by 2.2% a year in 1980s, but by 1.0% in 90s
  - World (100-LEB) drops by 0.9% yr in 70s & 0.72 in 80s, but by 0.41 in 90s
  - Decline is significant & robust to removal of SSA-EECA from sample
  - Modest – but perhaps telling – gains over 2000-4. Is the worst behind us?
- Health divergence between and within countries
  - divergence in IMR, (100-LEB) between regions and countries
  - growing polarisation in distributions of IMR by
    - Rural- Urban
    - Asset index approximating ‘household income income’

2.Long term mortality models

- Material deprivation pathway (McKeon)
- Technical progress in health (Preston, Deaton)
- Acute psychosocial stress (Cornia-Paniccià)
- Lifestyles (Murray)
- Inequality and hierarchy (Wilkinson, Marmot)

In Sum: the socio-econ determin.of health

- GDP/c, income/c, subsidies
- GDP/c instability, volatility
- Income inequality,

- Relative prices of basic goods
- Human capital of family (especially female literacy)

- Demographic factors:
  - dependency ratio
  - migrant stock (% of resident population)

- Access to/supply of health care (doctors/1000)

- Environmental contamination (CO2)
- Technical progress in health (how to measure it?)

- Fast changes in employment, inequality, inflation, divorce, distress migrations
- Smoking/drinking/diet

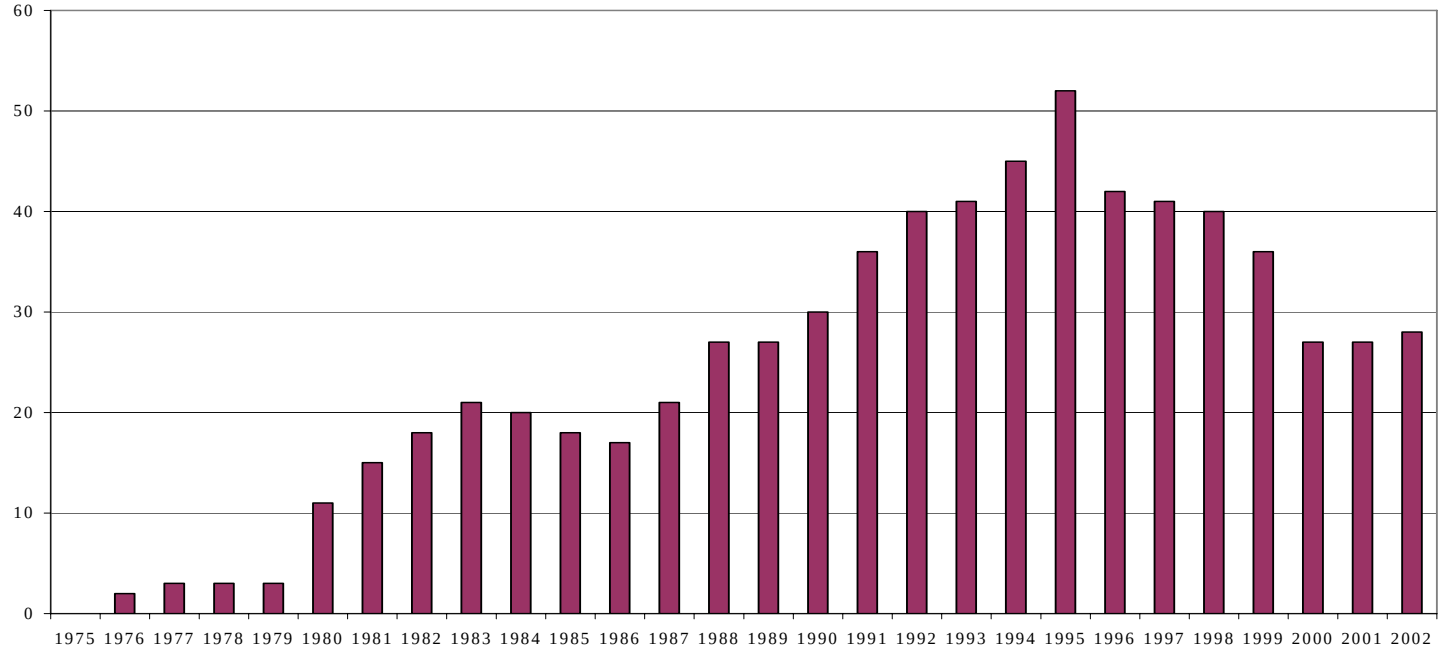
- Shocks: AIDS, wars, disasters

3.Changes in the determinants of health, 1980-2005

(i) Slower growth of GDP/c

- Over 1985-2005 growth is slower than in 1960-80
- Low-middle income countries much affected
- Important exceptions (China, India, VN)
- Signs of some limited GDP recovery over 2000-5 ?
  - China-India-VN continued growth
  - Growth rebound in EE/FSU (FDI-oil prices-remittances)
  - Africa's growth led by exp of raw materials to China
  - Japan's return to growth

(ii) Rising instability number of financial crises



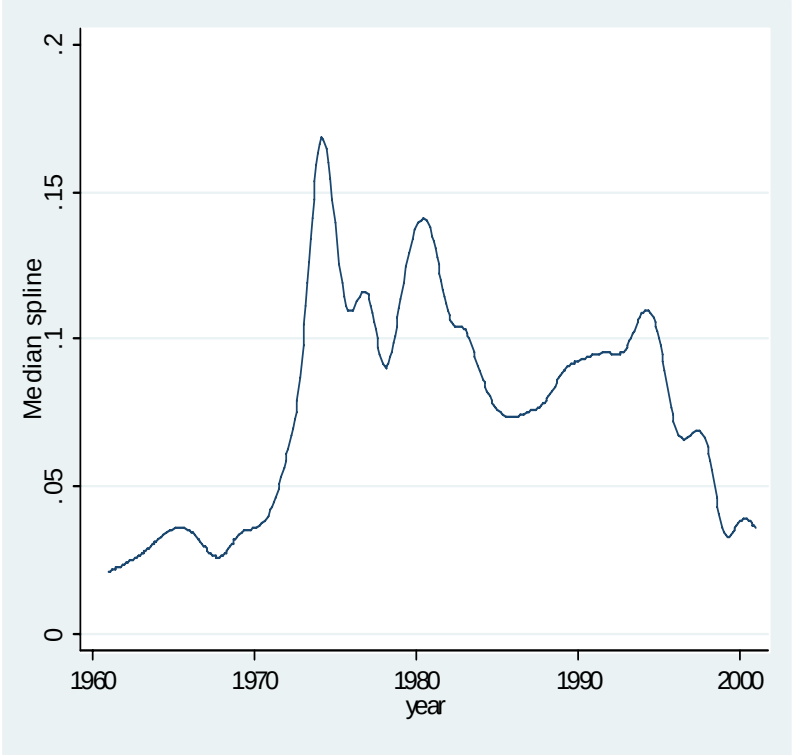
s.d. GDP/c g.r.,	1960-70	1970-81	1982-90	1990-2005
Low income	4.96	6.32	4.95	4.58
Middle income	2.77	3.48	4.44	5.62
High income	1.93	2.69	1.91	2.58

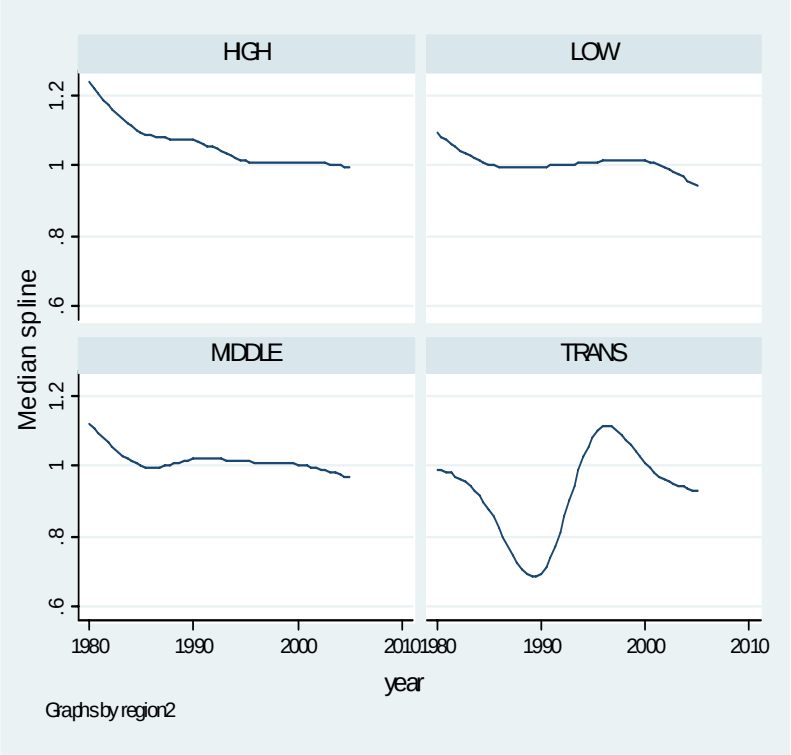
(iii) Inequality rises over 1960s-early 2000s

	OECD	Developing	Trans	Total	% WPop	% WGdp
rising	13	22	24	**59**	**76**	**71**
constant	1	15	1	**17**	**19**	**18**
declining	6	3	0	9	5	11
Total	**20**	**40**	**25**	**85**	**100**	**100**

Increases were most frequent in L.America and the Asian transition economies, followed by S.Asia and recently by S.E. + E. Asia. There are few data for MENA

(iv) Inflation (left) falls, relative price of food seems to rise only seldom

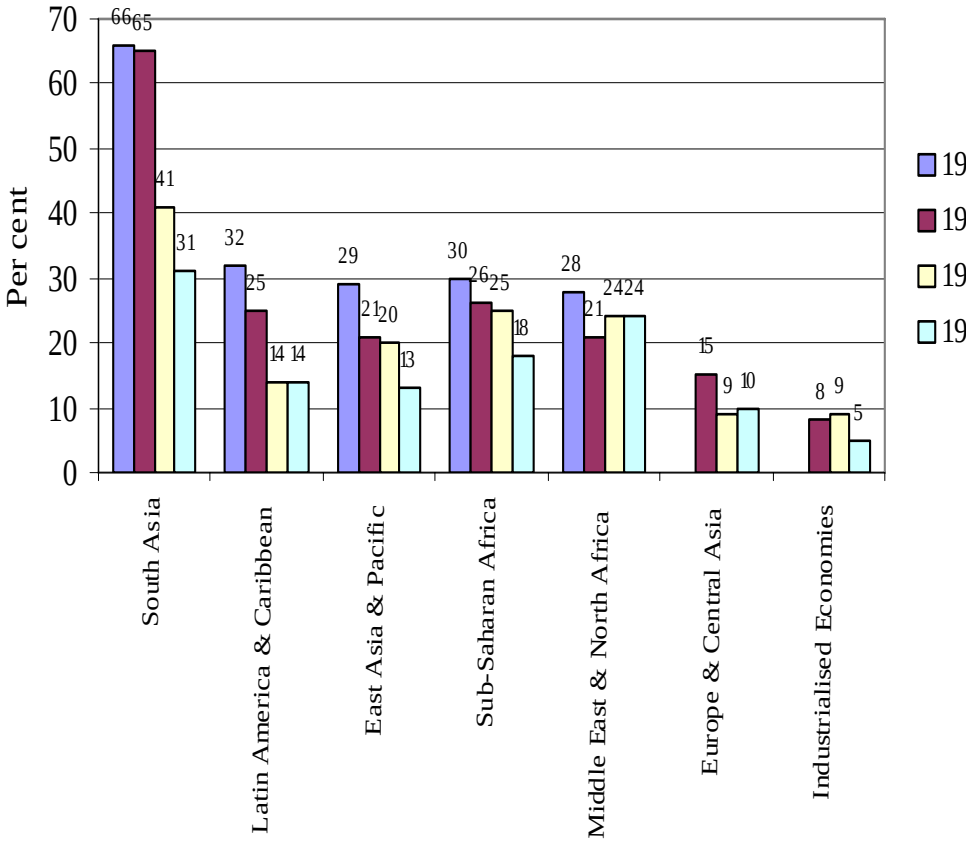




(v) Taxation and health expenditure

- No generalized fall in public health outlay ….

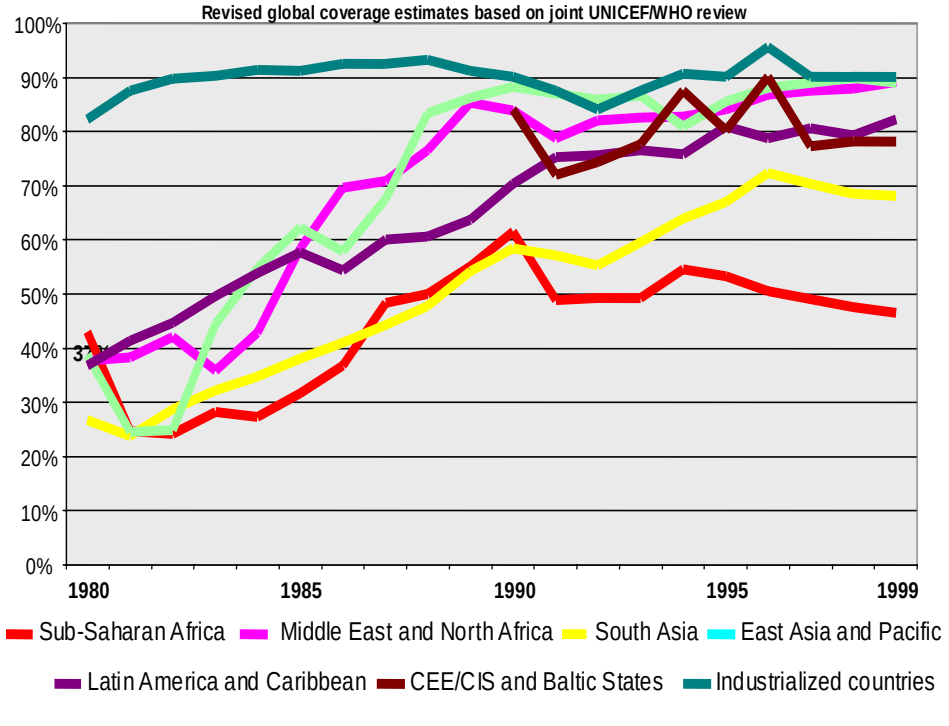
  but rising OOPC + exclusion form health care
- In China, % of patients not seeking treatment due to financial diffic. rose over ’93-98 from 9 to 42%
- similar survey-based evidence from several other transition and non countries



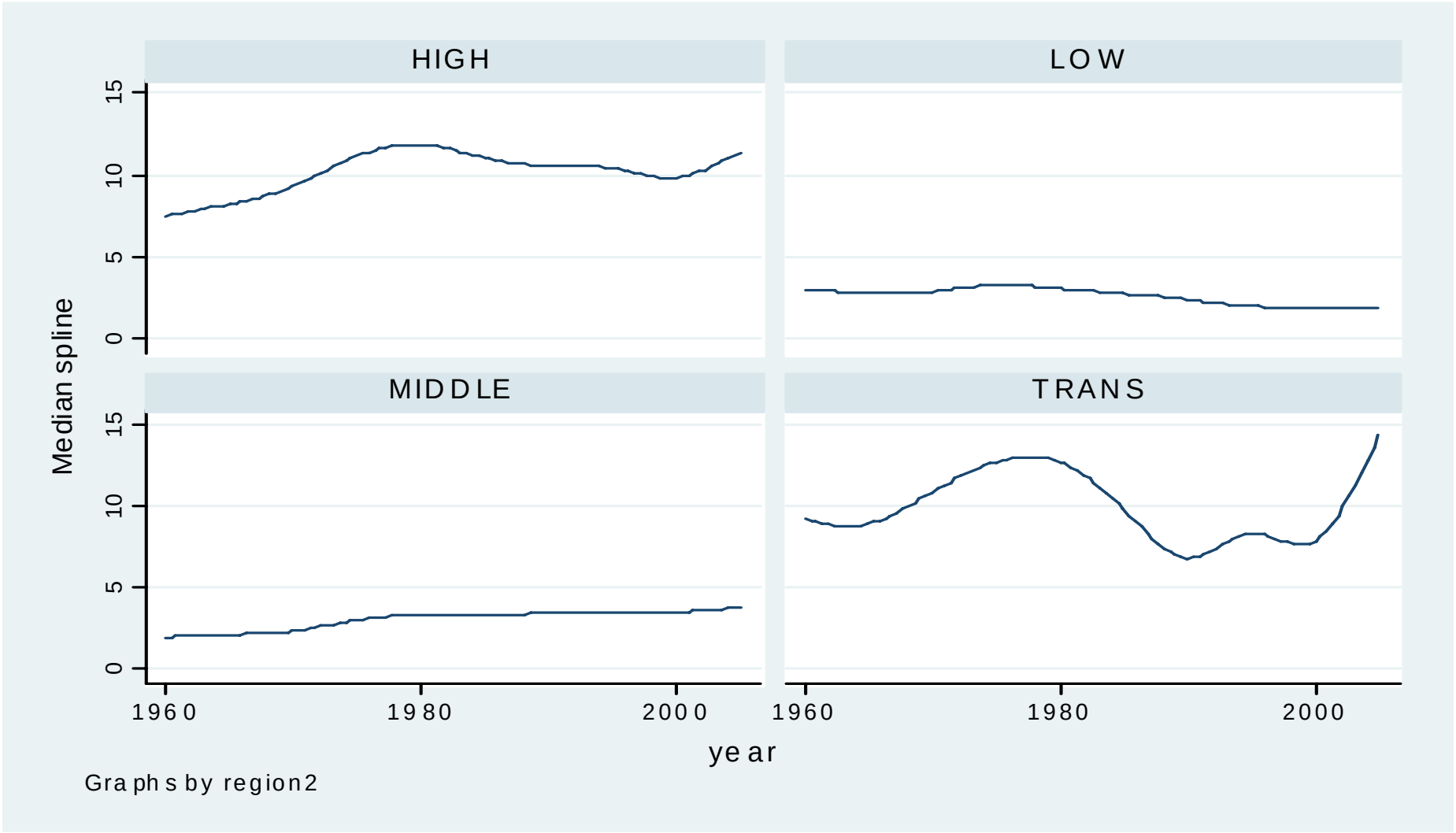
(vi) technical progress in health

- (i) <u>incentives to discover</u> new drugs for all?
  - 10 % health R&D is on diseases accounting for 90% of global disease burden
  - 1393 new drugs patented over 1975-99: only 16 were for tropical diseases/tbc
  - Still no vaccine against malaria (10% of all deaths in SSA)
- (ii)Trade liberalization + ITC facilitate N-S transfer of drugs....but TRIPS hampers it
- (iii) has glob facilitated the access to technologies transferred?
  - Slow behavioral change
  - Migration of health staff South →North
  - Privatization user fees created price barriers

Figure 5. DPT3 Percentage Immunization rate, 1980-1999

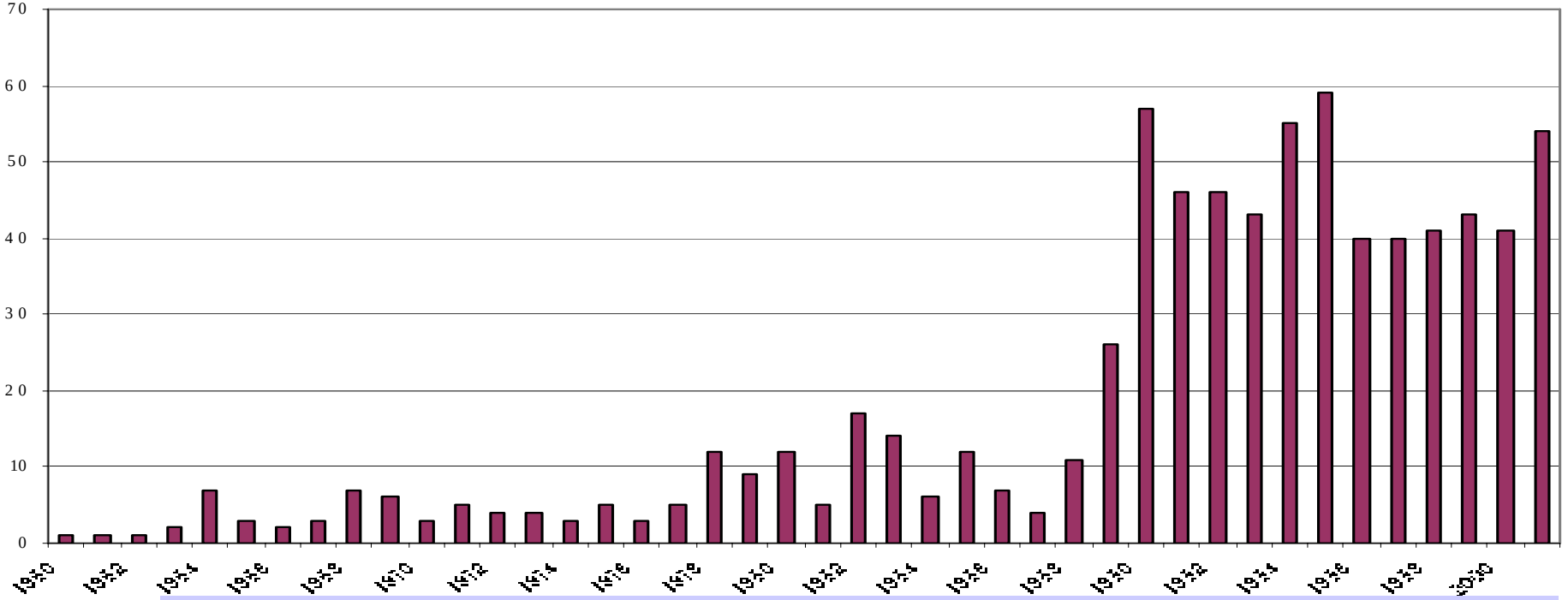


(vii) Few data on lyfestyles, exc.alcohol (below) & smoking. Problem → also in the South



(viii) Exogenous Shocks

Number of conflicts 1960-2002



	2005LEB with AIDS	2005LEBwithout AIDS
Botswana *	33.9	76.1
Namibia*	43.9	70.3
S.Africa*	43.3	67.0
Zambia*	39.7	56.6

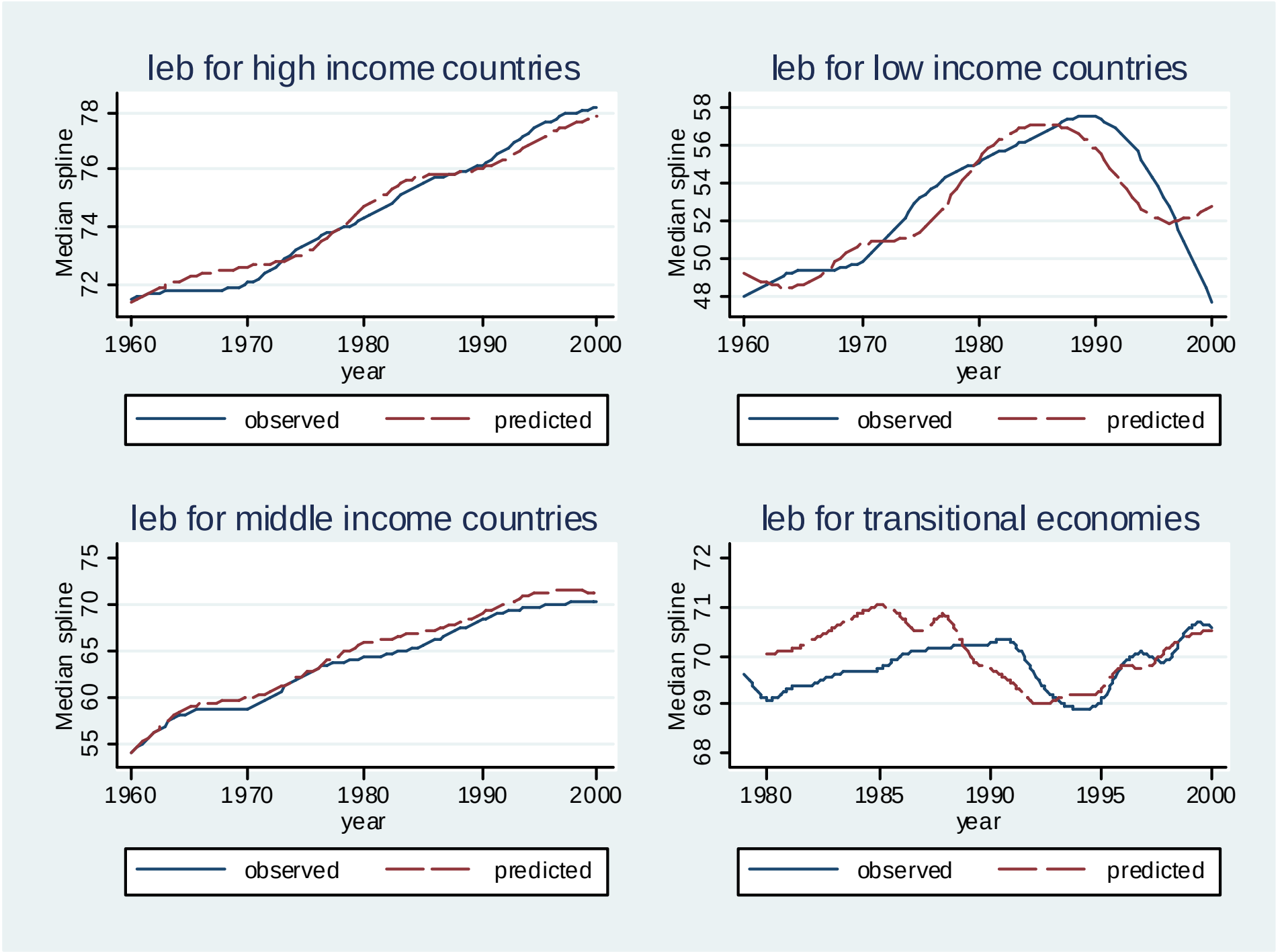
4. Estimation of econometric model to capture impact of globalization

- Built Globalisation-Health Nexus d.base (now online)
  - 136 countries, 10 quinquennial periods 60-65,65-70,..2000-5
  - 50-plus variables
  - empty cells make that global estimates done on 556 observ.
  - Regional estimates for high, low, middle income & transition cties
  - Estimation of fixed effect LEB model for 1960-05, 60-80, 80-05

Dep Variable:LEB	1960-2005	1960-1980	1980-2005
Constant term	38.966***	52.707***	39.673***
Dummy tech progr 1980-05 OECD	0.792*	….	….
Dummy tech progr 1980-05 E.Asia	1.362**	….	….
Dummy tech progr 1980-05 Trans	-2.461***	….	….
Dummy tech progr 1980-05LAC,MENA,SSA,SA	3.311***	….	….
Log GDP/c	3.203***	2.307***	3.148***
GDP/c volatility	-.0009**	-.0007	-.0008*
Gini income distribution	-0.057**	-.1058**	-.0498***
Δ Gini coeff > 4 points	-.0423*-	-.0645	-.0398
Female illiteracy (%)	-.098***	-.2763***	-.0427*
Log physicians per 1000 people /Gini	36.89***	7.305	55.392*-
DPT Immunisation rate (%)	.0861***	.1425***	.0828***
Immigrants stock/ Total population	.0026***	.0040***	.0042*-
Alcohol consumption/c	-.2536***	-.4074***	-.2702***
War and humanitarian emergencies	14.95**WS	-24.420	13.56*-WS
Disasters	.2864	.4415	.2106
HIV/AIDS	-.8495***	-2.099***	-.7737***
F statistic	126.89***	56.45***	77.02***
R square	.897	.847	.890
Number of observations/countries	556 -97	234-65	385 - 97

Comments on regression results (global)

- parameters have expected sign (except 'ws') are plausible, significant, robust
- medical progress: –2.5(transition) +3.3 years(SA,SSA,MENA) poor gain more, but..
- GDP/c largely affects LEB, effect disappears in high income
- Inequality affects significantly LEB (-0.057) --- Ineq. rise >4 Gini also significant -0.042
- Volatility in GDP/c affects negatively, if moderately, LEB (not on 1960-1980)
- Female illiteracy is very significant. 10 pts fall in illiteracy raises LEB by 0.98 yrs
- standardized doctor/1000 (standardized by Gini) is significant
- DPT vaccin.highly significant. Raising it by 30 pts ups LEB by 0.8 yrs
- Excessive alcohol consumption per capita affects LEB but less so IMR
- Migrant Stock raises LEB (a bit), due to health care+ wage containment?
- Disasters'and 'war'are non significant (rare event or coding problem ?)
- AIDS highly significant: 30 pts rise (Botswana) cuts LEB by 26


leb for high income countries
Median spline
72
74
76
78
1960
1970
1980
1990
2000
year
observed
predicted
leb for low income countries
Median spline
48
50
52
54
56
58
1960
1970
1980
1990
2000
year
observed
predicted
leb for middle income countries
Median spline
55
60
65
70
75
1960
1970
1980
1990
2000
year
observed
predicted
leb for transitional economies
Median spline
68
69
70
71
72
1980
1985
1990
1995
2000
year
observed
predicted

5. Simulating health impact of globalisation

- Simulate with this model whether changes in health determinants during last globalisation improved/reduced LEB

- Assumed counterfactual case where health determinants
  - Behaved over 1980-2005 as they did over 60-80 (GDP growth, instability, etc.) or 60-90 (DPT)
  - kept stable their value of 1980 (as for Gini)
  - medical progress (except immun), war, disasters & AIDS have not occurred

- Calculated what LEB would have been under these H_0.

- Subtracted for 2000‘counterfactual LEB’ from ‘real LEB’

- Positive difference (+) indicates gains observed during Globalisation, negative one (-) indicates loss

Region	OECD	TRANS	USSR	E.Asia	China	Lamer	MENA	India	S.Asia	SSA	WORLD
Policy driven LEB changes	**2.02**	**-1.78**	**-3.92**	**0.49**	**-3.61**	**-1.54**	**2.19**	**-1.07**	**-1.59**	**-5.63**	**-1.52**
Log GDP/c	0.00	-0.43	-1.91	-1.22	3.98	-0.80	-2.07	1.71	0.69	-0.99	**0.73**
Log GDP/c on volatility	-0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.07**
Gini of income inequality	-0.03	-0.07	-0.12	0.00	-2.14	0.00	0.00	-1.15	-0.61	-0.45	**-0.77**
Gini of income inequality / (year-1959)	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	**0.00**
GDP/c Volatility	0.00	-0.72	-0.49	-0.05	-1.26	0.01	0.04	-0.63	-0.32	-0.09	**-0.44**
Intra-period D Gini >4 points	0.02	-0.58	-1.60	-0.08	0.00	-0.03	0.00	0.00	0.00	0.14	**-0.08**
Log physicians per 1000/Log GDP/c	-0.44	0.02	0.37	1.10	-1.67	0.25	0.73	-0.97	-0.44	-0.60	**-0.51**
Log physicians per 1000/Gini	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Migrant stock/population	0.07	0.00	0.00	0.41	0.00	0.01	0.39	0.00	-0.12	0.06	**0.07**
DPT immunization coverage	0.31	0.00	0.00	0.70	-0.73	-0.05	-0.29	-0.18	-0.58	-3.37	**-0.47**
Female education	0.52	0.00	-0.16	-0.57	-1.78	-1.14	3.41	0.15	-0.21	-0.32	**-0.31**
Cigarette smoking/c	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.12**
Alcohol consumpition/c	1.21	0.00	0.00	0.20	0.00	0.22	-0.01	0.00	0.00	0.00	**0.22**
Endogenous driven LEB changes[a]	**1.07**	**0.36**	**0.35**	**0.66**	**3.04**	**1.83**	**1.28**	**3.04**	**3.04**	**3.04**	**2.15**
Age dependency ratio	0.00	0.66	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
technical progress in health field	1.07	-0.31	-0.31	0.66	3.04	1.83	1.28	3.04	3.04	3.04	**2.10**
Shocks driven LEB changes[a]	**0.00**	**0.00**	**0.00**	**0.00**	**-0.02**	**-0.04**	**-0.05**	**-0.57**	**-0.34**	**-6.36**	**-0.76**
War and humanitarian conflicts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.18	**0.02**
Disasters	0.00	0.00	0.00	0.00	-0.02	-0.04	-0.05	-0.02	-0.02	-0.01	**-0.02**
HIV-AIDS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.54	-0.31	-6.54	**-0.76**
Total LEB changes	**3.08**	**-1.42**	**-3.57**	**1.15**	**-0.59**	**0.25**	**3.42**	**1.41**	**1.11**	**-8.95**	**-0.13**

Comments on simulation results:

At global level, policies reduced LEB by 1.52 yrs (offsetting effects).

- Inequality rise depressed LEB by 0.77 years
- slowdown in DPT coverage since 1990
- Small LEB losses were caused by slow rise in 1980s-90s in n. of physicians relative to GDP/c, and large-sudden rises in inequality
- GDP growth raised LEB by 0.73 yrs – though with huge regional variation
- Global rise in female illiteracy reduced LEB by 0.31yrs
- better health behaviours (alcohol consumption) and faster than-past rise in migrant stock raised LEB, though with regional variation

- As for endogenous shocks
  - Medical technology added between -0.31 an 3.04 yrs to LEB

- Shocks driven LEB changes
  - War and Disasters do not have significant effect, AIDS reduced LEB by 0.76 yrs

- Overall, LEB grew a bit less than in counterfactual due to medical progress,

- ‘technology transfer’-TRIPS are thus key to trends in health status

Comment on simulation results: regions

- biggest LEB losers due to policies in the Globalisation Era are SSA &transition countries
- China suffered from 'policy driven' LEB loss, as large gains due to growth were offset by losses due to + inequality, volatility, slower gains in fem. illiteracy, physicians, DPT
- India is also loser as gains in GDP/c + female literacy, are over-compensated by losses due to slow DPT coverage, volatility, rising inequality, cuts of physicians
- East Asia gained, as it experienced small rises in inequality, and faster than past gains in medical staffing, alcohol consumption and DPT, but not growth and female illiteracy
- South Asia (excl India) exhibits LEB losses due to a worse-than-expected performance in all social policies, but benefited from a considerable transfer of medical technology
- OECD gains a bit from the policies introduced during globalisation
- LEB improves most in MENA as result of large gains in female education + doctors offset in part by a moderate losses due to slow growth & rising inequality and volatility.

6.How much LEB loss due to reforms?

- Literature
  - Standard econ theory predicts positive effects of narrowly conceived L+G
  - Trade + FDI raise empl.of unskilled workers, reduce good prices, raises wages,
  - Mkt liberalistation stimulate competition & efficiency,
  - But theoretical models hold under restrictive assumptions, rarely observed
  - In other cases, L+G may have been implemented prematurely and backfired
- Reforms may fail to improve income/c, inequality, on average or for some groups for the reasons seen above.
- Financial & trade reforms affect health status via instability and uncertainty
- Trade & FDI liberalisation + tax reform reduce revenue, health spending
- FDI in tobacco, food production, distribution + domestic deregulation may open door to smoking /drinking/obesity even in poor countries (e.g. China)

Liberalis and health care provision

- ‘private-insurance based’ model → exclusion from care
- Rising user fees in public establishment
- Rising out-of-pocket exp.in total expenditure
- Changing health benefit incidence of pub health exp?
- Better services for some, exclusion for many (VN-China-Uzb)
- Public financing of health care eroded in some countries
- Opening to ‘managed care’ providers

Impact of overall reforms on inequality and growth

	European transition economies (1989-01)			Latin America (1980-1999)		
	Income Inequality (1)	GDP/c index (1989=100) (2)	GDP volatility (deviation from 60-80 trend)* (3)	Income Inequality (4)	GDP/c (deviation from 1960-80 trend)* (5)	GDP volatility (deviation from 60-80 trend)* (6)
Constant	18.70***	1.09***	12.61***	37.37***	-.5285***	8.43***
Reform Index	.....	-1.71***	31.29***	.....	-.2328***	8.62**
Reform Index ^{2}	.....	1.74***	-36.68***	.....	-.2090***	-10.57***
Reform Index* Gini 0	.....	.....	.....	-.1851***	.....	.....
Reform Index t-5	15.19***	.....	.....	13.53***	.....	.....
Reform increment t 4-5	12.58***	.....	.....	14.27***	.....	.....
Reform increment t 3-4	12.42***	.....	.....	11.28***	.....	.....
Reform increment t 2-3	10.64***	.....	.....	14.73***	.....	.....
Reform increment t 1-2	9.47***	.....	.....	13.58***	.....	.....
Reform increment t 0-1	6.40***	.....	.....	12.01***	.....	.....
Money supply (M2/GDP)	-.0672***	.0019***	.....	.0179WS	.0004	.....
Total external debt	.....	1.66*-	.....	2.36***	-1.08***	.....
Real interest rate	-.0020***	-.00004	-.0273*-	.....	-.0003	.0152**
Extenal terms of trade	no data	no data	no data	-.0047	-.0003*-	.0122ws
Inflation	-.0025**ws	.....	.0100***	.00008	.000001***	.0006**
GDP index	29.08***	.....	.....	14.99***	.6133***	.....
GDP index ^{2}	-14.79***	.....	.....	-4.01**	.....	.....
F statistic	22.41***	29.81***	18.60***	10.08***	80.12***	2.39**
R square	.018	.280	.047	.005	.680	.009
Number of observations	120	127	306	183	191	191
Number of countries	17	17	24	12	17	17

In conclusion

- Globalisation has potential for improving health of poor, via transfer of health technology, a.w.a. income and price effects
- But several old-new threats to LEB that are ignored-denied
- health costs of globalization are due to distortions in market functioning, financial relationships, governance problems
- Some L+G policies are introduced prematurely but can improve health. Other (unrestr. financial liberalization,TRIPS) are wrong
- Large impact on health of endogenous changes and shocks.