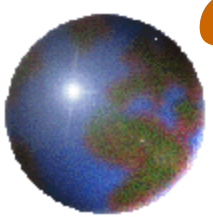
Food security in Asia's populous economies: What role for trade?



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Key questions

- What are the implications for food and other primary product markets of growth in (esp. Asia's) emerging economies?
- How would a projection for 2030 alter with slower growth (by 1/4th) in **China and India**?
- What about agricultural protectionism?

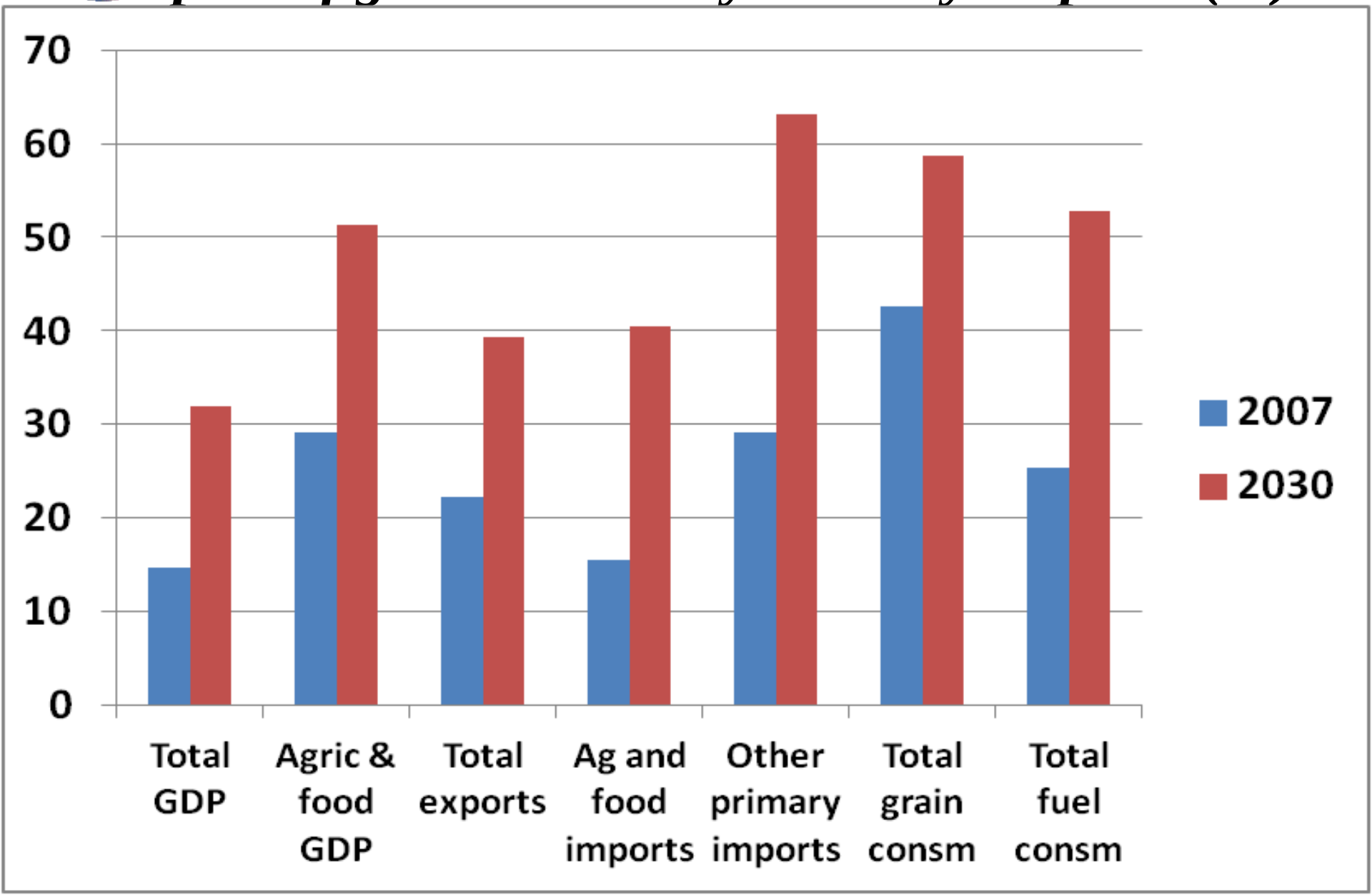
Methodology

- We use a modified version of GTAP's global comparative static model to project world economy to 2030
  - Core sim. calibrated to project small rise in prices of primary relative to other products
    - Using a combination of changes in mineral resources, land and other factor endowments, along with differences in sectoral TFP growth rates, to target exogenous expansions in GDP

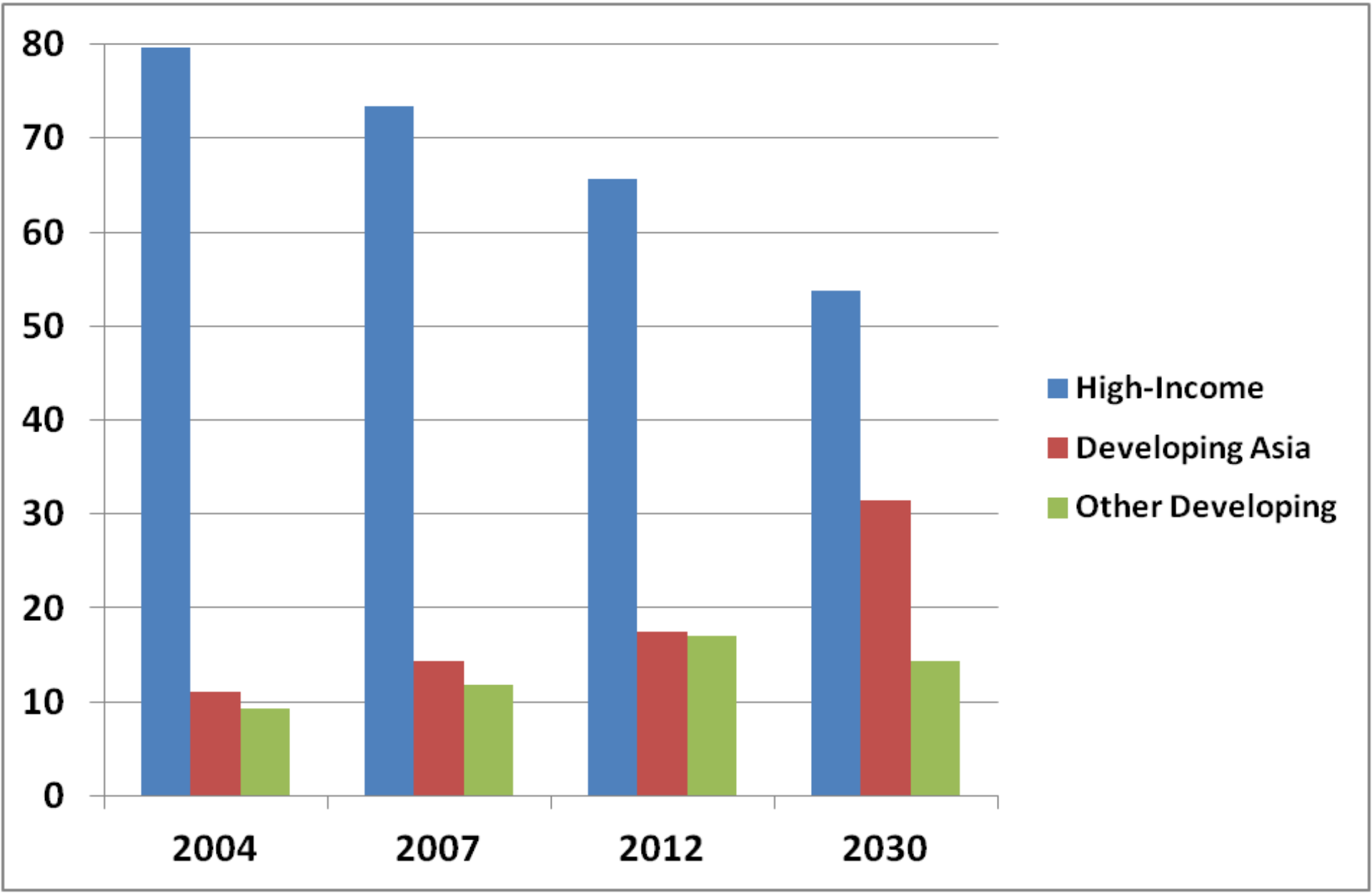
Summary of GDP & endowment growth rates assumed (% p.a.)

	High-income	Devel-oping	of which Asia	Total
GDP growth	**1.6**	**5.1**	**6.3**	**2.6**
Population	**0.3**	**1.0**	0.8	**0.9**
Unskilled labor	**-0.6**	**0.4**	0.2	**-0.4**
Skilled labor	**1.4**	**3.1**	2.9	**1.7**
Capital	**1.3**	**4.6**	5.7	**2.4**
Agric. land	**-0.3**	**-0.1**	-0.2	**-0.2**
Oil	**2.1**	**1.5**	0.3	**1.7**
Gas	**0.3**	**2.5**	1.3	**1.4**
Coal	**-0.3**	**4.3**	4.6	**2.1**
Other minerals	**2.1**	**2.1**	2.1	**2.1**

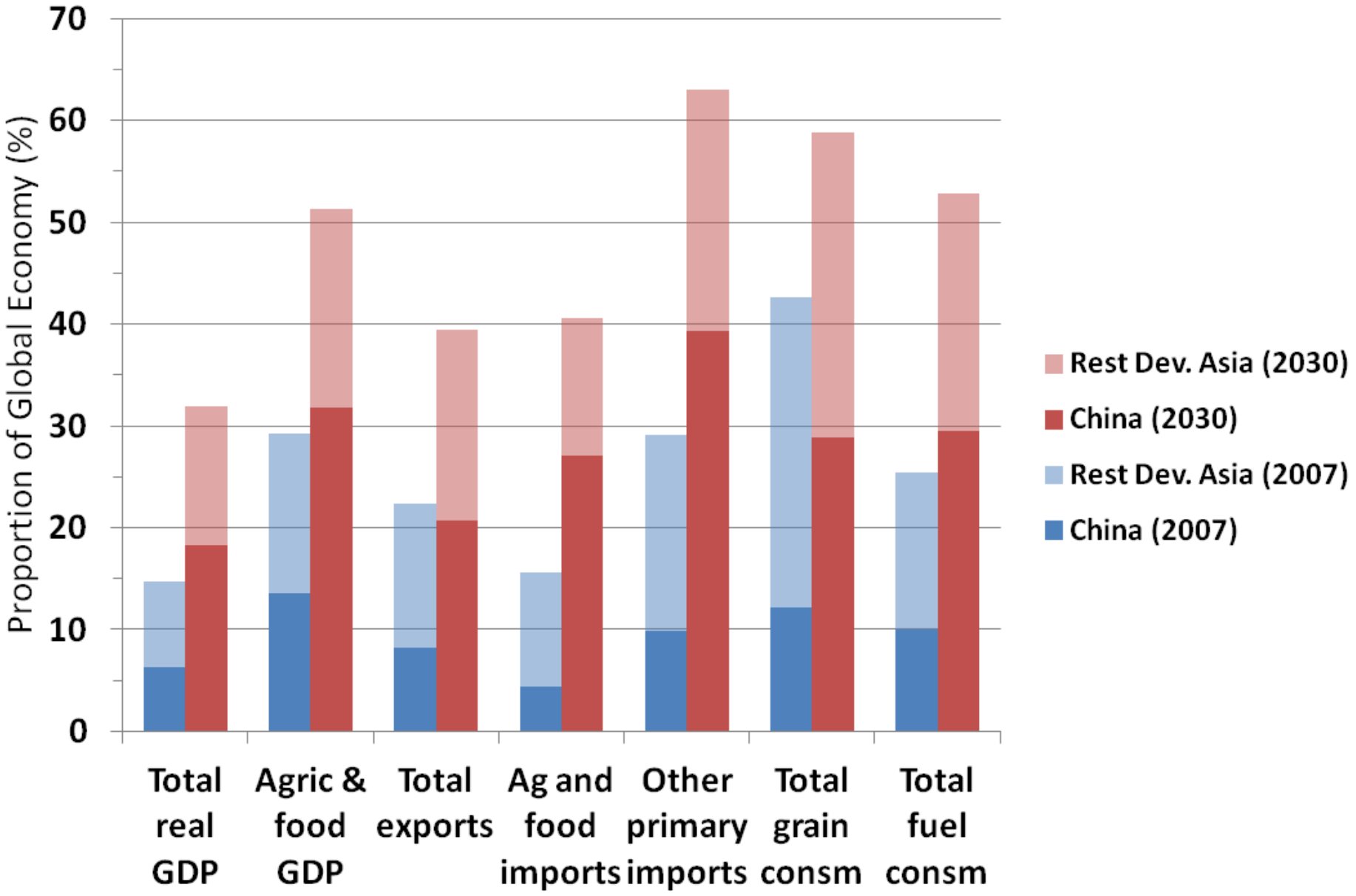
Bottom line: Dev. Asia to become far larger part of global economy in many respects (%)



Regional shares of global GDP, %



It's mostly a China story



Core & other 2030 baseline scenarios

- Calibrated to keep int'l price of primary goods relative to manufactures rising only a little
  - Consistent with World Bank price projections
- Alternatives considered are:
  - Slower growth in China and India:
    - would cause real primary product prices to ***fall*** somewhat,
    - **But,** if that slows primary sector TFP growth globally, real **primary product prices would instead *rise* rel. to 2007**
      - consistent with FAO, IEA and IFPRI price projections

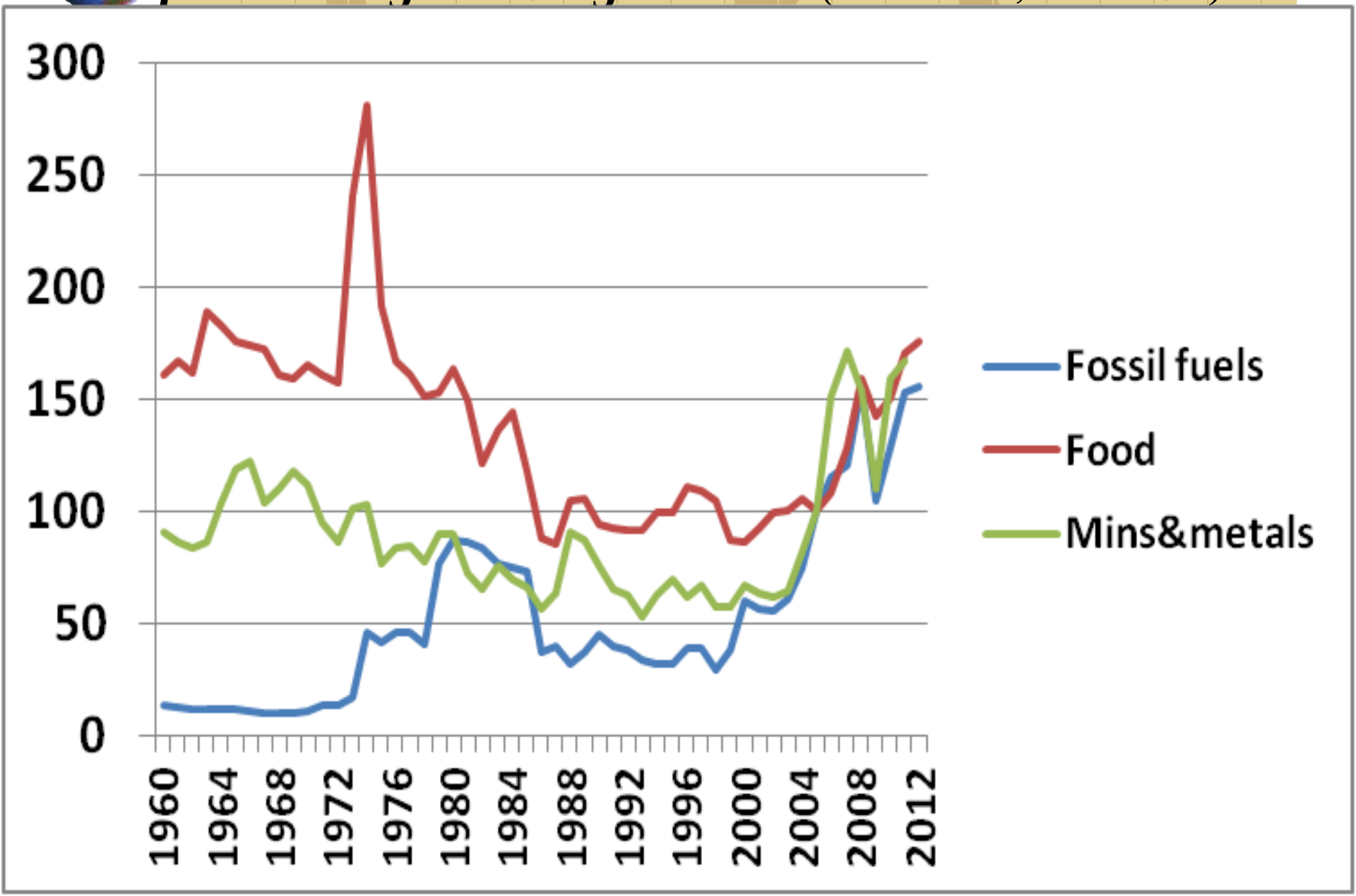
Cumulative changes in international prices, relative to 2007 (% change)

	Core 2020	Core 2030
Rice	**1**	**8**
All agric+food	**2**	**9**
Other primary	**-3**	**-1**
Manufactures	**-2**	**-4**
Services	**1**	**1**
ALL	**0**	**0**

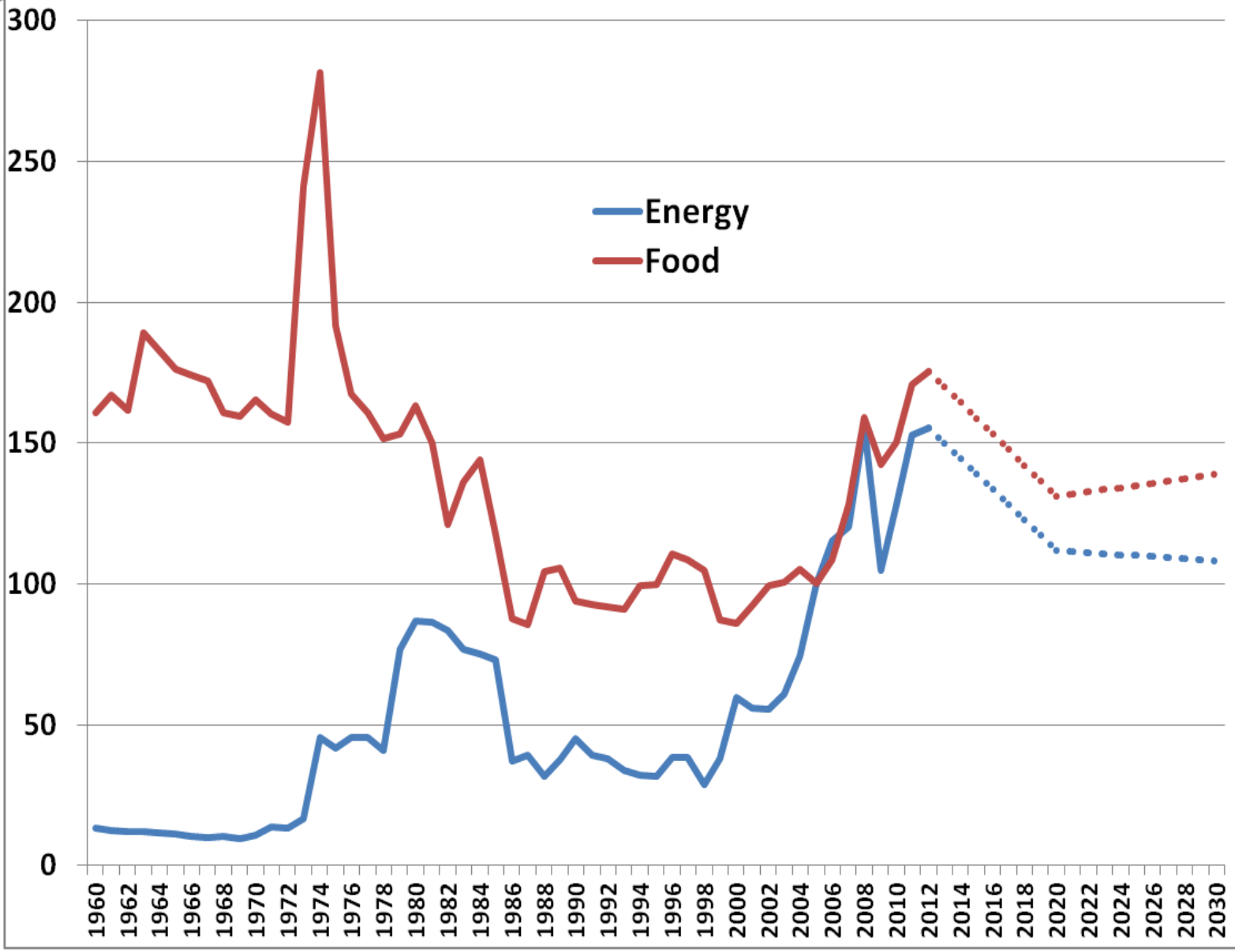
Cumulative changes in international prices *of grain, 2007 to 2030 (%): 3 different baselines*

	Core	Slow Ch&In growth	Also slow prim. TFP growth
Rice	8	2	27
All agric+food	9	3	21
Other primary	-1	-10	17
Manufactures	**-4**	-4	-4

Our projections are modest compared with real int'l price changes during 2007-12 (World Bank, 2005 = 100)



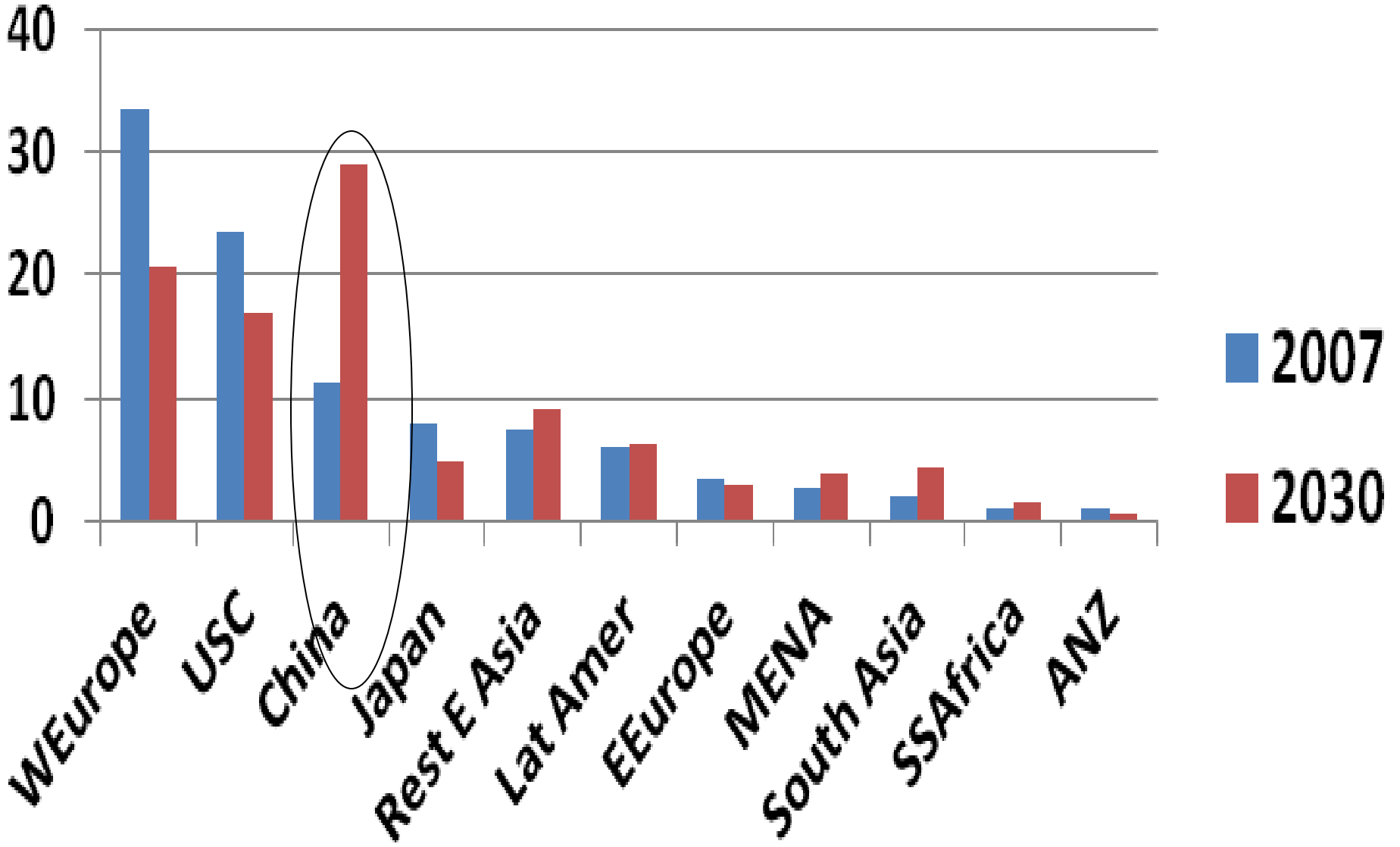
Real int'l price changes since 1960 (WB), & as projected in our core scenario to 2030 (2005 = 100)



Shares of global exports, by sector (%)

	Primary goods (%)		**Manuf. goods (%)**		**Services (%)**	
	2007	***2030***	***2007***	***2030***	***2007***	***2030***
World,	**16**	**19**	**66**	**63**	**18**	**18**
of which:						
Developing Asia	*2*	*2*	***17***	***32***	*3*	*5*
NRR countries	***11***	***14***	*11*	*11*	*3*	*4*

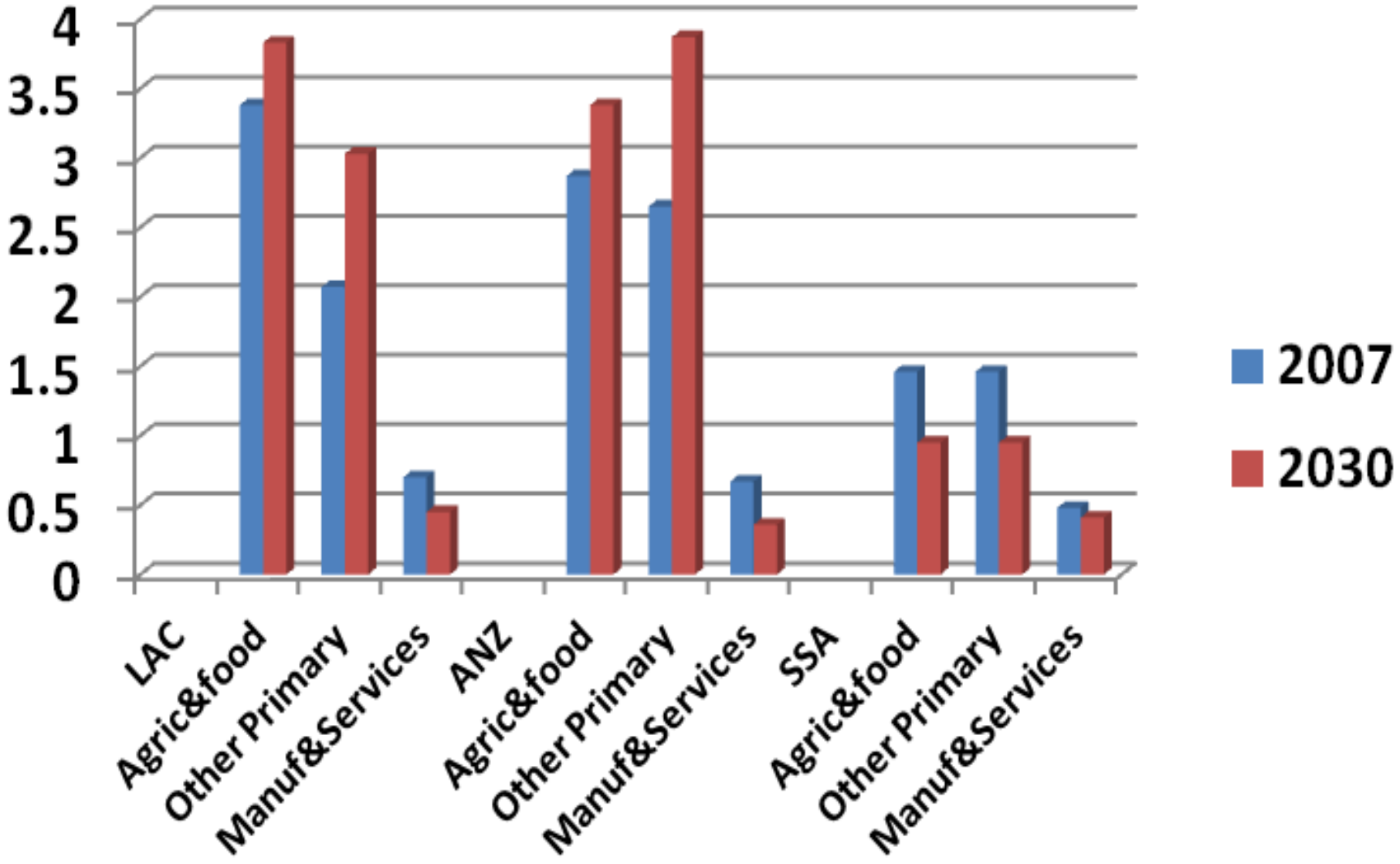
Regional shares (%) of global manuf GDP



Implications for agricultural trade, assuming no policy changes

- Dev. Asia's share of **global ag and food imports** rises from 15% in 2007 to 39% in 2030
  - mainly due to China (goes from 4% to 27%)
  - and to the benefit of land-abundant countries

'Revealed' comparative advantage index



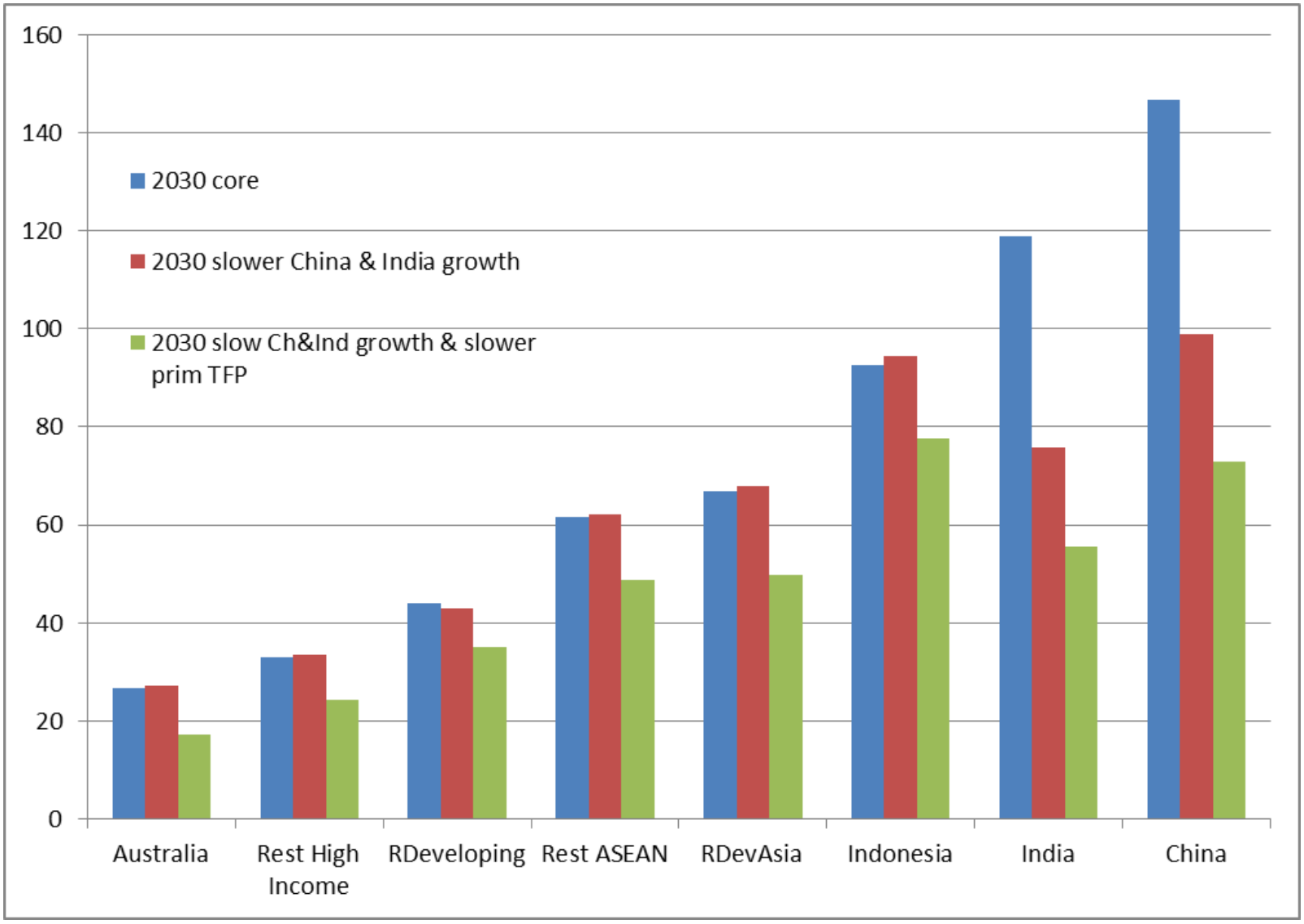
What does this imply about food security?

- Many food-deficit countries worry about **food self-sufficiency**
- A better indicator of access to food is **real household food consumption per capita** (i.e., at constant prices)
  - At least national average (Ideally need to also see its distribution across individuals.)

Agric+food self sufficiency (%)

	2007 base (1)	2030 core (2)	2030 slower growth in Ch/In and in primary TFP
China	**98**	**89**	**89**
South Asia	**100**	**97**	**95**
Other E Asia	**98**	**103**	**98**
SS Africa	**101**	**102**	**100**

Cumulative growth in real household agric and food cons'm per capita, 2007 to 2030 (%)



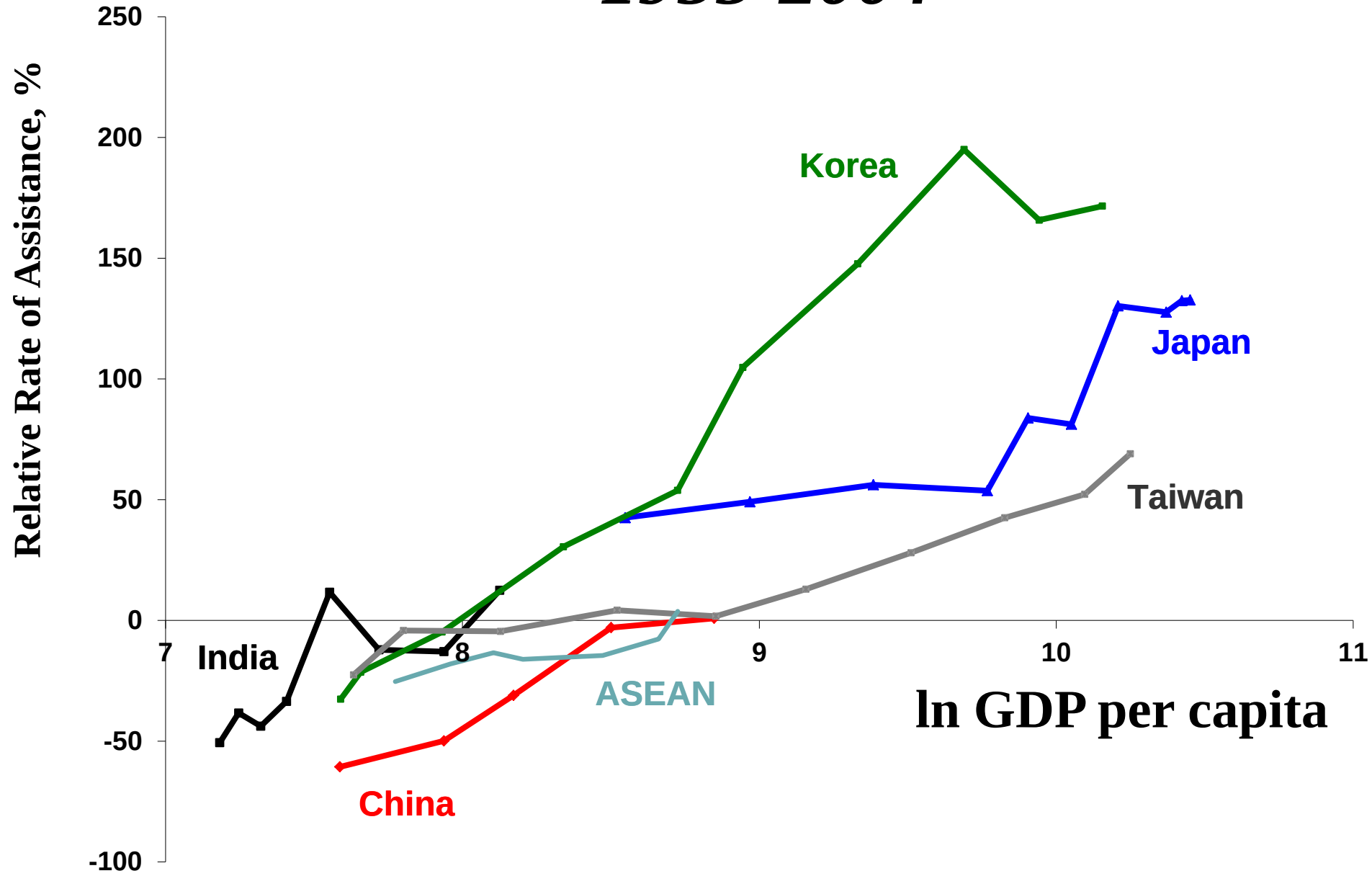
Share of national prim. product *exports to China, %*

	2007	2030, core projection	2030 slower Ch&Ind + slower prim.TFP growth
Indonesia	10	43	31
India	35	81	73
Rest ASEAN	10	35	25
Rest Dev. Asia	17	49	43
Rest Developing	9	33	24
Australia	22	54	39
Rest HICs	3	26	18
Total	**7**	**32**	**23**

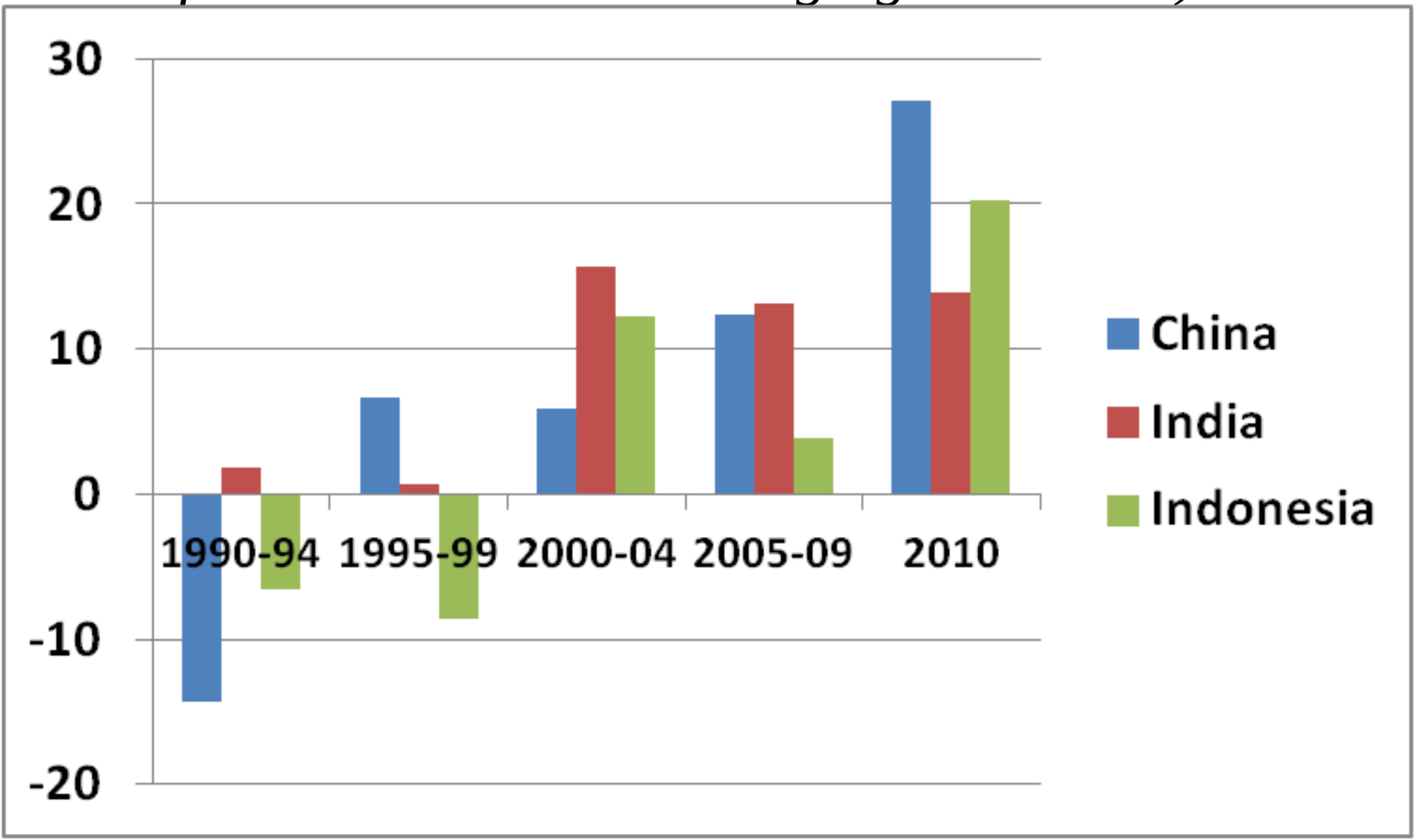
An important caveat

- Projections assume current trade policies continue, but ...
  - ... food security concerns may increase as Asian industrialization proceeds
- China (also India and Indonesia) may not allow food self-sufficiency to fall greatly
  - and so may follow the agric protection growth path of Japan, Korea and Taiwan
    - means higher domestic food prices, hence **less** food security for these rapidly urbanizing countries

East Asia's agric protection growth, 1955-2004



Agric protection already growing, in Indonesia as in China and India *(NRA, %, from www.worldbank.org/agdistortions)*



Three take-away messages

- By 2030, Developing Asia will consume more than **half the world's grain and fossil fuel**, and 3/4^{ths} of its other minerals – paid for by expanding exports of manufactures

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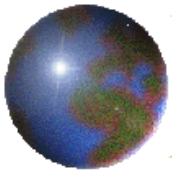
- Bright prospects for resource-exporting countries – BUT dampened if econ growth in China and India slows more than projected

Three take-away messages

- By 2030, Developing Asia will consume more than **half the world's grain and fossil fuel**, and 3/4^{ths} of its other minerals – paid for by expanding manuf exports
- Bright prospects for resource-exporting countries – BUT dampened if econ growth in China and India slows more than projected
- If emerging Asia follows an agric protection growth path, that will reduce its food security even if it raises its food self-sufficiency
  - Much better to instead raise rural human capital and agr R&D investments to boost food productivity growth and farm h'hold incomes



Thanks!

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Resource-rich vs other regions of world

(based on net trade specializ'n in primary products, 2005-09)

Natural Resource Rich

- Russia
- Cent. Asia
- Canada
- Australia
- NZ
- Indonesia
- Malaysia
- Vietnam
- Pacific Is.
- Argentina
- Brazil
- Chile
- Mexico
- Peru
- Rest LAC
- ME/NAfrica
- SSAfrica

Other regions

- USA
- Western Europe
- Eastern Eur (ex. Russia)
- Japan
- China
- E. Asian NIE4
- Philippines
- Thailand
- South Asia