

LOWY INSTITUTE

FOR INTERNATIONAL POLICY

Energy insecurity and the Great Convergence

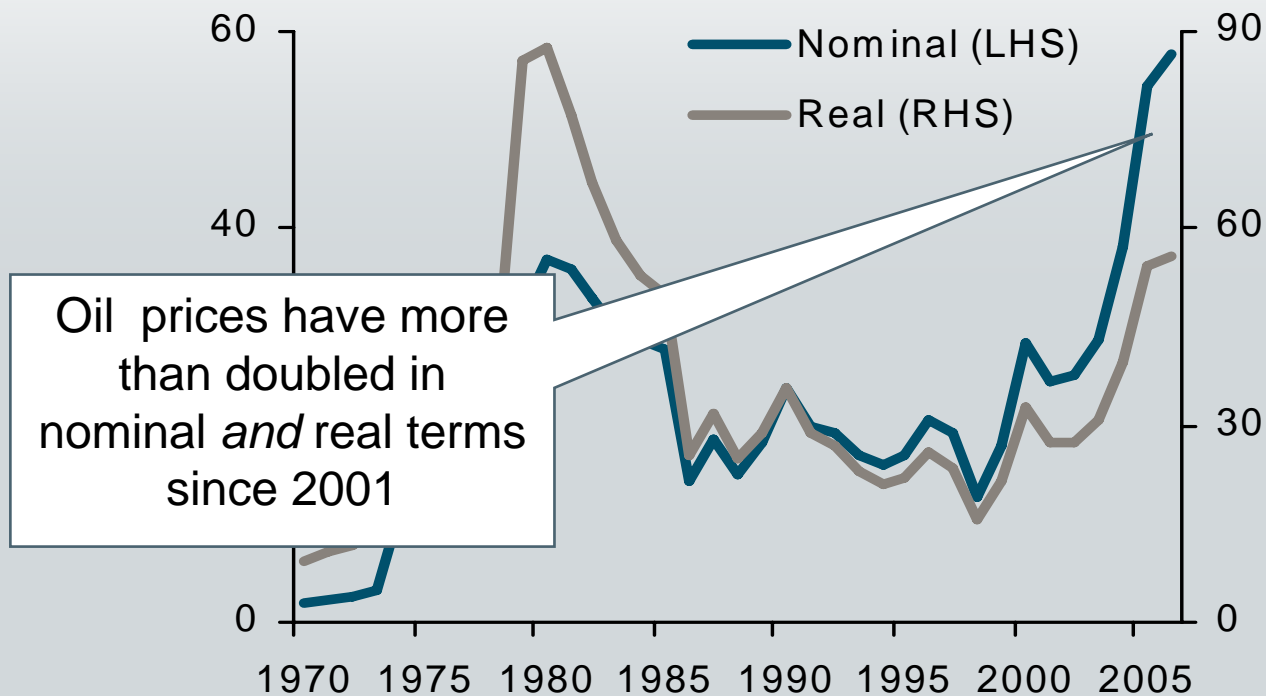
Mark Thirlwell
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November 2006

The return of energy insecurity

Climbing prices focused attention . . .

Nominal and real oil price

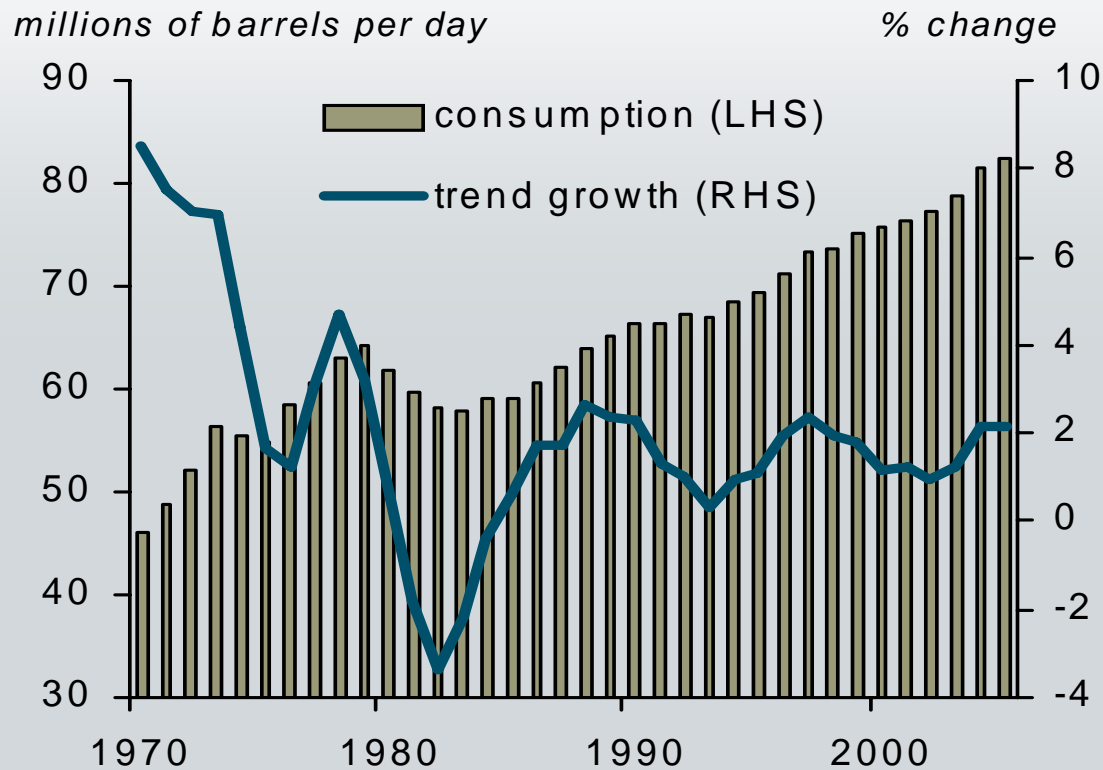
US\$/barrel, annual average price



Source: BP Statistical Review of World Energy (2006) except for 2006: data based on price for dated Brent on 6 November 2006

... as growing demand ...

Oil consumption

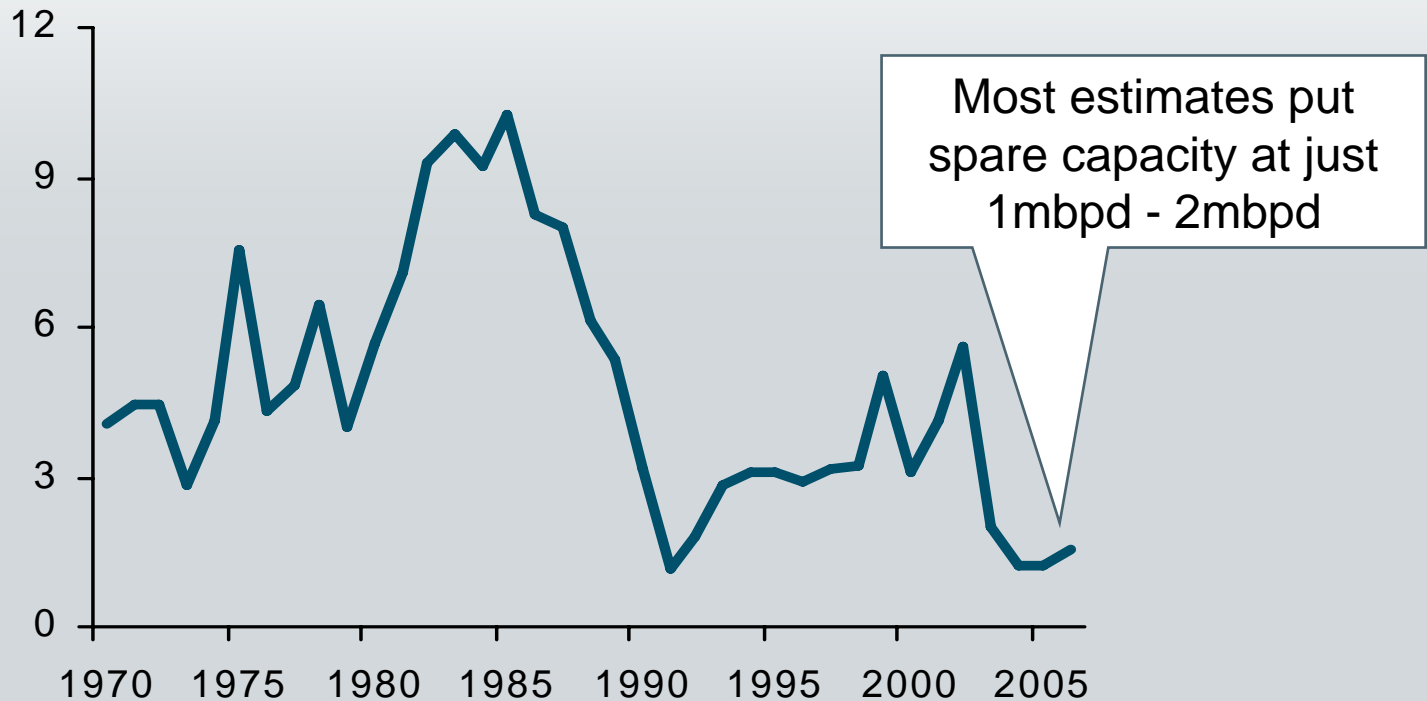


Source: BP Statistical Review of World Energy (2006)

... met constrained supply

Global spare oil production capacity

millions of barrels per day



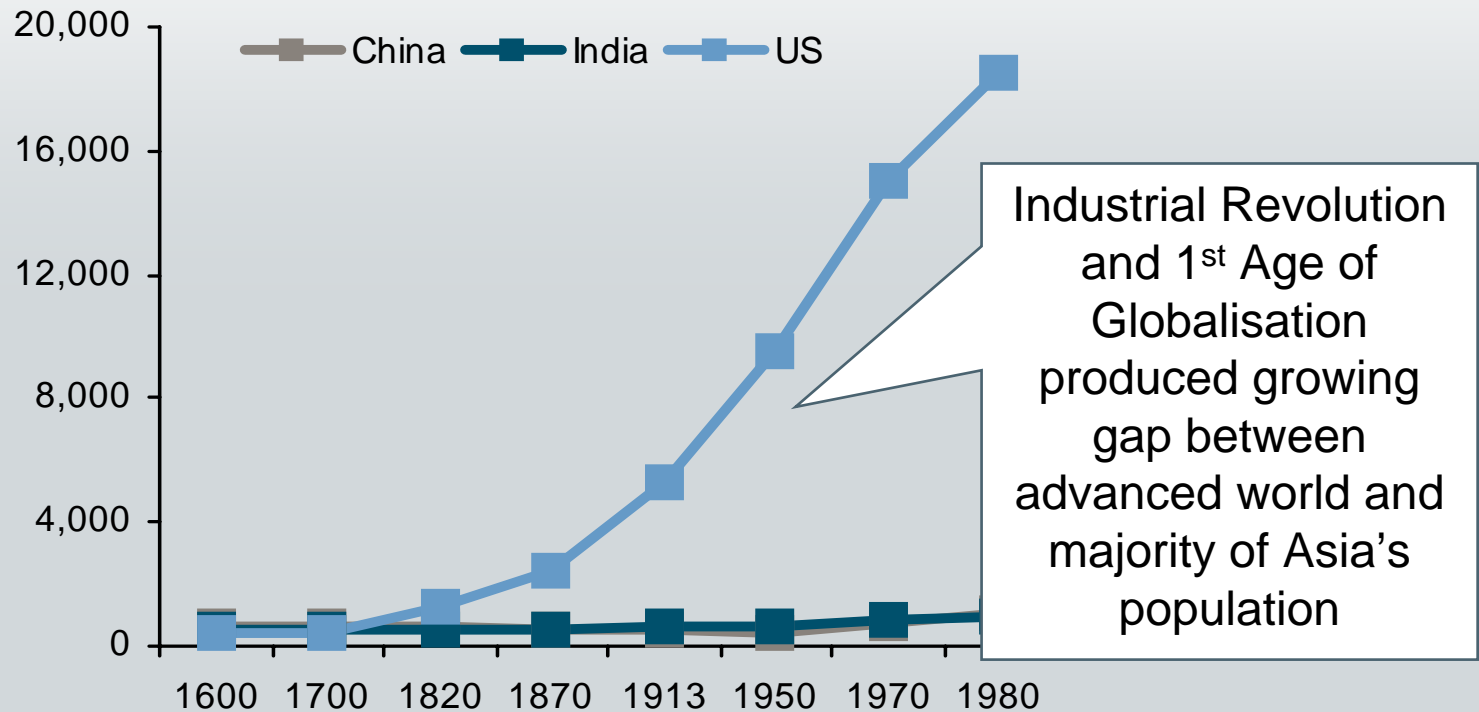
Source: IMF World Economic Outlook, September 2006: Spare capacity defined as production capacity that can be brought on line within 30 days and sustained for 90 days

The Great Convergence

World economic history is a tale of divergence

GDP per capita

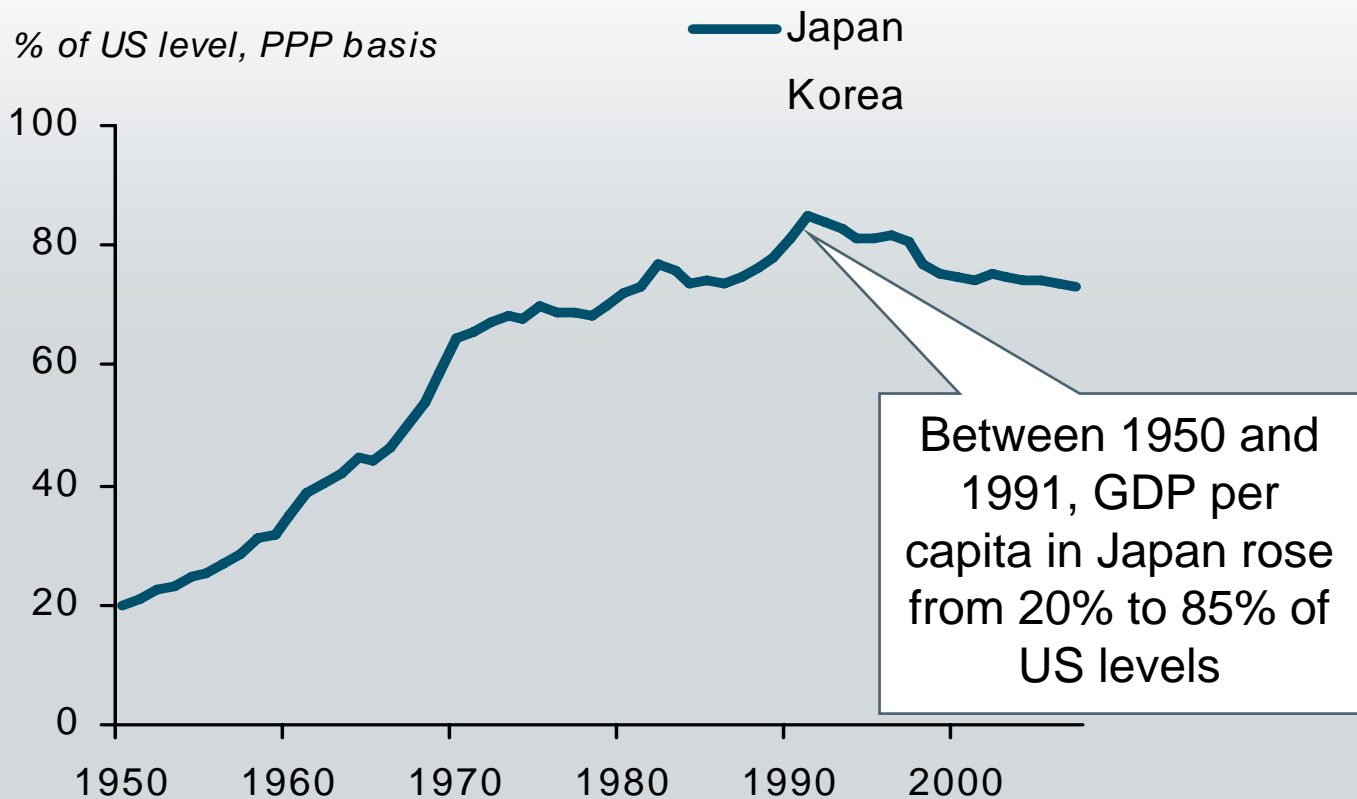
1990 dollars, PPP basis



Source: Angus Maddison, *The world economy: historical statistics*, 2003

But East Asia showed convergence is possible

GDP per capita

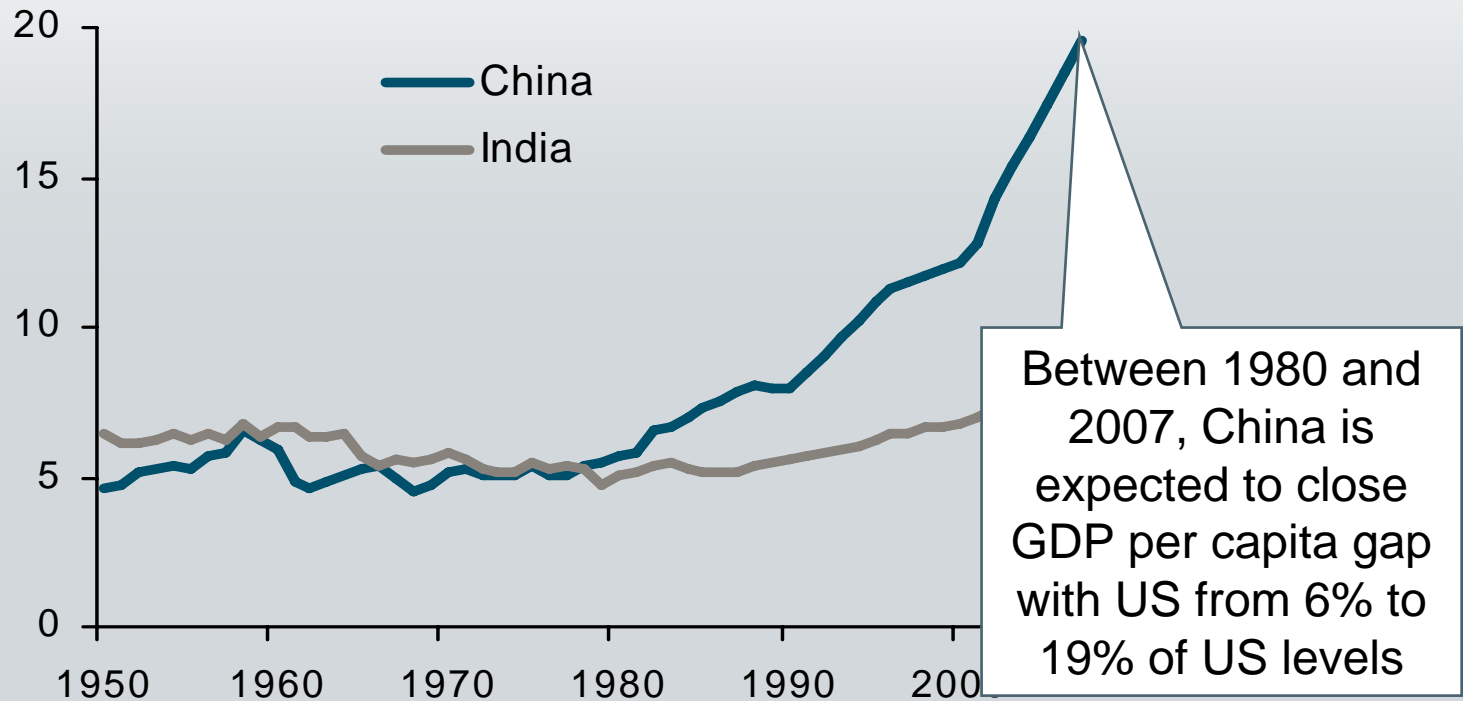


Source: Angus Maddison, *The world economy: historical statistics*, 2003. IMF World Economic Outlook September 2006 database

Now, the start of the Great Convergence?

GDP per capita

% of US level, PPP basis



Source: Angus Maddison, *The world economy: historical statistics*, 2003 and IMF World Economic Outlook database (September 2006)

Why “Great”? Top 10 countries by population

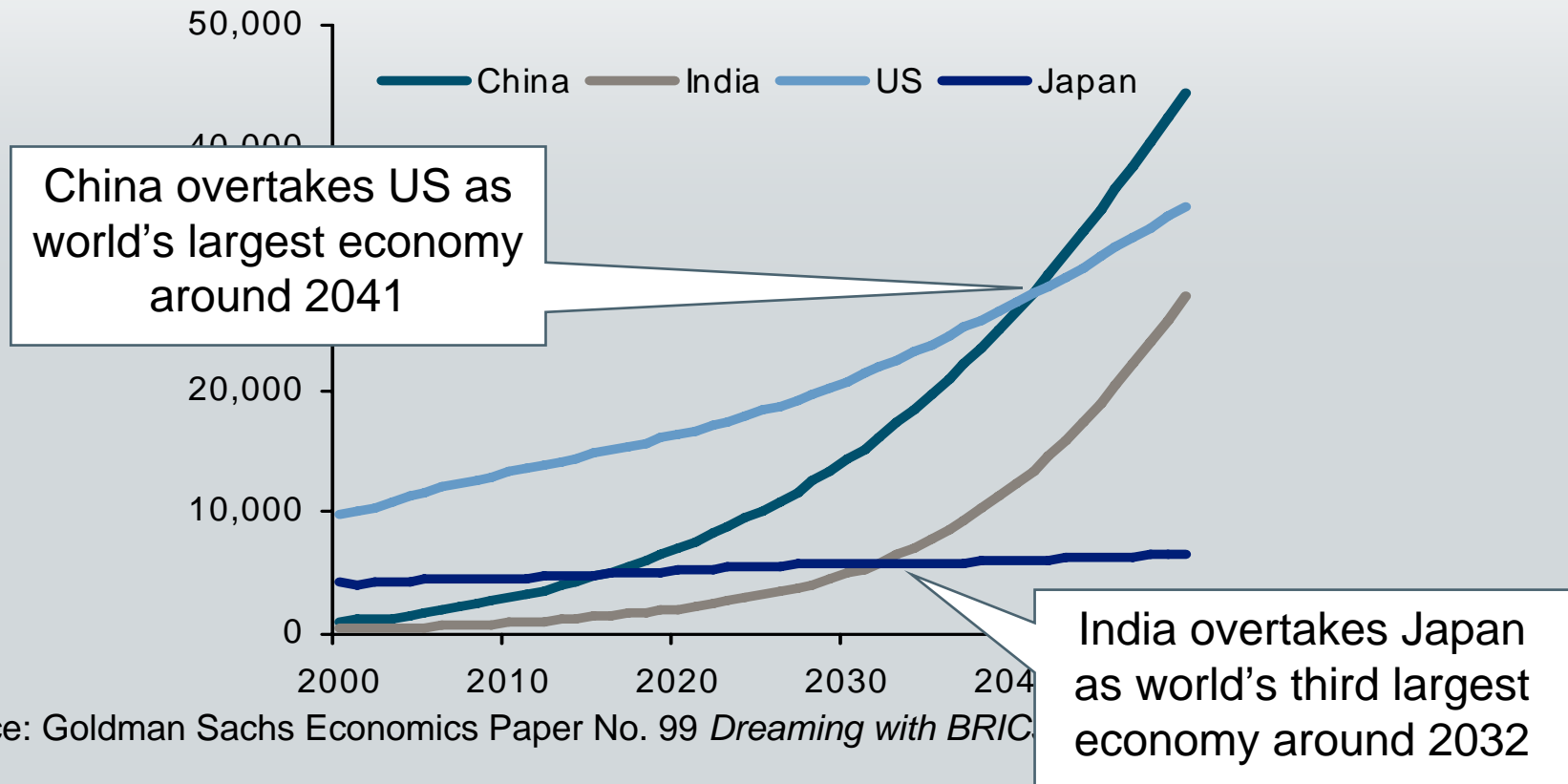
		1950			2005			2050	
		Pop'n (bns)	Cumul. %		Pop'n (bns)	Cumul. %		Pop'n (bns)	Cumul. %
1	China	0.56	22.0	China	1.32	20.4	India	1.59	17.5
2	India	0.36	36.2	India	1.10	37.4	China	1.39	32.9
3	USA	0.16	42.5	USA	0.30	42.0	USA	0.40	37.2
4	Russia	0.10	46.6	Indon	0.20	45.5	Pak	0.31	40.6
5	Japan	0.08	49.9	Brazil	0.18	48.4	Indon	0.29	43.7
6	Indon						Nigeria	0.26	46.6
7	Ger						Brazil	0.25	49.4
8	Brazil						India	0.24	52.0
9	UK	0.05	59.9	Nigeria	0.13	57.3	Congo	0.18	54.0
10	Italy	0.05	61.7	Japan	0.13	59.2	Ethpia	0.17	55.9

China and India account for more than one third of the global population. In contrast, Japan at the start of its economic takeoff was less than 4% of the global total.

Result: a rebalancing of global economic weight

Goldman Sachs's BRICs projections

2003 US\$ GDP, billions

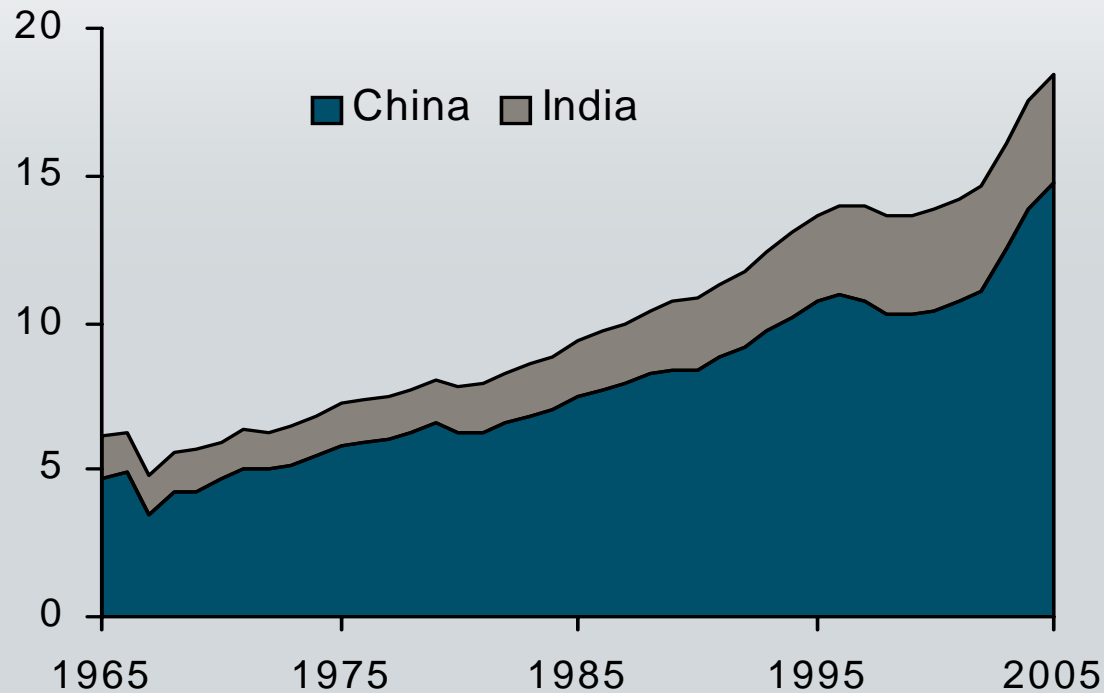


Source: Goldman Sachs Economics Paper No. 99 *Dreaming with BRICs*

The Great Convergence and energy demand

Implication: new drivers for global energy demand

Share of world primary energy consumption
% of total

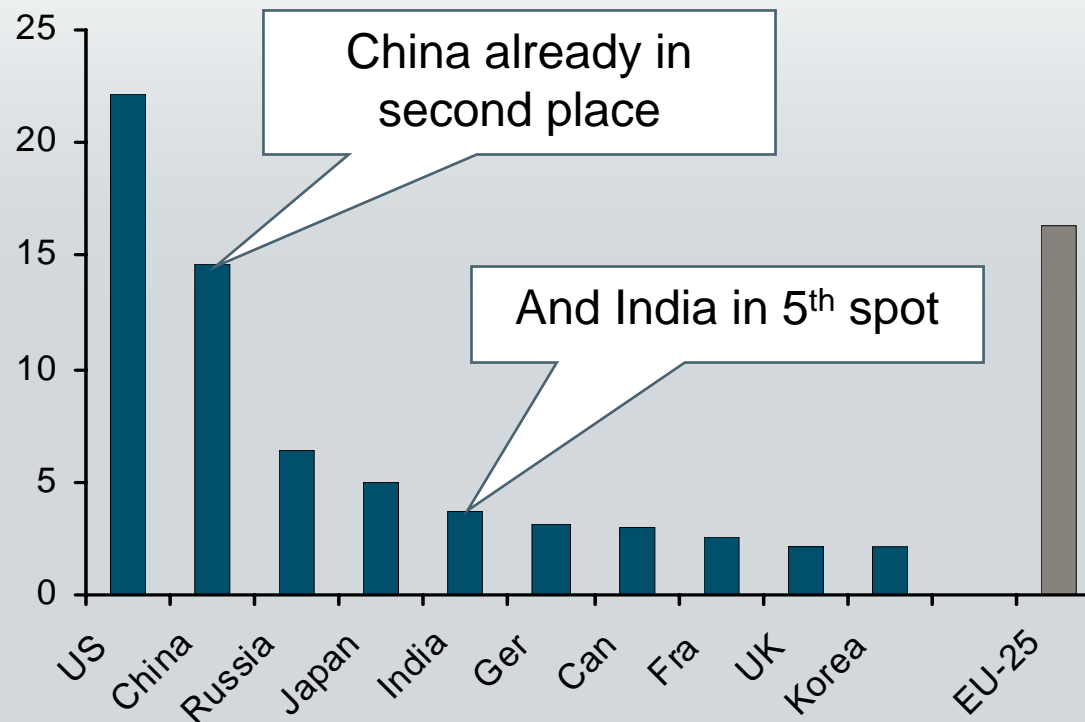


Source: BP Statistical Review of World Energy (2006)

The world's top ten energy consumers

Share of primary energy consumption, 2005

% of world total



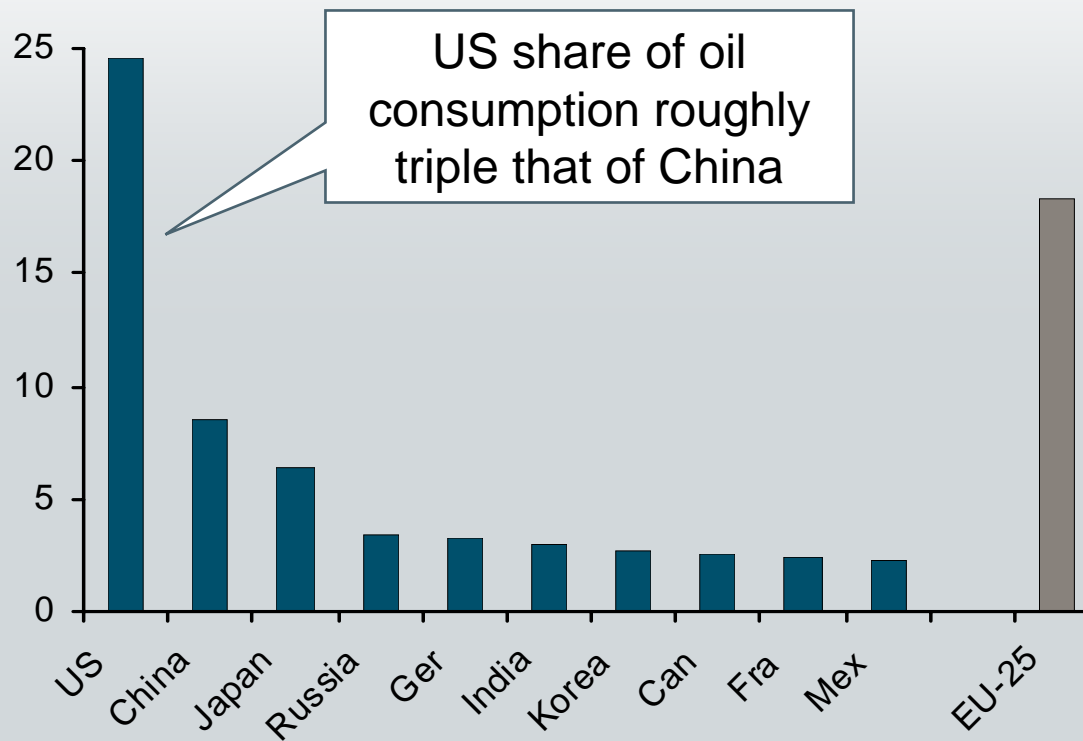
Source: BP Statistical Review of World Energy (2006)

The Great Convergence and Oil

US still dominates global oil demand

Share of global oil consumption, 2005

% of world total

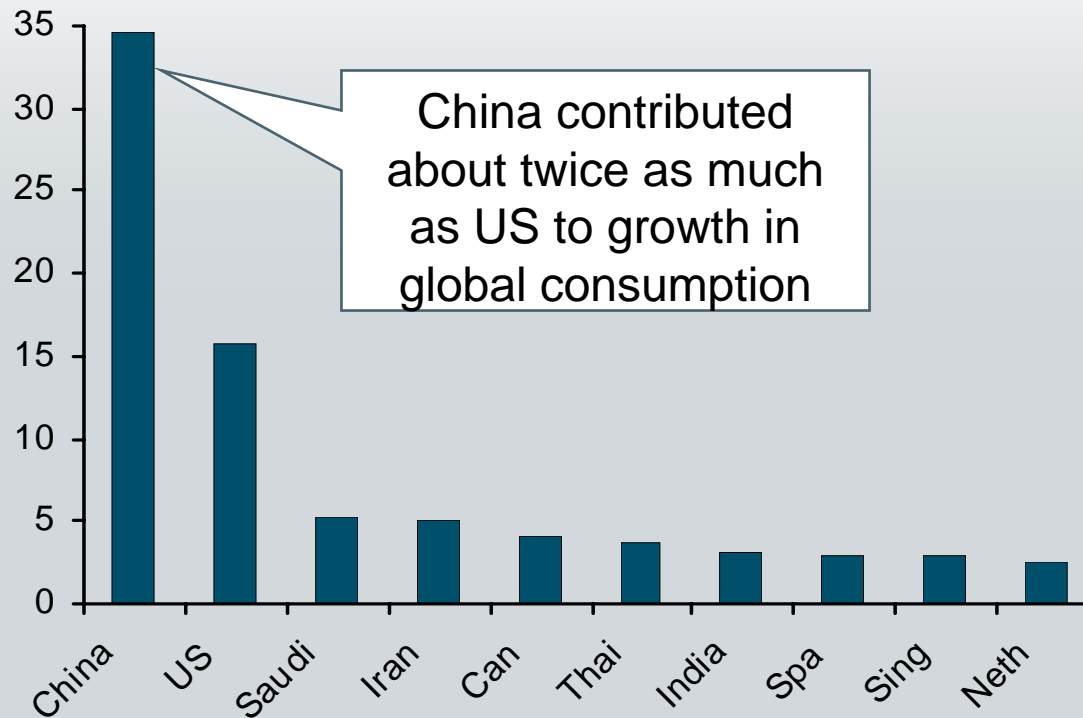


Source: BP Statistical Review of World Energy (2006)

But China *already* drives consumption growth

Source of growth in oil consumption, 2000-05

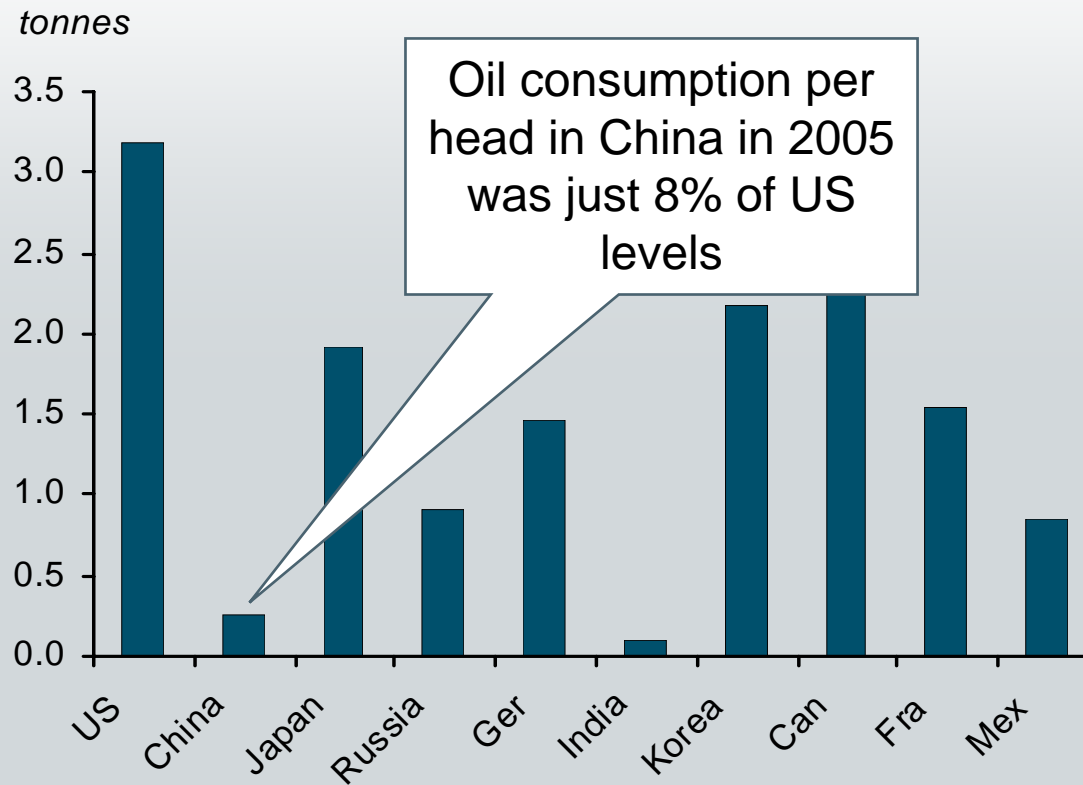
% of total growth in consumption



Source: BP Statistical Review of World Energy (2006), author's calculations

. . . despite still modest per capita consumption

Oil consumption per capita, 2005

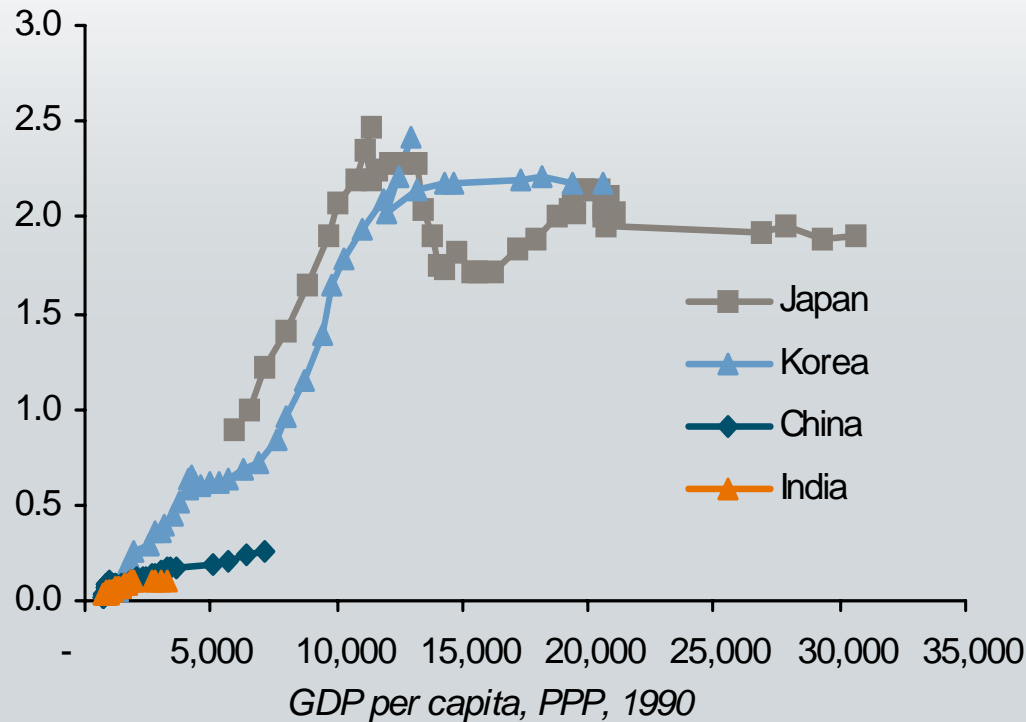


Source: BP Statistical Review of World Energy (2006), author's calculations

And per capita consumption expected to grow

Oil demand and economic development, 1965-2005

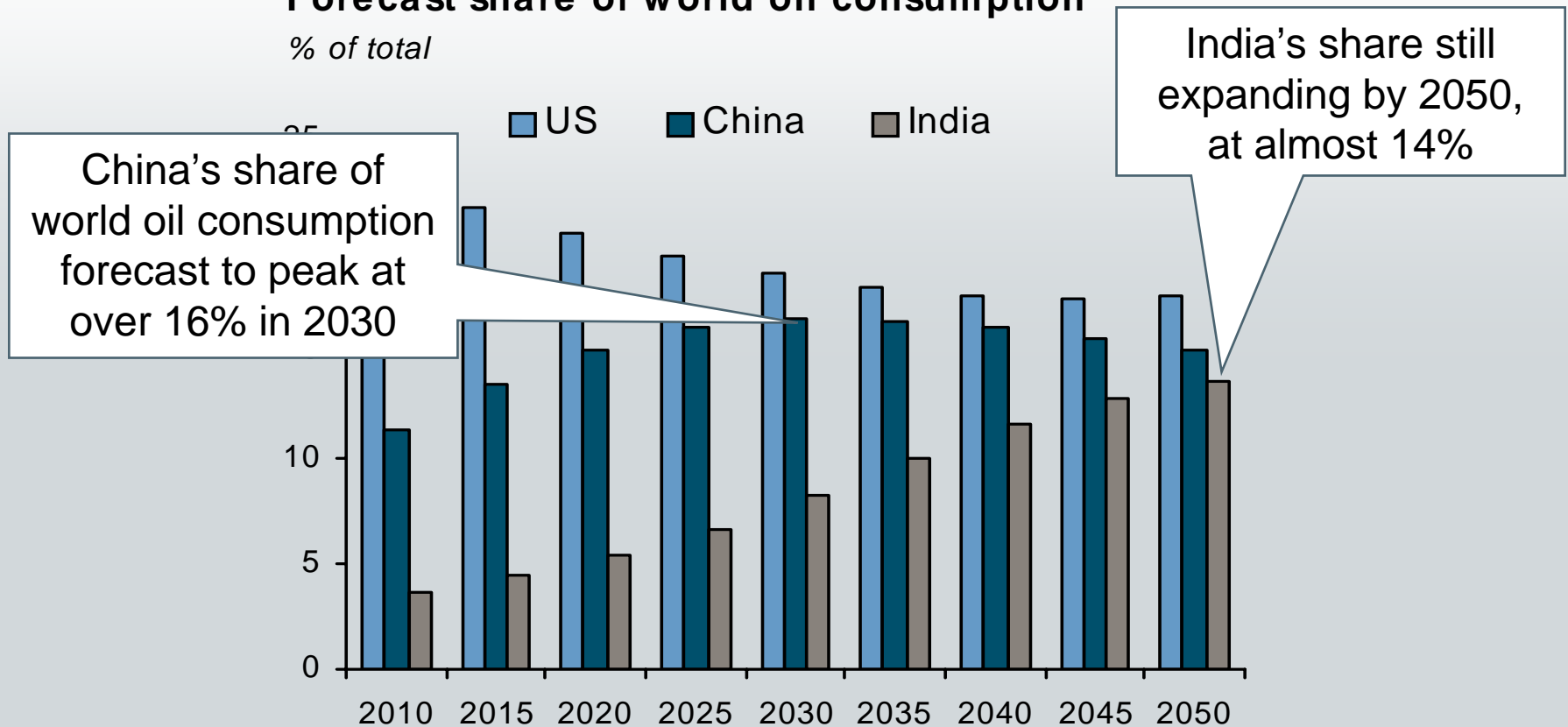
Oil consumption, tonnes per capita



Source: BP Statistical Review of World Energy (2006) and Angus Maddison, *The world economy: historical statistics*, 2003

One possible future

Forecast share of world oil consumption
% of total



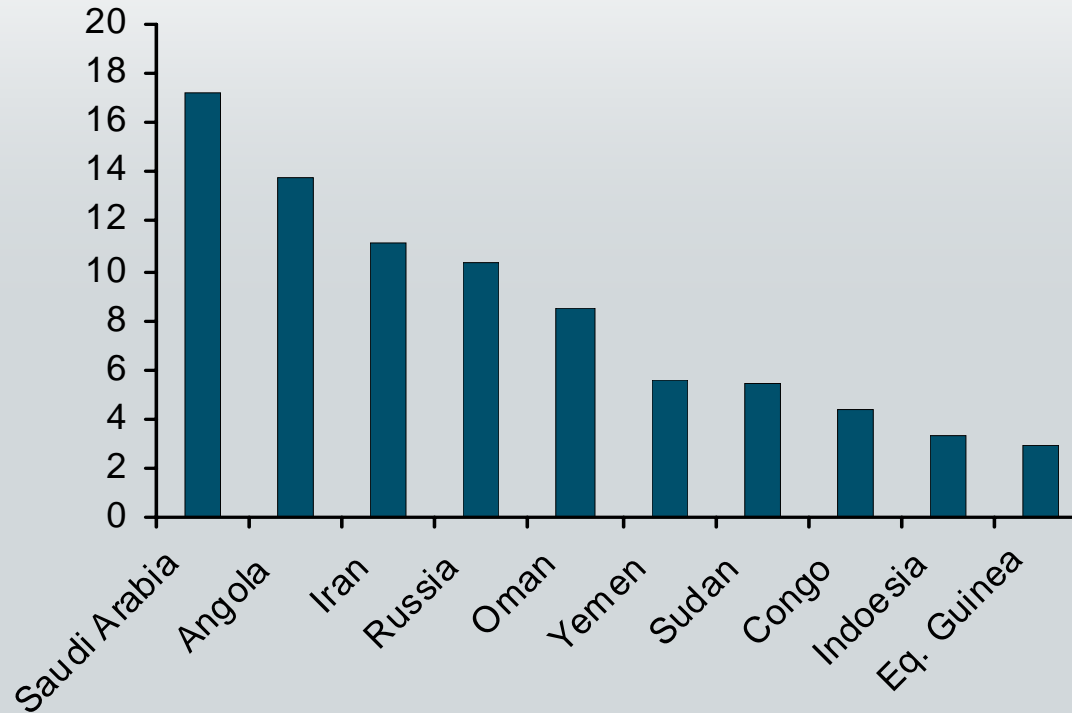
Source: Goldman Sachs Economics Paper No. 118 *The BRICs and Global Markets: Crude, Cars and Capital*

The new Great Game

China looks to diversify suppliers

China: top 10 sources of crude oil imports 2005

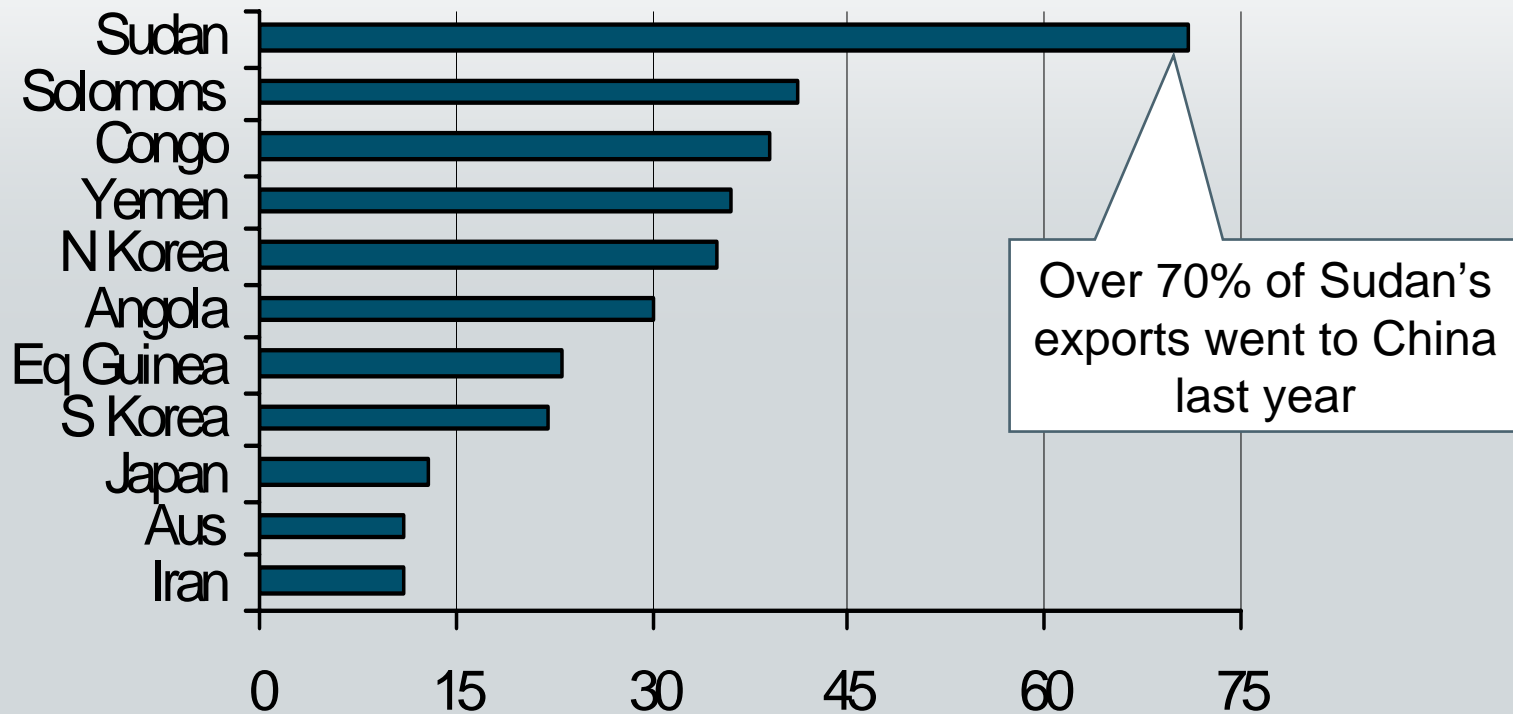
% of total



Source: UN Comtrade database

With implications for bilateral economic ties

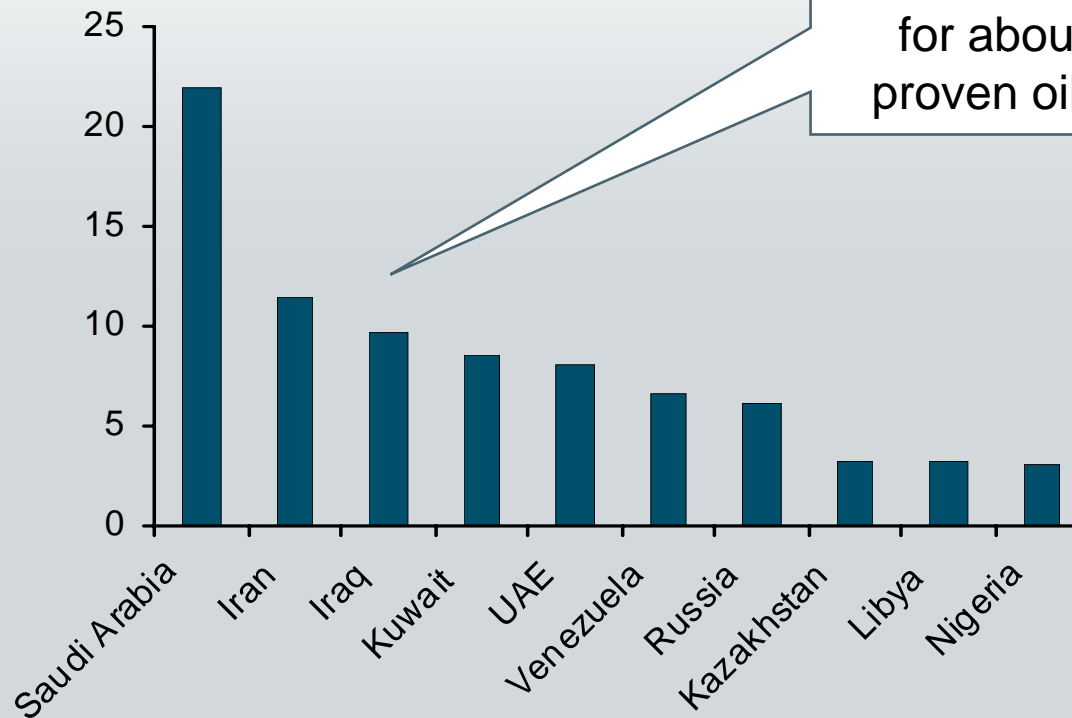
Exports to China as % of total exports



Still, its hard to 'escape' the Middle East

Share of proven oil reserves, 2005

% of total

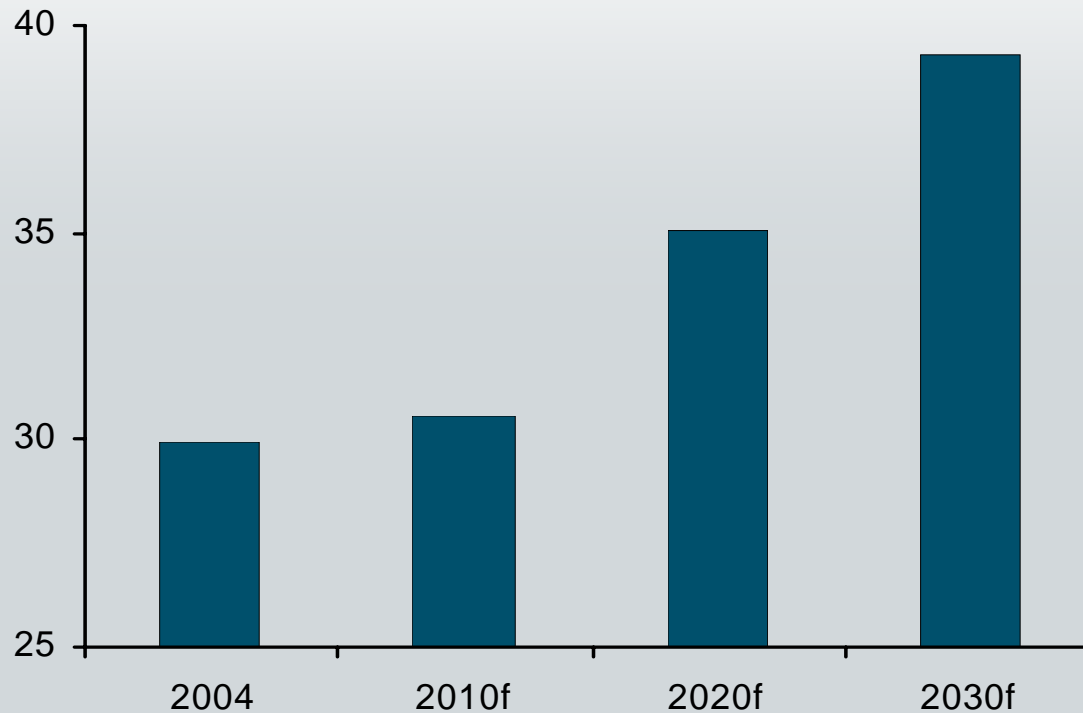


The Middle East is estimated to account for about 60% of proven oil reserves

And its set to get even harder

Share of Middle East in world oil production

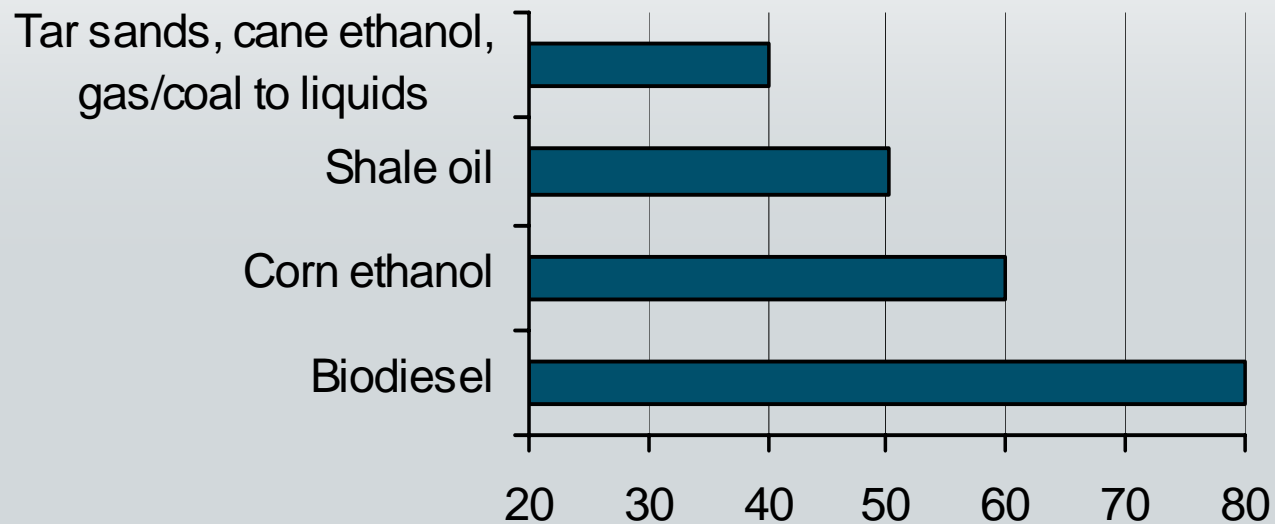
% of total



Source: IEA 2005 Reference Scenario

Although alternatives may be on offer

US\$ per barrel price threshold for alternative sources

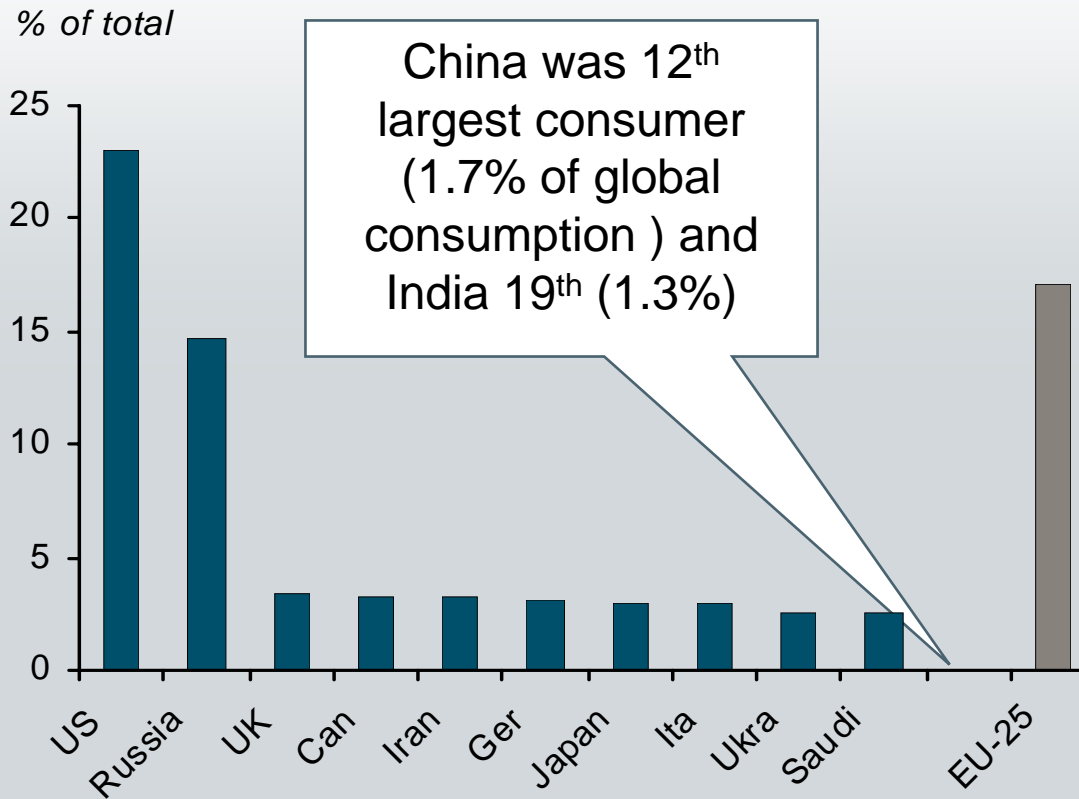


Source: Cambridge Energy Research Associates, The Economist, AMP Capital Investors

What about natural gas?

Gas consumption has a different profile

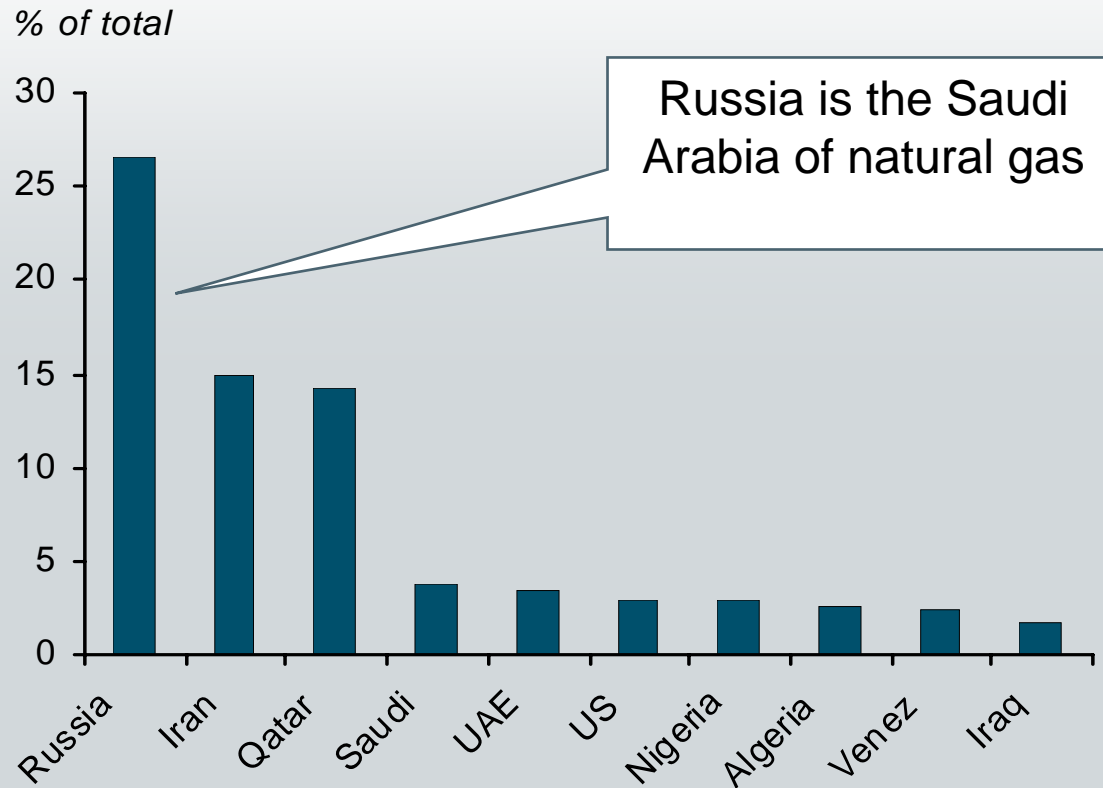
Share of global gas consumption, 2005



Source: BP Statistical Review of World Energy (2006)

Supply conditions differ, too

Share of proven gas reserves, 2005

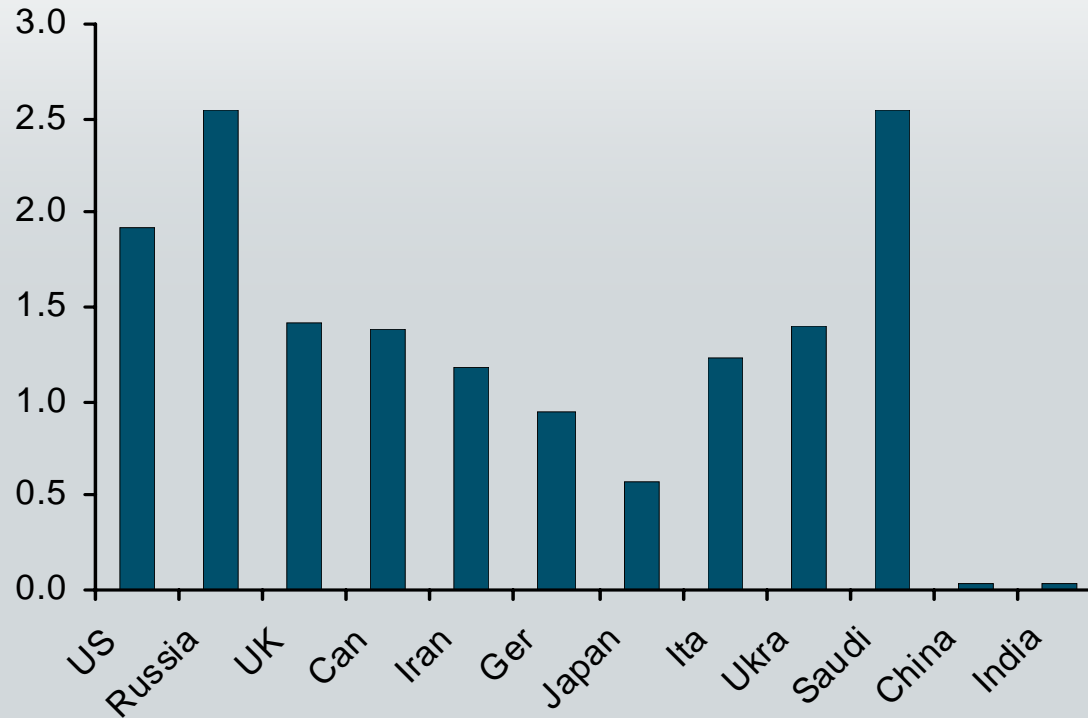


Source: BP Statistical Review of World Energy (2006)

Early days yet for China and India

Gas consumption per capita, 2005

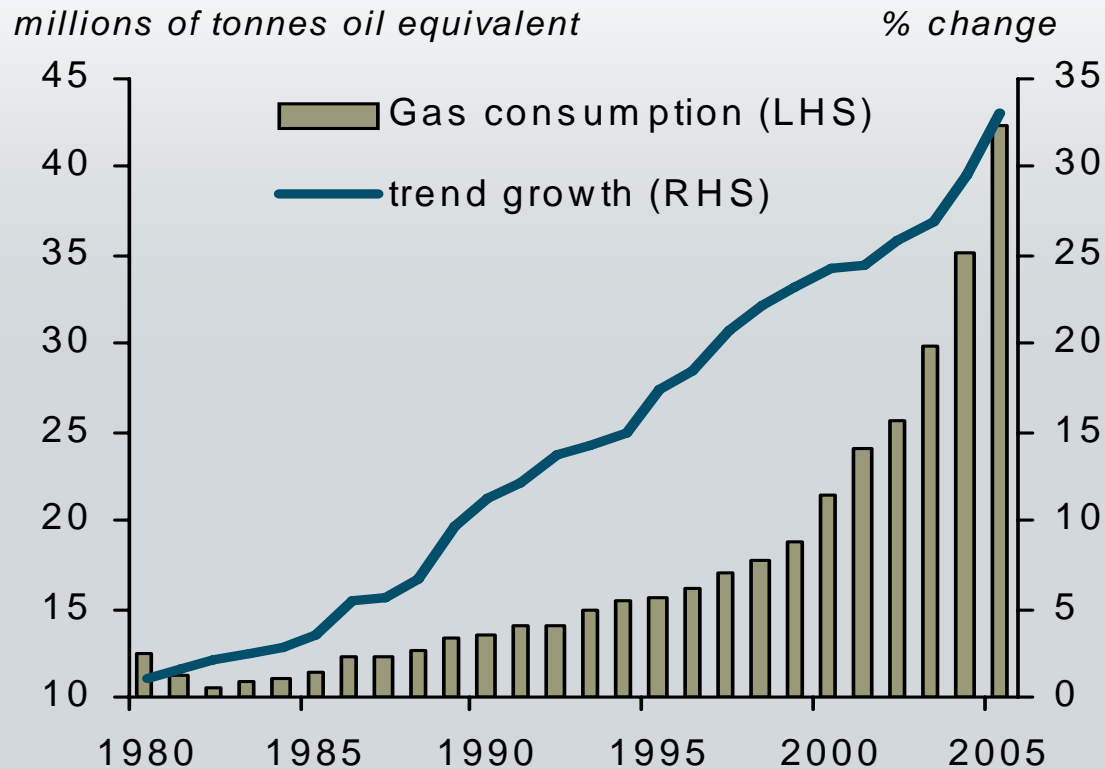
tonnes of oil equivalent



Source: BP Statistical Review of World Energy (2006)

But growth is dramatic

China's natural gas consumption



Source: BP Statistical Review of World Energy (2006)

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