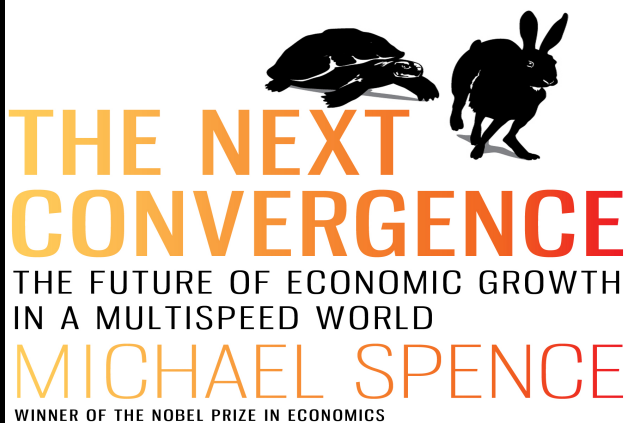
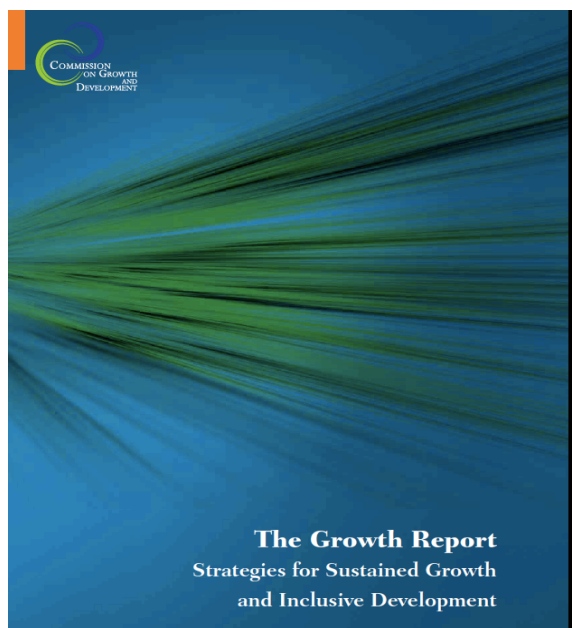


CONVERGENCE AND MULTI--SPEED GLOBAL GROWTH PATTERNS IN THE POST-CRISIS PERIOD: LEVELS, STABILITY, SUSTAINABILITY

Michael Spence

IAAE 2016

MILAN



China 2030

Building a Modern, Harmonious, and
Creative High-Income Society

The World Bank

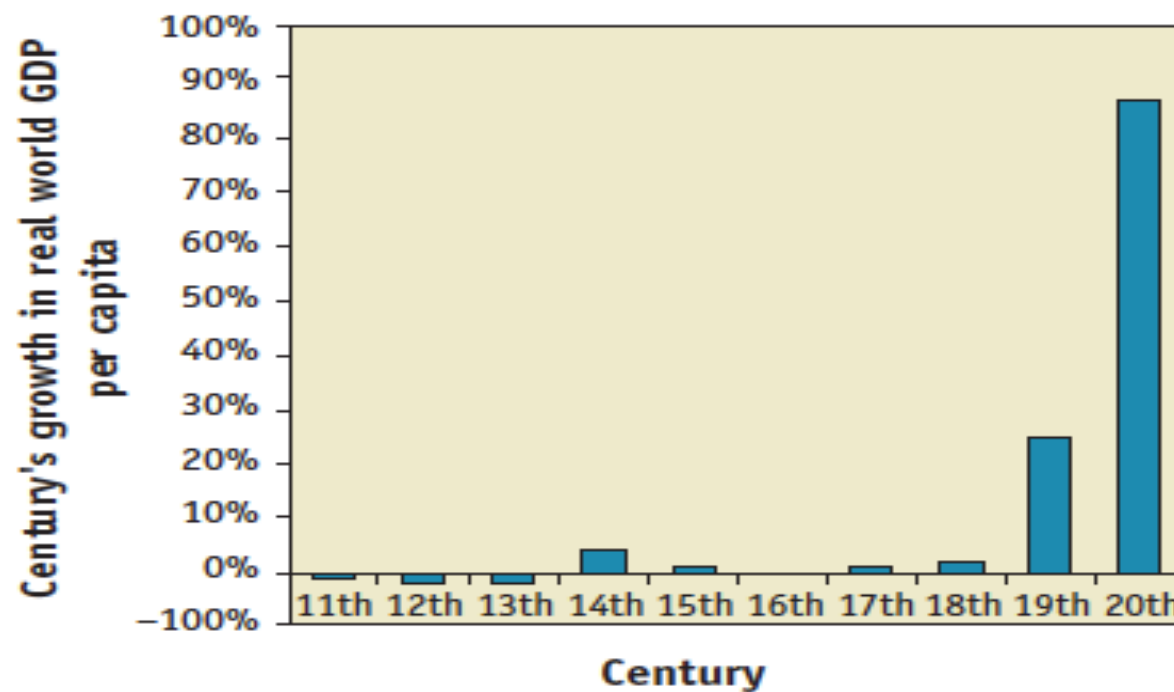
Development Research Center of the
State Council, the People's Republic of China

Council on Foreign
Relations

Growth Acceleration In Late 18th Century

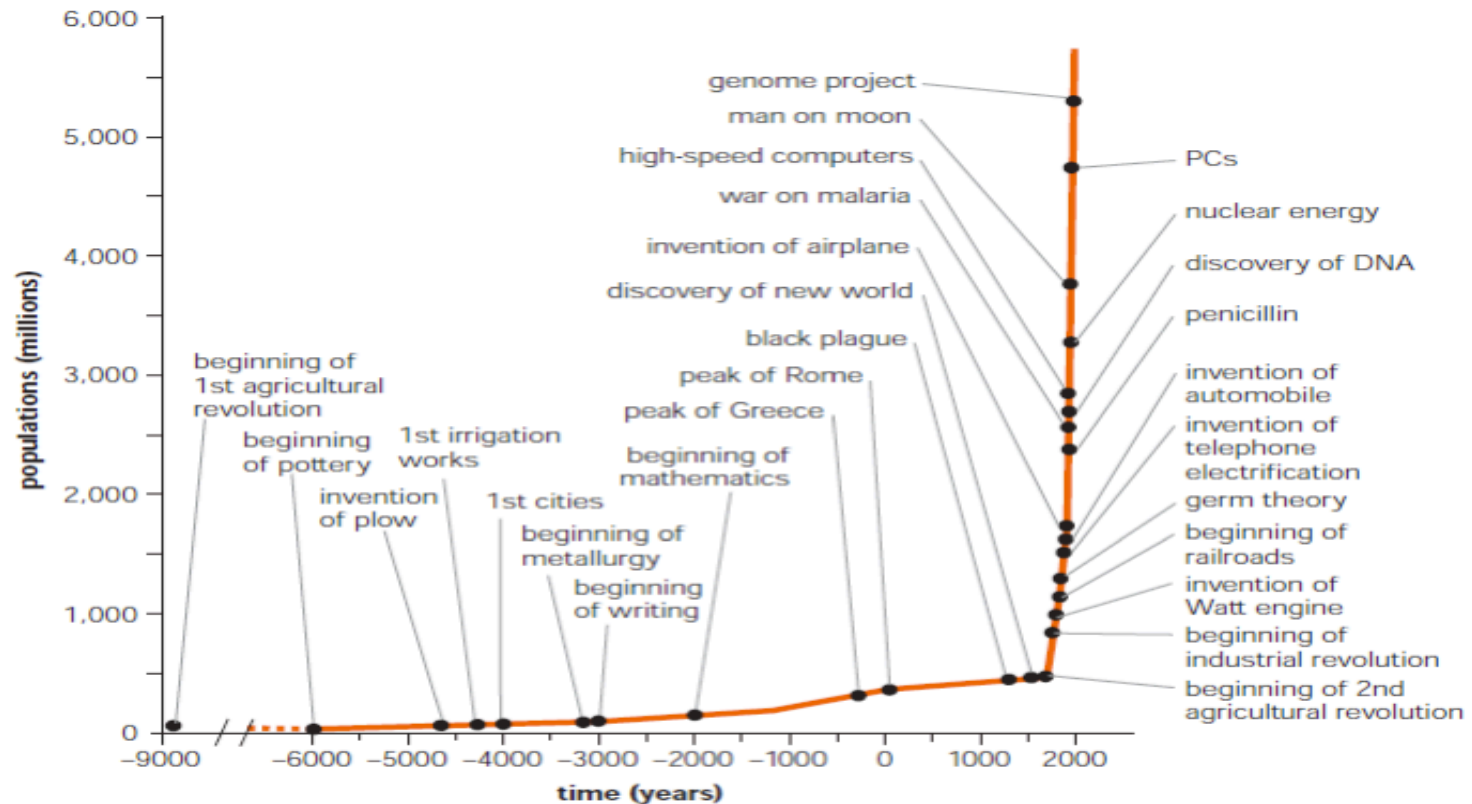
FIGURE 11

Worldwide Growth in Real GDP per Capita, 1000–Present



Source: DeLong 2000.

Population Growth



Source: Fogel, Robert. 1999. "Catching Up with the Economy." *American Economic Review* 89(1) (March): 1-21.

Note: There is usually a lag between the invention of a process or a machine and its general application to production. "Beginning" means the earliest stage of this diffusion process.

Developing Countries Convergence

- Before the Industrial Revolution – little growth by modern standards
- 200 years of divergence 1750-1950
- Post World War II: Reversal of the Divergence Pattern
- Now mid-way through a century of convergence of developing and advanced economies
- The convergence process is causing a massive increase in the size of the global economy
 - Likely to triple in size in the next 25 years

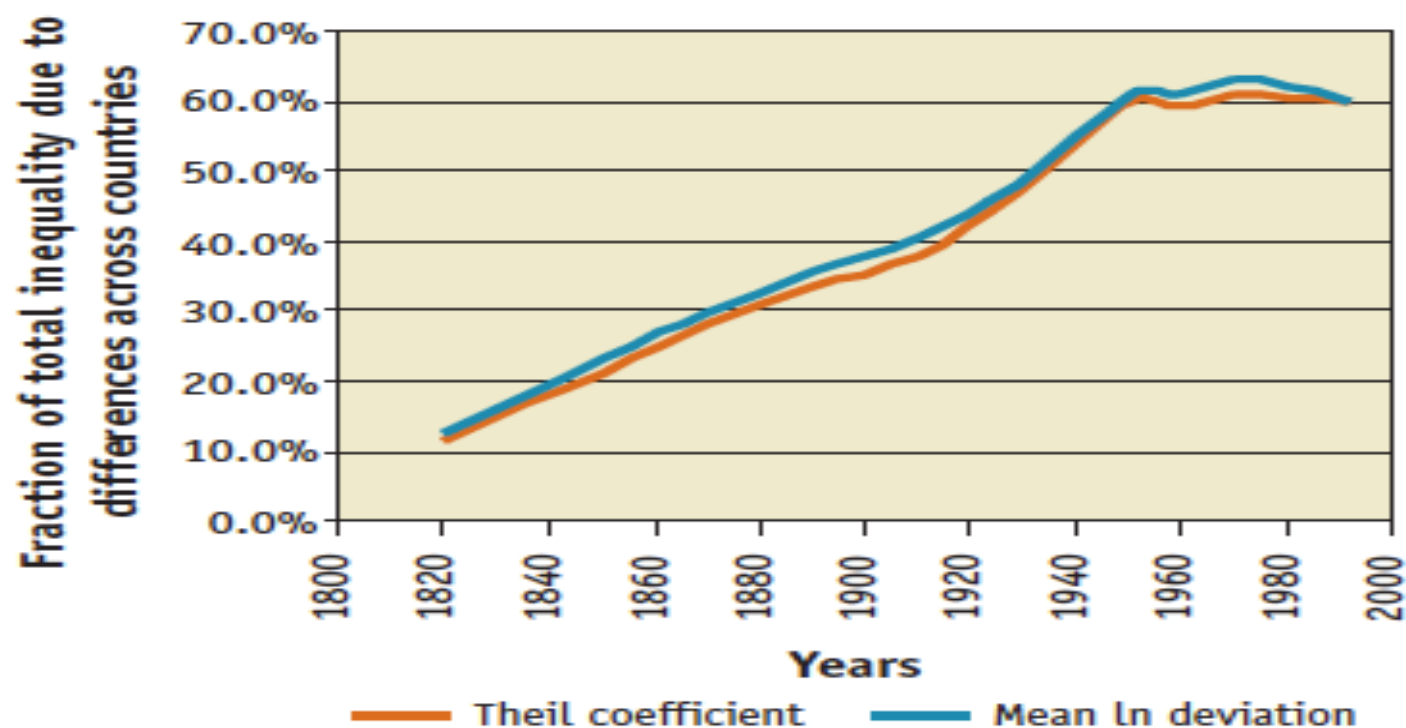
Why the Pattern Reversal

- After WW I vs. After WW II
- Post war recovery including the defeated powers
- Cold War in the Background
- GATT, Marshall Plan, IFI's
- Multi-fiber agreement
- Colonial Empires Dismantled
- Transportation, communications and logistics technology and cost

Two Centuries of Divergence

FIGURE 1.4

Fraction of World Inequality Accounted for by Differences across Countries



Source: Source: Bourguignon and Morrison 2002.

Why Do We Focus on Growth?

- It is not an objective or an end - just a statistic
- Sustained high growth
- Per capita GDP and growth are means to ends
- Ends have more to do with the chance to be productively employed, creativity, educate children, health
- Nearly Universal Value
 - Expanding opportunity for children and grandchildren and future generations
 - Requires high levels of investment and saving to finance the investment

Necessary and Sufficient Conditions

- In early stage developing countries, growth is a necessary but not sufficient condition for poverty reduction
- Generally measured inequality rises
- In middle and high income countries, growth is neither necessary nor sufficient for reducing inequality
- But it does help with the political economy – redistribution with no or low growth creates losers as well as gainers and hence resistance

Key Elements

- Global Economy
 - Technology
 - Market size and specialization
- High Investment rates
 - Property
 - Macro stability
- Moderate inequality – ex ante and ex post
- Market incentives, price signals, decentralization
- Structural change and shifting resources to higher productivity more modern urban sector
- Urbanization (pull/employment versus push/land consolidation)
- Complex areas
 - Industrial policy
 - Capital account management
 - Breaking political logjams

Economy	Period of high growth**	Per capita income at the beginning and 2005***	
Botswana	1960–2005	210	3,800
Brazil	1950–1980	960	4,000
China	1961–2005	105	1,400
Hong Kong, China*	1960–1997	3,100	29,900
Indonesia	1966–1997	200	900
Japan*	1950–1983	3,500	39,600
Korea, Rep. of*	1960–2001	1,100	13,200
Malaysia	1967–1997	790	4,400
Malta*	1963–1994	1,100	9,600
Oman	1960–1999	950	9,000
Singapore*	1967–2002	2,200	25,400
Taiwan, China*	1965–2002	1,500	16,400
Thailand	1960–1997	330	2,400

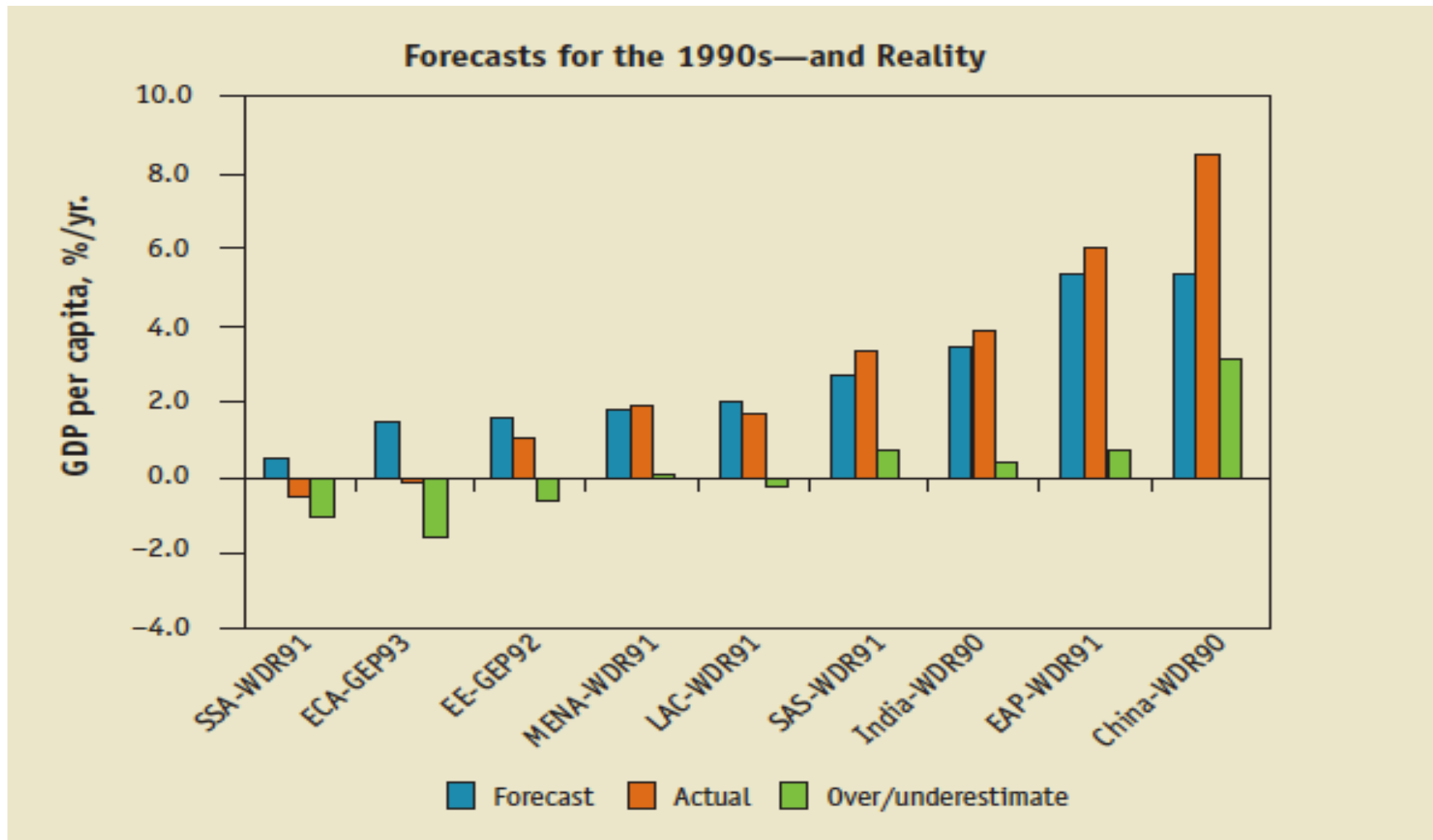
Source: World Bank, World Development Indicators.

*Economies that have reached industrialized countries' per capita income levels.

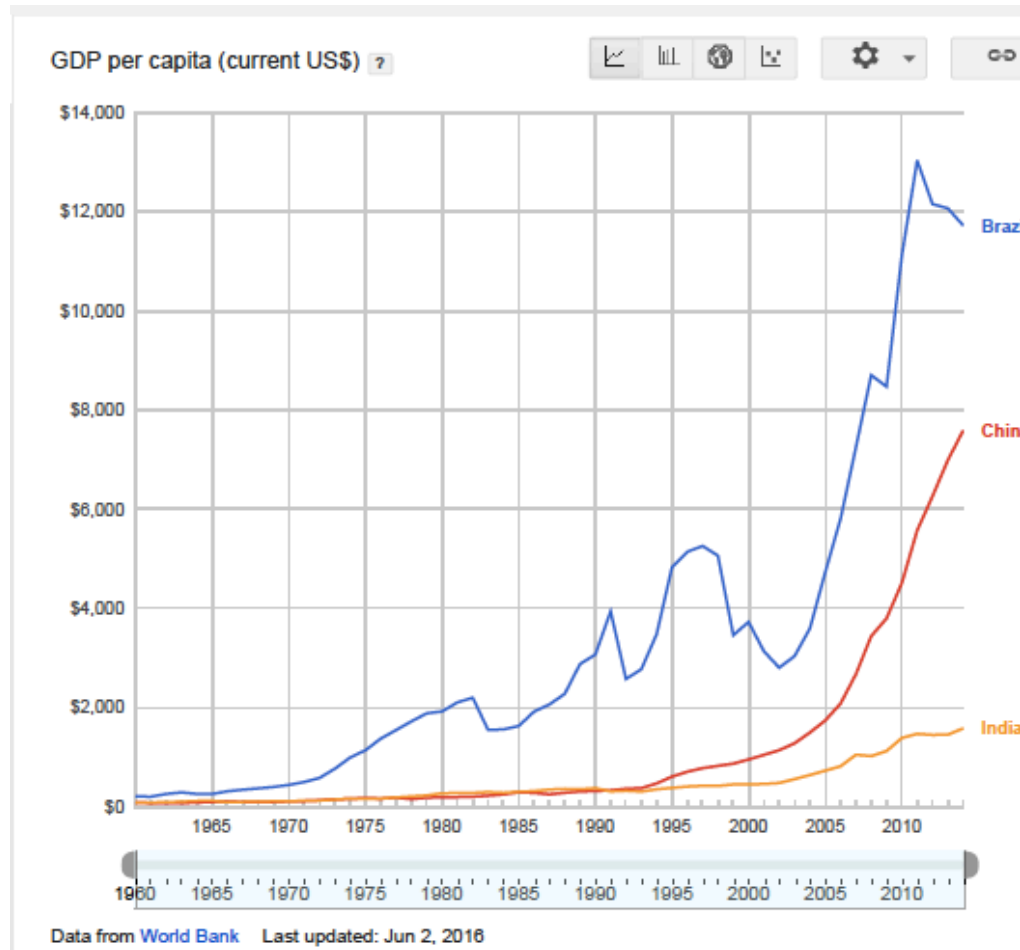
**Period in which GDP growth was 7 percent per year or more.

***In constant US\$ of 2000.

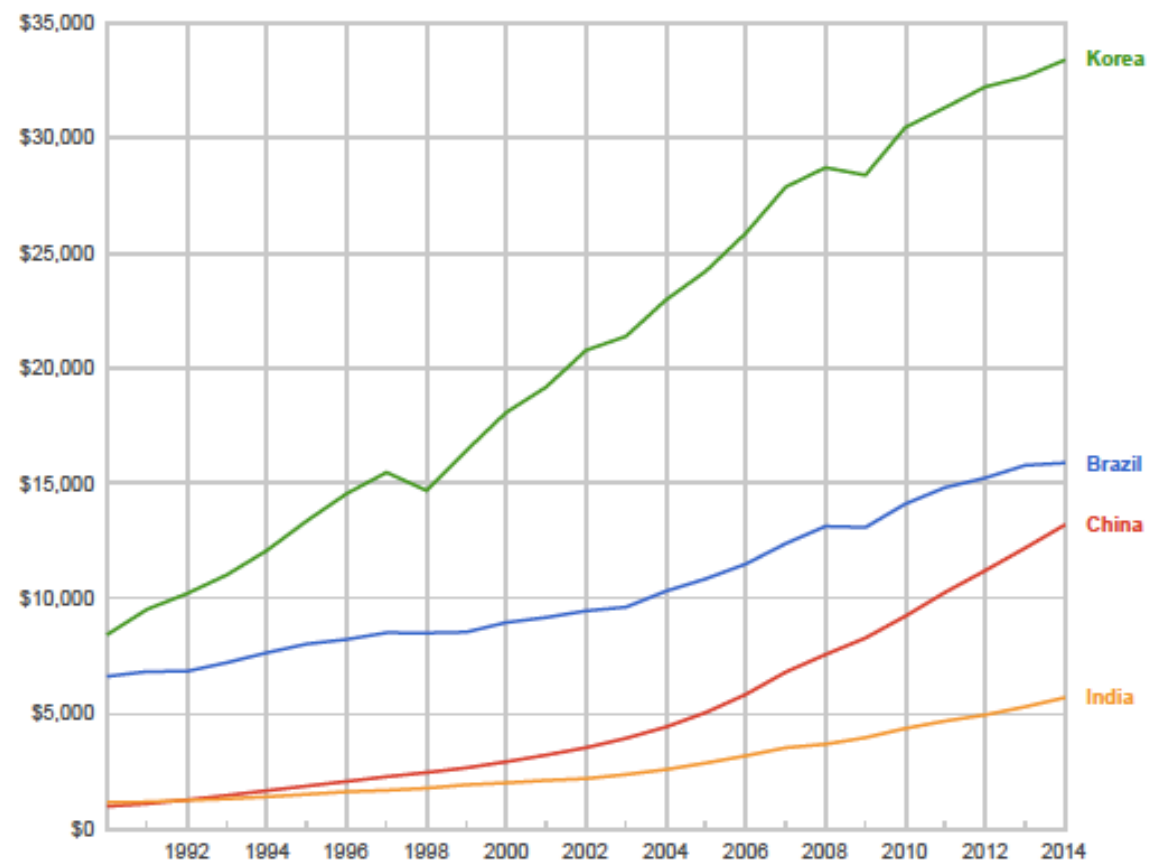
Economists' Forecasts



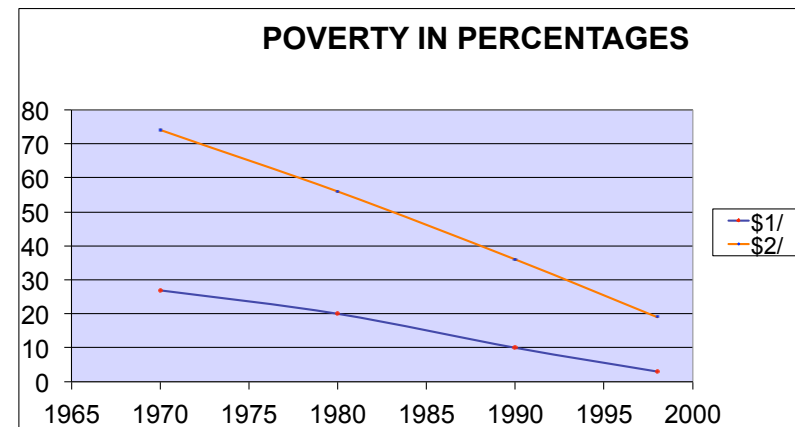
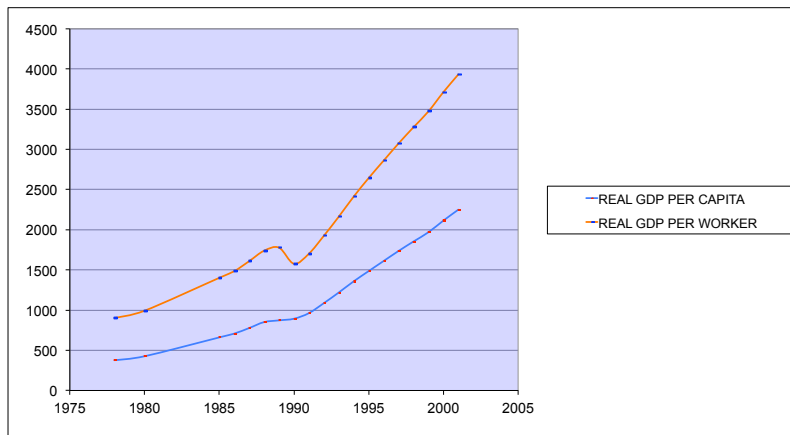
Growth: China, India, Brazil



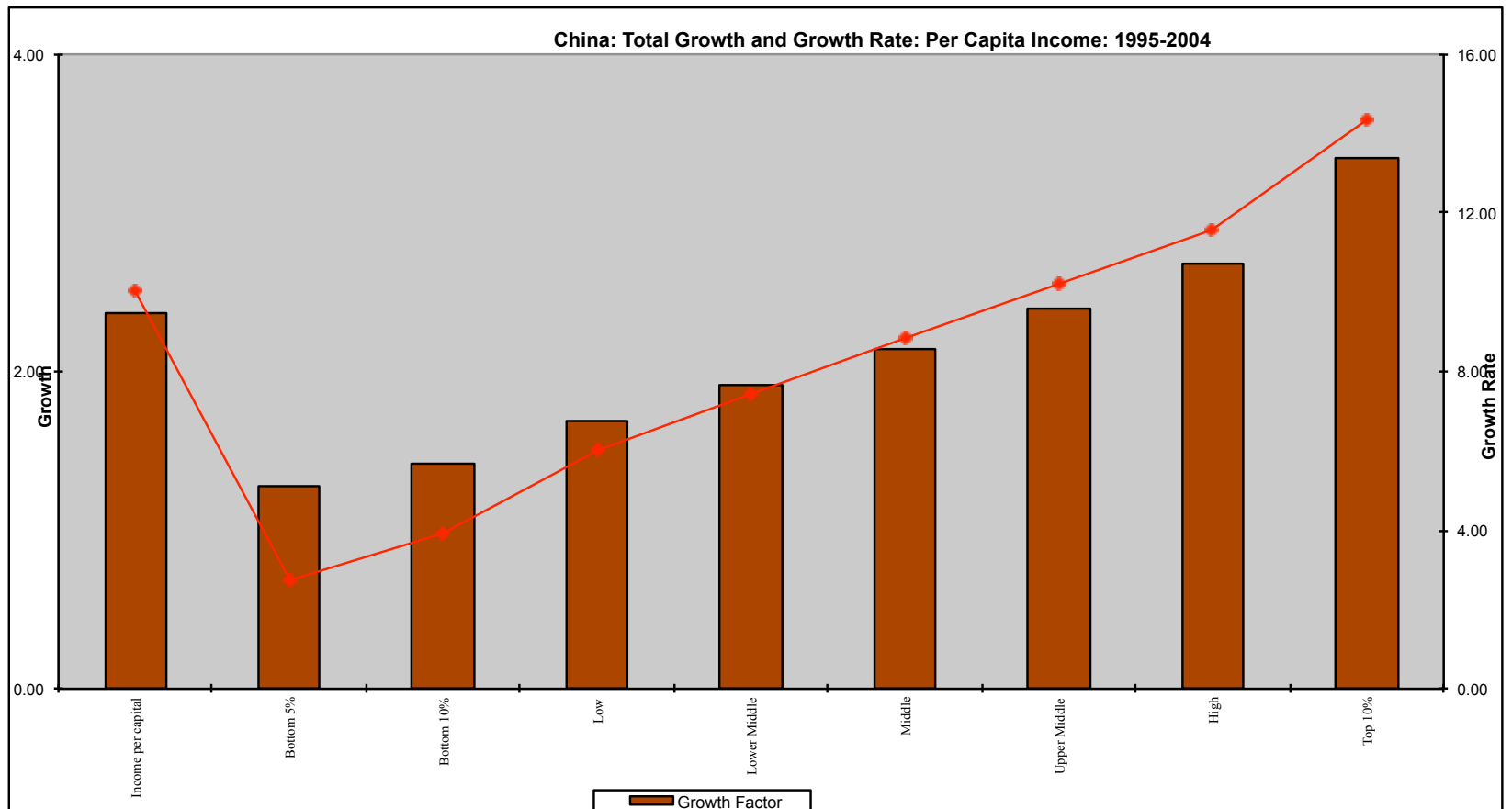
GDP per capita, PPP (current international \$) ?



China: GDP per capita and Poverty Reduction

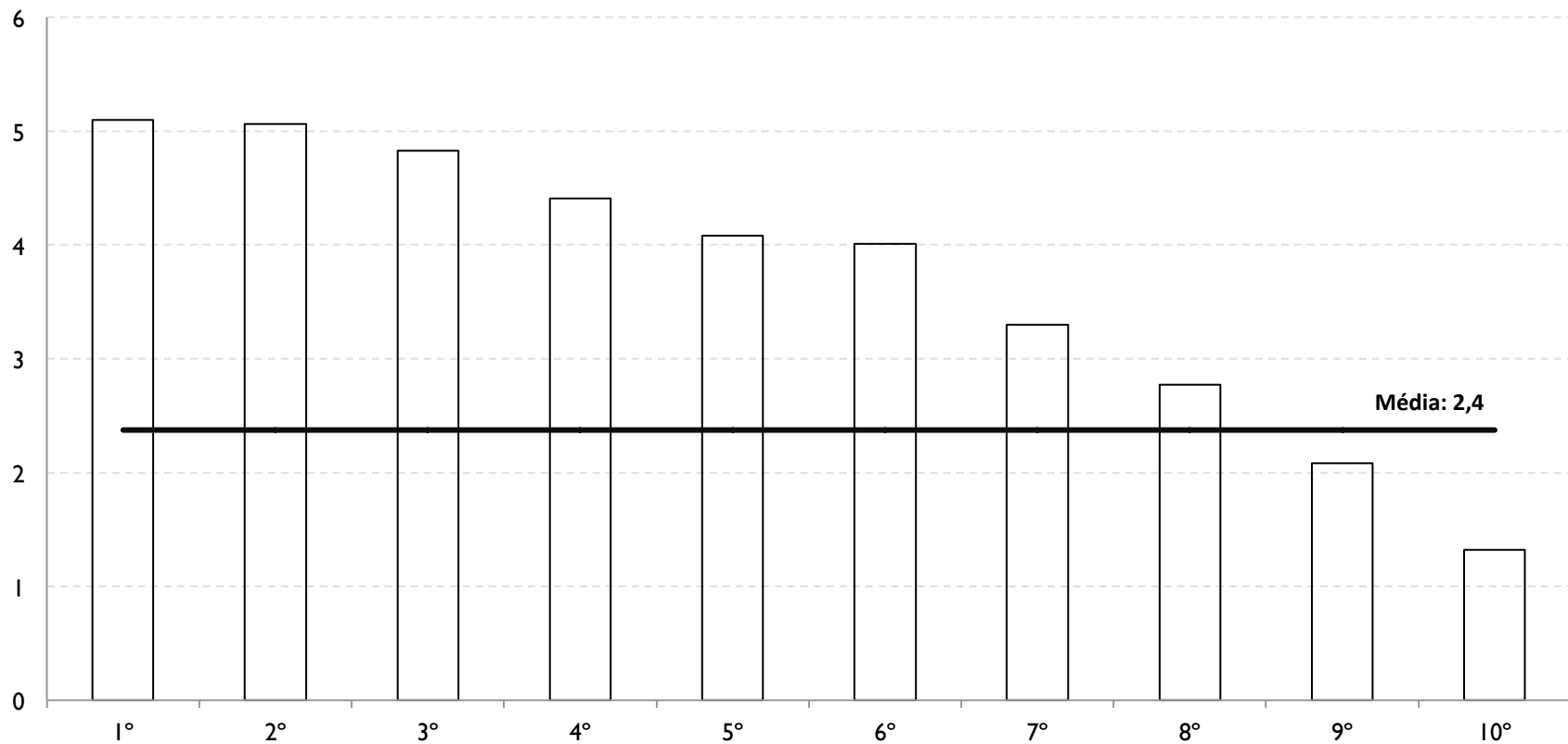


Income Inequality: China



BRAZIL: AVERAGE ANNUAL REAL GROWTH RATE OF HOUSEHOLD PER CAPITA INCOME, 1999-2009

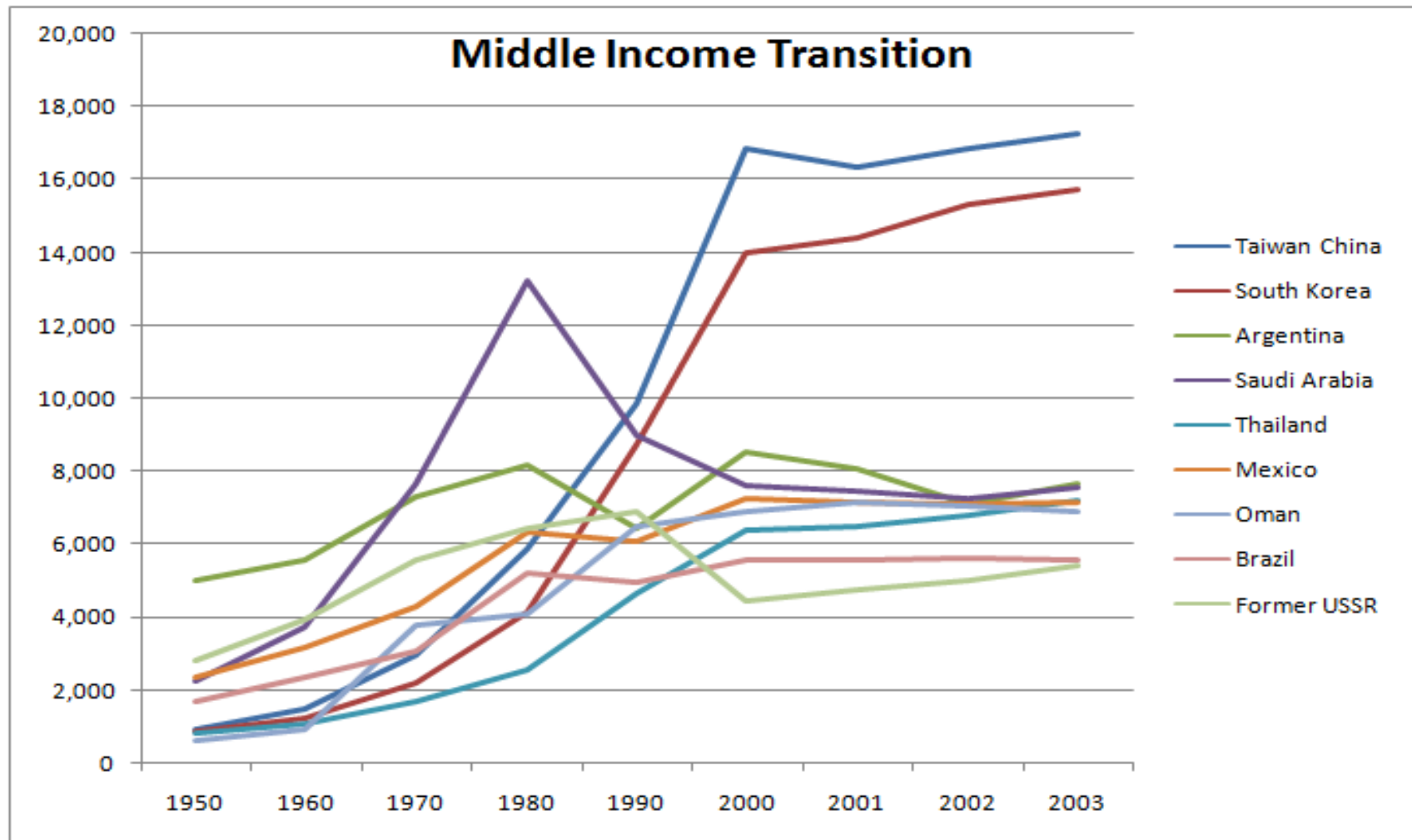
Taxa média anual de crescimento da renda real domiciliar per capita, por décimos da distribuição de renda, 1999-2009 (%)



Key Elements In Post-Crises Growth Patterns

- Demand
- Deflation
- Debt
- Distribution
- Digital technology
- Structure
- Productivity
- Monetary Policy
 - Only Game in Town
- Sovereign debt
- Savings
- Extreme Uncertainty
- Investment

Middle Income Transition is Difficult

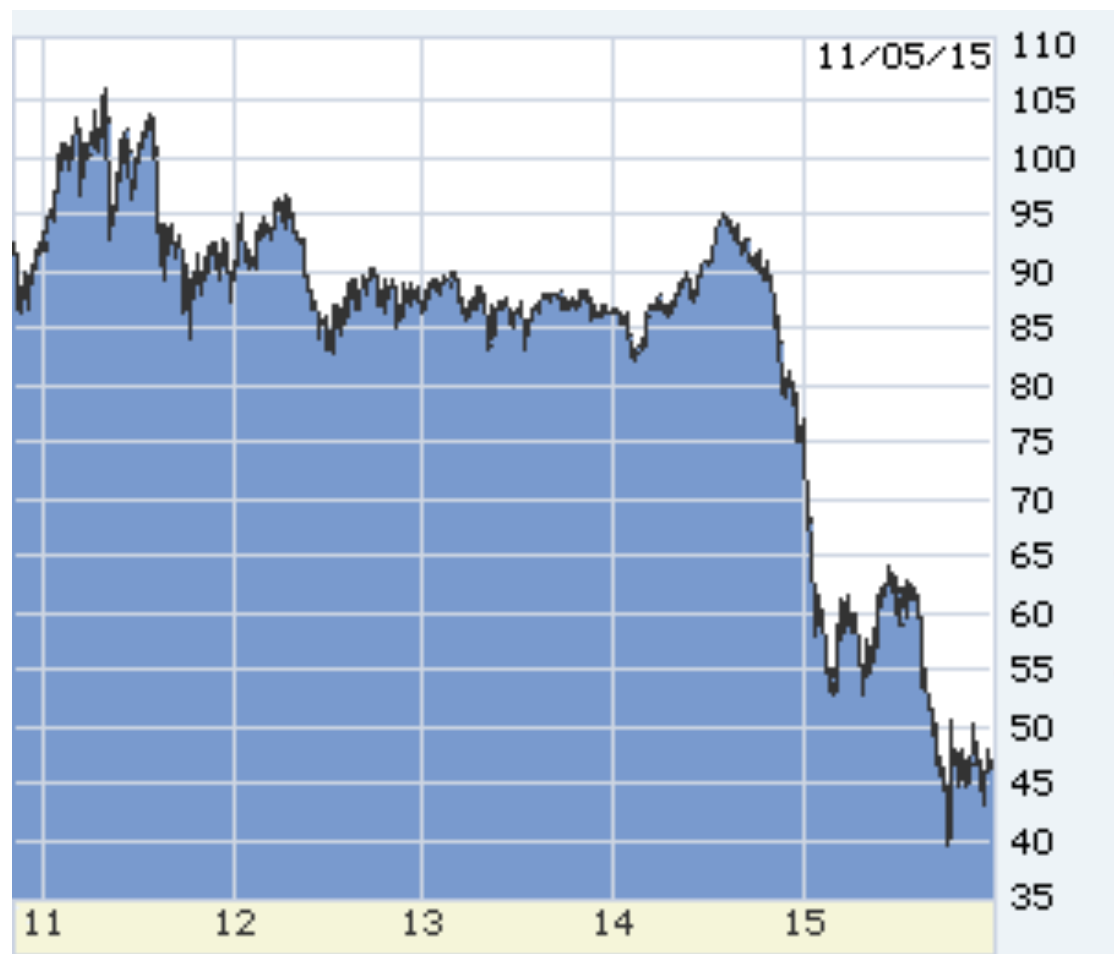


Emerging Economies

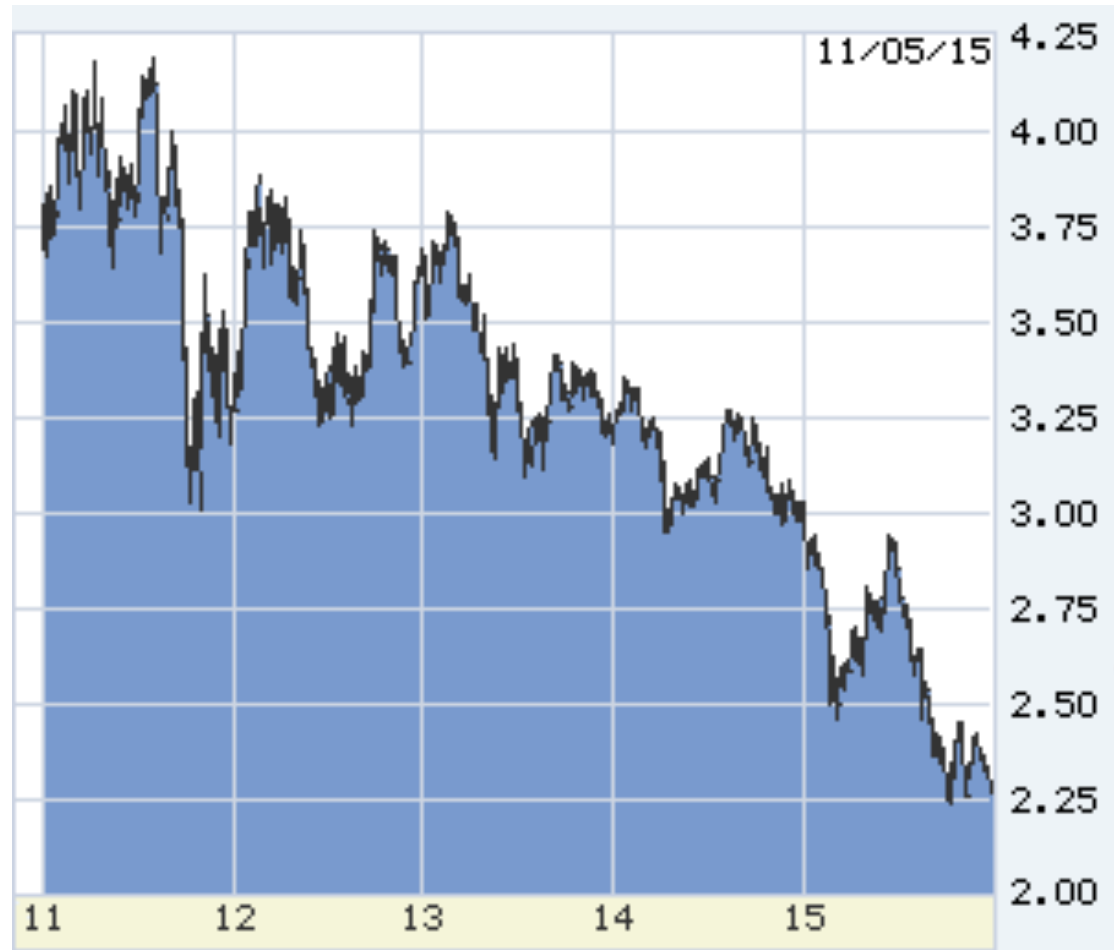
Growth Challenges More Complex

- Middle Income Transition
- Traditional Pre-Crisis Growth Agenda
- Insulating economy from external distortions and volatility
- Low growth in developed economies/major markets
- Digital Technology and comparative advantage in the future
 - Is there a service economy growth model
 - India's growth patterns are unusual and potentially instructive
- Commodity price headwinds

CRUDE OIL



COPPER



Artificial Intelligence and Machine Learning

- A major break through in the past ten years
- Leveraging computer and network speed and access to unimaginably large data bases
- Automation used to be about codifiability
- Now it is about learnability

Robotics and Automation

- Robotics
 - Sensors
 - AI and machine learning
 - Fine motor skills

Amazon Kiva



Fanuc



3D Printing



Electronics Assembly



Robot revolution helps Adidas bring shoemaking back to Germany

James Shotter in Ansbach and Lindsay Whipp in Chicago

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Comments



In a small factory in Bavaria, Adidas is about to do something that it has not tried for three decades: bring shoe production back to Germany.

Adidas share price

3 year to Jun 7

118.95 EUR

Latest Price



2013

2014

2015

2016

Markets data delayed at least 15 minutes

Thomson Reuters

RELATED TOPICS: [Adidas](#) [Share Price](#) [Financials](#) [Valuation](#) [Analyst Ratings](#)



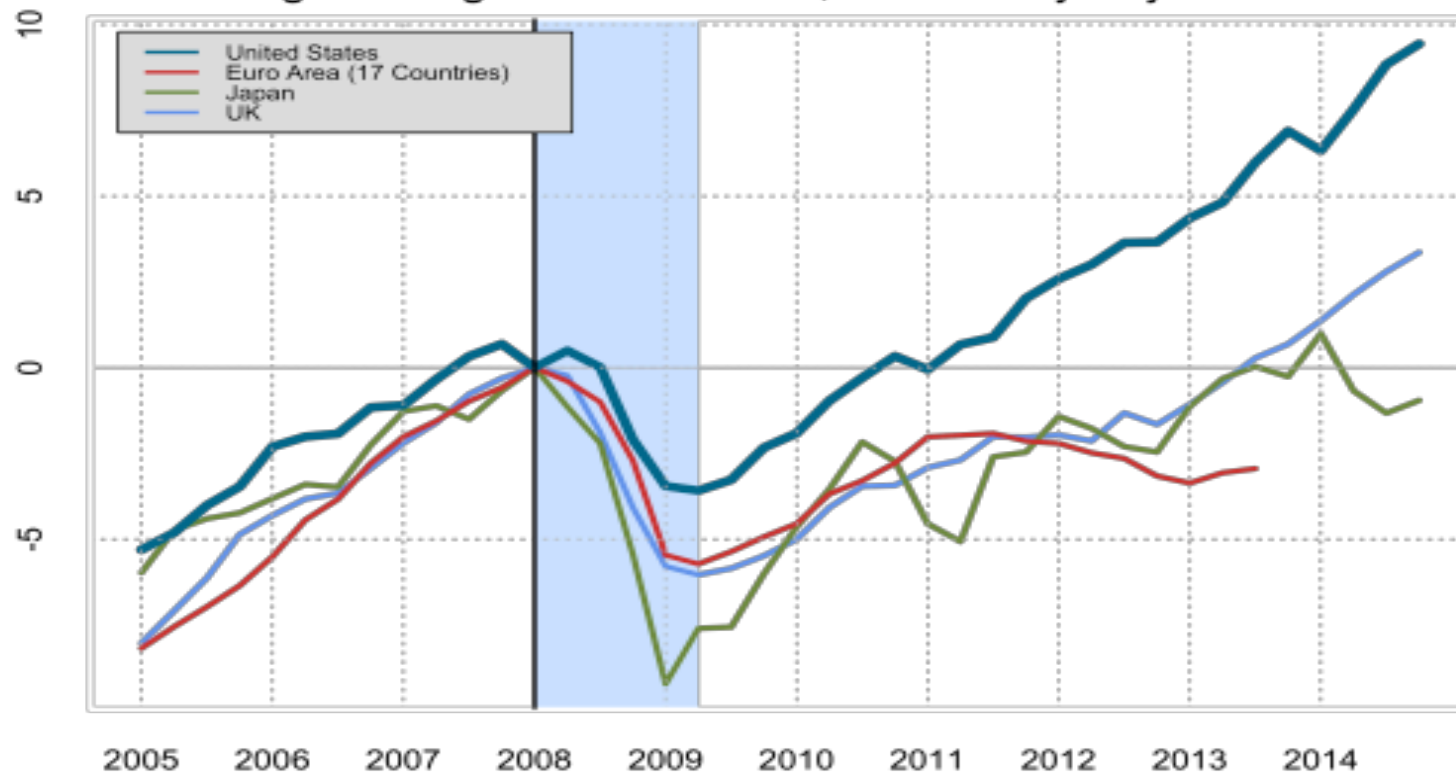
“There’s no hiding it, it’s a race to see who can revolutionise the manufacturing process first,” says David Weiner, an analyst at Deutsche Bank in New York. “They’re all going to get there, and that means combining the automation of footwear manufacturing with localising production. It’s the Holy Grail.”

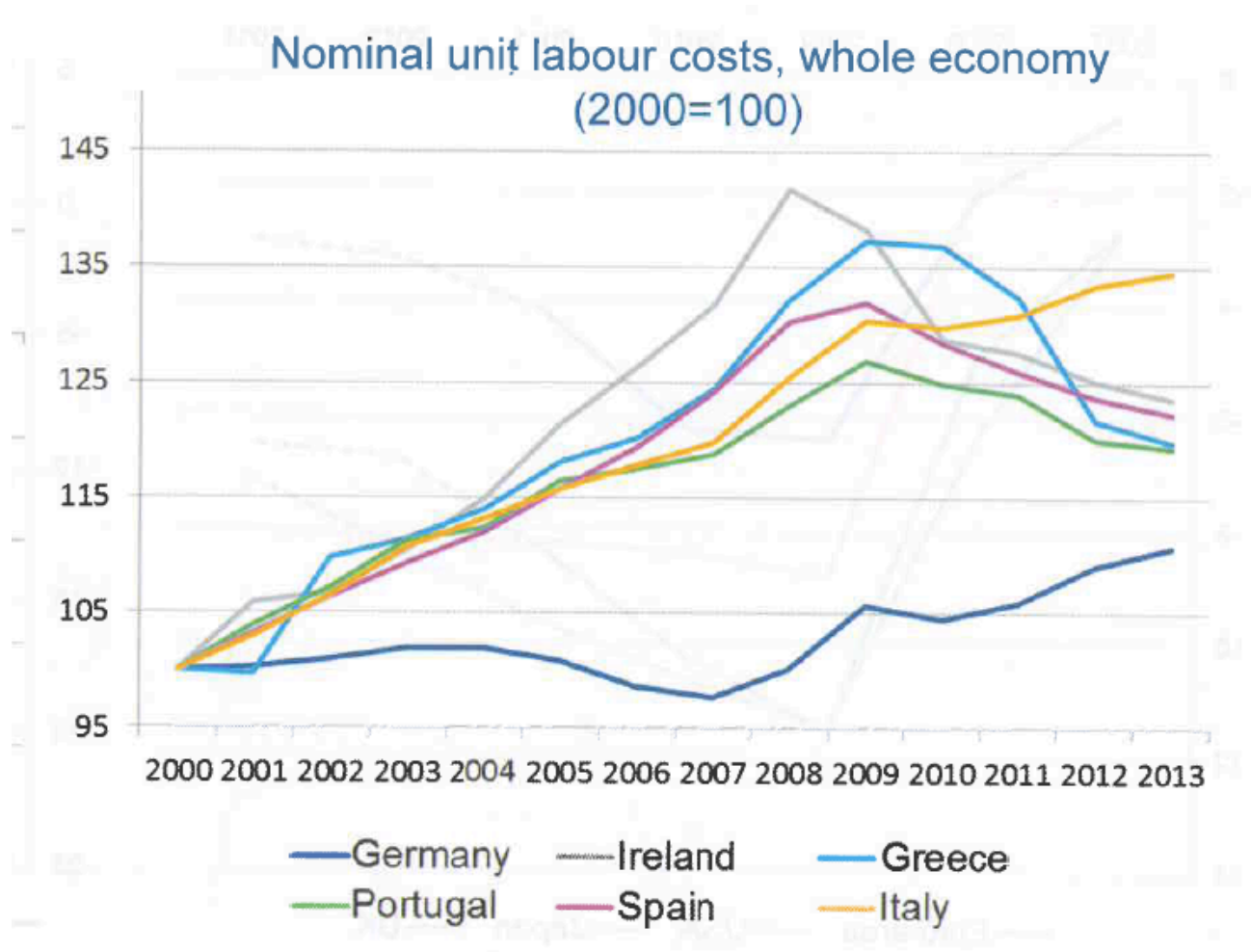
One big advantage of Adidas’s robot-led factory is efficiency. Adidas says it will need to carry out larger production runs before it can quantify the gains precisely. But the consultancy BCG estimates that by 2025 advanced robots will boost productivity by as much as 30 per cent in many industries, and lower total labour costs by 18 per cent in countries such as the US, China and Germany.

DEVELOPED COUNTRIES GROWTH SINCE 2008 CRISIS

Real GDP

Percentage Change from 2008 Q1, Seasonally Adjusted





China Grew with Little Growth in Major External Markets



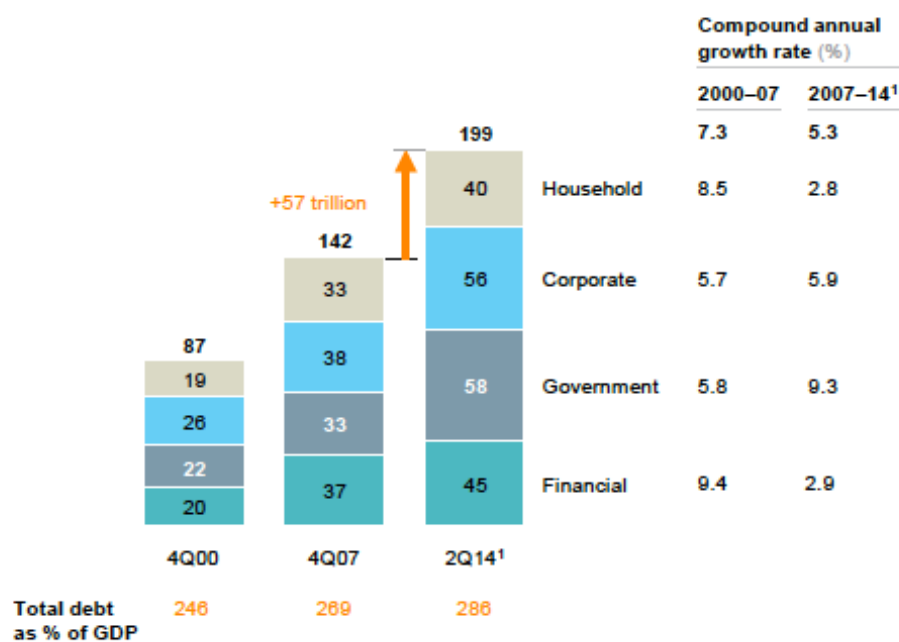
That is about a 63% increase

MGI: World is not Deleveraging

Exhibit E1

Global debt has increased by \$57 trillion since 2007, outpacing world GDP growth

Global stock of debt outstanding by type¹
\$ trillion, constant 2013 exchange rates



¹ 2Q14 data for advanced economies and China; 4Q13 data for other developing economies.
NOTE: Numbers may not sum due to rounding.

SOURCE: Haver Analytics; national sources; World economic outlook, IMF; BIS; McKinsey Global Institute analysis

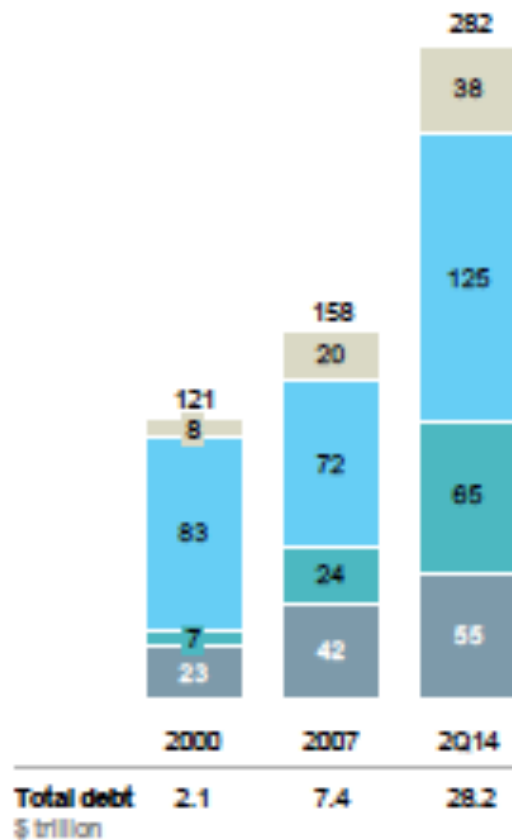
Exhibit 33

China's debt reached 282 percent of GDP in 2014, higher than debt levels in some advanced economies

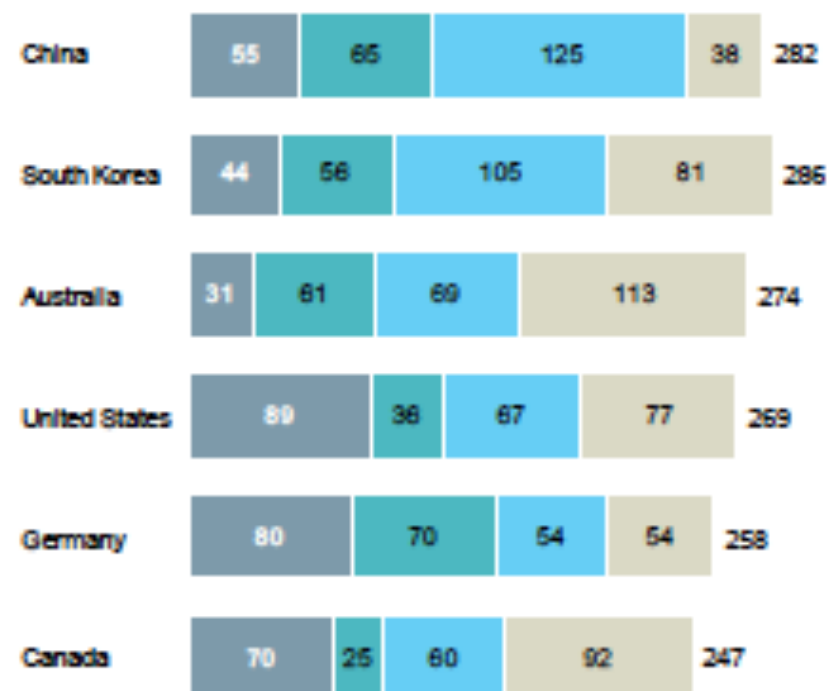
Debt-to-GDP ratio
%

Government Non-financial corporate
Financial institutions Households

China



By country, 2Q14

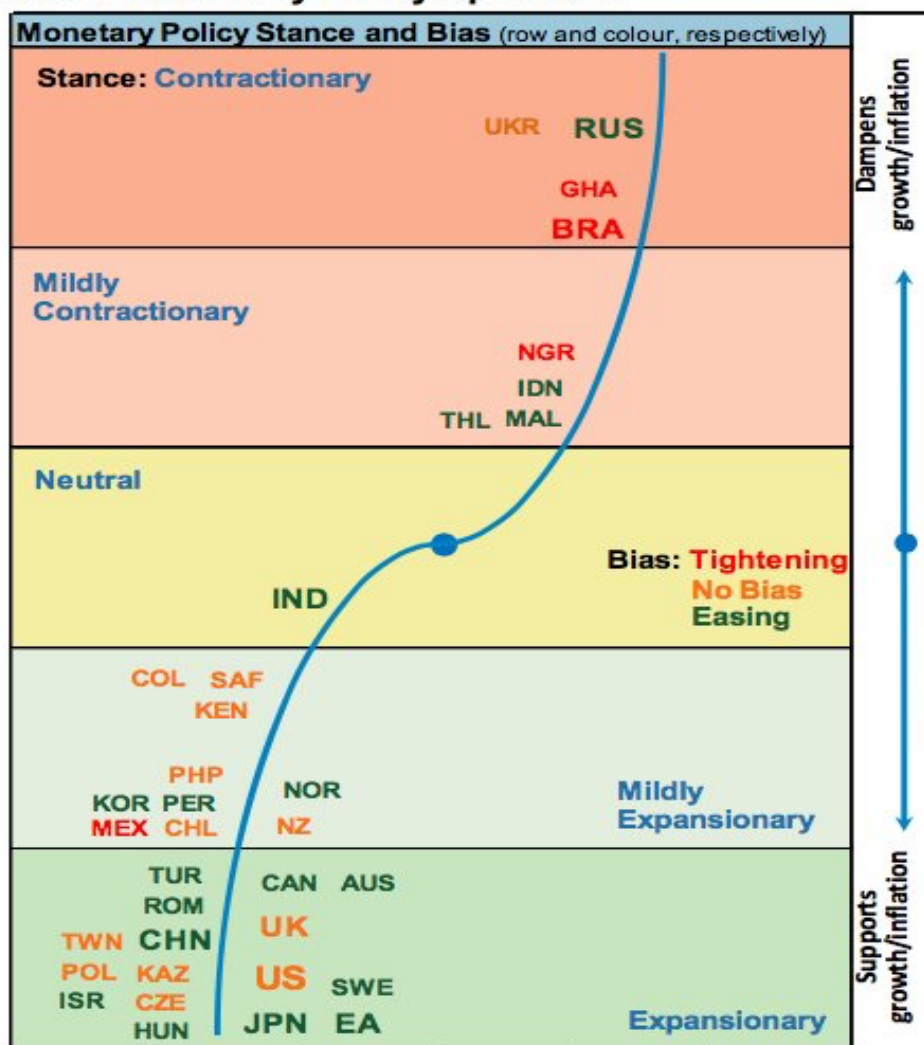


NOTE: Numbers may not sum due to rounding.

SOURCE: MGI Country Debt database; McKinsey Global Institute analysis

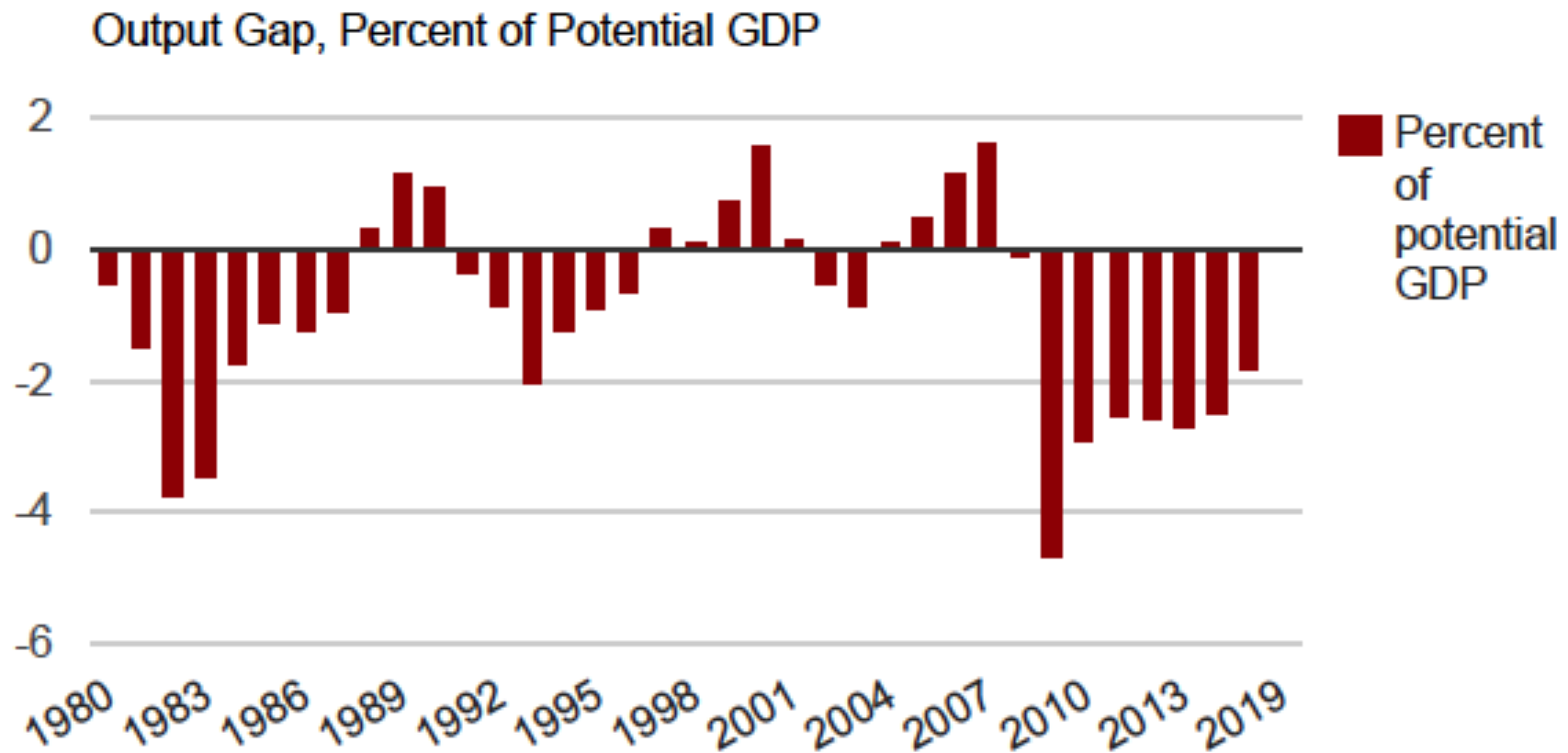
Monetary Easing is Becoming the Norm and the Dominant Policy Response - Globally

The Global Monetary Policy Spectrum



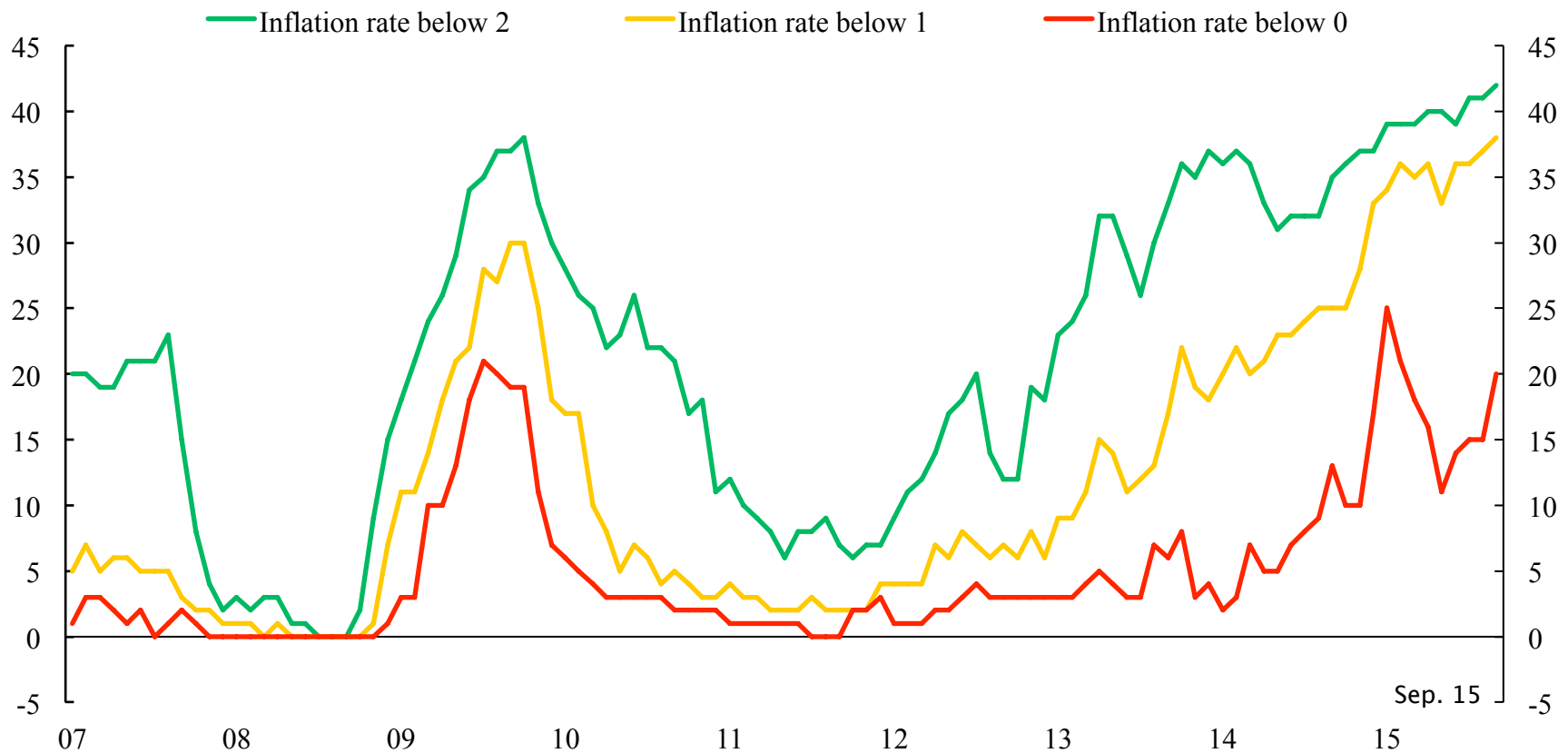
Source: Morgan Stanley Research

Advanced Economies Output Gap



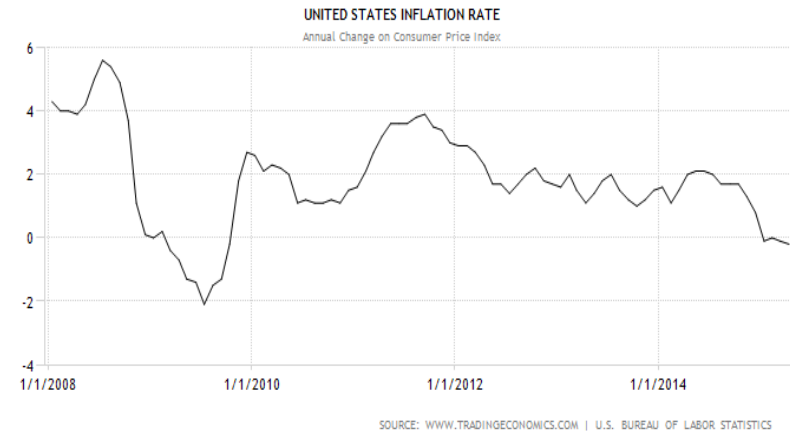
Global low inflation

Headline CPI: Number of countries with low inflation rates (out of 55 countries)



Sources: IMF, *Global Data Source*; and IMF staff calculations.

Deflationary pressures widespread



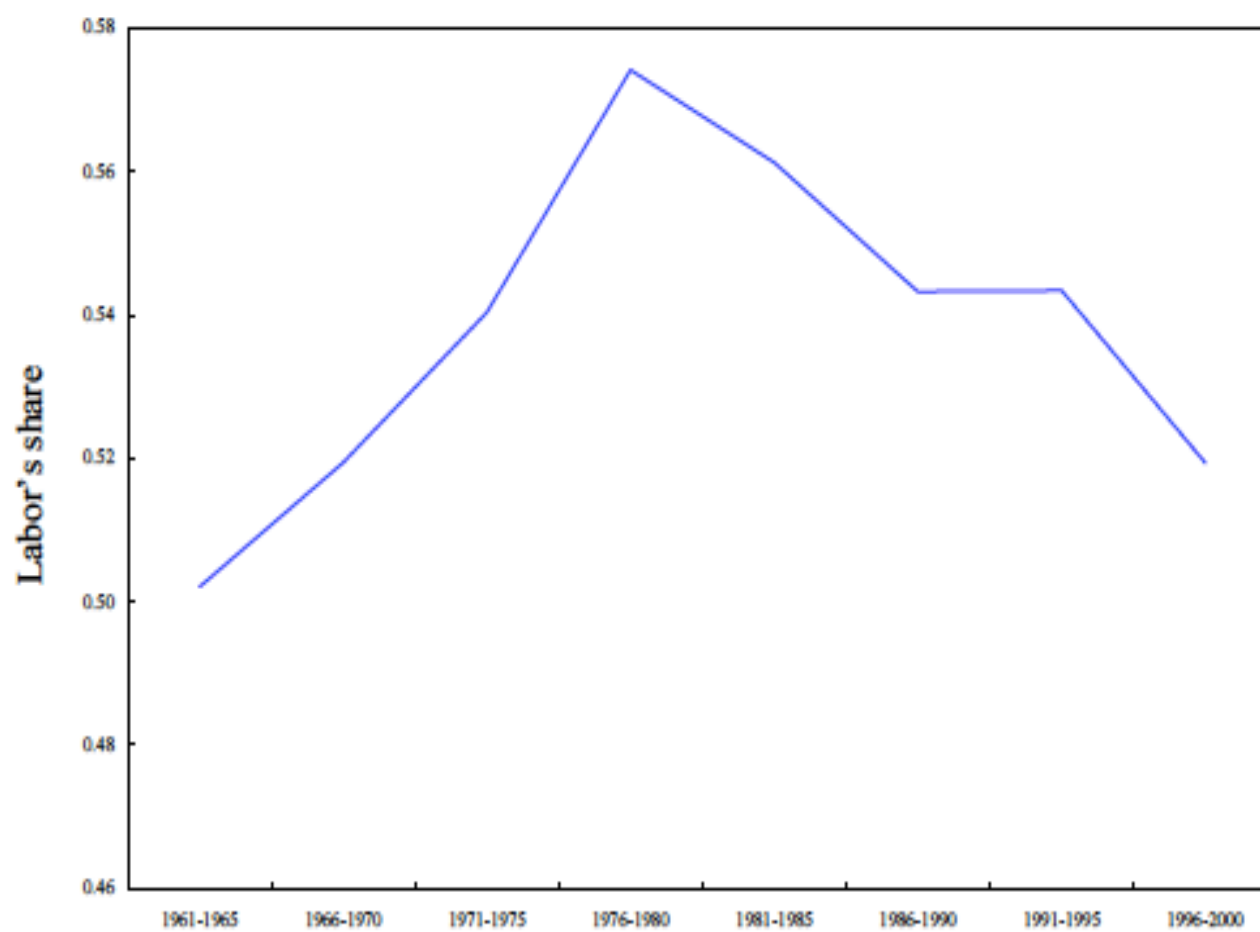
Global and Local/National Inequality

- While global inequality has been falling, country level inequality has been rising
- Starting in the mid 1970's
- Prior to that distributional aspects of globalization were relatively benign
- In tandem with (more or less)
 - Scale of developing country entry into global economy
 - Digital Technology
 - Abandonment of micro management of economies in the Reagan Thatcher era
 - This last may have shifted power away from labor in determining labor capital shares

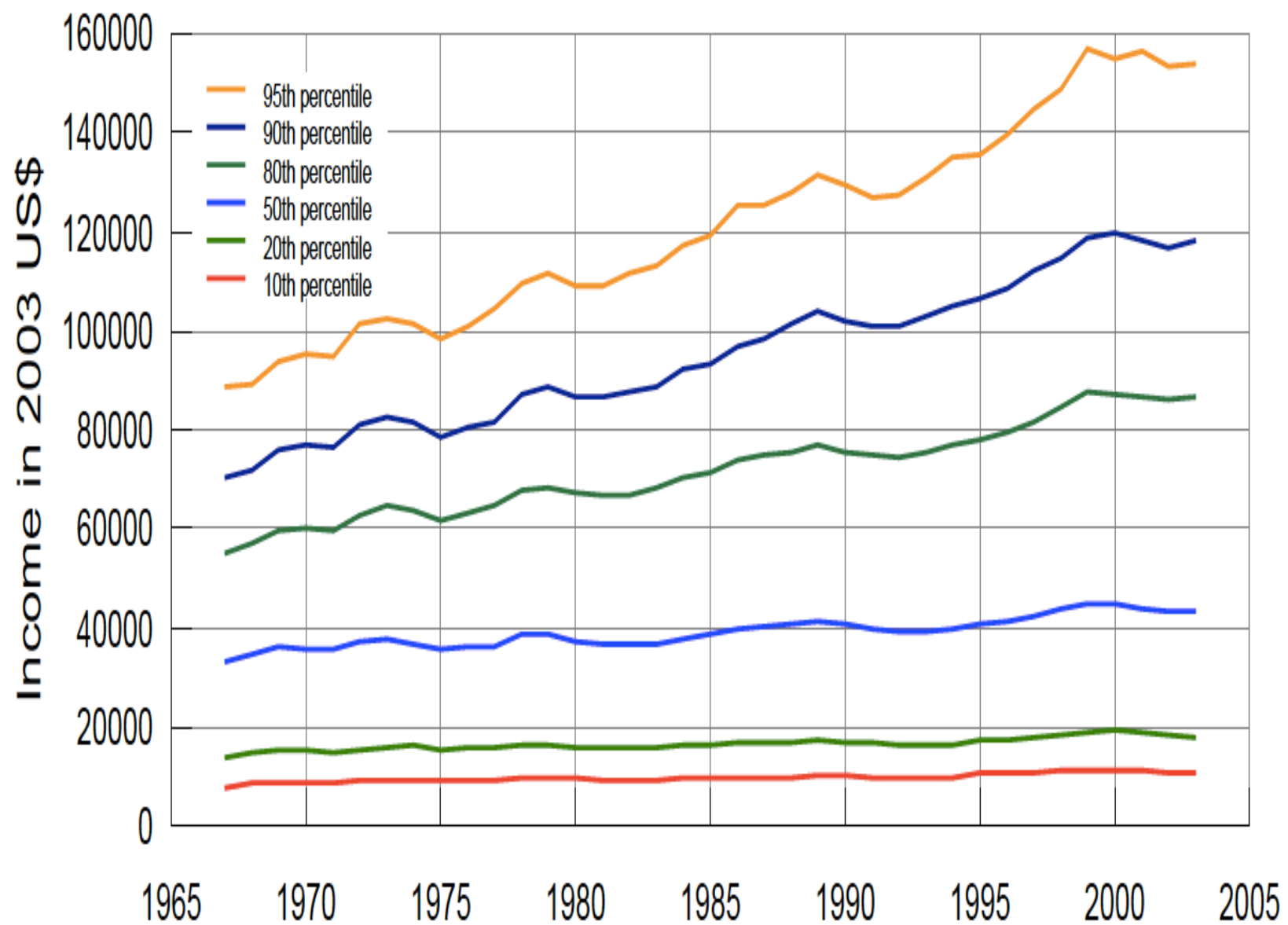
Digital Technology

- Labor saving dimension
 - Automation
 - AI
- Labor inclusion dimension –
 - think of global supply chains
 - Trade in services

Figure 1. Cross-Country Average Labor's Share in National Income
(Ratio of labor income to national income)



Source: OECD, Structural Analysis Database.



Average and Median Income

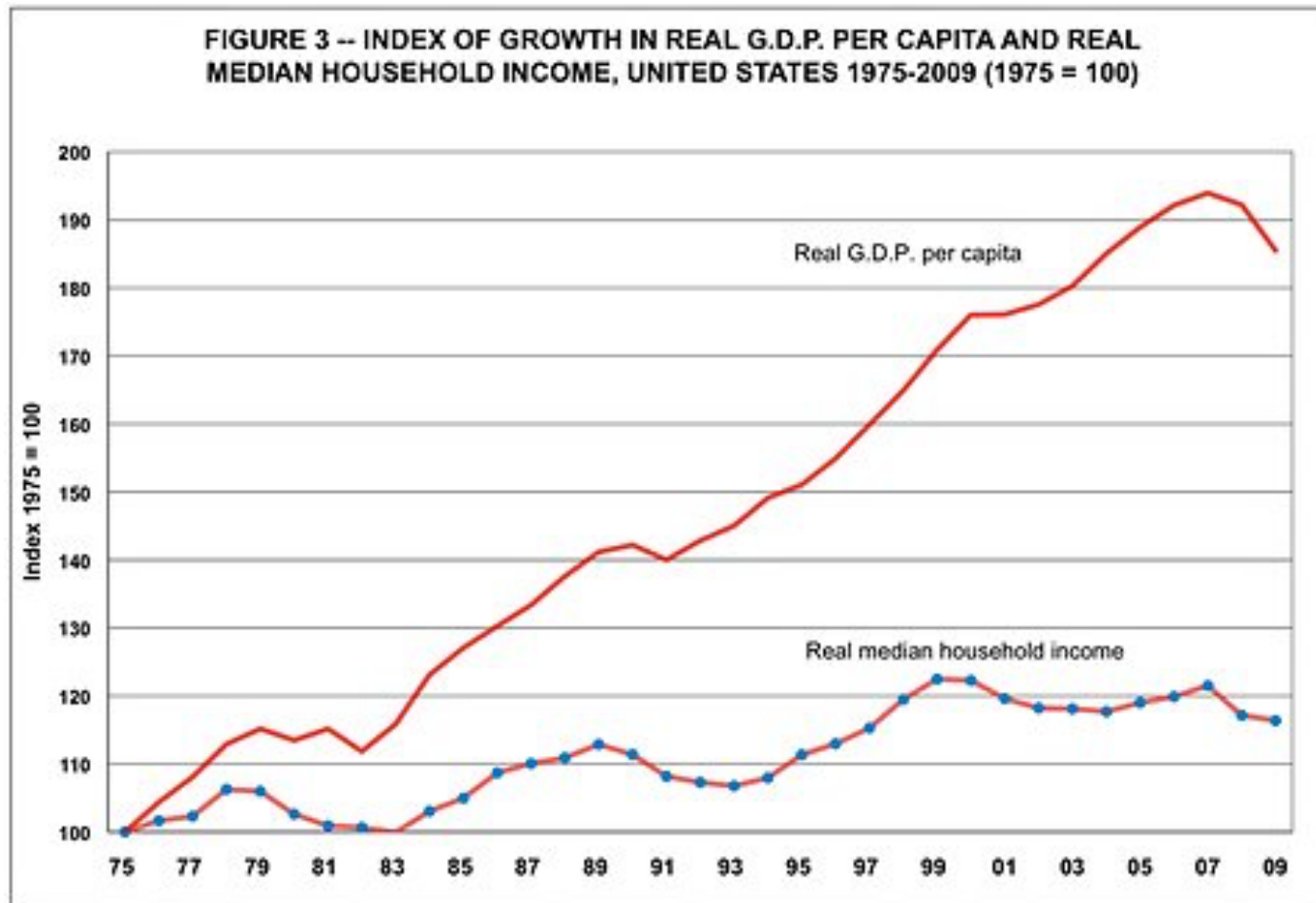
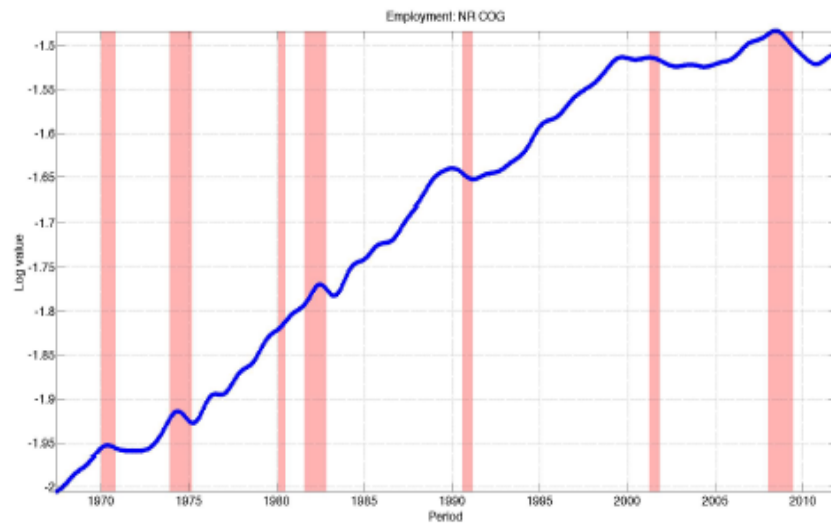
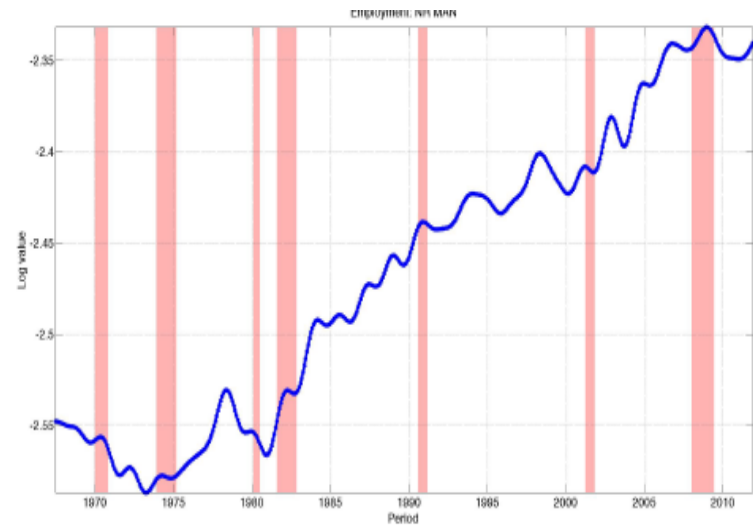


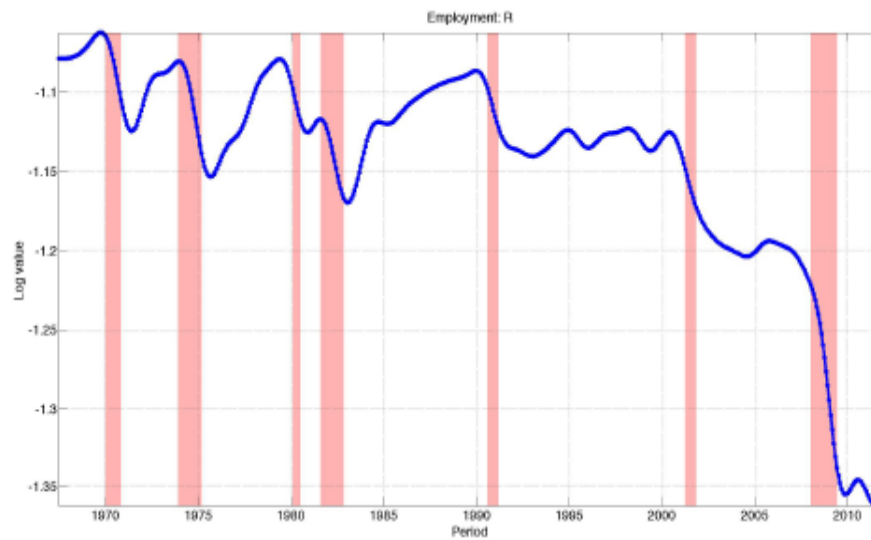
Figure 4: Employment in Occupational Groups: 1967 – 2011



Non-Routine Cognitive



Non-Routine Manual



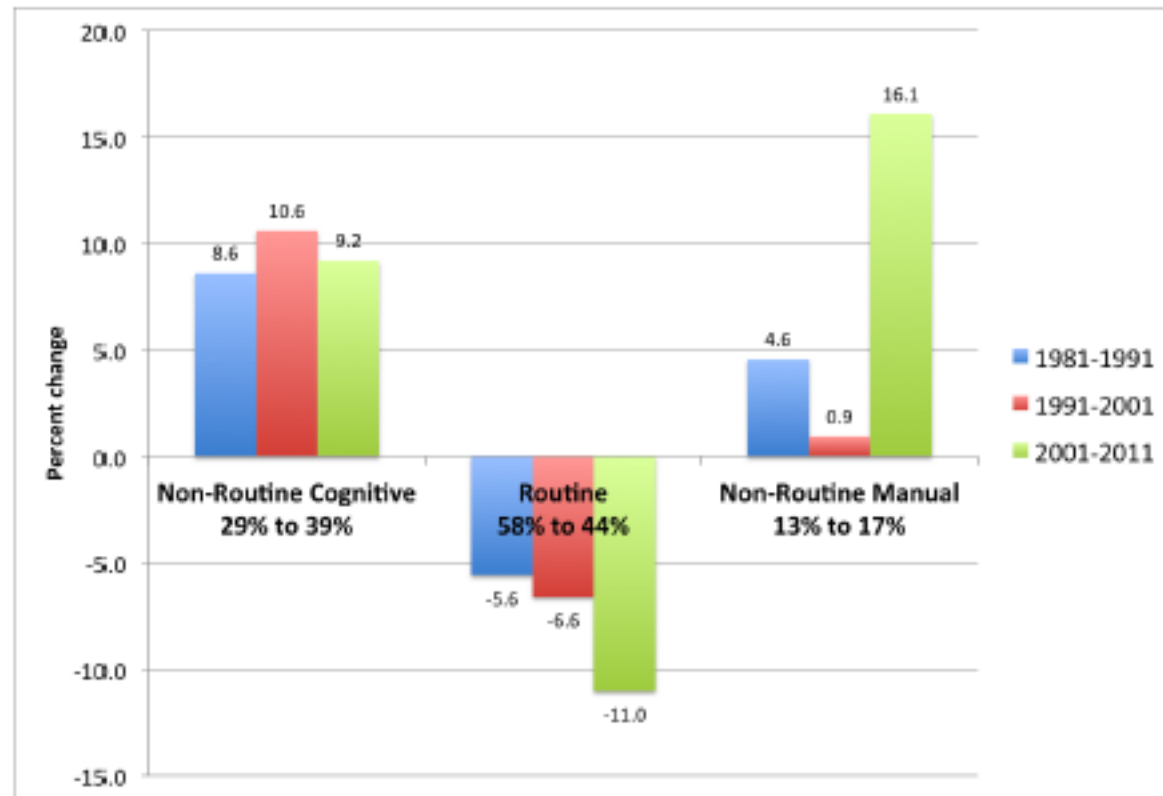
Routine – Manual and Cognitive

THE TREND IS THE CYCLE:
JOB POLARIZATION AND JOBLESS RECOVERIES

Nir Jaimovich
Henry E. Siu

USA Data By Type of Job

Figure 3: Percent Change in Employment Shares by Occupation Group

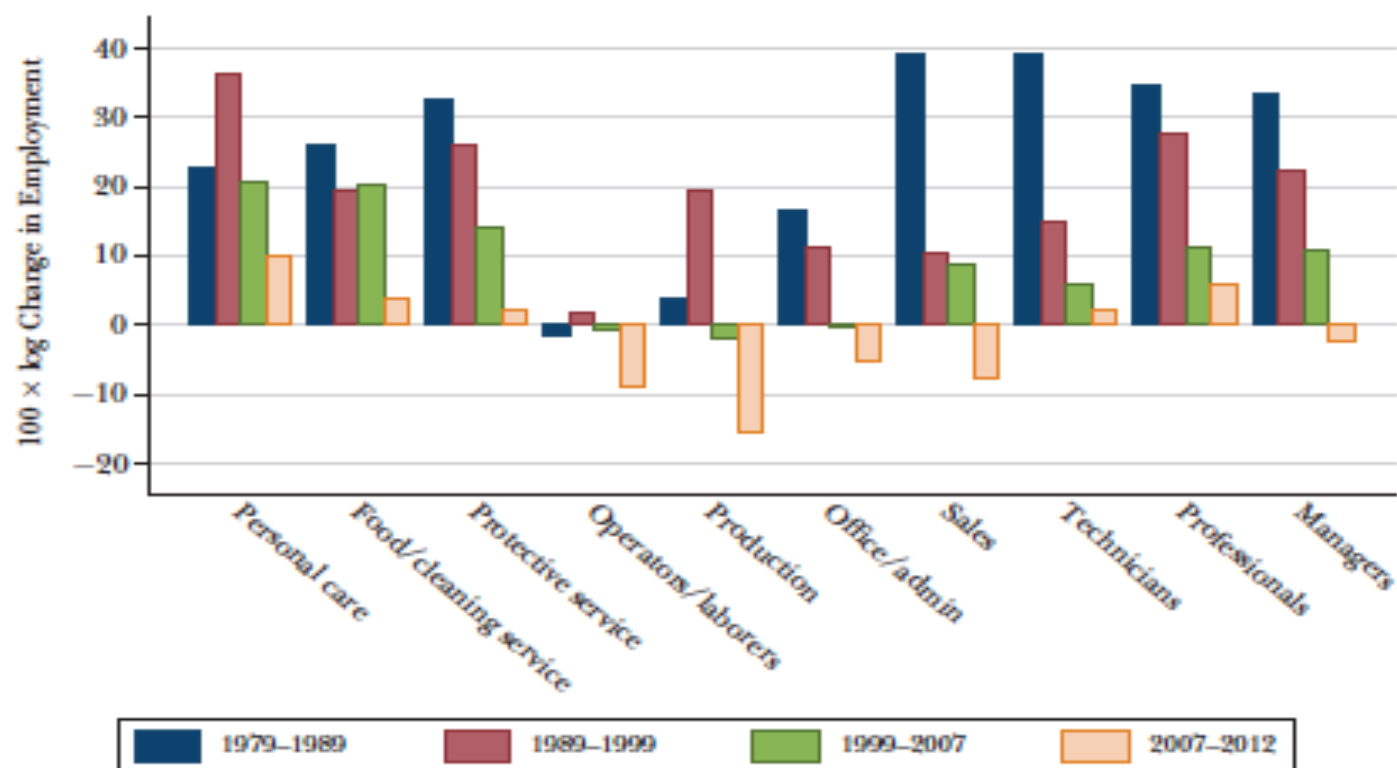


Employment Changes by Type of Work USA

Figure 2

Change in Employment by Major Occupational Category, 1979–2012

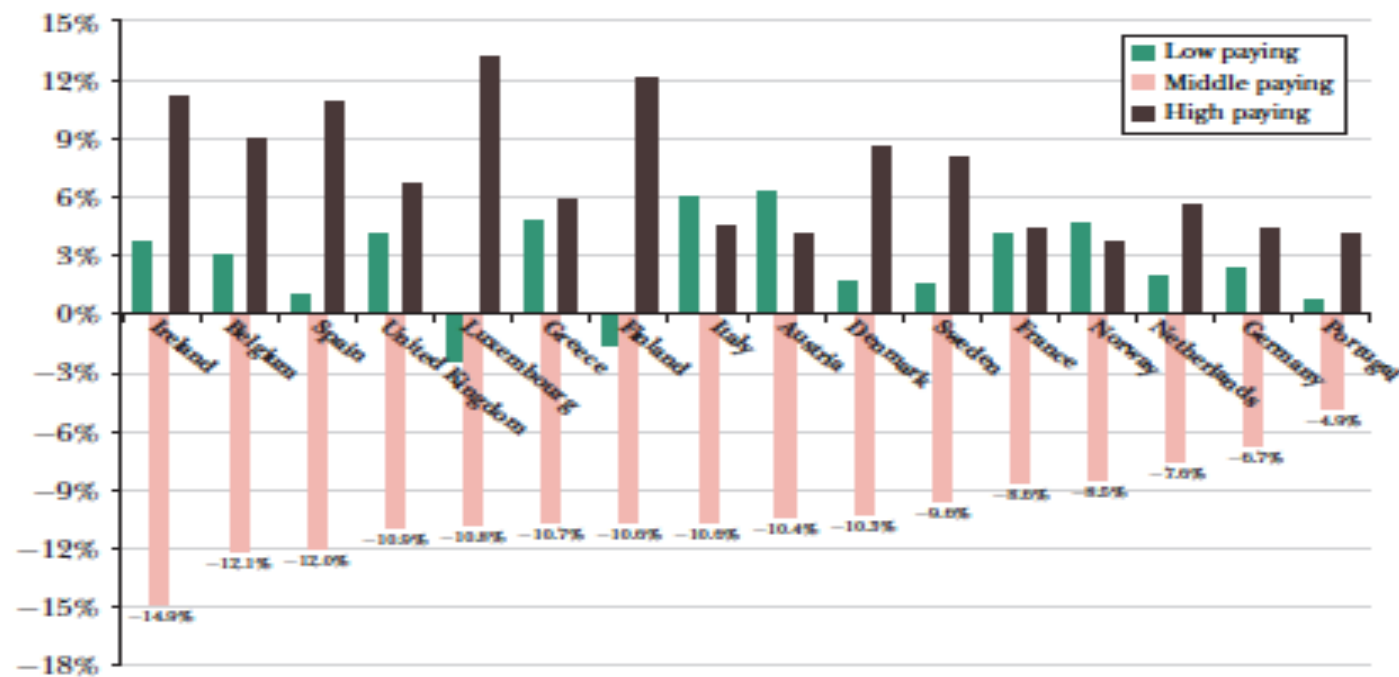
(the y-axis plots 100 times log changes in employment, which is nearly equivalent to percentage points for small changes)



Job and Income Polarization Not Unique to the USA

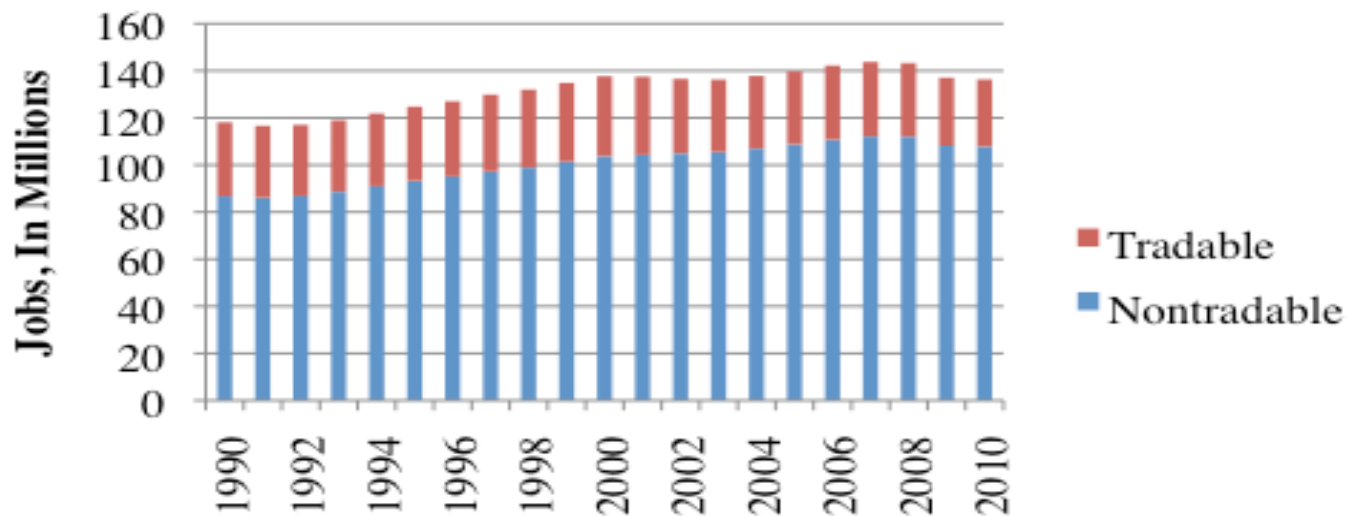
Figure 3

Change in Occupational Employment Shares in Low, Middle, and High-Wage Occupations in 16 EU Countries, 1993–2010

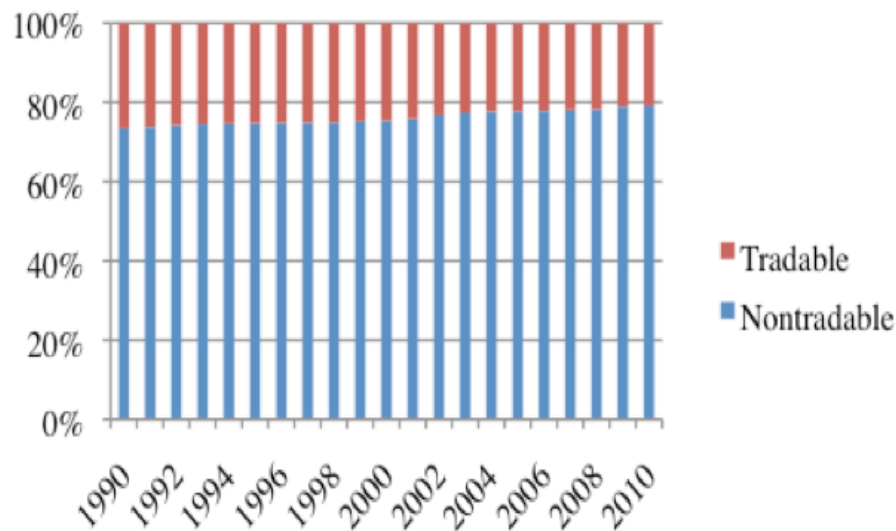


USA

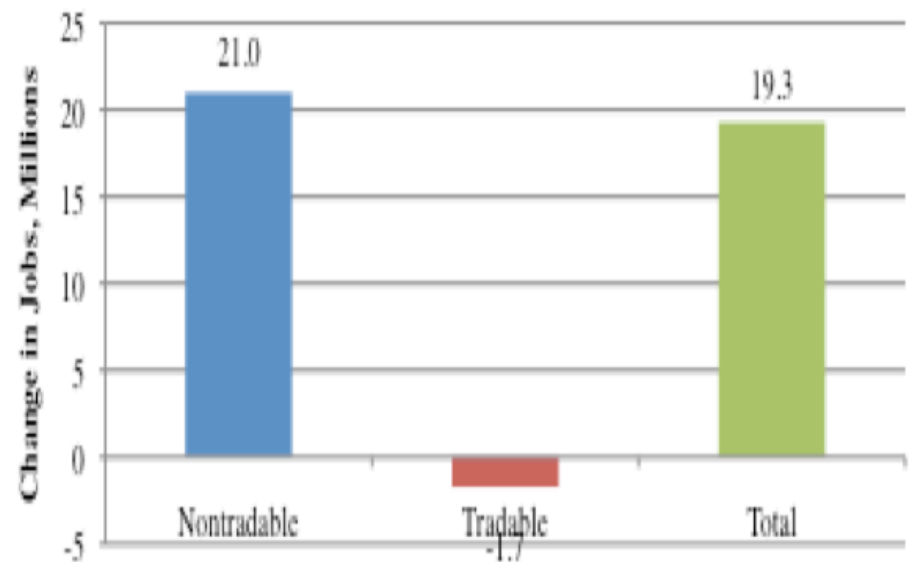
U.S. Tradable/Nontradable Jobs, 1990-2010



U.S. Employment Split (%)

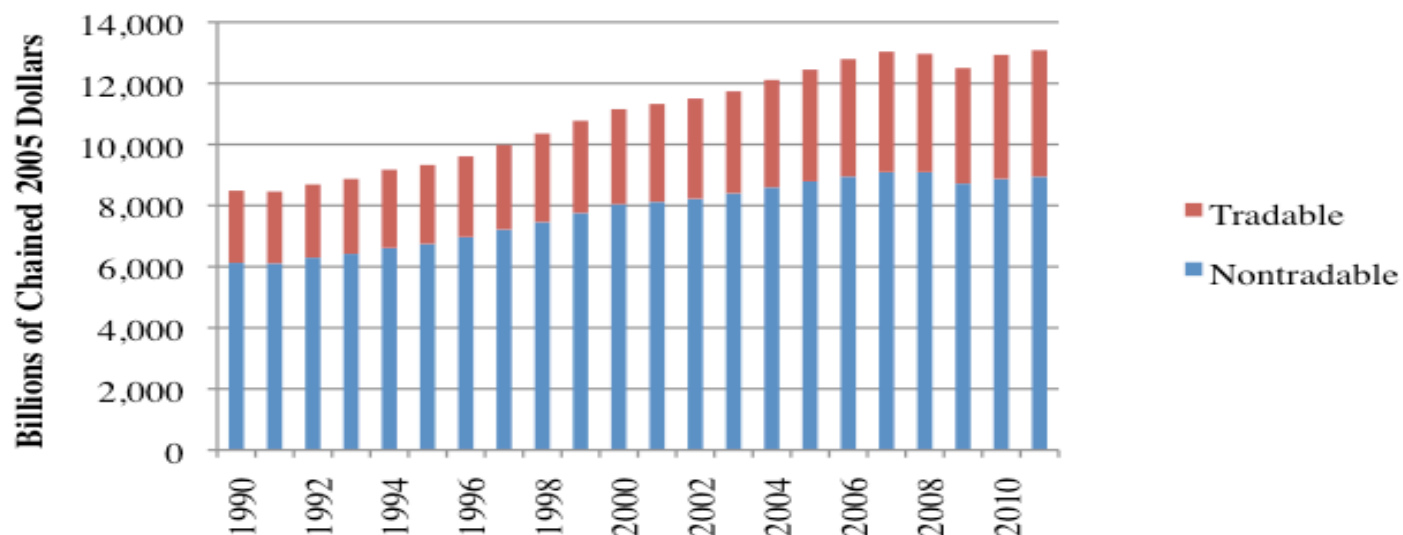


U.S. Total Change in Jobs, 1992 to 2010

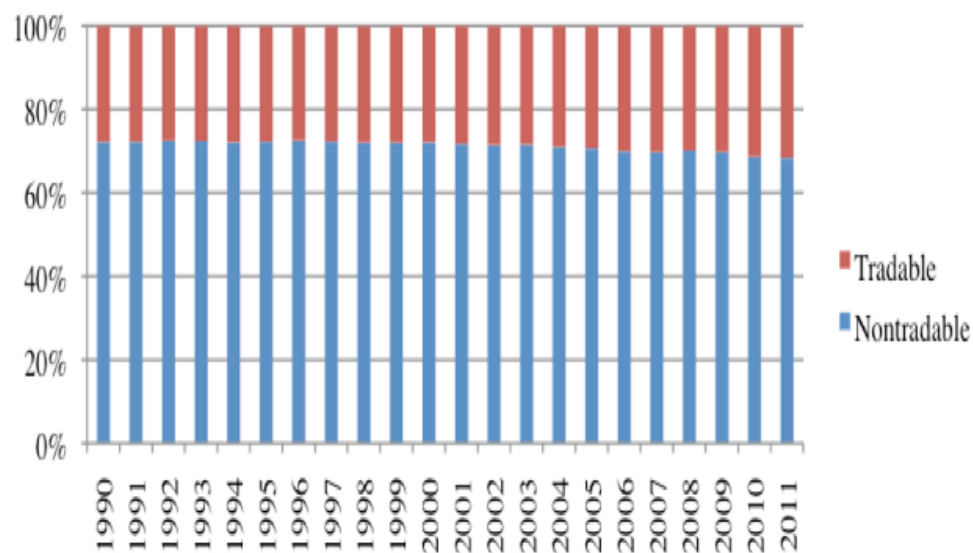


Value Added

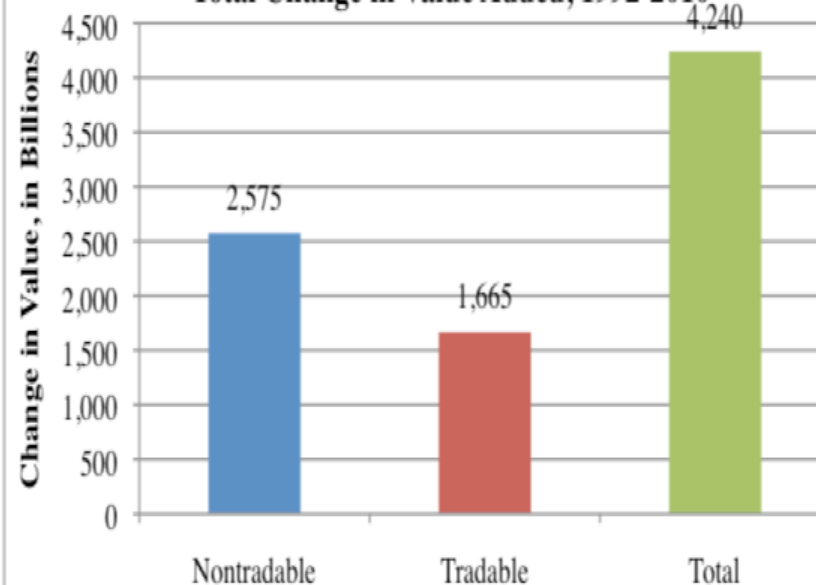
US Tradable/Nontradable Value Added, 1990-2011



U.S. Value Added Split (%)

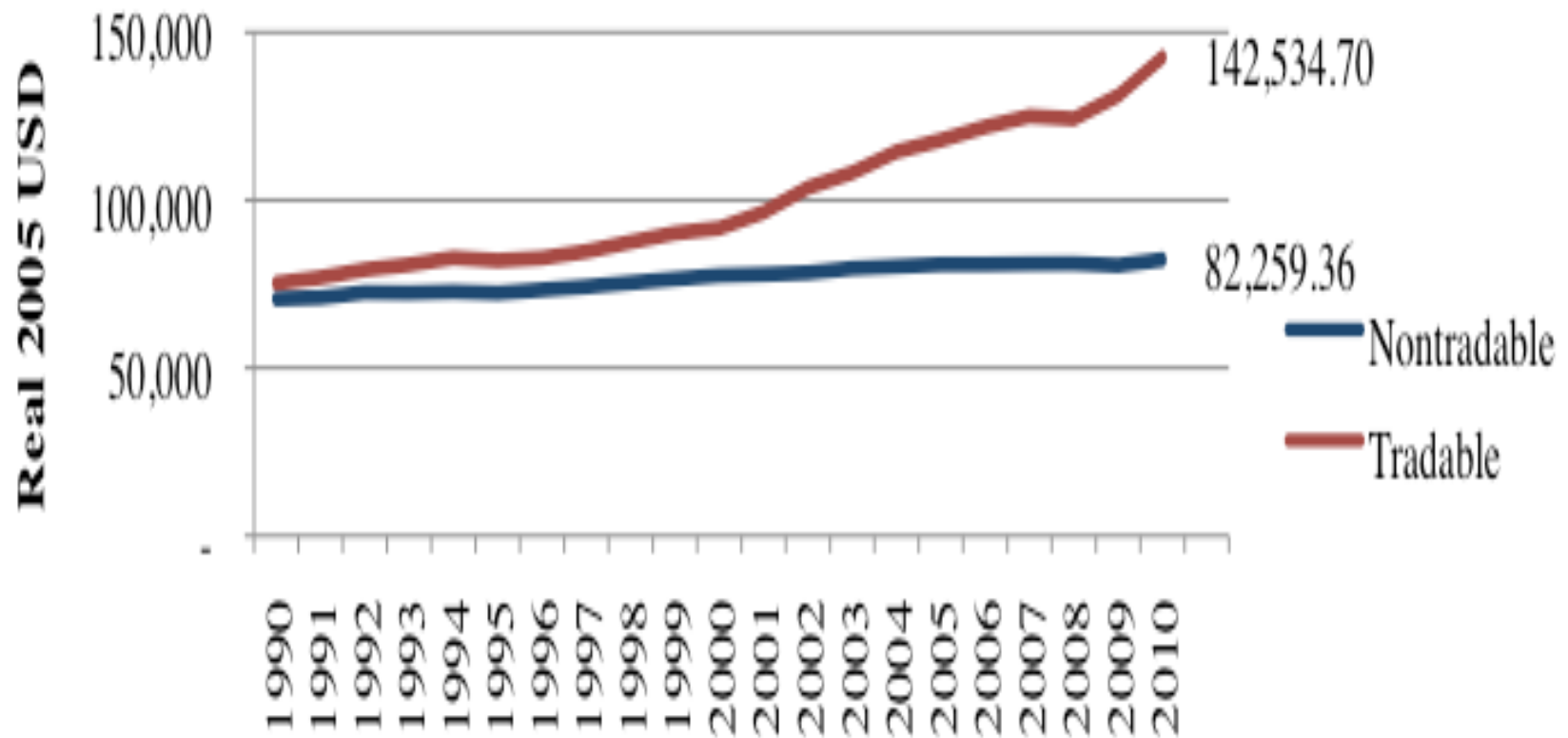


Total Change in Value Added, 1992-2010

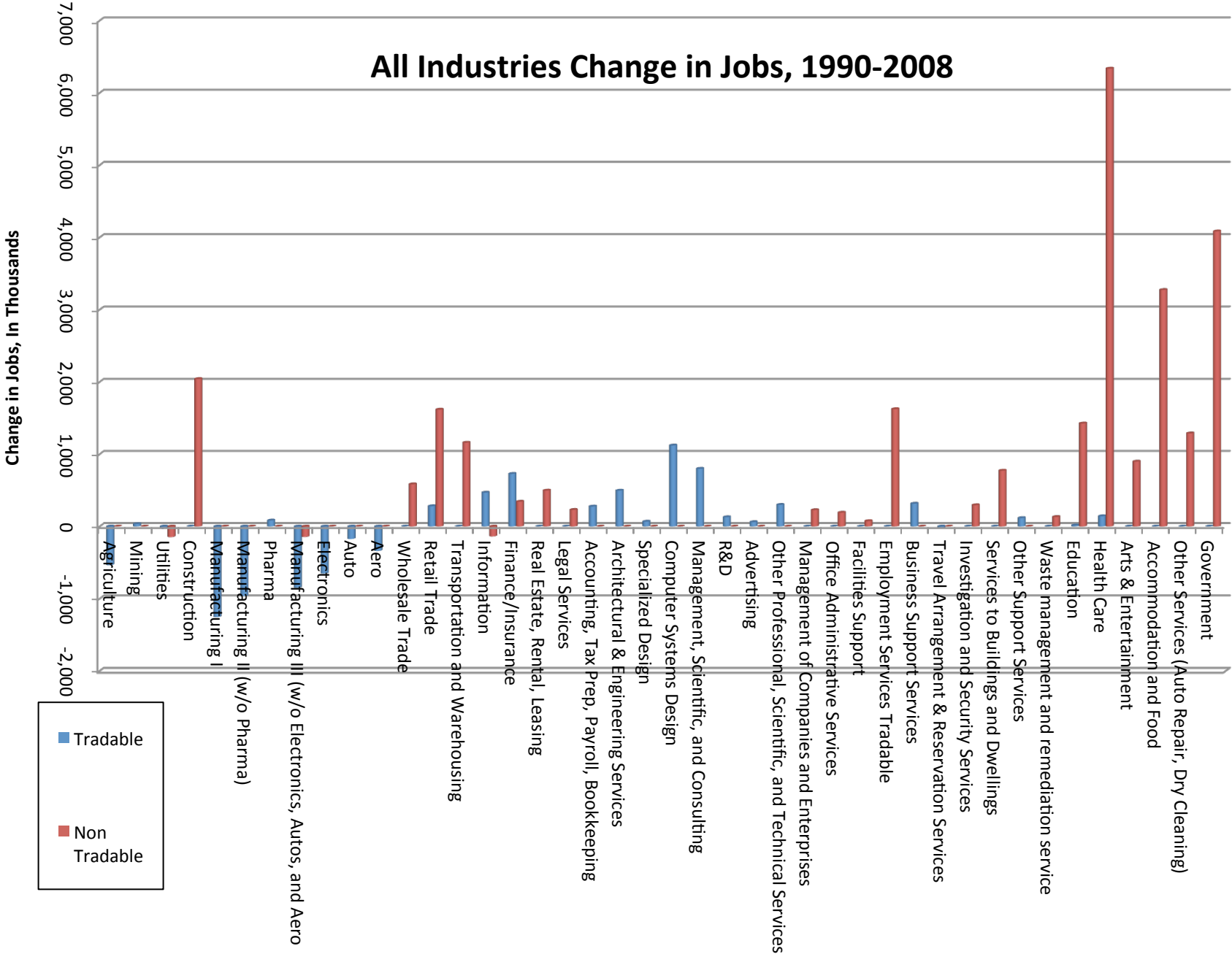


Value Added per Worker

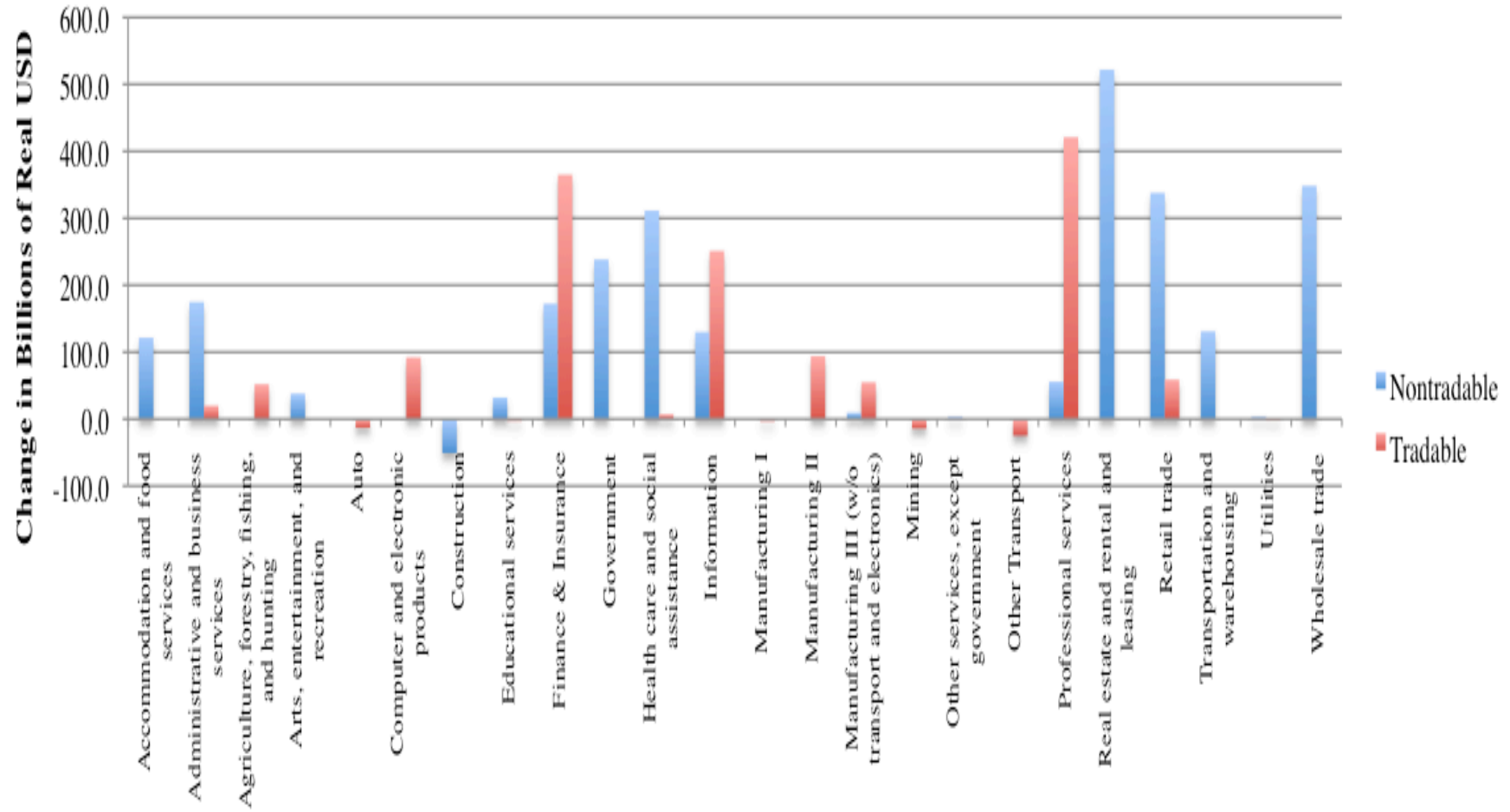
US Weighted Value Added per Job, 1990-2010



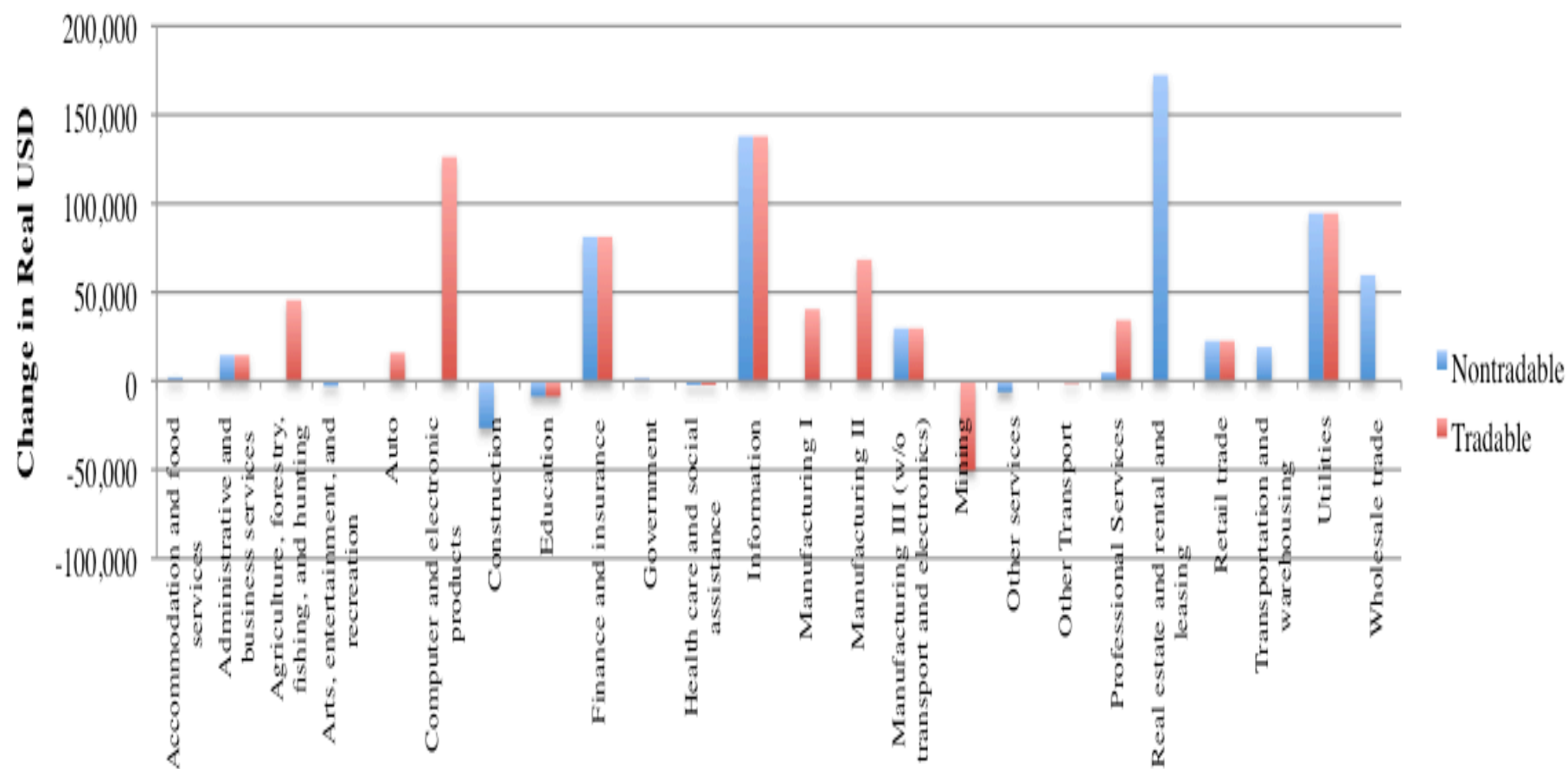
All Industries Change in Jobs, 1990-2008



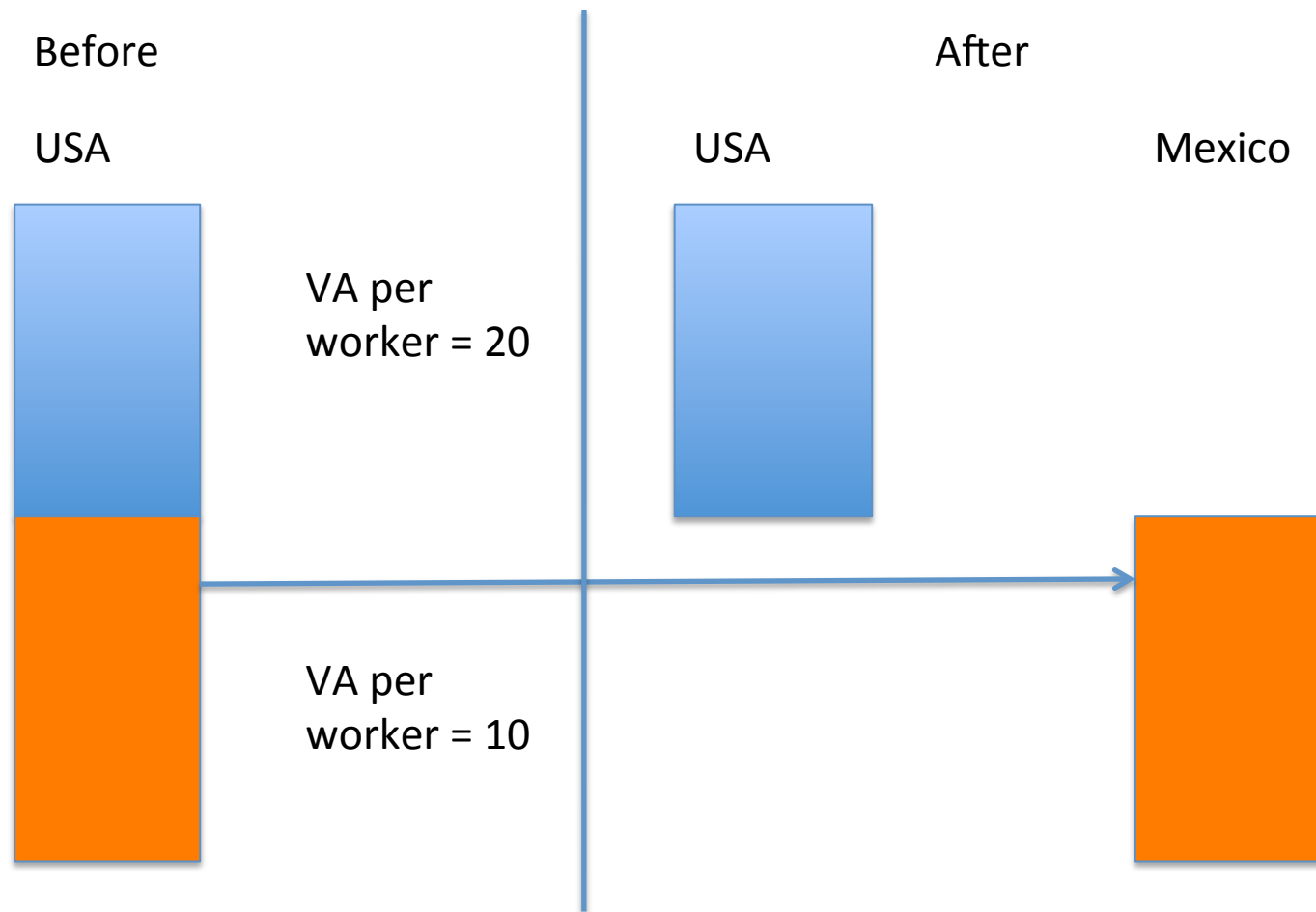
U.S. Change in Value Added, 1992-2010, in Billions of USD



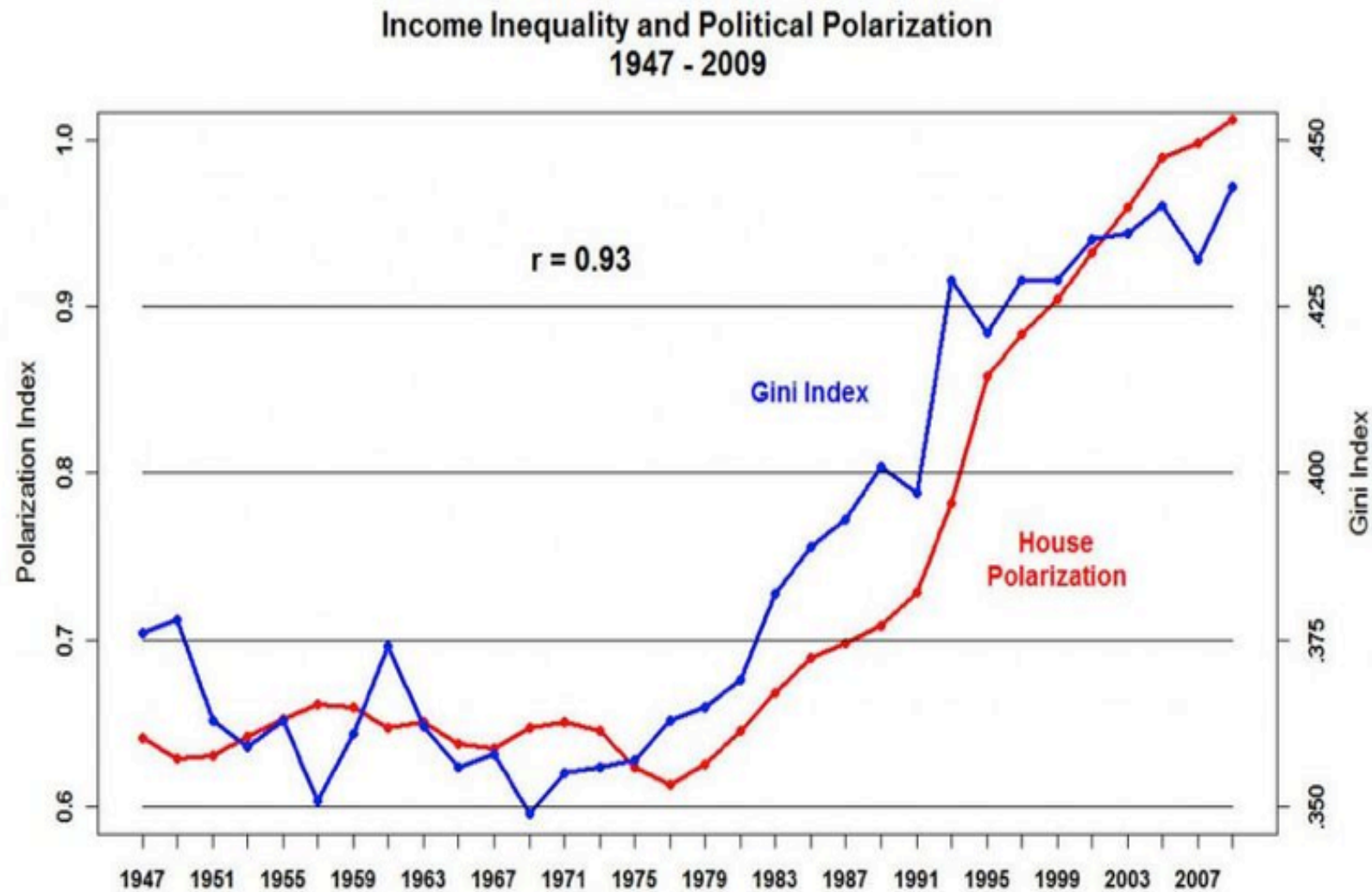
U.S. Change in Value Added Per Job, 1992 to 2010, in Real USD



Value added per Worker and Global Supply Chains

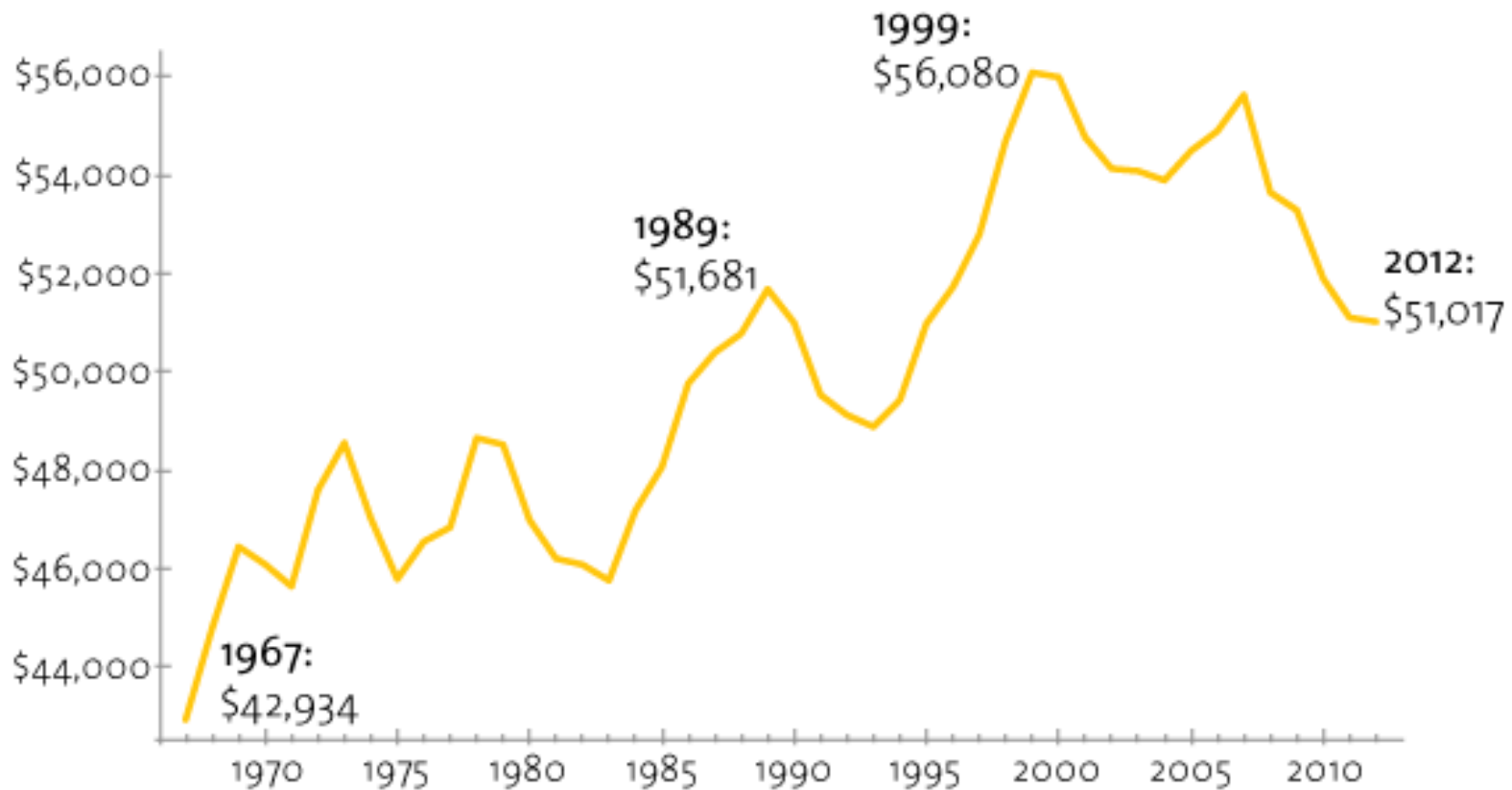


USA Income Distribution and Political Polarization

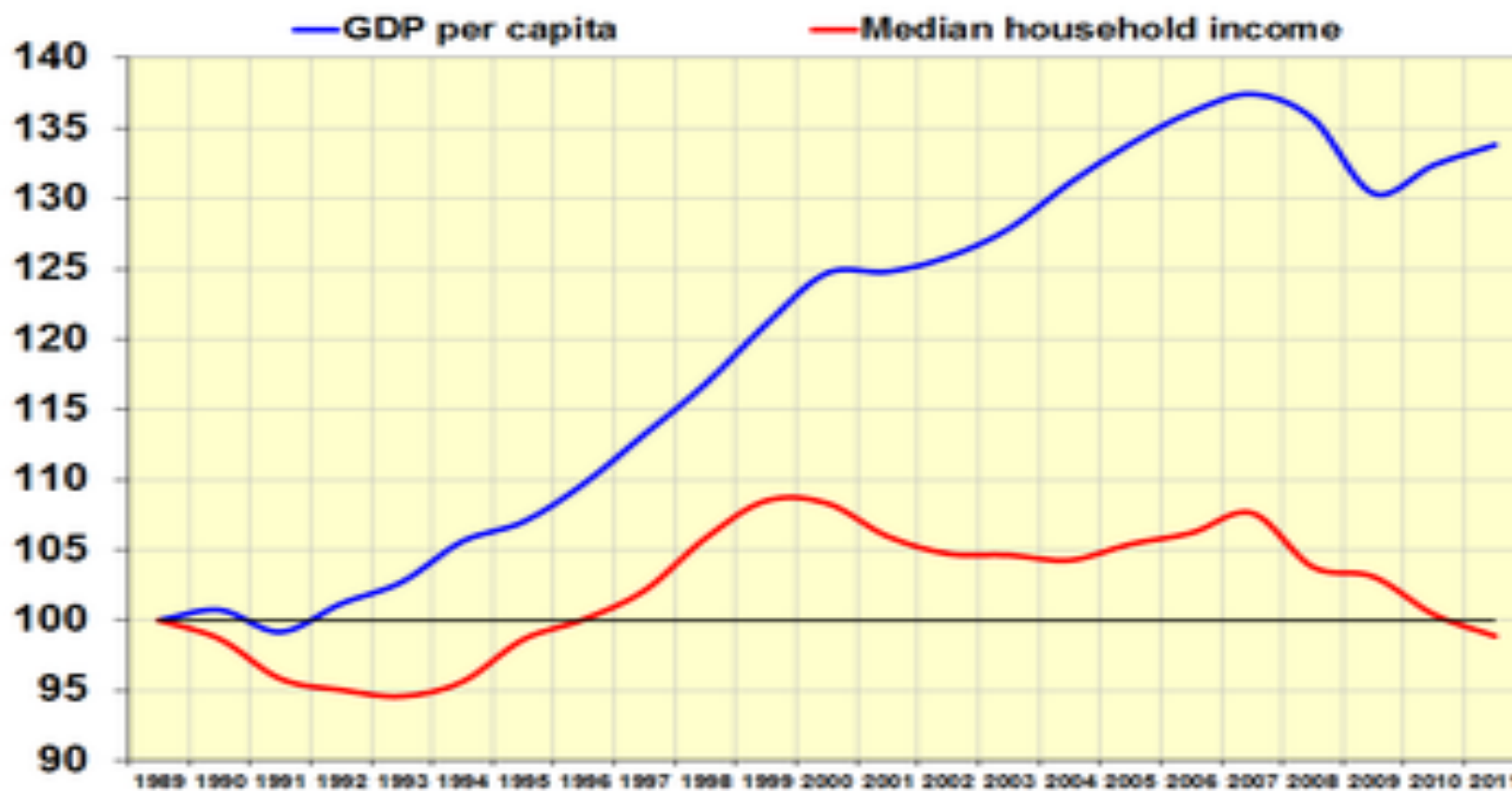


USA MEDIAN HOUSEHOLD INCOME

in 2012 dollars



AVERAGE AND MEDIAN HOUSEHOLD INCOME USA



COUNTRY	INCOME OF THE RICHEST 10% OVER THE POOREST 10%	INCOME OF THE RICHEST 20% OVER THE POOREST 20%	GINI COEFFICIENT
Australia	12.5	7	35.2
Austria	6.9	4.4	29.1
Belgium	8.2	4.9	33
Brazil	51.3	21.8	57
Canada	9.4	5.5	32.6
China (PRC)	21.6	12.2	46.9
Denmark	8.1	4.3	24.7
Finland	5.6	3.8	26.9
France	9.1	5.6	32.7
Germany	6.9	4.3	28.3
Greece	10.2	6.2	34.3
India	8.6	5.6	36.8
Israel	13.4	7.9	39.2
Italy	11.6	6.5	36
Japan	4.5	3.4	24.9
South Korea	7.8	4.7	31.6
Mexico	24.6	12.8	46.1
Netherlands	9.2	5.1	30.9
New Zealand	12.5	6.8	36.2
Norway	6.1	3.9	25.8
Russia	12.7	7.6	39.9
South Africa	33.1	17.9	57.8
Spain	10.3	6	34.7
Sweden	6.2	4	25
Switzerland	9	5.5	33.7
Turkey	16.8	9.3	43.6
United Kingdom	13.8	7.2	36
United States	15.9	8.4	40.8

Summary

- Globalization and digital technology
- Have dramatically alerted the structure of economies
- Made us more interdependent via specialization
- Put the labor markets out of long run equilibrium
 - Skills a human capital cannot keep up with the demand side shifts
- GLOBALLY
- Physical production (digitally enabled) will move toward the market, not toward pools of labor
- Services will continue to move to valuable and less mobile labor

What you see now

- Incomplete and unbalanced growth strategies
- Low interest rates
- Savings glut
- Free riding
- Deflation
- Fiscal Traps
- Demand constrained growth
- Little effective response to distributional trends
- Investment (public and private) way too low
- Headwinds to international cooperation
 - WTO
 - Decline of multilateral system
 - G20 sound bites
 - Competitive devaluations