

# CREATING A LEARNING SOCIETY

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*A New Approach to Growth,  
Development, and Social Progress.*

Joseph E. Stiglitz  
Columbia University  
Buenos Aires  
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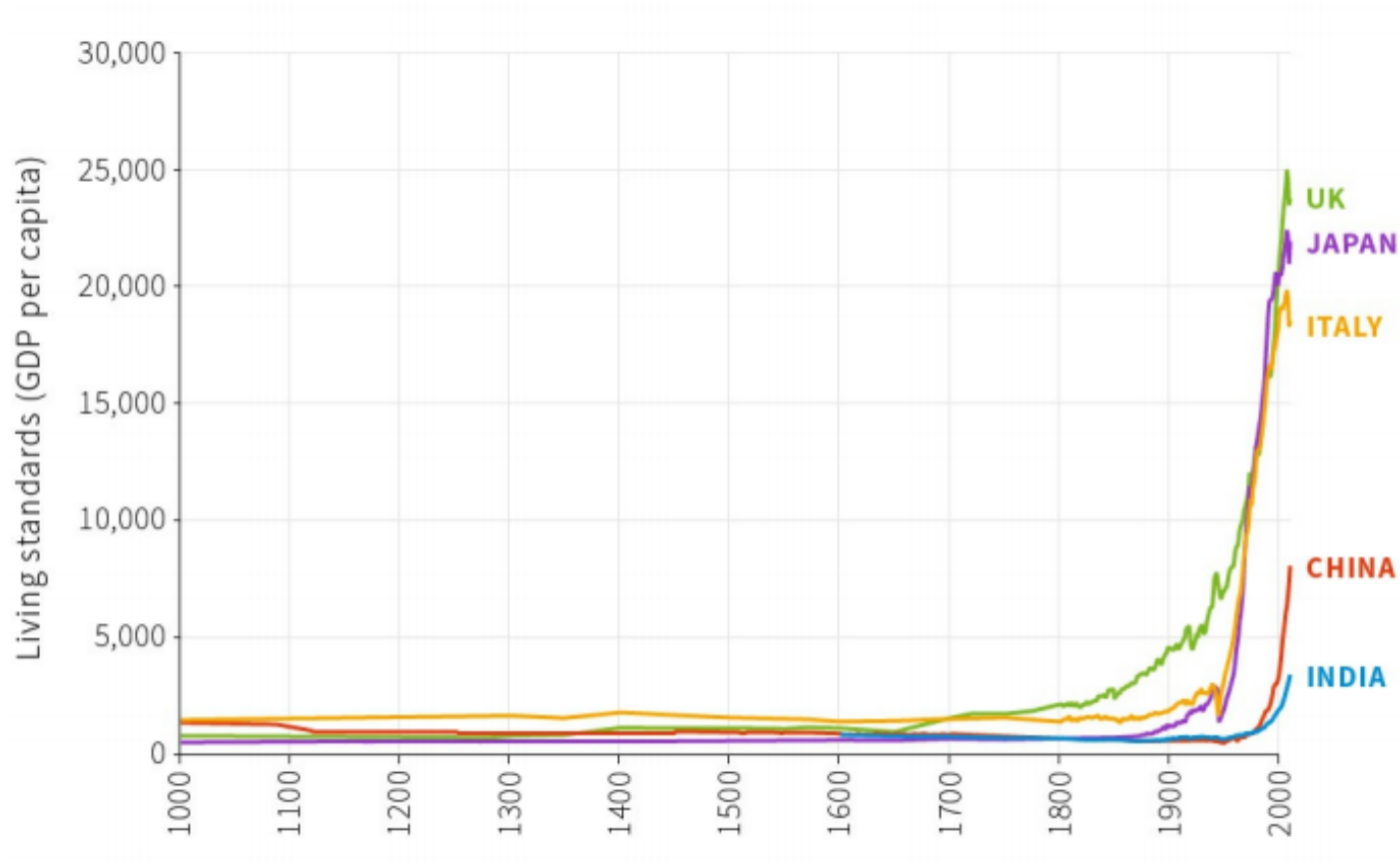
# Two themes

- Successful and *sustained* growth requires creating a learning society.
  - Especially in the 21st century, as we move to a knowledge economy.
- Markets on their own will not do this
  - There needs to be systematic interventions by the government

# On the importance of creating a learning society

- The transformation to “learning societies” that occurred around 1800 for Western economies, and more recently for those in Asia, appears to have had a far, far greater impact on human well-being than improvements in allocative efficiency or resource accumulation.
  - For hundreds of years standards of living had remained essentially unchanged

# Historical living standards



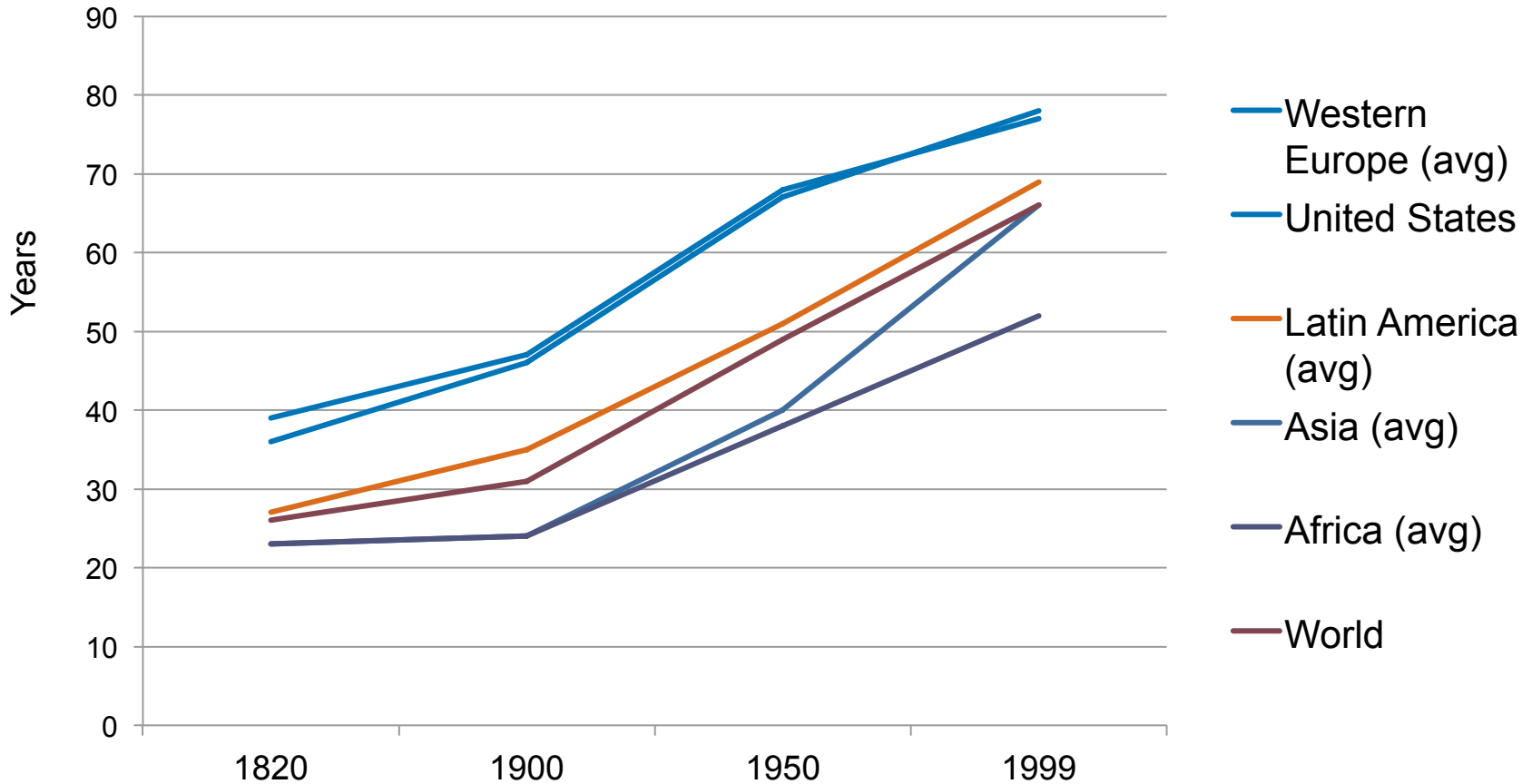
Source: INET

# Real wages of London craftsmen, 1200-2000



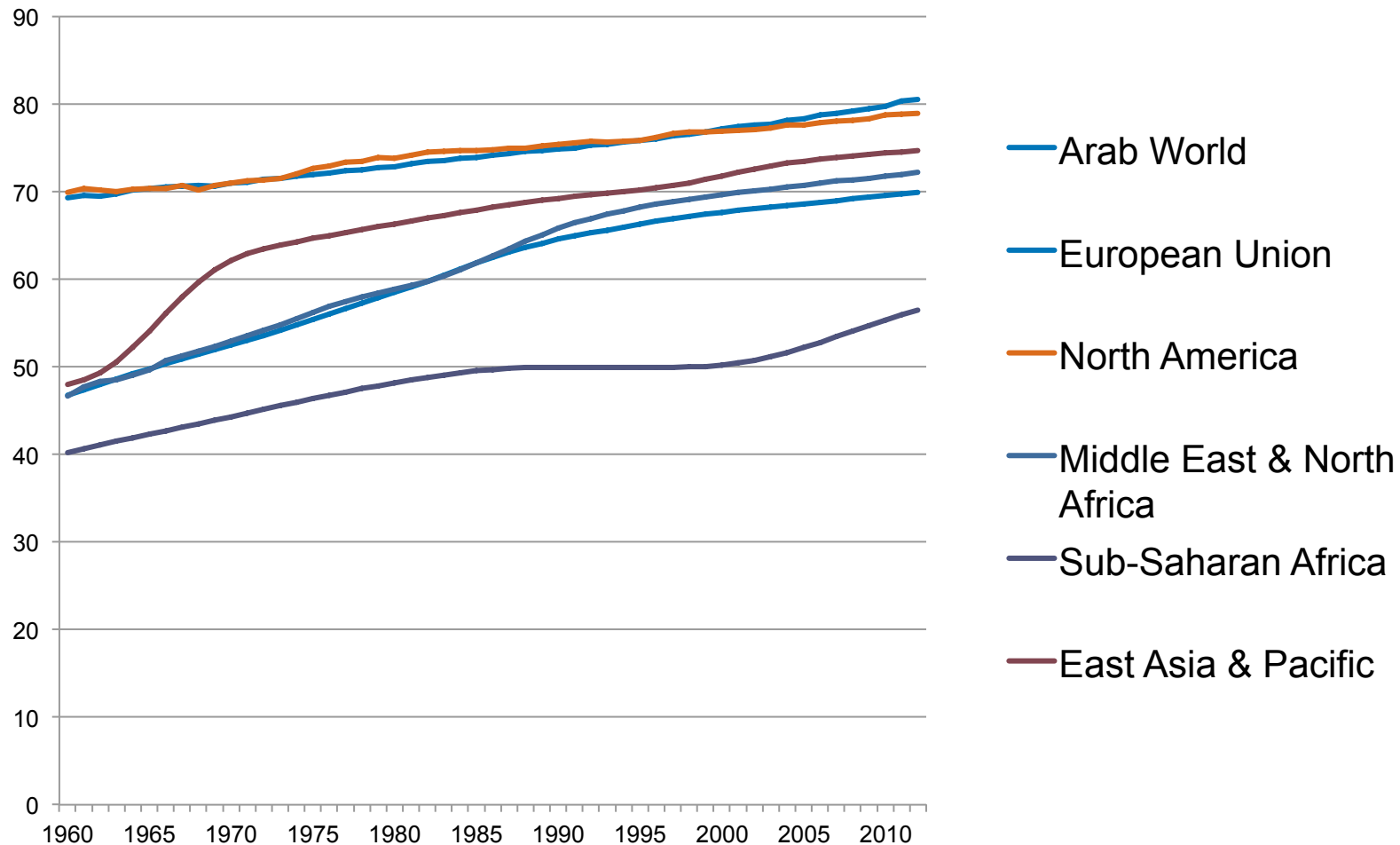
Figure 3. Real wages over seven centuries: craftsman (skilled worker) in London (1264-2001).

# Improvements in life expectancy since 1820



Data are estimates from A. Maddison, 2001, "The World Economy: A Millennial Perspective," OECD.

# Improvements in life expectancy since 1960



Source: World Bank DataBank

# What caused this seemingly sudden change?

- The enlightenment—A CHANGE IN MINDSET
  - Questioning authority
  - Recognizing change was possible
- The scientific method provided systemic way of figuring out how to improve productivity
  - Getting more outputs from given input
- THAT CHANGE IN MINDSET IS ASSOCIATED WITH THE CREATION OF LIBERAL DEMOCRACIES
  - **Sustaining increases in standards of living—and especially shared prosperity—will require sustaining liberal democracies**



# Quantification of importance of technical change

- Since Solow, we have recognized that the most important determinant of growth is technological change
  - Recognized earlier by Schumpeter, but Solow gave us first quantification
  - Our focus should be on the impact of policies on technological change, learning

# Gaps in knowledge

- In case of developing countries, focus on diffusion of knowledge
  - From developed to developing country
  - What separates developing from developed countries is as much a gap in knowledge as a gap in resources
- But even in developed countries, large gaps between productivity of best and other firms
  - Undermines concept of an aggregate production function

# Market failure

- Markets, on their own, are not efficient in promoting innovation
  - Since Arrow, recognized that markets by themselves do not yield efficiency in the production and dissemination of knowledge
    - Knowledge as a public good
    - Spillovers/externalities
    - Other imperfections (capital markets, imperfect competition) inherently associated with innovation
- Changed presumption from Smith's invisible hand
  - Production of knowledge/learning different from production of conventional commodities
  - Results consistent with Greenwald-Stiglitz theorem
    - Whenever information is imperfect/asymmetric, risk markets imperfect markets are not (constrained Pareto) efficient
    - Information is similar to knowledge, so result not surprise

# Government policy

- The policies that promote a transformation to a learning society are markedly different than those traditionally advocated by economists, which focus on improving the *static* efficiency of resource allocation and the accumulation of capital.
- Including policies that constituted the Washington Consensus.
- *Indeed, from the perspective of creating a learning society, those policies may be counterproductive.*

# Long-recognized conflict between static and dynamic perspectives

- Intellectual property restricts use of knowledge (a distortion—knowledge is a public good), and can even contribute to monopoly.
- Willing to accept because dynamic benefits outweigh static costs
  - May be negative dynamic benefits (US)
- Important to have a “developmentally oriented” intellectual property regime
  - With poorly designed IP regime, dynamic benefits less than the costs
  - TRIPS (regime of WTO) is *NOT* developmentally oriented
  - But important for countries to make full use of latitude given by TRIPS

# Implies that a central question of growth and development should be:

- What should governments do to promote growth through learning (technological progress)?
  - Question is especially salient because such policies may be in conflict with conventionally advocated policies
- Need to look comprehensively at factors affecting learning
  - Education system
  - The economy's innovation system, including IPR and technology policy
  - Macroeconomic policies, including exchange rate policy
  - Industrial and trade policies
  - Investment policies

# Multiple dimensions

Need to look at all policies and institutions through the lens of learning

- How they affect capabilities of learning
- How they affect incentives to learn (motivate learning)
- How they facilitate learning and catalyze it
  - Including mindsets that are conducive to learning
    - Importance of the Enlightenment
- How they impose impediments to learning

# Fundamental underlying questions

- How does learning occur?
  - Especial attention to learning by doing
- How do learning to learn?
- How do we convert an emerging economy like Brazil into a learning economy and society
- This lecture will focus on macrostability, role of education system and trade and industrial policies



- Based on

*Creating a Learning Society: A New Approach to Growth, Development, and Social Progress* with Bruce Greenwald  
(Columbia University Press, 2014)

# I. Macro-stability

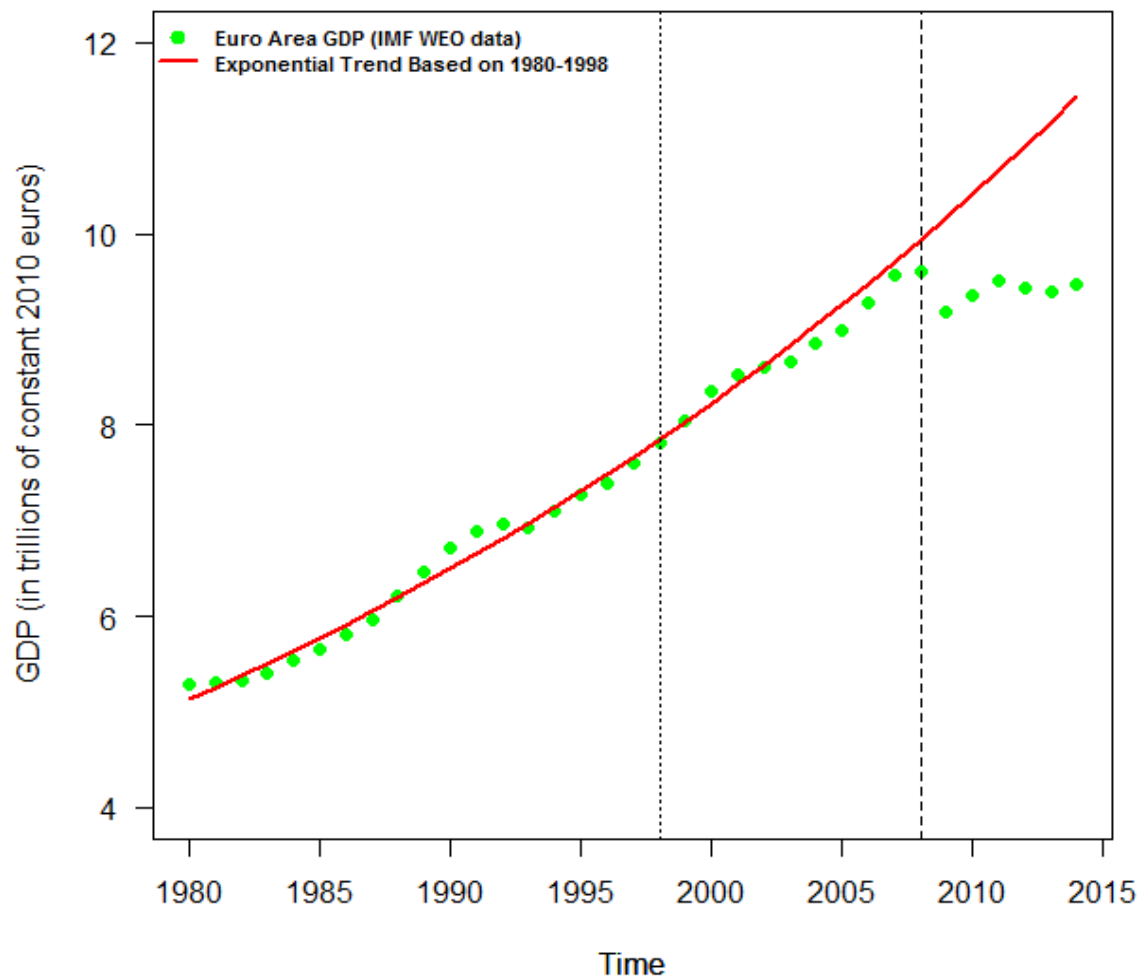
Stability important to learning

- Much knowledge resides within institutions, “firms”
  - Recessions destroy firms (bankruptcy) and the embedded knowledge
  - In effect negative learning
- Recessions impede learning
  - As attention gets focused just on survival
- Recessions impede the most important aspect of human capital accumulation—on the job learning
  - With long term consequences for growth and standards of living

**→ *The euro-recession’s impact on long-term standards of living will be enormous***

# Europe GDP growth far below trend

**Euro Area GDP Trend Analysis**



# Missing *real* capital

- Recessions destroy capital (or impede its accumulation)
- We trace out the consequences for plant and equipment
  - Revealed by investment data
  - May not do so fully: don't adequately monitor maintenance expenditures
- But we don't adequately trace out the consequences for other forms of capital

# Quantifying missing capital

- Top down approach
  - GDP in US is some 15% below what it would have been in the absence of crisis—in Europe, the gap is even larger.
  - We can measure the delta in “normal”  $K$  (what  $K$  would have been but for the recession) and actual  $K$  (i.e., the consequences of reduced investment), and normal human capital (“education”) and actual Human capital. We can estimate the predicted effect of this on output.
  - The difference between this and the actual (PDV) of output is the result of missing “dark matter”—analogous to Solow’s residual
  - Even if we can’t precisely parse out the components of this dark matter—destruction of organizational capital, other components of human capital (experience)—it’s real and needs to be taken into account
  - Back of the envelope calculations suggest that the magnitude is enormous—probably in excess of \$30 trillion (depending on discount rate)

# Bottom up approach

- We know that those who enter the labor force in a bad (recession) year have a significantly lower lifetime pdv income
  - Some of these effects may be distributional (changed bargaining power of workers)
- And this is especially true of those who remain unemployed for extended periods
- We also know that those who get displaced face a significant loss in pdv of income

# Hidden losses

- Reductions in quality of education as governments cut back on funding
- Reduced access to health care and nutrition can have life-long effects
- **Job experience**
- Most adverse effects are related to decrease in job experience (learning on the job)—major part of human capital
  - Especially adverse effects on young people who can't get jobs

# Missing capital

- Consistent with hysteresis effects associated with extended periods of unemployment
- And helps explain why effects of downturns persist
- With strong policy implications
- Long-term consequences of not taking strong counter-cyclical policies
- Focus on government debt was short-sighted (besides being counterproductive)
- Far more important adverse effects on asset side



# Another example of why metrics matter

- What you measure affects what you do
- If you focus on the liability side of the government, one may take actions that result in the liability side of private sector increasing, and asset side of the entire economy decreasing—undermining sustainability

## II. Education

- Needs to focus on “learning to learn”—life long learning
- Only small part of learning occurs in “formal” schooling
- Have to understand role of formal schooling vs. “life long learning”
  - Relationship changing with increasing pace of innovation, changes in labor market
  - Relationship changing with ability to access “knowledge” on internet
    - Need to know how to access, evaluate, and analyze knowledge base which is readily available
- Changes in technology are allowing changes in learning

# Changes in education on the job

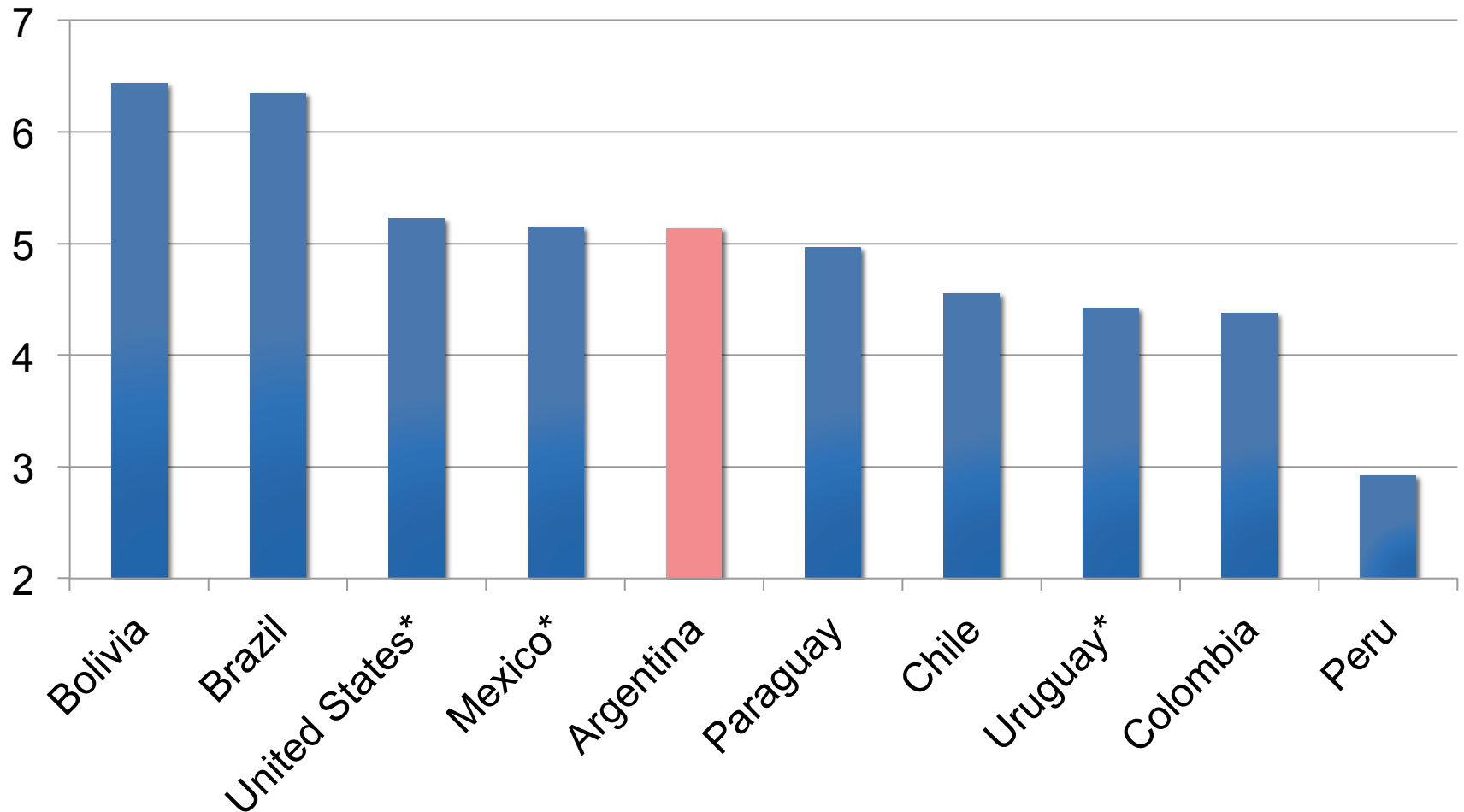
- Less provision of education by employers
  - With greater labor mobility
- Greater uncertainty about nature of future jobs
- Implying greater need for individuals to have access to relevant continuing education

# Learning perspective has changed thinking about education in developing countries

- Importance not just of primary education but secondary and tertiary
- Learning skills that enable individuals to learn in the contexts in which they live
  - With many continuing to live in rural sector, a rural-based education —not just qualifying individuals for urban jobs

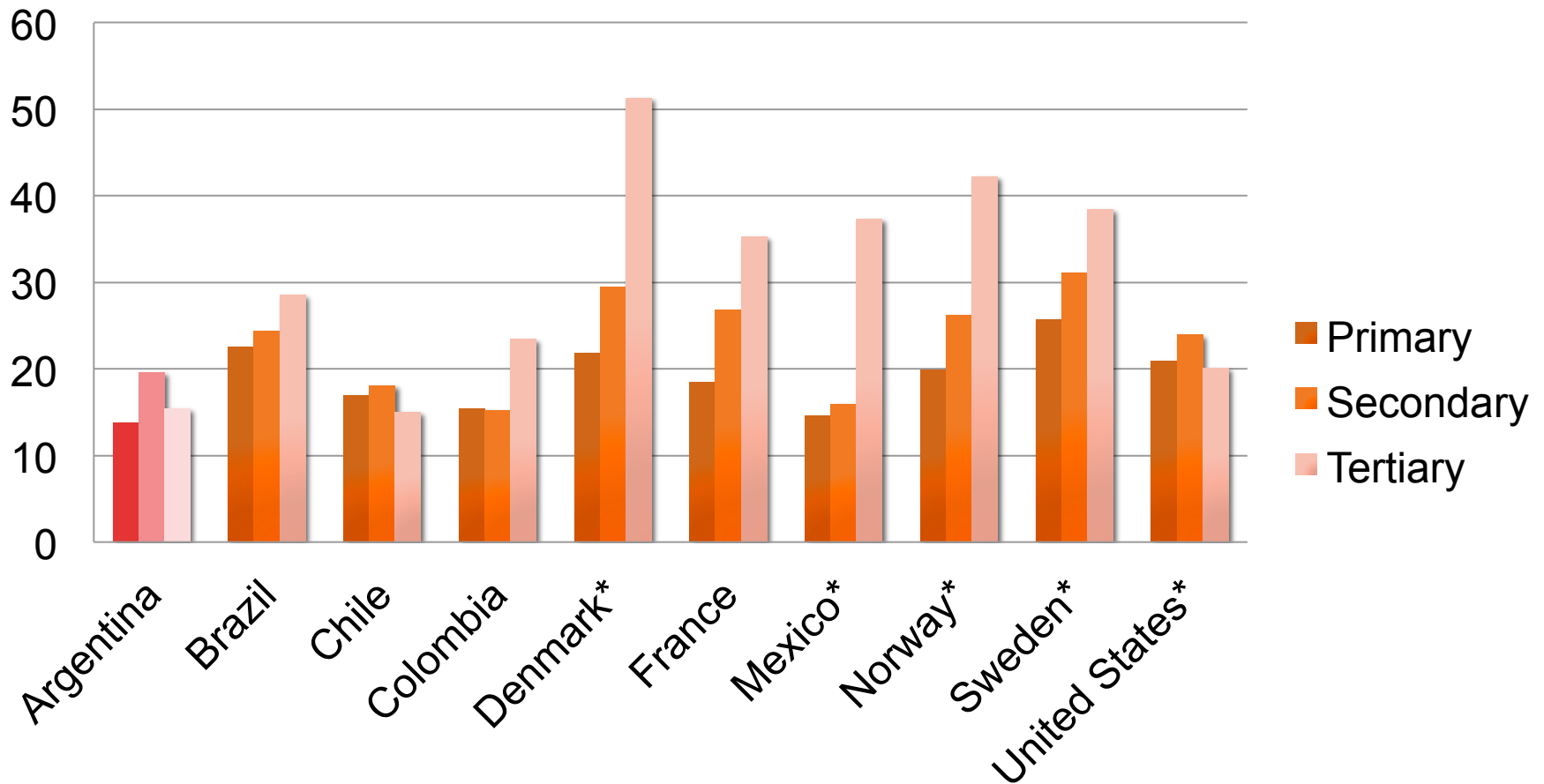
Among central messages of 1999 WDR *Knowledge for Development*

## Govt. spending on education, % of GDP, 2011/2012\*



\* Starred countries' data are for 2011, the latest available year. Other countries' data are 2012. Source: World Bank

## Govt. expenditure per student (% of GDP per capita)



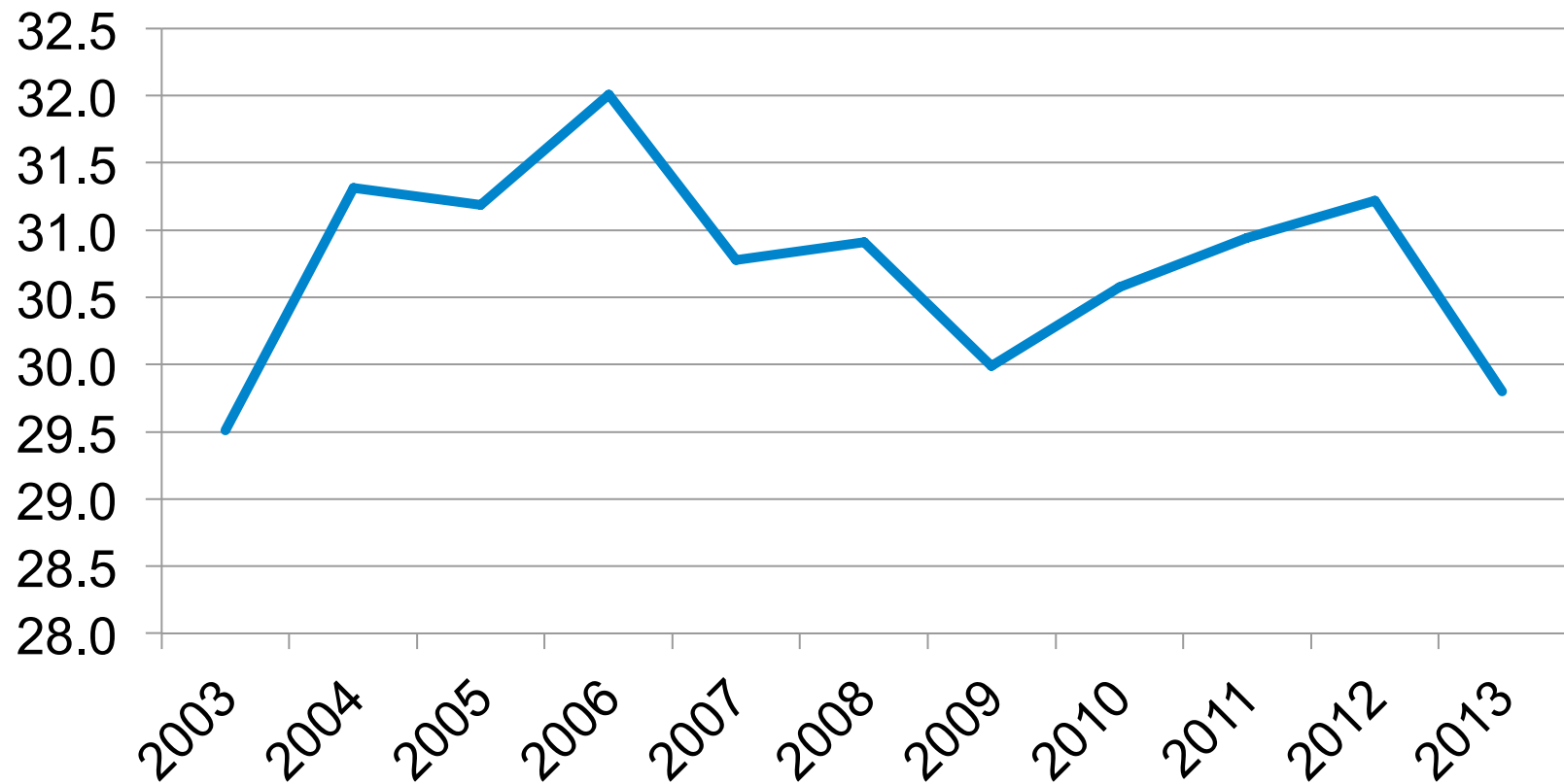
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# Argentina PISA rankings (out of 65 countries)

Mathematics			Science			Reading					
1		Shanghai, China	613	1		Shanghai, China	580	1		Shanghai, China	570
2		Singapore	573	2		Hong Kong, China	555	2		Hong Kong, China	545
3		Hong Kong, China	561	3		Singapore	551	3		Singapore	542
4		Taiwan	560	4		Japan	547	4		Japan	538
5		South Korea	554	5		Finland	545	5		South Korea	536
6		Macau, China	538	6		Estonia	541	6		Finland	524
7		Japan	536	7		South Korea	538	7=		Taiwan	523
8		Liechtenstein	535	8		Vietnam	528	7=		Canada	523
9		Switzerland	531	9		Poland	526	7=		Ireland	523
10		Netherlands	523	10=		Liechtenstein	525	10		Poland	518
11		Estonia	521	10=		Canada	525	11=		Liechtenstein	516
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51		Chile	423	51		Costa Rica	429	51		Bulgaria	436
52		Malaysia	421	52		Kazakhstan	425	52		Mexico	424
53		Mexico	413	53		Malaysia	420	53		Montenegro	422
54		Montenegro	410	54		Uruguay	416	54		Uruguay	411
55		Uruguay	409	55		Mexico	415	55		Brazil	410
56		Costa Rica	407	56		Montenegro	410	56		Tunisia	404
57		Albania	394	57		Jordan	409	57		Colombia	403
58		Brazil	391	58		Argentina	406	58		Jordan	399
59		Argentina	388	59		Brazil	405	59		Malaysia	398
59=		Tunisia	388	60		Colombia	399	60=		Argentina	396
61		Jordan	386	61		Tunisia	398	60=		Indonesia	396
62=		Colombia	376	62		Albania	397	62		Albania	394
62=		Qatar	376	63		Qatar	384	63		Kazakhstan	393
64		Indonesia	375	64		Indonesia	382	64		Qatar	388
65		Peru	368	65		Peru	373	65		Peru	384

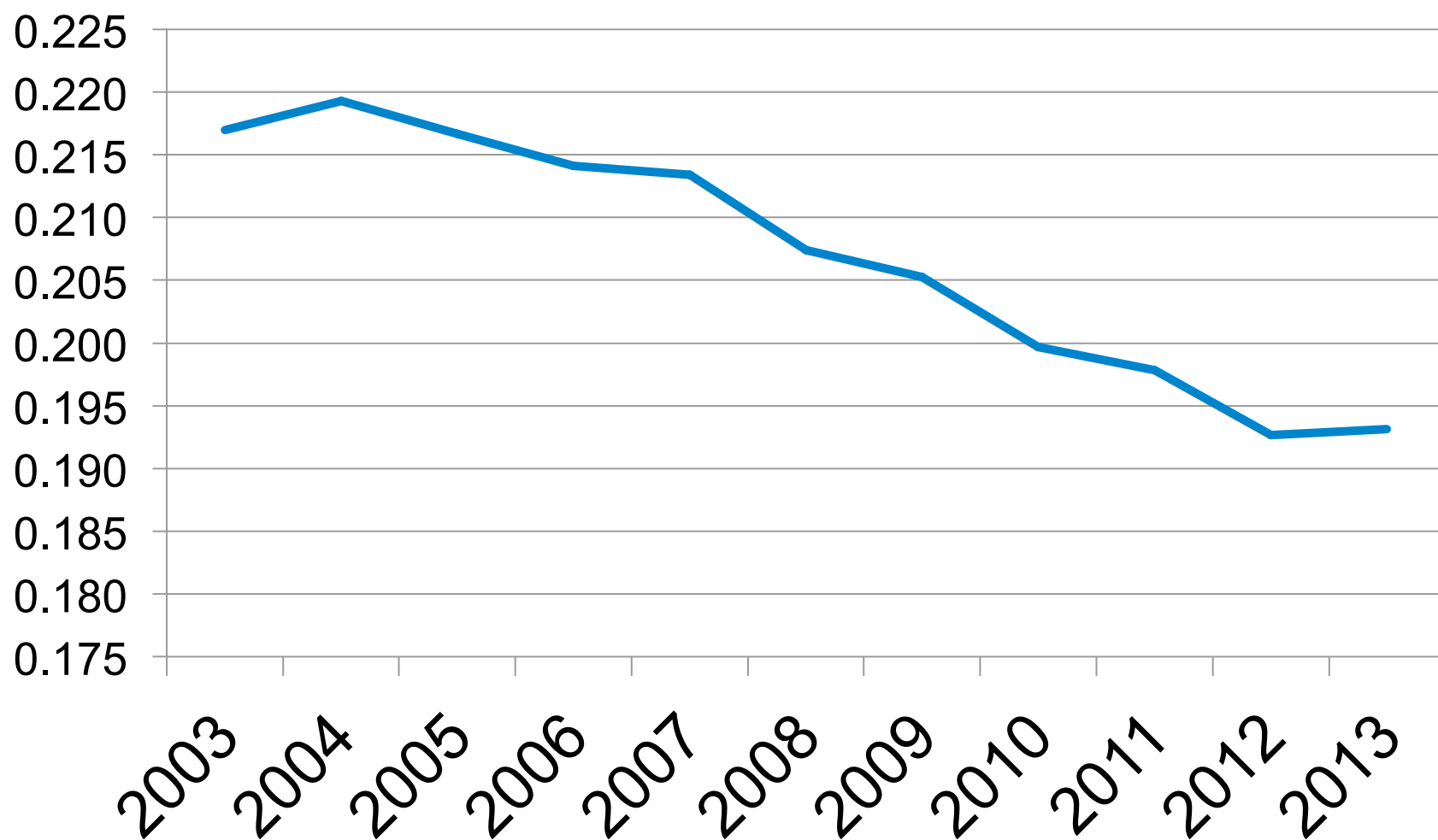
Source:  
2012 OECD  
Programme for  
International Student  
Assessment data;  
image from Wikipedia

# Net enrollment rates: % of youth in tertiary education (Argentina)



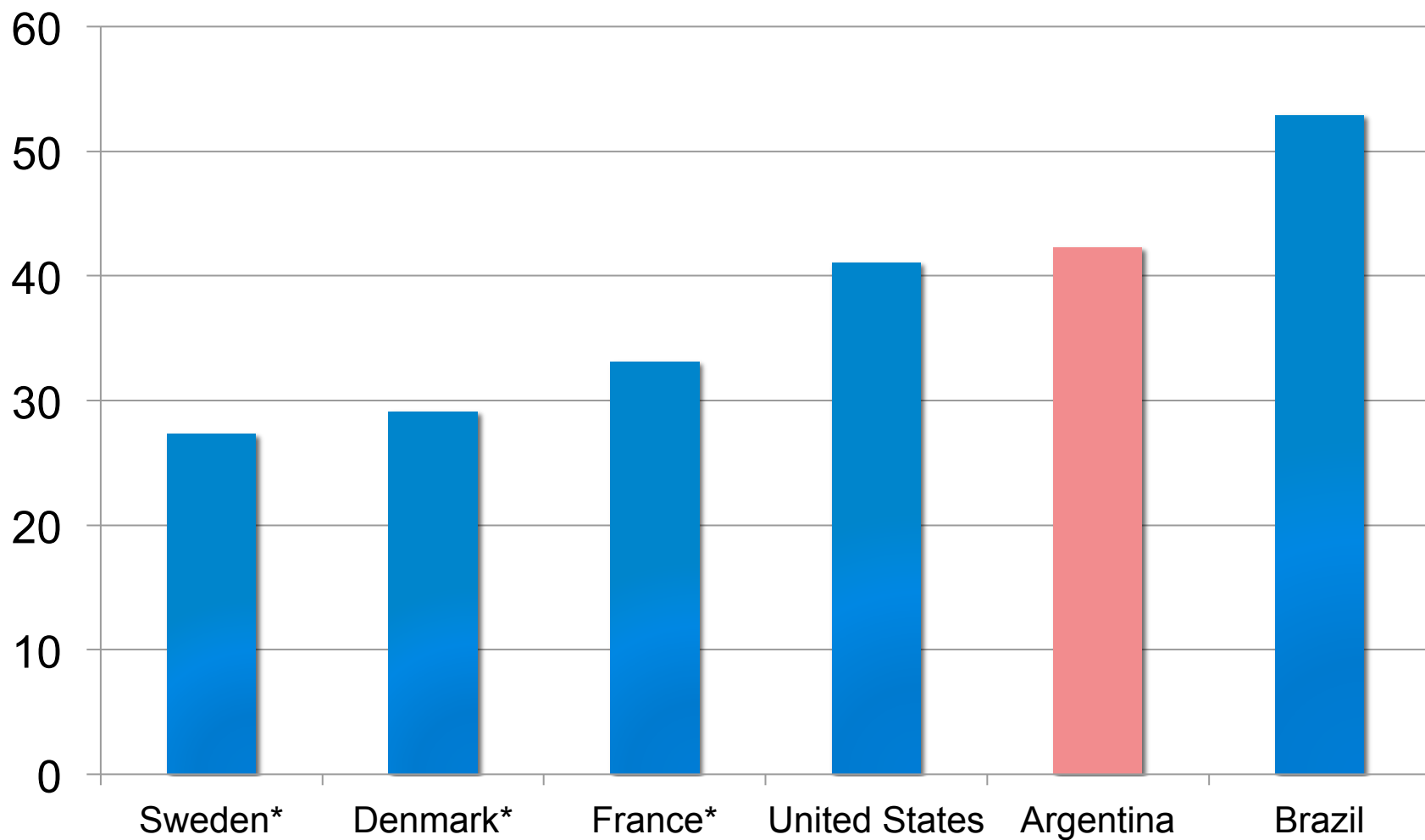


## Inequality in years of education (Argentina): Gini for the distribution of years of education, ages 25-65



\*Source: SEDLAC (CEDLAS and The World Bank)

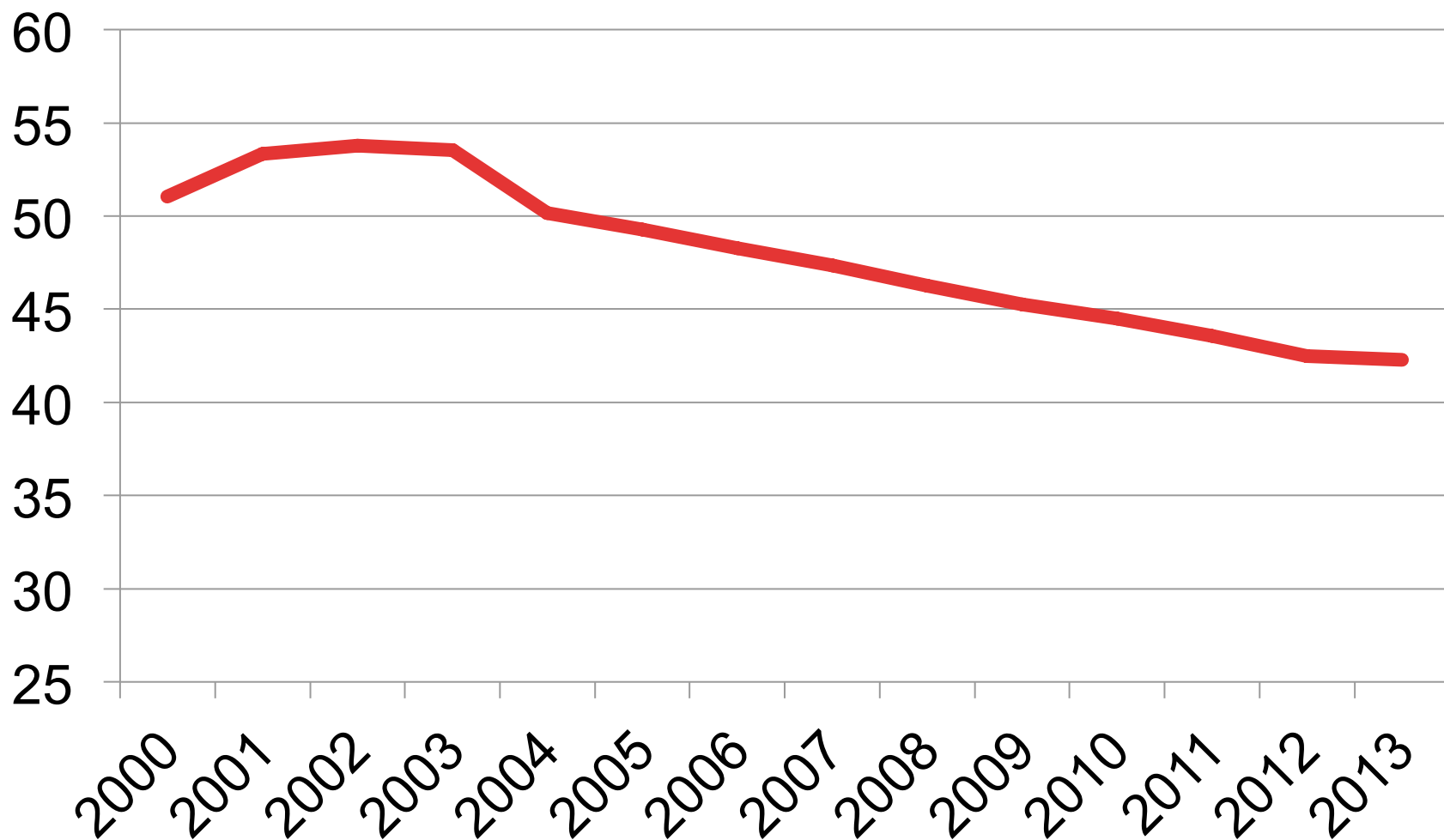
# Gini coefficients



Starred countries' data are for 2012, the latest available year. Other countries' data are 2013.

Source: World Bank

# Gini trends for Argentina



# III. New perspectives on trade

- Standard theories
  - Focus on comparative advantage
  - One-time gain from liberalization, opening up markets
- Technology-based learning theories
  - Focus on diffusion of technology from developed to less developed countries
  - And **spillovers** from one sector to other
  - And learning within any sector
    - Within all countries, there are large differences between average and best practices
    - Suggesting large scope for “learning”
  - Localized learning—localized to technologies
    - Similar technologies can be used across sectors

# Markets will underinvest in learning sectors

- Especially those with large learning spillovers to others
- Especially when there are imperfections in capital markets
- Especially when learning is risky—imperfect insurance markets

Explains important role of government in promoting innovation and learning

- Internet, bio-tech
- Agriculture in the 19<sup>th</sup> century
- “The Entrepreneurial State”
- Especially important in basic research

# Provides rationale for industrial policies

- For developing countries, the “infant economy” argument for protection
  - Industrial sector has greater learning spillovers than agricultural sector
  - Desirable to encourage industrial sector
- Traditionally, multiple instruments, including subsidies and trade interventions
  - Can be shown that benefits of such interventions exceed the costs
  - Many examples of successful interventions (Korea)
- WTO has restricted the set of instruments
  - Exchange rate policy is an effective, low cost instrument with some political economy advantages

# Dynamic comparative advantage— comparative advantage is endogenous

- With learning by doing affected by what a country produces
- Central then is understanding the structure of learning within an economy—including within and across sectors
  - Many processes, practices, and institutions entail cross-sector learning/increases in productivity
    - Inventory control processes
    - Labor management processes
    - Computerization
    - Financial services

# Learning to learn

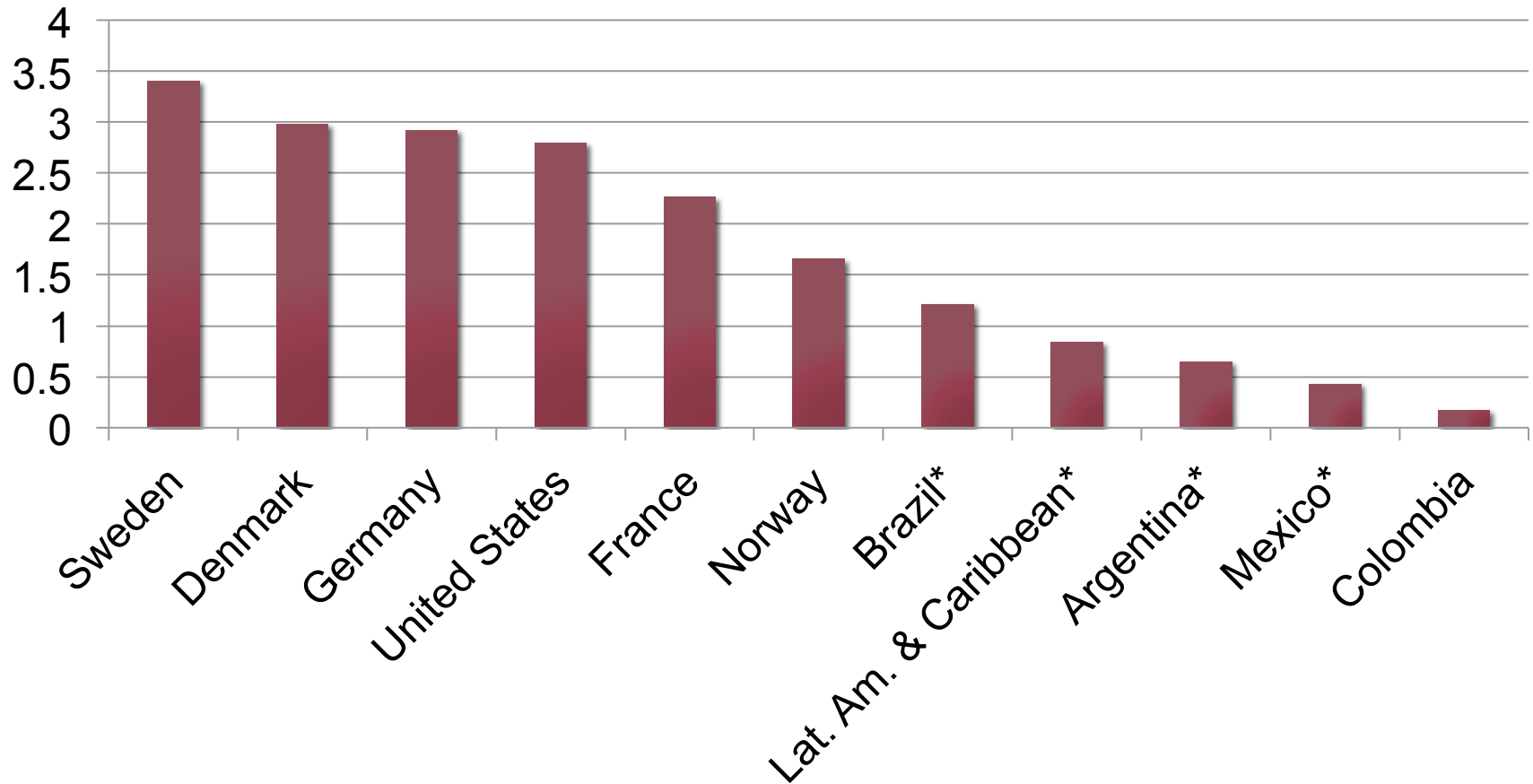
- **We have focused on “learning,” but even more important is “learning to learn”**
  - Industrial and trade policy can enhance an economy’s learning capacities
  - Introduces complex strategic questions



# Research

- Markets will undersupply research, especially basic research
  - Implying that there should be an important role for government in R & D
- R & D is even important in developing countries
  - For adapting existing technologies to circumstances of their country
  - For facilitating the transfer of knowledge
    - Part of the learning process
  - For leapfrogging
    - Brazil has shown that it is possible in certain areas

## Research and development expenditure (% of GDP)



Starred countries' data are for 2011, the latest available year. Other countries' data are 2012.  
Source: World Bank

# Political economy objection

- Ideal government intervention might improve matters
  - But real world interventions do not
- Political economy objections may be true—but conclusion based on political analysis, not economic analysis
  - Political analysis often more simplistic than economic analysis
  - Moreover, liberalization is also a political agenda
    - Not “perfectly applied”
    - Asymmetric application can have adverse welfare effects

# Political economy objections

- Critique of infant economy argument in particular
  - Government can't pick winners
  - Infants never grow up
  - Better ways of providing assistance than protection—direct and transparent subsidies
- Replies to critiques
  - Almost every successful country has had “industrial policies”
    - US from 19<sup>th</sup> century (telecommunications, agriculture)
      - Today mostly through Defense Department
      - Including Internet and biotech
        - With private sector playing central role in bringing innovation to market
  - Successful countries learned how to manage “political economy” problems

- Point of industrial policies is not to pick winners, but to identify externalities and other market failures
  - With imperfect capital markets, can't borrow to finance initial losses
  - Imperfections of capital markets are endemic (asymmetries of information)
    - Especially in developing countries
- Besides, we don't reject "monetary policy" simply because there have been failures

# Lesson

- Design of industrial policy has to reflect capacities and capabilities of government
- Broad-based export subsidies (as in East Asia) may be a desirable way of promoting industrial sector (including through exchange rate policies)

# IV. Other implications of new theory

- Theory of the firm
  - Not based on transactions costs (Coase)
  - Knowledge moves more freely within firms than across firm boundaries
  - Resource allocations within firm are typically not based on prices, or even contracts
  - Trade-off between “learning” and “allocative efficiency”

# Intellectual property

- Intellectual property restricts use of knowledge (a distortion—knowledge is a public good), and can even contribute to monopoly.
  - Willing to accept because dynamic benefits outweigh static costs
- May be negative dynamic benefits (US)—
  - Knowledge most important ingredient to production of knowledge
  - IPR reduces access to knowledge
  - Patent system intervenes with the open system which is essential for the advancement of science
- With poorly designed IP regime, dynamic benefits less than the costs, actually impedes creating of a learning society



# Adverse effects especially significant for developing countries

- Closing knowledge gap—access to knowledge
- Health—access to life savings medicines
- Explains call for a “developmentally oriented” intellectual property regime
- TRIPS (regime of WTO) is *NOT* developmentally oriented

# V. General lessons

- Another example of 2<sup>nd</sup> best economics
- But whenever one talks about innovation and learning, one is in the world of 2<sup>nd</sup>-best economics
  - Credit/revenue constraints are also likely to be particularly important
  - Imperfect competition/increasing returns to scale
  - Risk, with imperfect risk markets
  - All elements of standard Schumpeterian economics
  - Should be at the center of endogenous growth theory and growth policy

# General lessons

- Policies often based on simplistic models
  - Simplistic models consistent with simplistic ideologies
  - And used by special interests to advance particular policy agenda
  - Trade and capital market liberalization can make everyone worse off (Pareto inferior trade and liberalization) if there are imperfect risk markets (Newbery-Stiglitz, 1982)

# VI. Growth, learning and innovation: To what end?

- Much of innovation in advanced industrial economies has been directed toward saving labor
  - But in many developing countries, labor is in surplus, and unemployment is the problem
  - Labor saving innovations exacerbate this key social problem

- What is really “underpriced”: natural resources/the environment
  - And innovation needs to be directed at saving resources and protecting the environment
  - Cannot just “borrow”/adapt technology from the North
  - Need a new “model” of innovation

- These environmental impacts are important for all countries, but especially for developing countries
- What matters is not GDP, but the quality of life, “well-being” and individual capabilities
  - What that entails—and how it can be increased— should and can be a subject of rational inquiry
  - Has been an area in which Sen has made major contributions
  - Subject of Stiglitz-Sen-Fitoussi International Commission on the Measurement of Economic Performance and Social Progress

# VII. Social transformation and the creation of a learning society

- *Perceptions (beliefs) affect actions (choices) and are shaped by cognitive frames*
- *The categories that shape cognition are social constructions*
- *Because belief systems affect the equilibrium, e.g. by shaping perceptions, elites have a strong incentive to influence people's beliefs*
  - In contrast, in an RE equilibrium, cognitive frames play no role

- *Those in “power” typically do not control all the determinants of the evolution of beliefs*
  - Cultures are always contested.
- *The general beliefs about the world are a state variable that determine which beliefs are acceptable.*
- How such belief systems change—and how those (like governments) who seek to deliberately change belief systems—is thus a core part of developmental analysis

(Analysis based on K. Hoff and J. E. Stiglitz, 2010, “Equilibrium Fictions: A Cognitive Approach to Societal Rigidity,” *American Economic Review*, 100(2): 141-146).



## VIII. Democracy and the creation of a learning society

- Ideas concerning human rights and democracy have been among the most important in shaping what is and is not acceptable
- Democratic ideals question authority
- Same frame of mind which is so essential for creating a dynamic, learning economy and society
- A more open society generates more ideas, a flow of “mutations,” which provides not only excitement, but the possibility of dynamic evolution, rather than stasis

# Non-inclusive growth can lead to a failure to create a learning society

- Unfortunately, even if in the long run, a more dynamic society benefits most members of society, in the short run, there can be (and normally will be) losers
  - Trickle-down economics doesn't work
  - WC policies were often anti-poor (worse than failure to be pro-poor)
- Democratic processes can be shaped, and there are incentives on the part of some to maintain existing inequities
- Democratic processes can then lead to the antithesis of an open and transparent society

# *The political economy of inclusiveness and openness*

- Critique of non-inclusive growth goes beyond that it is a waste of a country's most valuable resource—its human talent—to fail to ensure that everyone lives up to his or her abilities
- Government needs to play an important role in any economy, correcting pervasive market failures, but especially in the “creative economy”

# *The political economy of inclusiveness and openness (cont.)*

- In a society with very little inequality, the only role of the state is to provide collective goods and correct market failures
- When there are large inequalities, interests differ
  - Distributive battles inevitably rage
  - To prevent redistribution, role of government is circumscribed
  - But in circumscribing government, ability to perform positive roles is also circumscribed

# Adverse dynamic

- More inequality—more circumscribed government
- Leading to more inequality
- In the long run—more unstable, lower growth
- Some fear that US has now embarked on this adverse dynamic
  - Less equality of opportunity, more inequality, than some countries of “old Europe”

# IX. Adam Smith, the Enlightenment, and Business Responsibility

- Adam Smith played a key role in the Enlightenment
- The Invisible Hand was one of the important insights
- But the Invisible Hand has often been misinterpreted by “market fundamentalists” (in the Anglo-American tradition)
- Firms should only pursue self-interest—maximizing profits
  - Shareholder value maximization
  - In comparison to “stakeholder” value
- Economic theory has discredited the shareholder view—only true with complete set of Arrow-Debreu securities
- And economic experience has as well
  - Banks pursuit of self-interest (greed) did not lead to well being of society
  - Bankers pursuit of self-interest did not even lead to well being of firm
    - Problems of corporate governance
    - Highlighted by theory of imperfect and asymmetric information

# Corporate responsibility

- Smith understood all of this
  - Talked about *enlightened self-interest*
  - Broader perspectives in his book *Moral Sentiments*
- We now understand the very limited conditions under which the “invisible hand” theorem holds
  - The invisible hand often appears invisible....because it's not there
  - Important role of the state to correct the pervasive market failures
    - Including the market failures around which this lecture has focused, learning and innovation

# **X. General principles of a learning society have broad implications**

For entire economic regime:

- Financial and capital market liberalization
  - Affects ability to learn how to allocate capital
- The design of monetary policy and institutions
- Intellectual property regimes
- Investment and trade treaties,
- Taxation, and expenditures on infrastructure, education, and technology
- Legal frameworks for corporate governance and bankruptcy



# Objective of this lecture

- A new lens through which one can examine these and other policy choices facing developing countries in the coming years
- Countries might like to pretend that they could avoid matters of industrial policy—following the neoliberal doctrines that these are matters to be left to the market
- But they cannot
- Matters of education policy—the design of the education system—are also *social* decisions which have to be addressed collectively
- The choices they makes in each of these arenas will inevitably shape the economy, politics and society, for better or for worse, for decades to come.