



CREATING A LEARNING SOCIETY

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

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July 2016

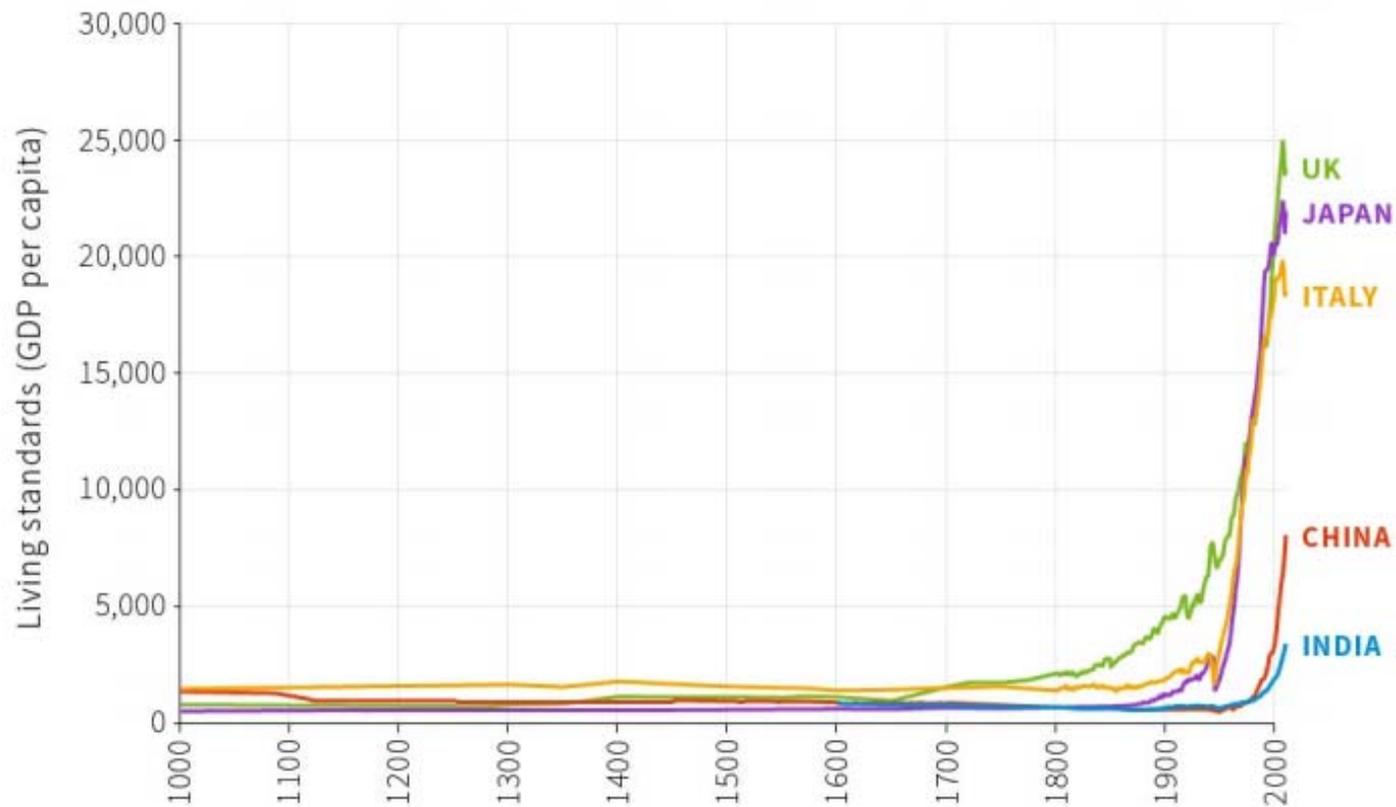
Two themes

- 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

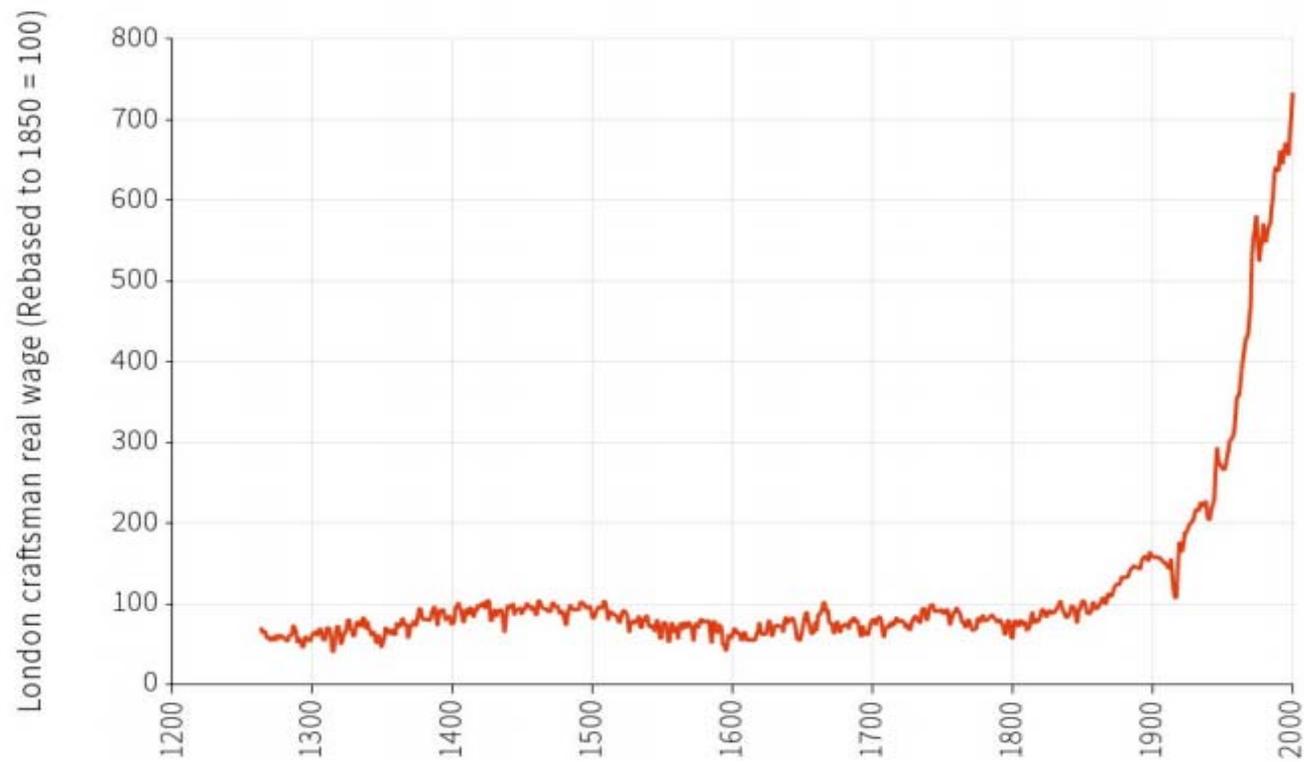
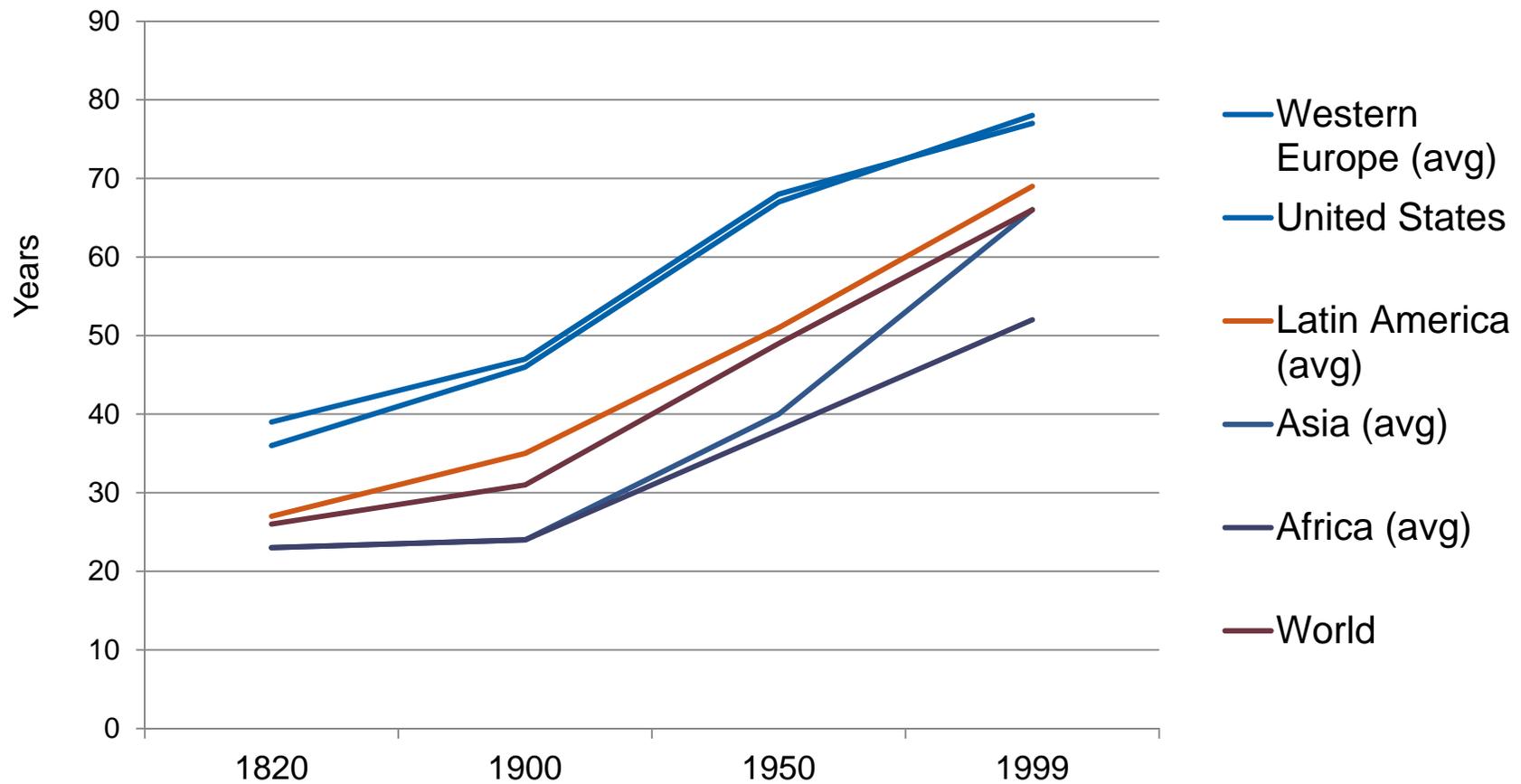


Figure 3. Real wages over seven centuries: craftsman (skilled worker) in London (1264-2001).

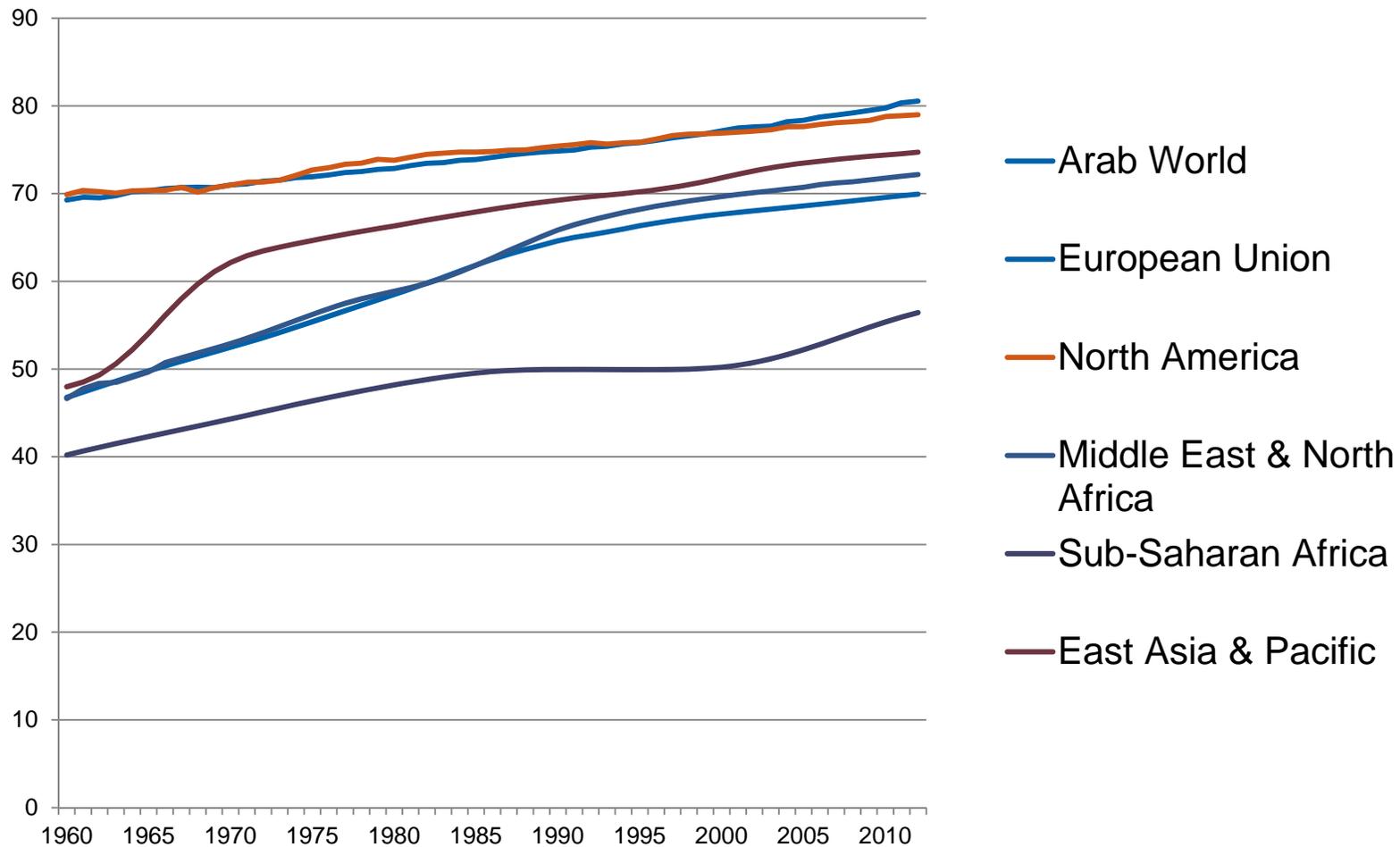
Source: INET

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 we learn to learn?
- How do we convert an emerging economy like India into a learning economy and society
- This lecture will focus on macrostability, role of education system and trade and industrial policies

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- Based on

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

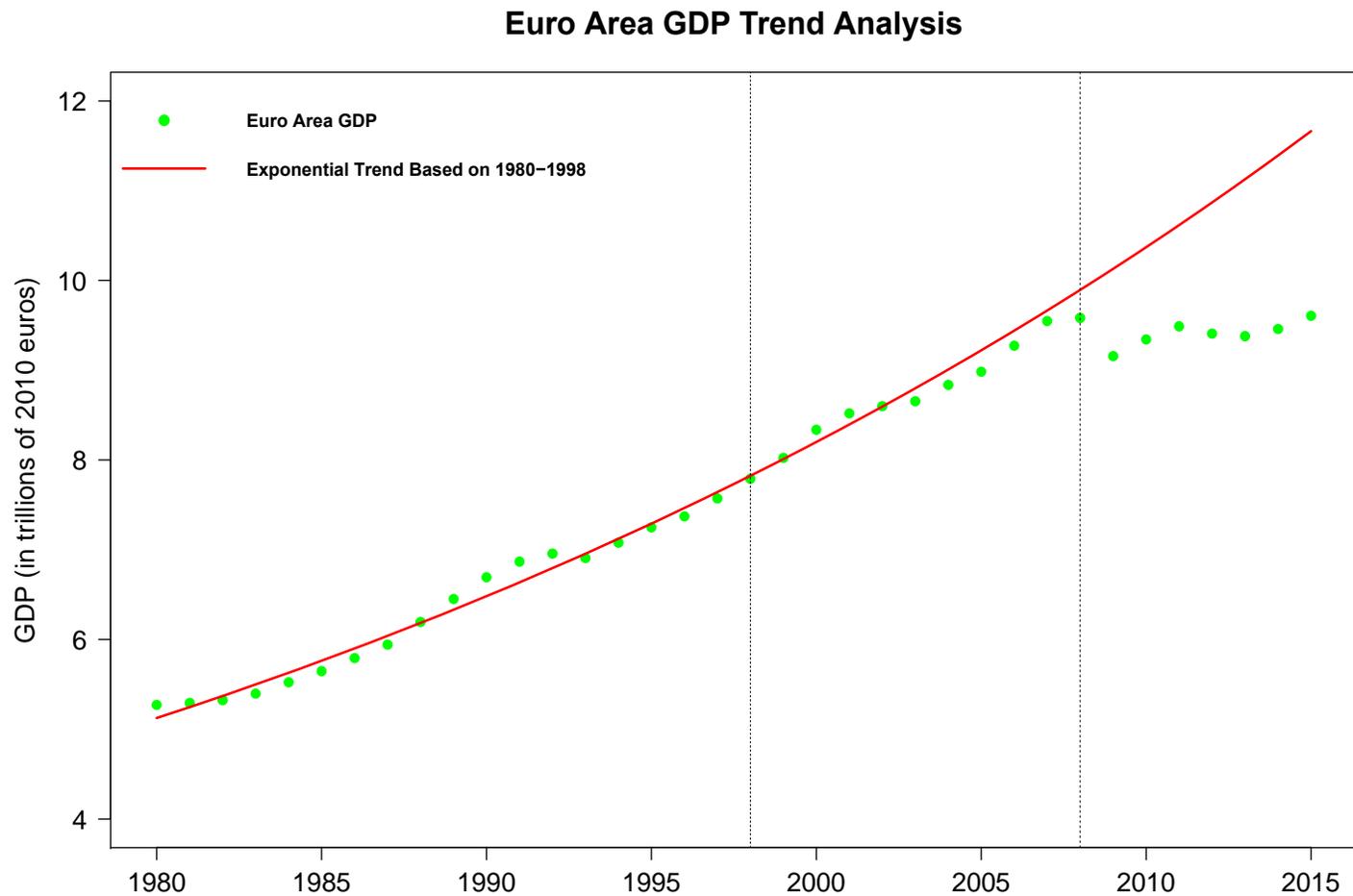
I. Macro-stability

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



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*

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 19th 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

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 19th 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

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- 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”

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 2nd best economics
- But whenever one talks about innovation and learning, one is in the world of 2nd-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

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- 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

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- 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

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- *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.