

Competitiveness and Growth

Getting the Policy Focus Correct

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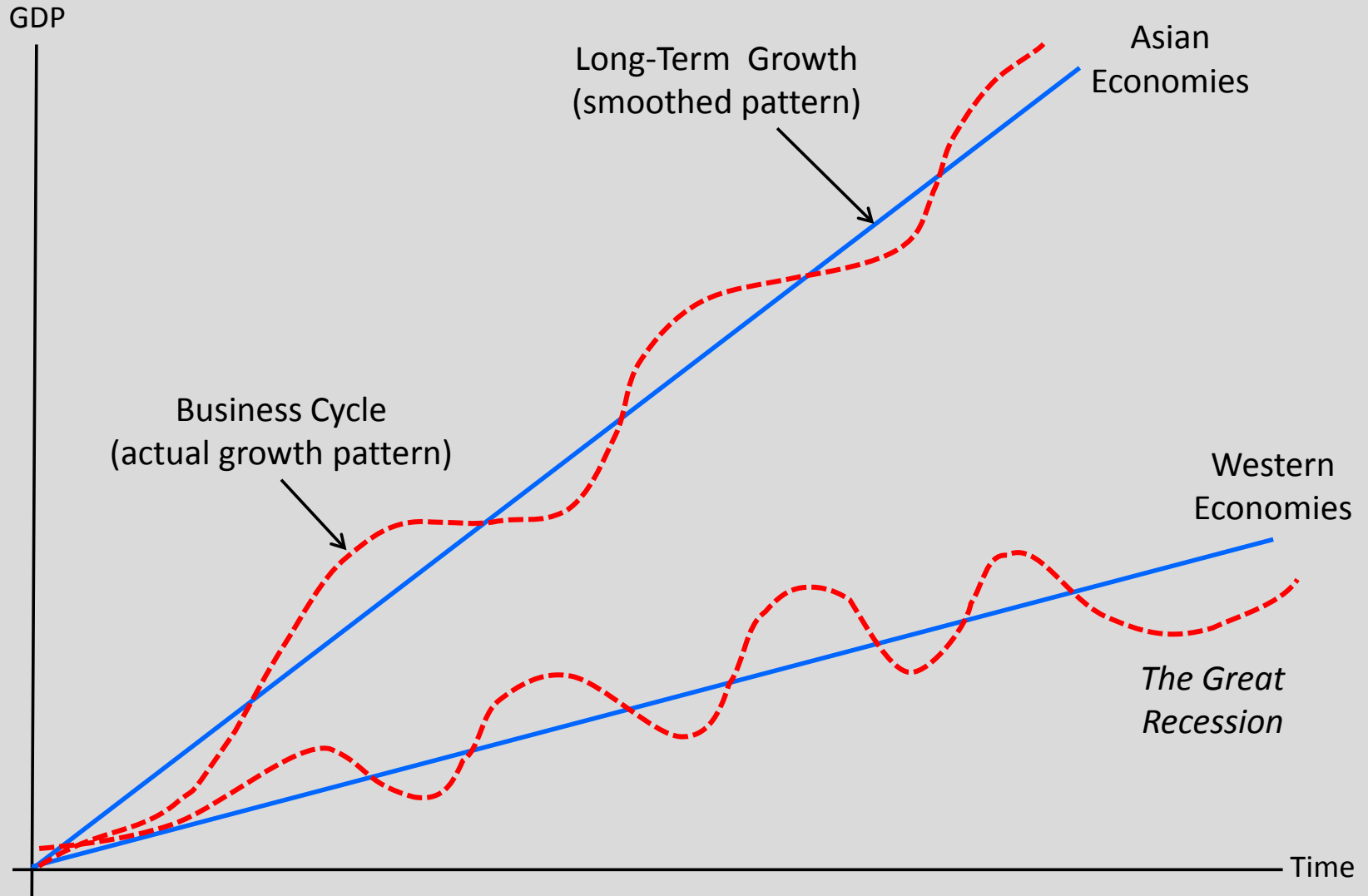
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Traditional Macroeconomic vs. Adaptive Microeconomic Growth Policies

- **Macrostabilization (Monetary and Fiscal) Policies**
 - Fiscal policy: stimulate demand (Keynesian)
 - Monetary policy: lower the cost of capital (neoclassical)
 - Capital accumulation drives growth through multiplier effect
 - Concept of public good is narrowly defined and therefore few government interventions justified—**adaptation is endogenous to the market**

- **Microeconomic (Technology-Based) Growth Policies**
 - Dynamics of economic growth requires management of change
 - Change embedded in and between technology life cycle
 - Productivity, enabled by technology, drives growth through multiplier effect
 - Nature of technology means multiple market failures—**adaptation requires multiple public-private interventions**

Long-Term vs. Short-Term Growth Trends



Importance of the Policy Problem

Projected slow rate of economic growth is simply an extrapolation of a **structurally weak** economy

- For the last decade (2000-2010)
 - Average annual real GDP growth was **1.7 percent**
 - U.S. private nonfarm employment **declined 3.3 percent**
 - Median household real income **declined 7.0 percent**
- However, the current economic growth policy debate is **focused on macroeconomic issues**: government spending vs. deficit reduction, monetary base expansion vs. potential inflation effects
- Inadequate attention given to **capital structure** of a modern economy
 - Technology
 - Physical
 - Human
 - Organizational
 - Technical infrastructure

The Strategic Response to Declining Competitiveness:

- From 2001-2010, a **mountain of debt**
 - American households increased their debt by \$5.7 trillion (75 percent)
 - State and local governments increased their debt by more than \$1 trillion (89 percent)
 - The federal government increased its debt by \$6 trillion (178 percent)
- From 2001-2010, a currency that **depreciated 34 percent** against a basket of major foreign currencies
- Yet, **average annual real GDP growth** in this decade was **one-third** the average for the previous three decades.

Critical to get the growth policy correct

- Ben Bernanke has pointed out that
 - A growth rate in per capita GDP of 2-1/2 percent per year doubles average living standards in 28 years—about one generation
 - A per capita GDP growing at only one percentage point less (1-1/2 percent per year) leads to a doubling in average living standards in about 47 years—roughly two generations

U.S. leaders say the right words

- “Innovation and technological change are undoubtedly central to the growth process; over the past 200 years or so, innovation, technical advances, and investment in capital goods embodying new technologies have transformed economies around the world.”
– Fed Chairman, Ben Bernanke
- “The United States should invest more in R&D”
–Treasury Secretary, Timothy Geithner
- “America’s future economic growth and international competitiveness depend on our capacity to innovate”
– President Obama’s *Strategy for American Innovation*

Relationship Between R&D Intensity and Real Output Growth

Industry (NAICS Code)	Ave. R&D Intensity, 1999-2007	Percent Change in Real Output, 2000-07	Percent Change in Real Output, 2000-09
<u>R&D Intensive:</u>			
Pharmaceuticals (3254)	10.5	17.9	4.9
Semiconductors (3344)	10.1	17.0	1.1
Medical Equipment (3391)	7.5	34.6	39.5
Computers (3341)	6.1	109.9	147.0
Communications Equip (3342)	13.0	-40.0	-59.7
	Group Ave: 9.5	Group Ave: 27.9	Group Ave: 26.6
<u>Non-R&D Intensive:</u>			
Basic Chemicals (3251)	2.2	25.6	-7.8
Machinery (333)	3.8	2.3	-22.4
Electrical Equipment (335)	2.5	-13.4	-33.4
Plastics & Rubber (326)	2.3	-5.2	-28.0
Fabricated Metals (332)	1.4	2.6	-23.6
	Group Ave: 2.5	Group Ave: 2.4	Group Ave: -23.1

Carefully Designed Total-Technology-Life-Cycle Growth Strategies Work

- Germany has a **trade surplus** in manufacturing, even though, compared to the United States, it has a
 - 9 percent lower R&D intensity (2.53 percent vs. 2.77 percent for U.S.)
 - 39 percent higher average hourly manufacturing labor compensation
 - 12 percent higher corporate tax rate

- However, Germany has a **more comprehensive and intensively managed STID policy**
 - Highly skilled labor force across all technology occupations
 - Optimized industry structure (support for both large firms and SMEs)
 - Highest percentage of manufacturing value added from R&D-intensive industries

The core of U.S. fiscal policy aimed at achieving recovery from the Great Recession was the American Recovery and Reinvestment Act (ARRA) of 2009

- Funded at \$787 billion
- A major stimulus program, but **only a modest share directed at productivity-enhancing investments**
 - \$105.3 billion allocated to **traditional economic infrastructure** (highways, bridges, public transportation, etc.)
 - An additional \$48.7 billion directed at **energy infrastructure and energy efficiency** (the latter included a small amount for energy research and manufacturing scale-up)
 - Only \$7.6 billion s allocated to support **“scientific research”**

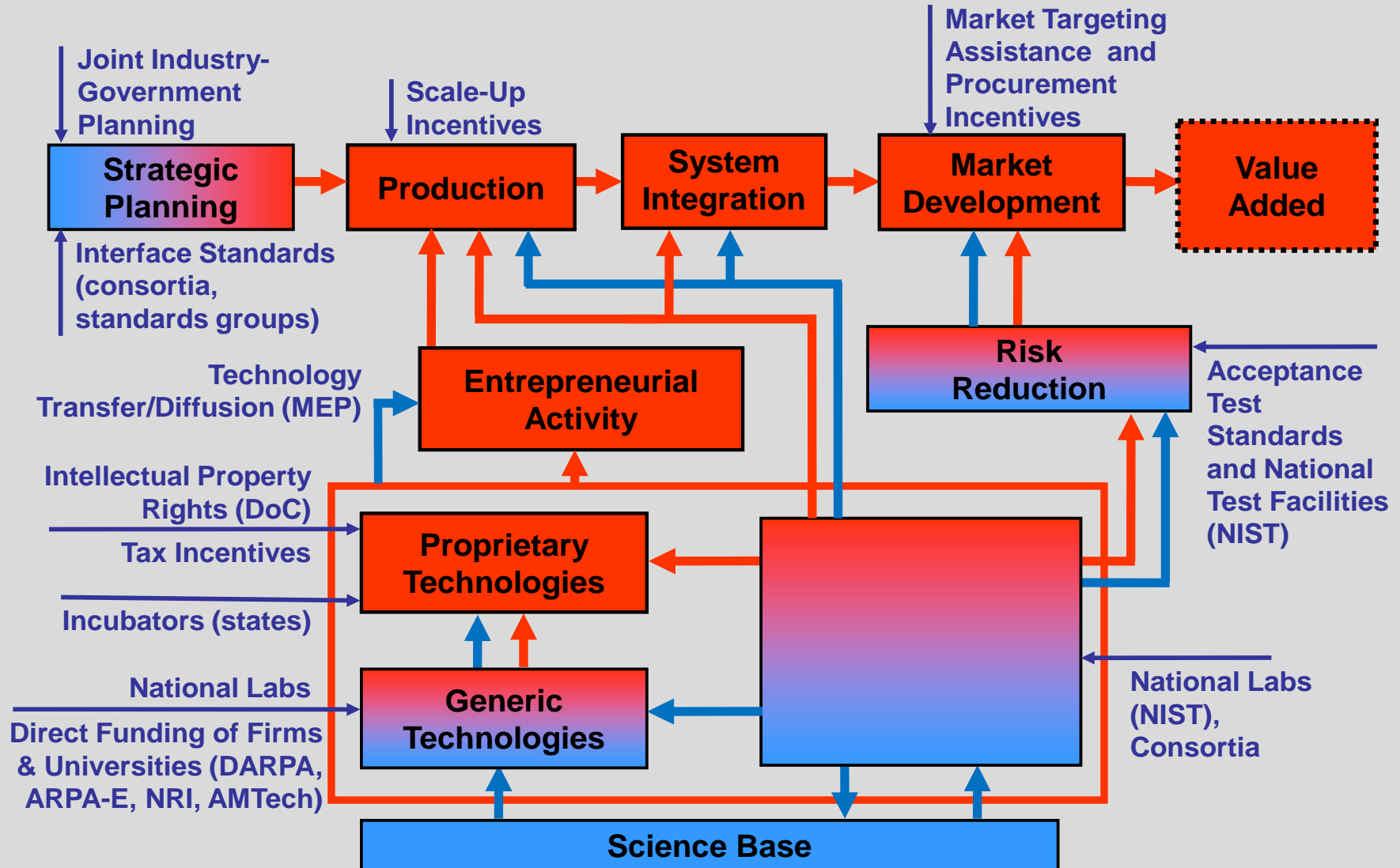
Long-term competitiveness requires three types of efficiency

- **Allocative** efficiency
 - Focus of neoclassical growth models
 - Promote saving
 - Industry uses savings to invest in capital
 - All investment decisions are responses to price signals
 - **i.e., no market failures**

- **Productive** efficiency
 - Function of internal market dynamics (perfect competition)
 - **i.e., no market failures**

- **Adaptive** efficiency
 - Required by dynamics of modern technology-based competition
 - Technology life cycles require adaptation through investment
 - Joint public-private behavior can affect nature and length of life cycles
 - **i.e., multiple market failures**

Managing the Entire Technology Life Cycle: Science, Technology, Innovation, Diffusion (STID) Policy Roles



The Western world has run out of ideas and is 'finished financially' while emerging economies across the world will continue to grow

David Murrin, CIO at Emergent Asset Management