

Forum on Economic Doctrines
ITIF
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“Innovation Economics and the Energy Technology Challenge”

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Four Topics:

1. Important report – draws the contending intellectual battlelines
2. It recalls the Classical/Neoclassical debate over growth theory
3. An analogy – the problem with the neoclassical response and the role of innovation-based growth in the current recession
4. The next task – given the failure of carbon price politics what can innovation economics bring to the energy debate?

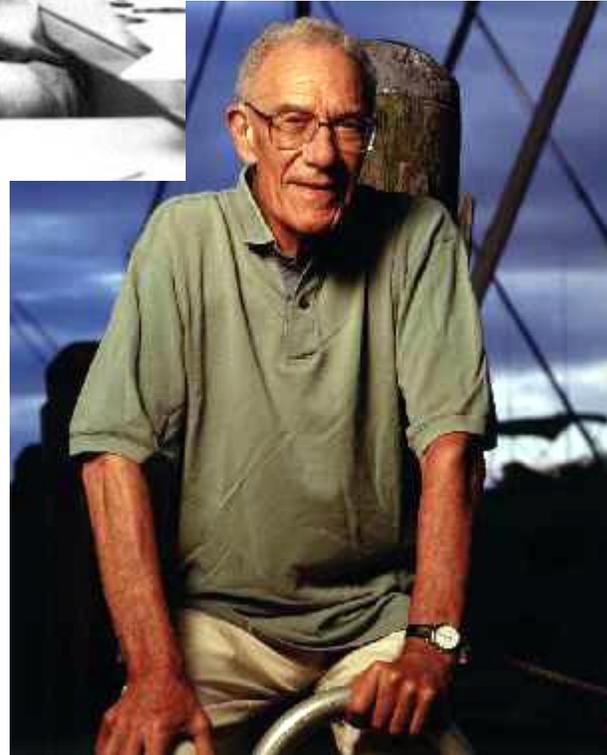
TOPIC ONE – This is an Important Report

- Ever since its founding by economists Solow, Romer, Nelson, etc., growth/innovation economics has been struggling to find a policy basis
- Approach in this report is important advance – it draws the policy battlelines against the economic doctrinal foundations
- Technology policy has been emerging as a field for 20 years, but it hasn't been conducted by economists, it's been led by practitioners in industry, gov't agencies like DARPA, and thinktanks – it has been separated from economic theorists - this report ties it to its doctrinal economic roots and puts it in the context of economic policy debates
- This report doesn't repudiate neoclassical economics – but it builds in a new foundational element

TOPIC TWO: The debate today recalls Solow's debate with the growth theory behind Classical Economics

- In 1987 Solow wins the Nobel Prize by overturning Classical economic growth theory
- He asks: When is an economy capable of steady growth?
 - Classical Answer: When national savings rate (income saved) = capital/output ratio + rate of labor force growth
 - Have to keep capital plant and equip. in balance with labor supply
 - Static view: 3 factors – labor supply/capital supply/savings rate – have to fix these ratios into balance – in forever unbalanced equilibrium
 - Capitalism: just periods of alternating worsening unemployment and labor shortages

Robert Solow and Innovation-based Growth Theory



Solow and Classical Growth Theory

- Solow in his 1987 Nobel Address: “the story told by these [Classical] models felt wrong”
- But Solow: “ I thought about replacing the capital and labor output “with a richer and more realistic representation of technology” – a new theory of production not just output levels – “technological and related innovation”
- Old “growth theory was mechanical” – simply “a description of flows and stocks of goods”
- Solow attacks classical economics and transforms growth theory – sees capitalism and growth as dynamic
- Solow’s basic point about classical economics: “No amount of statistical evidence will make a statement invulnerable to common sense”

Solow and Classical Growth Theory

- Solow's good news: you can increase your rate of economic growth through technological advance – you can improve real incomes/societal wellbeing
- Shows there is a third monster in the room along with capital and labor supply – “technological and related innovation” – and it's the big monster
- But economics still treats the policy implications of that monster as “exogenous” despite Romer's attempt to make it “endogenous”
- We've never followed through from a policy perspective and pushed the logic of Solow's vision
- This ITIF report says we can't wait – the need is upon us.
- We're at the same moment with Neoclassical Economics that Solow was at with Classical in 1987: “No amount of statistical evidence will make a statement invulnerable to common sense.”

TOPIC THREE: An Analogy to Our Current Economic Circumstances

- The Great Recession
 - 10% unemployment
 - Up to 44 million at poverty level – 1 in 7

The Toolkit – summarized in the report:

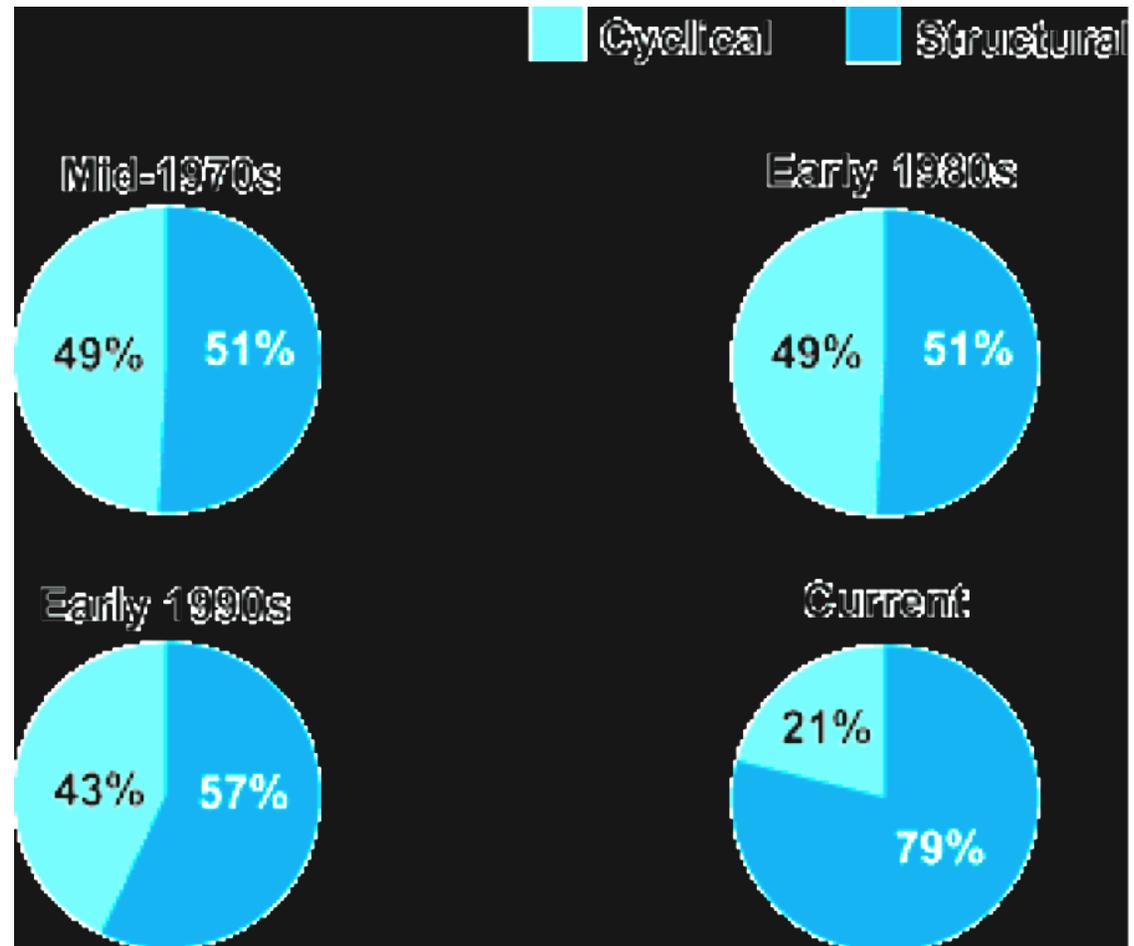
- The Neoclassical economics doctrinal base:
 - Condition for Growth: maximize allocative efficiency;
 - Equilibrium theory: supply demand balance⁸

The Neoclassical Toolkit:

- Pricing signals predominate – interest rates, currency supply, inflation, monetary policy – assumes pursuit of rational self interest
- Measurement based –
 - if it can't be measured (culture, history, organization theory, psychology), doesn't count
- Markets are all; avoid distortions and interventions
 - Exceptions: correct market failures via public goods; offset externalities; support information transparency; promote competition; allow new entrants despite economies of scale
- And Keynesian lesson – if market collapse,
 - bailouts, safety nets, lower interest rates –
 - damage control – and wait
- No real doctrinal base for recovery – stabilize + wait

Last Two Recessions:

- **1990-92 Recession**
– structural, 57% of jobs lost didn't come back; 14 months from trough to upswing
- **2001-03 Recession**
– 79% of jobs don't come back; 23 months trough to upswing
- **Structural: have to create new sectors**



BLS Data – E.Milsbergs,
Innovation Metrics (2004)

Clearly the Recession says we need new tools...

- Growth/innovation economics has a real contribution to make here -
- Can we bring on new wedges of growth – not full fledged innovation waves, but the starting wedges of new sectors?
- where public R&D would leverage private sector investment?
- Examples: robotics/advanced IT mix, advanced materials, nano or – energy?

TOPIC FOUR: Energy Technology

- For 15 years, since before the Kyoto Protocol we have assumed cap and trade is the policy answer to our energy challenge
- We had no “Plan B”
- Particularly interesting moment because a carbon price approach has politically fallen off the table –
- Can a series of technology advance policies help keep us on track on carbon advances?

What would a “Plan B” look like?

- *Possible Elements:*
 - Energy Security/Economic Competitiveness Rationale
 - Stronger technology strategy and support – focus on price
 - DOD test bed and initial market role – MilCon approp’s.
 - USDA role in biofuels and rural programs?
 - Residual regulatory authority – remains driver
 - EPA Clean Air Act, CAFE, appliance standards, etc.
 - Regional, state-based economic incentives and regulatory regimes for carbon
 - California, Northeast – regional “nation-sized” markets
 - Electrification Coalition – “Denmark” sized pieces for transport electrification
 - “Public Good” rationale: financing CCS, nuclear, transport
 - Registry for private sector actions and efficiencies

ITIF Report sends us in a new direction – what are the economic innovation policies we need in energy?

- Getting this Plan B energy policy right becomes the major technology policy challenge of our time