

Public Policies for Advancing Innovation, Economic Growth and Employment

**Nicholas A. Ashford
Massachusetts Institute of Technology**

Seminar Objectives

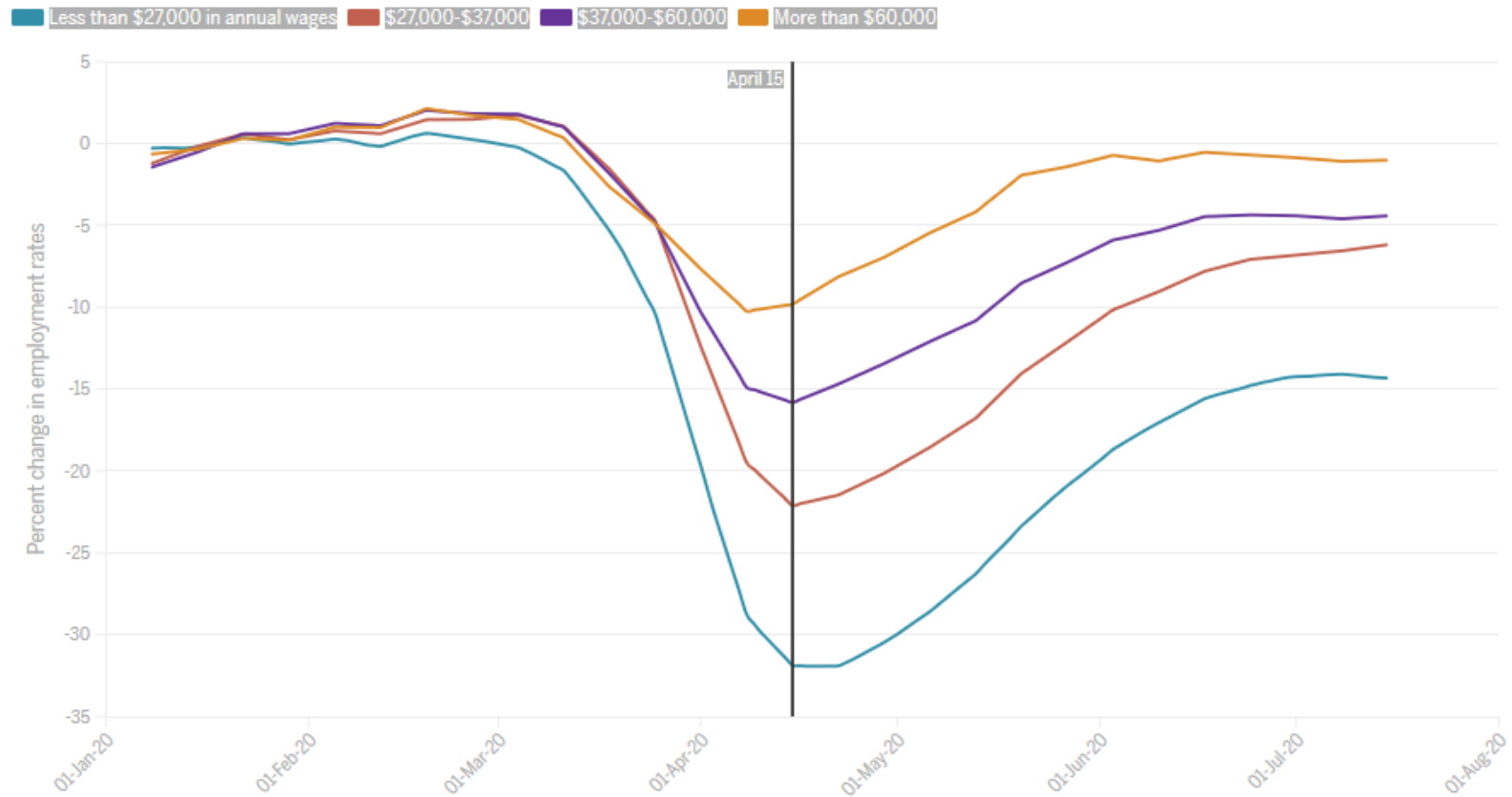
- Discuss how industrial policy is used to promote competitiveness and employment
- Explore various approaches to promoting more sustainable technologies/systems
 - Consider the role of government for each approach
- Develop an understanding of scenario analysis and participatory backcasting and their potential for promoting sustainable development
- Consider an industrial policy for developing economies

Employment Rates by wage quartile in the COVID-19 crisis

By Shared GraphicsDesign on 4 Sep 2020

Hardest hit

Higher earners have recouped nearly all the jobs losses from March and April, but those with lower annual incomes still have a ways to go.



Source: Opportunity Insights analysis combining payroll data from Paychex, Intuit, and Eamin and time sheet data from Kronos

TEMPLATE CREDITS

Line, bar and pie charts by Flourish team

Options for addressing the present crisis

- Increase labor-intensive activity in infrastructure (paint the bridges and fix the potholes, but watch out for environmental & global climate deterioration)
- Improve **labor productivity** (but note: labor productivity is a ratio of output from all sources (natural, physical., and energy capital per (cost of) unit of labor (this is not a good metric of economic health). Distinguish from increasing **labor productiveness**).
- Increase the production of products rather than increase innovation in processes (Cf. Edquist)
- Invest in more “big science” e.g., ARPA-Heath (Cf. Mazzucato)
- Apply traditional industrial policy to yield more innovation in general
- Select Niche’s to receive special treatment (transition management)
- Target environmental and labor deficits through regulatory intervention

Improving labor Productivity

- **Definition: labor productivity is output per (cost of) unit of labor (this is not a good metric of economic health)**
- **increase worker skills**
 - » increase **labor productiveness**
 - » Labor content and rewards to workers are increased
- **use/develop better hardware, software, and manufacturing systems**
 - » increase **capital productiveness**
 - » Labor content and workers' share of profits are decreased
- **externalize the cost of manufacturing and services onto the consumer**
 - » assemble your own bookcase; tech support, banking, travel help
- **Labor's share of productivity improvements and profits has been seriously eroded.**

Theoretical implications of decreasing labor content for employment and for the environment

- **Lower costs of goods and services →**
- **Lower prices →**
- **Increased demand and sale of goods and services**
 - » **in the original industry/market**
 - » **in new markets (influenced by increases in disposable income and producer-created demand)**
- **Are more workers hired than displaced?**
 - » **It depends on whether growth in production outstrips (capital) productiveness growth**
- **May require or stimulate a continual throughput economy with increasing consumption**
 - » **=> adverse effects on environmental sustainability**

Innovation and Employment

- Observations (after Edquist)
 - » It is generally accepted that products innovations *create* jobs
 - » It is generally accepted that process innovations *destroy* jobs
- Employment opportunities are more likely if the *new products* are cheaper and [1] consequently command a sufficient increase in demand and units sold, or [2] the increase in disposable income enjoyed by consumers is spent on other products

Innovation and Employment, cont.

But, job creation relating to new products might be counteracted by job destruction relating to the older products

There is also a tendency for new products to be capital intensive – i.e., less jobs are created

The key to job creation is that growth in production (*i.e., demand*) needs to outstrip productivity gains (*i.e., production efficiencies achieved via process innovations*)

Outcome: We need to consume more (i.e., grow the economy) to maintain employment! Environmental effects?

Should we pursue growth in products vs. product-services? Or in services?

AN EXPANDED VIEW OF THE DYNAMICS OF TECHNOLOGICAL CHANGE

- Invention (the first working prototype)
- Innovation (the first commercially successful introduction)
 - » *Within the current/dominant technological trajectory*
~ sustaining innovation
 - » *Outside mainstream development* ~ disrupting innovation
 - *Intrinsic innovation*
 - *Architectural Innovation*
- Diffusion/Technology Transfer (wider adoption *within* an industry/across industries or countries)

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- Products =>
 - Product Services

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- Process Changes

-
- System Changes

Generic Governmental Industrial Policy Options for Government focused on transforming industry

Provide a suitable business and financial environment and legal infrastructure. (minimal role for government)

Provide federal support for science and new product and technology development. (“big science” initiatives)

Augment the ongoing processes – involving stakeholder in various networks -- in the innovation process (traditional industrial policy) →

Actively manage/steer evolutionary change in industrial firms (co-evolutionary; transition management).

Create mandatory targets for performance and operations that may be beyond the current capacity of incumbent firms. (maximum intervention)

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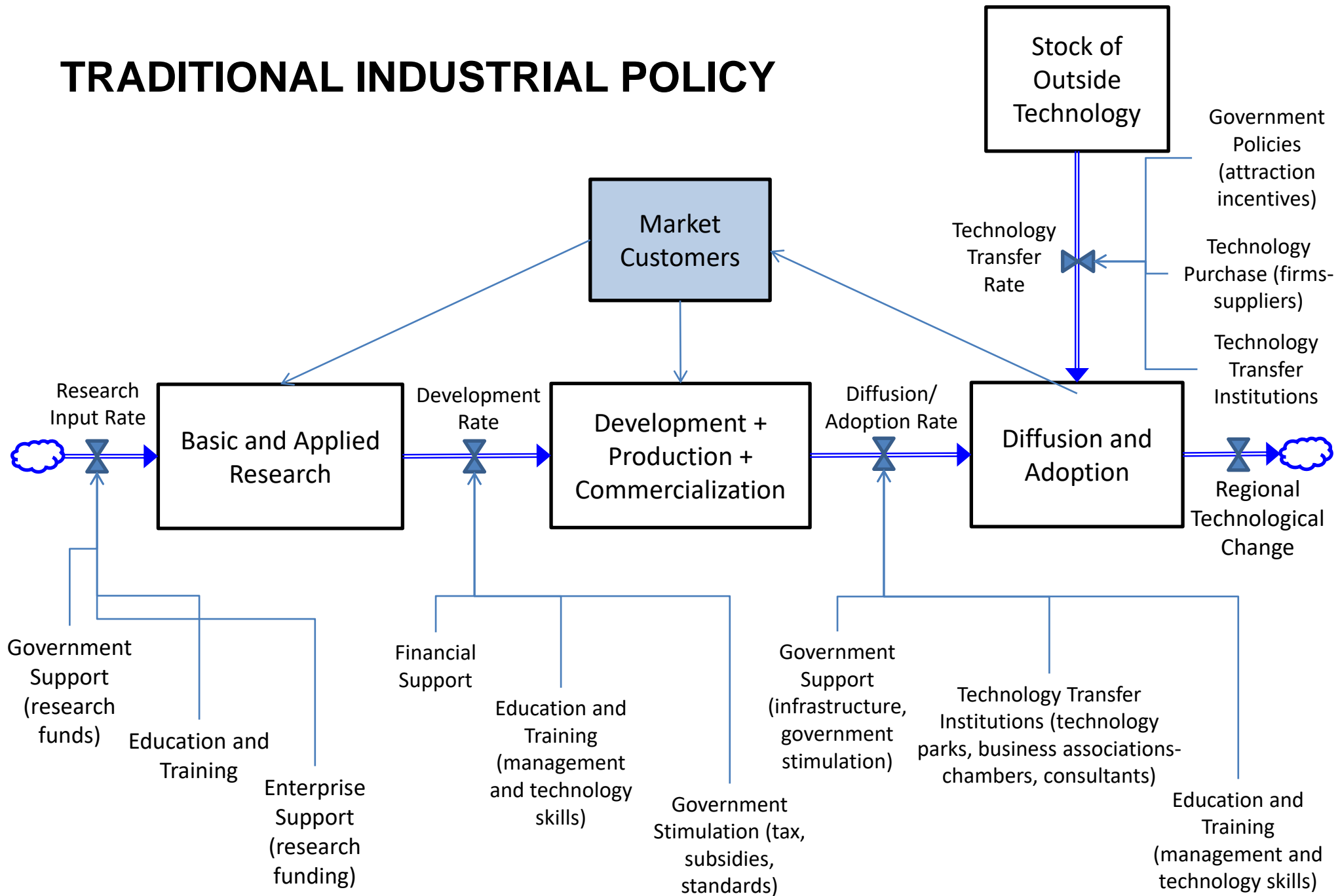
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TRADITIONAL INDUSTRIAL POLICY



DIFFERENT POLICY APPROACHES FOR STIMULATING INDUSTRIAL TRANSFORMATIONS

- **Strategic Niche/Transition Management** [Kemp, Rotmans, Hoogma]
 - » evolutionary/co-evolutionary approach addressing both technological and organizational changes/innovation – most likely to promote sustaining innovation.
- **Integration of policies and strong intervention by government**
 - » setting clear demanding targets (regulation) to encourage revolutionary (disrupting) change
 - » shift from products to product services
 - » encourage more comprehensive system changes
 - » Integrate, rather than merely coordinate policies

CURRENT SUGGESTIONS FOR WAYS OUT OF THE CRISIS

- More industrial production to create more trickle down, i.e., a robust industrial growth policy. (Are plateaus being reached in technology development? What about planetary boundaries, e.g., global climate disruption? Current ten-year forecast for the US is 1.9% growth)
- Shift to a greener industrial system/economy? (Is it sufficient?)
- Redistribution of wealth and income? (Is it politically feasible?)
- Keynesian spending (Are deficits a problem?)
- Doing with less (What about poverty?) Degrowth is upon us. Should we manage [de]growth?
- Deglobalization, retreat from trade, isolation, going-it-alone

REFORMING THE INDUSTRIAL & ECONOMIC SYSTEM

- Redistribute income and wealth
 - Change the taxation of income and wealth
 - Increase the Minimum Wage
 - Supplement the shortfall in paid wages during economic downturns
 - Provide a Guaranteed Minimum Income
 - Pay those doing unpaid work, such as child-rearing/care of the elderly
 - Tax corporations that shift production abroad
 - Tax excess profits
 - Prohibit elimination of jobs (~Germany ~ 9% growth)
- Redesign products, production processes, services, and systems
- Change the effective taxing of labor and pollution/energy by taxing pollution/energy and reducing the tax on labor
- Engage in Keynesian spending (a temporary solution)
- Shorten the workweek with or without a reduction in wages
- Increase the contribution of employment to productivity improvements by designing work back into the production process and the delivery of services
- Change the nature of consumer and human-centered demand

REFORMING THE INDUSTRIAL & ECONOMIC SYSTEM (CONT'D)

- Adopt the recommendations of Marjorie Kelly in *The Ownership Society* in creating “B-corporations” to invest in public services. Also wealth creation options (Are either competitive?)
- Increase the participation of workers in employee stock ownership plans (ESOPs) in their places of work (but early enough to matter)
- Institutionalize the central tenets of binary economics allowing people to gain income from collectivizing their financial capital currently restricted to elitist banks and investment cartels (Why so little interest in broadening the ownership of productive capital?)

Additional Interventions

- (1) advance the coverage of U.S. labor law
- (2) advance the practice of “technology bargaining” between employers and unions/workers
- (3) increase unionization
- (4) subsidize college loans and lower tuition to train workers for the new economy, and
- (5) extend and expand anti-trust law and enforcement to AI and platform-based emerging industries.

TRANSFORMATION PROCESSES REQUIRE

- trans-disciplinary expertise
- the emergence of new ways to meet the basic needs of the society,
- re-conceptualizing the basis of the economy
- the avoidance of agenda and pathway capture or lock-in by incumbent actors and ideology
- technological displacement and substitution of new for old technology
- in some cases, the displacement of not only the dominant products and technologies, but also the incumbent firms and public institutions
- co-optimization: co-evolution of technological and social systems, institutions → complementary and mutually-reinforcing technological, organizational, institutional, and social innovations
- system changes that cut across problem areas -- competitiveness, environment, and employment -- and therefore also cut across sectors and firm divisions, as well as government departments and missions.

Industrial Policy in Developed vs. Developing Nations

Industrial Policy in Developed Regions

- Promote innovation and accelerate diffusion of new technologies
- Rationale: Competitive advantage lies in innovation and in high value-added technological ‘frontier’ activities

Industrial Policy in Developing Regions

- Acquire technological capabilities to locate, use, and adapt existing technology
- Less of a focus on innovation
- Rationale: Technological follower (*but not true for all*)
- But also recognize indigenous approaches ~ “small is beautiful”

Industrial Policy for Developing Economies (after Rodrik)

- Theory of Comparative Advantage doesn't seem to operate to the benefit of the developing world
- Get the *policy process* right, rather than focus on the outcomes ~ need institutional innovation
- The developing world suffers more from the demand-side faults, than the supply-side deficiencies
- Focus on information externalities, rather than on winning sectors
- Need to enhance:
 - the self-discovery process to identify opportunities and deficiencies
 - coordination and the willingness of government to deploy an industrial policy

Ten Design Principles for Developing Economies (after Rodrik)

- Incentives should be provided only to new activities in order to diversify the economy and establish new areas of comparative advantage (not to be confused with sector promotion)
- Establish clear benchmarks for success and failure
 - Experimentation necessary
- Establish sunset clauses
 - Counteract inertia
- Support public activities, not sectors
 - Need institutional innovation and human resource development
- Subsidize activities that have spill-over and demonstration effects

Ten Design Principles for Developing Economies (after Rodrik), cont.

- Vest authority in agencies with demonstrated competence
- Insist on politically accountable monitoring
- Establish clear channels of communication between agencies and private sector
- Tolerate failures
- Ensure that activities renew (and rediscover) themselves
- **Surprisingly, there is no mention of regulation or the role/rule of law**

Take-home Lessons

- Everything is connected to everything else
- There are many more ways to address the problems incorrectly than correctly
- Co-optimization (achievement of mutually-supportive goals) and integration rather than “balance” or compromise of various policies are needed
- Government intervention, although not sufficient, is a necessary component of pathways to successful transformation of the developed and developing nations
- We need an industrial policy for the economy, environment, health, and safety (and for employment), i.e., a national sustainability initiative