INDUSTRIAL POLICY AND CREATING A LEARNING SOCIETY

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October, 2013
Industrial policy

- Attempts to “correct” market sectoral allocations or choices of technique
- Recognizing the pervasiveness of “market failures”
- Taking into account at the same time limitations of government
  - In some cases, “correcting” other harder to eliminate government failures
- Not limited to promote “industry”—term used more generally
- Wide variety of instruments
New views on industrial policies

- Every country has such policies—whether they know it or not
- Result of tax and expenditure policies (e.g. design of infrastructure, education policies)
- Result of legal and regulatory structures
  - General Principle: Markets do not exist in a vacuum; they are shaped by laws, regulations, policies
  - And hence governments are inevitably involved in industrial policy
    - When the US gave derivatives precedence over other claimants in bankruptcy court, that is industrial policy
    - When the US taxes speculation at low rates, that is industrial policy
    - When the US bails out its banks and auto industries, that is industrial policies
      - And how it does these things is also part of industrial policy
Objectives of industrial policy

- Not just to promote growth
  - Or helping economy restructure
- But to pursue other social objectives
  - Employment
  - Equity/redistribution
  - Regional
  - Environment
Basic themes

This talk is about one set of industrial policies

- Successful and sustained growth and development requires creating a learning society.
  - The transformation to “learning societies” that occurred c. 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.

- 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
Especially important in the 21st century, as we move to a knowledge economy.

Especially important for developing countries—what separates them from developed countries is not just a gap in resources but a gap in knowledge

Focus on diffusion of knowledge

- From developed to developing country
There are many aspects of creating a learning society

- Promoting the dissemination of ideas—even in well-run economies, there are large gaps between best and average practices
- Promoting the movement outwards of the technological frontier
- Promoting the adaption of knowledge to local circumstances
- Increasing learning capabilities—learning to learn
Creating a learning society

- Markets, on their own, are not efficient in promoting innovation.
- There are marked market failures associated with learning
  - Knowledge is a (quasi-public) good
  - There are always important spillovers/externalities
  - Investments in learning/R & D are risky and hard to collateralize; risk and capital markets are imperfect
  - Fixed costs associated with learning naturally lead to imperfect competition
- Industrial policies can help “correct” these market failures
  - But policies that are appropriate for countries in one stage of development may not be appropriate at another
  - IPR regime for US and for emerging markets may differ
  - Trade interventions may be more desirable in developing countries than in advanced countries
Implies that a central question of growth and development should be:

- What should governments do to promote growth through learning (technological progress)?
  - Markedly different perspective than standard question, which focuses on static efficiency, moving countries to “frontier” or moving out frontier through the accumulation of more resources
  - Question is especially salient because the two policies may be in conflict
    - 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
What drives growth? Is it trade?

- Trade, investment opportunities are universal: so if they were driving force, then would expect to see similar patterns everywhere.
  - So long as governments didn’t foreclose opportunities of taking advantage of trade.

- But some open economies have grown more than others.
  - Some economies that “managed” trade did better than some that were more open.
  - Some regions of country grow better than others—facing same trade opportunities.

- But growth differs markedly, suggesting it is particular forces that are driving growth.
  - Must look into structure of economy and its policies.

- Within all countries, there are large differences between average and best practices.
  - Suggesting large scope for “learning”.
  - Much of learning is “incremental,” not grand innovations.
Contrasting perspectives

- **Standard theories**
  - Focus on *current* 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
  - Structure of economy that encourages learning
  - Policies that encourage learning and spill-overs
  - Dynamic comparative advantage—comparative advantage is endogenous
But what shapes/determines dynamic comparative advantage? What are the state variables (endowments) today that shape the direction that an economy should go? How should the government try to influence the economy?

- If capital is relatively mobile, then capital labor ratio is less important.
- Knowledge, institutions, learning capabilities may be least mobile across boundaries, and therefore be the central core of “endowment”
  - Though movement of skilled labor makes even some forms of knowledge mobile.
- Easiest to learn about adjacent technologies
  - But may not correspond to usual sectoral definition
  - Localized technological progress—may be specific to specific technologies within a sector
  - But can be relevant to quite different sectors using similar technologies
  - Interesting research agenda: what are technologies from which society can learn the most
  - Research suggests that in the past natural resource sectors have weak linkages
  - But this may in part be because potential linkages have not be adequately exploited
  - Complex dynamic programming—want to move towards technologies from which one can learn the best going forward
    - Reinforces argument for “tech” oriented industrial policies
    - Reinforces argument against mining sector
Example 1: Theory of the firm

- Not based on transactions costs (Coase)
- Knowledge moves more freely within firms than across firm boundaries
- “Learning firm” focuses on how best to organize itself (networks) to maximize learning and diffusion of knowledge
- Resource allocations within firm are typically not based on prices, or even contracts
- Trade-off between “learning” and “allocative efficiency”
Example 2: Intellectual property

- Designed to reduce access to knowledge by others
- Promoting secrecy, undermining collaboration
- Allegedly, static costs vs. dynamic benefits
- But increasing concern that there may be dynamic costs as well
- Alternative models—open source (universities)
Infant industry argument

This talk focuses mostly on “macro” perspective

- Infant industries—economies of scale
  - Losses during “learning phase” serve as entry barriers, putting developing countries at disadvantage

- Critiques
  - Government can’t pick winners
  - Infants never grow up
  - Better ways of providing assistance than protection—direct and transparent subsidies
Infant industry argument (cont)

- 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 bio-tech
        - 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
In fact, learning by doing itself provides little basis of industrial policy.

- Consider a two-country, two-product Ricardian world with Cobb-Douglas utility functions, with one product with learning and the other stagnant (learning internalized in country).

- Consider equilibrium in which “developed” country specializes in dynamic sector.

- With competition, full benefits of learning are shared with developing country through price declines.
Central then is understanding the structure of learning within an economy—including across sectors.

Many processes, practices, and institutions entail cross-sector learning/increases in productivity:

- Inventory control processes
- Labor management processes
- Computerization
- Financial services
Central conclusions

- The industrial sector (broadly understood, including services) may not only exhibit a larger learning elasticity, but also more spillovers to the rural/agricultural sector.

- It is therefore desirable to encourage the industrial sector:
  - May be sub-sectors with higher learning elasticities, more externalities.

- Broad-based export subsidies (as in East Asia) may be a desirable way of doing so.

- But WTO has restricted the use of such subsidies.

- Exchange rate policy may be a second best alternative.
Advantages of industrial sector

- Large—high returns to scale
- Long-lived—high returns from continuity (learning to learn)
- Stable—high returns from completion
- Concentrated—high rates of diffusion
Strong industrial sector is basis for:

- More research—
  - More resources and incentives for research and development
  - More internalization
  - Greater ability to support public research and development
  - More human capital formation, including public support for human capital accumulation

- The development of a robust financial sector

- Learning to learn and cross-border knowledge flows

**Implication:** Rate of productivity increase related to (relative) size of industrial sector.
Markets fail to do this on their own

- Learning external to the firm
  - Failure to take into account learning benefits to industry as well as spillovers

- Learning limited to the firm
  - Natural monopoly
  - If there were no cross-sectoral spillovers, rational firm would take into account all learning benefits
  - But distortion from monopoly power

- In both cases, in general, market equilibrium not efficient
From the infant industry argument to the infant economy argument for industrial policy

To create a learning economy, government intervention is required

- Infant economy argument for intervention

- Optimal to impose some subsidies, even if taxes are distortionary

- Optimal subsidies lead to expansion of those sectors that have larger societal learning benefits, taking into account both direct learning and cross sectoral spillovers.
  - If the learning elasticity of some sector is much larger than that of others, and there is some sector that is a substitute for the high-learning sector, then it may pay to tax that sector, in order to encourage learning in the high-learning sector
Industrial policy in the presence of WTO constraints

- Exchange rate policy may be an effective alternative
  - Lowering exchange rate below “equilibrium” (trade balance) leads to larger industrial sector and faster learning and trade surplus
  - Avoids the problem of “picking winners”
  - Avoids the problems posed by WTO restrictions

- Even pays to have a perpetual current account surplus
  - Surprising — “capital” that one never uses
  - But learning benefit exceeds the opportunity cost of funds
But even if it were not desirable to do it forever, it may be an important element of development strategy.

- Problem with using steady-state models
Trade policy can affect factor prices, and therefore the level of investment, and therefore the level of learning (when learning is related to the level of investment rather than to output or labor input).

More than offsetting the social costs of distortion.

We have focused on “learning,” but even more important is “learning to learn.”

Industrial and trade policy can enhance an economy’s learning capacities.
General lessons

- Another example of 2nd best economics

- But whenever one talks about innovation, 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 lesson

- 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)
“Political economy” objections

- 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
  - Monetary policy is also imperfectly implemented, still most believe some use of monetary policy desirable
Industrial policies can work

- Mixed historical record
  - Question is: are problems inherent in political processes, or can political processes be improved
  - Historical record suggests not inevitable
  - Virtually every successful country has used industrial policies

- But historical record does suggest caution
Growth, learning and innovation: To what end?

- Much of innovation in advanced industrial economies has been directed towards saving labor
  - But in many developing countries, labor is in surplus, and unemployment is the problem
  - Labor saving innovations exacerbate this key social problem
It is natural resources/the environment which is “underpriced”

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.
Democratic growth must be inclusive

- 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.
  - Non-inclusive growth can lead to non-democratic societies
  - Non-inclusive growth can lead to democracies that do not support high growth strategies
The political economy of inclusiveness and openness

- Government needs to play an important role in any economy, correcting pervasive market failures, but especially in the “creative economy”
  - Industrial policies can affect structure to promote learning
  - But they also affect structure to promote other objectives—greater equality, better environment
  - And these objectives may be intertwined—more inclusiveness may promote more learning; better environmental policies may promote more learning

- 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”
General principles of a learning society have broad implications for:

- Financial and capital market liberalization
- The design of monetary policy and institutions
- Macro-economic policies
- Intellectual property regimes
- Investment treaties,
- Taxation, and expenditures on infrastructure, education, and technology
- Legal frameworks for corporate governance and bankruptcy
- Entire economic regime
Again, policies are intertwined

And all need to be viewed through learning perspective

- Capital and financial market liberalization may lead to more instability
- Focus on price stability may lead to more instability in real economy
- More instability in real economy has implications for sectoral allocations
- More instability in real economy adverse to creating a learning society
- More instability may have adverse distributional consequences
  - Reinforcing adverse impacts on learning
- Standard policy prescriptions ignored learning, often resulting in policy prescriptions that were adverse to learning, and hence to long term increases in standards of living
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 it could avoid matters of industrial policy—following the neoliberal doctrines that these are matters to be left to the market.

- But they cannot.

- The choices they make in each of these arenas will inevitably shape the economy, politics and society, for better or for worse, for decades to come.
Paper builds on earlier joint work with Bruce Greenwald

