Introduction
Controversy on state versus market organization is particularly true for industrial activities
Exaggerated rumors of industrial policy’s death
Industrial policy is more appropriately conceived as a process whereby the state and the private
sector jointly arrive at diagnoses about the sources of blockage in new economic activities and
propose solutions to them.

Literature on importance of specialization has evolved recently:
  -from comparative advantage theory
  -to recognition of market failures and dynamic benefits of diversification and sophistication
No one size fit all recommendation for the industrial policy:
  -depends on the context -doomed to choose.
  -some reasonable principles of organizations can be advised

Lecture Outline
Introduction
I-Industrialization as development
A-Why industry rather than agriculture?
B-Does industrial specialization matters?
II-Development of new activities: is there a role for industrial policy?
A-Reasons why government should not get involved?
B-Reasons why government should get involved?
C-Modern sector development: impact of policies
D-Industrial policy as a predicament

I-Industrialization as development
A-Why industry rather than agriculture?
1- Hoffmann’s law
2-Traditional models of development economics: Lewis
3-Economic globalization has greatly increased the premium on manufacturing, particularly of the
exportable kind.
   -near-limitless demand
   -less evidence of terms of trade deterioration as long as development of new activities
which face dynamic demand.
4-Higher productivity: increasing returns to scale and learning effects

I-Industrialization as development
B-Does industrial specialization matters?
1-Conventional trade theory à la Heckscher-Ohlin:
   -Comparative advantages argument
   -Products have no major significance
   -Attempt to change an export package from what is indicated by its current income level is
misallocating resources (lower growth)

2-Empirical findings
These regularities underscore the **importance of industrial development (products) as an engine of economic growth.**

Growing body of systematic empirical evidence that now backs up the maintained hypotheses in the classical literature on development (in opposition to the conventional HO theory).

**2-Empirical findings**

**Finding 1:** Economic development requires diversification not specialization

**Finding 2:** Rapidly growing countries are those with large manufacturing sectors (East Asia versus Latin America)

**Finding 3:** Growth accelerations are associated with structural changes in the direction of manufacturing

**Finding 4:** Specialization patterns are not pinned down by factor endowments

In many countries policies have pushed the limits of static comparative advantage: sophistication greater than predicted

**Indicator EXPY:** level of sophistication of exports defined as income levels of exports

\[
EXPY_i = \sum_p PRODY_p \frac{EXPORTS_{i,p}}{EXPORTS_i} \quad \text{with income level} \quad PRODY_p = \sum_i RCA_{i,p} \times GDP_p \quad \text{with revealed comparative advantage} \quad RCA_{i,p} = \frac{EXPORTS_{i,p}}{EXPORTS_i} \times \frac{EXPORTS_{w,p}}{EXPORTS_w}
\]
Association between sophistication of export package in 1992 and growth over the following 11 years. Hausmann, Hwang and Rodrik (2006)

B-Does industrial specialization matters?
2-Empirical findings:
Finding 5: Countries that promote exports of more “sophisticated” goods grow faster
Countries converge to the level of income implied by their exports, or said differently: you become what you export

Incoherent with conventional HO theory

Reasons for importance of level of sophistication (industrial upgrading) for economic performance
*More sophisticated products have greater productivity frontiers: start of their production guarantees productivity improvements: convergence at the product level
*Hwang: changing products is complicated but once done economic convergence at the level of individual products is unconditional.

II-Development of new activities: is there a role for industrial policy?
A-Reasons why government should not get involved?
1-Deep skepticism of the capacity of well-meaning bureaucrats
-allocation of resources in an economy is too complex and too information sensitive
-a process to be centralized: impossible to pick winners
-what incentives would guarantee advances in the public interest? issue of rent seeking

2-Magic hand of the market forces
-miraculous capacity of the market to solve coordination problems that would be dauntingly complex
-self interest addresses the incentive problems to achieve good social outcomes
Implication: Governmental role should be restricted to basic public goods provision

B-Reasons why government should get involved?
1-Externalities: divergence between private and social returns
-positive externalities on competitors: information, innovation, labor training, and infrastructure: discourage first mover
-negative externalities: pollution, resources exhaustion: encourages overproduction to the detriment of social welfare
2-Complementarities: coordination failure

- new activities are less likely to develop if suppliers of specific inputs are already present but they will more likely exist if outlets are large
- chicken and egg problem / path dependency / multiple equilibrium (trap)

**Implication:** subsidize activities with positive externalities (innovation, labor training, and infrastructure)
- coordinate new activities and inputs investments: provision of a guarantee to investors.

**B-Reasons why government should get involved?**
Market failures are more acute for new activities than for already established ones
- externalities and complementarities
- huge fixed costs: dysfunction of the capital/insurance market
- information failures

**Implication:** process of structural transformation may halt jumps may be too slow, fewer in number and shorter in distance than would be socially optimal

3-Path dependency: analogy of the forest
Existing production pattern is platform for jumping on to new economic activities with unexploited productivity potential: more favorable if
- similarity of specific inputs (markets, assets, institutions): distance
- density of the forest: opportunities of jump / respond to collapse in export earning of existing activities

**B-Reasons why government should get involved?**

4-Illustration: "open forest" Hausman and Klinger (2006)

**OPEN FOREST:** aggregate measure of a country's position in the forest. How valuable are a country's unoccupied trees: weighted sum of the sophistication index (PRODY) of each unoccupied tree by distance to current occupied trees.

\[
\text{OpenForest}_c = \sum_{p,\text{unocc}} \frac{PRODY_{p,\text{unocc}}}{DISTANCE_{p,\text{unocc} / \text{Occupied}}}
\]

Everything else being the same, a country is better off producing goods that require assets that can be used in a wide range of sophisticated goods other than those already in production.

**Empirical evidence:** relation between OPEN FOREST and structural transformation and sophistication.

**Suggestion of a positive feedback loop:** if a country is able to improve its EXPY, it moves to a better part of the forest where it is easier to further improve EXPY.
C-Modern sector development: impact of policies

1-Simple model (Rodrik, 2006)
Growth is driven through learning and enhanced capabilities accumulating in the industrial sector.

4 sectors: 3 tradable sectors (decreasing returns to scale)
- modern importables (import substitutes) Q
- modern exportables (export substitutes) X
- traditional exportables Z

1 non tradable sector: constant returns to scale

Full employment and labor mobility between 4 sectors

Level of productivity in modern sector rises with the level of economic activity in the modern sector (Q+X): learning effect at aggregate level

Intuition: increase of Q+X is favorable to the long term development of the country

2-Impact of import liberalization: decrease in protection of Q
Contraction of modern importables sector (since increase of imports): but release of resources to produce exportables

Question: which exportables: modern or traditional?
- If higher elasticity of supply of traditional exportables (greater expansion): reduction in spillovers: export growth but with little economic growth overall.

3-Impact of subsidies for modern exportables: expansion of X
But expansion of resources to produce X induces contraction of modern importables sector and traditional exportable sector

Question: which contracts most: traditional exportables or importables?
- If higher elasticity of supply of traditional exportables (greater decline): increase in spillovers: economy's rate of productivity growth is permanently higher.

Illustration: although Lerner Symmetry Theorem says equivalence between import/export tax: different impact: Latin America versus Asia.

D-Industrial policy as a predicament

1-Challenges of industrial policy (Hausmann and Rodrik, 2006)
Need to provide inputs not supplied by the markets:
- complex, specific, hard to design in advance, deeply interacting
- very different from traditional view that holds that these are few, very broad: cf. general system of property rights and contract enforcement, a good general-purpose business environment, infrastructure and education.

Provision of all complementary inputs to all potential activities is impossible:
- it is unaffordable: financially, managerially and politically
- list is unknowable in advance: depend on the context

D-Industrial policy as a predicament

2-Implications (Hausmann and Rodrik, 2006)
Doomed to choose: choice of how much and to who

To overcome problems of information and incentives and ensure appropriate choice: three principles
- open architecture: no predetermination: wait for revelation of preference by potential investors
- self organization: no imposed groups of would be beneficiaries
- transparency and independent evaluation of private requests for public funding
Conclusion
Industrial policy requires the government to take an ex-ante stand neither on the activities to be promoted nor on the instruments to be deployed. It simply requires it to build the public-private institutional arrangements whereby information on profitable activities and useful instruments of intervention can be elicited.

**Crucial features:**
- recognition of complementarities between state and market
- Open-minded and experimental approach instead of first principles and imported best-practice blueprints
- evaluation to learn from mistakes and successes

Industrial policy is hard but needed: well-articulated strategies to provide the specific inputs that markets need in order to foster the structural transformation that drives economic development.