Lecture # 27 – Innovation Policy or Industrial Policy

Today's class was a discussion of the role of government promoting technology development. Should government play a general role, providing general policy support, or should they promote specific technologies. Using green technology as a guide, we discussed the pros and cons of a more focused industrial policy.

Rather than try to reproduce that discussion here, below are my notes on the readings that were the basis for discussion.

I. What is Industrial Policy?

- What is industrial policy?
  - "The attempt by government to promote the growth of particular industrial sectors and companies" (Economist, August 7, 2010, p. 69).
  - Examples of success
    - Internet
    - Israel backing for startups
    - France high speed rail
    - EU: airbus
  - Examples of failures
    - France's attempt to develop IT
      - Hard for countries to break into competitive industries
    - UK support of autos and semiconductors
    - Japan's MITI once opposed exports of autos
    - China: 3G
      - Attempted to develop their own 3G technology
      - By the time ready, private companies (Huawei and ZTE) were already using 3G
      - Government forced another company, China Mobile, to adopt their 3G technology, even though it is not used outside of China
- Four reasons for revived interest in industrial policy
  - Weak economy
    - Pressure to stimulate growth and employment
  - Rebalancing economy towards new sectors
    - Green technology is a favorite
  - Emergency use of industrial policy (e.g. stimulus) leads to demand for more
  - Rich countries emulating emerging economies
- What are the arguments used to support industrial policy?
  - Knowledge spillovers
    - But can these be addressed with general policies, such as IPR
  - Increasing returns & latent comparative advantage
    - If there are increasing returns to scale and/or learning, comparative advantage can change as the industry grows

        - Thus, support may be needed to get the industry started
    - Coordination failures
        - Relates to network externalities
    - International rent shifting
    - Redistribution/political economy
        - Industrial policy can smooth economic transitions

II. Green Industrial Policy

- Policy background: support for renewables in the European Union
    - EU renewable directive passed in 2009 sets a goal of 20% energy from renewables by 2020
        - Implemented by individual member states, which means that there are multiple strategies being used to meet the goal
    - By 2010, about 15% of energy coming from "new" renewables (wind, solar, geothermal)
    - Germany's support for PV is an example
        - Has led to development of thriving solar industry in Germany
        - But, will also increase costs of electricity to consumers
            - Utilities are allowed to pass on costs
                - As of 2008, this was about $1.7 per month to a typical bill
            - There is no cap on capacity that can be installed
                - Thus, additional installations can raise costs even more
- Other examples of picking winners for energy
    - Brazil & biofuels
    - China and PV
- Policy options
    - R&D support (technology-push)
    - Correcting externalities
        - A carbon tax makes fossil fuels more expensive by incorporating the damage done by emissions into the cost of fuel
    - Deployment support
        - Some argue that this is not necessary if carbon is priced properly (e.g. using a carbon tax)
            - This is the key question: is getting prices right sufficient?
            - Do other market failures (e.g. behavioral economics) justify additional intervention to address environmental externalities?
                - Note that getting prices right also means removing subsidies on fossil fuels
        - Others say necessary to encourage learning by doing
            - Does this ignore the source of learning (and thus possibly the costs of learning)?
        - Main strategies are either price or quantity driven

        - Price driven
            - Feed in tariffs
                - Provides guaranteed price support
                - Usually set for a specific duration, which helps investors plan
                - However, facing financial strain, Spain recently lowered the payments to solar energy producers, despite earlier promises
                    - Originally promised 58 cents/kWh for 25 years and 80% of that thereafter
                    - The original law said changes could only affect new installations
                    - Original plan was so successful that, after the financial crisis, Spain could not afford to pay all of the 60,000 solar energy producers in Spain
                        - Consumer prices would need to rise 40% to cover the cost
        - Quantity driven
            - Tradable green certificates
            - Generally support any renewable, but can be designed to support specific technologies
- Is green industrial policy desirable?
    - Arguments in favor
        - Some argue industrial policy helped rise of Japan and other East Asian countries
        - Provide environmental benefits, so worth doing even if no positive effect on economic growth or job creation
        - Because of economies of scale, getting prices right is not enough to encourage new green industries
        - When in place, pricing policies are not credible long-term commitments
            - Uncertainty discourages investment
        - May be needed to smooth transition for declining energy-intensive industries
        - Picking winners may be less risky for developing countries, as they can choose among existing technologies
    - Cons
        - Vulnerable to rent seeking and lobbying
            - Most likely to be successful where there are strong institutions
            - Need to be able to remove support when no longer needed
                - This is often difficult politically
        - Compare Brazil's ethanol policy to US
            - Import tax on ethanol prevents imports of more efficient biofuels from Brazil

        - Subsidies increase corn prices
    - As discussed last class, US energy policy has been least successful when promoting a specific option (e.g. synfuels)
    - Another example is California electric vehicle initiative.
        - Initially were going to require a percentage of cars sold in California to be electric
        - Had to modify the law to allow hybrids when electric cars were not available
    - When the government backs specific firms (e.g. DOE support for green vehicles), it is harder for other firms to raise capital
        - Thus, innovation may be stifled
- How to remove support when no longer needed?
    - Can government's overcome the pressure to keep supporting policies on the books?
    - Could removal be done by basing support on a market test
    - But, if there are externalities, will the technology ever be supported by the market?
- World Bank report notes that there has been much frontier green technology development in rich countries
    - However, additional catch-up R&D to make technologies specific for developing country needs are needed. Box 3.3 provides examples
        - Rainwater harvesting
        - Rice husks for bioenergy
        - Affordable green housing
    - Increasing trade in environmental goods suggests demand for such goods is increasing
        - However, almost all growth concentrated in East Asia and high income countries (fig 3.2)
            - Recall need for policy to encourage diffusion of green technologies
    - Note that many of the policies the World Bank report advocates (adaptive capacity, low barriers for starting and ending a business) are recommendations that would benefit all industries and are things we've discussed earlier in the semester.
        - So, what makes what they are advocating "green industrial policy"?

III. Evaluation: Does Industrial Policy Make Sense?

- How should industrial policy be evaluated?
    - Evaluation of energy policy in the reading focuses on normalized electricity generation
        - That is, focused on growth of renewables (effectiveness)
            - Normalized based on renewable potential of each country
        - Also include NPV, which considers leveled costs
            - Claim that profits should be near zero
            - That is, focusing on whether the remuneration given to producers is sufficient to encourage investment, but not generating economic rents (e.g. Fig. 9)
                - Cases such as Belgium and Italy illustrate compensation greater than the average generation cost.
        - Figure 10 illustrates "effectiveness" and profits
            - Does this seem sufficient? Focuses on whether the renewable targets are met, but says little about cost effectiveness
- Lessons from past experience
    - Industrial policy more likely to be successful if in step with local comparative advantage
    - Policy more likely to be successful when it follows the market, rather than leading the market
    - Works best when government is dealing in areas where it has a natural interest and competence (e.g. military or energy supply)
        - Does this provide some support for green industrial policy?
- What does "technology neutral" policy mean? Is a technology neutral policy really neutral?