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Pitfalls in industrial policy

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Abstract

The term "industrial policy" refers to government interventions with market outcomes in economic activity. By the 1990s, advanced countries had rejected almost all industrial policies and relied on competition policy and the free market. But recently, industrial policy has become more popular. This paper covers some of the cautions applicable to industrial policy. Crucially important is the need for careful evaluation of proposed interventions, prevention of political interventions in management and engineering decisions, and ongoing willingness to evaluate performance in targets of industrial policy relative to intended purposes.

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JEL classification: L50, L51, L52.

1. Introduction

Industrial policy (IP) is once again in favor in advanced countries. After years when it was largely discredited, concerns about national security and the rise of networks have led to its advocacy. Unfortunately, just as earlier there was almost across-the-board rejection of IP in favor of markets, currently there seems to be almost indiscriminate acceptance of the validity of IP as a rationale for government actions, and lessons from developing countries' unsuccessful experience with IP have largely been ignored.

As usual, the reality is more complicated than that. Importantly, IP is a descriptive term for a wide range of policy instruments — tax breaks, subsidized credit, grants to favored activities, tariffs and other protective measures, research support, provision of cheap inputs (such as land), and more. Each of these can be used in varying amounts and even if policy intervention is desirable, questions arise as to the appropriate height of the policy instrument.

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The targets of IP and the rationale for them also vary widely. Hufbauer and Jung (2021) studied 18 high-profile cases of American IP over the period 1970 to 2020 and showed the variety of targets and policy instruments that were used. Some IP efforts were more successful than others, and there were many they deemed to have been failures. By and large, IP was out of favor in advanced countries and it was abandoned.

However, after World War II, most governments in developing countries chose public establishment and ownership of some industrial activities, and provided strong incentives for private firms to undertake others. That was true, for example, of Turkey, where about half of all manufacturing output originated in state-owned (public sector) enterprises (SOEs) in the immediate postwar period. Many were loss-making. In addition, prohibition, or high levels of tariffs or other forms of protection, insulated the new "import-substitution" (IS) activities from foreign competition.

Ironically, by the 1990s, it became evident that the most successful developing countries had adopted more market and "export oriented" trade policies than their IS-adopting counterparts. But only a few years later, renewed political support has led to a readoption of IP in advanced economies. That, in turn, has stimulated an outpouring of research, both theoretical and empirical, on the criteria for, and determinants of, success with IP. Juhasz and Lane (2024) and Juhasz et al. (2023) provide surveys of much of the literature to date.[1]

Here, focus is on cautions based on earlier experience with IP in developing countries. To start, an initial section defines IP. The next one summarizes the major reasons usually given in support of industrial policy. After that, attention turns to some of the key concerns that have arisen from experience. Then an account of a few experiences with industrial policy is given. The final section suggests some of the key cautions.

2. What is industrial policy?

Almost all economists, advocates and detractors, agree that the term "industrial policy" should apply to government interventions that provide differential incentives to private economic activity, regardless of whether it is in industry, agriculture, or services.[2] Much discussion and policy debate, however, is focused on policies affecting private-sector manufacturing and related activities. Here, IP will refer to policies aimed at industrial production. When policies significantly cover non-manufacturing private economic activity, such as securing critical minerals, it will be explicitly noted.[3]

Of course, there are policies that are crucial for a market economy to function, although they are usually more general and affect all economic activity. They include the existence and enforcement of a commercial code that guarantees property rights and the rule of law. Other important general policies pertain to patent and copyright law, anti-monopoly provisions, rules governing product qualities, and health and safety standards.[4]

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[1] See also Rodrik (2025).

[2] See Rodrik (2025) for a more detailed exposition of the case for inclusion of agriculture and services.

[3] Recently in the U.S., some important IP policies have focused on measures to support artificial intelligence (AI).

[4] Industries can and do lobby for measures of these types that in fact can result in market power for them. These can arise when standards are set at inappropriate levels and entail unnecessary costs.

Infrastructure benefitting many economic activities is also important and is generally usable by many private sector entities. Bridges, roads, ports, and power are among the important ones. In many cases these benefit many and are provided by governments or are private and regulated.[5] They are not generally regarded as IP except in instances when a facility is dedicated to a specific activity and are not covered here.

However, almost any government policy has some differential effect across the range of private economic activities. A decision as to the path of a new four-lane highway will favorably affect businesses located near the road but probably harm those located on the old two-lane road. But if all government actions (and failures to act) are IP, then the term is meaningless. Here, I use IP to denote policies designed to support or penalize individual economic activities or groups of activities.

3. What are IP policies?

IP policies are those that are designed to affect the composition and level of industrial output. There can be both positive and negative incentives for production. Policymakers adopt positive measures if they believe that the market outcome will produce less than desired quantities. Negative measures reduce incentives (or increase costs) for goods which policymakers believe the market will provide too much.

Positive incentives are extended through measures such as subsidies to individual activities (either on final products or inputs to them), tariffs (or limitations on the quantity of imports through import licensing and quotas) on imports of goods competing with domestic production, favorable tax treatment for some items, and more. Penalties can entail higher taxes, strict regulation of products or inputs, price controls, and even prohibitions on inputs or types of output. Subsidies for chip factories and for production of electric vehicles (EVs) have been recent positive incentives in advanced countries.[6]

Incentives can be provided in many ways, and the instruments can have different incentive effects. For example, a subsidy will likely have a different impact on management decisions depending on whether it is paid per unit of output, a lump sum, a grant in land, reduced input prices, a tariff or export subsidy, or a tax credit.[7]

Many developing countries adopted IS policies favoring domestic production of import-competing commodities hoping to industrialize in the quarter century after World War II. Tariffs and quotas limiting or prohibiting imports were the key policy instruments. Those policies were generally unsuccessful (Hausmann, 2025), but trade policies continue to be significant parts of many IPs. Indeed, in most instances when policymakers want to encourage production, it is usually

[5] There are cases, however, when a road, port or other infrastructure is undertaken to support an individual industry or enterprise, and they would constitute part of industrial policy.

[6] Subsidies for exports are also part of industrial policy, although WTO rules have mostly precluded their use. See WTO Subsidies and Countervailing Measures (SCM Agreement). https://www.wto.org/english/tratop_e/scm_e/subs_e.htm

[7] There are many other policies. For example, selling land cheaply to an enterprise will induce it to behave differently than would a production subsidy.

necessary to impose tariffs or other restrictions on imports of the commodity. Even when IP takes the form of subsidies for production, restrictions on imports are usually also adopted.

There are also policies whose impact may be on industries other than, or in addition to, the intended target. A good example is the requirement that a certain percentage of gasoline be ethanol, which, at least in the U.S., results in a significant increase in the demand for corn.

It is important to recognize that producers lobby for policies to benefit their industry. They appeal for support in terms of securing a supply chain, national security, or protecting employment. That may be the motive, but it is also possible that the actual motive may be to achieve increased profitability (or reduced losses because of lesser competition). It is important to assess IP measures in terms of their effects and results and not simply on stated intentions.

4. Rationales for IP

The usual "umbrella" rationale for "picking winners" is that there is, or will be, a "market failure" unless there is a government intervention in the market. Implied is the belief that IP measures favoring the industry will result in a preferable outcome than private competition. Often, the appropriate policy question might be better framed as an issue whether market failure will lead to a worse outcome than government intervention. It does not follow that because there is (or may be) a market failure, any type of government support will improve the outcome.

The rationale for free markets is that competition provides incentives for business leaders to choose the bundle of goods and services that gives buyers (both other businesses using the output and private consumers) the most employing the least-cost technology available.[8] Moreover, if a producer is high-cost, competition will drive it out of business or force it to seek cost-reducing methods and innovations.

Private decision-makers are likely to be more knowledgeable and better equipped to assess the likely outcome of a given production or research plan. Incentives for innovation are strong because private sector actors will receive the benefits or suffer the losses that result.

By contrast, government officials and politicians often receive little or no reward for success (especially when they are on politically mandated pay scales) and can be attacked for failed efforts. Moreover, political pressures can induce politicians to support high-cost firms. Note that the rationale for markets assumes the benefits of competition: anti-monopoly policy is desirable for markets to function effectively.[9]

The rationale for IP is that not all benefits and costs accrue to those producing a good or service, and there will be spillovers (externalities) that generate benefits

[8] In most instances, it is likely that market incentives are strongest for innovation and technical change, and some IP is directed toward encouraging innovation in both the private and public sectors. At present, much IP in the U.S. is largely directed at the so-called "frontier activities" such as semiconductors (chips) and EVs.

[9] The development of electronics has led to large networks, and there is currently discussion as to whether anti-monopoly policy should be applied in those areas. It is a complex question as advocates cite the market power of the large networking providers while opponents suggest that technical progress is so rapid that the market should largely be left to determine the future course of these activities.

or costs to others. Economists have long recognized that government interventions can improve outcomes, i.e., overcome, at least partially, market failure when there are externalities. Current concerns about the environment are an obvious case now under much discussion. When a production facility deposits harmful waste in a nearby stream or river, there is a cost which is not taken into account by the polluter unless there is government intervention to charge for pollution.

When research enables lower costs for many users in a competitive industry or across several industries, a private company undertaking the research will not reap full rewards, and almost all economists would agree that some promising basic research affecting many lines of activity could be supported by the government.[10] One successful government policy has been support of research for agriculture. For that highly competitive industry, government agencies have been established and some have been highly productive in research and development. The Green Revolution was underpinned by public research and development improving seeds and growing techniques.

5. Evaluating IP performance

In assessing IP measures and their probable results, there are two issues. The first is whether the political process can identify future winners in which the markets may insufficiently invest (or overinvest) or produce. The second is whether the outcome is likely to be better or worse in achieving the desired result with the chosen policy intervention or with market forces. Competitive market forces do not work perfectly, but neither do all interventions made in the name of IP. Indeed, some IP measures have led to results opposite of the objectives stated by their advocates. Policy evaluation must be based on assessment of the likely magnitudes of benefits and costs of intervention.

As noted above, the least controversial case for IP intervention is when a company has a monopoly on the production of a good or service.[11] A question arises, however, when research and innovation are involved. When a business invests in research to find a better product or process, successful innovation will give it a monopoly, at least temporarily. While the case for "competition policy" to prevent monopoly is strong, there also need to be appropriate patent and trademark measures so that companies themselves can recoup, if successful, the research and development (R&D) costs.[12] In the absence of the ability to profit from the innovation, businesses will generally be reluctant to invest in R&D.

Some advocates of IP assert that there are activities that might be profitable if new firms were established to produce needed inputs, but that no activity would

[10] Effective patenting laws with licensing arrangements for use of new knowledge are also desirable.

[11] It is important, however, to evaluate whether a particular entity has monopoly power. An important challenge is the definition of "industry." If there are very close substitutes, the single producer of a good may nonetheless have little or no monopoly power.

[12] Industrial policy measures can sometimes result in monopolies. In India, for example, import licensing was used to restrict imports because of "balance of payments shortage" when new industries were being encouraged. Many of them needed imported parts and components (such as engines and electrical kits), and the authorities allocated scarce licenses for those parts in proportion to each company's capacity. The result was that even though they already had excess capacity, additional capacity was installed (to maintain market share). Thus, each company's output was closely determined, and the industry's pricing policies could be much the same as a monopolist would have attempted (Bhagwati and Srinivasan, 1975).

be started in the private sector if the inputs were not also being produced.[13] Critics respond that if there are such strong spillovers, a start-up could undertake both activities in the private sector.

Under the WTO Articles, countries may protect activities to spur domestic production of goods and services deemed essential for "national security." No one would question that there are circumstances in which secret military technologies would best be kept domestically or that domestic supplies of needed goods would be available in the event of war.[14] However, "national security" is also used as an argument for IP when the industry seeking protection is using the defense argument to bolster its own case for protection (Hensarling, 2024). As with other arguments, it is important that protection (or other support) will enhance national security, and that least-cost measures to that purpose are chosen.

In the U.S. and many other industrial countries, proposals of financial support and protection from imports are advocated for "frontier" activities such as semiconductors, solar panels, batteries and EVs.[15] Advocates argue that there will be future societal rewards for IP in those activities and that public support of the activity will generate greater societal benefits than if decisions were left to the market (including the argument, in some cases, that the activity will not be undertaken at all without public support). Assessing whether an IP program should be adopted depends on the accuracy of the forecasts and assessments of what would happen if the activity were left to the market (or perhaps supported in a different and possibly more cost-effective way) and what would be the outcome under the proposed IP measures.

A good example of a failed forecast was the protection of the steel industry under President George W. Bush in 2001–2002. The objective was to promote domestic steel employment and output. With Bush protective measures, steel production did rise a little. But output, employment and exports in steel-using industries fell by more. A cost-benefit assessment taking steel employment as the objective would certainly have included its reduction in steel-using industries as an indirect cost which outweighed the direct benefit.[16] The protective measures for domestic steel were rescinded at the end of 2002.

More recently, solar panel production in the U.S. has been supported for two reasons. First, their installation was expected to reduce pollution from coal if solar energy replaced coal generation. It was also said that "jobs would be created." The federal government lent money to Solyndra, a manufacturer of solar panels.

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[13] The "infant industry" argument was used by many developing countries to justify measures for government ownership of some industries, subsidies and other incentives to private companies and protection against imports. In many developing countries, prohibition or high tariffs on imports were the main policy instrument used to provide incentives for new industrial activity. The argument was widely accepted. However, there were problems. A classic paper by Baldwin (1969) presents various arguments that were made and questioned whether most of the rationales were valid.

[14] Advocates of IP often cite the American Defense Advanced Research Projects Agency (DARPA) as a case of a very successful IP. The agency, which is in the Department of Defense, was established in 1958 and is charged with supporting research projects contributing to national security. It has supported research by universities and other groups undertaking relevant projects. DARPA is credited with major contributions to frontier technologies including the internet, GPS and stealth technology.

[15] IP support is also advocated to insure supply chains of critical inputs. That issue is discussed in connection with national security considerations below.

[16] https://taxfoundation.org/blog/lessons-2002-bush-steel-tariffs/. It was estimated that the cost to the U.S. of each job saved directly in the steel industry was hundreds of thousands of dollars (see Hufbauer et al., 1986).

Steep tariffs were placed on solar panel imports, but since costs of production abroad (in China) were estimated to be about one-fourth those in the U.S., tariffs did not lead to the increase of domestic production. Despite the objectives of stimulating the latter and "create jobs," the higher costs of solar panels reduced domestic demand and the rate at which solar panels would be installed. The solar manufacturer failed (Boaz, 2015), and the loan was not repaid. Moreover, jobs in panel installation (which must be done at the site of installation and are higher-paying than solar production) fell.

Another IP program was lending by the U.S. government to support General Motors during the 2007–2009 financial crisis.[17] That loan was eventually repaid, and news reports were that the government made money. There is still debate whether a market outcome would have been worse (if GM had gone bankrupt) or better, but the IP toward GM was more successful than that toward solar panels.[18]

These examples demonstrate how much IP measures can differ. Each must be evaluated on its outcome. It is highly desirable to have an institution assessing probable costs and benefits, as well as the uncertainties, of proposed measures. In what follows, I focus on some of the factors that need to be taken into consideration in evaluating the probable success or failure of individual IP activities. One failed IP activity does not indicate that there should never be other attempts to target support to particular industries, nor does one success indicate that there should be other private activities receiving government support.

There are several issues that arise in evaluating IPs. One is whether the chosen instruments give adequate incentives for the beneficiaries of IP to produce desired results. Another is whether the means chosen may give existing businesses monopoly power and prevent new entry, as happened with Indian protection of some industrial products in the pre-reform period, or induce negative spillovers to yet other industries, as happened with steel protection in the U.S. recently. Yet another is whether there may be cheaper ways of achieving the intended results as was almost certainly the case with American IP with solar panels.

6. Reasons for different market and government-directed performance

There are some systematic differences in the decision-making processes and pressures that surround the private and public sectors. In what follows, focus is on those differences, and how they may affect the relative success of market-driven and public sector influences on economic activity. There are both political and economic aspects of such policy. The question is how IP interventions likely affect outcomes, and how those outcomes could be compared with market-determined ones.

[17] There are also instances where there may be reasons to question whether publicly-stated motives for supporting a given IP activity are the real ones. A case in point is the "good jobs" objective. Businesses have been known to advocate support for their industry, arguing that it would create, or prevent the loss of jobs. The adopted IP measures have more than once resulted in increased profits with a relatively small or imperceptible effect on jobs. For this discussion, it is assumed that the stated motives are the real ones.

[18] Tariffs and "voluntary export restraints" (VERs) were also imposed on auto imports at various times over the past 75 years. The intention was to help American auto manufacturers. In the 1980s, when VERs were accepted by the Japanese, the price Japanese auto makers charged in the U.S. market rose and higher profits of Japanese producers enabled them to undertake research and advance more rapidly than American companies. The VERs were dropped (see Berry et al., 1999).

6.1. Choosing the winners

Since World War II in advanced countries, IP was mostly directed toward support for "new" industries. Japan's rapid economic ascent after the devastation of the war made it natural to focus on the Japanese experience. The Ministry of International Trade and Industry (MITI) actively led and supported private industries. At the time, it was widely thought that MITI's activities were responsible for Japan's rapid economic growth. But more recent analysis has questioned that conclusion. However, Weinstein (1995) showed that MITI's efforts were far less successful than was initially thought: not only were the industries chosen not necessarily "winners," but MITI gave much support to the "losers." MITI has experienced a reduction in its role over time, and the Japanese private sector has increased its share of output.

In developing countries, economic policies adopted after the war were intended to promote rapid economic development. For that purpose, governments conducted policies of IS which relied on the trade regime to protect newly-established industries from import competition. This happened through establishment of SOEs, imposition of high tariffs and/or restrictions on the quantities of imports that were permitted,[19] and other means (such as credit subsidies and tax breaks). At least until the 1990s, most developing countries relied heavily on tariffs and import quotas as the chief instrument for IP (see Evenett et al., 2024). However, evidence mounted that IS policies had been less successful than expected, especially in contrast to the rapidly growing economies such as the "Asian tigers." Their growth had accelerated astonishingly quickly after policy reforms, including of trade regimes. The increasing evidence led to abandonment of many IS and IP policies in developing countries.

It is ironic then that a "new wave" of IP has arisen worldwide in the past decade, particularly in the advanced countries. A major motivator was the challenge associated with geopolitical tensions and the rise of the Chinese economy.

With IP, politicians make the political choice of targets and of measures to implement the policies. Sometimes, the choice is made directly by the lawmakers, and sometimes an agency is assigned the task of supporting particular activities. The American National Science Foundation (NSF), for example, has staff to assess and provide support under guidelines designed by the U.S. Congress for research proposals submitted to them. In other situations, the lawmakers themselves decide on the target of support and even the value of the latter.

Because so many choices are made by politicians, it is important that there be guardrails on the political process. Politicians are naturally influenced by public opinion and public pressures, which sometimes push for policies that are unlikely to achieve their intended purpose, and may even be counterproductive.

In many cases, lobbyists use their power to influence not only the choice of instrument but the level and type of support (the height of the tariff, the magni-

[19] In Turkey, for example, about half of all manufacturing output originated in state-owned enterprises. Many were loss-making and high cost, and their importance has diminished considerably. The losses of the SOEs were so large that government financing of them was a major source of inflation in the country (Krueger, 1974).

tude of the tax break, grants of land and so on). Even if the named objective is one where a market failure would justify intervention, there can and should be questions not only as to whether the chosen policy instruments will facilitate the achievement of the designated goals, but also whether the means chosen are the least-cost ones, and whether the magnitude of support is appropriate and will be effective.

6.2. Choice of location

Often political pressures (such as a political leader needing votes to pass a measure) lead to inappropriate siting of economic activity, either because influential politicians want favors for voters in their district or because key politicians will vote for measures hoping that voters will be influenced to support them.[20] Measures to insure private contractors to be low-cost (and stipulated quality) are always essential so that contracts or subsidies for activity are directed toward the most proficient. Government procurement policies in general need to be undertaken with safeguards to avoid corruption in the choice of contractors for contracts. When companies are selected to receive government support, there may be unintended biases (such as toward large companies) or toward the politically well-connected. By contrast, if the activity is left to be undertaken in the private sector whose suppliers and workers are chosen without political pressures, the profit motive is likely to result in the choice of low-cost sources for inputs.

Another concern is the potential for corruption in the granting of government contracts. While managers of private companies may not always avoid corrupt practices, the incentives to do so are stronger than those for some managers of companies receiving IP support. In the U.S., the Foreign Corrupt Practices Act enacted strong penalties for private companies extending side payments to foreigners. As IP becomes more prominent in advanced economies, concerns that public funds are directed to designated public objectives will increase in importance.

6.3. Labor force in IP assisted activities

Political intervention affects staffing of IP-supported activities at three levels. These are the selection of management, the qualifications of needed staff, and the size and policies affecting the workforce itself.

First, in SOEs, appointments for top positions are often made, or significantly influenced, by politicians. They may promote colleagues and friends and secure posh jobs for them, often without regard to qualifications. Even when they refrain from directly urging the employment of friends and relatives, managers and boards may select politically-supported persons in order to curry favors.[21]

At private enterprise recipients of IP, some members of boards of directors are appointed because of their political connections. Sometimes, they are themselves politicians, and sometimes politicians use their influence to obtain appointments

[20] In some instances, the choice of location for an activity (or its expansion) may be determined by these political considerations. Sometimes, grants of land to potential producers are made to induce location in a politically influential district.

[21] See the discussion in Krueger (2020).

for friends and relatives. As well, top management in companies seeking to benefit from political decisions may choose to appoint persons with influence to gain support from politicians.

Second, political influence does not necessarily stop there. Below top management, many critical positions require specialized technicians and managers. Some staff appointed for their political connections may be well qualified, but there have been many instances in which the credentials of appointees have been doubtful.

Yet the third aspect of the labor force is the number and types of workers that are employed. There have been many circumstances when political pressures have led to excess employment. Strong pressures can be put to take on additional staff and/or to refrain from dismissing redundant (or inefficient) workers when the activity is the beneficiary of IP.

A private firm in the market without political pressures is more likely to make personnel decisions for staff and management according to criteria related to the candidates' technical and other qualifications for achieving low-cost outcomes.[22] To be sure, mistakes are made in private hiring, and some political appointees have excellent skills, but the political pressures to hire politically supported persons are far less, and the incentives for management and staff to achieve economically desirable outcomes are considerably stronger.[23]

For successful IP results, there need to be mechanisms in place to protect firms from unwarranted political interference in personnel policies, and to insure that top management and key personnel have appropriate qualifications for their positions. Equally, barriers against overstaffing are desirable if enterprises are to be economically efficient and viable.[24]

6.4. Effectiveness of IP instruments

When there is consensus about the objectives of IP and assurance that institutions are in place to prevent unwarranted interference with production decisions, questions often arise as to whether the chosen instruments of intervention will result in the desired outcomes. The cases of VERs in the 1980s, infant industry protection in developing countries, and steel protection in the U.S. in 2002 have all been mentioned as instances where the chosen instruments of IP did not induce the desired outcomes. Another interesting example occurred in Puerto Rico, a territory of the United States (classified as a commonwealth). In the 1970s, it had high unemployment. The U.S. Congress voted to support Puerto Rico by exempting profits of U.S. mainland companies that invested in production facili-

[22] When IP policies are widespread, it can also happen that managers and owners of private firms may select appointees for Boards of Directors and/or other top positions who will increase the business's chances of receiving IP support. That one industry is favored can be used as an argument that another deserves support.

[23] As is discussed below, political pressures also result in greater resistance to bankruptcies or other personnel-reducing measures when companies are inefficient. By contrast, financial pressures, the desirability of profits, and the incentives for improving performance are generally stronger in industries without IP preferences.

[24] In the reforms in Argentina in the early 1990s, Argentine railroads were often cited as having had very low levels of efficiency and productivity with excess employment. The total railway workforce pre-privatization was 92,500 and post-privatization it was 19,682. Labor productivity post-privatization was up 370% while employment had fallen by 69% (see Ramamurti, 1997).

ties there from the corporate profits tax. Investment was indeed forthcoming; but most of it went to highly capital-intensive companies.

6.5. Creative destruction

Finally, and especially for IP designed to support "frontier" activities, questions arise as to whether support can be altered if anticipated results are not realized. In a market economy, financial pressures force changes when businesses are doing poorly. Schumpeter deemed that competition from new products led to the "creative destruction" of costly or out-of-date industries and was essential for economic growth. At the extreme, bankruptcies can force business to close (and perhaps their profitable components sold off) when top management has misread its prospects and is not taking measures that meet consumer preferences.

There is no similar mechanism for shutting down political, financial and other support for individual companies through IP measures to restructure or dissolve.[25] IP measures can have sunset clauses. Financially assisted companies, such as General Motors during the 2007–2009 crisis, can succeed. But the political pressures to maintain employment levels and continue operations are certainly stronger in industries receiving IP support than in those subject to market forces. Political pressures are greater to continue support for larger firms (too-big-to-fail; and at the expense of smaller firms which might compete successfully if their larger rivals had to meet financial constraints) and in companies where employees work in or near capital cities.

When IP interest is focused on sunrise activities such as EVs and chips, it is inevitable that some chosen paths will be more successful than others. If IP is not undertaken in ways that reward successful choices and abandon ill-fated ones, it can well retard economic growth. As already noted, it is therefore essential to have an institution assessing the probable costs and benefits, as well as the uncertainties, of proposed measures.

7. Special issues in particular sectors

There are many issues surrounding the adoption of IP for particular objectives or industries. Most prominent are the national security argument, the various protectionist arguments for intervening in trade.

It has long been recognized that some activities must be undertaken within national borders for national security reasons.[26] Guarding technical secrets for high-tech military uses clearly qualifies. There are certainly instances of technological advances that can enhance the efficacy of military equipment.

Questions arise how a determination should be made as to which items should be prevented from reaching potentially hostile hands and how to differentiate them

[25] The same statement is also true for SOEs. The term "hard budget constraint" (see Kornai, 1999) was used to describe situations where companies are led to take action to improve profitability because of low profits or losses. SOEs typically can and do receive funds when they incur losses (or indeed want to invest and cannot obtain private money).

[26] The Articles of the World Trade Organization explicitly designate national security motives as an exception to its provisions.

from goods where there are pressures to support them from lobbyists for self-interest reasons.[27] The possessor of a patent or other knowledge embodied in a good or service may claim the need for secrecy on national security grounds when in fact the proposed protection would give the producer monopoly power or a competitive edge.[28] Devising ways of insuring that national security is the genuine motive and not simply the cover is a challenge. Moreover, even when these security issues are the genuine objective, however, it should be determined that IP assistance will achieve an outcome superior to that of competitive private sector firms.[29]

Lobbyists seek protection, citing reasons they deem will be politically appealing. National security has been a major stated rationale in recent years, but the job loss that might occur if the industry is not protected is also frequently cited.

Imposition of tariffs for national security reasons is permitted under the WTO. National security is not, however, clearly defined. Until President Trump took office, there were few challenges to countries imposing tariffs (or even import prohibitions) for national security reasons. For example, on national security grounds, the first Trump administration began to impose tariffs on items such as aluminum (imported mostly from Canada with which the U.S. had an FTA and which produced a very high percentage of the aluminium used in the U.S.) and steel (where 80% of production was domestic and only 2% of U.S. consumption originated in China). Many questioned whether there was a security rationale.

Finding a definition of national security to which countries can agree will be essential if the open trading system is to function well. Doing so is a major challenge, but until agreement can be reached, decisions as to what is done in the interest of national security will be challenged by trading partners, and the likelihood that there can be open multinational trade will be greatly reduced.

Trade protection is a prominent form of IP and almost always is used as a means of encouraging increased domestic production or as a support in addition to other IP measures. Almost any preferential treatment for particular firms or activities means that governments will decide to use trade policy to protect them from foreign competition. When an activity is, or is likely to be, high-cost relative to foreign firms, existing firms in the industry will be unable to raise their prices to cover costs unless imports are taxed or domestic subsidies and incentives are extended. Those considering entering the market will conclude they should not do so in the absence of protection.

There are many trade measures that can be used, and space limitations preclude detailed discussion here.[30] Two major ones are tariffs (and quotas) and sanctions against imports or exports of a good or service. Higher tariffs mean higher domestic prices and generate weaker competition than quotas do. That enables

[27] See Hensarling (2024) for a fuller discussion and of his experience in government when dealing with claimants for national security protection.

[28] Dual use (when the new technology has applications for military activities and for ordinary consumer or investment goods) is particularly problematic. But even determining what is essential for military security is not simple as the particulars of the technology must be revealed to a determining body. In the case of the United States, that body is CFIUS (Committee on Foreign Investment in the United States), which is charged with evaluating foreign investment proposals and rejecting those which would impair military security.

[29] For example, it has been argued that the U.S. IP intended to protect high-tech chip producers and prevent Chinese success in catching up spurred China to put additional resources into that technology and reduced the American lead in high tech chips.

[30] Setting standards for safety, health, or other reasons has also been used to protect against import competition.

domestic companies to cover their costs, but taxpayers pay more for tariff-ridden goods. The cost is the same as a subsidy would be but is paid by taxpayers in the form of higher prices to consumers and is less visible to them as voters.

Restricting the quantity of imports through licensing (quotas) or prohibition of imports is also used. Obviously, a tariff can be set high enough to discourage all imports, and for import quotas, there is a tariff equivalent. In most circumstances, tariffs enable more domestic competition and preclude the necessity of allocation of deciding quantities to be imported by each firm (which discourages competition).

Of many reasons given for IP, one of the most convincing to economists is that of environmental protection. There are important questions about which measures are most needed for such protection, but there can be little question that the existence of externalities (negative as well as positive) may justify intervention.

Challenges arise both in assessing the costs and benefits of interventions aimed at different environmental targets and in finding effective ways to enhance prospects particularly because there are almost always international spillovers. Space limitations here preclude analysis of these issues except to say that economists almost unanimously agree that, in thwarting global warming and the reduction in carbon emissions into the atmosphere, carbon taxes would be the most efficient way to proceed. However, they require international agreement for both efficiency reasons and because they are difficult to introduce politically when opponents argue that their introduction would just lead to their higher costs and inability to compete with exports from countries with less restrictive environmental policies.

Like other arguments for protection, there are valid bases for intervening when environmental issues are involved, but there are also businesses which use the argument to seek subsidies or protection to increase their profitability or monopoly power. As with other arguments, it is important that least-cost methods of achieving mitigation of damage be used.

8. Conclusions

The increased political pressure for, and use of, IP in recent years raises a number of issues. Especially when most governments are fiscally constrained, it is important that government expenditures for IP are effectively and efficiently used in support of agreed-upon social purposes that competition and market forces will not provide.

There are so many different ways in which IP can be administered that it is questionable whether it is meaningful to lump them all into a single category. But there are some general considerations. The first and crucially important one is that there should be institutional arrangements for an agency that evaluates and monitors IP policies and their effects.

The analysis of a potential IP should start with an assessment of whether the proposed policy will accelerate the achievement of a given objective relative to what the private market would deliver. Even when there is a clear-cut agreement on the purpose of intervention, such as national security, there are issues as to whether public intervention will improve prospects. An assessment needs to include not only its direct effects, but also the spillover effects, both positive and negative, to other economic activities.

If that test is passed, questions still remain. It is almost certainly desirable that an agency be tasked with assessing the nature of the proposed support and its

likely effects. That would assess the measures proposed to improve (or discourage) the performance of the industry and whether they are the least-cost way of achieving the desired effects. It should also evaluate the likely spillover effects of the measures on activities other than those targeted.

A major set of issues pertains to insuring that IP is economically efficient and that the measures chosen are determined by economic, and not political, considerations. Ongoing assessment of the performance of firms receiving IP assistance is highly desirable. That includes not only the issues of procurement, but also the processes of employment and retention of staff.

It is also important that there be a mechanism to insure that IPs and corresponding firms' support can be discontinued when they are found to be counterproductive and/or suppressing competition. Equally, care is needed to provide that adoption of an IP policy does not encourage others to seek similar benefits even when the applicants are not likely to achieve the goals of the initial IP.

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