NEW INDUSTRIAL POLICY: NAVIGATING BETWEEN MARKET AND GOVERNMENT FAILURE

Abstract

After three decades of expulsion, the industrial policy (IP) is again a part of legitimate policy agenda in developed and emerging economies alike. The theoretical case for IP interventions remains valid in the presence of continued market failures enhanced by growing share of international trade and stronger connectedness in the global economy. But dangers of government failures are equally present, either through errors of commission (due to excessive and wrong government intervention) or omission (failure to act and correct the obvious market failures). At the practical policy level the issue is no longer "why" IP is needed, or whether the government should engage in IP, but "how" to design and implement IP measures that would avoid the known pitfalls of the past and help sustain development and obtain desirable economic restructuring. Recent debates (Lin-Chang, Rodrik-Lerner) and thorough literature surveys (Harrison) confirm the need for IP, but recommend a close alignment with comparative advantage (Lin), shift from hard (tariffs, subsidies) to soft IP interventions aimed at increasing productivity whenever possible (Harrison), and suggest avoiding risks of poorly designed IP measures through joint government-private sector "self-discovery" of optimal IP policy parameters not known ex ante (Rodrik). Advanced WTO and bilateral trade arrangements may seriously limit the scope for legitimate new industrial policy.

Key words: industrial policy, market failure, government failure, trade, policy neutrality.

JEL classification: L50, L51, O12, O13

Sažetak

Posle tri decenije izgnanstva industrijska politika (IP) ponovo je deo legitimnih politika koje stoje na raspolaganju razvijenim i novim tržišnim privredama. Theorijosko opravdanje za IP intervencije ostaje validno u prisustvu stalnih tržišnih nesavršenosti koje se pojačavaju rastom međunarodne trgovine i svejačih (ekonomskih i finansijskih) veza u globalnoj svetskoj privredi. Ali opasnosti grešaka državne intervencije ostaju prisutne, bilo da je reč o pogrešnim ili prejakim merama, ili o odsustvu nephodnih mera da se preduprede ili koriguju greške tržišta. Na nivou praktnih politike, pitanje nije "zašto" je potrebna IP, i da li bi država trebalo da se anegažuje u vođenju IP, već "kako" da se pripreme i sprovedu mere IP da bi se izbegle greške iz prošlosti, podržao privredni razvoj i dostigla željena promena ekonomske strukture. Nedavne debale (Lin-Chang, Rodrik-Lerner) i detaljni pregled literaturi (Harrison) potvrđuju potrebu za vođenjem IP, ali preporučuju da mere IP budu usaglašene sa pravilima komparativnih prednosti (Lin), pomerene sa tzv. tvrdih mera (tarifs, subvencije) na mekane IP mere usmerene na porast produktivnosti (Harrison), i predlažu da se izbegava rizik loše koncipiranih IP mera putem zajedničkog delovanja države i privatnog sektora u "otkrivanju" optimalnih IP parametara koji su dosta diferencijirani (Rodrik). Postojeći aranžmani u okviru STO i bilateralni dogovori mogu ozbiljno da ograničavaju raspoloživi prostor za definisanje i sprovođenje legitimne industrijske politike.
Introduction and background: the global revival of industrial policy

As leading policy analysts predicted eight years ago [25], and the usually conservative but extra influential The Economist [10] repeatedly emphasized during the past few years, we are witnessing a strong global revival of industrial policy. After the 2008 financial crisis OECD countries intervened heavily to help ailing sectors and promote economic revival and growth. After three decades of ideological expulsion, the political stigma has been removed from industrial policy. In his previous incarnation as EC commissioner, Mario Monti said: "Industrial policy is no longer taboo. There’s a revival of demand for it."

Despite the recent revival, industrial policy (IP) remains controversial: there have been many successes, but also as many expensive failures in the past. Governments rarely evaluated the full costs and benefits of IP properly, and even when they did the full results were seldom made public. Past academic debates were, therefore, more inspired by pure scholarly positions and theoretical ideology than based on facts. In the US, the academic and policy debate over IP has raged fiercely since Baldwin [4] launched a frontal attack on facts. In the US, the academic and policy debate over IP has raged fiercely since Baldwin [4] launched a frontal attack on infant industry protection, the centerpiece of old industrial policy, and Krueger [16] questioned the rent-seeking nature of IP and government interventions in general.

Initially, the academic debate had little influence on the ongoing IP activities. The US government has had a long tradition of IP with some most glaring successes of global importance: the creation of internet and the rise of Silicon Valley were a direct result of projects funded by the government (defense department). Despite the successes and calls for a more coherent IP, the US government interventions to correct market failure remained sporadic and the political ownership of IP rested with the Democrats only. The big shift against IP programs happened during R. Reagan and G. Bush senior administrations (1981-1992). They fully endorsed the neoliberal trust in free-trade and self-correcting markets and thoroughly purged, scaled down or eliminated all IP programs and pro-development government interventions. The IP programs remained heavily underfunded or inactive by inertia during the Clinton administration (1993-2000) and by design during G. W. Bush terms in office (2001-2008). Based on past successes in the 1970’s, the Obama administration has reintroduced an innovation strategy for sectors of national importance, revived many old programs, including support for SMEs, and set up new programs (such as national network of business incubators and support for green technology).

Europe also had some important IP successes in promoting the development of nuclear power technology and high-speed rail (in France) and Airbus industry (jointly in France, Germany and Spain). But IP failures and mediocre results were more usual. Despite a relatively mixed record, IP interventions in Europe were sustained over the past decades. With the exception of Britain during Margaret Thatcher years, IP in Europe has never been exposed to such a coordinated political and academic attack as in the US. After all, the very core idea of EU was based on an IP aimed to provide coordinated support coal and steel sector.

With a few exceptions, governments around the world often failed to boost entrepreneurship and structural change either because they “picked” the wrong industries to promote, or used flawed or poorly designed IP process. Another important reason for failure is owed to “global fads” in technology or propulsive sectors: when too many countries target very few priority sectors, by definition some IP programs are bound to fail, just like some private investment were destined to failure in the dot-com frenzy. Hence, the famed IP sector bias should be taken with a pinch of salt since some of the biggest IP successes and failures happened within the same (semiconductor) industry. Partly this is due to growing risks of IP style intervention associated with such a competitive, global and open industry; partly some of the failures were simply inevitable because the strategic importance of the semiconductor sector attracted too much IP attention, as indicated above. According to McKinsey Global Institute, around US $200 billion of IP subsidies went into this sector since 1976; about half that sum expensed in the US (US $36 billion), Korea (US $26 billion), and Taiwan...
(US $43 billion) helped establish enduringly successful semiconductor industries. The other half has been labeled as wasteful use of public resources on IP despite the fact that 50% overall success ratio appears very high in such a risky globally competitive sector; additionally it remains to be seen if IP spent thus far by Germany, Japan, and especially China will indeed show no end result.

Despite obvious fears of past failures, the new wave of IP interventions in the US and Europe appears to be huge in size and scope. It has four main drivers: First, a need to counter the prolonged global economic crisis. After years of high unemployment and slow growth western governments became increasingly inclined to support selected industries to promote growth, save jobs and help fight foreign competition. Second, boost new green technology and sponsor traditional sectors (with proven growth and export record). The US, EU and many other countries showed clear intent to drop the famous policy neutrality and actively influence structural change (i.e. rebalance the structure of their economies away from swollen finance and property towards green technologies, targeted industries and related services). Third, protect jobs by supporting small and medium size industries through better access to financing. Fourth, replicate the apparently successful policies of fast-growing economies (China, Korea, India).

- The US has pumped hundreds of billions into banks and carmakers in line with government commitment to make "strategic decisions about strategic industries" (Obama). In addition, Obama's stimulus plan earmarked billions for innovation in green sectors (renewable energy, high-speed rail and advanced vehicles).
- Japan announced the recreation of the once famous "Japan Inc" idea to deepen links between businesses and the state, and combat the "increasingly aggressive" industrial policies of other countries (including the US, Britain, China, France, Germany and South Korea).
- EU countries have poured money on banks and carmakers, and the EC unveiled a new active industrial strategy [11] combining horizontal and vertical sector specific measures focused on enhancing innovation and competitiveness.
- Strategic Investment Funds have been setup in France and Britain2 to guide new interventions in specific industries and companies, as well as tighten controls over public stake in companies.
- China, India, Korea and many other developing and emerging economies have been successfully using industrial policy to promote select industries as means of accelerating economic development. More recently China has oriented an important share of its IP efforts towards supporting new technologies.
- International organizations are also changing their attitude towards IP. After decades of consensus that industrial policy doesn't work for developing nations, the World Bank is again recommending its use, albeit confined to interventions designed to enhance traditional comparative advantage.

Despite many promises that the new IP drive will scrupulously avoid mistakes of the past (in picking winners or rescuing losers), the initial steps do not provide much confidence that this will indeed be the case. As an example, in a typical "picking winners" fashion, the EC has already moved to express preference about the green car of the future. Instead, given the level of uncertainty in this area, the EC could have better concentrated its efforts on creating demand for green products and services by setting a carbon price; or by engaging in a "discovery process" with the private sector to design the best support and market correction measures as suggested by Rodrik [25], Hausmann [13], [14] and Harrison [12]. The choice of best technologies and individual products should emerge from the market.

In a similar fashion, the US Department of Energy has expressed its preference for new green vehicles by extending low interest multi-billion loans to three existing electric car producers and one startup. Financial markets have perceived this a clear sign of picking winners in this highly risky area and at this time would not invest in any other companies. Instead of favoring the so called horizontal measures that would support R&D in green technology, and the development of required skills that would jointly

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2 Conservative-led coalition government in Britain has challenged this plan as 'new interventionism' and has cancelled some loans, but much of the Labor party plan remains in place.
lead to innovations and ultimately the best technologies and products, the government is impatiently invoking crude vertical policies targeting specific subsectors and even individual companies. This approach is reminiscent of the old IP style; it has no credible underlying framework; and it exposes the new industrial policy to unwarranted risks that have undermined its credibility 30 years ago.

The pre-crisis literature on IP [13], [14], [25], [26] and [27] correctly predicted that the emphasis of the debate will shift from justifying "why" industrial policy is needed to "how" good industrial policy should be designed and implemented. We turn to these issues in section four of the paper. Before that, in section two, we provide a brief survey of theoretical justification of industrial policy and a review of selected empirical results, while section three summarizes some recent debates on the relevance and scope of industrial policy. Section five concludes with key policy lessons for the new industrial policy.

Theoretical case for industrial policy: market failure and government intervention

Since the start of the industrial revolution, and particularly after WWII, the debate on industrial policy has flared up when either market or state failures became too obvious. The first such instance happened during the post WWII reconstruction in Europe and Japan, and the economic revival of former colonies in the early 1960s; it provided rationale for traditional industrial policy interventions in the 1945-1970 period. The second occurrence was triggered by rampant government failures in the US and other developed countries in the late 1960’s and early 1970’s; this gave rise to neoliberal criticism of the role of the state and provided justification for a frontal attack on industrial policy. The third incidence started to shape with the growing signs of market failure in the late 1990’s (i.e. Asian financial crisis and meager growth response to liberal economic policies in Africa) and was completed with the outburst of global financial crisis in 2008; slowly the neoliberal mainstay gave way to the return of (new) industrial policy.

Based on widely held theoretical and political views of the time, the post WWII reconstruction in Europe and Japan and the economic revival of former colonies both required rapid industrialization. Industrialization was considered to be a necessary basis for development. However, market failures, pervasive in both war torn and underdeveloped countries, would prevent the process of industrialization from taking hold automatically. IP is needed to facilitate that process. Preferred forms of IP were infant industry protection (through import tariffs and quotas), state-ownership of productive assets and state coordination.

Paul Rosenstein-Rodan [28] argued that after WWII many European countries were caught in a low-level equilibrium trap resulting from policy and investment coordination failures. The industrialization based entirely on the normal incentive of private entrepreneurs would take a very long time, thereby inhibiting the change of economic structure for decades – the central problem of post war development. Therefore, in the view of Rosenstein-Rodan and other key authors of the time, the government’s role was to provide the missing coordination role and ensure "balanced" approach to development consistent with his "big push" theory: "The whole of industry to be created is to be treated and planned like one huge firm or trust’ implies an encompassing set of industrial policies." [28, p. 204]

This provided a strong rationale for traditional industrial policy interventions in the 1945-1970 period. The state intervened with traditional industrial policy measures aimed at correcting market failures, substituting for missing markets, and providing coordination necessary to enable and accelerate industrialization and accelerate economic growth. During the following three decades the role of the state continuously increased through policy interventions, growing asset ownership and expanding share in production. Over time this led to inefficient outcomes. The cost and disruptions of government failure exceeded the cost of market failures that motivated the interventions in the first place.

The neoliberal tide in economic theory launched a sweeping criticism of state interventions during the late 1960’s and throughout the 1970’s. Baldwin [4] launched a frontal attack on infant industry protection argument, the only remaining argument in favor of IP that was not dismissed free trade economists. The infant industry
argument essentially states that, due to lack of experience, a new industry may initially have higher production costs than foreign competitors. Hence, temporary protection may provide the new industry with an opportunity to attain the necessary production efficiency equal to, or in a stronger case, even better than prevailing international standard. In the absence of protection, such industry may never attract investors and take off. Potential gains to both domestic and international welfare may be lost.

Baldwin’s criticism of the infant industry argument was based on simple principles of discounted cash flow analysis. By analogy with investment projects, in initial years infant industry would exhibit higher costs and operate with a loss. If efficiency gains in subsequent years were sufficiently large to yield sufficient internal rate of return on investment (or a positive discounted net cash flow at appropriate discount rate), then private investors (or capital markets) would be ready to absorb the risk and invest in such industry. If this is not the case, the industry should not be established in the first place.

Baldwin’s argument against infant industry case had a huge impact it had on shaking the theoretical and practical grounds of industrial policy, despite the fact that it actually fell short of explaining the essential market imperfections assumed away in his analysis, i.e. the capital market bias in financing a new industry in less developed countries or less developed regions within developed countries. Due to asymmetric information and other imperfections, the risk premium placed by the capital markets may be so high that initial losses can hardly be compensated with reasonable efficiency gains even if they rendered a price below present world price. As noted by Pack and Saggi [22], argument that if there were opportunities in an industry they would have been exploited by private investors is a weak link in Baldwin’s assertion that infant industry case cannot exist in reality.

Nevertheless, this was sufficient to trigger a tide of negative articles emphasizing the dangers of government failure: market failures may indeed exist, but government interventions are equally bad, if not worse and should be avoided at all cost. Hence, although the theoretical case (market failure) may exist, neoliberals deny the existence of a practical case for government intervention. And this was the received wisdom and ruling academic position for almost three decades.

Attempts to revisit the theoretical justification for IP were isolated and often ignored until the turn of the century. Financial crises in the 1990’s, culminating in Asian crisis of 1997, stock market crises in the US, and disappointing growth and trade performance in countries employing unaltered core Washington Consensus policy advice, all gave rise to a growing body of literature questioning the extreme neoliberal position vis-à-vis the role of the government.

In the most recent volume of the prestigious Handbook of Development Economics, Harrison [12] provides a detailed survey of theoretical and empirical literature on industrial policy centered on a popular albeit controversial idea that both developed and developing countries may benefit from abandoning policy neutrality vis-à-vis trade, FDI and resource allocation across industries.

The real policy context is set by the actual developments over the past three decades. Since early 1980’s developing countries have made enormous strides in opening up their protected domestic markets to international trade and foreign investment. In parallel, most countries also instituted a range of domestic policies including price liberalization, privatization of SOEs and the introduction of sound macroeconomic management. On the external side, in addition to opening their markets most countries also introduced a range of policies to encourage exports, attract foreign direct investment (FDI), promote innovation as well as and favor some industries over others.

Government interventions that introduce tariffs, subsidies, and tax breaks beyond levels associated with optimal taxes or revenue constraints create are essentially the content of modern industrial policy. There are relatively few possible theoretical justifications for deviating from policy neutrality through IP: (a) learning externalities from exports; (b) knowledge spillovers from foreign companies; (c) production externalities in ”advanced” sectors through value chains, backward and forward production linkages; and (d) coordination failures in investment and introduction of new technologies, production and provision of public services.

The presence of learning externalities from export has long been the main argument to justify IP interventions
Based on export subsidies. Exporters have a higher rate of learning-by-doing with positive spillovers to the rest of the economy through supply channels, information on export/world market opportunities, new technology and production processes, innovation, modern management practices, etc. The empirical literature suggests that exporting firms tend to be more productive than companies oriented only on domestic market, and that causality often runs from successful exporting to productivity increases.

Additionally, Hausmann, Hwang and Rodrik [13] show that production and productivity increases are associated not only with the extent of export orientation but also with export content. Their analysis shows that countries without IP interventions tend to get stuck with lower income goods due to important externalities that hinder entrepreneurship in export cost discovery. Conversely, countries that are able to overcome (internalize) these externalities through IP policies that entice entrepreneurs into new activities producing export goods corresponding to higher income levels can reap the benefits of trade and higher economic growth.

Individual enterprise drive to enter into export markets may be suboptimal in the absence of IP due to positive spillovers on the domestic economy, high sunk costs related to export activities, and likely but delayed effect on productivity growth. This makes the theoretical case for government intervention through export promotion measures such as direct export subsidies, provision of free product or country brand marketing, free foreign market research, certification of product quality etc. The support is often focused on some sectors, special economic zones (SEZs) or export processing zones (EPZs) which are disallowed by new WTO rules.

Knowledge spillovers from foreign companies operating in domestic market are another type of externality that supports the theoretical case for IP. Typically, knowledge spillovers are expected to benefit local firms, workers, and consumers, enhance entrepreneurial capacity and help improve management effectiveness. If proven, knowledge spillovers could justify the use of tax breaks, relocation allowances, assistance in accessing business information and provision of infrastructure and other business services to foreign firms. These and related IP measures are often designed and discharged through foreign investment promotion agencies.

Production externalities from "advanced" sectors also support a theoretical case for IP that could justify infant-industry protection or other measures to help these industries take hold and expand.

Overcoming coordination failures was the mainstay of old industrial policy and remains relevant to this day especially regarding the introduction of new technologies.
creation of industrial and service clusters, provision of public services (in product certification, quality control, and sanitary inspections), and other areas of public-private interaction where capital markets provide incomplete and unreliable information. A range of IP measures can be justified to enable and/or provide better exchange of information, improve planning in the provision of public services, and overcome the breakdown of information flows on intended private investments.

Using a battery of simple specialized theoretical models, Harrison [12] highlights the critical role of Marshallian and inter-industry externalities, industry-level rents, sector-specific coordination failures and information spillovers as a rationale for establishing the theoretical validity of industrial policy. The most important conclusion of this analysis is "that the theoretical justification for infant-industry protection requires at a minimum either that the country has a latent comparative advantage in the protected industry or that the international price for this industry is higher than warranted by the true opportunity cost of this good in the rest of the world. Moreover, for protection to deliver large gains, the protected industry must exhibit large Marshallian externalities." [12, p. 4041]

It should be noted, however, that theoretical justification for infant-industry protection does not necessarily mean that traditional protection measures (tariffs and quantitative restrictions) should be used. Many empirical and policy studies have shown that production subsidies and other policies may be more efficient than protection since they may avoid the price increases and consumption losses associated with protection. Furthermore, in cases where market failure is caused by coordination problems, classical protection measures are not part of the solution.

While this provides sufficient theoretical justification for government intervention, the real question is whether IP measures can be designed and successfully implemented in practice. As already indicated, on the one extreme we have neoliberal critics who claim that government failure is equal or worse than market failure, and any attempt at IP is doomed to failure as well. This criticism pales against ample evidence of multiple success stories recorded over more than two centuries: from the 18th-century ban on cotton fabric imports in pre-industrial Britain to IP policies used to promote restructuring and industrial growth in late 20th-century. Overall, the results on practical application of IP measures are mixed.

Overall, the empirical literature shows a large gap between the promise of "IP theoretical validity" and "effective IP practice." Even in cases where empirical evidence confirms that protected or otherwise supported sectors grew faster, we rarely find sufficient information to demonstrate other critical aspects of IP performance and ultimately impact on sustainable economic growth and welfare.

A subset of empirical studies focused on particular industries that have received protection (such as steel and semiconductor industry) confirms the existence of significant Marshallian externalities and, hence, the practical possibility of using temporary protection measures to switch sectors to a better equilibrium. They also show the existence of inter-industry linkages with potential positive welfare impact on the whole economy.

Very few sector studies checked whether the new equilibrium was a "welfare-enhancing equilibrium" either at the sector or economy-wide level. In other words, the studies did not check whether the protected sectors satisfied both the Mill test – ability to eventually survive international competition without permanent protection, and the Bastable test – requirement that present value of net protection benefits is greater than zero (i.e. that discounted future benefits exceed present protection costs).

More specifically, the study of IP support provided to Japanese semiconductor industry shows impressive overall growth results and ability of the sector to survive and be competitive in international markets. However, persistent price differential between (higher) domestic and export prices led Baldwin and Krugman to conclude that "the cost to Japanese consumers outweighed the benefits, leading to net welfare losses for both Japan and the United States." [12, p. 4064]. Assuming the evaluation methodology is correct, Japan IP intervention in the semiconductor sector met the Mill but not the Bastable test.

3 Higher domestic than export prices are not limited to semiconductor sector in Japan. Dual prices reflect deeper structural characteristics of the Japanese economy and should be evaluated in a broader context. Using a single price differential as a measure of welfare loss may be highly biased and hence unreliable.
The same authors evaluated the case of IP that allowed Airbus to enter the imperfect international aircraft market. They concluded that this intervention resulted in net welfare gain for Europe but attributed the brunt of the gain to the existence of monopoly rents that characterized the sector. The results were very sensitive to the choice of elasticity of demand and other parameter values, and allow that both Mill and Bstable tests were met.

*Cross-sector empirical studies* try to evaluate the impact of IP interventions by exploring the variation in productivity growth and other performance measures across industries. Obviously, the main hypothesis is that supported industries exhibit faster growth. This assumes that tariffs and quotas are imposed for IP reasons, which is not always the case: special interests, political considerations (rent seeking), and revenue generation needs may have an equally strong weight in introducing these instruments.

Surprisingly, a thorough survey of a large body of cross-sector empirical studies did not reveal much new knowledge or insights regarding the effectiveness of IP. Case study of Turkey indicated a positive relationship between increased trade protection and productivity growth in a given sector, thereby supporting infant-industry case. Most other cross-sector studies (i.e. Mexico, Brazil, Korea, even old Yugoslavia), show that the removal of protection generated positive productivity gains both at the firm and industry level.

Cross-sector empirical studies often fell short of contributing much to the critical issues of IP design aimed at promoting sector restructuring, creation of efficient industry clusters and promoting competitiveness. On the one hand these studies are confirming that certain combination of factors, policies and institutions might have been instrumental in creating industrial concentrations and increasing productivity. But they also cautioning that Marshallian externalities may not materialize in a predictable fashion across developed and developing countries. "To put it crudely, subsidizing the software sector may not generate a Silicon Valley in a developing country." [12, p. 4067]

Cross-country empirical studies looked at the connection between trade policy and economic growth between pairs of similar countries, small sets of countries and the entire cross section of countries in the world. Most studies aimed to test the impact of protection on country performance, and more broadly the linkages between trade and growth. Harrison [12] suggests that two general lessons that may be drawn from the voluminous empirical evidence. First, perhaps surprisingly, no significant empirical relationship between average protection levels and growth could be observed in the second half of the twentieth century. Second, there is a positive association between trade volumes and growth.

This combination (weak association between average tariffs and growth, and strong relationship between trade shares and growth) suggests that any successful IP strategy must be outward oriented and ultimately increase the share of international trade in GDP. The presence of strong antitrade bias in IP interventions has been the main reason for government failure. It also shows that narrow focus on tariffs as a measure of trade performance and openness may be ill-defined: "there is a strong correlation between trade volumes and growth, while the association between trade policy—which measured by the World Bank’s revenue tariff measure—and growth is weak." [12, p. 4093]

*Other empirical results* relevant for the key dimensions of IP identified earlier show a considerable degree of complementarity between trade and FDI reforms and other government policies. The success of trade liberalization hinges on complementary measures in reducing barriers to new firm entry, increased labor mobility and creation of more flexible labor markets, and provision of improved infrastructure.

Strong theoretical and policy priors in favor of policies that attract and promote FDIs due to their direct and indirect effects on the economy have not been always confirmed by empirical studies. Micro empirical studies of inwards foreign investment flows confirm that FDIs are associated with direct technology transfer and positive labor market outcomes, but do not show strong evidence of horizontal spillovers or evidence that vertical spillovers exceed the cost of FDI subsidies. This is a very relevant conclusion for emerging economies ready to sink substantial IP resources into promoting FDI.

Most important single conclusion of Harrison survey is that enormous empirical evidence does not provide any
conclusive support for "hard" IP interventions that would distort prices to deal with Marshallian externalities, support learning by exporting, and promote knowledge spillovers from FDI. More specifically, she does not endorse infant-industry protection due to difficult conditions that have to met in order to welfare-enhancing outcome. At the same time Harrison survey does not suggest that (close to) uniform and moderate tariff is bad for development. Actually, the survey envisions an important role for "soft" industrial policies. "The goal is to develop a process whereby government, industry and cluster-level private organizations can collaborate on interventions to increase productivity. We suggest programs and grants to help particular clusters by improving the formation of skilled workers, regulation, and infrastructure. [12, p. 4112]

**Current debate on industrial policy: don’t ask WHY, ask HOW**

Now that the industrial policy is back on the table, the real question is no longer an easy academic "whether" and "why" IP is needed, but "how" should practical IP measures be designed and implemented to achieve the intended impact on industrial restructuring and economic growth. But neoliberal economists do not seem to be convinced. They continue to argue that government failures are so prevalent, and government competences so inapt, that all attempts to devise a meaningful IP to correct obvious market failures are doomed to fail from the start. Having lost all the academic debates in the last decade, neoliberals are now engaging in popular policy debates to reassert their position against IP.

In one of the last popular debates on the "why" of industrial policy was organized by The Economist, in July 2010, Josh Lerner, a moderate proponent of neoliberal school tried to defend the central neoliberal claim that "Industrial policy always fails." Dani Rodrik, won the debate with a huge margin (70:30) by fully admitting that the IP was imperfect, risky and prone to failure, but nevertheless necessary, just like any other government public policy. Lerner’s well-articulated criticism of IP as a suitable area for government intervention (due to lack of repetition, susceptibility to capture, and difficulties of unbiased evaluation) was sufficient to identify pitfalls of IP but fell substantially short of questioning the need for IP as such. Especially in the light of the issues and challenges identified by the proponents of the new industrial policy.

Most of the recent policy and scholarly debates have concentrated on "How" industrial policy should be designed and implemented. We single out a highly publicized debate published in Development Policy Review, in which Justin Lin and Ha-Joon Chang directly exchanged views on the use of industrial policy in promoting economic growth and industrial upgrading. In two rounds of exchanges and concluding remarks they reached a high degree of agreement on the theoretical justification of industrial policy, the relevance of the principles of comparative advantage, and the positive role state intervention can play in promoting industrial upgrading and the associated risks of possible government failure in discharging IP.

The real differences between their positions emerged regarding the principles of designing IP interventions. Lin strongly believes in *comparative-advantage-conforming* IP that would allow developing countries to fully exploit their present comparative advantage. That allows countries to move in small albeit quick steps towards their desired industrial structure by making Pareto improvements that are simultaneously consistent with macroeconomic stability and dynamic growth. At the empirical level Lin concludes that this is how China managed its spectacular transition from planned to market economy over three decades; this is how Korea moved from simple hand-madec consumer goods to become one of the leading global producers of cars and home electronics; this is how Nokia moved from wood processing to electronics in Finland. In short, Lin believes that industrial upgrading should proceed step by step in conjunction with the evolution of comparative advantage to keep the learning costs.

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4 Josh Lerner is a Harvard Professor and author of a bestseller book The Boulevard of Broken Dreams.
5 Dani Rodrik is also a Harvard Professor and author of many academic and popular books on trade and IP.
6 Justin Lin is the Chief Economist and Senior Vice President of the World Bank.
7 Ha-Joon Chang is a Professor at Cambridge, England and the author of many academic and popular book on trade and development.
down and limit exposure to high risks associated with big leaps into new industrial sectors. In technical terms, Lin uses neoclassical economics and Heckscher-Ohlin-Samuelson (HOS) model with full mobility of factors and single best technology to define (open and latent) comparative advantage, guide trade policy and justify IP interventions.

Chang, by contrast, sees present comparative advantage only as a starting point, a baseline from which countries can depart both in small policy steps and big leaps. In his view neoclassical economics and restrictive assumptions of the HOS model ignore the adjustment costs associated with trade liberalization due to limited factor mobility, and assume away restricted technological choices countries have in reality. According to Chang, the essence of IP is precisely to help countries protect industries in which they currently do not have comparative advantage by enabling them to acquire higher technological capabilities and limiting the negative impact of free trade due to induced adjustment costs. In other words, Chang argues for comparative-advantage-defying IP, but acknowledges the risks of deviating too much from the current comparative advantage: governments should not use IP to push economy too far away from its structure too quickly.

In debating the rationale and scope of IP interventions Lin and Chang inevitably also discussed the underlying trade liberalization issues. Lin admitted that in reality trade liberalization has produced many losers in the past two decades, but attributes this outcome to the existence of industries/resource allocation that were not consistent with international markets and country’s own comparative advantage: indeed, “removing protection in a shock-therapy manner caused the collapse of non-viable firms. ” Chang agrees that wrong allocations might be attributed to wrong policies in the past, but questions the rationale for trade liberalizations conducted in the past two decades: "If we know that a country has deviated ‘too much’ from its comparative advantage, the prudent course of action will be not to try to liberalize trade too much too quickly, as otherwise the adjustment costs will be very high. Two wrongs do not make a right.” [19, p. 14]

New industrial policy: institutions, methods, instruments

Principles of new industrial policy: joint pursuit of public interest based on incentives

At a more applied level of IP debate, Rodrik suggested three important principles to be kept in mind.

First, IP is a state of mind and a process of reaching consensus rather than a fixed objective and a list of specific policies. Creating a climate of collaboration between the government and the private sector than is more important than providing financial incentives. Forums that elicit information about investment opportunities and bottlenecks, and market failures (such as deliberation councils, investment advisory panels, sector round-tables, or private-public venture funds) have an essential role in this process. The government should be “embedded” in the private sector, but not in bed with it.

Second, IP needs to rely on both carrots and sticks. Incentives need to be measured, temporary and based on clear (and transparent) performance criteria. The success of government efforts to spawn new industries will hinge on its ability to design and implement such a system of incentives. It is equally important to identify eligible users of IP incentives and those that did not perform.

Third, IP practitioners need to bear in mind that the aim of IP is to serve society at large, not the bureaucrats who administer the funds or the businesses that receive the incentives. To guard against abuse and capture, industrial policy must be carried out in a transparent and accountable manner, and its processes must be open to new entrants as well as incumbents. Those who enter the IP arena should recall the old inscription from the Rector’s Palace (Knežev dvor) in Dubrovnik: OBLITI PRIVATORUM PUBLICA CVRATE – Forgetting private (interest) tend to public (interest).

The main objection to IP is government inability to pick winners. This is true but largely irrelevant in the context of new industrial policy focused on the principles of participation, incentives, and transparency. It is more important is the capacity to jointly identify binding issues, develop the right instruments, and attract all eligible stakeholders. Most importantly, be decisive about letting
losers go. IP is subject to uncertainties and mistakes. The ability to recognize mistakes, eliminate non-performers, and engage in a self-discovery and iterative learning process is formula for success.

Institutional arrangements and design principles for new IP

In its quest to correct market failure caused by externalities (information spillovers) and coordination failure, IP is faced with two major challenges: First, the lack of information on the problem being addressed and on solution options; and second, exposure to corruption and rent-seeking risks. The first requires that the government engages with the private sector in a self-discovery process to obtain the necessary information and design the optimal IP interventions under the circumstances. Following Peter Evans, Rodrik [25] labels this type of public-private partnership as "embeddedness". The second issue requires the opposite: arms-length relationship and full government independence from private sector to avoid capture and the known pitfalls of corruption and rent-seeking.

It is critically important to find the right balance between government autonomy and the necessary collaboration with the private sector in defining optimal IP interventions. Too close connection with the private sector may produce biased IP measures and open door to capture through direct or indirect corruption. Too little interaction may result in inefficient or irrelevant IP measures. As Rodrik [25, p. 17] put it: This is a unique situation in which the process is more important than outcome. Getting the balance right overshadows the elements of IP design. With an iterative process in place, the right mix and intensity of policy interventions will eventually be reached anyway.

The institutional setup for a successful IP system requires at least three standard ingredients:

1. **Strong political leadership at the top.** Every big policy objective must have its champion. Fiscal prudence is pursued by the minister of finance. Monetary stability by the governor of the central bank. Economic restructuring and growth need an equally capable champion to provide vision and raise visibility, secure coordination, foster credibility of the policy design, guarantee transparency and accountability of the agency based on strong oversight and monitoring. Only then will the agency be able to find the right balance between autonomy and embeddedness with the private sector.

2. **Private-Public coordination and deliberation bodies (councils, panels, boards).** Although specific organizational modalities may depend on local circumstances, strong coordination and deliberation bodies with appropriate public and private sector representation are an absolutely must in the new industrial policy. The role of these bodies would be to articulate and substantiate the demands of the private sector, request government policy intervention to correct market failure, seek legal and regulatory changes to lower or eliminate harmful transaction costs, as well as help overcome coordination problems. A hierarchy of these bodies would be coordinated and professionally and administratively assisted by the responsible government agency (ministry).

3. **Transparency and accountability arrangements.** The public and social image of IP bodies and due process must be impeccable. This can be secured only through transparent rules and strong independent accountability arrangements.

The design principles for IP should be clearly stated, but the actual areas of intervention (priorities), methods and instruments used should be left to the well-designed process and IP institutions previously described. Based on Rodrik [25], [26] and [27] we suggest the following ten design principles for a successful, unbiased industrial policy:

1. **Provide incentives only to NEW activities.** The main purpose of IP is to correct market failure and enable economic restructuring by diversifying the economy and opening new areas of potential comparative advantage. 

2. **Establish clear benchmarks of success and failure.** Performance criteria should be simple, focused on some aspect of productivity, and resistant to...
manipulation and false reporting. The administration must be strict and just. Companies that do not meet criteria must exit the program. One feature that distinguishes countries with successful IP from countries with failed IP attempts is the ability to identify and eliminate losers from the IP programs.

3. **Have a built-in sunset clause.** Sunset clause provisions should supplement performance criteria to ensure that resources are not tied with the same recipients for too long.

4. **Target activities not sectors or companies.** To avoid misuse of resources, IP should target specific activities rather than sectors or companies as such. Typically, activities span many companies and sectors and directly target market failures.

5. **Subsidized activities must have potential to generate spillovers and demonstration effects.** Inline with the spirit of the Mill test, targeted activities must have potential to pay back public resources either through sustainable export performance or creation of positive externalities in the domestic economy.

6. **Implementation of IP policies must be vested in agencies with demonstrated competence.**

7. **Implementing agencies must be closely monitored by a principal with a clear stake in positive outcomes.**

8. **Agencies promoting IP must maintain communication with the private sector.**

9. **Minimize the cost of inevitable mistakes.** Well designed IPs will sufficiently push the limit and, hence, inevitably have losers. The response should not be to minimize the probability of this occurrence, but to minimize the future cost and detrimental impact of such occurrence.

10. **IP self-discovery cycle should be ongoing to enable learning.**

    With the right IP institutional framework, these design principles are likely to result in many incentive and market failure correction programs including the already well known examples of: (a) subsidizing part of the operating costs of coordination bodies and other IP self-discovery activities; (b) developing mechanisms for high risk finance through public guarantees, development funds/banks, and venture funds (that are publicly funded but professionally managed); (c) resolve coordination failure problems through existing or new coordination and deliberation bodies; (d) support publicly funded R&D that is directly relevant for innovations needed by the private sector; (e) support / subsidize general technical training and provision of critical skills in short supply; and (f) take advantage of diaspora in advancing the self-discovery process in IP.

**The how of new EU industrial policy: horizontal and vertical IP measures**

The European Union has a long tradition in planning and implementing IP. The newest IP paradigm presented in a recent EC document [11] combines broad horizontal competitiveness enhancing measures for all sectors with more specific measures targeting a subset of (priority) sectors. The name Matrix Approach to IP coined by Aiginger [3] succinctly conveys the idea of combining broad horizontal measures with sector specific vertical measures. The concepts and rationale for IP in the EU have generally followed the treaties and communications of the EC. In reality, the practical changes have occurred at a slower and less radical pace than the often substantial shifts in declared philosophy.

On the practical policy level, a clear divide is emerging between countries practicing a pro-active future-oriented approach (with emphasis on innovation and knowledge), and countries that take a more defensive stance focused on immediate issues (with emphasis on subsidies and regulatory interventions). Empirical evidence suggests that countries pursuing future-orientation achieve higher shares of technology-driven and skill-intensive industries and excel with respect to the goals of the Lisbon strategy.

The EC document [11] provides an ambitious strategy framework for new industrial competitiveness policy understood in a wider sense. It includes the following structure under two broad policy pillars:

9 In a typical EC style this includes the following a long list: impact on cost, price and innovative competitiveness of the industry as a whole and of individual sectors; and synergy effects with all other policy initiatives such as single-market policy, trade policy, social and consumer protection policies, policies in transport, energy and environment, etc.).
Pillar 1: Horizontal policies
- Improving framework conditions for industry;
  - Competitiveness proofing and implementation of smart regulation;
  - Improved access to finance for businesses;
- Strengthening the single market;
  - Developing the single market and enforcing intellectual property rights;
  - Competition policy;
  - Improving infrastructure;
  - Standardization;
- New industrial innovation policy;
  - Industrial innovation;
  - Skill base;
- Capitalizing on globalization;
  - Trade and international regulations;
  - Ensuring access to raw materials and critical products;
- Promoting industrial modernization;
  - Resource, energy and carbon efficiency;
  - Structural excess capacities;
  - Building on corporate social responsibility;
- Ensuring access to raw materials and critical products;
  - Well-functioning global markets;
  - Raw materials initiative;
  - Sustainable international management of and access to raw materials;
  - Mining and processing technologies;
  - Sustainable supply and management of raw materials within the EU;

Pillar 2: Sector specific dimension — a targeted approach (vertical policies)
- Space industry: A driver for innovation and competitiveness at citizen’s service
  - Galileo / EGNOS (European Geostationary Navigation Overlay System)
  - GMES (Global Monitoring for Environment and Security)
- Sustainable mobility;
  - Clean and energy-efficient vehicle;
  - Rail energy storage and automatic train supervision technology;
  - Aerospace industry;
- Tackling societal challenges;
  - Pharmaceutical and health care industries (medical devices);
  - Security industry;
  - Construction sector;
  - Bio-based markets;
- Reinvigorating EU competitiveness through enhanced value-chains;
  - Chemical industry;
  - Agro-food industry;
  - Textile, clothing, leather industry;
  - Cultural and creative industries;
- Addressing concerns of energy intensive industries;
  - Transition to low-carbon and resource-efficient economy;
  - Low-carbon production technologies;
- Advanced sector approach.

Whilst the economic crisis has shifted the focus on industrial competitiveness towards short term concerns (centered on rescue and recovery actions), the focus of the strategy should be on long-term structural challenges: maintaining global competitiveness, climate change, energy efficiency, population aging, skills and knowledge. Given resource constraints imposed by ongoing fiscal consolidation, the new strategy is not built on large spending programs but rather analytical and policy interventions focused on addressing structural reforms in areas such as business environment, public administration reform, building innovation capacity, and enhancing energy efficiency.

The space for design and conduct of IP policy has been greatly affected by the advanced WTO rules, regional and bilateral trade arrangements. With the exception of rules on transparency, which appear fully aligned with sound IP design, WTO, regional and bilateral trade arrangements often impose restrictions on feasible IP measures. Most notably, recent WTO Agreement on Subsidies essentially renders all economic free zones illegal for countries above the $1,000 per capita income. Similar restriction may come from recent TRPS Agreement which may undermine many IP interventions aimed at reaping knowledge externalities.
Conclusion: new industrial policy is back, but old challenges remain

After three decades of expulsion, the industrial policy is back on the legitimate policy agenda of all countries, developed and emerging economies alike. Global crisis has provided a grand excuse to devise huge interventions to help ailing sectors, reignite the engines of growth and jump-start investments in green and advanced technologies of the future. Recent surveys of the literature have shown that the theoretical case for IP interventions remains valid. If anything, the presence of continued market failures is only enhanced by the ever growing share of international trade and stronger connectedness in the global economy, thereby strengthening the rationale for IP interventions.

But dangers of government failures are equally present, either through errors of commission (due to excessive and poorly designed government interventions) or errors of omission (i.e., failure to detect obvious market failures and promptly act to correct them).

At the practical policy level, IP policies have been designed and implemented almost continuously, despite the raging academic battles. Now that the issue is no longer “why” IP may be needed, or whether the government should engage in IP, but “how” to design and implement IP measures, applied policy may expect to get more meaningful input from the economic profession. Policy makers can again expect specific advice on how to avoid the known pitfalls from the past, facilitate industrial upgrading, and sustain economic development.

Recent debates [19], [25] and thorough literature surveys [12] confirm the continued need for industrial policy, but recommend caution in the design and implementation of IP measures. Lin recommends close alignment of IP interventions with present comparative advantage. Harrison admits the theoretical viability of hard IP measures (tariffs, subsidies and similar interventions) but does not recommend their use due to known risks (changing prices, generating welfare losses and being unable to reverse such policies when needed by changing macro circumstances). Therefore, Harrison instead recommends the use of soft IP interventions aimed at increasing productivity. Both Rodrik and Harrison suggest avoiding risks of poorly designed IP measures through joint government-private sector “self-discovery” search of optimal IP design. This includes both the identification of activities to be supported under IP and the determination of policy parameters to be used in the quantification of government interventions.

Space for design and conduct of IP policy has been greatly affected by the advanced WTO rules, regional and bilateral trade arrangements. With the exception of rules on transparency, which appear fully aligned with sound IP design, new trade arrangements often impose restrictions on feasible IP measures and significantly reduce scope for industrial policy. Most obvious WTO examples are Agreement on Subsidies, which eliminates the possibility economic free zones, TRIPS Agreement which may undermine many IP interventions aimed at reaping knowledge externalities.

References

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