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THE RETURN OF INDUSTRIAL POLICY

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ABSTRACT: Recent events (like the global financial crisis, the long North Atlantic slump, and the uprisings in the Middle East and North Africa), on top of accumulating evidence that many middle income countries are stuck in a “middle income trap”, have generated a renewed interest in industrial policy – in the state playing a more active role in accelerating industrial upgrading and diversification than sanctioned by the neoclassical mainstream. In other words, a renewed interest in moving beyond the “regulatory” state towards the “developmental” state. After the introduction, this paper describes the core arguments of the neoclassical mainstream against industrial policy, and the kinds of empirical evidence used to support the negative judgement. It then outlines some of the main flaws in this evidence.

The standard empirical tests consider industrial policy only in its “hard”, price distorting forms, such as protection and subsidies. And they examine effects mainly at the “micro” level, in the link between the policies and various aggregates of individual firms.

The paper argues that industrial policy also consists of “soft” measures, not readily captured by measures of money spent or prices distorted; and it also has “meso” level effects on supra-firm structures, which are also not readily captured by the standard tests.

With the “hard/soft” and “micro/meso” distinctions in mind, the paper shows that the US – generally understood to be a classic “regulatory” state, without industrial policies (or else ones which pick losers) – has long deployed “under the radar” soft industrial policies operating at the meso level; in particular, public policies and institutions for creating and sustaining *networks* between firms, venture capitalists, universities, and public agencies. But much less research has been done on the impacts of industrial policy of the soft-meso kinds.

The paper then shows that the “developmental” states of East Asia practiced not only the well-known forms of centralized, hierarchical, hard industrial policy, but also soft-meso kinds, focused on creating supra-firm networks within the national territory.

Finally, the paper summarizes recent rethinking about industrial policy in parts of the World Bank (against much resistance in other parts), in response to (a) evidence of the middle income trap, and (b) evidence of how China has succeeded by deploying policies and institutions rather far from what the World Bank has recommended for all countries.

The bottom line is that, to use J.S.Mills' phrase, the "deep slumber of a settled opinion" against industrial policy that has characterized mainstream economics for the past 30 years is finally being disturbed.

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The global financial crisis which started in 2008 has tarnished the aura of infallibility around "the market". In response, the Obama administration has engaged in industrial policy by any other name – trying to raise bank lending, defend the auto sector, and boost innovation in selected sectors (such as energy, medical, pharmaceuticals, IT).

In the developing world the urgency of industrial upgrading and diversification has been highlighted by the revolts in the Middle East and North Africa from December 2010 onwards. From Tunisia to Syria the protestors say not only "We want to choose our rulers" but also, "We want jobs". These economies must diversify their production base and achieve a more labor-intensive pattern of economic growth.

Meanwhile there is accumulating evidence that -- for all the talk of "a great convergence" (as developing countries catch up with developed countries in income, reversing the 19th and first half of the 20th century era of divergence)¹ -- many middle income countries are now caught in a "middle income trap". Their firms find that they cannot compete with firms producing standardized products in lower-wage countries; and cannot compete with firms producing more technology-intensive goods and services in higher-wage countries.

For example, Latin America's ratio of regional manufacturing value-added to regional GDP fell from 27% in 1980 to 18% in 2009. 18% is about the same as the ratio of the much higher-income eurozone. East Asia's equivalent is about 31%.

In Southeast Asia the problem is not the loss of manufacturing but the failure of the large manufacturing sector to push into high value-added activities. Malaysia, Thailand, and Indonesia have experienced deep structural change out of natural

¹ Martin Wolf, "In the grip of a great convergence", Financial Times, 5 January 2011. Wolf says that the reversal of the great income and technology divergence of the 19th and first half of the twentieth centuries "is far and away the biggest single fact about our world".

resources and into manufacturing since the mid 1970s, especially in electronics, electrical engineering, textiles and autos; and they have built up production and management skills to match the productivity levels of developed countries in standardized commodities. Few other developing countries have experienced such growth of manufacturing capacities.

However, in contrast to Taiwan and South Korea at the equivalent stage of development, none of them – including the wealthiest, Malaysia – has built an indigenous capacity to design, innovate and commercialize into new and more profitable sectors, and few firms have created even regional brand names. All of them remain heavily dependent on MNCs for their higher-tech manufacturing exports. Most important, backward links from MNC operations into the domestic economy are thin, with the result that domestic value-added in manufacturing remains low.

Indeed, as China advances in these respects (including (a) backward links from MNC operations, and (b) domestic innovation capacity), it is leap-frogging the Southeast Asian economies, putting them under even stronger competitive pressure. Moreover, Chinese firms are re-concentrating *within China* what previously were *regional* value chains, so that instead of shipping components from Southeast Asian factories for assembly in China, as before, they are placing factories out in lower-wage western provinces. This re-concentration of value chains redoubles the problems for component manufacturers in Southeast Asia.

A recent study of Malaysia finds that real wages declined in 2002 – 2008, and the average skill intensity of production also declined. It concludes,

“Malaysian industry appears to be sliding *down* the technological slope, and the incentives for workers to improve their skills are weakening... technological capabilities are relatively static (and may even be declining)... industrial competitiveness is marking time”.²

Governments of middle income countries caught in the trap have become much more willing to challenge the standard argument of mainstream economics and the World Bank, that “the best industrial policy is none at all”.

² Shahid Yusuf and Kaoru Nabeshima, *Tiger Economies Under Threat*, World Bank, 2009, p.26, emphasis added.

As J. K. Galbraith said, “The conventional wisdom” gives way not so much to new ideas as to “the massive onslaught of circumstances with which [it] cannot contend”.³ The above circumstances – and still others – have helped to bring the issues grouped under “industrial policy” back in to public discussion to an extent not seen for several decades. Even the World Bank – long a champion of sector-neutral policies for all developing countries – has recently been giving some open-minded thought to industrial policy.

“THE DEEP SLUMBER OF A SETTLED OPINION”

From when it emerged as a sub-discipline after the Second World War, development economics operated with significantly stronger “interventionist priors” than mainstream neoclassical economics -- on the premise that developing country conditions warranted a *distinct* economics precisely because the countries did not already have the full array of market institutions of an advanced economy. It endorsed a stronger steering role for the developing country state than did the neoclassical mainstream, including through protection, subsidies to targeted industries or activities, public enterprises, conditions on entry of FDI, capital controls, and the like. These policies in their steering aspect came to be known collectively as “industrial policy”.

From the early 1980s, however, development economics – as articulated by the hegemonic US-based organizations which claimed to articulate the interests of developing countries, such as the World Bank, the IMF, US Treasury, and by economics departments in western universities – changed direction and more or less merged its priors with those of the neoclassical mainstream, resulting in what Albert Hirschman called “mono-economics”, and what John Williamson, referring specifically to development economics, called the Washington Consensus.

The central neoclassical idea is that economic growth is a function of endowments and policies, where “endowments” include both resources and institutions of property and law, and “policies” are evaluated according to their degree of price distortion. The developing country state, like the advanced country state, should concentrate on providing stable macroeconomic conditions and an institutional framework for private markets, and should supply or

³ J.K. Galbraith, *The Affluent Society*, Penguin, 1999, 17.

ensure that private agents supply public goods like infrastructure, primary health care and primary and secondary education. Throughout, the state should adopt neutral, non-price distorting policies; and in particular should not try to manage flows of goods, services, and capital across the national border. As Martin Wolf of The Financial Times said in *Why Globalization Works*,

“It cannot make sense to fragment the world economy more than it already is but rather to make the world economy work as if it were the United States, or at least the European Union”.⁴

As for “industrial policy”, it should be at most “functional” or “horizontal”, such as subsidized credit for small and medium enterprises in the event that capital markets are thought to fail to provide optimal credit to such enterprises – but such credit must be equally available to SMEs in any sector. “Industrial policy” in the sense of the state imparting *directional thrust*, or favoring some sectors, industries, firms ahead of others, is ruled out. Thus stigmatized, thinking about industrial policy takes the form of, to use J. S. Mill’s phrase, “the deep slumber of a settled opinion”.

The premises of neoclassical economics are presented as having universal validity, as in the dictum of Lawrence Summers (professor of economics at Harvard, former Treasury Secretary, former chief economist of the World Bank):

“The laws of economics, it’s often forgotten, are like the laws of engineering. One set of laws works everywhere”.⁵ Summers subsequently set out the laws as the “three –ations: privatization, stabilization, liberalization”. He explained that these ideas are so accepted as to be beyond discussion, like “the idea that a huge spending program is the way to stimulate the economy”.

Gregory Mankiw, professor of economics at Harvard and former chairman of the President’s Council of Economic Advisors, expressed the central neoclassical prescription in 2006:

“Adam Smith was right when he said that ‘Little else is required to carry a state to the highest degree of opulence from the lowest barbarism but peace, easy taxes and a tolerable administration of justice’” .⁶

The president of the central bank of Brazil put it more colourfully in 1996:

⁴ Martin Wolf, *Why Globalization Works*, Yale University Press, 2004, 4.

⁵ Lawrence Summers, 1991. REFC

⁶ Gregory Mankiw, *The Wall Street Journal*, 3 January 2006.

“The only alternatives today are to be neo-liberal or neo-moron.”⁷

The strong consensus on industrial policy is captured in Nobel laureate Gary Becker’s declaration,

“The best industrial policy is none at all”, whether for advanced or developing countries.⁸

Here are some more quotes. Pay attention to the dates.

- “We can be pretty sure that industrial policy didn’t make a difference in East Asia, because we tried the same thing here [in UK] and it didn’t work” (senior UK Treasury official speaking to Wade, 1990)
- “For every Korea there are 100 failures. Who would you put your money on?” (World Bank economist speaking to Wade, 2010)
- “The government should be providing conditions that help all businesses – namely, effective infrastructure, a skilled workforce and better planning. We should make no attempt to pick winners – whether individual companies, specific sectors, or manufacturing as a whole” (Tim Leunig, Reader in Economic History, London School of Economics, 2010).⁹
- “In Dubai we don’t believe in planning or what you call industrial policy. We believe in the free market.” (CEO of Dubai Chamber of Commerce, in response to talks on smart industrial policy by Rodrik and Wade, 2011)

These verbalizations are crystallized out in the operating procedures of the World Bank. Ever since the mid 1990s the Bank has undertaken an exercise stretching from September to May in which it gets experts to score each of its borrower countries by the Country Policy and Institutional Assessment (CPIA) formula. The resulting score greatly affects the policy dialogue with all of its borrowers, and in the case of low income countries, it directly affects the amount of World Bank lending to each country. The formula distinguishes several major policy and institutional domains, and deploys several indicators within each domain. The scoring criteria reflect the Bank’s beliefs about the *best* policies and the *best* institutions for *all* developing countries.¹⁰

⁷ G. Franco, *Veja*, 15 November, 1996.

⁸ Gary Becker, “The best industrial policy is none at all”, *Business Week*, August 25, 1985.

⁹ Tim Leunig, “Economy class”, *Prospect*, November 2010, p.14

¹⁰ The Bank official in charge of the CPIA formula is Rui Coutinho.

The scoring criteria are derived directly from the Washington Consensus. For example, to get the top score on “trade policy” a country must have a completely free trade regime, with no tariff more than 15%, average tariff very low, no sectoral variability in tariffs, no quantitative restrictions on trade, and no export subsidies. In other words, the CPIA formula presumes that *the optimal degree of openness is maximum openness*. As for financial institutions, to get the top score the country must have no targeted and concessional credit (for example, to priority industries).¹¹ To get the top score on “labor market institutions” a country must have almost no worker protections.

The underlying argument takes “the market” as a natural institution which contains powerful negative feedback mechanisms, such that it is largely self-regulating. Hence “competition” can generally be relied upon to drive efficiency and innovation.

The argument recognizes a theoretical case for policy deviation from sectoral neutrality in the presence of “market failures” due to “spillovers” or what Alfred Marshall called “externalities”. Infant-industry protection is the best known formulation of this argument, where protection to selected industries is justified on grounds that market failures inhibit the growth of certain industries which would be competitive if given a temporary period of protection, yielding positive net welfare gains.

However, the argument says that public “intervention” is only justified when (1) markets fail to produce social optima (due to some form of “externalities”), *and* (2) the intervention can be presumed to move the outcome closer to the social optima at a cost lower than the gain. It then asserts that in the real world, both conditions are rarely satisfied. Hence the conclusion, “Government can’t pick winners, but losers *can* pick governments”.

The right public policy to promote economic growth is therefore to follow Mankiw’s endorsement of Adam Smith above: remove obstacles to markets; and build good institutions to protect the private property and the price system. And also, in the latter twentieth century, use foreign technology.

¹¹ On the history of the World Bank’s policy for financial institutions see Robert Wade, “Japan, the World Bank, and the art of paradigm maintenance: *The East Asia Miracle* in political perspective”, *New Left review*, 217, May-June 1996, 3-36.

A vast mainstream literature has accumulated on quantitative tests of parts of the argument.¹² One stream uses case studies of particular industries, such as the steel rail industry in the US and the semiconductor industry in Japan, to examine the effects of trade protection for infant industries. The broad conclusion is that variation in protection over time is not generally associated with variation in rates of growth of output from the cast study industry; and even where higher protection is associated with higher growth, it is also associated with net welfare losses.

A second stream compares different industries to see whether variations in the amount of protection and subsidy are associated with variations in productivity growth. Most such studies find that more protected sectors have lower productivity growth.

A third stream compares countries in terms of levels of protection and long-run growth. Some studies find a positive correlation between industrial tariffs and economic growth in developed countries between 1875 and 1913. Others find no significant relationship between average tariffs and growth for developing countries in the post-World War II period.

In short, the bulk of the empirical evidence does *not disturb* the mainstream's deep slumber, as expressed in the quotations from Gary Becker and Tim Leunig above.

FLAWS IN THE MAINSTREAM RESEARCH

But this is not the end of the story. The empirical studies suffer from several shortcomings which question our confidence in their conclusions.

- They do not distinguish trade and subsidy interventions motivated by industrial policy reasons from those motivated by rent-seeking reasons -- the former directed at industries where externalities are large, the latter directed at industries where tariff revenues may be greatest or special interests strongest.

¹² See the useful overview, "Industrial policies", Knowledge in Development Notes, World Bank, December 31, 2009.

- Little research has been done on the *complementarities* between trade and other policies and institutions, which affect the impact of trade protection on other things. For example, trade protection coupled with performance conditions may have different effects than trade protection without performance conditions.
- Little research has been done on the mechanisms by which trade openness affects productivity and growth – for example, through cheapening access to capital goods and technology, or through forcing more competition, or through forcing resource reallocation towards more efficient firms.
- The existing studies are based on the mainstream assumption that firms are independent, autonomous units, and examine the impacts of protection or subsidies on these independent units or aggregates of them.
- The existing studies focus on “hard” industrial policies -- mainly protection, subsidies, and tax breaks for foreign corporations -- which “distort” prices and can be readily measured. They have largely ignored a gamut of “soft” industrial policies, where the main mechanism is neither the price distortion nor the money. Soft industrial policies include, for example, local content requirements, public procurement, technical assistance (eg advice on new machine tools), public investment in infrastructure for industrial clusters, and publicly-initiated collaborations or networks between competing firms. More generally, soft industrial policies include the inculcation of a “cultural shift” towards certain national objectives, such as exporting, and mastering modern technology in the heads of nationals.

INDUSTRIAL POLICY AS CORRECTING FOR “NETWORK FAILURE”

I now argue that most of the existing studies miss an important mechanism of real-world industrial policy, which is through its impacts on *networks* of firms.¹³ Much of it is of the

¹³ I am indebted to John Matthews, “Strategizing in industrial clusters: collective efficiency, increasing returns and higher-order capabilities”, Holger Crafoord Memorial Lecture, University of Lund, Sep 7, 2010.

“soft” rather than “hard” variety, relying on interaction between public officials and firms and on efforts to shift cultural attitudes rather than simply on arms-length protection or subsidies or regulations.

Neoclassical economics has long operated with the distinction between “macro” (economy-wide) and “micro” (firms seen as independent, autonomous units interacting atomistically in the market, aggregated into structure-less categories of “industry” and “sector”). Micro analysis has assumed that firms are coordinated through one of two elementary institutions of a business system: either through market mechanisms (in which their interactions are governed mainly by price, courts or contracts, or what people in the trade call “one shot deals”) or through hierarchical mechanisms (based on ownership rights or legal sovereignty).

In the late nineteenth century Alfred Marshall implicitly distinguished a “meso” level of analysis between micro and macro when he studied “industrial districts” (such as the metals district in Sheffield) and developed concepts like “externalities” and “agglomeration economies” to explain them. But few scholars built on Marshall’s meso work, and those who did tended to stop at his static concept of “agglomeration economies”, where atomistic firms derive productivity benefits simply from co-location (proximity), not from coordinating strategy. In an industrial district like Sheffield the secrets of industry are “in the air”, said Marshall.

After 1980, as Toyota-type and IKEA-type supplier chains spread within nations and across borders, a vast literature has emerged – mostly outside the mainstream of economics -- on “suprafirm” networks, clusters, and value chains, treated as a third elementary institution of firm coordination.¹⁴ In contrast to Marshall and his neoclassical successors, it treats clustering and network building as intentional acts, part of firm strategy; and puts them in the context of an economics based on assumptions of limited-foresight, learning, and path-dependency, rather than of neoclassical equilibrium and rational expectations.

¹⁴ One of the first contributions was Giacomo Becattini, “From industrial ‘sector’ to industrial ‘district’”, *Rivista di Economia e Politica Industriale*, 1979.

The basic argument is, first, that inter-firm coordination through networks (as distinct from markets and hierarchies) can have big private and social gains -- that participation in networks, especially when the networks are spatially concentrated (industrial districts, special economic zones), can raise learning, productivity, and innovation by getting access to pooled resources. The strategies of firms in a network become contingent on the strategies of others in the network, and a core competence in each firm becomes that of managing multiple relationships outside the firm. The “emergent properties” of the network, such as the network’s competence in absorbing technologies, then affect the competitiveness of each firm. The networks themselves become a source of “increasing returns” (a little studied phenomenon in neoclassical economics, which tends to assume constant or declining returns in order to make the mathematics tractable).¹⁵

Second, “network failures” are common, basically because competing firms don’t like to cooperate when one firm’s sharing of knowledge rebounds to the private benefit of other firms. When “network failure” occurs (either existing networks are abandoned or networks fail to arise in the first place), firms interact only through what may be sub-optimal modes of markets or hierarchies, foregoing gains of reciprocity.

Third, one of the big research questions is how firms in networks manage to coordinate their activities – and avoid

¹⁵ John Hicks said in his seminal *Value and Capital* (2nd edition, Oxford University Press, 1946, 84-85), “[I]t has to be recognized that a general abandonment of the assumption of perfect competition ... must have very destructive consequences for economic theory. Under monopoly [and oligopoly] the stability conditions become indeterminate; and the basis of which economic laws can be constructed is therefore shorn away....It is... only possible to save anything from this wreck – and ... the threatened wreckage is that of the greater part of general equilibrium theory – if we can ... suppose ... that *marginal* costs do generally increase with output at the point of equilibrium [that is, increasing returns do not generally exist]. [T]hen the laws of an economic system working under perfect competition will not be appreciably varied in a system which contains widespread elements of monopoly. At least, this get-away seems well worth trying.... I doubt if most of the problems we shall have to exclude for this reason are capable of much useful analysis by the methods of [neoclassical] economic theory.” In other words, Hicks said that he and other theory-building economists could legitimately ignore phenomena which might challenge the prior commitment to formalization and the virtues of competitive markets. This sounds like no more than an innocent application of Occam’s Razor, but the argument had a profound effect on conclusions about the real world. See Robert Wade, “Beware what you wish for: lessons for international political economy from the transformation of economics”, *Rev. Internat. Pol. Econ.*, 16, 1, 2009, 196-21; and in Nicola Phillips and Catherine Weaver (eds.), *International Political Economy*, Routledge, 2011.

network failure. One solution is a dominant headquarters firm issuing instructions to the others. Another is one or more government agencies acting as initiators and stewards to offset “network failure” (as distinct from “market failure”, the standard “micro” justification for industrial policy). In other words, government agencies can help to form and sustain networks linking scientists, engineers, entrepreneurs, venture capitalists, aimed at fostering the growth of new firms and industries. They can do so, for example, through grants or subsidies, through something like an industrial extension service for firms in targeted sectors, and through more or less subtle uses of public power.

US INDUSTRIAL POLICY ¹⁶

The standard view of US industrial policy is that, to the extent it exists at all, it is ineffective judged against a national interest test. In Michael Mann’s words,

“There is no serious American industrial policy; this is left to the post-war powerhouses of the US economy, the large corporations. Much of this [industrial policy failure] is due to the radical separation of powers enshrined in the US constitution. A coordinated political economy cannot easily be run by a President and his cabinet, two Houses of Congress, a Supreme Court and fifty ‘states’ (which are also fragmented by the same separation of powers) – especially when they belong to different political parties”.¹⁷

Much the same argument is made by non-economists Robert Reich, Ira Magaziner, and those in the “varieties of capitalism” approach such as Peter Hall and David Soskice. The common general argument is that industrial policy (targeting specific industries) is likely to be *ineffective* in the context of (1) a federal structure, (2) strong separation of powers between legislature, executive and judiciary. In these conditions there may well be a lot of industrial policy, as vested interests capture the relevant parts of the state apparatus and obtain programs to their advantage; but it will be uncoordinated and yield negative net welfare gains. As Kevin Philips says, industrial policy in a fragmented political structure is both “inevitable and ineffective”.¹⁸

¹⁶ The following account of US industrial policy is based on Andrew Schrank and Josh Whitford, “Industrial policy in the United States: a neo-Polanyian interpretation”, *Politics and Society*, 37, 4, 2009, 521-53.

¹⁷ Michael Mann, “Has globalization ended the rise and rise of the nation state?”, *Rev Internat Pol Economy*, 4, 3, 1997, 472-96, at 484.

¹⁸ Kevin Philips, “US industrial policy: inevitable and ineffective”, *Harvard Business Review*, 70, 4, 1992, 104.

However, recent research by non-economists Fred Block, Charles Sabel, Andrew Schrank and Josh Whitford, among others, suggests that by using the “mesoist” lens described above and by recognizing the existence of “soft” industrial policy (as distinct from the “hard” kind which is the subject of most of the research), US industrial policy looks to be both more prevalent and more effective than the standard characterization suggests. In Schrank and Whitford’s words,

“The federal government has been pursuing industrial policy within decentralized political institutions for well over a generation... American industrial policies go beyond preservation of market competition, maintenance of macro stability, and provision of public goods *to address firm-specific needs* in a host of different ways and through a variety of different agencies”.¹⁹

It has been missed by most analysts because they have equated industrial policy with centralized coordination agencies and national programs to develop specified industries (as in the common understanding of East Asian industrial policy). But the fact that the US has had no top-down planning agencies akin to Japan’s MITI and Ministry of Finance does not mean it has had no industrial policy.

A lot of US industrial policy operates at the meso level -- creating networks and overcoming network failures, as distinct from remedying market or hierarchy failures. It is comprised of programs run by national, state, and local agencies, *which themselves are relatively uncoordinated*. At national level the agencies include the National Institutes of Health (NIH), Advanced Research Projects Agency (ARPA), National Institute of Standards and Technology (NIST), Small Business Administration (SBA), and more. They fund R&D in selected sectors, and use their control of funding to build and sustain networks between firms, scientists, engineers, and venture capitalists. NIST organizes Manufacturing Extension Partnerships (MEPs) in specific geographical areas to provide manufacturing advice to local firms. SBA makes Small Business Innovation Research (SBIR) grants. Federal agencies with large research budgets (like NIH, Department of Energy) are required to allocate 2.5% of grants to the SBA, which in turn distributes about 5,000 awards to 1,500 small firms per year. These awards are especially important in bridging university and

¹⁹ Op.cit, 2009.

commerce; for example, more than two thirds of the recipients include an academic or former academic among their founders.

SEMATECH is a famous example of network-building industrial policy. It was formed in 1987 at the initiative of the federal (Department of Defence) Advanced Research Projects Agency, in response to the virtually disappearance of American companies able to make the equipment needed to make semi-conductors. The leading equipment makers by then were all Japanese, who tended to hold back the latest generation equipment for six months and more for “testing” – by Japanese semi-conductor makers, giving the latter a strong competitive advantage over American rivals. ARPA rounded up 14 American semi-conductor makers, and (against some resistance) encouraged them to form a consortium to pool R&D and manufacturing capacities and re-enter the production of semi-conductor equipment. SEMATECH flourished when the semi-conductor cycle was down -- then the firms would willingly send top-quality staff to work with SEMATECH; but when the cycle was up they were less willing to cooperate. ARPA’s stewardship – its funding and its willingness to bang heads together -- helped to keep the consortium going through multiple cycles. By 1996 it was well enough institutionalized that its Board decided it could flourish without any more federal funding. It continues to flourish to this day.

One study summarizes the overall state of US industrial policy as follows:

“Below the ideological surface, a powerful ‘jerry-built’ substrate has emerged of federal, state and local government innovation support programs each filling gaps in the other”.²⁰

An official involved in these programs said, “We definitely see the programs as a de facto industrial policy, but we cannot use that term, so we usually call it R&D policy”.²¹

The decentralized, meso-level, soft type of US industrial policy has economic advantages: it better fits both the US’s increasingly decentralized production structure and its “separation of powers” political structure (as described in the quote from

²⁰ Henry Etzkowitz et al., “Pathways to the entrepreneurial university: towards a global convergence”, *Science and Public Policy*, 35, 9, 2008, 681-95, at 685.

²¹ Quoted in Schrank and Whitford, *op.cit.*, at n.93, from Etzkowitz et al., *ibid.*, p. 314.

Mann above). As previously vertically-integrated firms have become increasingly de-integrated there has been a corresponding growth of smaller-scale firms scattered around the country. As their share of production grows, so the gains from networking grow. By being brought into innovation networks they are more likely to compete on the high road (high skills, innovation) than compete on the low road (cheap wages). Moreover, decentralization – with programs run by many agencies at different levels and locations -- allows for experimentation.

It is, however, difficult to evaluate the economic rate of return of such scattered programs, especially by cost-benefit analysis. But we can say with confidence:

- The programs have developed valuable products and processes.
- The programs have been able to withdraw benefits from “losers”, at least in the civilian industrial sector, as distinct from agriculture and defence.
- Firm networks not encompassed in public network programs have a higher rate of decline or breakup – which on the face of it argues for the value of public involvement. For example, Sherrie Human and Keith Provan report that of the small firm networks (outside public programs) they studied in the mid 1990s more than 60% had broken up by the time of their restudy in 1998.²² Maryann Feldman and Maryellen Kelley provide evidence that firms within *publicly sponsored networks* are more likely to sustain collaboration than those outside.²³

EAST ASIAN INDUSTRIAL POLICY

In conventional understanding the defining feature of capitalist East Asian industrial policy (as practiced in post-war Japan, South Korea, and Taiwan) is its centralization in apex coordination agencies like MITI. Indeed, many analysts, including

²² Sherrie Human and Keith Provan, “Legitimacy building in the evolution of small-firm networks”, *Administrative Science Quarterly* 45, 3, 2000, 327-65.

²³ Maryann Feldman and Maryellen Kelley, “Leveraging research and development”, in Charles Wessner (ed), *The Advanced Technology Program: Assessing Outcomes*, National Academy Press, Washington DC, 2001.

the critics of US industrial policy mentioned above (Michael Mann, Robert Reich, Ira Magaziner, et al.), accept that industrial policies worked well in the centralized polities of East Asia (in contrast to the standard neoclassical conclusion), even as they warn against industrial policy in the decentralized US polity.

However, this familiar characterization of East Asian industrial policy is misleading. By focussing on “hierarchy” mechanisms – which to be sure were a major part of East Asian industrial policy -- it ignores much government activity of a soft industrial policy kind, some of it directed at “nudging” firms into networks and up the production hierarchy. ²⁴

For example, in all three East Asian cases companies (private and public) were densely incorporated into the process of defining public objectives and policy instruments. Firms were organized from above into associations. In Taiwan, any set of firms in the same sector which numbered five or more was *required* to form an industry association (such as a Taiwan feather exporters association). Each industry association had a government-appointed secretary, with a president elected by the members. The big and powerful associations had institutionalized roles in the planning process.

Also largely overlooked in the standard picture of centralized East Asian industrial policy is the public industrial extension services which operated in these economies, acting somewhat similarly to agricultural extension services. Their functions were:

- to promote a three–way flow of information – from the factory floor to the center of economic policy making, from the center to the factory floor, and between firms;
- build networks between firms (including supplier-buyer links);
- promote import substitution in selected sectors;
- promote exports.

²⁴ See Robert Wade, *Governing the Market*, Princeton University Press, 2004.

For example, Taiwan had an Industrial Development Bureau (IDB), supplemented by free-standing Task Forces (such as the Automobile Task Force, and the Factory Automation Task Force).²⁵ The IDB had a staff of roughly 180 in the early 1980s, mostly engineers. They were divided into teams. Four vertical or sectoral teams (metals and metal machinery, electric-electrical, chemicals and petrochemicals, and daily necessities); and three horizontal teams (industrial estates and export processing zones, industrial regulations, and research, the latter being where its three economists were corralled). Each member of a vertical team was required to spend several days a month visiting factories.

Here is an illustration of how the IDB kept nudging firms operating in Taiwan – domestic and foreign – to upgrade and diversify their production, decade after decade, and build networks within Taiwan. At a time in the early 1980s the IDB officials dealing with glassmaking decided that some Taiwan glass makers could step up the quality of their production to match the specialized glass which a Philips factory was importing for its TV sets, provided Philips gave them a risk-reducing supply contract.²⁶ The officials approached Philips, which declined even to consider the idea, saying it was happy with its existing supplier overseas. Soon Philips' applications to import the glass, previously quickly and automatically approved, began to be delayed. And delayed. Philips complained – to no avail. To cut a long story short, eventually Philips got the message, made a long-term supply contract with a couple of domestic glass makers and gave them technical help, and soon stopped importing the glass. Before long, the Taiwan glass makers began to export some of the specialized glass. This is a case where hierarchy in the form of an extra-market push provided by public industrial policy officials helped to create input-output links within Taiwan and nudge the production frontier up the technological ladder.

This kind of nudging has been going on in Taiwan for decade after decade, but has received little attention from those who write about industrial policy – whose attention has tended to be captured by programs like the “Five Year Plan to Develop the Automobile Industry” (which failed, though the subsequent plan to develop auto components was much more successful).

²⁵ Robert Wade, *Governing the Market*, Princeton University Press, 2004, p.201ff.

²⁶ Robert Wade, *Governing the Market*, “Politics of investment and industrial policy”, chapter 9.

As a further example, consider export promotion policies in East Asia. These included various “hard” and measurable components, such as duty drawback schemes, cheap trade credit, and the like. But East Asian governments tried to go beyond a set of discrete incentive policies, aiming to create a “culture of exporting” such that producers up and down the country knew that exporting performance was one of the main criteria by which the government would respond to them in the event of unexpected contingencies. In effect they understood that the government made exporting a “focal point” of government-business relations.

The Japanese government, preoccupied with what MITI described as “the nightmare choice of either exporting or perishing”, established the Supreme Export Council in 1954.²⁷ The Council comprised senior officials, business leaders and senior politicians, chaired by the prime minister. Normally 20 to 30 people attended its twice yearly meetings. Among other promotion methods the council awarded much sought-after prizes for export performance. The top achievers received Prime Minister's Prizes, the lesser ones, MITI Prizes. City and prefectural governments had their own export councils and appropriately calibrated prizes. July was designated Trade Promotion Month, when a concerted campaign was waged from top to bottom to exhort the population to export. Cities, prefectural governments, chambers of commerce, and local Trade Councils, organized trade fairs, symposia and seminars, all around the theme of exporting. There were also industry-specific export councils tasked with identifying and solving problems facing specific products. The Japanese government borrowed the idea of the Supreme Export Council and its sub-councils from a British attempt at the same, which was studied by a visiting Japanese trade delegation in the early 1950s. The emphasis on exporting was dropped in the early 1970s, by which time Japan was running current account surpluses.

The Koreans borrowed the idea from the Japanese. From the early 1960s onwards the government deployed an elaborate scheme of export prizes. It designated one day a year as Export Day, when national and local governments awarded prizes to top exporters in their jurisdiction, the national winners getting to shake the hand of President Park Chung-hee himself. The prizes conferred not only prestige but also rewards such as easier bank credit for non-export projects.

²⁷ P. Trezise and Suzuki, _____, 1976, 799.

More recently South Korea and Taiwan have been making intense use of industrial districts in the form of science parks. Hsinchu Science Park in Taiwan, for example, initiated by the state in 1980, has built up several clusters of firms focused on high-end computers and peripherals, telecommunications, optoelectronics and flat panels, precision machinery, and biotech, with strong backward linkages to component suppliers and forward linkages to users.²⁸ SECOND SCIENCE PARK IN TAINAN

THE WORLD BANK'S PARTIALLY REVIVED INTEREST IN INDUSTRIAL POLICY

As mentioned earlier, the World Bank, or a part of it, has recently begun to talk about industrial policy in a more positive tone. This modifies the three decade long embrace of the Washington Consensus, during which time the Bank's experts on industrial development and industrial technology were invited to find employment elsewhere, and replaced by specialists in good governance, poverty alleviation, environmental assessment, privatization, and the like.

The recent change has been propelled by the arrival in 2008 of Justin Lin as chief economist, the first-ever non-G7 chief economist. Lin is Chinese; and very importantly, has a PhD in economics from the University of Chicago, an imprimatur of reliability in the eyes of the American economics profession. Drawing on his knowledge of East Asian industrialization and of theories about stages of growth (such as the work of the Japanese economist Akimatsu beginning in the 1930s)²⁹, Lin has pushed the idea that “development” is about not only higher levels of income and consumption (the focus of the Bank's “poverty reduction” mandate) but also changes in production structure, a subject that has – surprisingly – received rather little attention under the rule of the Washington Consensus (which presumes that whatever changes in production structure resulting from freely working markets must be optimal, with few exceptions). Lin argues that governments can usefully push firms to diversify and upgrade their production – with the caveat that government efforts should stick within the economy's existing comparative advantage (undefined).

²⁸ John Mathews, “Strategizing in industrial clusters”, *op.cit.*

²⁹ Terutomo Ozawa, *The Rise of East Asia*, Edward Elgar, 2009.

The overarching vision is of an economy seen less as a set of endowments which are transformed into outputs via a production function, as a vast, continuously improving Toyota-style production system, in which constraints and opportunities are identified as they emerge over time.³⁰ Learning and self-discovery by actors private and public are the central processes. They drive technical and organization mastery over *broader* ranges of activities (as distinct from narrowly specializing in areas of existing and endowment-defined comparative advantage). Policy reforms aim not at a vast Washington Consensus “wish list” but at more specific constraints and opportunities revealed by the continuous improvement process.

Lin has spelled out six steps for strategic government intervention in a specific country: ³¹

(1) Government (G) identifies a list of goods and services produced over the previous two decades in dynamically growing countries with similar endowment structures and average GDP 100% higher.

(2) Among listed industries, G gives priority to those in which some domestic private firms have already entered, helps remove obstacles to their development.

(3) Some listed industries may be completely new to domestic firms; in such cases, G could adopt specific measures to attract firms in the higher-income countries identified in step (1) to invest in these industries.

(4) G should pay attention to private enterprises’ successful discoveries of industries not included in list, and provide support to scale up those industries.

(5) In developing countries with poor infrastructure and unfriendly business environment, G can invest in industrial parks or export processing zones and make necessary improvements to attract domestic private firms and/or foreign firms willing to invest in the targeted industries.

³⁰ “Overview: new industrial and innovation policy”, Knowledge for Development, World Bank,

³¹ Justin. Y. Lin, “Six steps for strategic government intervention”, Global Policy, 1, 3, 2010, 330-31.

(6) G should give limited incentives for domestic firms or foreign investors that work within list of industries in step (1) to compensate for public knowledge created by their investments.

It would be quite wrong to conclude that Lin and his ideas for strategic government intervention in industrialization have persuaded most World Bank economists. On the contrary, my field work in the Bank during the summer of 2010 revealed that many dismiss the arguments with the annoyance one might direct towards a fly, as indicated by the tone of the quote from the World Bank official given earlier (“For every Korea there are 100 failures. Who would you put your money on?”).³² The rejectors include staff of the research vice presidency of which Lin is the head.

On the other hand, some World Bank *operational* economists are desperate to respond to borrowing governments’ requests for help in building competitive industries, and are casting around for guidance as to how to do so.

Here another important development is the appointment of a senior McKinsey executive, Janamitra Devan, as vice president for Financial and Private Sector Development (FPSD), in early 2010. Devan, as a former McKinsey executive not marinated in neoclassical economics, sees the potential of industrial policy. With his encouragement the FPSD vice presidency is leading an effort to form what it calls Competitive Partnerships Initiatives (CPI) with a number of borrowing country governments. (The CPI designers eschew the term “industrial policy”.) Under the CPI, an array of mostly already existing Bank and International Finance Corporation (IFC) tools of lending and advice are *focussed on specific industries* identified by the government with Bank help, guided by the sort of steps Lin laid out. Implicitly, these industries are to receive more public support than others. The CPI is currently being piloted in Kenya, and more countries are in line to begin pilots shortly.

So the change underway at the World Bank, both in talk and action, is still in early days. But it is potentially of far-reaching significance for changing the prevailing income and consumption-based notion of development by re-introducing production upgrading and diversification and concepts of individual and

³² This field work was done jointly with Jakob Vestergaard of the Danish Institute of International Studies.

collective experimentation and learning. It is worth watching out for.

CONCLUSION

Facts kick, sometimes. Worries in many advanced and developing countries about the erosion of manufacturing in the face of Chinese competition, worries in many middle income countries about being stuck in the middle income trap, and still more factors have been reawakening interest in industrial policy. Some of the recent research suggests flaws in the earlier evidence used to discredit sectoral industrial policy. And important theoretical and empirical advances have been made by development economists such as Dani Rodrik, Ricardo Hausemann, and Justin Lin, by political scientists such as Andrew Schrank and Josh Whitford, and by strategic management scholars such as John Mathews. The field has started to bubble. Particularly important in terms of change in “global policy” is the recent work on rethinking the previously taboo subject of industrial policy at the World Bank.

In the end, however, what matters is not so much the precise design of this or that policy or institution, but a culture of public officials taking personal responsibility for national development goals. A senior British civil servant working on economic issues declared in late 1930 (as the Great Depression ground on), “If I leave the office on Saturday feeling confident that in the past week I have done no harm, then I am well content”.³³ This is the spirit of a “regulatory” state, oriented towards general rules and a neutral stance between firms and industries. The descendants of this breed of regulatory, “do no harm” civil servants and its neoclassical economist counterpart forged the Washington Consensus world view about appropriate development policy in the 1980s, which has dominated “global policy” on development ever since.

In post-war East Asia, however, civil servants and economists espoused a “developmental” state, which carried out developmental functions like indicative planning, industrial reorganization, infant industry protection and export promotion. Its spirit is captured in the slogan displayed in the entrance to the Industrial Development Bureau in Taipei: “The most important

³³ Quoted in G.C. Allen, “Advice from economists – forty-five years ago”, *Three Banks Review*, 106, June 1975, 35-50.

thing in life is to have a goal, and the determination to achieve it.”³⁴
The really big question about industrial policy is how to inculcate
the latter attitude in place of the former – and even more, in place
of the attitude which sanctions public officials to treat public
resources as their own private purse. END

³⁴ Cited in Linda Weiss and Elizabeth Thurbon, “‘Where there’s a will there’s a way’: Governing the market in times of uncertainty”, *Issues and Studies*, 40, 1, March 2004, 61-72.