

Competitive Manufacturing as a Driver of India's Next Economic Transformation: Opportunities, Potential, and Policies

Nagesh Kumar

Competitive Manufacturing as a Driver of India's Next Economic Transformation: Opportunities, Potential, and Policies

Nagesh Kumar

ISID **Institute for Studies in Industrial Development**
An institution of Indian Council of Social Science Research (Ministry of Education)

4 Vasant Kunj Institutional Area, New Delhi – 110 070

Phone: +91 11 2689 1111 | *E-mail:* info@isid.org.in | *Website:* <https://isid.org.in>

December 2022

ISID Working Papers are meant to disseminate the tentative results and findings obtained from the ongoing research activities at the Institute and to attract comments and suggestions which may kindly be addressed to the author.

Competitive Manufacturing as a Driver of India's Next Economic Transformation: Opportunities, Potential, and Policies

*Nagesh Kumar**

Abstract: A manufacturing-led transformation is imperative for India to address the challenge of employment creation, reviving growth, and sustainable management of the balance of payments and contribute to India's Vision 2047. The manufacturing sector can be boosted by tapping the opportunities for making for India and for global markets and exploiting the potential of new digital and green industries. India's talent pool and rising domestic demand and restructuring of global value chains on a China+1 basis provide opportunities for India to emerge as a manufacturing hub. However, manufacturing development does not happen in a vacuum, and governments around the world have intervened extensively through several strategic interventions to foster the manufacturing sector or the so-called industrial policy. Against that backdrop, this essay explores the potential and opportunities for the next phase of India's economic transformation led by manufacturing. It also summarizes key policy lessons from the development experiences of industrialized and East Asian newly industrialized countries regarding the strategic interventions for fostering the manufacturing sector.

Keywords: Manufacturing sector, industrial policy, strategic interventions for development, import substitution, development state, FDI.

1. The context

As it celebrates its 75 years as an independent nation, India can be justifiably proud of its many achievements in socio-economic development. These include its ability to sustain a rising trend of economic growth which has helped India emerge as the fifth largest economy in the world; its ability to lift over 500 million people out of poverty; improvement in all different indicators of socio-economic progress; and her ability to emerge as the most preferred global destination for IT services and business process outsourcing (see Kumar 2022a, for details). Successes in leveraging technology for inclusive development, leadership in ICT services, a new generation of entrepreneurs scripting success with their unicorns, and vaccination not only of her own population in a

* Dr Nagesh Kumar is Director of the Institute for Studies in Industrial Development (ISID).

Acknowledgements: This paper has been prepared within the framework of the ICSSR sponsored project "Fostering India's Industrial Transformation: India Industrial Development Report," support for which is gratefully acknowledged. This paper builds on earlier writings of the author (Kumar 2018 and 2020). The views expressed are personal. Email: nkumar@isid.org.in.

record time with made-in-India vaccines but also helping other countries across the globe, are among the achievements boosting national confidence. Hence, a more confident India is aiming high with a 2047 vision of a developed country status and a US\$ 5 trillion economy by 2026/7.

Realization of the developed country status needs to be underpinned by inclusive and sustainable prosperity for all citizens through the creation of decent job opportunities for India's youthful workforce. The inability to create an adequate number of decent jobs in the past has led to nearly 86% of India's workforce getting locked in the informal sector without adequate social protection and remaining vulnerable to any shocks. The issue of decent job creation is linked with structural transformation, where workers move over time from low-productivity activities (such as agriculture) to higher-productivity sectors (such as industry and services). India has witnessed the transformation of an agricultural-dominated economy into a services-dominated one bypassing the industry. While the service sector has delivered robust growth rates, it has not been able to absorb workers especially the unskilled and semi-skilled ones, in a proportionate manner. As a result, agriculture continues to sustain as much as 46% of India's workforce with barely a 15% share of GDP. This services-oriented structural transformation, as it has been termed, has been able to absorb only 26% of the workforce in services. The manufacturing sector has been bypassed with its share in GDP stagnating at around 16% in contrast to an average of 30% in the East Asian countries. The neglect of manufacturing to underpin the structural transformation in India has cost the country dearly in terms of creating decent jobs directly, and indirectly through its extensive backward and forward linkages (Kumar 2018). Not only has the share of manufacturing stagnated in India, but there is also evidence of some deindustrialization taking place (see Dasgupta and Singh 2006; Felipe, Mehta and Rhee 2014; Amirapu and Subramanian 2015; Rodrik 2015; Kumar 2018).

History corroborates that few countries if at all have attained prosperity without industrialization (Kaldor 1967). Kaldor (1967) has also argued persuasively that the growth of manufacturing will not only drive economic growth but will also enhance the productivity of the economy overall with increasing returns to scale which could be dynamic in nature. The Agenda 2030 on Sustainable Development adopted at the United Nations Summit in September 2015 comprising 17 Sustainable Development Goals also recognizes the transformative potential of the industrial sector and seeks to enhance its share in employment and GDP (SDG-9.2). Industrialization through manufacturing is also critical for SDG-8 on accelerating growth and productive job creation. An expanded manufacturing sector could also help to make India's balance of payments (BoP) more sustainable --which tends to periodically get into stress-- by substituting imports or expanding exports.

Therefore, faster job-creating rapid economic growth through industry-oriented structural transformation is the key to inclusive and sustainable prosperity of India for realization of India's Vision 2047 of a developed country. In that context, the Make-in-India programme announced by Prime Minister Modi in 2014 that seeks to tap the potential of manufacturing

for India's development, was timely. It was further reinforced by *Atmanirbhar Bharat Abhiyan* in 2020 as a strategy to pull the economy out of the Covid-19 pandemic comprising production-linked incentives (PLI) scheme to boost local production in 14 sectors.

In achieving a manufacturing-led economic transformation, India could learn from the experiences of the industrialized and East Asian countries in fostering competitive manufacturing capacities through extensive state interventions. The developmental role of the State in these countries and the aspects of strategic interventions deployed that are collectively called industrial policy have been well documented in the literature, as summarized later. After becoming a bad word in the heydays of globalization, industrial policy is back in fashion across the world. Among many trends that the Covid-pandemic has accentuated is a shift towards a real economy comprising production, jobs, and localization replacing the earlier emphasis on finance, consumerism, and globalization. Rodrik (2022) has termed this trend 'Productivism.' Governments around the world are adopting the so-called industrial policies that incentivize domestic manufacturing to create jobs and reshoring of value chains. For instance, in the US, once the greatest champion of free markets and globalization, the Biden Administration has defined its industrial policy recently with the \$280 billion CHIPS and Science Act, the \$737 billion Inflation Reduction Act, and the \$550 billion Infrastructure Investment and Jobs Act. These Acts will foster local manufacturing and innovation of semiconductors chips, electric mobility, and other new technology products through hundreds of billions of dollars in subsidies and tax breaks.

Against that backdrop, this essay explores the potential and opportunities for the next phase of India's economic transformation led by manufacturing. It also summarizes key policy lessons from the development experiences of industrialized and East Asian newly industrialized countries regarding the strategic interventions for fostering the manufacturing sector. It is organized as follows: Section 2 overviews the key opportunities that India could tap into in the pursuit of its industrialization. Section 3 summarizes lessons from the experiences of the Industrialized and East Asian countries on the strategic interventions relevant to India's context. Section 4 concludes with a few remarks.

2. Opportunities and Prospects for Industrialization in India

As India strives for building competitive manufacturing capabilities, an important question would be what opportunities are available to it in terms of feeding the domestic demand versus external markets and emerging opportunities. In what follows, a few pointers to the opportunities are provided.

Making-for-India and strategic import substitution

Clearly the biggest opportunity for expanding the manufacturing base of the country is making for India by reversing the trend of the rising share of imports in domestic consumption. Using Input-Output Tables for 2001-2011, Kumar (2018) had found a sharp

rise in the share of imports in final consumption particularly in Electrical and Optical Equipment (from 20% to 52.2%), Machinery, n.e.c. (from 5.9% to 15.1%), Transport Equipment (from 0.5% to 4.7%), Other Non-Metallic Minerals (8.3 to 37.1%). The study attributed the trend of deindustrialization in India to import liberalization through gradual reduction of tariffs since 1991, phasing out of quantitative restrictions since 2000, and elimination of tariffs on IT products under the Information Technology Agreement (ITA) 1996 of WTO, and under FTAs. Real appreciation of the exchange rate of the Indian rupee particularly since 2004 was also an important factor which triggered outsourcing of manufacturing by Indian companies to save costs (Kumar *ibid*). Outsourcing has been practiced widely by a number of Indian companies owning well-known brand names to get their products manufactured in other countries, mainly China, and continue selling them under their brand names. This was done even for a number of electrical and electronic appliances that tend to be price sensitive like electric fans, toasters, mixer-grinders, juicers, wall clocks, TVs, refrigerators, air conditioners etc, explaining a sharp rise in import dependence in Electrical and Optical Equipment from 20 to 52% in just a decade. Rising import dependence of consumption in India especially through outsourcing of production abroad is akin to the phenomenon observed in Japan that has been described as the 'hollowing out' of Japanese manufacturing practiced to save wage costs (Horaguchi 2004).

Besides reversing this trend of hollowing out of the Indian industry, there are opportunities for strategic import substitution in select industries. Industries with significant import dependence include power equipment, a variety of organic and inorganic chemicals, and active pharmaceutical ingredients (APIs), that can be manufactured within the country as adequate domestic demand exists. Similarly, India is importing around \$ 54 billion of non-electrical machinery, \$ 15 billion of transport equipment, \$ 30 billion of chemicals and artificial resins, project imports of around \$ 10 billion, and around \$ 15-20 billion of defence equipment. An effort needs to be made to start the domestic manufacture of these products.

The opportunities for making for India could be substantial. In 2021-22, India's merchandise imports totaled \$610 billion. However, bulk imports e.g. hydrocarbons, bullion, and raw materials, would constitute nearly half of the import bill. The other half of the imports include around US\$300 billion of manufactured goods. Substitution of even 50% of these manufactured imports in a gradual manner in the medium term could enhance the current scale of manufacturing value-added of roughly \$550 billion per annum by 30%! Growing demand for consumer and capital goods and defense equipment would continue to provide additional opportunities for the local manufacturing base with scale economies. It goes without saying that the competitive manufacturing plants exploiting scale economies would also be able to tap opportunities that may arise in the international markets.

That it is possible to substitute these imports is clear from the case of the toys industry where India has turned a net exporter in 2022 with exports rising to Rs 3600 crores from being highly dependent until recently on imports from China which contributed nearly 80% of domestic demand. The Production-Linked Incentives (PLI) scheme announced as a

part of the *Aatmanirbhar Bharat* package in 2020 is seeking to bring some of the production back to India for local and global markets in 14 sectors.

Export-oriented manufacturing

A strategy of export-oriented industrialization of the type pursued by the Southeast Asian countries in the past may be challenging in the current context of global economic slowdown and rising protectionist trends. However, an important opportunity for India to expand exports through integration with global value chains (GVCs) has arisen from the strategy adopted by global corporations to diversify their supply chains on a China+1 basis in the aftermath of supply chain disruptions following the Covid-pandemic. 'Friend-shoring,' might also help direct the reshoring of GVCs to India, given its extensive strategic partnership and engagement under the framework of Indo-Pacific Economic Framework (IPEF), besides improving infrastructure and logistics, and abundant low-cost labour, among other advantages.

Furthermore, it is vital to strengthen and consolidate India's presence in traditional areas of exports such as textiles & clothing, leather goods, gems and jewellery, processed foods, vaccines, and generic pharmaceuticals, automobiles, and components, refined petroleum products, steels, and non-ferrous metals, some types of machinery and electrical equipment, besides making inroads in new products and markets. Given India's rather marginal 1.7% share of global merchandise exports, even a very small rise of 0.5% in this share over the next 2-3 years will add US\$ 100 billion to India's exports and possibly \$150 billion to MVA.

Furthermore, import substitution and export orientation are not to be seen as alternative but complementary strategies as demonstrated by the examples of toys and mobile handset manufacturing in which India turned from being a net importer to a net exporter within a short time, as the large domestic market enables opportunities to reap scale economies leading to competitiveness.

New Economy sectors: Electronics and Semiconductors

Annual imports of electronics themselves are of the order of US\$ 50 billion and are growing rapidly with projections of US\$ 400 billion of imports by 2025. Electronics and the semiconductor industry, beyond mobile handset making, also provide fruitful opportunities for fostering manufacturing in India, especially in the context of the digital revolution. The Government has come up with a one trillion-dollar digital economy vision. India can leverage its unique strengths such as its pool of technical manpower, software and chip design capability, and large domestic market for exploiting these opportunities. The recent Government initiatives to develop design, manufacture, and export semiconductor chips in the country are promising. They could transform the whole electronics ecosystem while reducing import dependence which has been projected to be of the order of half a trillion dollars per annum by 2025. The Government has announced

a Semiconductor Policy with an investment of US\$10 billion to incentivize the establishment of semiconductor display and microchip fabs in the country. A number of investment proposals for semiconductor chips have already been lined up including Vedanta-Foxconn, Taiwan Semiconductors, and Tata Group. The manufacture of semiconductors in the country will help to catalyze the electronics ecosystem comprising a whole range of downstream products. Besides the semiconductors, the focus should be on indigenous production of other components of mobile handsets and other electronic equipment, now that there is a large and fast-expanding base of handset assembly in the country in which India has turned net exporter with exports crossing US\$ 1 billion in September 2022, incentivized by the PLI scheme. Although much of mobile phone production represents shallow assembling only, this is how it begins anywhere and the component ecosystem develops when assembling reaches certain scales. With Apple aiming to source 25% of iPhones from India by 2025, the scale for localizing the whole ecosystem for mobile handset manufacturing is there. The Government has now allowed the Chinese vendors of components to establish joint ventures in India for their production.

New Economy sectors: Green Industries

Similarly, green industrialization also offers fruitful opportunities in India. Manufacture of green hydrogen, solar panels, wind turbines, electric vehicles (EVs), batteries, and other storage solutions offer very promising industrialization avenues while also advancing the sustainability agenda. India should aim to become a global hub of compact EVs (including two and three-wheelers) and batteries. India's manufacture of EVs has shown rapid growth in 2022. With a number of incentives available to EVs from the government and with a number of companies incentivizing the use of EVs by their vendors and employees as a part of their net-zero strategies. Supported by the Green Hydrogen Mission of the Government, India's major business houses including Reliance Industries, Adani Group, JSW Energy, and public sector enterprises like Indian Oil and NTPC have announced big investments in the manufacture of green hydrogen not only for domestic consumption but also for exports.

To sum up, translating these opportunities for bringing back outsourced production, strategic import substitution, GVCs and export-oriented manufacturing, and new digital and green industries has the potential to lift India's MVA from the current \$550 billion to \$1 trillion by 2026-27, thus advancing the Government's \$5 trillion economy target and creating millions of decent jobs in the process. There is also a Vision for the Indian Centenary in 2047 of a developed economy when India would emerge as the third or second-largest economy globally. The manufacturing sector will have to grow at an accelerated pace to contribute to the realization of this Vision in the last quarter of the Indian Centenary.

3. Strategic Interventions for Building Competitive Manufacturing Sector: Lessons from Experiences of Industrialized and East Asian Countries

In the foregoing analysis, a compelling case has been made for switching over to a manufacturing-led growth especially to harness its higher potential of direct and indirect job-creation. However, building competitive manufacturing capacities does not happen in a vacuum and often requires considerable hand-holding and interventions by the government playing the role of a development state. Collectively these interventions are called industrial policy.

The rationale for Public Intervention in Industrial Development

The case for state intervention in industrial development has continued to be made in the theoretical literature at regular intervals. The argument for infant industry protection had been around for a very long time since List (1909) and was used to justify high tariff barriers imposed in the US in its period of industrialization, as documented by Chang (2002). Infant industry protection, later on, was used to justify the incorporation of a chapter on trade and development in the General Agreement on Tariffs and Trade in the 1960s. The literature on the Developmental State has documented extensive state intervention for industrialization employed in East Asian countries (Johnson 1982). Strategic Trade Theory has also justified state intervention that can be welfare-enhancing shifting profits from international to domestic firms under certain conditions (Brander and Spencer 1985). More recently the New Structural Economics has justified state intervention for building industrial capabilities (Lin 2012).

The need for state intervention arises from the inability of markets to give the correct investment signals in enabling the technological capacity of new industries, when there are high and uncertain learning costs and high levels of pecuniary externalities (see Kumar and Gallagher 2007 for a review). For many reasons including weak capital markets, restrictive intellectual property laws, lack of information, poor coordination, imperfect competition and the need for scale economies, under-investment in technologically dynamic sectors can occur (Arrow, 1962; Nelson and Winter, 1982; Lall, 2005). Historically, to address these market failures, governments have encouraged joint ventures and technology transfer agreements with foreign firms to foster the technological capabilities of domestic firms. Firms may under-invest in the training of their workers because of fears of high labor turnover (Rodrik, 2004). Besides investing heavily in skill development, higher education, and funding and subsidizing research and development (R&D) activity, they have encouraged knowledge spillovers through vertical inter-firm linkages. Intellectual property rights have been loosened to facilitate the absorption of spillovers of R&D activity of foreign firms. Technological and industrial upgrading has been fostered through government procurement, export subsidies, subsidized capital, and tariff protection. History is rich in lessons of strategic interventions employed by industrialized

as well as newly industrializing countries in the process of their industrialization, as documented extensively in the literature (Amsden 2001, Lall, 2005; Wade 2003, Chang 2002, Kumar & Gallagher 2007, Nayyar 2019a; among many others).

As a part of the recent trend of focusing on the real economy or ‘productivism,’ referred to earlier, industrial policy has become fashionable again across the world including in the industrialized world (*The Economist* 2010; Stiglitz et al. 2013; Salazar-Xirinachs, Nubler and Kozul-Wright 2014). Governments worldwide are adopting the so-called industrial policies that incentivize domestic manufacturing to create jobs and reshoring value chains. For instance, the US Government through the CHIPS and Science Act adopted in 2022 is providing over US\$ 50 billion in subsidies for local research and manufacturing of semiconductors chips. The Inflation Reduction Act is offering tax breaks for promoting electric mobility and other new technology products. The use of domestic content regulations on solar panels has also been authorized under Buy America Act.

The strategic interventions that may be relevant in India’s case are as follows.

Strategic approach towards trade and exchange rate management: The East Asian countries have pursued calibrated and strategic integration with the world economy in conjunction with industrial policy, rather than passive opening to world trade (Nayyar 2019a). The trade policy followed has been characterized by dualism, open for the export sector but restrictive for importing sectors. East Asian countries have widely used managed exchange rates as a tool for fostering industrialization. Japan has extensively used the depreciated exchange rate of yen to boost competitiveness of its exports until the Plaza Accord of 1985. In the early years of industrialization, the Republic of Korea (ROK) rationed foreign exchange, giving priority to importers of capital goods and intermediate inputs (Chang and Zach 2019:203). The Chinese government adopted initially a dual-track exchange rate system, allowing the market-determined exchange rate to operate parallel with the overvalued official exchange rate, and the dual-track system converged to a managed floating system in 1994 (Lin 2019). This was followed by a hard peg during 1995-2005, allowing the exchange rate of yuan to move within a narrow band since 2005, as international pressure mounted with growing trade surpluses.

The Indian rupee, on the other hand, has tended to appreciate in real terms over the years especially after 2004 despite the country consistently running current account deficits, due to significant short-term capital inflows. The rupee appreciation has led to the erosion of the competitiveness of Indian products thus encouraging the outsourcing of production by Indian companies for even their domestic markets (Kumar 2018). It is an important challenge for Indian policymakers, especially in view of the pressure on the exchange rate to appreciate the short-term capital inflows attracted by the dynamism and robust macro-fundamentals of India’s economy. From that point of view, some kind of capital flows management measures in the form of taxes on short-term capital inflows would be fruitful not only in moderating the volatility and upward pressure on the exchange rate of the rupee but also generating some revenue. India should also leverage its G20 Presidency to

bring the International Financial Transactions Tax (IFTT) back on the G20 Agenda which may help in moderating the volatility of the short-term capital flows besides providing a new source of revenue to fund sustainable development (Kumar and Gallagher 2021).

As a part of industrial policy, therefore, the RBI may be required to maintain a competitive and slightly depreciating exchange rate of rupee in real terms and vis-à-vis the major competitors in the export markets.

Leveraging the domestic market for achieving scale economies: For manufacturing plants to have higher productivity and competitiveness, it is important that they are able to exploit scale economies. To provide to domestic firms a privileged or preferential access to their national markets to enable them to reap economies of scale, governments have employed a variety of interventions. These include high tariffs and non-tariff barriers to protect local manufacturing from imports. Although industrialized countries today are champions of trade liberalization in multilateral trade negotiations, it is interesting to see how tariffs have been used as a tool of development policy by most of the developed countries in the early phases of their development. European countries, the US, and Japan have employed high tariffs extensively to protect their infant industries in the early phases of their development and liberalized their trade regimes only when their industries gained competitiveness. Thus, 'Britain was protectionist when it was trying to catch up with Holland. Germany was protectionist when trying to catch up with Britain. The United States was protectionist when trying to catch up with Britain and Germany, right up to the end of World War II. Japan was protectionist for most of the twentieth century up to the 1970s, and Korea and Taiwan to the 1990s' (Wade 2003). Protectionism in developed countries has not been limited to only the pre-War period. Most of the developed countries adopted the Multi-Fibre Agreement (MFA) that enabled them to impose quantitative restrictions on imports of textiles and clothing. The MFA quotas have finally been phased out under the WTO's Agreement on Textiles and Clothing (ATC), by 31 December 2004. However, industrialized countries continue to employ high peak tariffs on select labour-intensive products such as textiles and clothing, and leather goods, among others. The incidence of contingent protection e.g. anti-dumping duties, on these products is also very high.

The East Asian countries have emulated the industrialized countries in their own process of industrialization and have generally combined the elements of both import substitution and export orientation to exploit the economies of scale although the emphasis has changed with needs. Before embarking on export-oriented manufacturing in the 1970s focused on electronics and textiles, Malaysia had focused on import substitution during 1957-67. In 1981, it launched another import substitution focusing on heavier industries followed by an export-oriented phase from the mid-1980s with greater emphasis on fostering domestic technologies (Kozul-Wright and Poon 2019). Malaysia has protected Proton with high tariffs on imported cars ranging up to 300% and had resisted the liberalization of tariffs under the ASEAN Free Trade Agreement. Nearly full access to the domestic market enabled Proton to grow to competitive scales and even export its vehicles to 26 countries. Chang (2002) highlights the role that protection has played in the

emergence of Hyundai, and POSCO among other enterprises in ROK as the world's leading enterprises in their respective industries. The ROK government embarked on the Heavy and Chemical Industrialization (HCI) programme in 1973 when the country was at a relatively low level of development by protecting domestic 'infant industries' including through quantitative restrictions that were prevalent until 1980. Performance-based subsidies were provided based on export performance or for development of R&D capabilities (Chang and Zach 2019:203).

Similarly, NTBs have been employed extensively and have included different unique and stringent standards (as Japan setting its electric current at unconventional 100 volts), and registration requirements on pharmaceutical imports in China, among other barriers. WTO's SPS and TBT Agreements allow countries to impose standards and other requirements to protect human health and the environment which have been used extensively to deter foreign competition to protect the fledgling domestic industry.

East Asian countries also provided support to selected firms to nurture their managerial or technological capabilities or encourage their horizontal and vertical expansion so that they were able to realize scale economies, not only in production but also in marketing to develop global brand names and operations, as ROK and Taiwan did to create national champions like Samsung, LG, and Foxconn. ROK promoted the chaebols, large and highly diversified industrial conglomerates in an effort to harness scale economies. China has facilitated mergers in an effort to create large-scale national champions besides extensively using state-owned enterprises (SOEs), subsidized credit, public procurement, and public investments (Chang and Zach 2019). To prevent rent-seeking behavior of domestic enterprises provided protection and strengthen their competitiveness, the East Asian countries normally fostered domestic competition while protecting them from external competition, for instance, between Toyota and Honda, or Sony and Panasonic, LG, and Samsung, or Hyundai and Daewoo.

Therefore, privileged access to the domestic market to local producers through tariff and non-tariff barriers could enable them to reap scale economies. India has maintained wide space between bound and applied tariffs for most industrial products and it has raised tariffs for several products in recent times. However, given the liberalization commitments within the framework of bilateral and regional FTAs, non-tariff measures provide more viable options for building manufacturing capacities and allowing them to grow to a certain scale before being exposed to competition. Various non-tariff measures such as registration requirements, labelling requirements, and different and changing standards to constrain access of foreign-made goods to the local market can be tapped for achieving the objectives, especially for a short period to build scales and achieve scale economies. Once domestic products achieve international competitiveness, the need for protection would generally decline. Therefore, protection can be for a limited period and phased out gradually as the domestic capacities become well entrenched while domestic competition is also fostered.

Leveraging Quality FDI inflows: The East Asian countries adopted a selective approach to FDI to improve its quality. ROK and Taiwan, following Japan, relied on non-equity modes to tap the resources of multinational enterprises (MNEs) such as technology licensing, and managerial and technical assistance from Japanese companies such as Nippon Steel and Kawasaki Shipbuilding to build world-class industries. They also used the special economic zones (SEZs) or export processing zones (EPZs) in a strategic manner to leverage FDI for building export capabilities but ensured domestic linkages by imposing local content requirements (Kozul-Wright and Poon 2019:142). China engaged MNEs in strategic bargaining, leveraging its high-quality infrastructure in its SEZs, disciplined skilled workers, and large domestic market, to impose informal conditions on local sourcing, export commitments, or technology transfer (Nayyar 2019a). The governments, at all levels, proactively approached prospective foreign investors to relocate their production to China with incentives such as tax holidays in SEZs and industrial parks (Lin 2019). As a result, the share of FDI in China reached 17% of gross fixed capital formation by 1994 (Kozul-Wright and Poon 2019). The preferential tax treatment of FDI in China was such that some of the domestic investment was roundtripped to China via Hong Kong to take advantage of the incentives.

Industrialized and East Asian countries have also used performance requirements extensively to make FDI meet their objectives—deepening their integration with the local economy or export promotion, among others. Among the specific types of performance requirements (PRs), local content requirements (LCRs) have been employed by most of the developed countries at one time or other for deepening their industrial structure (Kumar 2005). In particular, governments have employed LCRs in auto industry to promote backward integration and localization of value-added activities. For instance, when Ford Motor Company took over a minority stake in the UK in 1960, ‘a string of conditions on exports, earnings retentions, employment, and import policies were imposed’ (UNCTAD 2003: 266). Countries like Australia, Canada, France, and Japan, among others, have made extensive use of PRs. Australia (and New Zealand) imposed 50 percent domestic ownership requirements in natural resource projects, and also employed an offsets policy under which larger government contracts required new domestic activity of 30 percent of their import content. Canada enacted a Foreign Investment Review Act (FIRA) in the early 1970s by means of which an extensive set of PRs (called undertakings) was imposed to ensure the reaping of ‘significant benefit’ by Canada from the operations of FDI (UNCTAD 2003). Japan also imposed PRs at the time of approvals depending upon the contribution to technology development, exports or import substitution, competition to Japanese industry, 50 percent foreign ownership, and required the president of the joint venture to be a Japanese (UNCTAD 2003). Thailand has emerged as the third largest exporter of automobiles in Asia and the Pacific by using performance requirements on Toyota and Honda by initially imposing LCRs to deepen production linkages and once integrated production bases are developed, to impose export performance requirements to virtually turn these facilities into global sourcing hubs for certain models (Kumar 2005). India’s

emergence, for instance, as a competitive exporter of auto parts in recent times owes to a particular strategic intervention by the government in the form of an erstwhile performance requirement that required foreign-owned companies to balance imports by foreign exchange earnings (Kumar 2005). Quantitative studies have found a trade-off between quantity and quality of FDI in terms of the effect of performance requirements. While performance requirements may affect the quantity or magnitude of FDI adversely, the quality of those that come in terms of their depth and vertical integration, export orientation and R&D activity improves (Kumar 2002). Through these strategic interventions, East Asian countries were able to manage FDI inflows crowd-in domestic investments rather than crowding them out (Kumar and Pradhan 2005).

While some performance requirements such as LCRs have been outlawed by WTO's TRIMs Agreement, others like export performance requirements can still be imposed by host governments. Again there is a case for a review of the TRIMs Agreement for retrieving the policy space by developing countries (Correa and Kumar 2003). India, as a champion of sustainable development in the Global South, could raise the issue of a review of the TRIMs Agreement or a temporary peace clause on its provisions especially when they affect the ability of developing countries in augmenting the productive capacity for sustainable industrialization (Kumar 2022b).

Proactive targeting is another tool employed by governments to raise FDI inflows of desired quality. This involves inviting MNEs to undertake certain investment proposals on the basis of agreed parameters and could also be a useful tool for attracting the right kind of investments, as demonstrated by the case of Maruti-Suzuki joint venture in India which has helped to build a vertically integrated passenger cars industry in the country (Kumar 2005).

A proactive approach towards FDI may be especially relevant for India at the current juncture while trying to develop production capacity in select high-priority products of strategic nature such as semiconductor chips and displays, batteries for EVs, and storage solutions for the grid, PV cells, green hydrogen electrolyzers, electronics value chain, defence equipment, assembly-line for jet aircraft, among others, which involves the identification of specific manufacturing projects for which MNEs may be invited to bid for, could help in getting the best terms. The bidding process may include specific performance requirements such as transfer of technology, export orientation, local partnership or ownership in equity, board seats etc.

The organized retail sector, both offline as well as online, is becoming an important conduit of imports of labour-intensive consumer goods that could have been manufactured by MSMEs. It may also be helpful to push FDI in retail (offline and e-commerce) to procure a certain and growing proportion of their procurement from domestic MSMEs, giving to them access to the marketing networks of MNEs. It would also encourage MNEs in retail to work with the MSME vendors to develop their quality, packaging, and after-sales

service practices. Trading is a service activity covered under GATS. Hence, it will not be affected by the provisions of the TRIMs Agreement.

Directed credit through national development banks and investment incentives: East Asian countries also intervened to develop sunrise industries through subsidized credit in ROK and tax credits in Taiwan. National Development Banks (NDBs) have been employed extensively by East Asian countries to foster industrialization. In conjunction with its HCI programme, the RoK government created in 1973 the National Investment Fund which accounted for 70% of total manufacturing investment lending by institutions, in the late 1970s. China established the China Development Bank, to finance large-scale infrastructure and industrial projects by providing long-term financing. Kozul-Wright and Poon (2019:153) have shown how the outstanding loans extended by NDBs as a proportion of GDP have grown consistently since 1994 from under 2% to over 13% in China in 2016 and from over 4% to over 11% in Malaysia. Starting with Malaysian Industrial Development Finance established in 1960, Malaysia has created 13 NDBs over time. Malaysia has also instituted a pioneer industry programme to provide investment incentives to new industries.

Under the WTO Agreement on Subsidies and Countervailing Measures (SCM), many possible subsidization measures such as export subsidies and investment incentives have been phased out except for low-income countries with a per capita income of up to US\$ 1000. However, investment incentives and subsidies have historically been widely practiced in developed countries to give their enterprises a competitive advantage. Examples include large sums of subsidies doled out to investors by governments in developed countries to industrial enterprises such as US\$ 484 million given to Ford in Portugal in 1991 for creating 1900 jobs or \$ 300 million to Mercedes-Benz in Alabama in 1996 for creating 1500 jobs (Kumar and Gallagher 2007). The billions of dollars or euros were given as subsidies to Boeing and Airbus by the US Government and the EU countries are well known. The European governments have been giving the so-called 'launch aid' to Airbus while Boeing gets huge subsidies from the US government for R&D projects. The aircraft subsidies dispute has been one of the biggest feuds at the WTO dispute settlement. Another dispute running at the WTO dispute settlement concerned the policy of the US Government to pass on the anti-dumping duties collected from foreign exporters to the US enterprises under the Byrd Amendment, which has since been deemed illegal by the WTO. WTO has also deemed illegal the subsidies given to exporters under the Foreign Sales Corporation Act totalling US\$ 4 billion annually on the basis of a complaint brought by the EU.¹ Developed country governments also assist their exporters through export credits extended to importing countries tied to imports from them. Reportedly the developed country export credit agencies had outstanding guarantees of US\$ 500 billion in 2000 to their firms in developing countries and had issued US\$ 58 billion worth of new export credits for goods and services exported by their firms. The European Community Structural Funds comprise over 540 programmes including areas such as agriculture, R&D,

¹ See for details https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds108_e.htm

and industry, among others, besides several regional funds such as the European Regional Development Fund, the European Social Fund, the European Agriculture Guidance and Guarantee Fund, with budgets of several hundreds of billions of euros.

The East Asian countries have also supported their industrialization through various kinds of subsidies. The ROK has directed subsidized credit to the chaebols or their national champions in their formative years. The Chinese government has been offering a variety of subsidies and incentives including subsidized infrastructure in the special economic zones. Malaysia offers a range of incentives to manufacturing enterprises under its pioneer industry programme. India's Biocon Ltd has been lured by the pioneer industry incentives to locate a billion-dollar insulin plant in Malaysia. Currently, there is a new wave of billions of dollars of incentives and tax breaks being offered to bring industries to the US among other countries under the CHIPS and Science Act and the Inflation Reduction Act both adopted in 2022. Therefore, India's recent PLI scheme of providing incentives to manufacturers in 14 sectors is very much part of a global trend.

Regarding directed credit, in the early post-Independence period, India had also established term-lending institutions to support industrialization by providing long-term capital viz. the Industrial Development Bank of India (IDBI), the Industrial Finance Corporation of India (IFCI), and Industrial Credit and Investment Corporation of India (ICICI). However, over time, as capital markets developed, two of them have moved on to become full-scale retail banks (ICICI Bank and IDBI) and IFCI has turned its attention to infrastructure financing (Nayyar 2015, Kumar 2017). However, the Government has recognized the importance of providing directed credit to the industry and has started MUDRA and Stand-Up programmes to SMEs and start-ups recently. A new institutional architecture for industrial financing is sorely needed especially given the limitations of commercial banks in term-lending due to asset-liability mismatches. Hence, an ISID (2022) study has recommended the establishment of a new national industrial development bank for the term-lending needs of the manufacturing sector along the lines it created NaBFID for infrastructure investment in 2021.

Funding and soft IPRs Regimes for Building Domestic Technological Capability: Building domestic technological and innovative capability has been an important objective of industrial policy. In order to retain and further sharpen the technological edge of their corporate enterprises, governments of industrialized countries have been supporting the technological activities of national enterprises through a wide variety of government-industry complexes and direct and indirect subsidies and tax breaks. In the US, the federal government accounted for \$125.7 billion, or 30%, of U.S. total R&D in 2011, a substantial part of this funding was to support directly or indirectly the activities of US firms.² The governments in France, Germany, the U.K., and the US, for instance, accounted for 48.8, 37, 34, and 47 percent respectively of total gross R&D expenditure in their countries with a substantial proportion of the funding directly going to business enterprises (Kumar and

² See for more details <https://www.nsf.gov/statistics/seind14/index.cfm/chapter-4/c4s1.htm>

Siddharthan 1996 for more details). In the EU, the national programmes for supporting corporate R&D are complemented by the European Union's Framework Programmes for subsidizing corporate R&D to the tune of 50 percent. The Eighth Framework Programme (FP8) (2014-2020) had a budget of Euro 80 billion.

Among the East Asian countries, in the ROK, the government was spending 0.42% of GDP directly or indirectly supporting business R&D, the highest in OECD countries.³ With respect to learning in private firms, East Asian tigers—like developed countries before them—also spent a great deal of effort providing education and training to their people. This was done by spending a significant amount of funds on education (including providing scholarships to obtain PhDs in developed countries), clustering schools in export processing zones, requiring that foreign firms hire nationals and train them on the job, and subsidizing training programs in domestic firms (Kim and Nelson, 2000; Amsden, 2001). East Asian countries also invested in creating public infrastructure for innovation. The ROK, for instance, created a powerful S&T Agency in the Prime Minister's Office in 1967 besides a network of government research institutes such as Korea Institute for S&T and the Korea Advanced Institute of Science in the late 1960s which also received assistance from the US besides the political patronage (Wade 2019). Taiwan established the Industrial Technology Research Institute (ITRI) in 1973 to support strategic industries with key technology projects and had 10,000 employees by the early 1980s (Kozul-Wright and Poon 2019). After building domestic production capabilities, China focused on development of local R&D capacity, expansion of domestic linkages and vertical diversification, especially in strategic sectors. The Made-in-China 2025 initiative was launched in 2015 to upgrade Chinese industries and to enhance local content of core components to 40% by 2020 and 70% by 2025, especially in priority sectors such as aerospace, robotics, IT, energy, and pharmaceuticals (Chang and Zach 2019).

Strengthening the enterprise-level innovative activity assumes a greater criticality in the context of sustainability considerations for future manufacturing activity in terms of the intensity of products in terms of energy, natural resources, and emissions. Given the international commitments undertaken by India under the Paris Agreement, the carbon intensity of production will have to decline progressively. Growing environmental consciousness among consumers within the country and in export markets will increasingly put a premium on greener products. Only through investment in an innovative activity focused on sustainability can the enterprises stay in the competition. Heavy subsidization of enterprise-level R&D activity by governments in industrialized and newly industrializing countries, directly and indirectly, puts them at an advantage vis-à-vis others.

The Indian government has been providing tax incentives to enterprises to encourage corporate R&D activity. However, it has been argued that more direct subsidization may yield greater benefits in select strategic sectors in terms of sharpening the competitive edge

³ See for more details <http://www.oecd.org/sti/scoreboard-2015-interactive-charts.htm>

of Indian enterprises (Kumar and Aggarwal 2005). Under WTO's Agreement on Subsidies and Countervailing Measures, subsidization of up to 50% of precompetitive R&D expenditure is non-actionable.

There is extensive evidence suggesting that the developed countries of today have used lax intellectual property rights to absorb spillovers of innovative activity in other countries during the process of their industrialization. They started demanding stringent IPR standards from others after emerging as the source countries of innovations to provide monopoly rights to their enterprises to exploit the inventions. The US is a typical case in this regard. The US has been seeking to strengthen IPR protection through bilateral negotiations and through unilateral sanctions under the Super 301 Priority Watch Lists before using multilateral trade negotiations in the Uruguay Round to harmonize the IPR protection under the TRIPs Agreement. However, history suggests that the US followed a discriminatory IPR regime in its period of industrialization. Between 1790 and 1836, as a net importer of technology, the US restricted the issue of patents to its own citizens and residents. Even in 1836, the patents fees for foreigners were fixed at ten times the rate for US citizens (CIPR 2002). East Asian countries such as Japan have similarly used weak IPR regimes extensively to facilitate the absorption of foreign inventions and did not recognize product patents until the mid-1970s. The Republic of Korea did not have product patents till the mid-1980s to facilitate the absorption of innovations of others (Kumar 2003).

India herself has benefited from soft IPRs in building a globally competitive generic pharmaceutical industry that serves as a major sourcing base for affordable medicines and vaccines for developing countries. Although some of the policy space has been eroded under the TRIPs Agreement, yet there are still a number of flexibilities available and can be used for instance, the criteria for patentability and compulsory licensing provisions on account of public health considerations (Kumar 2003). An important strength of Indian enterprises, now recognized worldwide, has been their frugal engineering capability emanating from their experience in serving a market where the volumes lay at bottom of the income pyramid. This frugal engineering capacity has led to the development of some of the most affordable products and processes anywhere in the world ranging from generic pharmaceuticals and vaccines to automobiles, home appliances, and medical diagnostic equipment, among others. This capacity can be harnessed to develop greener and more affordable products that can become a source of competitive advantage in the era of sustainability. The R&D incentives and subsidies could be directed to harness this frugal engineering capacity of Indian enterprises. Furthermore, in order to foster frugal engineering activity in the context of sustainable and affordable products as discussed above, India may adopt a petty patents regime or utility models that provide a short duration protection to incremental innovations (Kumar and Joseph 2022). In Japan, petty patents have been used effectively to foster the innovative activity of SMEs among other enterprises.

Leveraging Public Procurement for Domestic Production: A number of developed countries have used government procurement as a policy tool to foster deepening and diversification of domestic industrial structure. The U.S. government adopted the Buy

American Act in 1933 which mandates a preference for the purchase of domestically produced goods over foreign goods in U.S. government procurement. The provisions of the Act have also been used as local content requirements (LCRs). For instance, in order to qualify as a domestic product to claim a 25 percent price preference under the Buy American Act, a Hungarian manufacturer of buses had to buy US-made engines, transmissions, axels, and tyres (Krugman and Obstfeld 2000:205). EU also has provisions for minimum local requirements and preference for European firms in government procurement (Corrales-Leal and Sugathan 2003). A number of countries including developed countries like Switzerland impose offset requirements in government procurements especially of defence equipment where the exporters have to undertake obligations to import or outsource a certain proportion of the value of exports from the importing country. The US President on 6 June 2022 authorized the use of the Defence Production Act and super preferences under the Buy America Act among other actions to spur local manufacturing of solar power equipment. While India has recently started to use some local content or offset requirements in its defence procurements, a recent ruling by the WTO dispute panel on the basis of a complaint by the US against India's domestic content requirements under its solar energy mission under TRIMs Agreement. It shows that some of the multilateral trade rules need to be reviewed to recover policy space eroded in the Uruguay Round especially for expanding productive capacity for environmentally sensitive goods such as solar panels by adopting some kind of peace clauses under TRIMs agreement. India should leverage its G20 Presidency to build consensus among the member countries for the need for such policy flexibilities through amendments of multilateral trade rules (Kumar 2022a).

Preferential Access to Markets: Non-discrimination enshrined in the most-favoured nation (MFN) clause is a bedrock of multilateralism trade regime within the GATT framework. But rules provided an exception from MFN for regional economic integration (REI) (Art. XXIV of GATT) to take care of the exceptional situation of critical interdependence between economies. However, in the 1990s the exception was exploited by developed economies to form a number of groupings, a trend led by the formation of a Single European Market and of the North American Free Trade Agreement (NAFTA), EFTA, and European Economic Space, APEC among others. Major implication of the formation of large trade blocs of 1990s was that a large proportion of world trade began to take place outside MFN, on a preferential basis. This was because of high share of advanced economies in world trade (73% in 1990, 65% in 2000 and 51% in 2012) and a very large proportion of their trade taking place within the region (63% of EU's \$ 5.8 trillion trade was intra-regional; 49% of NAFTA's \$2.37 trillion trade was intra-regional). There was a domino reaction world-wide with MERCOSUR being formed in Southern America, SADC and SACU in Africa, among others. Besides trade diversion, participation in FTAs also influences magnitude and quality of FDI inflows (Kumar 2016). Recently, there has been another trend of formation of mega FTAs of transcontinental type led again by advanced economies. This includes the Comprehensive and Progressive Agreement for

Trans-Pacific Partnership (CPTPP), a free trade agreement (FTA) between Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, Peru, New Zealand, Singapore and Vietnam, that came into being in 2018. Although the negotiations of another mega grouping namely the Transatlantic Trade and Investment Partnership (TTIP) ended in 2016 without an agreement, the Regional Comprehensive Economic Partnership (RCEP) bringing together the ten member states of the Association of Southeast Asian Nations (ASEAN) (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam) and its five FTA partners (Australia, China, Japan, New Zealand and Republic of Korea) came into force in 2022. India was part of the RCEP negotiations all along as a member of the East Asia Summit (EAS). However, it decided not to sign the RCEP Agreement eventually due to apprehensions of RCEP helping China a greater hold over the Indian market.

India has been gradually building its network of agreements for gaining preferential access to overseas markets having concluded FTAs/RTAs with South Asian countries (SAFTA and bilateral FTAs with Sri Lanka among others), with ASEAN (besides bilateral FTAs with some of the ASEAN members like Singapore), with Japan, ROK, and with Australia, and UAE recently. India also has been member of the Asia-Pacific Trade Agreement (APTA), the oldest such agreement signed in the mid-1970s. It has a number of FTAs negotiations in the pipeline including with the UK, EU, GCC, among others. However, India's experience with FTA/RTAs so far suggests that Indian enterprises have not been able to exploit the market access that they gain through these agreements but enterprises from the partner countries were able to get a toehold in the Indian market. The preferential market access obtained by the government through these negotiations is of no use, unless exploited by Indian enterprises to enhance their exports. With the bulk of trade of their major trade partners going off the MFN, developing countries like India need to look at the policy options especially to be a part of some of the major regional trade blocs to enhance its attractiveness for regional value chains (RVCs) that drive a large part of trade and investment. In that context, India may reconsider the possibility of joining RCEP at some point as the door remains open for India, after negotiating the concerns it has with it. Another is to build a regional trading arrangement within the trade pillar of the Indo-Pacific Economic Framework (IPEF) bringing together 13 countries including the US, Japan and India and ASEAN members, especially by working together with the developing member countries to build a development-friendly trade agreement giving them flexibilities to pursue their development priorities through an extended timeframe for implementation, for instance.

Physical and social infrastructure and investment facilitation: Most governments support their industrialization by investing in the development of social and physical infrastructure such as transport corridors passing through lagging or backward regions. Others have been more proactive and have invested more directly by building industrial infrastructure such as special economic zones, technology parks, and industrial estates which are often offered to prospective entrepreneurs at subsidized or nominal prices.

China has fostered its industrialization by establishing SEZs in coastal areas and investing in physical infrastructure development across the country. In addition, provincial and local governments in China also offer a variety of support to potential entrepreneurs including subsidized land and utilities to attract investments. By lowering the initial set-up costs, such industrial infrastructure can incentivize and facilitate rapid industrialization. The East Asian countries have also paid attention to human resource development through a heavy emphasis on education and health. This has helped them to enhance labour productivity. Some of the East Asian countries also had a strong culture of target setting and monitoring. In ROK, for instance, the President's Office monitored the targets set for exports by enterprises followed by rewards and penalties.

The Indian government has also recognized the importance of the physical infrastructure as logistics costs impinge on the international competitiveness of exports. Besides investing in physical infrastructure comprising highways, ports, and waterways, the Indian Government has launched a comprehensive programme aiming to improve the overall logistics, namely the PM GatiShakti National Master Plan (NMP) for providing multimodal connectivity infrastructure to various economic zones on 13th October 2021. The GatiShakti NMP is aimed at breaking departmental silos and bringing in more holistic and integrated planning and execution of projects with a view to addressing the issues of multi-modal connectivity and last-mile connectivity. Like East Asian countries, India should also put emphasis on providing affordable quality education, vocational training and health facilities to all. For a country passing through a youth bulge in its demographic transition such as India, there could not be a better investment than in human development, seeking to close the access gaps that exist along rich-poor, urban-poor or gender lines to these opportunities or basic amenities of life (Kumar 2022a).

A coordinated and pragmatic approach to different elements of industrial policy: The most important lesson from the East Asian countries is that different elements of industrial policy such as trade and exchange rate management, FDI policy, innovation and technology capability, and enterprise development need to be pursued in a coordinated manner to be effective. This requires a high-powered coordinating institutional architecture for smooth implementation of industrial policy. East Asian countries have established high-powered coordinating bodies in the highest offices viz. President or PM Offices. In India, the industrial sector is handled by several line ministries including the Ministry of Commerce and Industries, Ministry of Heavy Industries, Ministry of Electronics and Information Technology (Meity), Ministry of Chemicals and Fertilizers, Ministry of Steel, Textiles Ministry, Department of Defence Production. Then there are important Ministries dealing with key raw materials such as Coal, Minerals, Petroleum, and Natural Gas, with the Ministry of Railways, Ministry of Ports and Shipping, and the Ministry of Roads Transport and Highways, managing transport infrastructure. Then Ministry of Finance and the Reserve Bank of India deal with the credit policy, FDI inflows, and exchange rate management. Clearly, there is a need for creating a high-powered coordinating agency to drive the industrial policy and competitiveness agenda with

powers to coordinate between different arms and also to negotiate with global corporations to establish local production facilities. To be effective, such an office or secretariat should be within the administrative control of the PMO and should be backed by a strong research and analysis team providing strategic inputs for policy making.

4. Concluding remarks

To sum up, therefore, a manufacturing-led transformation is imperative for India to address the challenge of employment creation, reviving growth, and sustainable management of balance of payments and contribute to the vision of a developed country in the coming quarter century. In that context, Make-in-India and *Aatmnirbhar Bharat* are timely initiatives. Manufacturing sector can be boosted through tapping the opportunities for making for India and for global markets and exploiting the potential of new digital and green industries. India's talent pool and rising domestic demand and restructuring of global value chains on China+1 basis provide opportunities for India to emerge as a manufacturing hub. Translating these opportunities could help to raise the manufacturing value added to US\$ 1 trillion by 2026/27, thus bolstering the \$5 trillion economy target and eventually contributing the Vision 2047.

However, manufacturing development does not happen in a vacuum, and governments around the world have intervened extensively through several strategic interventions to foster the manufacturing sector or the so-called industrial policy. Industrial policy is now back in fashion as Governments across industrialized as well as developing countries are adopting strategies that incentivize domestic manufacturing to create jobs and reshoring of the value chains, including in the US, once the greatest champion of free markets and globalization. The experiences of East Asian countries in building competitive manufacturing capacities using strategic interventions have rich lessons for India as it tries to embark on its accelerated industrialization. These lessons can be suitably adapted for India and include a coordinated implementation of a strategic approach to trade and exchange rate management, achieving scale economies through privileged access to the domestic market to domestic manufacturers, adopting a selective and proactive approach to FDI, focusing on enterprise-development and building domestic technological capability and directed credit and development of physical and social infrastructure.

India's new industrial policy has unfolded with ease-of-doing-business, production-linked incentives (PLIs), tariffs protection, sectoral missions such as the Semiconductor and Green Hydrogen Missions, and Gati-Shakti, among many initiatives. India's recent emergence as a net exporter of mobile handsets and toys in a short time gives confidence that the industrial policy can work. But an updated industrial policy framework for changed context is desirable. The first Industrial Policy Resolution of 1956 laid down the basic policy framework for a young republic, the 1991 Industrial Policy Resolution updated it as a part of reforms, liberalization, and globalization adopted against the backdrop of a foreign exchange crisis. But today's India is a vastly different landscape.

In that context, an updated Industrial Policy Resolution providing a framework for an accelerated growth of manufacturing sector, generating jobs and prosperity in an inclusive and balanced manner, and a roadmap for achieving it is desirable. It should identify the sectors that would be targeted for building leadership-in, depending on our factor endowments viz. labour abundance, skills, and natural resources (such as garments and leather goods), dynamic and high-value adding sectors with potential to drive economic growth and meet aspirations (such as consumer durables), those that determine competitiveness in others due to linkages (like capital goods), or help enhance sustainability (such as EVs, storage solutions). It should also define the approaches to harness the full potential of MSMEs and Start-ups, foreign direct investment and MNCs for India's development. It should lay out a framework for fostering innovation-based rivalry between firms to lead India on the path of innovation-led growth besides helping the country leverage opportunities in the incipient Industry 4.0. It should lay out a path for tapping the opportunities of green industrialization like EVs or Solar PV equipment manufacturing and also push towards sustainable practices and decarbonization of existing ones through new technology.

Much more importantly, it should create policy space to leverage certain strategic interventions of the type that the East Asian countries adopted for building competitive manufacturing capabilities, as summarized in the preceding section. These include creative non-tariff measures to incentivize domestic products, performance requirements that could help India to tap the advantages of MNEs more effectively for her development including by helping MSMEs get integrated with global value chains and tap the global markets, and leverage public procurement for domestic manufacturing, among others. Some of the policy flexibilities or policy spaces have since been sanctioned under multilateral trade rules like the TRIMS Agreement of WTO. India could leverage its G20 Presidency to build consensus for reform the WTO, seeking to retrieve some of these policy flexibilities, especially to pursue sustainable industrialization. Exchange rate management has been another critical factor for building a competitive manufacturing sector in East Asian countries and should not be overlooked. A new institutional architecture for industrial financing is sorely needed especially given the limitations of commercial banks in term-lending due to asset-liability mismatches.

Finally, the East Asian experience shows that coordinated implementation of different aspects of industrial policy would be most critical. A high-powered institutional framework for coordinated implementation in a whole-of-the-government approach would be imperative.

To conclude, the manufacturing-led transformation would be the key engine of India's growth over the next quarter of the century. One should be captivated by the jobs this new manufacturing activity will create, fostering the inclusive and sustainable transformation of the Indian economy, helping to realize the Vision 2047!

References

- Amirapu, Amrit and Arvind Subramanian (2015), *Manufacturing or Services? An Indian Illustration of a Development Dilemma*, WP 409, Washington DC: Centre for Global Development.
- Amsden, Alice (1989), *Asia's Next Giant: South Korea and Late Industrialization*, New York: Oxford University Press.
- Amsden, Alice (2001), *The Rise of the Rest: Challenges to the West from Late Industrializing Countries*, Oxford: Oxford University Press.
- Arrow, Kenneth J., (1962), 'The Economic Implications of Learning by Doing', *Review of Economic Studies*, Vol. 29, No. 3, June 1962, pp.155-173.
- Bairoch, Paul (1993), *Economics & World History: Myths and Paradoxes*, Chicago: The University of Chicago Press.
- Brander, J.A., and B.J. Spencer. "Export Subsidies and International Market Share Rivalry." *Journal of International Economics* 18(1985):83-100.
- Burton, J. (1983), *Picking Losers...? The Political Economy of Industrial Policy*. London, Institute for Economic Affairs.
- Chang, Ha-Joon (2002), *Kicking Away the Ladder: Development Strategy in Historical Perspective*, London: Anthem.
- Chang, Ha-Joon and Kiryl Zach (2019) 'Industrialization and Development' in Nayyar, Deepak ed. *Asian Transformations: An Inquiry into the Development of Nations*, Oxford: Oxford University Press.
- CIPR (2002) *Integrating Intellectual Property Rights and Development Policy*, London: Commission on Intellectual Property Rights, www.iprcommission.org
- Corrales-Leal, Werner and Mahesh Sugathan (2003) *Spaces for Development Policy: Revisiting Special and Differential Treatment*, Geneva: ICTSD.
- Correa, Carlos and Nagesh Kumar (2003) *Protecting Foreign Investment: Implications of a WTO Regime and Policy Options*, London: Zed Press, 2003, ISBN 1 84277 182 5.
- Dasgupta, Sukti and Ajit Singh (2006) *Manufacturing, Services and Premature Deindustrialization in Developing Countries*, RP# 2006/49, Helsinki: UNU/WIDER.
- Economist* (2010), 'Picking Winners, Saving Losers: Industrial Policy Is Back in Fashion', *Have Governments Learned from Past Failures?* 5 August. Available from www.economist.com/node/16741043.
- Evans, Peter and Patrick Heller (2019) 'The State and Development' in Nayyar, Deepak ed. *Asian Transformations: An Inquiry into the Development of Nations*, Oxford: Oxford University Press.
- Felipe, J., A. Mehta and C. Rhee (2014), *Manufacturing Matters...but it's jobs that count*, Economics Working Paper 420, Manila: Asian Development Bank.
- Hobday, Michael (1995) *Innovation in East Asia: The Challenge to Japan*, Edward Elgar Publishing Limited, England and USA.
- Horaguchi, Haruo (2004) *Hollowing-Out of Japanese Industries and Creation of Knowledge-Intensive Clusters*, Faculty for Business Administration, Hosei University.

- ISID (2022) Financing India's Industrial Transformation: Some Policy Lessons from International and National Experiences, Draft Report submitted to the NITI Aayog, Government of India.
- Johnson, Chalmers (1982), *MITI and the Japanese Miracle*, Stanford, CA: Stanford University Press.
- Kaldor, N. (1967), *Strategic Factors in Economic Development*, Ithaca, NY: New York State School of Industrial and Labour Relations, Cornell University.
- Kim, Linsu and Richard Nelson (2000), *Technology, Learning, and Innovation: Experiences of Newly Industrializing Economies*, Cambridge University Press.
- Kozul-Wright, Richard and Daniel Poon (2019) 'Economic Openness and Development', in Nayyar, Deepak ed. *Asian Transformations: An Inquiry into the Development of Nations*, Oxford: Oxford University Press.
- Krugman, Paul and M. Obstfeld (2000) *International Economics*, (Fourth Edition), McGraw Hill.
- Kumar, Nagesh (2002), *Globalization and the Quality of Foreign Direct Investment*, New Delhi: Oxford University Press.
- Kumar, Nagesh (2003), 'Intellectual Property Rights, Technology and Economic Development, Experiences of Asian Countries', *Economic and Political Weekly*, XXXVIII(3):209-226.
- Kumar, Nagesh (2005), 'Performance Requirements as Tools of Development Policy: Lessons from Experiences of Developed and Developing Countries for the WTO Agenda on Trade and Investment', in Kevin Gallagher ed. *Putting Development First*, London: Zed Press.
- Kumar, Nagesh (2016), G-20, Multilateralism and Emerging Mega-trade Blocs: Options for India and Asian Developing Countries, in Kathuria, R. and N.K. Nagpal eds. *Global Economic Cooperation*, Springer: 233-240.
- Kumar, Nagesh (2017) National Development Banks and Sustainable Infrastructure in South Asia, GEGI WP 003, Global Economic Governance Initiative, Pardee School of Global Studies, Boston University.
- Kumar, Nagesh (2018), 'Reversing the Pre-Mature De-industrialization for Job-Creation: Lessons for 'Make-in-India' from Experiences of Industrialized and East Asian Countries', in A. Ghosh Dastidar et al eds. *Economic Theory and Policy amidst Global Discontent: Essays in Honour of Deepak Nayyar*, New Delhi: Routledge, 2018: 389-415.
- Kumar, Nagesh (2020) 'East Asia's Paths to Industrialization and Prosperity: Lessons for India and Other Latecomers in South Asia,' *Economic and Political Weekly*, LV(50), December 19: 24-31.
- Kumar, Nagesh (2022a), 'Indian Economy @75: Achievements, Gaps, and Aspirations for the Indian Centenary,' *Indian Economic Journal*, 70(3) doi:10.1177/00194662221105552.
- Kumar, Nagesh (2022b) Multilateral Trade Rules and Green Transition: The Case of India, presented at the workshop on Toward a Green and Just Energy Transition, organized by the Boston University Global Development Policy Center, in Boston, USA on November 3, 2022.
- Kumar, Nagesh and A. Aggarwal (2005), 'Liberalization, Outward Orientation and In-House R&D Activity of Multinational and Local Firms: A Quantitative Exploration for Indian Manufacturing', *Research Policy* 34: 441-460.

- Kumar, Nagesh and J.P. Pradhan (2005) 'Foreign Direct Investment, Externalities and Economic Growth in Developing Countries: Some Empirical Explorations', in Edward M. Graham (editor), *Multinationals and Foreign Investment in Economic Development*, Palgrave: 42-84.
- Kumar, Nagesh and K.J. Joseph (2007) *International Competitiveness & Knowledge-based Industries in India*, New Delhi: Oxford University Press.
- Kumar, Nagesh and Kevin P. Gallagher (2007), *Relevance of 'Policy Space' for Development: Implications for Multilateral Trade Negotiations*, Geneva: ICTSD. Available from www.researchgate.net/publication/247236671_Preserving_Policy_Space_at_the_WTO.
- Kumar, Nagesh and Kevin P. Gallagher (2021), 'G20 needs to act to curb short-term capital flows and fund development' *The Jakarta Post*, 27 October 2021, : <https://www.thejakartapost.com/paper/2021/10/27/g20-needs-to-act-to-curb-short-term-capital-flows-and-fund-development.html>.
- Kumar, Nagesh and N.S. Siddharthan (1997) *Technology, Market Structure and Internationalization: Issues and Policies for Developing Countries*, London and New York: Routledge.
- Kumar, Nagesh and Reji Joseph (2022), Petty Patents can boost R&D, *The Hindu*, 20 June 2022, <https://www.thehindu.com/opinion/op-ed/petty-patents-can-boost-rd/article65543004.ece>.
- Kumar, Nagesh. (2003). 'Intellectual Property Rights, Technology and Economic Development: Experiences of Asian Countries', *Economic and Political Weekly*, 38(3), January 18, 2003: 209-226.
- Lall, Sanjaya (1994), 'The East Asian Miracle: Does the Bell Toll for Industrial Strategy', *World Development* 22(4):645-654.
- Lall, Sanjaya (2005), 'Rethinking Industrial Strategy: The Role of the State in the Face of Globalization', Kevin P. Gallagher ed. *Putting Development First: The Importance of Policy Space in the WTO and IFIs*, London: Zed Books.
- Lall, Sanjaya (2005). "Rethinking Industrial Strategy: The Role of the State in the Face of Globalization," *Putting Development First: The Importance of Policy Space in the WTO and IFIs*. Kevin P. Gallagher (editor). London: Zed Books.
- Lin, Justin Yifu (2019), 'China' in Nayyar, Deepak ed. *Asian Transformations: An Inquiry into the Development of Nations*, Oxford: Oxford University Press.
- Lin, Justin Yifu, (2012) *New structural economics: a framework for rethinking development*, Washington DC: the World Bank.
- List, Friedrich (1909) *The National System of Political Economy*, London: Longmans, Green & Co. McGraw Hill.
- Moran, Theodore H. (1998) *Foreign Direct Investment and Development*, Washington, DC: Institute for International Economics.
- Nayyar, Deepak (2019a) *Resurgent Asia: Diversity in Development*, Oxford and New Delhi: Oxford University Press for UNU/WIDER
- Nayyar, Deepak (2019b) *Asian Transformations: An Inquiry into the Development of Nations*, Oxford: Oxford University Press for UNU/WIDER

- Nayyar, Deepak(2015)"Birth, Life and Death of Development Finance Institutions in India", *Economic and Political Weekly*, L(33), 15 August, pp. 51-60.
- Nelson, Richard and S.J. Winter (1982), *An Evolutionary Theory of Economic Change*, Cambridge, Harvard University Press.
- Rodrik, Dani (2004), *Industrial Policy for the 21st Century*, Vienna: United Nations Industrial Development Organization.
- Rodrik, Dani (2015) Premature Deindustrialization, WP #20935, National Bureau of Economic Research.
- Rodrik, Dani (2022) The New Productivism Paradigm, Project Syndicate, <https://www.project-syndicate.org/commentary/new-productivism-economic-policy-paradigm-by-dani-rodrik-2022-07>.
- Salazar-Xirinachs, J.M., I. Nübler and R. Kozul-Wright, eds. (2014). *Transforming Economies: Making Industrial Policy Work for Growth, Jobs and Development*. Geneva: International Labour Office.
- Stiglitz, J.E., Justin Y. Lin and E. Patel (2013) *The Industrial Policy Revolution II: IEA Conference Volume No 151-11*, Houndsmill: Palgrave Macmillan.
- UNCTAD (2003) *Foreign Direct Investment and Performance Requirements: New Evidence from Selected Countries*, New York: United Nations.
- UNCTAD (2003) *Foreign Direct Investment and Performance Requirements: New Evidence from Selected Countries*, New York: United Nations.
- Wade, Robert (2003), *Governing the Market*, (Second Edition), Princeton, NJ: Princeton University Press.
- Wade, Robert (2014), 'The Paradox of US Industrial Policy: The Development State in Disguise', in J.M. Salazar-Xirinachs, I. Nübler and R. Kozul-Wright eds. *Transforming Economies: Making Industrial Policy Work for Growth, Jobs and Development*, Geneva: International Labour Office: 379–396.
- Wade, Robert (2019), 'East Asia', in Nayyar, Deepak ed. *Asian Transformations: An Inquiry into the Development of Nations*, Oxford: Oxford University Press.
- World Bank, (1993) *The East Asian Miracle: Economic Growth and Public Policy*, A World Bank Policy Research Report, Oxford University Press, New York.

List of ISID Working Papers

- 258 Vaccine Manufacturing Industry of India: Structure, Size, and Competitiveness, *Shailender Hooda*, December 2022
- 257 India's Unbalanced Industrial Development: Possible Explanations for Inter-State Variations, *Shiladitya Chatterjee*, December 2022
- 256 Status and Scope of Industrial Development in Aspirational Districts of India, *Surya Tewari*, November 2022
- 255 Growth Slowdown in the Automobile Industry in India: Dwindling Middle Class Demand or Changing Consumption Pattern? *Satyaki Roy*, November 2022
- 254 Examining Regional Disparities among States of India through Sectoral Compositions, *Sangeeta Ghosh*, October 2022
- 253 India's Trade in Manufactures: The Role of Intra Industry Trade, *Manmohan Agarwal & Neha Batai*, September 2022
- 252 The Survival of Outward Investments from India and China: Is there a North-South Divide? *Suma Athreye, Abubakr Saeed, Muhammad Saad Baloch*, September 2022
- 251 Manufacturing Units and Employment in India: A District Level Analysis Using Economic Census, *Surya Tewari*, August 2022
- 250 India in the Global Vaccine Market Prior To and During COVID-19: Some Structural Issues, *Shailender Hooda*, August 2022
- 249 Unlocking India's Potential in Industrial Revolution 4.0: National Innovation System, Demography, and Inclusive Development, *Nagesh Kumar*, July 2022
- 248 India's Trade in Pharmaceutical Products: A Method for the Classification of Pharmaceutical Products and Recent Trends, *Reji K. Joseph & Dinesh Kumar*, July 2022
- 247 Exports and Growth in Indian Manufacturing: An Econometric Analysis, *Bishwanath Goldar*, June 2022
- 246 State-wise Distribution of Manufacturing Units and Employment in India: An Exploration from the Economic Census, *Surya Tewari*, June 2022
- 245 Product Market Concentration with Ownership Characteristics: An Exploration into the Consolidation Activities of Business Groups, *Beena Saraswathy*, March 2022
- 244 Indian Economy@75: Achievements, Gaps, and Aspirations for the Indian Centenary, *Nagesh Kumar*, March 2022
- 243 Understanding the Impact of Covid-19 on MSMEs in India: Lessons for Resilient and Sustained Growth of Small Firms, *Akhilesh Kumar Sharma & Sushil K Rai*, February 2022
- 242 Related party Trade and Transfers to Tax Havens: A Study of Select Manufacturing Foreign Subsidiaries in India, *Swati Verma*, January 2022

* ISID Working Papers can be downloaded at <https://isid.org.in/>

The **Institute for Studies in Industrial Development (ISID)** is a public-funded, non-profit, autonomous institution dedicated to conducting policy research, advocacy, capacity-building, and outreach activities to foster the industrial transformation of India.

Registered on October 7, 1986, under the Indian Societies Registration Act 1860, ISID in 1988, became one of the institutions that are supported by the Indian Council of Social Science Research (ICSSR), (Government of India), through grants-in-aid. Since 2006, the Institute operates from its own well-appointed campus located in the Vasant Kunj Institutional Area in South Delhi.

The research themes and key projects are classified under following broad thematic areas:

- o Industrial Structure, Performance, and Policies
- o Corporate Governance and Industrial Financing
- o Leveraging MSMEs and Start-ups for Industrial Transformation
- o Globalization, FDI, and Trade
- o Technology, Innovation and Industry 4.0
- o Green Industrialization Strategy
- o Employment and Labour Markets
- o Spatial Dimensions of Industrial Development and Industrial Infrastructure
- o Sectoral Studies on Competitiveness of Indian Manufacturing

ISID is recognized as a Scientific and Industrial Research Organization (SIRO) by the Government of India. It is also listed on DARPAN portal of NITI Aayog (India's Planning Agency) as a recognized think-tank. It is also a member of the Asia-Pacific Research Network on Trade (ARTNet) and the South Asia Network on SDGs (SANS) of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). ISID's Databases and e-resources are accessed by the academic community across the country through the Information and Library Network (INFLIBNET) Centre of the University Grant Commission (UGC).