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Working Paper

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CESifo Working Paper, No. 6431

Provided in Cooperation with:

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

Suggested Citation: Nam, Chang Woon; Nam, Sumin; Steinhoff, Peter (2017) : Modi's 'Make in India' Industrial Reform Policy and East Asian Flying-Geese Paradigm, CESifo Working Paper, No. 6431, Center for Economic Studies and ifo Institute (CESifo), Munich

This Version is available at:

<https://hdl.handle.net/10419/161870>

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CESIFO WORKING PAPER NO. 6431
CATEGORY 6: FISCAL POLICY, MACROECONOMICS AND GROWTH
MARCH 2017

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ISSN 2364-1428

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Abstract

The on-going 'Make in India' campaign aims at manufacturing revival. Its characteristics resemble East Asian industrial reform and growth policies based on the flying-geese model which highlights 'step-by-step' changes in a country's specialisation pattern and global competitiveness accompanied by economic growth. Unlikely, 'Make in India' comprises heterogeneous measures 'simultaneously' supporting industries in different development stages from labour and capital-intensive to high-tech industries and modern services. Moreover issues like world-market uncertainty discouraging export activities; poverty-reduction-oriented labour-industry promotion vs overall productivity increase; and complementary role of IT services for industrial modernisation and growth, will shape the success of India's diversified industrial policy.

JEL-Codes: O100, O400, O500, L600.

Keywords: development stage theory, flying-geese paradigm, industrial growth and specialisation, Make in India, East Asia, international comparison.

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I. Introduction

‘Make in India’ originally launched by Prime Minister Narendra Modi in 2014 is a government initiative aimed at encouraging multi-national and also national companies to manufacture their products in India, since the overall contribution of the country’s industrial sector to economic growth has been relatively weak and its export share has also been gradually shrinking (Singh and Ranjan, 2015).¹ By implementing a large number of reforms in a broad range of government policy fields (including also simplification of tax system, price deregulation and reduction of foreign firms’ ownership – see Box 1), the country primarily hopes to attract FDIs from abroad and also enhance the country’s global competitiveness via fostering innovation, developing labour skills, providing modern infrastructure, etc.² To a large extent, such policy measures are similar to the typical industrial development and growth convergence models of some East Asian nations and appear to be the adaption and/or extension of some ‘regional’ strategies on the national level, which have been popularly applied in the context of the special economic zones and export processing areas, etc. (see also Wu, 2002; Rodrik, 2013b).

Furthermore, the Indian government would like to improve not only the production efficiency of a large number of industries ranging from agricultural commodities to mining and manufacturing goods but also that of various services (Rajan, 2015): for this purpose altogether twenty-five economic sectors are identified, which include: (1) automobiles; (2) automobile components; (3) aviation; (4) biotechnology; (5) chemicals; (6) construction; (7) defence manufacturing; (8) electrical machinery; (9) electronic systems; (10) food processing; (11) information technology and business process management; (12) leather; (13) media and entertainment; (14) mining; (15) oil and gas; (16) pharmaceuticals; (17) ports and shipping; (18) railways; (19) renewable energy; (20) roads and highways; (21) space and astronomy; (22) textiles and garments; (23) thermal power; (24) tourism and hospitality; and (25) wellness.

¹ “Compared to many other developing countries, India’s manufacturing sector has played an unusual role in the national growth experience. In 1950-51 [...] manufacturing [accounted for] approximately 9% of GDP. By 1979-80, this ratio had risen close to 15%, but thereafter [it] has hardly increased. The highest share of manufacturing in any year was in 1996/97, at 16.6%: after then the figure has hovered on either side of 16%, even in the years when India’s GDP grew at over 9% annually” (Singh, 2014, p. 18).

² See <http://www.makeinindia.com/about>.

Box 1: The Modi Government's Reform Program

The major individual reform measures include, for example:

- Create a unified national tax on goods and services
- End retrospective taxation of cross-border investments
- Deregulate diesel pricing
- Deregulate natural gas pricing
- Deregulate kerosene pricing
- Remove government-mandated minimum prices for agricultural goods
- Use direct benefit transfer to deliver cash subsidies
- Deregulate fertilizer pricing
- Allow more than 50% foreign investment in insurance
- Allow more than 50% foreign investment in defence production firms
- Allow more than 50% foreign investment in railways
- Allow foreign lawyers to practice in India
- Allow foreign investment in more construction projects
- Reduce restrictions on foreign investment in multi-brand retail
- Reduce restrictions on foreign investment in single-brand retail
- Allow more than 50% foreign investment in direct retail e-commerce
- Fully open the coal mining sector to private/foreign investment
- Relax government controls over corporate downsizing
- Stop forcing banks to lend to 'priority sectors' including agriculture, small businesses, education and housing
- Extend the expiration date of industrial licenses
- Make it quicker and easier for companies to go through bankruptcy
- Offer one-stop shopping for clearances for new businesses
- Institute a mandatory 30-day 'Notice & Comment' period for proposed regulation
- Allow cities to issue municipal bonds to raise funds
- Raise the ceiling on foreign institutional investment in Indian companies
- Conduct transparent auctions of telecom spectrum

Source: Center for Strategic and International Studies (<http://indiareforms.csis.org/>).

The 'Make in India' initiative which sees the urgent manufacturing revival as the most important prerequisite for guaranteeing the country's long-term economic development (Singh and Ranjan, 2015) are based on the following policy logic. Apart from safeguarding basic production inputs (such as power, minerals and water) at competitive prices, the availability of modern transport, logistic and communication infrastructure is necessary in order to support the growth of industry and firms' accessibility to the domestic and international markets. Enhancing productivity and firms' R&D and innovation activities shaping the India's international competitiveness on the global market require also well-educated, skilled human capital which fully satisfies the labour market demand. Entrepreneurship and the ease of doing business should not only be supported by an easier access to venture capital but also be strengthened by delicensing and deregulating the industry during the entire life cycle of a business.³

³ See http://www.pmindia.gov.in/en/major_initiatives/make-in-india/.

Repeatedly Modi's 'Make in India' industrial reform policy contains a large number of heterogeneous promotion schemes which are addressed not only to traditional, labour-and capital-intensive industries but also to high-tech manufacturing firms and modern services. Furthermore, this ambitious endeavour aims at stimulating the creation of favourable business conditions, direct investment from abroad, firms' innovation and R&D activities, development of IT and its application,⁴ as well as provision of different transport, logistic and research infrastructure, *all at the same time*. Apart from the enhancement of productivity which is in general described as the primary engine of economic growth, Modi's policy appears to additionally exploit other types of positive growth contributions which are generated by the accumulation and deployment of capital as well as a more effective use of abundant labour in the country.⁵

This study attempts to deliver some first appraisals of the Modi's reform policy, highlighting the extent to which the Indian model is similar to the traditional flying-geese approach successfully applied by the East Asian NIEs and China in the past. On the other hand, it examines the reasons why, unlike the East Asian smooth 'step-by-step' changes in industrial structure from labour-intensive to R&D-oriented high-tech industries and modern services in line with overall economic growth, India needs such a wide range of diversified industrial policy measures addressing also simultaneously various types of industries and services positioned in the different development stages – the important India-specific policy practice which to a certain extent violates the conventional development stage analysis model implemented in East Asia. In particular, some crucial aspects surrounding the country's export-orientation and competitiveness on the world market; promotion of labour intensive industries; stimulation of high-tech firms' innovation activities and their complementarity with modern business services; and relevance of IT and its application for India's growth, are tackled. Can India accomplish all these goals at the same time? Is there any trade-off or conflict among these different goals? Will this Modi reform lead to the so-called 'productivity-enhancing structural change' for Indian economy?⁶ At first glance, in particular from a Western point of view, Modi's reform appears to have a rather general character, neglecting some 'specific', concentrated

⁴ According to Dedrick et al. (2003), IT-producing industries generally include manufacturers of semiconductor, computer, telecommunications hardware and also software (service) providers which enable IT technologies to be adopted effectively in firms and organizations. The contribution of such an IT sector to growth in East Asian economies has become particularly significant in the second half of the 1990s (see Lee and Khatri, 2003).

⁵ According to Jorgenson and Vu (2006), about 35-40% of world growth is resulted from the accumulation of capital whereas another 25-35% is originated from the more effective use of labor. The contribution of productivity growth accounts for approximately 20-40% of growth.

⁶ More about the productivity-enhancing structural change – see McMillan et.al. (2013).

promotion priorities and policy schemes.

The analysis on India's industrial and economic catching-up process starts with the simple development stage theory (from which the step-by-step catching-up cycle model is originated), followed by the comparison of India's recent growth dynamics of industrial production and its specialisation with those of selected countries.⁷ Unlike some other studies which mainly examine either the life-cycle of a few specific industries in different countries or the changes in the composition of their major export items, this study identifies the ultimate changes in each country's industrial production — also triggered by economic and political factors mentioned above — adopting simple statistical methods. For this purpose data on real manufacturing value added (MVA) are applied for the years between 2000 and 2014, which are collected by UNIDO.⁸

II. East Asian Catching-Up Cycle Model and Its Application

(1) Basic Theoretical Backgrounds

When investigating the industrial development and the specialisation pattern among different countries, a simple theoretical approach is widely applied in Asia, which identifies the development stage where the economy of a country or the life cycle of its leading industries are currently positioned in the past growth-path of a more developed country (Akamatsu, 1961; Vernon, 1966; Song, 1992; Heitger, 1993; Kojima, 2000; Nam, 2006; Rodrik, 2013b; Panagariya, 2013). Such a traditional flying-geese model is a catching-up cycle model or a basic economic convergence model between developing and advanced countries, of which process begins with the import substitution and later achieves the export expansion through the continuous increase in domestic production over the indigenous demand (Lim, 2014). According to UNCTAD (1995), an open developing economy grows and continues its industrial upgrading via exploiting and capitalising the learning opportunities provided by the country's economic relation with the developed world. In Asian countries including China, Korea, Singapore, etc. all such industrial and structural transformations have been strongly supported and/or controlled by the government, in many cases in the framework of industrial policy (see also Brookings Institution, 2008). "Korea's [industrialization] strategy was directly influenced by Japan's,

⁷ Apart from China, these selected nations are: rapidly growing two additional Asian competitors Indonesia and Vietnam; South Korea as one of the successful NICs of the 1st generation; Germany as an example of advanced industrial country; as well as two further BRICS nations Brazil and Russia.

⁸ See <http://stat.unido.org/>.

and China's was influenced by the precedents of Hong Kong and Taiwan. Southeast Asian countries such as Malaysia and Indonesia explicitly targeted industrialization after observing the successes of the so-called Gang of Four (Korea, Taiwan, Hong Kong, and Singapore)" (Rodrik, 2013b, p. 29). According to Panagariya (2013, p. 25), in particular under the consideration of serious poverty from which a huge share of population has continuously been suffering, "India has no [other] choice but to follow the East Asian example" in order to achieve a long-term economic growth via accelerating the output and exports of manufactures. Does India want to be the next Asian 'goose' following China?

In addition to the changes both in the life-cycles of dominating industries and in the domestic industrial structure of a country in the course of economic growth, "such a development stage analysis model also [delivers] in a regional hierarchy framework an explanation for the industrial relocation from a developed country to a less-developed one through trade and foreign direct investment in response to a shift in competitiveness" (Nam, 2006, p. 358). Due to this reason one generally assumes that changes in the trade structure of a country are closely associated with those in the industrial structure of the country (see also Hughes, 1989; Rivera-Batiz and Romer, 1991a and 1991b; Lloyd and Toguchi, 1996). Following this logic, as a nation grows, its main industrial structure moves step-by-step from the natural resource and labour driven stage; to the capital and imported-technology driven stage; and finally the R&D and innovation driven stage, and the country takes on new competitive tasks in the global economy and leaves less sophisticated activities to the lower-level economies (Balassa, 1965; Grossman and Helpman, 1991; Ezaki, 1995; Lloyd and Toguchi, 1996; Kasahara, 2004).⁹

Quite often different industries are classified into five categories: for example, R&D-intensive and easily imitable high-tech industries, as well as capital-, labour- and natural resource-intensive industries (Table 1). Yet, a strict separation among the aforementioned three development stages as well as the five types of industries is getting difficult because these phases have recently been increasingly becoming overlapped in a globalised world (Ozawa, 2001). As noted by Blomqvist (1995) and Grow (1995), large-scale FDI flows

⁹ In the labour-driven stage relatively cheap, manual-skilled labour are employed in various simple mass-production assembly plants (incl. also agricultural products). In the capital-driven stage, countries are more technologically advanced, which attracts (domestic and) foreign investments (plus foreign technology transfer) aimed at producing standardised products with mass local labour inputs. In the innovation-driven stage, modern technology, R&D infrastructure and know-how of skilled labour determine the firms' and nations' success on the world market. Furthermore, an establishment of national and regional innovation system appears to be necessary for the continued economic and industrial growth, which endowed with the innovative industrial firms' (permanent and institutionalised) networks with research institutions and high-tech business service firms as well as other industrial companies in the same country and abroad. (Nam, 2006).

equipped with foreign technology transfer have more rapidly changed, for example, China's specialisation patterns from the labour-intensive to the capital-intensive ones at an earlier development stage (between 1985-95) than was the case in NICs (in the 1970s), also allowing its domestic manufacturers to produce rather sophisticated industrial goods (i.e. some high-tech products) and capital goods as well as labour-intensive products simultaneously. Furthermore, UNCTAD (1996) argues that, thanks to the rapidly enhanced firms' absorption capacity of new ideas and modern technology (also equipped with enhanced R&D infrastructure and human capital), the 'innovation-imitation lag' between advanced and developing nations has also been significantly reduced (see also Nam, 2006).

Table 1: Classification of industry types

Types	Industries classified according to International Standard Industrial Classification of All Economic Activities (ISIC)
R&D-intensive high-tech industries	Professional & scientific equipment (385) Non-electrical machinery (382) Transport equipment (384)
Easily imitable high-tech industries	Industrial chemicals (351) Other chemical products (352) Electrical machinery (383)
Capital-intensive industries	Food products (311/2) Beverages (313) Tobacco products (314) Textiles (321) Glass & glass products (362) Other non-metal mineral products (369) Other manufacturing industries (390)
Labour-intensive industries	Wearing apparel (322) Leather & fur products (323) Footwear (324) Wood & wood products (331) Furniture & fixtures (332) Paper & paper products (341) Printing & publishing (342) Rubber products (355) Plastic products (356) Pottery, china & earthenware (361) Metal products (381)
Natural resource-intensive industries	Petroleum refineries (353) Miscellaneous petroleum & coal products (354) Iron & steel (371) Non-ferrous metals (372)

Source: OECD (1992); Heitger et al. (1992); UNIDO (1996); Nam (2006).

(2) Identification and Comparison of Recent Industrial Growth and Specialisation Patterns in Selected Countries

Beside the simple statistical comparison of the changes in output share of principal industries within a country (i.e. shift-share analysis) in last twelve to fifteen years, (1) the degree of a country's industrial specialisation;¹⁰ and (2) the growth index of individual manufacturing branches (= industrial growth index) are compared for a number of selected economies in different development stages.

If $s_i(t)$ denotes the share of i -th industry in a country's total MVA for the year t , and \ln is the natural logarithm, the degree of specialisation at the same year, $h(t)$, is:

$$(1) \quad h(t) = 100 [1 + \{ \sum_{i=1} s_i(t) \ln s_i(t) \} / h_{max}(t)]$$

where $h_{max}(t) = \ln(N)$ in the year t . (The total number of investigated industries $N > 1$). Note that "if a country has N number of industries and the MVA share of individual industries are all equal in the year t , [the degree $h(t)$] for the country is 0 (UNIDO, 1996, p.116). If among N only one industry exists in a country, $h(t)$ is 100.

The industrial growth index (IGI) of i -th industry compares the change in the same industry's MVA with that of total MVA between the year t and $t+1$:

$$(2) \quad IGI_i = \ln \left[\{ Q_i(t+1) / Q_i(t) \} / \left\{ \sum_{i=1} Q_i(t+1) / \sum_{i=1} Q_i(t) \right\} \right]$$

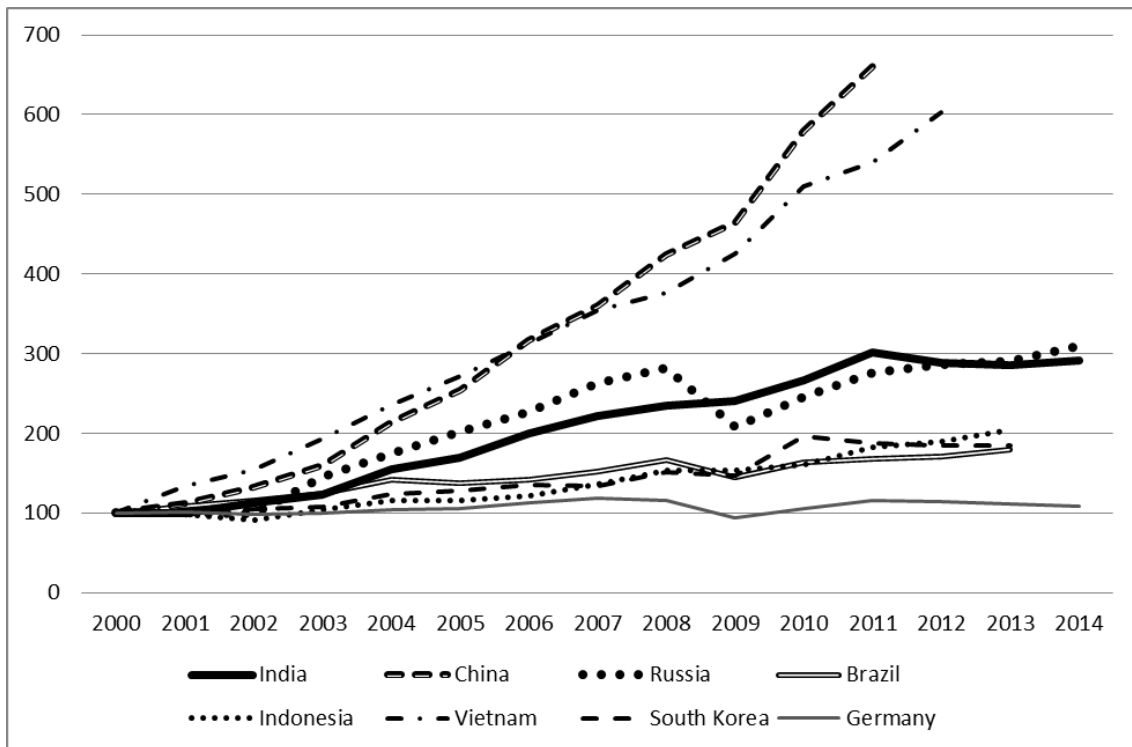
where $Q_i(t)$ = absolute amount of MVA of i -th industry at t and \ln = natural logarithm. Consequently, when the output of a given industry in a country and the total MVA of the same country grow at the same rate within a year, this industry's IGI = 0. And analogously, if an industry grows faster than the national total sum of MVA, then IGI > 0 for this industry (Nam, 2006).

Figure 1 clearly demonstrates the reasons why, first of all, India would like to further stimulate its manufacturing production and reform the industrial structure; and secondly why the country wants to be like China. In the investigated period since 2000, India's industrial growth was comparable to that of Russia's and remained rather moderate in the

¹⁰ The degree of industrial specialisation is developed by the UNIDO (UNIDO, 1996; Nam, 2006).

international context: the real MVA level reached around 300, when the MVA level in the year 2000 is set as 100. China's industrial expansion in the same period was remarkable: even in 2011, the country's real MVA level peaked to higher than 650 which has surely played a crucial role for the country's overall economic growth. One should also note that Vietnam's industrial production continued to grow very rapidly in these survey years as well. A rather slow trend was observed in Germany and South Korea, yet these two countries have already reached a more advanced level of industrial production – a fact which can be revealed more apparently when we compare, for example, their specialisation with India's major industries.

Figure 1: Real growth of total industrial production in selected countries (2000 = 100)



Source: UNIDO database.

The calculated degree of specialisation $h(t)$ delivers an overview of the concentration of industrial activities and the changes in manufacturing structure of a country within an investigated period of time. Table 2 shows that $h(t)$ differs from one to another and has also changed in the last years. A rather strong industrial specialisation took place in Indonesia, South Korea and Germany as well as in two BRICS countries Brazil and Russia, while Vietnam has recently achieved a remarkable industrial growth thanks to its

heterogeneous industrial structure and further diversification.¹¹ A weak concentration trend was also observed in India between 2000 and 2014, while that of China remained rather stable in the period 2000-2011.

Table 2: Degree of industrial specialisation in selected countries

Country	2000	2014
India	13.6	14.9
China	9.6	9.9 ^(a)
Russia	18.5	21.5
Brazil	10.3	13.9 ^(c)
Indonesia	7.5	16.6 ^(c)
Vietnam	15.8	9.2 ^(b)
South Korea	11.1	15.2
Germany	10.7	14.6

Note: ^(a) 2011; ^(b) 2012; ^(c) 2013.

Source: UNIDO database; own calculation.

Although the changes of $h(t)$ in some countries were generally less significant in the course of time (see India, China), one can identify the changes of a country's comparative advantage when the position of leading industries measured in terms of MVA shares are compared: an increase of the MVA share of an industry in a given period is the consequence of the fact that this industry has been growing faster than the total MVA in a country – a fact which is also revealed by the positive IGI.

In *India* the most dominant (but slowly-growing) industries with higher MVA shares belong to traditional capital and labour-intensive production (see e.g. 'food & beverage', 'textiles'), while the natural-based industries 'coke, petroleum and nuclear fuel' and 'basic metal manufacturing' grew rapidly and maintained their leading roles in the investigated years 2000 and 2014 (Table 3).¹² This, in turn, reveals the fact that the country's economic

¹¹ Imbs and Wacziarg (2003) also suggest the possibilities that poor economies initially producing a narrow range of goods and services could achieve the expansion of the range of economic activities as they grow. After a certain point, they argue, such a diversification will stop and a greater specialization will take place at high levels of income. These findings, however, do not match "with approaches that emphasize the role of trade and comparative advantage in spurring economic development. After all, the central insight of classical trade theory is that countries gain from trade by specializing in product lines they are comparatively good at" (Rodrik, 2013, p. 26).

¹² "The natural resource sector [...] converges very rapidly to the global frontier as it utilizes off-the-shelf, imported technology but has very little ability to absorb labour because it is highly capital and skill intensive. Furthermore, its upstream and downstream linkages are typically exceptionally weak and thus produce few spillovers to the rest of the economy. [...] Mining and other natural resource activities can produce very rapid growth in the boom stage, but [...] when the resource boom ends — because of resource depletion or a downturn in the terms of trade — there is often a collapse in economic activity"

and industrial development stage as well as the specialisation pattern did not change much during this period. Yet some high-tech branches such as ‘motor vehicles’ and ‘electrical machinery’ achieved a rather rapid real MVA increase in the same period of time (Table 4 and also Brookings Institution, 2008). India’s dominant industries have also contributed to its export performances: the ten best export items in 2015 were (a) gems, precious metals (14.7% of total exports); (b) oil (11.7%); (c) vehicles (5.3%); (d) machines, engines, pumps (5%); (e) pharmaceuticals (4.7%); (f) organic chemicals (4.3%); (g) clothing (excl. knit and crochet) (3.5%); (f) electronic equipment (3%); (g) knit and crochet clothing (2.9%); and (h) cotton (2.8%).¹³

It is quite apparent that India is envious and would like to realise the comparable prosperous industrial progress which *China* has recently achieved. Compared to the Indian industrial structure, some high-tech industries in China (in particular ‘machinery’, ‘motor vehicles’ and ‘electrical machinery’) not only have recently enjoyed a more advanced position and grown more rapidly, but also made a more decisive contribution to the total real MVA growth between the years 2000 and 2011. At the same time, like the case in India, China also achieved a strong manufacturing performance measured in terms of MVA share in those labour- and capital-intensive branches such as ‘food & beverage’, ‘textiles’, ‘coke, oil products, nuclear fuel’, ‘basic metals’ and ‘chemicals’ (Table 3) – where a development parallelism still exists in both countries and a fierce international competition between these two countries can continuously be expected. Industries like ‘textiles’, ‘wearing apparel’, ‘tobacco products’ and ‘coke, petroleum products, nuclear fuel’ in China appear to grow slowly also in the future (see the low IGI values in Table 4).

The BRICS nations appear to continuously pursue the economic integration among themselves. In this context it is also interesting to compare India’s industrial structure and specialisation with other selected BRICS countries (here *Brazil* and *Russia*), since it easily enables the identification of international (vertical and horizontal) cooperation possibilities between companies as well as the competition and rivalry relationship between their industries on the world market. Some similarities in industrial specialisation can be observed among these three BRICS countries in the investigated time period, which include, for example: (a) dominance of some branches like ‘food & beverages’, ‘coke, petroleum product, nuclear fuel’, ‘chemical product’, etc. (Table 3); (b) rather dynamic growth of ‘motor vehicles’ and ‘other transport equipment’ which are classified into the high-tech industries; (c) gradual declining significance of traditional labour intensive industries such as ‘leather & foot wear’, ‘wood product’, ‘paper product’, etc. (Table 5).

(Rodrik, 2013b, p. 52).

¹³ See Government of India data base (<http://www.commerce.nic.in/eidb/>).

India should also bear in mind that the country is in a competition with other rapidly growing Asian economies such as *Vietnam* and *Indonesia*. In particular Vietnam's real MVA growth have recently been remarkable since 2000, as already mentioned above. Just like the case in India, branches like 'food & beverages', 'basic metals' and 'chemical product' in both countries have recently played the role of leading industries with high MVA shares. In addition these two countries have also recently been strongly dependent on other labour-intensive industries such as 'wearing apparel' and 'leather & footwear' in Vietnam, and 'paper product', 'wood product', etc. in Indonesia (Table 3). Yet some differences in specialisation can also be noted among these three countries, including (a) Vietnam and Indonesia appear to have better development potentials for the high-tech 'office & computing machinery, communication equipment, medical & optical instrument' industries; (b) unlike the case in India the dominance of 'coke, petroleum product, nuclear fuel' was hardly visible in Vietnam and Indonesia (Table 6).

As expected, some R&D intensive high-tech industries (such as 'motor vehicles, trailers, semi-trailers' and 'other transport equipment') in *South Korea* and *Germany* have experienced strong growth in the investigated years (Table 7), while the MVA share for the same category of high-tech industries including 'office, accounting & computing machinery; communication equipment; and medical, precision & optical instruments' and 'machinery & equipment' have also remained high at the same time (Table 3). Yet it should be noted that no industries grew with the IGI larger than 0.5 in these industrial nations. On the other hand, a large number of capital- and labour-intensive industries grew much slower than the total average growth of real MVA and have been gradually losing importance – see e.g. 'food & beverage', 'tobacco' and 'textiles' as well as 'wearing apparel, fur', 'wood product', 'paper product', etc. (Table 7). All these in turn emphasise the fact that these two countries should continuously make immense efforts not only to enhance R&D and innovation activities but also to create highly qualified labour in order to safeguard the countries' future industrial development in the globalised world.

Table 3: Industrial specialisation in selected countries measured in % share of manufacturing value added (MVA)

India		China		Brazil		Russia	
2000	2014	2000	2011	2000	2013	2000	2014
Industries with higher than 10.0% MVA share				Industries with higher than 10.0% MVA share			
Chemicals & chemical products; Food & beverages; Basic metals; Textiles	Coke, refined petroleum products, nuclear fuel; Basic metals; Food & beverages; Chemicals & chemical products	Electrical machinery & apparatus; Radio, television & communication equipment; Chemicals & chemical products	Basic metals; Chemicals & chemical products	Food & beverages; Chemicals & chemical products	Food & beverages; Chemicals & chemical products; Motor vehicles, trailers, semi-trailers	Food & beverages; Basic metals; Chemicals & chemical products	Coke, refined petroleum products, nuclear fuel; Food & beverages; Basic metals
Industries with MVA shares between 5.0% and 10.0%				Industries with MVA shares between 5.0% and 10.0%			
Coke, refined petroleum products, nuclear fuel	Motor vehicles, trailers, semi-trailers; Textiles	Food & beverages; Basic metals; Textiles; Coke, refined petroleum products, nuclear fuel	Food & beverages; Machinery & equipment n.e.c.; Motor vehicles, trailers, semi-trailers; Radio, television & communication equipment; Non-metallic mineral products; Electrical machinery & apparatus; Coke, refined petroleum products, nuclear fuel	Motor vehicles, trailers, semi-trailers; Coke, refined petroleum products, nuclear fuel; Basic metals; (Office, accounting & computing machinery & Radio, television & communication equipment + Medical, precision & optical instruments); Machinery & equipment n.e.c.	Basic metals; Machinery & equipment n.e.c.; Coke, refined petroleum products, nuclear fuel	Motor vehicles, trailers, semi-trailers; Machinery & equipment n.e.c.; Non-metallic mineral products	Chemicals & chemical products; Motor vehicles, trailers, semi-trailers; Machinery & equipment n.e.c.
Indonesia		Vietnam		South Korea		Germany	
2000	2013	2000	2012	2000	2014	2000	2014
Industries with higher than 10.0% MVA share				Industries with higher than 10.0% MVA share			
Food & beverages; Textiles; Chemicals & chemical products	Food & beverages; Chemicals & chemical products	Food & beverages	Food & beverages; (Office, accounting & computing machinery + Radio, television & communication equipment + Medical,	(Office, accounting & computing machinery & Radio, television & communication	(Office, accounting & computing machinery & Radio, television & communication equipment +	Motor vehicles, trailers, semi-trailers; Machinery & equipment n.e.c.	Motor vehicles, trailers, semi-trailers; Machinery & equipment n.e.c.

		precision & optical instruments)	equipment + Medical, precision & optical instruments)	Medical, precision & optical instruments); Chemicals & chemical products; Motor vehicles, trailers, semi-trailers; Coke, refined petroleum products, nuclear fuel; Basic metals			
<i>Industries with MVA shares between 5.0% and 10.0%</i>				<i>Industries with MVA shares between 5.0% and 10.0%</i>			
(Office, accounting & computing machinery + Radio, television & communication equipment + Medical, precision & optical instruments); Paper & paper products; Tobacco products; Wood products (excl. furniture); Rubber & plastics products; Other transport equipment; Basic metals	Rubber & plastics products; Tobacco products; Motor vehicles, trailers, semi-trailers; Textiles	(Office, accounting & computing machinery + Radio, television & communication equipment + Medical, precision & optical instruments); Chemicals & chemical products; Leather, leather products & footwear; Non-metallic mineral products; Wearing apparel, fur	Chemicals & chemical products; Fabricated metal products; Non-metallic mineral products Basic metals	Chemicals & chemical products; Motor vehicles, trailers, semi-trailers; Basic metals; Machinery & equipment n.e.c.; Coke, refined petroleum products, nuclear fuel; Food & beverages	Machinery & equipment n.e.c.; Other transport equipment	Food & beverages; Chemicals & chemical products; Fabricated metal products; (Office, accounting & computing machinery + Medical, precision & optical instruments + Medical, precision & optical instruments); Electrical machinery & apparatus	Food & beverages; Chemicals & chemical products; Fabricated metal products; Electrical machinery & apparatus; Basic metals

Source: UNIDO database; own calculation.

Table 4: Industrial growth in India (2000-2014) and China (2000-2011)

	Lagging or slowly growing industries with negative IGI	Fast growing industries with IGI between 0.0001 and 0.4999	Very rapidly growing industries with IGI > 0.5000	Lagging or slowly growing industries with negative IGI	Fast growing industries with IGI between 0.0001 and 0.4999	Very rapidly growing industries with IGI > 0.5000
	India			China		
R&D-intensive high-tech industries	(Office, accounting & computing machinery + Radio, television & communication equipment + Medical, precision & optical instruments); Machinery & equipment n.e.c.; Other transport equipment	Motor vehicles, trailers, semi-trailers		Office, accounting & computing machinery; Radio, television & communication equipment	Medical, precision & optical instruments; Motor vehicles, trailers, semi-trailers; Other transport equipment	Machinery & equipment n.e.c.
Easily imitable high-tech industries	Chemicals & chemical products	Electrical machinery & apparatus		Electrical machinery & apparatus	Chemicals & chemical products	
Capital-intensive industries	Food & beverages; Tobacco products; Textiles; Non-metallic mineral products	Wood products (excl. furniture); Rubber & plastics products		Tobacco products; Textiles; Rubber & plastics products	Food & beverages; Wood products (excl. furniture); Non-metallic mineral products	
Labour-intensive industries	Wearing apparel, fur; Leather, leather products & footwear; Paper & paper products; Printing & publishing	Fabricated metal products	Furniture & manufacturing n.e.c.	Wearing apparel, fur; Leather, leather products & footwear; Paper & paper products; Printing & publishing	Fabricated metal products; Furniture & manufacturing n.e.c.	
Natural resource-intensive industries		Basic metals	Coke, refined petroleum products, nuclear fuel	Coke, refined petroleum products, nuclear fuel		Basic metals

Source: UNIDO database; own calculation.

Table 5: Industrial growth in Brazil (2000-2013) and Russia (2000-2014)

	Lagging or slowly growing industries with negative IGI	Fast growing industries with IGI between 0.0001 and 0.4999	Very rapidly growing industries with IGI > 0.5000	Lagging or slowly growing industries with negative IGI	Fast growing industries with IGI between 0.0001 and 0.4999	Very rapidly growing industries with IGI > 0.5000
	Brazil			Russia		
R&D-intensive high-tech industries	(Office, accounting & computing machinery + Radio, television & communication equipment + Medical, precision & optical instruments)	Machinery & equipment n.e.c.; Motor vehicles, trailers, semi-trailers; Other transport equipment		Machinery & equipment n.e.c.; Office, accounting & computing machinery; Motor vehicles, trailers, semi-trailers	Medical, precision & optical instruments; Other transport equipment	
Easily imitable high-tech industries	Chemicals & chemical products	Electrical machinery & apparatus		Chemicals & chemical products; Electrical machinery & apparatus		
Capital-intensive industries	Tobacco products; Textiles	Food & beverages; Non-metallic mineral products		Food & beverages; Tobacco products; Textiles; Non-metallic mineral products		
Labour-intensive industries	Leather, leather products & footwear; Wood products (excl. furniture); Paper & paper products; Printing & publishing; Rubber & plastics products	Wearing apparel, fur; Fabricated metal products; Furniture & manufacturing n.e.c.		Wearing apparel, fur; Leather, leather products & footwear; Wood products (excl. furniture); Paper & paper products; Fabricated metal products; Furniture & manufacturing n.e.c.	Printing & publishing; Rubber & plastics products	
Natural resource-intensive industries	Coke, refined petroleum products, nuclear fuel	Basic metals		Basic metals		Coke, refined petroleum products, nuclear fuel

Source: UNIDO database; own calculation.

Table 6: Industrial growth in Indonesia (2000-2013) and Vietnam (2000-2012)

	Lagging or slowly growing industries with negative IGI	Fast growing industries with IGI between 0.0001 and 0.4999	Very rapidly growing industries with IGI > 0.5000	Lagging or slowly growing industries with negative IGI	Fast growing industries with IGI between 0.0001 and 0.4999	Very rapidly growing industries with IGI > 0.5000
	Indonesia			Vietnam		
R&D-intensive high-tech industries	(Office, accounting & computing machinery + Radio, television & communication equipment + Medical, precision & optical instruments); Other transport equipment	Machinery & equipment n.e.c.; Motor vehicles, trailers, semi-trailers		Other transport equipment	(Office, accounting & computing machinery + Radio, television & communication equipment + Medical, precision & optical instruments); Machinery and equipment n.e.c.; Motor vehicles, trailers, semi-trailers	
Easily imitable high-tech industries		Chemicals & chemical products; Electrical machinery & apparatus		Chemicals & chemical products	Electrical machinery & apparatus	
Capital-intensive industries	Textiles; Non-metallic mineral products	Tobacco products	Food & beverages	Food & beverages; Tobacco products; Textiles; Non-metallic mineral products		
Labour-intensive industries	Wearing apparel, fur; Leather, leather products & footwear; Wood products (excl. furniture); Paper & paper products; Printing & publishing; Fabricated metal products; Furniture & manufacturing n.e.c.	Rubber & plastics products		Wearing apparel, fur; Leather, leather products & footwear; Printing & publishing	Wood products (excl. furniture); Paper & paper products; Rubber & plastics products	Fabricated metal products, Furniture & manufacturing n.e.c.
Natural resource-intensive industries	Basic metals		Coke, refined petroleum products, nuclear fuel			Coke, refined petroleum products, nuclear fuel; Basic metals

Source: UNIDO database; own calculation.

Table 7: Industrial growth in South Korea and Germany (2000-2014)

	Lagging or slowly growing industries with negative IGI	Fast growing industries with IGI between 0.0001 and 0.4999	Very rapidly growing industries with IGI > 0.5000	Lagging or slowly growing industries with negative IGI	Fast growing industries with IGI between 0.0001 and 0.4999	Very rapidly growing industries with IGI > 0.5000
	South Korea			Germany		
R&D-intensive high-tech industries	Machinery & equipment n.e.c.; (Office, accounting & computing machinery + Radio, television & communication equipment + Medical, precision & optical instruments)	Motor vehicles, trailers, semi-trailers; Other transport equipment		(Office, accounting & computing machinery + Medical, precision & optical instruments)	Machinery & equipment n.e.c.; Motor vehicles, trailers, semi-trailers; Other transport equipment	
Easily imitable high-tech industries		Chemicals & chemical products; Electrical machinery & apparatus		Electrical machinery & apparatus	Chemicals & chemical products	
Capital-intensive industries	Food & beverages; Tobacco products; Textiles; Non-metallic mineral products			Tobacco products; Textiles; Non-metallic mineral products	Food & beverages	
Labour-intensive industries	Wearing apparel, fur; Leather, leather products & footwear; Wood products (excl. furniture); Paper & paper products; Printing & publishing; Furniture & manufacturing n.e.c.	Rubber & plastics products; Fabricated metal products		Wearing apparel, fur; Leather, leather products & footwear; Wood products (excl. furniture); Paper & paper products; Printing & publishing	Rubber & plastics products; Fabricated metal products; Furniture & manufacturing n.e.c.	
Natural resource-intensive industries		Coke, refined petroleum products, nuclear fuel; Basic metals			Coke, refined petroleum products, nuclear fuel; Basic metals	

Source: UNIDO database; own calculation.

III. Relevance of East Asian Flying-Geese Paradigm for the ‘Make in India’ Reform

To a larger extent the Modi’s industrial development model contains the export-led catching-up strategies which have popularly been applied in Asian countries like South Korea and China in the past: India should better attract foreign capital and make domestic production process more efficient and, in particular, the country’s industrial products should become more competitive on the world market. It is a widely acknowledged fact that countries with strong economic growth have also had rapid exports growth, typically manufacturing exports, and such a rapid growth has seldom been based on a domestic market (Johnson, Ostry and Subramanian, 2010). Furthermore, just like the general case of FDI, international trade also serves as a mechanism for technology transfer and learning which may create positive external effects on other related industries (see also Rodrik, 2013a). Yet Rajan (2015) recommends that India should reconsider its export-led growth model, since a rapid recovery of advanced industrial countries (including Japan and those in the EU) from stagnation is unfortunately not anticipated in near future.¹⁴ Due to this reason the application of the export-oriented growth strategy alone appears to be less promising, following the path that China and South Korea have achieved in the past, optimally taking chance on the strong economic power of aforementioned developed nations and the US. Even though China continues to gradually experience a slow growth at present – the fact which increasingly forces its economy to turn to domestic markets for future development (Lim, 2014), one should also bear in mind China’s persisting dominant role on the global market as the export champion of manufacturing goods, while Vietnam and Indonesia, for example, are also rapidly emerging as the new international competitors and seriously challenging Indian manufacturers, as already mentioned above.

Strictly rejecting the implementation of import-substitution endowed with import tariffs, Rajan (2015) suggests the idea of ‘*Make for India*’, highlighting the importance of domestic demand for the country’s growth (see also Rodrik, 2013b). Yet his ‘*Make for India*’ strategies mainly address the creation of a well-functioning national (product and service) market via reduction of market transaction costs, which include, for example, not only the improvement of physical infrastructure such as energy supply system, transport network, etc. but also strengthening banking system as well as the creation of more efficient intermediaries in the supply chain from producer to consumers. All these

¹⁴ According to Rajan (2015), such a rather-long lasting, unfavourable economic development in advanced nations have also been triggered by slow productivity growth and increasing population ageing.

policy suggestions appear to be sufficiently considered in Modi's 'Make in India' programme which can also be applied as the 'Make for India' strategies.

For the production of mineral fuels including oil; organic chemicals; and gems and precious metals, India has recently had a type of 'intra-industry trade' with the rest of the world: i.e. these have recently been the major export as well as import items for the country,¹⁵ while the two former industries have also been playing a crucial role for generating India's MVA (Table 3). A 'market-oriented' import substitution without imposing import tariffs could take place for organic chemicals, for example, in the short run, if Indian manufacturers in this field were able to make their production system more efficient, while they also improve the quality of their products simultaneously. This would also enhance their competitiveness on the world market.

According to Panagariya (2013), India should strongly target on developing labour-intensive industries and create jobs for less-qualified people, since the movement of the workforce out of agriculture and into the manufacturing activities has been particularly slow in this country.¹⁶ Some labour-intensive, less-productive industries (food, leather, wearing apparel) are also supported by Modi's 'Make in India' initiative. Considering the persisting poverty in India, this strategy can also be recognised as a measure for rectifying redistribution problems via industrial growth. In part, this argument is also based on the Rodrik's 'unconditional convergence' hypothesis which empirically explains that 'in general' (i.e. regardless of the quality of policies or institutions and other country-specific circumstances in their home economies) a faster labour productivity growth can be achieved in lower-productivity industrial fields. Consequently, growth can be triggered by the increased economy's ability and also policy to pull resources into such 'convergence industries' (Rodrik, 2013a). Furthermore, some Asian experiences show that the establishment and/or existence of strong labour-intensive industries were the prerequisites for a smooth transformation towards a capital-intensive industrial structure. However, India is different: "whereas growth in South Korea and Taiwan in the 1960s and 1970s, and China more recently, has been driven by a massive expansion of labour-intensive manufactures such as

¹⁵ The ten important India's import items in 2015 were (a) mineral fuels including oil (26.8% of total imports); (b) gems, precious metals (15.3%); (c) electrical machinery (9.2%); (d) machinery including computers (8.2%); (e) organic chemicals (4.1%); (f) iron & steel (3%); (g) plastics (2.9%); (f) animal/vegetable fats, oils & waxes (2.7%); (g) fertilizers (1.9%); and (h) optical, technical, medical apparatus (1.8%) – see Government of India data base (<http://www.commerce.nic.in/eidb/>).

¹⁶ "[Nowadays], India has a workforce of nearly half a billion. Approximately half of it is employed in agriculture, which contributes less than 15 per cent to the GDP. This is a massive workforce living on a very small income" (Panagariya, 2013, p. 25). See also Panagariya and Mukim (2014) more about India's poverty.

apparel, footwear, light consumer goods and assembly activities, it has been propelled by skilled-labour-intensive services and capital-intensive manufactures in India” (Panagariya, 2013, p. 23) – the fact that also suggests some serious problems related to the application of the typical Asian flying-geese model for India.

In addition, the aforementioned promotion strategies of labour-intensive industries combined with redistribution motives create some conflicts with the goal of enhancement of overall productivity and competitiveness of a nation. In modern economics it is generally acknowledged that the best strategy to accomplish economic development in a rapid way is building modern high-tech industries endowed with highly-skilled human capital (Glaeser et al., 2004; Rodrik, 2013a and 2013b). Accompanied by the provision of necessary research infrastructure, modern manufacturing firms also contribute to the creation of positive spillovers for other industries and business services in a national (and regional) innovation network – the fact that emphasizes the role of development compatibility (or interdependence) between high-tech industries and modern business service firms for a nation’s economic growth. To a larger extent the experiences of developed countries (including Germany) in general and also those of Korea and China in recent years show this (see also Table 3). Following this logic, the Modi’s ‘Make in India’ reform also sees industrial firms’ R&D and innovation activities, and the creation of well-educated human capital urgently necessary for India’s structural change from low-productivity traditional sectors to high-productivity modern sectors and the country’s future competitiveness on the global market.

As Table 3 indicates, India has a rather unbalanced industrial structure. In this context the major reasons for the immediate promotion of high-tech manufacturing sector and improvement of quality and availability of skilled labourers appear to be three-folds in this country: (1) the most dominant industries are either slowly growing, low-productive capital and labour-intensive productions (such as ‘food & beverage’, ‘textiles’), or they are the natural-based industries such as ‘coke, petroleum and nuclear fuel’ and ‘basic metal manufacturing’; (2) the promising recent development of some high-tech branches such as ‘motor vehicles’ and ‘electrical machinery’ have well demonstrated the potentials of successful transformation towards the high-productive manufacturing sectors in this country; and (3) as Chandra and Sastry (2002) critically note, the lack of spending on R&D, and the relatively small numbers of employees with advanced degrees are serious issues in the manufacturing sector.

The recent development of services sector, in particular software and IT-enabled services (ITES), has been quite promising in generating GDP growth and employment (see also Dubey and Garg, 2014; Singh and Ranjan, 2015).¹⁷ In this context there have been two different streams of policy-relevant arguments aimed at promoting the country's economic growth. Firstly a number of experts say that the service sector by itself cannot provide the sustained, long-term growth in output or employment in India. Due to this reason "India must walk on two legs as it transitions to a modern economy: traditional industry, especially unskilled-labor-intensive manufacturing, and modern services such as software and telecommunications. Each leg needs to be strengthened through a set of policy initiatives" (Panagariya, 2008, p. 287). The traditional Asian flying-geese approach also mainly explains the significance of manufacturing activities for an economic success and the changes in industrial specialisation pattern as a country grows, but it does not explicitly take into account the importance of services for growth and the evolution of service sector in the course of a nation's development process.

On the other hand, studies by Singh and Ranjan (2015) and Singh (2014) highlight the existence of a linkage between these 'legs' of the Indian economy – the application of information technology (IT) in domestic manufacturing sector as a 'potential avenue to spur' productivity and employment growth in that sector which is resulted from the modernisation and rationalisation of the organisation, management and production as well as commercialisation and distribution processes including customs service (see also Jorgenson et al., 2003; Inklaar et al., 2004; Bosworth and Triplett, 2004; Kanamori and Motohashi, 2007; Kretschmer, 2012).¹⁸ Instead of exploiting such opportunities (and efficiency gains) resulted from the intact forward and backward linkages of business operation created by the IT development and usage (see also Erdil et al., 2009), Chandra and Sastry (2002) report, however, that industrial firms in India have recently neglected the investments in information technology, such as computer-aided manufacturing to supply (CAM), computer-aided design (CAD), computer integrated manufacturing (CIM), and computer-aided engineering (CAE), whereas domestic IT firms have failed

¹⁷ According to Dubey and Garg (2014), the size of the sector 'ITES and the hardware segments' has annually increased at a rate of ca. 35% on average since the beginning of 2000. "Domestic software Domestic software has grown at 46 percent while software exports have grown at 62 per cent over the last 5 years" (Dubey and Garg, 2014, p. 49). Nowadays the share of information technology industry amounts to around 7 percent of Indian GDP.

¹⁸ More precisely, faster information processing enables firms consider new communication ways with suppliers or arranges new distribution systems. The rationalized business process leads to a reduction in capital needs, for example, through better utilisation of equipment and reduction in space requirements. "Increased communication reduces co-ordination costs and the number of supervisors required. More timely and widespread transfer of information enable better decision-making and reduces labour costs" (Kretschmer, 2012, p. 8). On the other hand, some studies including Baily and Chakrabarti (1988); and

to supply the right products for manufacturing firms in such application areas (Singh and Ranjan, 2015).¹⁹

Various types of ‘business application software services’ may well represent the above-mentioned aspect and benefit of IT where India has recently enjoyed comparative advantages and also success on the global market (Arora and Athreye, 2002; Singh, 2014).²⁰ “India’s concentration in software has been driven by two sorts of wage advantages that have reinforced each other as such the lower wages for Indian software developers relative to that of their US and European counterparts make Indian software cheaper in global markets, and while the higher wages earned by software professionals in India relative to that in other industrial sectors has ensured a steady stream of supply of software professionals” (Dubey and Garg, 2014, p. 49). Due to this reason, Singh (2008 and 2014) assess that India’s sophisticated software-application and other IT services should be further developed, and, that this sector can play a central role for this country’s economic growth, following the Japanese and Korean experiences with automobile industry and electronics, of which continued enhancement of comparative advantages for the world market had significantly contributed to their rapid growth in the past.

Information technology can also create intra-service development complementarities generating positive external effects (Arora and Athreye 2002). For example, direct spillovers from the IT sector to other service industries can be easily realised, when improved managerial practices initially developed particularly in ITES area adopting its new technology are diffused and, at the same time, applied in the operation of a wide range of services (including also media and entertainment). Kapur and Ramamurti (2001) argue for even larger-scale impacts of IT for India’s economy, extending to modern, knowledge-intensive industries such as biotech, chemicals, etc. (see also Kretschmer, 2012). More importantly one should bear in mind that an advanced IT is a crucial factor shaping the nation’s innovation system, which not only makes the creation

Berndt and Morrison (1995) highlight the possibility of existing ‘productivity paradox’, arguing that IT may have a negative contribution to productivity growth.

¹⁹ Jorgenson (2003) demonstrates that the growth of IT investment jumped to double-digit levels after 1995 in all the G7 economies. Consequently, investment in tangible assets (including IT equipment and software) has been the most important source of world growth, although the non-IT investment has recently predominated (Jorgenson and Vu, 2006). Yet studies by Kraemer and Dedrick (1999); and Hawash and Lang (2010) highlight that such a significant contribution of IT investment to economic growth caused by the existence of a complementary system of IT infrastructure can hardly be observed in the developing countries which are obviously lacking in such investments and the absorption capacity of advanced technology.

of clusters of high-tech industrial firms among each other and also with other modern business services with ease, but also intensifies and fastens the technology transfer and diffusion process from research institutions to industries and services for the application (Lundvall, 1992; Nelson, 1993; Weitzman, 1998; OECD, 2002; Garcia and Vicente, 2012).

IV. Conclusion

The ‘Make in India’ campaign introduced by Prime Minister Narendra Modi in 2014 primarily aims at the manufacturing revival in India, whereas its mission and characteristics very much resemble those structural reform and growth policies applied by the Asian NIEs and China in the context of the flying-geese model. In other words, the basic policy design for ‘Make in India’ considers the East Asian experiences in achieving accelerated expansion of industrial output and exports, and consequently the rapid economic growth. Such a traditional development stage (and also economic convergence) approach postulates: as a nation grows, its main industrial structure evolves *step-by-step* from the natural resource and labour driven stage; to the capital and finally the high-tech, R&D and innovation driven stage, while the country takes on new competitive tasks in the global economy and leaves less sophisticated activities to the lower-level economies.

Unlike those intensive industrial policies in Asian NIEs and China, which triggered gradual changes in the country’s specialisation pattern and its competitiveness on the world market, and consequently created the so-called ‘East Asian miracle’ in previous years, the ‘Make in India’ is endowed with the numerous heterogeneous promotion schemes which are addressed not only to traditional, labour- and capital-intensive industries but also to high-tech manufacturing firms and modern services (in particular the IT services). In addition, the same policy *simultaneously* attempts, for most industries (and also some services), (1) to create favourable business conditions (and entrepreneurship), (2) to safeguard production inputs at affordable prices; (3) to attract FDI, (4) to stimulate firms’ innovation activities, (5) to provide different transport, logistic and research infrastructure, and (6) to enhance the availability and quality of qualified labour, to name a few. A priori Modi’s reform appears to be rather general: i.e. less ‘industry specific’ (or less ‘differentiated’) in terms of target areas and priorities, and, consequently, contains some

²⁰ Using indexes of value added in manufacturing and software revenue as the comparators, the calculations made by Arora and Athreye (2002) reveal that India’s comparative advantage for software is higher than that of manufacturing, when compared to the corresponding indicators for the US.

conflict potentials in the coordination of various objectives and different policy measures.

In India those traditional capital and labour-intensive products such as ‘food & beverage’ and ‘textiles’ have recently been mostly dominant, apart from some natural-based industries including ‘coke, petroleum and nuclear fuel’ and ‘basic metal manufacturing’, which have limited abilities to absorb labour. On the other hand, a few high-tech branches such as ‘motor vehicles’ and ‘electrical machinery’ have achieved a rather rapid real MVA growth in recent years (see Tables 3 and 4).²¹ To a certain extent such a rather long-lasting unbalanced industrial structure forces India to adopt numerous, diversified industrial policy measures simultaneously addressing various types of industries positioned in the different development stages. Apart from the enhancement of productivity which is widely acknowledged as the primary engine of economic growth, Modi’s policy may aim to better exploit positive growth contributions resulted from the capital accumulation and a more effective use of abundant labour. Yet such a policy practice can eventually conserve the existing industrial structure and impeded the rapid structural change.

Compared to the NIEs’ and China’s experiences with the export-led growth strategies, some experts note that a strong foreign-market orientation pursued by the ‘Make in India’ would be less wise, if the stagnating economies of major importers of potential Indian industrial products (Japan, the EU and the US) continue to prevail. In this context Rajan (2015) suggests the introduction of a type of ‘Make *for* India’ programme which creates a well-functioning national market system by enhancing energy supply system, transport network, by strengthening the banking system, and by establishing efficient supply chains – all measures which have already been considered by Modi in his ‘Make in India’ policy. On the other hand, the world’s economic history assures that strong economic growth of countries have been led by rapid growth of manufacturing exports and the efforts made for exploiting and realising the comparative advantages and competitive strength on the world market, but seldom generated in domestic market (see also Johnson, Ostry and Subramanian, 2010). Yet one should acknowledge China’s current role as the world’s export champion of manufacturing goods and the fact that the country will also remain as India’s major competitor on the international market in the near future, in particular for branches including ‘food & beverage’, ‘textiles’, ‘coke, oil products, nuclear fuel’, ‘basic metals’ and ‘chemicals’. At the same time India’s major manufacturing exporters will face some serious challenges also from other rapidly growing Asian countries such as Vietnam and Indonesia (Figure 1; and Tables 3 and 4).

The ‘poverty reduction’-oriented promotion of labour-intensive industries and job

²¹ A comparable list of dominating industries has also been identified in Brazil and Russia.

creation for less-qualified people can hardly be combined with a long-term industrial growth and structural change: such strategies combined with redistribution motives create trade-offs with the objectives of improving overall productivity and the nation's competitiveness. This fact should be particularly borne in mind since some labour-intensive, less-productive industries (e.g. food, leather, wearing apparel) are also supported by Modi's 'Make in India' initiative. The experiences in Korea and Taiwan demonstrate that an establishment of strong labour-intensive industries were necessary in the *initial* development stage in order to make a smooth transformation to a capital-intensive industrial structure feasible. In addition such an explanation based on the typical East Asian flying-geese model largely conflicts with the fact that India's growth has recently been strongly triggered by 'skilled-labour-intensive' services and capital-intensive manufactures (see also Panagariya, 2013).

India's comparative advantage in software services on the global market has been firstly led by the lower wage compared to that of their US and European counterparts, whereas the prevailing income difference between software professionals and those other industrial workers in this country has attracted the continued supply of them. In this context it appears to be desirable that India's sophisticated software-application and other IT services be more strongly promoted (see also Singh, 2014). However, the conventional flying-geese approach tends to question the hypothesis that the service sector alone can generate the continuous long-term growth in output or employment in a country. Instead, based on the development interdependence logic between modern IT services and high-tech industries (including also IT hardware production), the same approach emphasises the crucial role of information technology, not only for knowledge transfer and diffusion but also for shaping a national innovation system.

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