

Characterizing New Structural Economics to Explain the Path of Development and Catching up Pattern for Developing Countries

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Abstract: The last decades witnessed only a limited number of countries managing to converge with developed countries, however, most countries in the world failed to have a similar acceleration in their growth. Most of growth models mainly explore the long-run trend shift in the compositions of sectors without exploring the dynamics within the aggregate sectors, such as the continuous upgrading of manufacturing industries. In this way, the process of steps interpreted by different views that each one has defined specific principles to move in this direction. The new structural economics attempts to reconstruct the path of successful countries as it will be practical and achievable for other developing countries. The real question is what is the path of the limited successful countries had been gone? The new structural economics is an attempt to set out third wave of development thinking and its aim is reconsideration of structural changes to development studies. The main preference of this study is that it offers 9 special and essential characteristics of the new structural theory for the first time together and this is what distinguishes the study from others with the same issue. More importantly, some of these features according to all the subject research and obtained on the base of researcher deductions. Explanation of the characteristics and features together makes the path of development that successful countries have gone will be well be obvious for developing countries and other follower ones. So this theory in the context of these characters determines the path. The main characters includes intelligently combining state and market, attention to sub-sectors and transfer between generations, historical view, continuous process of industrial upgrading, the distinction between developing countries and developed policies, presentation criteria how imitation of followers countries from leaders ones, presentation an application framework, consideration countries comparative advantage and export-oriented industrialization.

Key words: Economic development, new structural economics, structural changes, industrial policy, leader-follower pattern

INTRODUCTION

The New Structural Economics (NSE) is an attempt to set out third wave of development thinking. Taking into account the lessons learned from the growth successes and failures of the last decades, it advances a neoclassical approach to study the determinants and dynamics of economic structure. It postulates that the economic structure of an economy is endogenous to its factor endowment structure and that sustained economic development is driven by changes in factor endowments and continuous technological innovation. The factor endowments in a country are given at any specific time and changeable over time. A country's comparative advantages and thus its optimal industrial structure are determined by its factor endowments. Upgrading the industrial structure in a given country requires the upgrading of the factor endowment structure from one

that is relatively abundant in labor and natural resources to one that is relatively abundant in capital, the introduction of new technologies and the corresponding improvement in infrastructure to facilitate economic operations. The goal of third wave is revising of structural change to economic study. Some theorists of this theory are Justin Lin, Dani Rodrik, Ricardo Hausmann and Velasco, Ann Harrison and Célestin Monga.

Maddison (1995) estimated that, in Western Europe, the annual per capita income growth rate before the 18th century was about 0.05%, accelerated to about 1% in the 18th and 19th centuries and reached 2% in the 20th century. The required time for doubling per capita income thus reduced from 1400 year before the 18th century to 70 year in the 18th and 19th centuries and further to 35 year in the 20th century. So important problem was in the decades that followed, Rapid growth primarily was in English (where the industrial revolution began) then only

limited countries notably the Western European countries, United States and other Western offshoots were able to follow in the footsteps of England accelerating growth and catching up with the U.K and were able to follow in the footsteps of England and accelerate their growth. also During the past century a few economies in Asia most notably Japan and the East Asian Tigers, including Hong Kong SAR, China; the Republic of Korea; Singapore; and Taiwan, China were also able to achieve sustained growth and reached high-income status. Although the occurrence of high, sustained growth further diversified in the 21th century to some Sub-Saharan African and Latin American countries such growth still remains the exception rather than the rule. Most developing countries suffered from prolonged uninterrupted spells of anemic growth. The real question is what is the path of the limited successful countries had been gone?

The historical and empirical evidence suggests that a reexamination of sustainable growth strategies for developing countries should devote special attention to structural change and its corollary, industrial upgrading and diversification and to an imitation (not replication) of the successful approaches that have allowed a small group of countries to move from low- to high-income status. So the last decades witnessed only a limited number of countries managing to convergence with developed countries, however, most countries in the world failed to have a similar acceleration in their growth. The Flying Geese Model that is based on a leader-follower pattern was paid the convergence and explanation structural changes in leader countries. Growth models do start to address various types of structural change. Most of them mainly explore the long-run trend shift in the compositions of sectors without exploring the dynamics within the aggregate sectors such as the continuous upgrading of manufacturing industries. In this way, the process of steps interpreted by different views that each ones have defined specific principles to move in this direction. The new structural economics attempts to reconstruct the path of successful countries as it will be practical and achievable for other developing countries. The main feature of this study is that it offers special and essential characteristics of the new structural theory and this is what distinguishes this paper articles with the same issue. Explanation of the characteristics and features together makes the path of development that successful countries have gone will be well be obvious for developing countries and other follower ones.

Similarities to and differences from old structural economics: In terms of similarities, the “new” and the “old” structural economics are both founded on structural differences between developed and developing countries

and acknowledge the active role of the state in facilitating the movement of the economy from a lower level of development to a higher one. However, there are profound differences between these two approaches regarding their targets and the modalities of state intervention. The old structural economics advocates development policies that go against an economy’s comparative advantage and advise governments in developing countries to develop advanced capital-intensive industries through direct administrative measures and price distortions. By contrast, the new structural economics stresses the central role of the market in resource allocation and advises the state to play a facilitating role to assist firms in the process of industrial upgrading by addressing externality and coordination issues.

The differences between the two frameworks derive from their dissimilar views on the sources of structural rigidities: old structural economics assumes that the market failures that make the development of advanced capital-intensive industries difficult in developing countries are exogenously determined by structural rigidities due to the existence of monopolies, labor’s perverse response to price signals and/or the immobility of factors. By contrast, the new structural economics posits that the failure to develop advanced capital-intensive industries in developing countries is endogenously determined by their endowments. The relative scarcity in their capital endowment and/or the low level of soft and hard infrastructure in developing countries make the reallocations from the existing industries to the advanced capital-intensive industries unprofitable for the firms in a competitive market.

Old structural economics assumes a dual and restrictive view of the world, with a binary classification of only two possible categories of countries: “low-income, periphery countries” versus “high-income, core countries.” As a result, it views the differences in the industrial structure between developed and developing countries as expressing a dichotomy. Contrary to that vision, the new structural economics considers these differences as the reflection of a whole spectrum that includes many different levels of development. The new structural economics also rejects dependency theories. In an increasingly globalized world, it sees opportunities for developing countries to counter negative historical trends by diversifying their economy and building industries that are consistent with their comparative advantage so as to accelerate growth and achieve convergence by exploiting the advantage of backwardness in an open, globalized world.

Another major difference between the new and the old structural economics is the rationale for using key instruments of economic management. Old structural economics sees systematic government intervention in

economic activities as the essential ingredient in the modernization objective. Among the key instruments used to move from “developing” countries to “industrialized” countries are generalized protectionism (such as government-imposed tariffs on imports to protect infant industries), rigid exchange-rate policies, financial repression and the creation of state-owned enterprises in most sectors. By contrast, the new structural economics recognizes that import substitution is a natural phenomenon for a developing country climbing the industrial ladder in its development process, provided that it is consistent with the shift in comparative advantage that results from changes in its endowment structure. But it rejects conventional import-substitution strategies that rely on the use of fiscal policy or other distortions in low-income, labor-or resource-abundant economies to develop high cost, advanced capital-intensive industries that are not consistent with the country’s comparative advantage.

MATERIALS AND METHODS

Special and essential characteristics and features of the new structural theory: This part extracts new structural economic theory principles and main characteristics of this theory due to successful and unsuccessful countries and the historical trend analysis and economic facts.

Intelligently combining state and market: The first feature of new structural economic theory is clever combining state and market. New structural economic is trying a combination of the role of the market and the government in structural transformation on the process of economic development. NSE acknowledges the positive role that state intervention can play in promoting industrial upgrading, given important market failures that exist in the supply of new technological knowledge, NSE rightly warns against the possibility of government failure but goes on to note that ‘there are few if any examples of governments that have succeeded with a purely laissez-faire approach that does not try to come to grips with market failures and far more examples of rapid growth in countries whose governments have led effectively’.

It agrees that industrial upgrading is necessary for economic development and it will not happen purely through market forces and will need government intervention. It also agrees that the government should not push the economy too far away from its current structure too quickly.

The new structural economics is a combination of the two approaches of neoclassical and old structural economics and then this makes the combination of state

and market perspective in the theory. Old structural economics in fact emphasized the importance of structural change and saw structural differences as a result of market failures. Not surprisingly, they proposed to use government interventions to facilitate structural change through import substitution and gave priority to modern advanced industries.

It was a period when new protective device such as quantitative restrictions on imports and exchange controls to manage the balance of payments were first used on a large scale by most countries. Most developing countries and multilateral development institutions followed these policy recommendations. From Latin America to Europe, Asia and Africa, results were disappointing and the gap with the industrialized countries widened.

The failure of the government interventions inspired by the first-wave development thinking generated a new wave, which highlighted government failures and adopted an astructural approach toward economic development that emphasized the essential function of markets in allocating resources and providing incentives for economic development, ignored the structural differences among countries at different levels of development in their policy recommendations and expected the structural change to happen spontaneously in a country’s development process.

They based much of their policy advice and conditionality on stabilization and structural adjustment programs that reflected the new dominant paradigm and promoted economic liberalization, privatization and the implementation of rigorous stabilization programs. The results of these policies for growth and employment generation were at best controversial.

Something strange and unexpected happened in the recent history of economic development: it was observed those developing countries that succeeded during the second half of the 20th century did not follow the dominant development thinking or the policy prescriptions of the first and second wave.

But NSE as third wave of development thinking emphasizes the important roles for the market and the state in the process of promoting economic development. NSE agrees that the market should be the basic mechanism for resource allocation but that government must play an active role in coordinating investments for industrial upgrading and diversification and in compensating for externalities generated by first movers in the dynamic growth process.

Taking lessons from history view: Taking into account the lessons learned from the growth successes and failures of the last decades, it advances a neoclassical approach to study the determinants and dynamics of economic structure.

Historical experiences of the industrial revolution offer several insights. First, countries that are on the technological frontier can play the role of the leader as the U.K. did. Second, late comers have the economic advantage of backwardness and under certain conditions, can catch up quickly and even overtake the leader. Third some European countries could catch up with Britain relatively quickly because their stage of development was not too far apart.

There are several examples the theory concludes the principles from historical evident and experiments. Such as, industrialization was delayed in the United States Relative to the Britain because the country lacked the basic factor endowments, labor and capital to invest in business. When it finally began in the 1820s after the country had enough capital and labor, relative to continental Europe, its growth was explosive. Or starting with an income level which was only one-third of the West in 1850s, Japan achieved rapid catch-up in 50 years to become the first industrial country in Asia by 1904. After opening up trade in 1854, its government encouraged learning from Western technology and institutions by sending high level missions including about half of the ministers to America and Europe for nearly two years. Many examples of these facts can be found that used in the theory.

The distinction between developing countries and developed policies: Most economic theories are produced by economists in developed countries with the intention to explain economic phenomena in developed countries or by economists who use developed countries as reference to explain phenomena in developing countries (such as structuralism and the Washington Consensus). As noted in Lin and Volker (2012), many economic and social constraints to development differ across countries and/or across time.

Economists in the advanced countries in general focus their subjects of research on issues in their societies. Consciously or unconsciously, they take the existing institutions, technology and resources in their societies as given conditions in their research. That is, the starting point of their research is a society with frontier technologies and relatively stable social institutions.

Because in the same society at different times or in different societies at the same time, many economic and social constraints will change or differ, there is no one-size-fits-all best choice or theory. To simply introduce theories based on developed countries into developing countries and make policies based on those theories will lead to unintended or catastrophic consequences.

The theories and experiences that are generated from developing countries will be more relevant for other developing countries, due to the similarity in their opportunities and constraints. Africa could learn from Brazil's successful models for expanding agricultural production in regions with similar climatic and soil conditions.

Experiments with export processing zones in Mauritius and other countries have helped us understand how best to design these interventions. East Asian economies including Japan, Korea, China, Singapore, Indonesia and others, provide many useful experiences of developing from backward agrarian economies to modern industrialized economies through the state's facilitation in a market-based mechanism.

The increase in the trade, financial flow and the research capacity in developing countries will contribute to exchange of South-South experiences. As a result, the thinking that may have direct relevance for developing countries' development is likely to come increasingly from the developing countries themselves (Lin, 2012).

Including differences that are well seen in the new structural theory is that since the latter part of the industrial revolution and into the twentieth century, the advanced economies had accumulated substantial amounts of capital. Meanwhile, the developing countries' endowments were characterized by high levels of labor particularly unskilled labor and in some cases, abundance of natural resources land, minerals and oil. Another examples is that There was already the empirical observation that industrialization was at the core of progress in advanced economies; however, structuralists believed that structural rigidities in developing countries would prevent this process of industrialization and self-sustained growth could not become a reality without more interventionist government policies.

But both the old structural theory and Washington Consensus did not consider to this issue. The Washington Consensus advised the developing countries to adopt the idealized advanced countries' institutions namely, free markets-without paying attention to the following facts. First of all, the various distortions in the developing countries might have been endogenous to the structuralist development strategy itself and secondly, appropriate institutions may differ depending on the level of development in a particular country.

In fact, not all those policies recommended by the Washington Consensus were rigorously followed in the high-income countries. In the 1990s during the heydays of the Washington Consensus, many policy advisors for

the high-income countries advised the developing countries to “do as what we say but not as we do”. In brief, the focus shifted from trying to copy industries (Old structural economics) to trying to copy the idealized market institutions of the high-income countries (Washington Consensus). In recent decades, the emphasis has also been placed on country specificity as policy makers moved away from generalized policy prescriptions. As part of a more pragmatic approach, some economists spent more time trying to understand the structure of domestic economies and domestic institutions in order to deepen their understanding of why some countries succeeded, while others failed that NSE approach is the same of it.

Continuous process of industrial upgrading: NSE acknowledges the importance of industrial upgrading for economic growth and development. This is a point that is often missed by today’s development mainstream which emphasizes static allocative efficiency; so NSE theory emphasis on industrial upgrading is really good.

Recent growth models do start to address various types of structural change. Most of them mainly explore the long-run trend shift in the compositions of aggregate agriculture, industry and service sectors without exploring the dynamics within the aggregate sectors, such as the continuous upgrading of manufacturing industries. In addition, in a globalized economy, this implies that the new growth poles will need to continuously upgrade their industrial structures to either find new product niches or improve productivity in existing product lines. All of these challenges create the scope for improved national development policies to overcome these challenges and secure continued development progress.

This subject is one of important differences between old and new structural theory. Old structural economics assumes a dual and restrictive view of the world, with a binary classification of only two possible categories of countries. As a result, it views the differences in the industrial structure between developed and developing countries as expressing a dichotomy.

Contrary to that vision, the new structural economics considers these differences as the reflection of a whole spectrum that includes many different levels of development. The diverging patterns and performances among world economies are puzzling and have been a major topic of research for development economists for many decades. Yet there is an important clue; that dramatic acceleration in growth rates came about with the rapid technological innovation after the Industrial Revolution and the transformation of agrarian economies

into modern industrialized societies. The Industrial Revolution drew attention to the critical role that continuous technological innovation and upgrading play in the development of an efficient manufacturing sector.

According to NSE this intriguing trend has led us to recognize that continuous structural change prompted by industrialization, technological innovation and industrial upgrading and diversification are essential features of rapid, sustained growth. So in a result, long-term growth depends on continuous structural transformation.

Numerous examples can be found in NSE analysis in this regard. For example the development of manufacturing industries in the United States shows the employment shares for the most labor-intensive industries declined continuously over the period, from a high to a low level for those in the middle range the employment shares first increased and then declined; and for the most capital-intensive ones the employment shares increased throughout the period, from a low to a high level and so the emphasis is on continuous process(Lin, 2015).

Presentation an application framework: The Framework is a tool, for implementing new structural economic that can be done in six stages. However, this framework has drawbacks, but a practical structure can be useful. The Growth Identification and Facilitation Framework (GIFF) which lays out a step-by-step approach for policy makers to facilitate structural. The GIFF operationalizes key insights of New Structural Economics by developing a methodology for identifying sectors where the country may have a latent comparative advantage and removing binding constraints to facilitate private firms’ entry into those industries.

The GIFF argues that picking winners is inevitable because the binding constraints may be sector specific and removing them may not be possible for the private sector alone. Therefore the main issue is to minimize the error margin of picking the wrong industry. The key risk in this regard is that countries target industries that are too advanced and far beyond the latent comparative advantage or target industries in which the country has already lost its comparative advantage. NSE believes that industrial policy based on the Growth Identification and Facilitation Framework (GIFF) actually enhances competition. By facilitating co-ordination and addressing externality issues, industrial policy helps many domestic and foreign firms to enter sectors that are consistent with the country’s latent comparative advantage and turn them into overt comparative advantages and thereby intensifies

Table 1: The catch-up in the pre-war and post war era: Countries can catch up if their per capita income levels are not too far apart (per capita GDP by 1990 international GK dollars)

Country	Europe targeted the UK, gaps were small		Japan targeted Germany during Meiji Restoration			Japan targeted the US after the WWII			
	1870	UK (%)	1890	1900	Germany (%)	1950	1960	US (%)	
France	1876	59	2376	2876		5186	7398		
Germany	1839	58	2428	2985	100	3881	7705		
U.K.	3190	100	4009	4492		6939	8645		
United States	2445	77	3392	4091		9561	11328	100	
Japan	737		1012	1180	40	1921	3986	35	
	The East Asia NIEs (4 dragons) incl S.Korea targeted Japan in the 1960-80s		China targeted the East Asian NIEs including S.Korea			Late comers started to target China after the 2000			
Country	1960	1970	Japan (%)	1980	1990	Korea (%)	2000	2008	China (%)
U.K.	8645	10767		12931	16430		20353	23742	
United States	11328	15030		18577	23201		28467	31178	
Japan	3986	9714	100	13428	18789		20738	22816	
South Korea	1226	2167	25	4114	8704	100	14375	19614	
China	662	778		1061	1871	23	3421	6725	100
India	763	868	938	1309		1892	2975	44	
Vietnam	799	735		757	1025		1809	2970	44

competition within the industries and enhances the economy’s competitiveness internationally. So the GIFF aims at helping firms enter industries with latent comparative advantage (Lin and Chang, 2009).

New structural theory offers the GIFF precisely to advise political leaders and the general public on the right way of carrying out industrial policy and identify clearly what would be the wrong way, so that the probability for governments being over-enthusiastic is reduced.

GIFF provides a dual-track strategy for government intervention. Following comparative advantage which is only the first track of the GIFF is a necessary condition for a successful industrial policy. However, that is not sufficient. For industrial policy to contribute to a country’s growth and structural transformation, the government also needs to play the facilitation role by providing incentives to the first movers and to help them by removing binding constraints to their growth and by coordinating investments in the soft and hard infrastructures that are needed.

Presentation how imitation of followers countries from leaders ones: The second feature is presenting a model on how follower countries selecting leader countries. New structural economic want concludes leader countries must be with similar structure and per capita income to follower ones. The Industrial Revolution started in Great Britain in the 1730-1780s, although at that time, Belgium and Netherland were more industrialized than Britain. Britain was a latecomer in the 16th and 17th century, Britain was an export of raw wool to the Netherlands. It targeted the Netherlands’ industries for catching up when its per capita income was about 70% of the Netherlands’. Some European countries could catch up with Britain relatively

quickly because their stage of development was not too far apart. Countries that are on the technological frontier can play the role of the leader as the UK did.

According to Maddison’s estimate, the per capita incomes of Germany, France and the United States were about 60-75%of Britain in 1870. Fourth, during the Meiji restoration, Japan targeted Prussia’s industries and its per capita income was about 40% of Germany’s. Thus it was realistic for Japan to target Germany rather than Great Britain or the United States which were too far ahead of Japan in term of their development stage. Even though many nation states tried to catch up, Japan succeeded and became the first industrialized nation from the East because of the right choice of targeting countries. (Table 1)

InNSE’s view, Japan’s success is mainly attributable to its identification of the right target countries in both pre-and post-war periods. If we consider the process by example it can be find out how the followers countries catching up leader ones in rail way. The first steam locomotive was invented in Britain in 1804 but other European countries did not start railroad building until the 1830s. Germany for example, produced its first locomotive in 1835 but railway construction lagged for the lack of an integrated central government. After the 1840s, German coal and iron production skyrocketed and by the 1850s construction began on a rail network. After German political unification in 1871, Germany exceeded Great Britain in terms of the length of new railroads and there was a rapid catch-up process in the production of pig iron and other industries (Fig. 1).

According to the new structural economics, the developing should imitate countries as a leader that in terms of per capita income, abundant labor and capital and generally structure of production factors are close to each other.

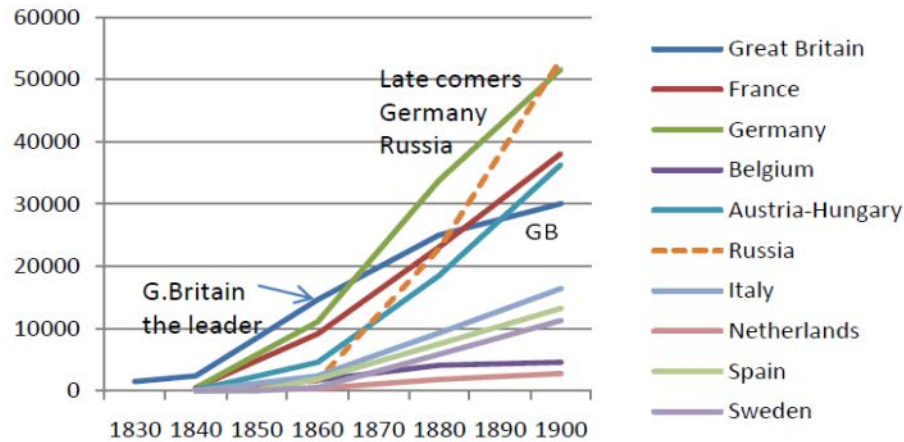


Fig. 1: Spread of the industrial revolution: late comers catching up (1800-1914); (length of railroad lines open in kilometers (1 km =5.8 mile); Source: statistical appendices in the fontana economic history of Europe Vol 4, accessible on the web, modern history source book

RESULTS AND DISCUSSION

Consideration countries comparative advantage: The third feature is attention to the countries comparative advantage. The failure of many developing countries to achieve development was because of their incorrect imitation. In the post WWII period, most developing countries were keenly aware of the role that industrialization played in accelerating structural transformation and catch-up in the U.S., Europe and Japan. Keen to emulate them, developing countries adopted the prevailing paradigm which advocated an Import Substitution-led (IS) Industrialization Strategy to develop advanced industries similar to those in the industrial countries. Examples include heavy industries such as iron and steel, chemicals, machinery and transport equipment in countries as diverse as India, Brazil, Ghana and Egypt.

In spite of a large variety of protectionist measures including high tariffs, even the most well intended policy interventions failed in sustaining Comparative Advantage Defying (CAD) industries. The crux of Japan and East Asia's success was that their development followed closely their comparative advantage or was CAF and their governments played the facilitation role (Lin *et al.*, 2011).

Even in the United States can be well seen in the industrialization process of the country according to comparative advantage. The figure shows the employment shares in the United States during 1958-2005 for five subsectors selected from 99 manufacturing

industries, ranked from most labor-intensive to most capital intensive. Overall, as the capital labor (K/L) ratio increases over time, the industrial and employment structures change dramatically (Fig. 2).

The share of labor employed in the most labor-intensive sectors such as fabrics declined monotonically in the period. In sectors such as computer manufacturing whose capital-labor ratio was mid-range, the share of labor employed first increased and then declined, showing a hump or inverse V-shape. In industries such as aircraft and automobile manufacturing that are capital-intensive but subject to labor-saving scale economies, the share of labor showed a slow and declining trend. In the most technology-intensive sectors such as plastics including fiber optics and lens, the share of employment shows a monotonic increase indicating that the US still maintains a comparative advantage in these industries. In general, the manufacturing sectors started to shed labor in the 1970s and the services sector created more jobs throughout the period. This process accelerated in the 1990s.

The same decrease in employment occurred in the past in the United States, now are taking place in China and other emerging countries because of their comparative advantages. China has an estimated 85-100 million workers in manufacturing, with most of them in labor intensive industries or labor intensive segments of capital-intensive industries. Going forward, rising wages will force China to upgrade to higher value-added, more capital/technological intensive sectors and relocate the jobs in the existing sectors to countries that have lower

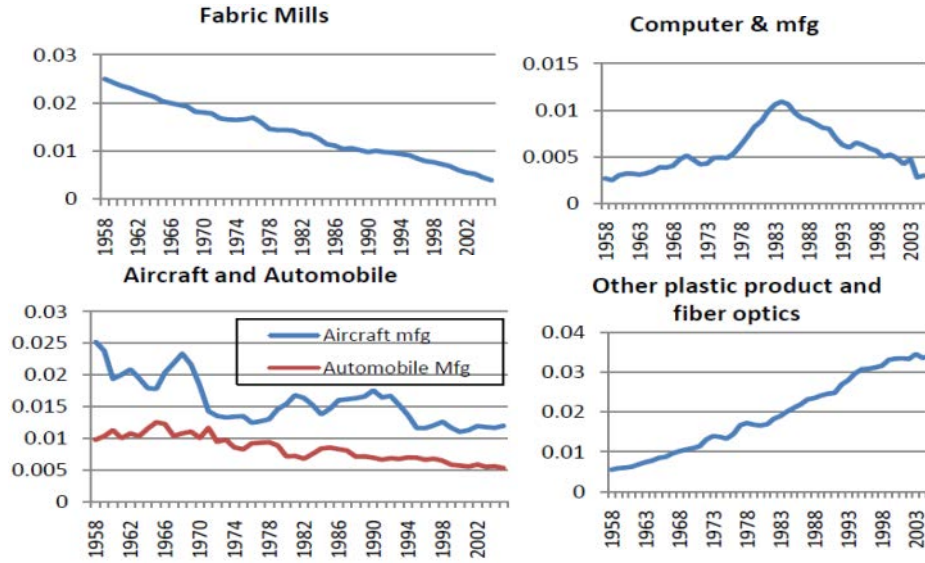


Fig. 2: The United States as the leader of transformation: shares in total employment for selected subsectors ranked by capital-labor ratio, 1958-2005

Table 2: Employment in manufacturing, potential dragons, 2009/10

Variables	Brazil	China	India	Indonesia	Total
Employment share in manufacturing (million)	13.1	85	8.7	12.5	119.3
Population (million)	192	1324	1140	277	2934
Outward FDI (USD billion)	11.5	68	14.6	2.7	96.8

ILO, Penn World Tables and UNCTAD, 2011

wage rate than China's. India currently employs about 9 million workers and Brazil about 13 million. These emerging market countries employ about 120 million workers whose jobs could be relocated to other developing countries in the coming years. Notably, India still has significant surplus labor which implies that its labor intensive industries will expand before they contract and relocate jobs. Its younger population will provide more workers for Indian industries in the future but also more potential jobs for lower wage countries.

The employment of labor intensive jobs in low wage countries currently is also large but pales in comparison to the numbers in either China or the emerging market countries (Brazil, China and India) collectively. As an example, in 2009, all developing countries in Sub-Saharan Africa collectively had a labor force of 338 million. Most of it was employed in subsistence agriculture that fetches below poverty level wages. Assuming that about 3 percent are in manufacturing suggests that the sector employs about 10 million African workers. To achieve employment in manufacturing equivalent to about 20% of total employment implies that Sub-Saharan Africa needs a total of about 70 million jobs. In most industrial

countries, the share of manufacturing in total employment reached about 20% before it declined due to industrial upgrading and wage increases (Table 2).

If India, Brazil, Indonesia and other large MICs maintain their current pace of growth, a similar pattern and employment space will arise. The most important is all these changes and reallocations in employment are due to change in factors structure and finally change has occurred in the country's comparative advantage. And for this reason comparative advantage is as main principle in the theory.

Attention to sub-sectors and transfer between generations: What has been less studied is that comparative advantage influenced in the subsectors and how has caused an industry to be transferred from one country to another. Since, most of studies were paid to share of agriculture, industry and services generally and their changes. So what is less well studied, however is how this process evolved at the subsector level and how the jumping of an industry from one country to another evolved. For example and how Korea has ceded its dominance in labor-intensive sub-sectors to the third generation.

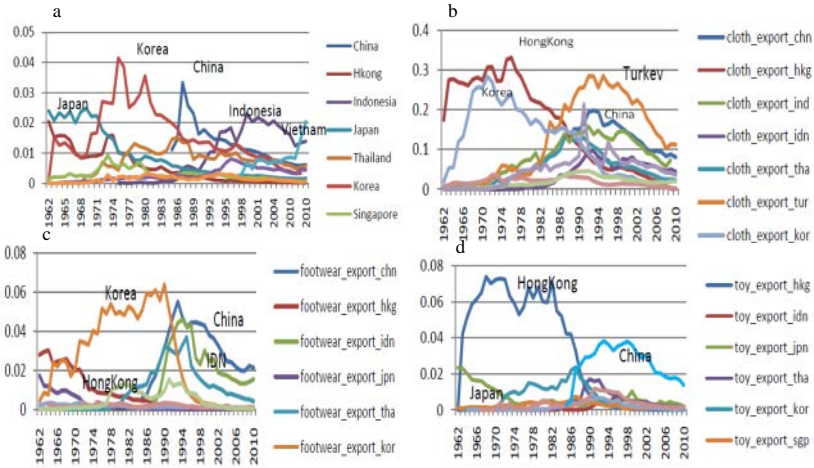


Fig. 3: Share of sectorial exports in total merchandise exports: several generations (textile (five generations), Clothing (two generations), Footwear (three generations), Toys (bottom-left)

There is an inverse U shape in some subsectors where the leader loses comparative advantage to its followers. Each specific sector may have several generations of countries playing the role of leader sequentially in different periods as the country's endowment structure changes (Fig. 3).

In textiles, an upstream but labor-intensive industry, five generations emerged sequentially. Japan ceded to Korea in the 1980s, then China emerged in the 1990s but now its textile exports are losing steam as labor costs are raising and employment shares are declining. ASEAN, in particular, Indonesia and Vietnam and countries which can expand market share rapidly would have a better chance to benefit by following China.

In the apparel and clothing sector, long ago in the 1970s, Japan lost its leading position to Korea, whose clothing exports show a clear hump shape as it ceded its leading position to China in 1989. China emerged later than ASEAN but its low wages and efficient industrial clusters in many provinces enabled it to gain dominance. After many years in the dominant position, China is now losing its comparative advantage due to rising wages and will gradually cede its market shares to ASEAN, Vietnam and countries which can seize the opportunity to rapidly expand exports.

In footwear and toys, China is recently losing market shares in the EU and the US markets and their shares in total exports have been declining. This is consistent with what other studies found but these shares vacated by China have not yet been taken up by African countries.

There are large opportunities for other low-income countries to benefit from China's graduation from these labor-intensive industries.

Export-oriented industrialization: Another character is recommendation to adoption of export promotion policies according to its own comparative advantages. So it is important exports promotion according to comparative advantages. As explained above the failure of many developing countries to achieve development was because of their incorrect imitation. Developing countries adopted the prevailing paradigm which advocated an Import Substitution-led (IS) Industrialization Strategy to develop advanced industries similar to those in the industrial countries.

Most developing countries adopted IS strategies in the belief that the market encompassed insurmountable defects and the state was a powerful supplementary means to accelerate the pace of economic development. Many development economists at that time advocated that the state should overcome market failures by playing a leading role in the industrialization push, directly allocating the resources for investment and setting up public enterprises in the large heavy industries to control the commanding heights.

As an example, in Latin America which was overly dependent on primary commodity exports, a temporary deterioration in the terms of trade was perceived as a secular trend by political leaders and social elites. They believed that it would lead to a transfer of income from

Table 3: Indicators of trade strategy and effective rates of protection

Country	Period	Trade Strategy	Average ERP for manufacturing	Range of ERPs
Brazil	1958	IS	106	17-502
	1963	IS	184	60-687
	1967	MIS	63	4-252
Chile	1967	IS	175	-23-1140
Colombia	1969	MIS	19	-8-140
Indonesia	1971	MIS	33	-19-5400
Ivory Coast	1973	EP	41	-25-278
Pakistan	1963-64	IS	356	-6-595
	1970-1971	IS	200	36-595
South Korea	1968	EP	-1	-15-82
Thailand	1973	MIS	27	-43-236
Tunisia	1972	IS	250	1-737
Uruguay	1965	IS	384	17-1014

Source: Krueger, 1983

resource-intensive the developing countries to capital-intensive developed countries and the only way to end exploitation was to develop domestic manufacturing industries through IS.

In the 1960s and 1970s, well-intended governments across Latin America, Africa and South Asia implemented IS-led development strategies comprised of a variety of administrative measures and trade barriers focused on identifying priority sectors and leveraged large state owned enterprises to deliver capital-intensive products.

They also devised administrative measures such as granting the nonviable enterprises in the priority sectors a market monopoly, suppressing interest rates, overvaluing domestic currency and controlling prices for raw materials to reduce the costs of investment and operation of the non-viable enterprises. Such interventions caused widespread shortages in funds, foreign exchange and raw materials. Consequently, these governments had to bypass the market mechanism and allocate resources directly to these enterprises through administrative channels, including national planning in the socialist countries and credit rationing, investment and entry licensing in non-socialist developing countries (Lin, 2009).

Because of limited fiscal resources, small taxable bases and limited tax collection capacity, large-scale subsidies and other administrative measures could not be sustained in the medium term and the industrialization strategy failed (Table 3).

Most tariffs on manufactures led to Effective Rates of Protection (ERP) well in excess of 100% in most countries (Table 3). In a sample of 10 countries chosen for a special study, Krueger found that all except the Ivory Coast and South Korea were pursuing IS strategies in the 1960s and 1970s.

Brazil is notable for starting out with high ERPs in the late 1950s but gradually shifting to a Moderately IS strategy (MIS) by 1967. Between 1963 and 1966, the ERP

on mining was reduced from 34-24%, on machinery from 68 -30%, on chemicals from 146-56%, transport equipment from 147-103% and electrical equipment from 169 - 112%. After the reform, although ERP levels of around 100% or less were relatively high, their reduction was a signal that the industries they protected were Brazil's Comparative Advantage Following (CAF) industries.

The NSE contends that the crux of Japan and East Asia's success was that their development followed closely their comparative advantage or was CAF and their governments played the facilitation role (Lin, 2009; Lin and Monga, 2011). In contrast, in the 1960s and 1970s, across Latin America, Africa and South Asia well-intended governments adopted IS and protection to achieve dynamic growth in industries that were CAD according to their endowment structures. They assigned a high priority to the development of capital-intensive heavy industries when, in fact, capital was scarce. To compensate for the absence of private firms in capital-intensive sectors, governments identified them and leveraged large state owned enterprises to produce capital-intensive products.

The case of South Korea suggests that because its government was actively fostering CAF industries through an Export Promotion (EP) strategy, it could afford to keep protection rates lower than governments fostering CAD industries. South Korea did industrial upgrading through export promotion according to comparative advantage. During this phase of industrial upgrading this was guided by export-oriented industrialization. The benefits of economic backwardness were exploited with sequential structural transformation from labor-intensive industries (i.e., wood manufactures and clothing) to capital intensive industries (i.e., machinery and transport equipment). The early 1980s, labor intensive products, primarily wood manufactures and clothing had a combined share of about 60% and accounted for the majority of total exports. Since 1983, capital intensive machinery and transport equipment products have

accounted for majority of exports; after mid of the 1990s, their share exceeded half of total exports (Lin, 2011).

CONCLUSION

The Korean case, together with Japan's and other East Asian Tigers' discussed earlier suggest that developing country governments had two options to accelerate industrialization after World War II. They could adopt an IS strategy to foster CAD industries or they could pursue export promotion to nurture CAF industries. As noted above, CAD industrialization through IS strategies not only failed but it also diverted governments' attention and resources away from CAF, export-oriented industrialization. Pursuit of CAF industrialization through EP also enabled the East Asian Tigers to upgrade their industries according to the changes in their endowments structures.

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