

# EXIM BANK: RESEARCH BRIEF

## *Value Addition Chains and Trade in Manufactured Commodities in Southeast Asia*



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In commemoration of Jawaharlal Nehru Birth Centenary (1889 - 1989), Export-Import Bank of India instituted the International Economic Research Annual (IERA) Award in 1989. The objective of the award is to promote research in International Economics, Trade, Development and Related Financing, by Indian nationals at universities and academic institutions in India and abroad, leading to a doctoral degree. The study titled 'Value Addition Chains and Trade in Manufactured Commodities in Southeast Asia' is based on the IERA 2014 award winning thesis by Dr. V. Kalyan Shankar, ICSSR Postdoctoral Fellow, Department of Economics, S. P. Pune University.

*“The Barbie Doll's label says ‘Made in China’. This suggests, correctly, that in the production of Barbie, China provides the factory space, labour and electricity, as well as cotton cloth for the dress. It conceals however, the facts that: Japan provides the nylon hair, Saudi Arabia provides oil, Taiwan refines oil into ethylene for plastic pellets for the body, and Japan, the United States and Europe supply almost all the machinery and tools, most of the moulds (the most expensive item) come from the United States, Japan, or Hong Kong; the United States supplies the cardboard packaging, paint pigments and moulds; and Hong Kong supplies the banking and insurance and carries out delivery of the raw materials to factories in Guangdong Province in South China, together with collection of the finished products and shipping”<sup>1</sup>.*

The global journey of the Barbie doll could be deemed a purely economic phenomenon. Described varying, often interchangeably, as the outcome of 'value addition chains', 'vertical integration' or 'kaleidoscope comparative advantages', it remains the consequence of rising integration of world markets that “has brought with it a disintegration of the production process, in which manufacturing or services activities done abroad are combined with those performed at home”<sup>2</sup>. But beyond the logistics of the 'value chains' and the trade and investment flows intrinsic to them, there exist multiple undercurrents running beneath – historical, geographic, cultural – that influence the economics of it. How to explore the

linkages across them? How to place the international economics of value chains in a richer context of international political economy that is shaping what goods get produced where and why? Having identified a certain value chain and its geographic scattering, how do comparative advantages get split across the different nations? How to make trade-indices more responsive/sensitive to reflecting specializations across value chains? These are some of the broad questions examined in the study.

The study comprises six sections covering both theoretical and empirical aspects of value chains organized under three rubrics (a) the history and culture of value chains (b) unfolding the value in value chains and

(c) value chains, comparative advantages and trade indices. While the thesis is geographically rooted in Southeast Asia, given the extensive cross-country trade and investment linkages in the region, the arguments are more broad-based and would find resonance for India as well.

### HISTORY AND CULTURE OF VALUE ADDITION CHAINS

#### **The Logic Behind a Sequence: Interpreting Economic Histories from a Geographic Lens<sup>3</sup>**

'Economic ascendancy' is rooted in (a) time, the independent variable that charts the years when a nation's growth became conspicuous and (b) the space/geography (city-states, nations, regions) where this occurred. Studies of economic

<sup>1</sup> Snyder Francis (2002), 'Governing Economics Globalization: Global Legal Pluralism and EU Law', in 'Regional and Global Regulation of International Trade', ed. Francis Snyder, Studies in European Law and Integration, Hart Publishing, page 4

<sup>2</sup> Feenstra Robert (1998), 'Integration of Trade and Disintegration of Production in the Global Economy', The Journal of Economic Perspectives, Volume 12, No.4, Autumn 1998, page 31

<sup>3</sup> V.Kalyan Shankar and Rohini Sahni (2010), 'Is there a twist in the tale? Reinterpreting economic ascendancies through the geographic lens', Economic and Political Weekly, Vol. XLV, No. 1, January 2, 2010

**Table 1: The Geographic Grid for Nations - Competitors in Ascendancy**

The geographic status of competitor nations	The geographic status of an ascendant nation		
		Individual	Collective
	Individual	Individual vs. Individual (1)	Individual vs. Collective (3)
	Collective	Collective vs. Individual (2)	Collective vs. Collective (4)

ascendancies however, are predisposed to time, laying emphasis on constructing the time-frames of a nation's ascent; rather than highlighting the geographies involved that were partaking (fully or partly) in this growth, assuming them to be constant. But spaces have not been constant after all, at least in terms of the nation-states they have represented. The historical reorganization of spaces/ geographies (the colonial consolidations, post-colonial splintering of boundaries) has been making space as much an evolving variable as time. If we consider the hypothetical (politically incorrect) example of Japan retaining its Southeast Asian annexations of World War II, what would have been the nature of growth ascribed to the region in the ensuing years? Would the 'flying geese' model<sup>4</sup> still be validated, or would it have been subsumed under a sweeping statement of 'Japanese' growth? How would we then view the post-War Southeast Asian collective model of using trade as an engine of growth?

It is imperative to understand how geographies have played a role in the creation of paradigms in which ascendancies emerged. For this purpose, an alternative framework is created that factors-in the impact of global spatial rearrangements on ascendancies. The temporal-historical sequence of the rise of nations remains the same. But using geography as a tool, it is attempted to deduce the logic behind such a sequence. In other words, why it happened the way it happened?

For understanding how an ascendant nation emerged and in what geographic contexts, the categorization of nations into 'individuals' and 'collectives' is introduced. For a starter, an 'individual' is a geographically continuous entity while a 'collective' is scattered over disjointed spaces. It is argued that the rise or

ascendancy of nations needs to be analyzed in terms of geographically 'individual' or 'collective' efforts to achieve that status as classified in the grid (Table 1). Global value chains, in the contemporary understanding of the term, would qualify as a post-War pathway of growth, where competition is across rival collectives of value chains.

### **Culture of Consumption in Global Markets: Value Chains as a Phenomenon of International Production and International Consumption<sup>5</sup>**

For understanding trade patterns, the key would be to map what goods are prone to enter international markets through what available channels. What will travel as exports, what will transcend across national barriers, via, FDI, and what will go international via value-chains? It is argued that this decision is intrinsic to the product and the "culture of consumption" it seeks.

When it is said that consumption cultures go global, more often the ambit of studies revolves around *what* happens on account of it rather than *how* it happens. It is a study of the ends rather than the means. But how do cultures travel after all, particularly when they have acquired material forms? Probing through channels for the global spread of material culture, the underlying forces are as much *economic* as they are *cultural*. It is about the role that international economists have in cultural studies, considering that economic frameworks can either bar or facilitate the movement of consumption cultures. Within the aegis of cultures going global, the two inter-related questions remain important. How does economics matter to the global spread of culture? How does the culture of a particular commodity shape the economics of it?

In the global itineraries of cultures, the role of global capitalism cannot be undermined. As cultures get driven by consumption, and

nudged to anchor on material forms, economics matters all the more in cultural studies. In the quest for global consumption of a product, economics provides not just the means but also the modes for enabling such a possibility. But from a given set of economic modes it is the culture of a product that picks and chooses what mode will be most economical for it to spread.

## **UNFOLDING THE VALUE IN VALUE ADDITION CHAINS**

### **Division of Supply Chain and Regional Linkages in Southeast Asia**

How does splitting of value chains form the basis of regional trade linkages? And how do commodity compositions of trade baskets get reconstructed in the process? For exploring these questions, the study considers an overview of value chains in select commodities in Southeast Asia. The following countries were chosen: ASEAN 4 - Malaysia, Indonesia, Philippines and Thailand, NIEs (Newly Industrialized Countries) such as Singapore, Taiwan, Hong Kong and South Korea, along with China and Japan. The countries under review are diverse in terms of economic development, trade policies as well as their potential for trade. They also offer different resource bases and as a result participate accordingly in value addition chains. Reviewing existing literature shows that splitting of comparative advantages within the region is evident in several sectors like automobiles, automatic data processing machines (computers), telecommunications, etc.

Trade as an engine of growth in Southeast Asian countries has manifested in an altered commodity composition of exports and imports. The share of Southeast Asian exports has increased in terms of value added commodities, moving from low technology, raw material based commodities to medium and high technology commodities. Such a qualitative alteration of commodity composition is an expected phenomenon in developing countries. However, probing deeper, a decline in exports of finished goods can be noted. Concomitantly, the proliferation of trade in medium and high technology commodities appears almost

<sup>4</sup> Akamatsu Kaname (1961), 'A Theory of Unbalanced Growth in the World Economy', *Weltwirtschaftliches Archiv* 86, no. 1, 208

<sup>5</sup> Rohini Sahni and V.Kalyan Shankar (2009), 'What has Economics got to do with it? Cultures of Consumption in Global Markets', *Economic and Political Weekly*, Vol. XLIV, No. 1, January 3, 2009

entirely on account of trade in unfinished goods or intermediaries. As argued in literature, there has been a disintegration of the production processes of manufactured commodities into several intermediary components, which are then produced with economies of scale in different countries.

### Developing Countries, Export Baskets and Acquired Comparative Advantages

Comparative advantages have a chronology to them, a distinctly historical trait; something that gets lost when interpreted through the conventional labour-capital paradigm in international economics. But advantages are old and new; they have a past and they have a present. Their historical underpinnings are vital in understanding their origins, formation and where they could be heading. Any nation's export basket would suffice to demonstrate that each of its comparative advantages have not emerged simultaneously; they are (invariably) an eclectic mix of items embedded varyingly in time, having been sequentially introduced and established. By assigning labels of labour and capital abundance to nations, what is it that gets buried in the theorization? Does it mean that when a labour-rich country adds a new commodity to its basket, it would *necessarily* be a *horizontal* expansion - from one labour-intensive commodity to another? By assuming such a pre-determined stance on trading capacities, we end up grossly undermining the dynamism

displayed by nations to move *vertically* and go beyond their theoretically prescribed specializations.

Moving beyond traditional advantages, what requires scrutiny is the 'acquiring' of comparative advantages by nations, what gives rise to them and how do they evolve. The study examines how nations may not strictly adhere to the idea of restricting themselves to their indigenous, factor-endowed advantages. As commodities rise, fall or stagger in world trade, so do the fortunes of nations trading in them. At any given time, there exists a hierarchy of significance among traded items depending upon their share in world trade. *Not all comparative advantages matter equally - the worth of holding a comparative advantage in a commodity is only commensurate to its share in world trade.* Advantages in say automobiles cannot be equated with those in tea or sugar not because of their industrial-agricultural divide but simply because of the vast chasm that exists in their world trade shares. To avoid getting sidelined in world trade, nations have sought to participate in commodities that the world is trading in rather than confining themselves to what they can offer for trade. For achieving this, they have actively contrived to acquire new comparative advantages rather than limiting themselves to their prevailing ones. The Southeast Asian value chains form an example of such a development.

## VALUE CHAINS, COMPARATIVE ADVANTAGES AND TRADE INDICES

### 'Revealed Comparative Advantage' Behavior in Evolving World Trade: How to understand what it reveals?

The Revealed Comparative Advantage (RCA) index was introduced by Balassa (1965)<sup>6</sup> as an ex-post measure for determining comparative advantages of nations in manufactures. The index for exports is expressed as:  $(X_{ij} / X_{nj}) / (X_{it} / X_{nt})$  where:  $X$  = exports,  $i$  = country,  $j$  = product,  $n$  = sum of exports of a set of nations (either in the world or in the region),  $t$  = total. Instead of using RCA to measure trade flows, is reused the order of enquiry by evaluating how *trade flows per se would structurally impact RCA formations*. How would rapidly evolving, diversifying world trade and changing proportions of commodity composition shape RCA values? By splitting the index into its numerator (country ratio) and denominator (world ratio) components, the study probes into what item in world trade can potentially generate what kind of RCA for itself. The index values remain sensitive to time, commodity and geography.

### Fine-tuning the RCA Index: The Cascading Index of Product Specialization

In the context of value chains, trade specialization is a sub-sectoral activity, involving specific components or intermediaries. In the revisions to trade

Table 2: Construction of the Cascading Indices

1-digit	2-digit	3-digit	4-digit	5-digit	The cascading nature of calculations creating a series of indices
7					(Cat. 7 exports from Japan / Total exports from Japan) / (Cat.7 exports in the world / Total world exports)
	78				(Cat. 78 exports from Japan / Cat. 7 exports from Japan) / (Cat. 78 exports in the world / Cat. 7 exports in the world)
		784			(Cat. 784 exports from Japan / Cat. 78 exports from Japan) / (Cat. 784 exports in the world / Cat. 78 exports in the world)
			7841		(Cat. 7841 exports from Japan / Cat. 784 exports from Japan) / (Cat. 7841 exports in the world / Cat. 784 exports in the world)
				78411	(Cat. 78411 exports from Japan / Cat. 7841 exports from Japan) / (Cat. 78411 exports in the world / Cat. 7841 exports in the world)

<sup>6</sup> Balassa Bela (1965), 'Trade Liberalization and 'Revealed' Comparative Advantage', The Manchester School of Economic and Social Studies, Vol. 33, No.2, pages 99-123



classification systems like the SITC or HS, the attempt is to capture these specific sub-categories of trade through more disaggregated data. Is a trade-indicator like Balassa's RCA that should be reflective of trade specializations in sync with this disaggregated data? Does it really *reveal* advantages and specializations at all levels? Take for example, the calculation of RCA for Japan in road vehicles (category 78 in HS 2000) and parts and components for road vehicles (category 784) (**Table 2**):

$$(a) \text{ RCA (78) } = (\text{Cat. 78 exports from Japan} / \text{Total exports from Japan}) / (\text{Cat. 78 exports in the world} / \text{Total world exports})$$

$$(b) \text{ RCA (784) } = (\text{Cat. 784 exports from Japan} / \text{Total exports from Japan}) / (\text{Cat. 784 exports in the world} / \text{Total world exports})$$

Comparing the two equations, the measure makes use of constant denominators across all levels of disintegrated data viz. total country exports in the numerator ratio and total world exports in the denominator ratio. In doing so, the index becomes intrinsically prone to cross-influences. A commodity's share gets affected by the export performance of other sectors – within the industry to some extent, but much more by other industries). For example, two totally unrelated industries could influence each other in proportion formations of exports, reciprocally affecting and altering their RCAs. The rise of electronic goods exports in Japan can cause a fall in the ratios of automobile exports, the export growth of gems and jewellery in India can lead to a decline in textiles ratios and so on. Such phenomena are of common occurrence when a country is diversifying its export basket and trying to build capacities in a wider range of export sectors. Interpreting such cases in RCA terms, the numerator would show a contraction translating into a reduced final RCA value. But this in no way is suggestive of whether the nations trading in those sectors are losing their edge in them.

The RCA index fails to incorporate the cascading or nested nature of data compilation into its measurement. The

index measurements are based on data that is constructed into layers of sections, divisions, groups, sub-groups and basic headings. But the index formula treats every item independently rather than as part of an integrated set. Therefore, it does not segregate the value chains or showcase the level at which a country is positioning itself in the chains. To counter this and make the RCA more responsive to value chains and intermediate specializations, a cascading variation to the calculation of RCAs that works on the principle of taking proportions in the same hierarchy in which data has been disaggregated is proposed. The proportion of a category would be calculated only in the context of the immediately higher level of aggregation (see table 2). This way, a series of indices tracing comparative advantages at different levels of data segregation are derived. Importantly, these indices remain responsive to any future changes in data compilation.

### POLICY IMPLICATIONS: CONTRIBUTIONS OF THE RESEARCH

This research makes the following theoretical and empirical contributions in deciphering the phenomenon of global value chains:

- In a historical-geographic sense, participation in value chains has been one mode of using trade as an engine of growth. However, it becomes imperative to understand what country participates at what level of the value chain. As a country seeks to diversify its export baskets, an important pathway is through moving up the value chain of a product. However, there could be historical constraints because of pre-established trade patterns that could hinder this transition.
- Not all products may have the same propensity for entering into value chains. The consumption culture of the product becomes central to determining the type of international movements it will generate for itself. For trade expansion, it becomes important to differentiate what

products are prone to go international via what economic channels (trade, FDI, value chains) and how the culture of consumption of a particular good shapes its participation in value chains.

- In a value chain context, there is more to the sources of comparative advantages than labour and capital. It becomes necessary to understand how combinations of labour and capital are being employed by multinational firms to produce a range of intermediaries in the value chain and reorganizing the assembly lines. Comparative advantages have to be accounted for in terms of whether they are (a) historically induced, (b) indigenously created through innovation, (c) indigenously acquired through replication, or (d) externally acquired through multinational firms' investments.
- Balassa's RCA Index is commonly used for measuring comparative advantages of trading nations. A cascading or nested modification to Balassa's RCA Index is proposed in the study which provides for a more appropriate representation of a country's specialization and positioning in the value chain of a commodity.

*The contents of the publication are based on information available with Export-Import Bank of India and on primary and desk research through published information of various agencies. Due care has been taken to ensure that the information provided in the publication is correct. However, Export-Import Bank of India accepts no responsibility for the authenticity, accuracy or completeness of such information.*

**For further information, please contact**  
 Mr. David Sinate  
 Chief General Manager  
 EXPORT-IMPORT BANK OF INDIA  
 Centre One Building, Floor 21,  
 World Trade Centre Complex,  
 Cuffe Parade, Mumbai - 400 005, India.  
 Phone : +91 22 2218 0379  
 Fax : +91 22 2218 3070  
 E-mail : rag@eximbankindia.in  
 Website : www.eximbankindia.in

**Contact Numbers :** Ahmedabad : (079) 2657 6852, Bangalore : (080) 2558 5755, Chandigarh : (0172) 2641910, Chennai : (044) 2852 2830, Guwahati : (0361) 223 7607, Hyderabad : (040) 2330 7816, Kolkata : (033) 2283 3419, Mumbai : (022) 2217 2600, New Delhi : (011) 2347 4800, Pune : (020) 2640 3000, Addis Ababa : (251) 116 630079, Dubai : (971) 43637462, Johannesburg : (27) 11 3265103/13, London : (44) 20 77969040, Singapore : (65) 653 26464, Washington D. C. : (1) 202 2233238, Yangon : (95) 1389520