

Creativity at Work:

# **Bangalore vs. Bollywood: Connectivity and Catch-up in Emerging Market Economies**

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# Bangalore vs. Bollywood: Connectivity and Catch-up in Emerging Market Economies

Emerging market economies account for an ever-increasing share of gross world product. By 2005, the total output of the 22 countries in this grouping overtook that of the advanced market economies (IMF, 2009). It is well recognized that countries that are often placed in this category are heterogeneous; they range from relatively wealthy countries like South Korea and Singapore through “middle income” countries like Brazil and Taiwan to fairly poor countries like China, India and Indonesia. These countries have different comparative advantages and specialize in different industries, e.g., South Korea has established a leading position in high end electronics while China has become the world’s leading center for low cost manufactures (Rodrik, 2006).

However, what is less recognized is the heterogeneity of economic activities *within* emerging market economies. Early work in development economics recognized that many developing countries were characterized by so-called “dual” economies where backward sectors (usually, subsistence agriculture) co-existed with relatively advanced export-oriented sectors (Nurkse, 1955). We expect such sectoral diversity to be even more pronounced in rapidly changing emerging market economies. Some sectors and industries are likely to be much more advanced than others. These industries and their constituent firms have been characterized as the engines that drive the process of emergence (Athreye and Cantwell, 2007). Examples include emerging market multinationals like Lenovo and Huawei in China as well as Infosys and TCS in India (Khanna and Palepu, 2006; Ramamurti and Singh, 2009). These firms and sectors attract attention because they are beginning to compete on world markets with rivals from advanced market economies through the process of implementing successful “catch-up” strategies, aiming to develop higher value-added activities in global production networks (Mudambi, 2008).

More recently, it has been recognized that even in advanced market economies like Japan, relatively backward sectors that continue to be “inward-looking”, targeting purely local demand, co-exist with advanced sectors that have long been “outward-looking”, serving global markets (Dore, 1980; Ozawa, 2003). However, having an outward orientation and dependence from the outset, while often successful, is not the only path along which catch-up is occurring in emerging market economies. Many industries and sectors that have been inward-oriented for decades or longer are beginning to reorient themselves and participate in the process of catch-up. The latter process of development has received relatively little attention, and this is unfortunate, because such sectors are often more deeply embedded in the domestic economy and offer a more stable route to long term inclusive development, especially for the larger

emerging market economies like the BRIC (Brazil, Russia, India, China) countries.

In order to build a better understanding of the heterogeneity of catch-up phenomena within emerging market economies, this note contrasts two locomotive sectors in India, one of the large BRIC countries: the information and communications technology (ICT) sector often linked to Bangalore, catching up from an outward-looking outset, and the film and entertainment industry (so-called Bollywood) anchored in Mumbai, catching up after a century of looking inward.

Figure 1

**BANGALORE AND BOLLYWOOD’S MODELS OF CATCH-UP**

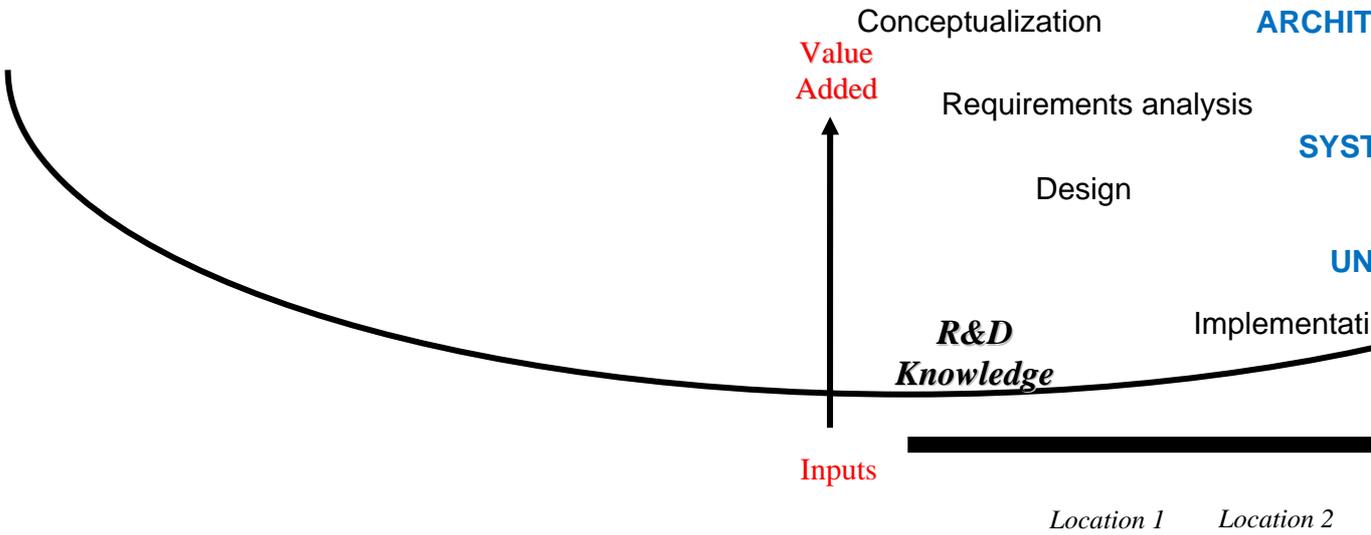
	<b>Bangalore</b> Young ICT cluster (inception: 1980s)	<b>Bollywood</b> Old entertainment cluster (inception: 1910s)
<b>Development potential</b>	Outward-looking from inception → few investments in domestic market → modest domestic spillovers to suppliers or other industries	Inward-looking for almost a century → investments in domestic market → domestic spillovers to suppliers and other industries
<b>Catch-up model</b>	Early and one-way global connectivity → inward investment impetus, outward market focus → early but slow catch-up, steady exports → imitative in value creation as well as value capture capabilities	Late, but two-way global connectivity → Inputs from Indian diaspora, outward investment → late but rapid catch-up, booming exports → leapfrogging in value capture activities
<b>Strategic challenges</b>	Build two-way global connectivity through acquisitions — in order to catch-up to bleeding edge in value creation and value capture	Use existing two-way global connectivity — in order to leverage existing value creation capabilities to create global products

As outlined in figure 1, the catch-up models of these two Indian sectors are different along important dimensions, and we shall discuss these differences below.

### **Bangalore vs. Bollywood**

Bangalore is the seminal Indian ICT cluster. Its inception is often associated with the founding of a Texas Instruments (TI) subsidiary in 1985 (Patibandla and Petersen, 2002), roughly a quarter century after the genesis of the globally dominant cluster in the ICT industry, Silicon Valley, in the 1950s (Saxenian, 1985). TI was followed in Bangalore by Microsoft in 1987, Hewlett-Packard in 1989, Motorola in 1991, Oracle in 1994 and Philips and Cisco in 1996. All of these foreign MNC subsidiaries undertook high knowledge cutting edge R&D activities as evidenced by the large number of US patents assigned to them. However, with a few exceptions, this R&D effort was in support of their parents' R&D, an example of the fine-slicing of even very high value-added activities (Mudambi, 2008). These early investments created knowledge spillovers to local firms and spurred establishment of sophisticated (public) telecom links. This was used to good effect by local firms that were to become the main players in the Indian software industry - Infosys, Wipro and Tata Consultancy Services (TCS), all of which located in Bangalore. These local firms, followed by a multitude of others, soon recognized the advantages of undertaking standardized tasks for MNCs — initially for their subsidiaries in India and soon after servicing their locations around the globe. They began at the bottom of the "smile of value creation" (Figure 2 below, adapted from Mudambi, 2008), undertaking "implementation and testing", i.e., tasks involving coding, data entry and so on. From the very beginning both the MNC subsidiaries and the Indian firms were outward-looking, focused on servicing clients in advanced market economies in areas like business process outsourcing (BPO) and IT-enabled services. Even today, Bangalore invests little in developing its domestic market. This is ironic since ICT is currently India's biggest growth sector, growing in spite of the benign neglect of the leading firms in the industry.

**Figure 2**  
**THE SOFTWARE DEVELOPMENT VALUE CHAIN**



“Bollywood” is the popular name for the cluster in Mumbai (formerly Bombay) of hundreds of producers of feature films and related entertainment. Its inception can be dated to 1912, at roughly the same time as the globally dominant cluster in the entertainment industry, Hollywood. Bollywood is a mature cluster that has traditionally been almost entirely looking inward at the Indian home market. While thus being central to Indian national identity for almost a century, Bollywood has also been characterized by very poor economic performance. Since the 1990s, however, the cluster’s sales and exports have been skyrocketing and the cluster has built widespread synergies with TV, pop music, computer games and advertising. Consequently, while Bollywood’s approximately 250 annual feature films represents 15% of India’s film output, the cluster accounts for 40% of India’s film revenues, with a current annual growth rate between 10 and 20% and notable quantities of outward foreign direct investment (FDI). It is largely due to Bollywood that entertainment now is India’s second biggest growth sector, and that India is becoming an important global player in the booming global entertainment sector (Lorenzen and Täube, 2008).

Below, we analyze key dimensions of Bangalore and Bollywood’s recent development. We find that the nature of their global connectivity plays an important role for the different modes of these clusters’ catch-up with respect to value creation and value capture.

**Global connectivity: one-way vs. two-way**

Even if Bangalore has traditionally been much more outward-looking than Bollywood, a crucial factor for both clusters’ catch-up is how they have been connected to the world economy. Bangalore was already connected upon its

inception, but in a *one-way connectivity*, where capital and knowledge was pipelined into the cluster. Knowledge spillovers were largely from foreign MNC subsidiaries to domestic firms, while foreign subsidiaries themselves served their overseas parents. Even the large domestic firms did most of their work responding to user specifications rather than driving the technology frontier themselves. This is evidenced by the fact that even by 2008, TCS has accumulated a grand total of 7 US patents, while Infosys has 4. Finally, a significant share of knowledge spillovers were embodied in the mobility of engineers and managers from MNCs and MNC subsidiaries to domestic Indian firms. There is little evidence of “reverse mobility”, i.e. of Bangalore pipelining talent abroad.

Bollywood became connected to the world economy much later than Bangalore, but when it did in the 1990s, it quickly developed a *two-way connectivity*, where knowledge and talent was pipelined in and investments pipelined out of the cluster. For a short period after Bollywood’s inception, a handful of studios enjoyed connections to European filmmakers, actors, and cinematographers, but after World War II, the cluster lost global connectivity. Small-scale producers became dominant, relying on local capital, talent, and inspiration. Film formulae incorporated local musical, dance, and theatre styles and were adapted to local tastes. Since the 1990s, however, Bollywood has become rapidly connected to the global economy in two ways. First, inward connectivity into Bollywood has been established from the 10 million strong Indian diaspora in the US, the UK, Canada, the Middle East, and Australasia. NRIs (non-resident Indians) in these countries are becoming actively engaged in consuming Indian films online, on satellite TV, and on DVD. Many act as “lead users” (Leonard-Barton, 1995; von Hippel, 2005), pipelining knowledge on global trends and styles to Bollywood film directors and producers. NRIs also invest directly in Bollywood productions or companies or infuse global talent into the cluster through pursuing careers in Mumbai. Second, outward connectivity from Bollywood consists of the cluster’s recent on-location shooting all over the world, plus its notable FDI into exhibition channels and production infrastructures abroad. Bollywood companies currently own more than 250 cinemas across North America, and large shares of several Hollywood production companies. This connectivity is particularly impressive, as Hollywood has had little luck with its attempts at investing in the Indian entertainment market.

### **Catch-up: value creation vs. value capture**

From its outset, Bangalore undertook implementation and testing activities. It is now widely recognized that it is imperative to move up the value chain toward higher value-added activities (Figure 2). Bangalore’s move to build capabilities of design and post production client support occurred fairly rapidly, but even the most advanced Indian firms are having difficulty moving to the highest level of the business with respect to value creation (here, the

highest value-added lies in conceptualization) and value capture (here, business development activates offer most growth potential). They derive relatively little revenue from bespoke consulting businesses, which offer the highest rates of value capture. This is at least partly because Silicon Valley continues to push the technological edge leaving little scope for clusters elsewhere to leapfrog. Indian firms have responded to this challenge by undertaking a series of targeted overseas knowledge-seeking acquisitions to build capabilities in specific areas. Examples include the TCS acquisition of the Swiss firm TKS-Teknosoft and Infosys' acquisition of the UK consulting firm Axon. Some acquisitions had added customer relationship aspects, as when Wipro acquired the Finnish firm Saraware not only for its wireless semiconductor patents and expertise, but also because it was intimately related to the Finnish cell phone giant Nokia (Dossani and Kenney, 2009). In 2007 alone, Indian ICT firms undertook 48 strategic acquisitions valued at about \$2.5 billion, though the current pace has fallen off due the global recession. These developments could herald a new level of connectivity for Bangalore, as knowledge and skills flows between the Indian operations to overseas locations become increasingly two-way.

In course of a century of looking inward, Bollywood developed strong capabilities of value creation — i.e., the production of blockbuster films for a mass market. However, Bollywood's focus on the hugely fragmented home cinema market and the cluster's disintegrated industry structure with poor marketing and distribution capabilities did not allow it to capture value efficiently. Since the 1990s, however, Bollywood's two-way global connectivity allowed for a late but dramatic catch-up with respect to value capture capabilities. While Hollywood hesitated to take advantage of new distribution technologies, Bollywood decided to leverage the diaspora markets to introduce satellite TV and online film distribution. Such technological leapfrogging was necessary to capture value from the affluent diaspora which remains so geographically dispersed globally and across national territories that traditional cinema distribution is unviable. The value thus captured has been strategically reinvested in catching up to Hollywood's core capabilities in large-scale global marketing and distribution. The connectivity to the diaspora has also been used to repackage the economic value encapsulated in Bollywood's main product: the skills as well as trend and style inputs pipelined from the diaspora are helping Bollywood to change the *masala* (mixed-genre) formula to create a product that is more exportable to the global market. To further catch up and move into higher value-added activities, Bollywood is now acquiring shares of Hollywood. The 2009 acquisition by Bollywood's Reliance Entertainment of US Dreamworks may signal a phase when Bollywood's global connectivity allows the cluster to co-produce Hollywood films, or even develop films that blend the styles of the world's two largest film entertainment industries to a new and truly global product.

## Conclusion

Bangalore and Bollywood showcase the heterogeneity of catch-up phenomena within emerging market economies: an outward-looking and inward-looking cluster, respectively, currently struggling to catching up to dominant clusters in different ways. Both Indian clusters are in crises of adolescence: they are very close to maturity, but still need to earn legitimacy and recognition as equal partners in the global value system. Each faces its own challenges. Bangalore needs to live down its reputation as a low cost ICT service provider. Bollywood needs to break out from the confines of the Indian cultural silo and develop a truly global entertainment product.

Decades of one-way connectivity offered Bangalore little opportunity to catch up, and thus, the cluster now pursues an acquisition strategy to enhance its connectivity to the global ICT industry. Very soon after the Indian diaspora had offered Bollywood global connectivity, the cluster has entered into a strategic process of connecting to Hollywood through acquisition. Hence, the fundamental differences between Bangalore's and Bollywood's industry and technological context aside, our comparison of the two Indian clusters demonstrates how important it is for emerging market economies to build a two-way global connectivity as a part of the process of catch-up.

The links between connectivity and catch up highlighted in the Bollywood and Bangalore illustrations have echoes in other large emerging market economy clusters. For example, in electronics clusters in China like Suzhou and Dongguan, both advanced economy multinationals and Chinese firms from Hong Kong and Taiwan are major investors (Yang, 2007). Our analysis of the Indian clusters resonates here because while the multinationals are largely focused on component supply for final sales in advanced economy markets, Chinese firms have established entrenched positions in the burgeoning domestic market. Meanwhile, the highly very organized Chinese "diaspora" firms in Taiwan and Hong Kong offer crucial inflows of investment and knowledge as well as conduits to markets in advanced economy markets (Yeung, 2004).

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