LEVERAGE THE OPPORTUNITIES FROM
THE ECONOMIC SEA CHANGE IN THE LARGEST DEMOCRACY

INDIAN ECONOMIC SUPERPOWER

FICTION OR FUTURE?

JAYASHANKAR M. SWAMINATHAN

CHAPTER 6

INDIA'S AVIATION SECTOR: DYNAMIC TRANSFORMATION

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Introduction

India is no longer a country of promise — it has arrived, and in a big way. Not long ago regarded as a relatively closed and staid demographic giant, the nation has emerged over the past decade as "open for business," quickly joining global leaders in everything from IT and BPO to financial services and medical tourism.

As India's integration into the global economy accelerated, so did its annual GDP growth rate, averaging over 8% since 2003. In the fiscal year 2007, its GDP expanded by 9.4% and was forecasted to remain above 9% for the next three years.[40] Foreign investment concurrently mushroomed, positioning India as number two in the world (behind China) as the preferred location for FDI. Net capital inflows (FDI plus long-term commercial debt) exceeded USD24 billion.

The country's explosive economic growth has yielded a burgeoning middle class in which higher incomes have led to sharp rises in purchases of automobiles, motorbikes, computers, mobile phones, TVs, refrigerators, and branded consumer goods of all types. Rapidly rising household incomes have also generated a burst in air travel, both domestic and international. In just three years from 2003–2004 to 2006–2007, commercial aircraft enplanements in India rose from 48.8 million to nearly 90 million, a growth rate of almost 25% annually.

Forecasts such as those by Boeing[4] and others indicate that India will continue to experience double-digit growth rates in passenger enplanements at least

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through 2020. Its major metropolitan regions, including Chennai, Delhi, Hyderabad, and Mumbai, are expected to experience the largest increases in air passenger traffic. Air passenger traffic in the Delhi region, for example, which was just under 20 million in 2006, is forecasted to reach over 63 million by 2020 and 112 million by 2036.[26]

For India as a whole, Boeing is forecasting 20% annual growth in air passengers for the next five years and 12% annually for the following 15 years. This will require almost 1000 new commercial aircraft serving India, according to the 2007 Boeing forecast. It will also require expanded, improved, and new airports and substantially improved surface transportation infrastructure connecting passengers and cargo to these facilities. Estimates are that over the next 10 years, some USD120 billion will be invested in India's aviation sector, creating at least three million new jobs.[18]

The current Minister for Civil Aviation Praful Patel, who comes from a business background, is responding quickly and forcefully to the mushrooming demand, making dozens of additional civilian airports operational by 2010. These will include major new public-private partnerships to construct greenfield (undeveloped site) airports in Bangalore and Hyderabad, as well as smaller airports such as those in Durgapur and Asansol. The country's two largest airports in Delhi and Mumbai have also been "privatized" (through public-private partnerships) to accelerate their modernization and expansion, which will enable them to accommodate substantially greater domestic and international passenger traffic.

A new civil aviation policy entitled "Vision 2020" is scheduled to be approved by the Union Cabinet in mid-2008. This policy is designed to strengthen the recently merged state-owned Air India and Indian Airlines, foster the success of a bevy of new commercial private airlines, and substantially upgrade India's airport infrastructure.

Vision 2020 will encourage greater FDI in airlines, airports, and ground handling services; support the expansion of domestic and international service (including the entry of new airlines); and foster public-private partnerships to improve existing airports and build new ones. The policy will also encourage the incorporation of "Airport City" and "Aerotropolis" models (discussed below) to generate commercial development at and around India's airports, increasing their non-aeronautical revenues and further boosting passenger and cargo flows. Preliminary releases (under review at this writing) additionally recommend the development of "Merchant Airports" built and operated on a for-profit basis primarily by private-sector entities, and "Cargo Villages" to promote India as a regional air cargo hub.[29] India, in short, is in the "take-off" stage of an aeronautical revolution, establishing new models for commercial aviation, airport infrastructure, and airport-driven business development.

To establish the background for the current and likely future evolution of India's airlines and airports, the following section provides a brief history of aviation in India. Next, we describe India's modern civil aviation era, including the factors giving rise to the recent surge in passenger traffic and the boom in India's private airlines. We then examine how this is affecting airport development, concluding with a description of the way that India is incorporating Aerotropolis (airport-driven development) principles to help achieve the Ministry of Civil Aviation's goal of India's becoming not only the world's largest aviation industry, but also its most entrepreneurial and progressive.

Historical Development

6.1. India's Aviation History

Civil aviation in India is among the oldest in the world. The present-day business giant The Tata Group was its pioneer, with the founding of Tata Airlines in 1932. Tata's inaugural flight was piloted by the indefatigable founder of the empire, J.R.D. Tata. On October 15, 1932, J.R.D. (as he was affectionately known) piloted a de Havilland Puss Moth aircraft between Karachi, Pakistan, and Bombay (now Mumbai).[34] By 1935, there were nine airfields in India — Bombay, Delhi, Ahmedabad, Hyderabad, Bellary, Nagpur, Madras, Calcutta, and Bhuj — handling an average of seven unscheduled domestic flights a day.

Tata Airlines in its early years served primarily as a feeder airline to the Imperial Airline of Great Britain (British Imperial Airlines), carrying mail and luxury items to British rulers. In 1946, it became a scheduled commercial airline under the name Air India Ltd., and in 1948 Air India launched its first international flight from Bombay to London via Cairo and Geneva and was incorporated as Air India International. By 1952, Air India was the nation's near-exclusive international air carrier, operating flights to London, Nairobi, Düsseldorf, Tokyo, Hong Kong, Bangkok, Singapore, and Darwin, Australia, while a number of smaller private airlines provided domestic service.

Soon after India emerged as a sovereign state in the late 1940s, a significant socialist movement commenced. The federal government appropriated (nationalized) all of the country's airports and began the process of nationalizing its nine private airlines, as well. Through the Air Corporation Act of 1953, India's government took over all domestic private airlines and merged them into a newly created government entity, Indian Airlines Corporation Ltd., to operate the domestic routes. The predominantly international carrier Air India was likewise taken over by the government, which then mandated that the two airline corporations separately operate domestic and international segments.

By 1980, Indian Airlines was offering 79 flights to 27 destinations using 21 aircraft, while Air India was providing 41 flights to 14 destinations with 19 aircraft. Thus, a total of just 40 India-based commercial aircraft (mainly aging Fokker and Boeing planes) were handling all of India's domestic and international traffic. These were supplemented by approximately once-daily flights by foreign-flag carriers to 10 international destinations.

To manage the development of domestic and international air service, the government established independent authorities: the National Airports Authority (NAA) and the International Airports Authority of India (IAAI). The four major metro gateway airports at Delhi, Bombay, Madras (now Chennai), and Calcutta (now Kolkata) were managed by IAAI, the rest of the nation's commercial airports by NAA. This arrangement continued until April 1995, when the government merged both entities under the name Airports Authority of India (AAI) in its new civil aviation policy.

6.2. The First Surge of Passenger Traffic

The period 1985–1995, ushered in by the Rajiv Gandhi era, witnessed the initial surge in India's civil aviation sector. This boom was propelled by:

- New, larger jet aircraft acquired by India's airlines from Airbus and Boeing (42 in all)
- Expanded routes and more convenient schedules
- India's first telecom revolution
- The emigration of millions of skilled and semi-skilled Indian workers to the Gulf countries of the Middle East and to the booming TIGER economies of Southeast Asia

6.2.1. *The Kerala Factor*

Interestingly, the small state of Kerala — about the geographic size of Maine in the United States — played a key role in India's first civil aviation boom. The state had few natural resources, so its large population had to depend primarily on the tourism sector centered around the famous backwaters of the Arabian Sea. With tourism-related employment stagnating in the mid-1980s and with limited agricultural jobs available, huge numbers of workers became unemployed. It was at this time that the oil sector in the Persian and Arabian Gulf region took off, requiring mass numbers of immigrant workers for the oil, construction, and service sectors.

Recognizing this opportunity, hundreds of thousands of Kerala's unemployed flocked to the Gulf region for jobs. This mass emigration from Kerala exposed a major flaw (and an opportunity) in India's aviation infrastructure. Desiring to exploit major movements to and from the Gulf, the Indian government passed a law restricting airline operations to India's state-owned carriers (Air India and Indian Airlines), thus creating a monopoly for these carriers to serve the lucrative region. Existing bilateral air agreements with other countries were bypassed in order for India's flag carriers to retain exclusive Gulf market operations. Likewise, Gulf-country airlines were denied entry to India, a restriction which was held until 1997. By this time, there were 3.2 million non-resident Indians (NRIs) from the state of Kerala (the equivalent of one in four Kerala citizen workers) employed in the Gulf region. To handle emigrant worker flows, there were 27 daily flights from three Kerala airports, making up 11% of India's international air passengers.

Mushrooming emigration to the Gulf region and protected aviation markets not only resulted in a windfall for India's airlines but also generated large net positive foreign exchange via worker remittances. These remittances remained the biggest portion of India's foreign exchange, even surpassing the export revenue from its former dominant export industries of textiles and apparel. Indian Gulf worker remittances served as a foreign exchange leader until the year 2001, when they were overtaken as a source of foreign exchange by the export of software services as well as by the dollar remittances of IT and other professionals who had emigrated from India to the United States.

The surge in aviation traffic between Kerala and the Gulf countries posed major infrastructure hurdles. Initially, every Gulf-bound passenger from Kerala had to travel to the southern tip of the state to its only international airport, Trivandrum, resulting in serious airport congestion and frustrating many. Congestion and other infrastructure problems stimulated the state government to actively lobby the federal Ministry of Civil Aviation to build a new airport.

Simultaneously, the state began wooing a growing number of Kerala's affluent NRIs working in the Gulf to invest in the airport. After years of intense lobbying with the federal government and Kerala's NRIs, India's first private airport was born in 1999: Cochin International Airport Limited (CIAL). This greenfield airport at Nedumbassery — 28 km from Cochin City — was constructed to modern international airport standards at a cost of USD68.5 million (Cochin International Airport Ltd., 2007). Given the large movements of Kerala workers to and from the Gulf, CIAL became profitable in the second year of its operations, a remarkable accomplishment in airport privatization.

Subsequently, the airport at Kozhikode, formerly called Calicut, was upgraded to handle the international traffic. The vibrant trio of Trivandrum, Cochin, and Kozhikode international airports in this tiny state of Kerala dramatically

showcased the transitioning face of emerging India, laying the foundation for airport privatization.

6.3. India's Modern Civil Aviation Era

The third-largest job creator in the nation's new line of economic activities since 2001 (after IT and surface transportation infrastructure), India's civil aviation has become one of the fastest growing in the world, whether measured in terms of airport infrastructure, aircraft, or passenger traffic. Its main institutional pillars include the following:

- The Ministry of Civil Aviation, the federal ministry formulating and controlling aviation policy at the highest level, headed by the Minister of State for Civil Aviation.
- The Director General of Civil Aviation (DGCA), equivalent to the U.S. Federal Aviation Administration (FAA), the nodal unit within the Ministry administering, monitoring, and evaluating the civil aviation policy of the government.
- The Airports Authority of India (AAI), the federal government agency that owns and operates most of the airports in the country.
- Airlines anchored by the national flag carriers Indian Airlines (the domestic and neighboring-countries route operator), Air India (operating international routes), and Jet Airways (the most consistent world-class private airline in the country). These are complemented by a new generation of private low-cost carriers such as Air Deccan, SpiceJet, Indigo, and GoAir, along with the premium-class private airline Kingfisher.

India's dynamic private airlines have been overtaking the market share of the once-proud Indian Airlines. The Ministry of Civil Aviation is tackling this problem through major reorganization and business restructuring of this carrier, starting with the merger with Air India. We illustrate the enormity of the Ministry's task by briefly describing the conditions faced by the Indian Airlines.

6.4. Mediocrity — Thy Name is Indian Airlines

With its new aircraft, the surge in passenger traffic, and the monopolistic position in the domestic sector during the second half of the 1980s, the state-owned Indian Airlines became lethargic and operationally ineffective. Its staff mushroomed as each successive government since 1985 pampered the airline, which recruited personnel far in excess of its operational requirements through political patronage

and personal affiliations. Governed by a board composed of a mix of bureaucrats and political appointees, the airline evolved into an entity essentially accountable to no one, including its passengers.

With India's air traffic growing more than 20% annually from 1985 to 1992, the airline could not beef up its routes sufficiently, and mismanaged its schedules. This resulted in passengers who flew the trunk routes (Bombay-Delhi, Delhi-Chennai, Delhi-Kolkata, and Bombay-Chennai) frequently having to wait 30 days or more to obtain reservations on these flights. Since there were no airline alternatives, eager passengers resorted to all means to obtain tickets, fostering corrupt practices. Travel agencies hoarded tickets and sold them at exorbitant prices, frequently in collusion with airline staff. Influential businessmen often procured tickets through the intervention of high-level government officials or executives of the airline, as the demand and supply gap further widened by 1990.

Financial woes created through mismanagement were compounded by the fact that the airline never shied away from its social responsibility of flying to remote, unprofitable locations, which it considered part of its mandate.[34] Yet, significant changes for India were in the wind that would reshape Indian Airlines along with the entire nation.

Current and Future Trends

6.5. The Economic Reforms — Paradigm Shift

The year 1991 was momentous in the history of India for a number of reasons:

- Rajiv Gandhi was assassinated.
- The nation's BOP (balance of payments position) was nil, with zero foreign exchange reserves. Foreign currency remittances by expatriate workers, about USD1.89 billion annually, were not sufficient to meet India's oil import bill and other import needs.
- International lenders were unwilling to extend the nation's credit line.
- For the first time in India's history, 100 tons of gold reserves had to be air-expressed to Switzerland to UBS and other banks in order to raise about USD4 billion to meet the BOP crisis.
- Amidst all this, a minority government headed by Mr. P.V. Narasimha Rao took the reins of federal power.

In response to the financial crisis, Mr. Narasimha Rao initiated the first economic reforms of independent India, moving away from the socialist approach to running the economy and the country in general. He partnered with the

present-day Prime Minister Mr. Manmohan Singh, formerly RBI Governor (equivalent to Chairman of the Federal Reserve Board) and subsequently Finance Minister,[33] and with the current Finance Minister, Mr. Palaniappan Chidambaram, formerly Commerce Minister.

The renowned trio ably commenced the trajectory toward a more modern India by initiating numerous economic and financial reforms with a passion. These reforms paved the way for substantial investments that breathed new life into a sluggish economy. Virtually all important sectors were opened for investment by entrepreneurs, corporations, and investment bankers from India and abroad. Trade and financial services were liberalized and tariffs reduced, while numerous public sector enterprises were privatized.[28] Such reforms were carried out while keeping the rupee's foreign exchange convertibility essentially stable, thereby protecting the newly opened economy from speculation by currency traders. The result was huge increases in FDI across the sectors, tens of millions of jobs created, rising personal incomes, and new waves of air travelers in the domestic segment.

Civil aviation likewise became open to the private sector. This, along with a new civil aviation policy in 1995, paved the way for the reblossoming of private airlines serving the domestic sector and, eventually, international routes.

6.6. The Era of Private Airlines

Taking immediate advantage of economic reforms, the new aviation policy, and the lure of the robust economy, aviation companies launched seven private airlines by 1995. This process was far from smooth, however; we briefly summarize their entrepreneurial risks and a number of failures below.

East-West Airlines: East-West Airlines, a division of Bombay-based East-West Travel and Trade Links, started in 1992 as an air taxi service. However, following policy reform, it was converted into a scheduled airline with the leasing of four Boeing aircraft. Founded and managed by the Wahid family, the airline's initial success could not withstand a flailing business strategy and funding difficulties. With all the hiccups in its operations, the airline lasted only four years, and after the sudden assassination of the airline's head, Thakiyudeen Wahid, it was liquidated.[16]

ModiLuft: ModiLuft was promoted by the well-known industrialist family Modi, in association with Lufthansa German airline. It began its operations in 1993.[25] This full-service carrier was positioned to offer premium service to its passengers, well above what Indian Airlines had been providing at that time. However, it also could not sustain its expenses and capital requirements, due largely to the government-mandated 26% ceiling on the foreign holding of any India-based airline.

In 1997, after Lufthansa pulled out of its partnership with the Modi Group over charges of breach of contract and nonpayment of fees, ModiLuft went dormant.[32] It remained as such until 2005, when Royal Airways (formerly ModiLuft) revived it as budget carrier SpiceJet in the wake of the post-2003 second phase of India's civil aviation resurgence.

Damania Airways: This airline was promoted by then poultry farmer Mr. Parvez Damania in 1993 and started with just two aircraft. It ran a highly efficient operation, with on-time departures and arrivals, which was a rarity in India at that time. NEPC Airlines purchased Damania Airways in 1995 and renamed it Skyline NEPC.[36] Yet, Skyline/Damania also went bust in late 1997 when it could no longer raise sufficient capital for its operations. Mr. Damania became an aviation industry expert, later serving with Sahara Airways and Kingfisher.[3,6]

NEPC Airlines: The Khemka family of Chennai, which accumulated its wealth producing windmills and packaged goods, jumped onto the private airline bandwagon with enthusiasm in 1995. Like their peers, they too drowned in red ink caused by operating losses and the high cost of borrowing from Indian financial institutions. The Khemkas had diverted a substantial portion of the revenues from their other group businesses to NEPC, leading many of these companies to go down with the airline in 1997.

Jagson Airlines: This limited-sector scheduled airline began as a charter operation in 1991 before going regional a few years later. Its parent company, Jagson International, is in the oil industry. Jagson Airlines ran into financial difficulties and also stopped service for a time, emerging later as a regional airline and abandoning its plans to expand to national service.[38]

Air Sahara: Air Sahara (formerly Sahara Indian Airlines) was started by the Sahara Group in 1993, mostly with leased jets.[34] Through shrewd business planning, the airline survived and was only one of two private airlines of the 1990s to withstand the vagaries of changing government policies and difficult funding mechanisms. In early 2007, Air Sahara changed hands when it was bought out by rival Jet Airways in a bitter takeover battle spanning 18 months. Today, the airline is operating under the new brand name JetLite.[9] The Jet-Sahara deal was the initial consolidation in the Indian aviation sector and was later eclipsed by the Air Deccan and Kingfisher merger in the second half of 2007.

Jet Airways: Jet Airways is by far India's biggest airline success story in recent times, becoming a world-class domestic and international airline. This premium-service airline was launched by airline veteran Mr. Naresh Goel in 1993, and it survived having its first flight land at the wrong airport.[27] Mr. Goel worked in an

array of international airlines in various capacities, ranging from travel agent to country manager for Royal Jordanian Airlines and Philippine Airlines, among others. His niche market strategy, shrewd selection of partners, and professional management allowed Jet Airways to grow and prosper throughout a tumultuous period that included the onslaught of India's budget airlines and cut-throat competition. Jet Airways is only the second airline from India to fly international routes, joining national flag carrier Air India.

Air Deccan: India's modern economic and demographic context sets the stage for the rise of this initially successful low-cost airline. The year 2003 saw a peak of the IT and infrastructure sectors in the country, creating millions of new jobs and raising the level of disposable income for India's rapidly growing middle class. This 100-million-strong middle class, with a disposable income of more than USD1000 per month on average, was the major force underlying a second recent boom in air travel in India.

Until the year 2000, air travel in India was largely limited to business and political travelers whose travel costs were paid by the company or the government. The growing middle class had not been seen as a potential market by India's airlines and hence was not targeted in their business plans. Around this time, an inspiring entrepreneur named Capt. G. R. Gopinath developed the idea of creating an airline with the goal of allowing every Indian to fly at least once in their lifetime. Inspired by Henry Ford, who once said, "I want every American to be able to own an affordable motor car," Capt. Gopinath launched the airline Air Deccan with the slogan "Simplify", targeted to the vast emerging Indian middle class, many in the nation's hinterland regions.

The airline, modeled after JetBlue in the United States and Ryanair in Ireland, was formed in 2003.[14] It soon became the darling of the middle class, with its low fares and deep connectivity to remote cities, which previously could only be reached by long hours of train journey. Air Deccan utilized various innovative business strategies to attract passengers and raise revenues while cutting the cost of operations. It advertised extensively in the middle-income media, established fares that competed with the cost of train travel, and expanded routes. To generate non-ticket revenues, the airline introduced in-flight advertising and shopping along with the sale of food and beverages to passengers. As it added more aircraft and expanded routes across India, the airline became an even greater hit with the middle class.

Air Deccan quickly revolutionized India's air travel market. As a result, a number of competitor low-cost airlines soon started operating using the same model. Air Deccan also successfully tapped capital markets to raise funds for its

expansion as well as the maintenance of operations. Yet, in the process of creating its extensive domestic route connectivity, the airline started bleeding heavily. By the end of 2006, despite its popularity, an infusion of IPO funds, and its profitable routes on some sectors, the airline was on the financial ropes.

In an effort to stay afloat, Air Deccan pursued consolidation by merging with another high-profile airline, Kingfisher, in the second half of 2007.

There were several reasons that Kingfisher jumped at the merger opportunity:

- Air Deccan was ready to fly international routes starting in March 2008, after completing the mandatory five years of domestic operations with a minimum of 10 aircraft. Kingfisher was still another three years away from meeting the requirements for serving the lucrative international routes.
- The combined entity of Deccan and Kingfisher would be mightier than the monolithic Indian Airlines in the domestic sector, offering more flights and destinations with newer aircraft whose average age was one-half that of Indian Airlines' equipment.
- The merger was completed through an equity investment, which meant that whatever Kingfisher invested became its equity stake, thereby adding considerable short- and long-term value to its investment.
- Kingfisher could transfer its high-profile — and high-quality — brand to Air Deccan, providing luster to the low-cost carrier.

This novel consolidation of a premium luxury airline with a budget airline was among the smoothest mergers and acquisitions in Indian corporate history. By early 2008, its benefits were already becoming manifest.

SpiceJet: Taking a cue from the initial success of Air Deccan, a bevy of other low-cost airlines began creating highways in India's skies. SpiceJet arose out of the defunct Royal Airways and Modiluft, commencing operations early in 2005 and launching flights in May 2005.[30] Using a mix of its own and leased new aircraft, it has become one of the more profitable budget carriers in the country.

IndiGo: IndiGo, another successful budget carrier modeled after Air Deccan, started its operations toward the end of 2005 and its flights in early 2006. As of early 2008, it has 16 aircraft offering 112 flights every day with 17 destinations.[17]

GoAir: This airline was started by the scions of the Wadia Group (whose holdings include Bombay Dyeing and Britannia Industries) as a budget carrier offering efficient service with eight new aircraft in the Boeing and Airbus family.[39] Launched in 2005, GoAir (Go Airlines) is adding to its weekly operations and its

aircraft fleet, with plans for 561 commercial flights per week in winter 007–2008 and 41 aircraft by March 2012.[11]

Paramount Airways: In this age of rising budget carriers in India, it took substantial fortitude for Mr. M. Thiagarajan, a pilot and business management graduate, to start a business-class airline with premium quality service and impeccable service schedules. Mr. Thiagarajan followed novel methods to launch this airline in September 2005, choosing new Embraer jets from Brazil instead of the typical Boeing or Airbus.[31] Limiting operations to eight cities of South India and only offering full-service business-class travel, his strategy paid off. Today, Paramount is one of the most profitable small airlines in India, attracting both passengers and investors. The company ended 2007 with five aircraft and 52 daily flights to eight domestic locations. Paramount is purchasing additional aircraft; setting up maintenance, repair, and overhaul facilities with Embraer; and looking to become a strategic partner with an existing airline such as GoAir.

Kingfisher: A summary of contemporary Indian civil aviation would not be complete without a discussion of Kingfisher Airlines. The airline was promoted in early 2005 by Dr. Vijaya Mallya of the United Brewery Group (famous for Kingfisher beer) to offer luxurious domestic travel to a niche segment of Indian travelers. Modeled on Virgin Atlantic Airlines, Kingfisher made aviation history by successfully taking over another major airline (Air Deccan) within 18 months of entering the business. The firm is eagerly waiting to give the established international airlines a run for their money starting in 2008 under the merged brand Deccan, with the proposed utilization of up to 10 new super-jumbo A380 aircraft in 2011–2012. Air Deccan's Capt. Gopinath will become the newly merged airline's vice-chairman, under Dr. Mallya's continuing leadership.[2]

   With India's forecasted strong economic growth and likely continuing boom in domestic and international passenger demand, numerous other new air carriers are expected to enter the nation's skies in the years ahead. How many will financially make it, nobody can guess. Suffice it to say that turbulence and intense competition will likely shake out many of these new entrants, as well as possibly some of those that are current successes. Such is the nature of a dynamic economic environment.

6.7. Burgeoning Air Infrastructure — Airport Privatization

The sudden boom in passenger traffic posed a serious challenge to India's existing air infrastructure. The nation was simply not equipped to meet the burst in aircraft movements and terminal passenger handling. This was particularly telling at

the five major metro airports of Mumbai, Delhi, Chennai, Bangalore, and Hyderabad, which were already saturated to near capacity.

To address the problem, the government of India convened the EGoM (Empowered Group of Ministers) of the federal cabinet to assess the issue and suggest ways to markedly upgrade the nation's airport infrastructure. The group studied the privatization option in detail, including the case studies of the first private-sector airport in the country, CIAL, and the possible sanction of public-private partnership greenfield airports at Bangalore and Hyderabad.

The new Bangalore International Airport near Devanahalli-Bangalore was approved in 1998 but was progressing quite slowly. In contrast, the new Rajiv Gandhi International Airport (RGIA) at Shamshabad, near Hyderabad, which was approved in 2001, was making much quicker progress. Both airports are scheduled to be operational by March–April 2008.

The Bangalore International Airport is being built by a consortium of partners led by Siemens Projects Ventures (40% stake), Unique Zurich Airport (17%), and Larsen & Toubro (17%). The remaining 26% of the equity is split between the AAI and the state government of Karnataka (Bangalore International Airport Limited, 2006). The new RGIA in Hyderabad is being built by a GMR Group-led consortium. GMR holds a 63% stake, with the AAI and the state government of Andhra Pradesh holding 13% each and Malaysia Airports Holdings Berhad holding 11% (GMR Hyderabad International Airport Ltd., 2005).

Encouraged by the success of India's CIAL and the progress made at the new private sector-led airport at Hyderabad, EGoM recommended the privatization route for Mumbai and Delhi airports to create world-class passenger facilities and expand their aeronautical infrastructure. The group submitted its recommendations to the government in May 2005, and the federal cabinet approved the proposal to "privatize" the commercial airports at Mumbai and Delhi but asked to make AAI a minority partner.

While AAI's union strongly opposed airport privatization, the federal government defended its decision on the grounds that AAI could not raise the equity for the ambitious modernization and expansion program, as it was operating with a very thin bottom line. Moreover, the federal government said it could not provide the necessary resources either, since it had to allocate available resources to higher-priority sectors such as highway infrastructure and health services.

The 20,000 unionized employees of AAI protested the privatization move mostly because they feared that many would lose their jobs under the new management. Despite continuing protests and opposition to the privatization move, the federal government announced an international competitive bidding process to select the partners for airport development at Mumbai and Delhi in August 2005. After a four-day strike by airport workers in early 2006, the government made a provision in the privatization document that more than 60% of the

workforce at the privatized airports would be absorbed by the new management and the remainder would be accommodated at the other airports operated by AAI.[15] With this issue resolved and much scrutiny and due diligence of the bids, the government awarded 30-year renewable management contracts to the private-sector-led consortiums.

India's GMR Group, in association with AAI, Fraport AG, and Malaysia Airports Holdings Berhad, won the bid to modernize and expand the airport at Delhi, while the GVK-SA Consortium of GVK Group, in association with South African companies Airports Company South Africa Limited (ACSA) and the Bidvest Group Limited won the bid to manage and modernize the airport at Mumbai. In both consortiums, AAI retained about 25% of the equity for revenue sharing.[7] After the completion of the formalities, both of the airports were handed over in May 2006 to the newly formed public-private consortiums Mumbai International Airport Limited (MIAL) and Delhi International Airport Limited (DIAL).

6.7.1. *Mumbai and Delhi Airport Progress*

6.7.1.1. *MIAL*

At the time of handover, MIAL at Sahar in suburban Mumbai was India's busiest airport, handling almost 20 million passengers per annum on over 160,000 air traffic movements. Immediately after assuming control, the GVK-led consortium laid out expansion and modernization priorities. This occurred in advance of the preparation of the long-term master plan for development with the assistance of Changi Airport of Singapore.

GVK and its partners rapidly implemented interim airport upgrades to handle more aircraft and passengers and to improve passenger amenities. These included a new taxiway system to allow better use of the main runway, a new departure terminal with 60 check-in counters, upgraded retail and restaurant offerings, and a new parking facility.

By the late 2007, interim improvements were completed and the long-range master plan was approved by India's Ministry of Civil Aviation. This plan includes the development of a new integrated passenger terminal to initially handle 40 million domestic and international passengers annually and further upgrades of existing terminals; a new integrated cargo complex to handle one million tons of cargo; a hotel and entertainment complex; substantially more parking and new road links.

The approved plan has a budget of approximately USD1.2 billion, with the construction contract awarded to Larsen & Toubro (L&T), India's largest engineering and construction company, which is also building the new Hyderabad

Airport and modernizing Delhi International Airport. With the expansion work set to commence, MIAL is still facing problems in reclaiming airport land from slum squatters who are demanding exorbitant relocation costs.

MIAL is actually spread over 2900 acres,[a] but 1000 of these acres have been occupied by slum dwellers on the east and south side of the airport. The consortium has submitted a generous compensation package with the help of the state government of Maharastra to move the dwellers from the property and relocate them onto land to be purchased by the GVK group. Yet, as of January 2008, efforts to take back the land for airport infrastructure and facility expansion have been rebuffed.[24] With annual passengers exceeding 25 million at MIAL in 2008, a new Mumbai airport site at Navi (on the outskirts of Mumbai) is being pursued to meet strong future aviation growth in the metropolitan region, which is expected to surpass 100 million passengers annually by 2030.[35]

6.7.1.2. *DIAL*

Delhi's International Airport spans a more substantial 5000 acres. Though part of the airport site was occupied by the Ministry of Defense, reclamation of this land from the Ministry posed little problem for the GMR Group. In short order, plans were implemented for a new runway (the third) at DIAL and a new integrated passenger terminal, Terminal 3, initially capable of handling 30 million passengers annually and expandable afterwards. The third runway is expected to be operational by late 2008, and the integrated (domestic and international) passenger terminal by 2010.

Terminal 3 will be state-of-the-art in every respect, providing modern passenger amenities and services along with 55 aircraft terminal gates and 20 remote stands. Departing and transferring passengers will have available a significant complement of retail and service options that will measure up to the leading terminals at Singapore Changi, Frankfurt, and Hong Kong International airports, including a 300-room, four-star passenger transit hotel connected to the terminal. The terminal and adjacent infrastructure are being designed in a modular, expandable fashion, allowing the airport to serve up to 100 million passengers annually by 2036.

In addition to the above new infrastructure and terminal, GMR has provided interim facelifts to the existing domestic and international terminals and has improved their operations. The modernization and expansion work, with a budget of USD1.2 billion, was awarded to L&T after a competitive bidding process.

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[a] 1 acre = 43,560 square feet.

GMR has developed a plan to utilize much of its available land for commercial development at both DIAL and the new Hyderabad airport following the Aerotropolis model. Since this new business model is being implemented so extensively across India, it is useful to summarize its general principles before illustrating ways in which it is being implemented in Delhi, Hyderabad, and Nagpur.

6.8. Aerotropolis: Airport-Driven Business Development

Fueled by an integration of globalization, digitization, aviation, and time-based competition, the roles and commercial impact of major airports are dramatically changing. No longer are airports simply transportation infrastructure where aircraft operate and passengers and cargo transit. Rather, they have become complex, multimodal, multifunctional enterprises driving substantial commercial development within and well beyond their boundaries.

In addition to incorporating shopping mall concepts into passenger terminals and developing airside logistics facilities, landside areas near passenger terminals are seeing hotels, office and retail complexes, conference and exhibition centers, free trade zones, and time-sensitive goods processing facilities emerge. The bottom line is that, today, many major airports receive greater percentages of their revenues from non-aeronautical sources than from aeronautical sources such as landing fees, gate leases, and passenger service charges.

The expansion of non-aeronautical activities at airports is favorably affecting their financial performance, better allowing them to meet their modernization and infrastructure expansion needs. Rapid commercial development is also making airports leading urban growth generators as they become significant employment, shopping, trading, business meeting, and leisure destinations in their own right. The evolution of these new functions and commercial land uses has transformed many city airports into airport cities.[12,23]

Even greater aviation-centric commercial development is occurring beyond airport perimeters. With the airport itself serving as a region-wide multimodal transportation and commercial nexus (analogous to the central business districts of the 20th century metropolis), strings and clusters of airport-linked business parks; information and communications technology complexes; retail, hotel, and entertainment centers; industrial and logistics parks; wholesale merchandise marts; and residential developments are forming along airport arteries up to 20 miles outward. This more dispersed airport-linked development is giving rise to a new urban form, the Aerotropolis.[19–22] Figure 6.1 presents the basic Aerotropolis model, derived from longitudinal case studies of 12 new and evolving international airports around the world.[b]

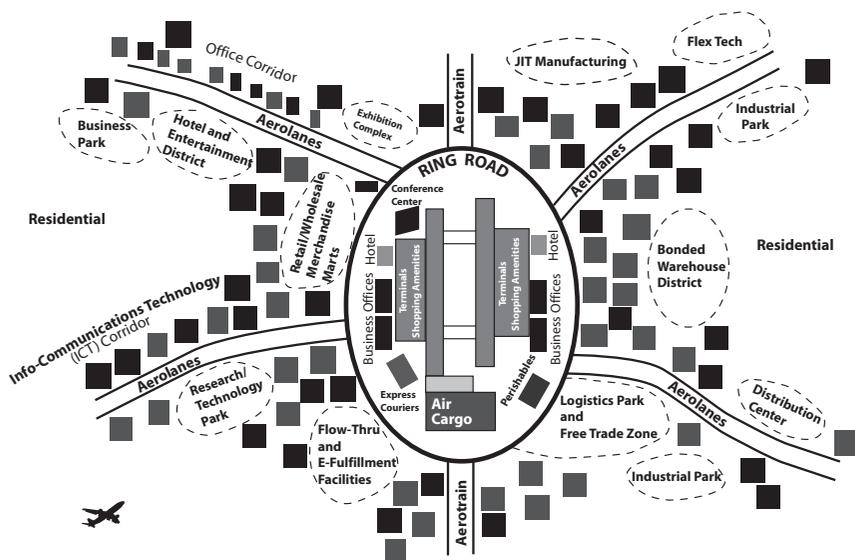[b] See http://www.aerotropolis.com for elaboration.

Fig. 6.1. Basic aerotropolis schematic.

Source: Dr. John D. Kasarda © Aerotropolis schematic.

India is at the forefront of Aerotropolis implementation, led by private-sector management consortiums around the country. Aerotropolis case examples for Delhi, Hyderabad, and Nagpur presented after the References section illustrate this new phenomenon.

6.9. Challenges for India's Aviation Future

While the increase of passenger travel and air cargo handling hold great opportunities for India, the country faces several significant challenges in capitalizing on this growth. Losses for domestic airlines totaled USD580 million for 2006–2007 as a result of intense domestic competition, restrictions on flying overseas routes, increased operating expenses due to high fuel costs and taxes, and continuing airport infrastructure and facility constraints.[37] For instance, Deccan Aviation has suffered from a lack of aircraft hangar space at most airports in India, forcing the airline to spend additional funds to rent space from competitors. A lack of night landing facilities also caps airlines at or near current flight levels.

As previously discussed, the government and its private-sector partners are working to meet these challenges by upgrading India's aviation infrastructure,

with the modernization of almost 70 airports expected by 2009–2010, along with the construction of a plethora of new commercial airports. To increase capital flows to airports and airlines, FDI limits are being raised as follows:

- FDI of 100% is now allowed in maintenance, repair, and overhaul facilities, up from the previous cap of 49%.
- Up to 100% FDI is also allowed for helicopter and sea-plane services, as well as flight training organizations for pilots, cabin crews, and ground crews.
- FDI of up to 74% is permitted in cargo airlines and non-scheduled airlines, as well as ground-handling services following acquisition of required security clearances.
- FDI remains capped at 49% for scheduled domestic airlines.[13]

Perhaps the greatest challenge to India comes from the rapid expansion of airports and air routes in nearby countries in the Gulf region. For example, Dubai, only a two- to four-hour flight from most Indian cities, is expanding its airports and international aviation network at a breathtaking pace. Dubai already offers convenient air service to all major destinations in Asia and Europe, and it is in the process of adding service to the United States. It is not implausible that Dubai could become India's gateway to Europe and possibly to much of Asia, thereby limiting India's centrality in global aviation networks. This is all the more reason to remove the current limitation that India's airlines must operate domestically for at least five years before receiving the right to fly internationally.

6.10. Conclusions

Three basic words characterize the dynamic transformation of India's aviation sector: growth, privatization, and innovation. Together, they are generating an entrepreneurial spirit that is changing the face of the nation's airlines and airports.

India's aeronautical revolution shows no signs of slowing as it seeks to keep pace with, and further enhance, the nation's rapid economic trajectory. Both business and government recognize that the country's competitive future rests on the development of world-class airlines, airports, and aviation systems, enabling it to succeed in an increasingly integrated, speed-driven global economy. They also realize that the surface transportation infrastructure connecting India's larger airports to major commercial, production, and residential nodes in their metropolitan regions requires significant upgrading to fully unleash the potential of airport-driven economic development.

In the eyes of many, the 21st century is fast becoming "the aviation century." India is positioning itself to fly high and be an important contributor to this dynamic new era.

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Case Examples

The Aerotropolis

The Delhi Aerotropolis: Despite having a 5000-acre property, DIAL is currently restricted by federal law to the commercial development of only 250 acres of its airport land. It is, therefore, doing this wisely based on best use and highest value, following Aerotropolis principles.

The first major Aerotropolis component to be developed is a hospitality and retail district located adjacent to DIAL's planned new private jet facility and National Highway 8 (NH-8). The district will be composed of six land parcels: (a) 5.5 acres for a five-star plus deluxe hotel and premium apartment hotel with a maximum built-up area of 590,000 sq. ft.; (b) a 4.7-acre parcel for another luxury hotel and apartment hotel of maximum 625,000 sq. ft.; (c) 7.1 acres for a business and mid-market hotel, a mid-market condo hotel, and office and retail space with a maximum 970,000 sq. ft. build-out; (d) a 140-acre "high street" style pedestrian arcade surrounded by luxury, business, and mid-market hotels and condo hotels plus office and retail space and a hotel convention facility, including metro station access, with a maximum gross build-out of 1.9 million sq. ft.; (e) an 8.7-acre parcel for luxury and business hotels, luxury apartment hotels, and office and retail space, with a maximum build-out of 1.2 million sq. ft.; and (f) a five-acre parcel with a proposed boutique, luxury resort hotels, spas, and hotel villas.

The above six parcels will each be designed to have a distinct thematic identity, yet be integrated functionally. All will be architecturally appealing, with green spaces and a perimeter road network for vehicular access. Internal pedestrian routes lined with upscale retail shops will give the feel of a high-quality urban experience.

The hospitality and retail district has the potential to become the Aerotropolis core and second central business district (CBD) of the Delhi metropolitan area, serving an accelerating number of passengers expected to pass through DIAL as well as destination visitors. DIAL hotel development will also help reduce a serious deficit in Delhi hotel space, currently estimated to exceed 30,000 rooms.

DIAL's hospitality and retail district will be complemented and reinforced by the Delhi Development Authority's (DDA) planned International Convention and Exhibition Center, Hotels, and Allied Commercial Facilities Complex in Dwaraka, just two miles from DIAL. This 30-acre parcel will house an 86,400-sq.-meter convention and exhibition complex, a 60,000-sq.-meter hotel complex, and a 36,600-sq.-meter[c] commercial complex, all built to top international standards. With both the DIAL hospitality district and the DDA convention and exhibition/commercial complex serving as major Aerotropolis clusters along nearby NH-8, this area is expected to evolve into India's primary Aerotropolis corridor.

The NH-8 corridor also continues to Gurgaon near the airport which is developing into a major southern Delhi IT, office, and retail mall cluster housing such multinationals as Adobe Systems, General Electric, Hewlett-Packard, Nokia, and PepsiCo Holdings. The burgeoning Gurgaon area is attracting thousands of young professionals who also regularly shop at the many large malls being developed there.

There will no doubt be other major commercial complexes attracted to the NH-8 corridor and around DIAL in the not-too-distant future. DIAL itself still has two other substantial land parcels of a combined 220 acres reserved for future commercial development along with the several other small parcels of land adjacent to new Terminal 3. These offer immense potential for DIAL to become the functional core of a world-class Delhi Aerotropolis.

The Hyderabad Aerotropolis: What was originally conceived by the AAI as an airport to reduce congestion at the existing Begumpet Airport near the center of Hyderabad City has become a bold experiment in Aerotropolis development. A visionary and ambitious master plan has been prepared by CPG Consultants under the direction of the GMR Group. If implemented, the plan will transform the new 5500-acre international airport with state-of-the-art infrastructure and facilities into a leading Aerotropolis and driver of economic development throughout a broad Hyderabad Airport Development Area.

Phased market-driven infrastructure and facility development is planned, with a capacity at opening in March 2008 of 12 million passengers and 100,000 metric tons of cargo. Expansion will occur in phases, rising to a target of more than 40 million passengers and up to one million metric tons of cargo by 2038. Modular design of facilities will enable incremental expansion to meet growing aeronautical demand and associated commercial opportunities. The plan is for the

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[c] 1 sq. meter = 10.7639 sq. ft.

new airport (HIAL) to evolve into a full-blown Aerotropolis, complete with business parks, hotels, shopping malls, convention centers, and exhibition halls as well as an air cargo/industrial complex, the latter anchored by logistics hubs and special economic zones (SEZs).

In the first phase, HIAL will house 4300 sq. meters of airside retail (3000 sq. meters in international and 1300 sq. meters in domestic) and 500 sq. meters of landside retail. In addition, there will be a 2500-sq.-meter landside "Airport Village" where passengers and meeters-and-greeters can shop and dine in an aesthetically pleasing Indian ambiance. There will also be a four-star terminal-linked business hotel for transit passengers.

At later phases of development, numerous commercial, logistics, and industrial facilities are planned. These are organized into three zones: Zone West, Zone Core, and Zone East. Zone West (landside) is envisioned as a core 250-acre multiproduct SEZ with an affiliated 17-acre logistics hub near the airport's air cargo terminal. In addition, Zone West is designated to house a 57-acre business park, 22 acres of which will be mixed commercial; a 2.5-acre hospital and a 71-acre recreational golf course. The multiproduct SEZ can be built out to a maximum of 3.4 million sq. ft., the logistics hub to 723,000 sq. ft., the business park to 3.4 million sq. ft., and the mixed commercial space to nearly seven million sq. ft.

Zone East (airside) will have a 125-acre aviation support SEZ with an affiliated 39-acre logistics hub in close proximity to Terminal 2; a 67-acre business park; a 25-acre corporate office complex; 313 acres of commercial and mixed commercial development; a 104-acre aircraft maintenance zone; a 5.2-acre business hotel; and 3.7 acres for service apartments. Together, the commercial and mixed commercial parcels can support an office parcel of 1.9 million sq. ft. of buildings, the logistics hub of 1.7 million sq. ft. of facilities, and the business park (including IT offices) of 5.3 million sq. ft. Health, wellness, and medical tourism facilities are also being contemplated.

The Core Zone will house the passenger terminal complex (89.5 acres), hotels (13 acres), a convention center (16 acres), and the GMR corporate office (19 acres), along with a 104-acre commercial parcel supporting nearly seven million sq. ft. of additional commercial facilities. Iconic aviation-themed architectural design, public art, and sculptures will enhance HIAL's Aerotropolis image and brand.

Nagpur: A Multimodal Logistics Aerotropolis

Driving much of the airport-linked business development around the world is fast-cycle logistics, especially that which utilizes air cargo. In fact, in many

goods-processing sectors, the 21st century is becoming known as the "Fast Century." Customers in both India and international markets are demanding speedy and reliable delivery of products, often with distinctive features. An industrial advantage is thus being gained by firms that respond flexibly and rapidly to their domestic and global customers, delivering lower-cost, higher-quality (often customized) products quickly and efficiently over great distances (Friedman, 2005).

For example, high-tech manufacturers must be able to access national and global networks of suppliers of materials, components and sub-assemblies in order to obtain the best-quality components at the lowest possible price. Likewise, contract drug and medical testing often requires a 24- to 36-hour turn-around from potential source to distant test site and often back to source, the latter usually done electronically.

The above business requisites underlie plans by India's Ministry of Civil Aviation to build a multimodal logistics-driven Aerotropolis at and around Nagpur Airport. A center point of India situated in the state of Maharashtra, Nagpur Airport is one of the nation's oldest airports, developed by the British in the early 1930s.

It was selected for air cargo and logistics-driven development for a variety of reasons. It has a strategic location below the international air corridor connecting Asia-Pacific to the Middle East and Europe, with almost 300 international flights crossing its skies daily. It is also at the center of the Indian subcontinent, which offers logistical access advantages. It is the meeting point of the major national highways and rail systems in India linking the north-south and west-east corridors, which provides for seamless connectivity of road and rail linkages. In addition, there is ample land surrounding the airport that is available for commercial development.

Capitalizing on these factors, the Vidarbha Economic Development Council (VEDC) — the regional development forum — started pursuing an ambitious project to develop a multimodal cargo airport at Nagpur in 1987. After a 10-year hiatus, efforts to develop this multimodal logistics airport gathered momentum. In addition to linking air, road, and rail in a seamless fashion, a master plan was created that included: (1) special economic zones to attract and foster high-tech and other time-sensitive industries, (2) improved and expanded airport infrastructure to accommodate wide-bodied cargo aircraft and to provide MRO services, (3) an ICT and software development zone, (4) a commercial district, (5) a health and allied medical services complex, and (6) residential, recreation, and shopping parcels.

Taking advantage of the Nagpur airport development area, scores of real estate entrepreneurs have commenced outside-the-airport-fence ventures to meet anticipated growing housing and commercial demands. As of late 2007, these

include an 800-acre IT and jewelry park adjacent to the commercial district and a hotel and entertainment complex, as well as Boeing's proposed MRO facility. It was estimated that as of early 2008, Nagpur's airport-linked development has also attracted at least 100 smaller entrepreneurs, generating approximately 3000 additional jobs.