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The Significance and Performance of Real Estate Markets in India

by Graeme Newell*
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Executive Summary. *This paper reviews the real estate markets in India and assesses the risk-adjusted performance and portfolio diversification benefits for the real estate markets (office, retail and residential) of New Delhi and Mumbai (two largest cities in India) over the 1998: Q2–2005:Q4 period. The real estate markets were found to under-perform the stock market in India over 1998–2005, with most markets improving their performance in more recent years, although there was some loss of portfolio diversification benefits for office and residential real estate with stocks. Deregulation of the capital markets and international investment in India is also likely to have a significant impact on future FDI levels and the growth of real estate funds for real estate investment in India.*

In recent years, global real estate securities funds have been seeking real estate investment opportunities in the emerging real estate markets, particularly in Asia. This investor interest has sparked the establishment of over 59 global real estate securities funds with over $14 billion in assets under management, including the ING Clarion Global Real Estate Income Fund ($2.7 billion), the Nikko AMP Global REIT Fund ($1.3 billion), and the ABN AMRO Global Property Securities Fund ($1.3 billion) (EPRA, 2005a). Importantly, Asia accounts for 27.5% of these fund assets under management, compared to Europe (25.1%) and the United States (45.4%), including ten funds with in excess of 40% of assets in Asia (e.g., Nikko AMP Global REIT Fund, Fidelity International Real Estate Fund, and Cohen & Steers International Realty Fund) (EPRA, 2005a).

This trend reflects studies highlighting the portfolio diversification benefits of including international real estate in mixed-asset portfolios (Wilson and Okunev, 1996; Steinert and Crowe, 2001; Bond, Karolyi, and Sanders, 2003; Conover, Friday, and Sirmans, 2003; and Hoesli, Lekander, and Witkiewicz, 2005). Importantly, international diversification has been shown to be more effective in the Asian real estate markets than in the European real estate markets (Bond et al., 2003), as well as there being long-term diversification opportunities by investing in real estate in several Asian countries (Garvey, Santry, and Stevenson, 2001). This has seen recent attention given to the dynamics of the real estate markets in specific Asian countries (e.g., Hong Kong) (Newell and Chau, 1996; Chau,

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MacGregor, and Schwann, 2001; Chau, Wong, and Newell, 2003; Schwann and Chau, 2003; and Newell, Chau, and Wong, 2004), the development of REITs in Asia (UBS, 2005; and Ooi, Newell, and Sing, 2006) and the rapidly expanding real estate investment opportunities in China (Tse, Chiang, and Raftery, 1998; Webb and Tse, 2000; Chu and Sing, 2004; and Newell, Chau, Wong, and McKinnell, 2005).

While China has attracted considerable international attention due to its rapid economic growth and real estate investment opportunities in major areas such as Beijing, Shanghai, Guangzhou, and Shenzhen (Newell et al., 2005), the other market in Asia that will attract significantly increased attention from international real estate investors in the near future is India. With a population of over 1 billion, real GDP growth is forecast at 6.9% p.a. over 2005–2015, recent introduction of economic liberalization policies, and relaxing of foreign investor guidelines for real estate investment in India, significant opportunities for real estate investment in India will emerge in the near future.

To date, most of the real estate focus on India has been on the impact of international outsourcing and offshoring to India; particularly in the areas of IT services and IT-based business processes (e.g., JLL, 2003a,b, 2005a,b,c), as well as real estate market reports by leading real estate companies such as Jones Lang LaSalle and Cushman & Wakefield (e.g., JLL, 2005d, 2006). No real estate research on India has yet been published in any of the leading real estate research journals. As such, this paper will review the real estate markets in India, and assess the risk-adjusted performance and portfolio diversification benefits of the office, retail and residential real estate markets in New Delhi and Mumbai (two largest cities in India) over 1998:Q2–2005:Q4, with the overall investment implications assessed for real estate investment in India.

Profile of India

Social Profile

With a population of 1.08 billion, India has the world's second largest population (only exceeded by China), which represents 18% of the world's population. Through major cities such as New Delhi, Mumbai, and Bangalore, India (along with China) has been a major player in the economic transformation of Asia. Exhibit 1 presents a general demographic and social profile of India at December 2005.

Economic Profile

Fundamental to India's economic success in Asia and internationally has been strong economic growth (Exhibit 2), only exceeded by China amongst the Asian countries. Currently accounting for 6% of the world's GDP (DB, 2005a), the GDP growth for India is 5.5% p.a. projected over 2006–2020 (DB, 2005b). This projection casts India as the fastest growing global economy over the next fifteen years, becoming the third largest economy in the world by 2020, with Indian GDP per capita to double by 2020. Thus, India is viewed as a key element in the "Chindia" and the "BRIC" economies,[1] which are seen as key emerging markets playing an expanding role in the global economies.

India's previous domestic and inward-looking economic strategy has changed significantly in recent

Exhibit 1
General Profile of India: 2005

Area: 3.3 million km^2 (33% size of U.S.)

Population: 1.08 billion (world's second largest population; 18% of world's population)

Languages: Hindi, English, and fourteen other official languages

Religions: Hindu (81%), Muslim (13%), Christian (2%), Sikh (2%)

Capital: New Delhi (with 28 states)

Major Cities: New Delhi (13 million)
Kolkata (13 million; previously Calcutta)
Mumbai (16 million; previously Bombay)
Bangalore (6 million)
Chennai (6 million; previously Madras)
Hyderabad (5 million)
28 cities with population > 1 million

Government: Republic (since 1947)

Legal System: Based on English common law

Prime Minister: Manmohan Singh

Literacy: 60%

Life Expectancy: 64.4 years

Commonwealth Games: New Delhi (2010)

Source: www.cia.gov.

Exhibit 2
GDP Growth and Inflation for Major Asian Countries

	Annual GDP Growth			Inflation		
Country	2004	2005	2006[a]	2004	2005	2006*
China	9.5%	9.3%	8.0%	3.9%	1.8%	1.0%
India	**6.9%**	**7.8%**	**7.0%**	**3.8%**	**4.4%**	**5.1%**
Hong Kong	8.1%	7.1%	4.5%	−0.4%	1.1%	1.3%
Indonesia	5.1%	5.3%	5.1%	6.1%	10.5%	14.0%
Malaysia	7.1%	5.2%	5.2%	1.5%	2.9%	2.4%
Singapore	8.4%	5.1%	4.5%	1.6%	0.4%	0.8%
Philippines	6.1%	4.5%	4.7%	6.0%	7.7%	7.3%
Thailand	6.1%	4.0%	4.8%	2.8%	4.7%	4.9%
South Korea	4.6%	3.9%	5.0%	3.6%	2.9%	2.4%
Taiwan	5.7%	3.8%	4.5%	1.6%	2.3%	1.2%
Japan	3.2%	2.4%	1.3%	0.0%	−0.3%	0.1%

Notes: The source is JLL (2006).
[a] Forecasts.

years. The recent introduction of economic liberalization policies and relaxed foreign investment guidelines has helped to impel India into becoming more integrated in the international trade and investment markets. The development of the knowledge-based and services sectors have been a key focus for India's economic development; particularly when compared to China, which has prioritized the manufacturing sector. The services sector accounts for 56% of India's GDP, compared to only 32% in China (DB, 2005a). A well-trained, English-speaking, inexpensive labor supply has been a key ingredient in this services sector growth, with India having the third largest pool of skilled workers in the world.

Exhibit 3 presents the economic and financial profile of India in 2005. While India is behind the more mature Asian markets (e.g., Singapore, Hong Kong) in terms of global growth competitiveness, it is coming off a much lower base and has comparable levels to that seen for China in many of the dimensions of global competitiveness.

Importantly, India is now seen as the world's third most attractive foreign direct investment (FDI) location, only exceeded by China and the U.S. (DB, 2005c). India's FDI ($5 billion in 2004) currently significantly lags China's FDI ($55 billion in 2004), but the recent relaxing of foreign investment guidelines will facilitate significantly expanded FDI in India. In particular, since February 2005, 100% FDI is now allowed in the construction sector (JLL, 2005e,f), with the construction sector contributing 5.5% to India's GDP. Current impediments to India's economic growth include poor infrastructure, corruption, and bureaucracy. Over $150 billion is needed to upgrade India's infrastructure, including power, telecommunications, airports, and roads (DB, 2005c) with the government currently prioritizing infrastructure development. Further developments are also needed in the manufacturing sector to ensure broader sustainable economic growth; in particular, manufacturing only accounts for 22% of GDP in India compared to 53% in China (DB, 2005a).

Overall, India has experienced considerable economic growth, with projections seeing the Indian economy nearly tripling by 2020 and India being the world's third largest economy by 2020 (DB, 2005b). In addition to these international economic factors, internal catalysts to this ongoing economic growth are a stable government, expanding middle class, increased household savings, and increasing domestic consumption, a young and educated labor force, improving institutional framework, and capital productivity improvements. All of these factors

Exhibit 3
Economic and Financial Profile of India: 2005

GDP: $3.68 trillion
GDP Sectors: Agriculture (22%), industry (22%), services (56%)
GDP Growth: 7.8% (second largest in Asia)
GDP Growth Forecasts: 7.0% (2006), 6.9% p.a. (2005–2015)
GDP (% world): 6% (c.f.: China: 13%; U.S.: 21%)
GDP Per Capita: $508 (120th; c.f.: China: 95th)
FDI (2004): $5 billion (c.f.: China: $55 billion)
Foreign Direct Investment: 3rd most attractive location (c.f.: China = 1st; U.S. = 2nd)
Inflation: 4.4%
Labor Force: 496 million; comprising agriculture (60%), industry (17%), services (23%)
Unemployment: 9%
Population Profile: 0–19 years (42%); 20–30 years (31%)
Population Below Poverty Line: 25%
Central Bank: Reserve Bank of India
Currency: Rupee
Exchange Rate: US$1 = 45 rupees (at Dec 2005)
WTO Membership: 1995
Export Partners: U.S. (17%), UAE (9%), China (6%), HK (5%), U.K. (5%)
Global Economic Growth Competitiveness (2004): 55th in world (of 104 countries surveyed) (c.f.: U.S.: 2nd; U.K.: 11th; Australia: 14th; Singapore: 7th; Hong Kong: 21st; China: 46th)
Technology Growth Competitiveness (2004): 63rd (c.f.: U.S.: 1st; China: 62nd)
Public Institution Competitiveness (2004): 53rd (c.f.: U.S.: 21st; China: 55th)
Macroeconomic Environment Competitiveness (2004): 52nd (c.f.: U.S.: 15th; China: 24th)
Business Competitiveness (2004): 30th (c.f.: U.S.: 1st; China: 47th)
Global Competitiveness: 34th (c.f.: U.S.: 1st; China: 24th)
Corruption: 88th least corrupt in world (of 158 countries surveyed; c.f.: U.S.: 17th; Australia: 9th; U.K.: 11th; Singapore: 5th; Hong Kong: 15th; China: 77th)

Sources: www.cia.gov; www.weforum.org; www.imb.com; www.imf.com.

concerning India's economic growth have significant implications for the development of the real estate markets in India.

Outsourcing and Offshoring

A significant component within India's economic growth has been global outsourcing and offshoring to cities such as New Delhi, Mumbai, and Bangalore. Cost reduction and access to a low cost, young, well-educated workforce have been key drivers in the offshoring of business process operations, contact centers/call centers, IT/software development, and R&D activities. India is currently seen as the preferred location for offshoring (ahead of China, Malaysia, and the Philippines), with India currently accounting for $17.6% billion (44%) of the $40 billion global market for IT/BPO offshoring (DB, 2005d). Over 50% of the Fortune top 500 companies have outsourced their software development requirements to India (JLL, 2003b), with leading companies such GE, American Express, Citibank, Microsoft, Morgan Stanley, Dell, and HP having offshored their contact centers to India (JLL, 2003a). With labor costs in India only 10% of U.S. labor costs, this spurred the growth of significant Indian software service providers (e.g., Infosys, Wipro Technologies, TCS) (JLL, 2003a,b).

The growth in offshoring has seen the classification of Indian cities into tiers regarding their offshoring capabilities; particularly concerning IT/

Exhibit 4
Indian Stock Market Profile: December 2005

Major Stock Markets: Bombay Stock Exchange (www.bseindia.com), National Stock Exchange (www.nse-india.com); 21 smaller regional stock exchanges

Number of Listed Companies: 5,797; comprising BSE (4763) and NSE (1034)

Total Market Capitalization: US$ 1,069 billion; comprising BSE ($553 billion; 52%) and NSE ($516 billion; 48%)

Global Significance: 8.3% of Asia-Pacific stock market value; 6.3% of U.S. stock market value

Value of Share Trading: 43% of total market cap (c.f.: 51% in 2004)

Increase in Market Cap in 2005: 43% increase

Stock Index Increases in 2005: Sensex (BSE): 42%; CNX500 (NSE): 36%

Stock Index Increase Over 2004–2005: 61%

Market Cap as Percentage of GDP: 89%

P/E Ratios: BSE: 17.3; NSE: 16.3

Major Listed Real Estate Companies: Ansal Properties; Unitech, India Bulls

Sources: www.world-exchange.org; www.bseindia.com; www.nse-india.com.

software development (JLL, 2005a,b,c). These three tiers are:

- Tier I: Bangalore, Mumbai, New Delhi
- Tier II: Hyderabad, Chennai, Pune
- Tier III: Ahmedabad, Chandigarh, Kolkata, Indore, Nagpur

Cost, quality, and market place factors are key considerations in the selection of a suitable offshoring location. The competitiveness among these Indian cities is reflected in local governments providing significant incentives for attracting offshoring; these include zero property tax, 50% increase in floor space ratio, exemption on stamp duty, investment subsidies, and electricity duty wavier (JLL, 2005a).

Current issues impacting on India's ongoing competitiveness for offshoring include increasing labor costs, depth of labor pool in some cities (e.g., Tier III cities), labor retention, lack of infrastructure, international competition (e.g., China, Philippines) (JLL, 2003a), and expansion of offshoring to also include R&D activities (JLL, 2005a,b).

This area of offshoring has significant real estate investment issues; particularly concerning technology parks, access to Grade A office space, and the February 2005 relaxation of foreign investment guidelines for real estate in India (JLL, 2005e,f). This has already attracted considerable overseas real estate investor interest [e.g., Ascendas (Singapore), EMAAR (UAE) (JLL, 2005b)].

Investment Markets in India

Stock Market

Established in 1875, India has the oldest stock market in Asia.[2] Comprising two national stock markets [i.e., Bombay Stock Exchange (BSE) (www.bseindia.com) and National Stock Exchange (NSE; established 1993) (www.nse-india.com)] and 21 smaller regional stock markets, the Indian stock market system is a diverse, well-regulated market, with a significant role in the Asian capital markets. The BSE and NSE account for 99% of traded value in the Indian stock market system. With both the BSE and NSE located in Mumbai, Mumbai is seen as the financial hub of India, with contemporary access to the Asian, U.S., and U.K. stock markets. The Securities and Exchange Board of India (SEBI) (www.sebi.gov.in) regulates and supervises the securities markets in India.

Exhibit 4 gives a profile of the Indian stock markets at December 2005. With 5,797 listed companies on the BSE/NSE, and a total market capitalization of $1,069 billion, the Indian stock market is the second largest (by market cap.) in Asia, only exceeded by Japan ($7,562 billion).[3] The Indian stock market system represents 8.3% of the total Asia-Pacific market capitalization and is the equivalent of 6.3% of the total U.S. market capitalization.

In 2005, the Bombay Stock Exchange Stockmarket index (Sensex) increased by 42%; this being the second largest increase in the major Asian markets, only exceeded by Japan (43% increase) and significantly ahead of Hong Kong (8%), Singapore (13%), and China (−8%). The Indian stock market also significantly outperformed the U.S. stock market (7% increase) and U.K. stock market (18%). Over the two-year period of 2004–2005, the Sensex increased by 61%. However, in 2006, concerns have been raised that Indian stocks may be over-priced, with reduced earnings growth expected. The level of overseas investment in the Indian stock market is also expected to decline from the $10.7 billion invested in 2005.

The value of share trading on the Indian stock market (43% of total market cap.) is consistent with the more mature Asian markets; e.g., Hong Kong (44%), Singapore (45%), Japan (59%), but significantly less than that seen for other less-mature Asian stock markets; e.g., China (99%). The volatility of the Indian stock market (23.8% over 2004–2005) was above that seen for the more mature stock markets both in Asia [e.g., Hong Kong (15.1%), Singapore (11.5%)] and internationally [e.g., U.S. (10.3%), U.K. (9.5%)], and comparable to that seen for other emerging markets [e.g., China (20.4%), Brazil (25.0%), Russia (36.4%)].

While twenty sub-sector performance indices are available on the BSE, no real estate company sub-sector index is available. Unlike most other Asian countries (e.g., Japan, Singapore, Korea, Hong Kong, Thailand), there are currently no REITs in India. The guidelines and regulations for I-REITs are likely to be developed in the near future by the Securities and Exchange Board of India and the Association of Mutual Funds of India, as a flow-on effect of the introduction of real estate funds with the deregulation of the capital markets in India in 2004.

Major listed real estate companies include Ansal Properties, Unitech, and India Bulls; being predominantly in the area of real estate development. This low level of exposure for real estate companies on the Indian stock market reflects commercial real estate typically being held by the large private corporations or houses such as Raheja and Hiranandani, and the significant role by large unlisted real estate developers in India such as DLF, Vatika, MGF, Vipul, Essel, Omaxe, Niho, and Parasvanath.

Funds Management

Typically, international investors obtained exposure to the Indian markets using India-specific funds (e.g., Fidelity, ABN Amto, HSBC), Asia-Pacific funds, or global emerging markets funds. Total funds under management in India accounted for nearly $45 billion (www.amfiindia.com) at December 2005, having increased significantly in recent years (e.g., $27 billion at October 2003). This comprises:

- Indian private sector funds: $9.7 billion (22% of total FUM); e.g., Reliance, Tata, Kotak Mahindra
- Joint venture funds (predominantly Indian): $13.5 billion (30%); e.g., Prudential ICICI, HDFC, Birla Sun Life, DSP Merrill Lynch
- Joint venture funds (predominantly foreign): $11.3 billion (26%); e.g., Franklin Templeton, Standard Chartered, HSBC, Principal PNB, Deutsche, ING, Fidelity, Morgan Stanley
- Bank sponsored funds: $8.5 billion (19%); e.g., UTI, SBI
- Institutional funds: $1.3 billion (3%); e.g., Jeevan Bima Sahayog

A number of major U.S. pension funds have already invested in India (e.g., CalPERS, as well as several German and Dutch pension funds).

Real Estate Markets in India

With an estimated $79 billion in investment-grade real estate, India accounts for 0.5% of the world's investible real estate (EPRA, 2005b). This compares with Japan (13.5%), China/Hong Kong (1.9%), South Korea (1.6%), Taiwan (0.8%), and Singapore (0.6%), seeing India as the sixth largest real estate market in Asia (EPRA, 2005b).[4]

Using the JLL Global Real Estate Transparency Index (JLL, 2004), Exhibit 5 gives the real estate transparency for the Asian real estate markets and selected international real estate markets. India is seen to be "low transparency," ranked tenth of the twelve Asian countries surveyed, with comparable transparency levels to that of China and Indonesia. Importantly, the transparency of the Indian real estate markets has improved since the previous JLL global real estate market transparency survey in 2000, while the transparency level for the real estate markets in China is the same as in 2000.

With New Delhi as the political center, Mumbai as the financial center, and Bangalore as the IT center in India, Exhibit 6 gives the office market profile for India compared to the other major Asian cities; similarly Exhibit 7 for the retail market profile. While New Delhi, Mumbai, and Bangalore account for 90 million ft^2 of office space, only 25% of this is Grade A office space (JLL, 2005d), with low stock levels compared to other major Asian countries. Similarly, while India has the eighth highest retail sales in the world ($220 billion p.a.), only 3% is via malls, with 300 new malls to be completed in India in 2007 (UBS, 2005). Currently, Mumbai and Bangalore are seen as the top two Asian cities in terms of investor sentiment for performance over the next three years (JLL, 2005c), being largely driven by strong economic performance and offshoring demand for office space. The development of the Indian real estate markets is also reflected in many of the leading real estate advisory firms (e.g., JLL, Cushman & Wakefield) now being actively involved in India.

Exhibit 5
JLL Global Real Estate Transparency Index: 2004

Highly Transparent: Australia, New Zealand, U.S., U.K.

Transparent: Hong Kong, Singapore, Malaysia

Semi-transparent: Japan, Taiwan, South Korea, Philippines, Thailand

Low Transparency: China, **India**, Indonesia

Opaque: Vietnam

Source: JLL (2004).

Exhibit 6
Major Asian Cities: Office Market Statistics: 2005:Q4

City	Office Rent (US$/m^2/pa)	Vacancy
Hong Kong	$940	6.2%
Tokyo	$566	3.9%
Shanghai	$476	4.9%
Mumbai	**$474**	**6.0%**
Seoul	$457	2.9%
New Delhi	**$431**	**6.8%**
Singapore	$339	8.5%
Beijing	$312	14.2%
Taipei	$246	15.4%
Bangkok	$143	11.5%
Bangalore	**$141**	**2.6%**
Makati	$110	9.4%
Kuala Lumpur	$85	16.6%
Jakarta	$80	19.6%

Note: The source is JLL (2006).

Exhibit 7
Major Asian Cities: Retail Market Statistics: 2005:Q4

City	Retail Rent (US$/m^2/pa)	Vacancy
Hong Kong	$8132	NA
Singapore	$2537	0.4%
Taipei	$1935	NA
Shanghai	$1620	5.2%
Mumbai	**$861**	**6.0%**
Beijing	$838	9.4%
New Delhi	**$755**	**13.0%**
Jakarta	$481	14.7%
Kuala Lumpur	$455	15.1%
Bangkok	$419	NA
Bangalore	**$387**	**NA**
Manila	$295	6.3%

Note: The source is JLL (2006).

Prior to February 2005, foreign direct real estate investment in India was not allowed for office and retail real estate, with Reserve Bank of India permission required for foreign companies to acquire the real estate necessary for their business activities in India. One hundred percent of foreign direct investment was only allowed for IT/business parks or hotels, and large residential developments. In February 2005, India allowed 100% foreign direct investment in the construction and development sector to facilitate investment in the infrastructure sector (JLL, 2005e,f), covering housing, commercial real estate, hotels, resorts, recreational facilities, and infrastructure.

Specific aspects under these revised foreign direct real estate investment guidelines (JLL, 2005e,f) include:

- Development projects for office, retail, industrial, and IT/business parks must be at least 50,000 square meters of built up area.
- Minimum capitalization of $10 million for 100% ownership, and $5 million for JV with Indian partner.
- No repatriation of original capital for three years; unless approval from the Foreign Investment Promotion Board.
- Undeveloped sites can not be sold.

With this deregulation, coupled with strong overseas investor interest in India, these guidelines are likely to have significant impact on foreign direct real estate investment in India in the future.

Similarly, India has deregulated the capital markets. In 2004, the Securities and Exchange Board of India allowed capital funds to invest in India. This has seen the establishment of real estate funds by local players such as ICICI, HDFC, and Kshitiji (JLL, 2005g), as well as real estate funds by international players such as Tishman Speyer (JV with ICICI), GE Commercial Financial Real Estate, and Macquarie (JV with Unitech).

Methodology

Quarterly capital returns were assessed over the eight year period of 1998:Q2 to 2005:Q4[5] for:

- Office real estate (CBD: Grade A): New Delhi, Mumbai;
- Retail real estate (Prime): New Delhi, Mumbai; and
- Residential real estate (Prime): New Delhi, Mumbai

from JLL (2006), as well as the equivalent quarterly capital return series for stocks (Sensex) and ten-year government bonds (from Datastream). Equivalent JLL series for industrial real estate are not available; similarly the JLL office, retail, and residential series for Bangalore are only available since 2001:Q3 and are not included in these analyses.

Real Estate Performance Analysis

Risk-Adjusted Returns

Exhibit 8 presents the performance analysis for the Indian real estate markets over 1998:Q2–2005:Q4. New Delhi was the best performed of the office and retail markets, with Mumbai being the best performed residential market. All of the real estate markets under-performed the Indian stock market over this eight-year period. Risk levels for the real estate markets were 11%–15%, except for the more

Exhibit 8

Indian Real Estate and Stock Market Performance Analysis: 1998:Q2–2005:Q4

Asset Class	Average Annual Return (%)	Annual Risk (%)	Risk-Return Ratio	Sharpe Index[a]
Office Markets				
New Delhi	8.43	13.65	1.62	0.11 (5)
Mumbai	0.74	14.69	19.83	−0.42 (8)
Retail Markets				
New Delhi	9.87	11.34	1.15	0.26 (2)
Mumbai	4.21	13.06	3.10	−0.21 (6)
Residential Markets				
New Delhi	2.14	13.62	6.36	−0.35 (7)
Mumbai	10.81	20.98	1.94	0.18 (4)
Stocks	12.04	26.71	2.22	0.19 (3)
Bonds	8.56	1.20	0.14	1.34 (1)

Note:
[a] Ranks for risk–adjusted performance are given in parentheses.

volatile Mumbai residential market, with all real estate sector risk levels being significantly less than the Indian stock market risk (26.71%).

On a risk-adjusted basis, New Delhi retail, Mumbai residential, and New Delhi office were the best performed real estate sectors, although bonds (ranked #1) and stocks (ranked #3) generally outperformed the real estate markets. This lesser risk-adjusted performance by India's real estate markets compared to the Indian stock market is consistent with that seen in other Asian markets such as Hong Kong (Newell, Chau, and Wong, 2004) and China (Newell, Chau, Wong, and McKinnell, 2005).

Diversification Benefits

Exhibit 9 presents the inter-asset correlation matrix for the Indian real estate markets over 1998:Q2–2005:Q4. The office markets in New Delhi and Mumbai were not significantly correlated (r = 0.15), nor were their respective retail markets (r = 0.28). Similarly, the office and retail markets in each city were not significantly correlated; $r = 0.25$ and $r = 0.10$ respectively. No significant correlation occurred between the stock market and any of the real estate markets.

These inter-asset correlations indicate the potential significant portfolio diversification benefits for the real estate sectors with stocks in India. Similarly, within office and retail real estate portfolios, diversification benefits were evident between New Delhi and Mumbai. This reflects their different functional roles, with New Delhi being the administrative capital and Mumbai being the major financial center in India.

The office markets in India were seen to be better hedges against inflation, compared to retail real estate, residential real estate, and stocks, but the extent of inflation hedging for all asset classes was not high.

Sub–period Analysis

To assess the potential changing dynamics of the Indian real estate markets, the full period of 1998:Q2–2005:Q4 was broken into the two sub-periods of 1998:Q2–2001:Q4 and 2002:Q1–2005:Q4.

Exhibit 10 presents this sub-period risk-adjusted performance analysis. Significant improvement was evident for New Delhi office and residential markets over 2002–2005, with the Indian stock market giving an average annual return of over 30% in this period compared to −4.60% previously. This 2002–2005 period also saw significant increases in the risk levels for both retail and residential real estate markets. On a risk-adjusted basis, New Delhi office, residential, and the Indian

Exhibit 9
Inter-Asset Correlation Matrix: 1998:Q2–2005:Q4

	Office		Retail		Residential			
	Delhi	Mumbai	Delhi	Mumbai	Delhi	Mumbai	Stocks	Bonds
Office-Delhi	1.00							
Office-Mumbai	0.15	1.00						
Retail-Delhi	0.25	0.04	1.00					
Retail-Mumbai	−0.06	0.10	0.28	1.00				
Residential-Delhi	0.16	0.11	0.17	0.23	1.00			
Residential-Mumbai	0.03	0.05	−0.07	0.31	0.40*	1.00		
Stocks	−0.02	−0.01	0.06	0.03	0.23	0.26	1.00	
Bonds	−0.19	0.05	−0.01	−0.07	−0.62*	−0.20	−0.31	1.00
Inflation	0.14	0.27	−0.16	0.06	0.01	0.12	−0.35	0.18

Note:
*Significant ($p < 5\%$)

Exhibit 10
Sub-period Analysis: Indian Real Estate and Stock Market Performance

Asset Class	1998:Q2–2001:Q4 Average Annual Return (%)	1998:Q2–2001:Q4 Annual Risk (%)	1998:Q2–2001:Q4 Sharpe Index[a]	2002:Q1–2005:Q4 Average Annual Return (%)	2002:Q1–2005:Q4 Annual Risk (%)	2002:Q1–2005:Q4 Sharpe Index[a]
Office Markets						
New Delhi	2.27	11.28	−0.58 (5)	14.54	15.34	0.61 (4)
Mumbai	4.24	17.96	−0.26 (3)	−2.43	11.09	−0.69 (8)
Retail Markets						
New Delhi	10.43	5.49	0.29 (2)	9.35	15.13	0.27 (6)
Mumbai	3.13	7.32	−0.78 (6)	5.23	17.03	0.00 (7)
Residential Markets						
New Delhi	−13.15	7.61	−2.89 (8)	18.92	13.58	1.01 (2)
Mumbai	2.76	6.26	−0.97 (7)	18.93	28.34	0.48 (5)
Stocks	−4.60	24.47	−0.55 (4)	30.28	27.06	0.93 (3)
Bonds	10.97	0.57	3.72 (1)	6.36	0.38	2.99 (1)

Note:
[a] Ranks for risk-adjusted performance are given in parentheses.

stock market showed the most significant improvement in recent years, with only the Mumbai office market showing lesser risk-adjusted performance.

Exhibit 11 presents the sub-period inter-asset correlation matrices. In recent years, both office and residential real estate have seen reduced portfolio diversification benefits with stocks (particularly for Mumbai); for retail real estate, the diversification benefits have improved (New Delhi) or have been stable (Mumbai). In terms of real estate portfolio diversification across the two major Indian cities, less portfolio diversification benefits have been evident in recent years for office, retail, and residential real estate. Similarly, for New Delhi and Mumbai, lesser portfolio diversification benefits have been evident for office and retail real estate in 2002–2005.

Overall, while improved risk-adjusted performance has been evident for the office and residential real estate markets in India over 2002–2005, this latter period has also seen some loss of portfolio diversification benefits for these two real estate sectors with stocks.

Real Estate Investment Implications

This research has been the first attempt at providing significant insights into the structure, operation, performance, portfolio diversification benefits, and dynamics of the Indian real estate markets over the eight-year period of 1998–2005. Evidence of portfolio diversification benefits was seen, although these diversification benefits have reduced in recent years; with this being offset to some degree by improved risk-adjusted performance in the office and residential real estate markets over 2002–2005, as well as a strongly performing Indian stock market over this latter period.

In addition to these real estate performance issues, continued strong growth in the Indian economy, deregulation of the Indian capital markets since 2004, and less restrictive guidelines for foreign direct investment in real estate in India since February 2005 have seen significant improvements in the real estate investment environment in India—for both local and international players. This has taken on increased importance as India significantly expands its economic growth to potentially be the world's third largest economy by 2020, and international real estate investors seek global investment opportunities; particularly in the emerging Asian real estate markets. The expected development of REITs in India in the next few years will also expand the real estate investment opportunities available in India.

Exhibit 11
Sub-period Analysis: Inter-asset Correlation Matrix

	Office		Retail		Residential			
	New Delhi	Mumbai	New Delhi	Mumbai	New Delhi	Mumbai	Stocks	Bonds
Panel A: 1998:Q2–2001:Q4								
Office (New Delhi)	1.00							
Office (Mumbai)	0.11	1.00						
Retail (New Delhi)	−0.44	−0.26	1.00					
Retail (Mumbai)	−0.27	0.10	−0.20	1.00				
Residential (New Delhi)	0.02	0.15	−0.36	0.47	1.00			
Residential (Mumbai)	−0.48	0.05	0.21	0.75*	0.08	1.00		
Stocks	−0.29	−0.27	0.33	0.03	−0.02	0.12	1.00	
Bonds	0.17	−0.20	0.07	−0.15	0.05	−0.09	0.07	1.00
Inflation	0.56*	0.42	−0.36	−0.18	0.22	−0.25	−0.48	0.13
Panel B: 2002:Q1–2005:Q4								
Office (New Delhi)	1.00							
Office (Mumbai)	0.29	1.00						
Retail (New Delhi)	0.45	0.23	1.00					
Retail (Mumbai)	−0.01	0.15	0.36	1.00				
Residential (New Delhi)	0.04	0.37	0.32	0.19	1.00			
Residential(Mumbai)	0.05	0.14	−0.09	0.26	0.40	1.00		
Stocks	0.03	0.45	−0.02	0.01	0.10	0.26	1.00	
Bonds	−0.12	−0.48*	−0.09	0.00	−0.50	0.04	−0.26	1.00
Inflation	−0.36	−0.31	−0.13	0.34	0.05	0.50*	−0.11	0.20

Note:
*Significant ($p < 5\%$).

While China has been the focus of much investment attention due to its rapid economic transformation, India is also experiencing significant economic growth and also provides a major opportunity for international real estate investors. This is further enhanced by improved disclosure and transparency, and a better regulatory and English-based legislative structure for real estate ownership in India than is currently available in China, as well as positive international investor sentiment regarding future real estate performance in the Indian real estate markets in an overall Asian real estate market context (JLL, 2005c,h).

Coupled with India's economic growth, focus on the services sector, and an expected growth in the local funds management sector due to increased disposable income and savings by an expanding middle class in India, this is expected to generate significant local and international interest in real estate investment in India. There is also likely to be a change in attitude by local investors, who typically saw real estate as risky in comparison to the more traditional Indian investment sectors of IT, biotechnology, pharmaceuticals, and manufacturing. With a number of leading international real estate investors (e.g., Tishman Speyer, Ascendas, GE Commercial) having already established significant real estate funds and real estate investments in India, considerable further international real estate investor interest in India is expected in the near future.

Endnotes

1. Chindia = China and India; BRIC = Brazil, Russia, India, and China.
2. The Bombay Stock Exchange was established in 1875; the Tokyo stock market was established in 1878.
3. Other Asian stock markets include Hong Kong (#3; $1,055 billion), Australia (#4; $804 billion), Korea (#5; $725 billion), and China (#7; $400 billion).

4. Levels for other major real estate markets are U.S. (34.4%), Germany (7.4%), U.K. (7.2%), and France (5.5%).
5. JLL quarterly capital returns are not available prior to 1998: Q2.

References

Bond, S., A. Karolyi, and A. Sanders. International Real Estate Returns: A Multifactor, Multicountry Approach. *Real Estate Economics*, 2003, 31, 481–500.

Chau, K.W., B. MacGregor, and G. Schwann. Price Discovery in the Hong Kong Real Estate Market. *Journal of Property Research*, 2001, 18, 187–216.

Chau, K.W., S.K. Wong, and G. Newell. Performance of Property Companies in Hong Kong: A Style Analysis. *Journal of Real Estate Portfolio Management*, 2003, 9, 29–44.

Chu, Y. and T.F. Sing. Inflation Hedging Characteristics of the Chinese Real Estate Market. *Journal of Real Estate Portfolio Management*, 2004, 10:2, 145–54.

CIA. *The World Factbook 2005,* CIA (www.cia.gov), 2005.

Conover, M., S. Friday, and G.S. Sirmans. Diversification Benefits from Foreign Real Estate Investment. *Journal of Real Estate Portfolio Management*, 2002, 8, 17–26.

Deutsche Bank. *China and India*. Deutsche Bank, 2005a.

——. *Global Growth Centres 2020*. Deutsche Bank, 2005b.

——. *India Rising: A Medium-term Perspective*. Deutsche Bank, 2005c.

——. *Outsourcing to India*. Deutsche Bank, 2005d.

European Public Real Estate Association, *Top Real Estate Fund Managers Go Global*, EPRA Newsletter, 2005a, 16, 14-16.

European Public Real Estate Association. *Global Real Estate Securities: Where Do They Fit in the Broader Market?* EPRA Newsletter, 2005b, 16, 18–21.

Garvey, R., G. Santry, and S. Stevenson. The Linkages between Real Estate Securities in the Asia Pacific. *Pacific Rim Property Research Journal*, 2001, 7, 240–58.

Hoesli, M., J. Lekander, and W. Witkiewicz. International Evidence on Real Estate as a Portfolio Diversifier. *Journal of Real Estate Research*, 2005, 26, 2, 161–206.

Jones Lang LaSalle. *India: Winning the Race for Contact Centre Dominance in Asia*. JLL, 2003a.

——. *Contemporary Trends in the Information Technology Sector*. JLL, 2003b.

——. *Global Real Estate Transparency Index 2004*. JLL, 2004.

——. *Deciding Where to Offshore*. JLL, 2005a.

——. *India: The Next IT Offshoring Locations: Tier III Cities*. JLL, 2005b.

——. *Asia Pacific Corporate Real Estate Impact Survey*. JLL, 2005c.

——. *Corporate Occupiers Guide–India*. JLL, 2005d.

——. *Foreign Investment Regulations in Real Estate*. JLL, 2005e.

——. *Asia Pacific Property Investment Guide–2005 / 06*. JLL, 2005f.

——. *India Economic Insight*. JLL, 2005g, May.

——. *Where, When and What to Invest?* JLL, 2005h.

——. *Asia-Pacific Property Digest: Fourth Quarter–2005*. JLL, 2006.

Newell, G. and K.W. Chau. Linkages between Direct and Indirect Property Performance in Hong Kong. *Journal of Property Finance*, 1996, 7, 9–29.

Newell, G., K.W. Chau, and S.K. Wong. The Level of Direct Property in Hong Kong Property Company Performance. *Journal of Property Investment and Finance*, 2004, 22, 512–32.

Newell, G., K.W. Chau, S.K. Wong, and K. McKinnell. Dynamics of the Direct and Indirect Real Estate Markets in China. *Journal of Real Estate Portfolio Management*, 2005, 11:3, 263–78.

Ooi, J., G. Newell, and T.F. Sing. The Growth of REIT Markets in Asia. *Journal of Real Estate Literature*, 2006, 14:2, 203–22.

Schwann, G. and K.W. Chau. News Effects and Structural Shifts in Price Discovery in Hong Kong. *Journal of Real Estate Finance and Economics*, 2003, 27, 257–71.

Steinert, M. and S. Crowe. Global Real Estate Investment: Characteristics, Portfolio Allocation and Future Trends. *Pacific Rim Property Research Journal*, 2001, 7, 223–39.

Tse, R., Y.H. Chiang, and J. Raftery. Office Property Returns in Shanghai, Guangzhou and Shenzhen. *Journal of Real Estate Literature*, 1999, 7, 197–208.

UBS. *REITs in Asia*. UBS, 2005.

Webb, J.R. and R. Tse. The Regional Comparison of Office Prices and Rentals in China: Evidence from Shanghai, Guangzhou, and Shenzhen. *Journal of Real Estate Portfolio Management*, 2000, 6, 141–51.

Wilson, P. and J. Okunev. Evidence of Segmentation in Domestic and International Property Markets. *Journal of Property Finance*, 1996, 7, 78–97.

World Economic Forum. *Global Competitiveness Report*. www.weforum.org, 2005.