Housing Trends in China and India

Patrick D'Arcy and Alexandra Veroude*

Residential construction has made an important contribution to China's economic growth over recent decades. Given China's large population and the extensive use of steel in its urban residential development, this investment has also been an important driver of growing demand for Australia's exports of iron ore and coking coal. India's population is of a comparable size to that of China. However, despite its faster population growth, India's slower pace of urbanisation and less intensive use of steel in its housing construction has meant that housing activity in India has not been a major source of demand for iron ore and coal. This article explores the trends in the main factors that influence the amount and nature of investment in housing in China and India, and assesses the long-term outlook for residential construction in these two economies.

Introduction

A key part of the development process in emerging economies is growth in residential investment, which typically makes up a significant share of investment and is a major contributor to improved living standards. A range of factors influence the pace of growth in residential investment, in particular population growth, income growth and patterns of urbanisation. Further, depending on the type of construction undertaken, investment in residential housing may be resource intensive, with high-density and high-rise residential developments in particular requiring significant inputs of concrete and steel. As such, trends in residential investment in large emerging economies can influence global markets for iron ore and coking coal, Australia's two largest resource exports.

As discussed in Berkelmans and Wang (2012), residential construction associated with rapid urbanisation has been an important source of economic growth in China, with the share of dwelling investment in GDP estimated to have increased steadily over the past decade. In contrast, urbanisation in India has proceeded at a slower

pace, with a range of factors – including planning difficulties and slower income growth – constraining residential investment and discouraging investment in large, steel-intensive housing developments in particular.

Although not always directly comparable, the data on housing stock and construction activity in China and India highlight these divergent developments. Not only has the stock of dwellings in China grown faster than that in India (Graph 1), but the Chinese housing stock also consists of a greater proportion of dwellings constructed with steel – which is of particular relevance for Australia – than is the case for India.[1] As Indian steelmakers import much of the coal required for production, with Australian coking coal a major source of supply, steel-intensive housing construction in India is also important for Australia.[2]

This article compares the current Chinese and Indian housing stocks and assesses the factors that affect the path of residential investment in these two

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* The authors are from Economic Group.

[1] The measure of the stock of dwellings in China has been boosted by the significant increase in the average size of dwellings over this period. The measure for India is based only on the number of houses, not their size.

[2] Hyvonen and Langcake (2012) note that India's demand for iron ore (used with coking coal to create steel) is currently met through the extraction of high-quality hematite reserves.

Graph 1
Dwelling Stock Growth*
Average annual growth over decade
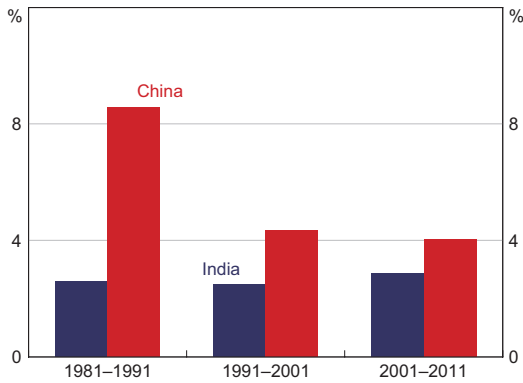
* Growth in India's dwelling stock is calculated using number of houses in the census; for China, this is calculated using the growth in aggregate residential floor space
Sources: Ministry of Home Affairs, Government of India; National Bureau of Statistics of China; RBA

Graph 2
Population*
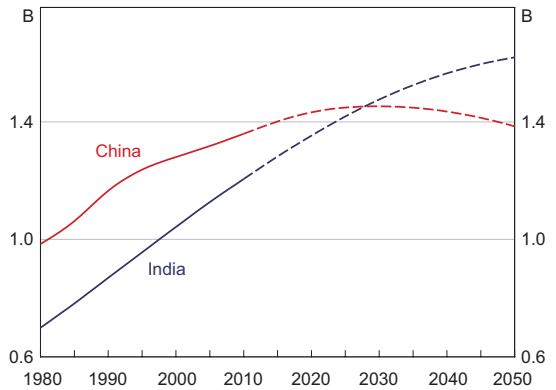
* Dashes indicate projections
Source: United Nations

countries. The first section reviews the demographic and urbanisation trends underlying the demand for housing; the second section explores the nature of the housing stock and factors influencing residential construction in China and India.

## Demographic and Urbanisation Trends

China and India account collectively for almost 40 per cent of the world's population, with populations of 1.3 billion and 1.2 billion, respectively. Over the past three decades, India's population has grown at a much faster rate than in China, although the annual population growth in both countries has slowed over this period (Graph 2). Projections from the United Nations suggest that while India's population will continue to grow, albeit at a somewhat slower pace than in the past, China's population will increase more slowly and eventually begin to decline around 2030 when India's population is expected to surpass that of China (in its central scenario).[3]

Growth in the demand for housing is heavily influenced by the growth in the number of

households, which in turn is determined by the pace of population growth and changes in the average household size.

Although population growth is projected to slow in both China and India, the decline in the average household size is likely to support the demand for housing in both countries (Graph 3). In principle, the more rapid pace of population growth in India over the past few decades could have been expected to have encouraged greater housing demand than in China. However, the average household size is much lower in China than in India, both in rural and urban areas. This has made a larger contribution to the growth in

Graph 3
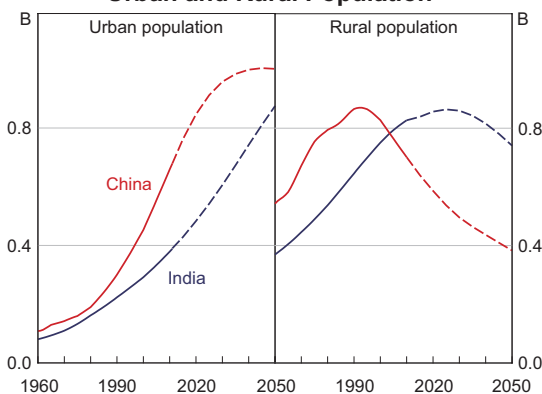**Average Household Size**
Number of residents
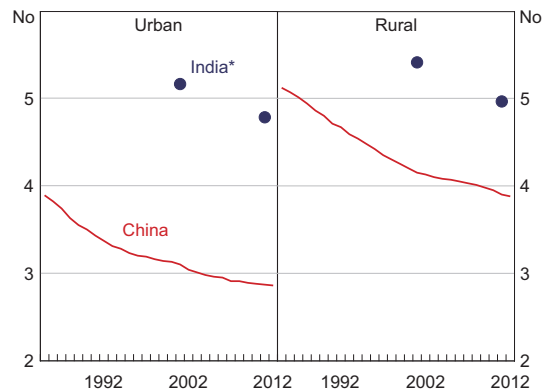
* Data from 2011 and 2001 census
Sources: CEIC Data; Ministry of Home Affairs, Government of India; RBA

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3 The central scenario assumes a continuation of recent patterns and policies on migration in each nation (UN 2013).

the number of households in China compared with India.[4] The smaller average household size, and the larger population, mean that there are currently over 160 million more households in China than India, most of which are in China's urban areas. Although larger households potentially require a larger house, the significant number of additional households in China is likely to have bolstered their overall level of housing investment compared with that in India.

Urbanisation is another key factor driving investment in housing. Since the 1980s, China's population has undergone rapid urbanisation, with the current population approximately evenly split between urban and rural areas (Graph 4).[5] In contrast, in India only around 30 per cent of its 1.2 billion people live in urban areas, and its urban population is not expected to surpass the rural population for another 30 years (UN 2012). Even though India is projected to overtake China as the world's most populous nation by 2030, it is estimated that there will still be 350 million more urban residents in China at that time. The more moderate pace of urbanisation in India means that it may not experience a surge in demand for high-density dwellings of a similar magnitude to that observed in China.

The Nature of the Housing Stock

While the overall number of households and urbanisation patterns are important elements of housing demand, the quality of the housing stock is an important factor in determining the type and resource intensity of housing investment, in particular the use of steel in construction. From similar starting points three decades ago, when both populations were primarily living in traditional housing structures in rural areas, the differences in the pace of urbanisation and average household size, and especially income growth, have led to considerable differences in the quality of the housing stock in the two countries today.

Data on the construction quality of Chinese housing are only available for rural households, and so could be expected to be a lower bound for Chinese dwelling quality.[6] There has been a very large increase in the share of rural dwellings in China classified as having a 'reinforced concrete structure', from 9 per cent of the dwelling stock in 1991 to 45 per cent in 2011 (Graph 5). As there has been faster growth in the urban population – where concrete dwellings are more common – than in the rural population, the share of concrete dwellings in the whole of China is likely to have grown even faster than this.

Given the high population density of India, residential construction has the potential to use steel intensively. However, unlike China, the share of concrete dwellings in India has increased only modestly over the past two decades and remains at low levels. According to the Indian census, only 3.5 per cent of households live in a dwelling with concrete walls. Steel would not be likely to be found (in any significant way) in buildings made of any other material, so these data suggest that the use of steel in residential dwellings is currently quite low.

Graph 4
Urban and Rural Population*

* Dashes indicate projections
Sources: RBA; United Nations; World Bank

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4 High levels of housing construction in China could have also supported growth in the number of households, as there may be fewer multigenerational households if there is sufficient housing supply.

5 Due to limitations, Graph 4 uses backdated data on urban populations from the World Bank database. All projections are from the United Nations.

6 As suggested in Berkelmans and Wang (2012), many of the areas classified as rural, as published by the National Bureau of Statistics of China, may later be reclassified as urban areas. As dwellings measured as a 'reinforced concrete structure' are likely to be multistorey structures built on urban fringes, these data are not likely to reflect a true rural environment .

Graph 5
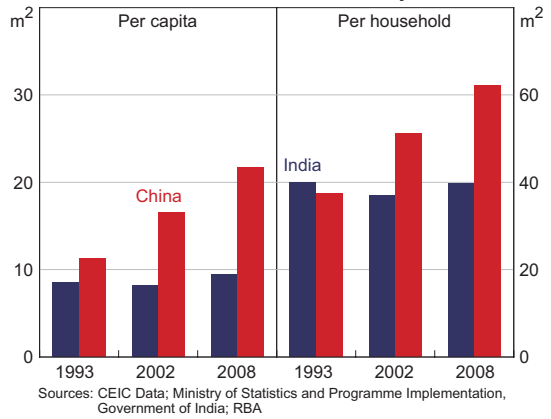**Concrete Dwellings**
Per cent of dwellings
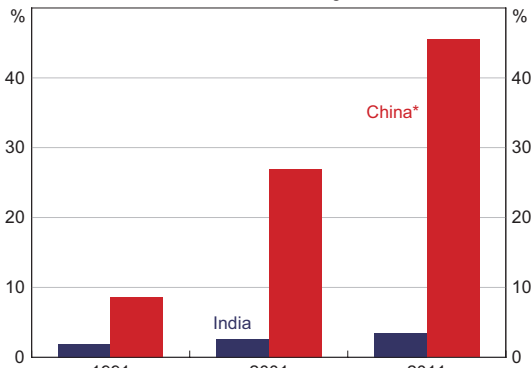
* National Bureau of Statistics of China measure of rural dwellings
Sources: Ministry of Home Affairs, Government of India; National Bureau of Statistics of China; RBA

Graph 6
Urban Residential Floor Space

Sources: CEIC Data; Ministry of Statistics and Programme Implementation, Government of India; RBA

Indeed, even though India's *current* level of GDP per capita is similar to that of China in 2002, the Chinese housing stock in 2002 consisted of a far greater proportion of houses constructed with steel than is the case for India today. In 2002, around 29 per cent of Chinese 'rural' households lived in a 'reinforced concrete structure', a larger percentage than the current concrete intensity in any major Indian city.[7] The composition of the housing stock in India today is more similar to that in China between 1985 and 1990 when per capita incomes in China were less than one-third of India's current levels.

In addition to being constructed using higher quality materials, Chinese houses are also generally larger than in India. Between 1993 and 2008, urban residential floor space per capita in China increased by 10 square metres, while in India it increased by at most 1 square metre (Graph 6).[8] Despite the larger average household size in India, estimates of urban residential floor space per household are significantly larger in China. In India, smaller dwellings on average

and little growth in average floor space are likely to have been associated with lower demand for raw materials for housing construction, relative to China.

Average income growth has been a key reason behind these different trends in the quality of the housing stock. The urbanisation process in China has transferred large numbers of workers from relatively low productivity jobs in the rural sector to higher productivity jobs in urban areas. This movement has been a driver of the rapid growth in incomes in China over the past three decades, which has far exceeded the growth in incomes in India (Graph 7). Over time, Chinese households have chosen to spend their higher income on higher quality dwellings and dwellings with larger floor space and, as a consequence, the share of concrete dwellings and residential floor space per capita has increased.

Higher incomes increased the demand for higher quality buildings in China and so, as Berkelmans and Wang (2012) note, demolitions occur at a high rate as low-quality dwellings are replaced. As incomes in India rise, demolitions may also increase due to the high percentage of households currently living in dwellings constructed with 'informal materials' – material other than burnt brick, concrete or stone packed with mortar. The Indian census finds that almost 40 per cent of all households in India live in a dwelling with walls made from informal materials. However, it may be that these households seek to

7   Data are available annually on the share of concrete dwellings in 'rural' areas in China, but the equivalent measure in India is only measured every 10 years in the census.

8   Berkelmans and Wang (2012) estimate an average dwelling size per capita that is smaller than official estimates because the official estimates appear not to include the migrant worker population. Indian floor space data are collected from the National Sample Surveys. These surveys report lower average household sizes than the census data.

Graph 7
Income Per Capita*

* Based on PPP, 2005 constant prices in US dollars
Source: World Bank
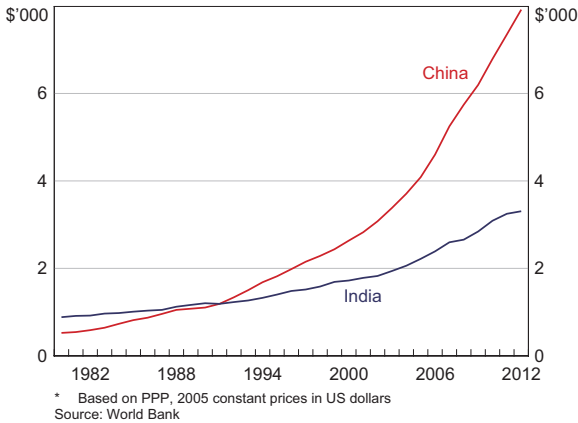
upgrade their rural dwellings rather than relocate to high-density urban areas, in which case it is not likely that the demand for steel will increase significantly.

While income growth has supported the demand by households for higher-quality, medium-density dwellings, housing development also typically requires an increased level of supporting infrastructure. In China, various levels of government have played an important role in coordinating the urban development process, supporting growth in higher-density housing development. In contrast, many areas of large Indian cities do not have the power supply, water and sewerage facilities or transportation infrastructure to support dense housing areas (McKinsey Global Institute 2010). Moreover, it has been suggested that a range of state and city laws across India result in project delays, illegal construction and inefficient land use, which constrain urban development (Panagariya 2008). These impediments not only make residential construction more difficult in India but could also

impede the urbanisation and productivity cycle that is a significant driver of residential development. Selected indicators from the World Bank database on the development of crucial infrastructure show that India generally lags in these aspects in comparison with China (Table 1).

Looking ahead, while these constraints are currently restricting high-density residential developments in India, the construction of necessary infrastructure, such as bridges and railways, is likely to increase the demand for steel over time. The Delhi-Mumbai Industrial Corridor is one project that is likely to contribute to India's steel demand. Initially, the project proposes to develop seven cities along the 1 483 kilometre Western Dedicated Rail Freight Corridor into global manufacturing and commercial hubs with world-class physical infrastructure to facilitate freight movement (Planning Commission, Government of India 2013). The McKinsey Global Institute (MGI) estimates that by 2030, US$1.2 trillion of capital investment will be necessary to meet the projected demand in India's cities and 7 400 kilometres of metros and subways will need to be constructed (McKinsey Global Institute 2012). In addition, MGI estimate that, by 2030, 700–900 million square metres of commercial and residential space needs to be built to accommodate urbanisation in India.

From Australia's point of view, the combined investment in housing construction in China and India is significant because of the overall impact on the demand for Australian commodities. Continued growth in urban populations and their incomes will support demand for steel-intensive construction in both China and India. In addition, if the expansion of

Table 1: China and India – Development Indicators

	China	India
Roads paved, per cent of total roads, 2008	54	50
Per cent of urban population with access to improved sanitation facilities, 2011	74	60
Electricity consumption, kWh per capita, 2011	3 298	684
Internet users per 100 people, 2012	42	13

Source: World Bank

infrastructure in India meets the projected demand, Indian commercial construction has the potential to have a large impact on the global demand for raw materials.

Conclusion

Differences in demographic, urbanisation and income trends in China and India have been key factors underlying variations in the use of steel in housing construction. In China, the declining average household size and rapid urbanisation as well as strong income growth have underpinned investment in high-quality and high-density housing. In contrast, slower urbanisation and income growth in India, alongside administrative difficulties associated with undertaking housing developments, have limited the demand for steel, iron ore and coal for housing construction in India. However, the magnitude of essential infrastructure needs throughout India indicates that there is the potential for significant increases in demand for these commodities as infrastructure is developed and incomes continue to rise. At the same time, as the large proportion of households living in informal dwellings, particularly in rural areas, seek to upgrade their dwelling or relocate to urban areas, this will add to the demand for steel-intensive housing. ⚒

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