

INVESTMENT NOTE

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The rise of the Chinese smart city

As China's investment-fuelled economy has slowed, with consumption increasing in importance, investors have feared a hard landing. However, the country's continuing annual growth and steady employment rate should ease these concerns. Rather than question whether Chinese growth will grind to a halt, investors should consider its changing composition says Gary Greenberg, Head of Hermes Emerging Markets and Lead Portfolio Manager.

In 2014, there were 632m internet users in China, making its e-commerce market not only the largest but also one of the fastest-growing in the world, and the number of 4G mobile subscribers has surged from zero to more than 70m in little more than a year. This escalation of internet usage in China, and rising levels of consumer spending on popular domestic brands, indicate that online services are becoming a significant force in the Chinese economy.

As China's investment-fuelled economy slows, and consumption becomes an increasingly important input, investors have feared a hard landing. New infrastructure, housing developments and public amenities will still need to be built, but this activity will be a diminishing force as the economy modernises.

The change China is undergoing is vast, rapid and unprecedented. But as China continues to urbanise, its cities must become more than polluted places of low-value-added manufacturing. They must be cleaner, smarter and offer more skilled employment. This change is vital for the nation's economic development, its leadership's mandate to rule, and will help innovation to become endemic.

The rise of the smart city

What makes a city 'smart'? In essence, it is the ability to track the movement of people in real-time and allocate resources swiftly according to demand. Functioning like a nervous system, data is sent to processing facilities, which optimise the information to organise responses.

A smart city exploits the technology enabling 'the internet of things', which is already being integrated into essential services. Germany's 529km A9 autobahn is managed by a system from Taiwanese company Advantech, which has products to assist traffic surveillance and control by reliably capturing, sending and processing massive amounts of real-time transportation video and usage statistics.

As part of a recent research trip, we visited a smart metro hub in São Paulo, where computers monitored the trains in the system. A smart city would better this capability, and do a whole lot more: parking spaces would indicate when they are vacant, water and energy prices would be accurately aligned with demand, and the effectiveness of environmental policies would be tracked. Emergency situations, from building fires to train failures, would be quickly identified to ensure recovery services can be notified immediately.

Implementing these capabilities requires strong, widespread and secure internet connectivity – both fixed-line and mobile – and the development, installation and linking of remote sensors with centres for analysing and optimising data in real time. The Chinese Government has named 103 cities and regions, including 20 rural areas, for pilot smart-city projects. Of these, Shanghai is the focus.

A leader in urban innovation

Shanghai is primed for smart city development, with the fastest broadband speeds and highest usage of mobile devices. China Mobile, China Telecom and China Unicom are investing in networks, fibre development, public WiFi, data centres – as well as the digital functionality of a smart city: apps for healthcare, safety, transportation, mobile payments and e-government. Tencent has also recently partnered with the Shanghai municipal government to jointly push smart-city infrastructure and services.

This indicates IT will be integrated with Shanghai's industrial base through cloud computing, social networking and big data, and that government services will become digitalised. This follows the construction of 12 industrial parks and 10 more should be built by the end of the year, to attract e-commerce, 3D printing, robotics, public information, mobile payment and clean energy enterprises. One such site is the Shanghai Pudong Software Park, which at the end of 2013 managed three sites, employed about 40,000 people in companies including software and technology services business SunGard, and generated \$8bn in estimated revenue.

But unlike the construction of infrastructure and skyscrapers, smart cities cannot be developed by allocating capital and mobilising abundant low-skilled labour. Clearly, political will and funding are evident in Shanghai, but what about the skills to operate the city's burgeoning technological infrastructure, let alone an environment conducive to developing and attracting talent in the future? Greater home-grown talent will help.

In 2000, China produced about 7,500 science and engineering PhD graduates, compared to about 17,500 in the US. By 2010, the number of PhDs awarded in China more than tripled to 29,000 – comfortably passing the number gained in the US. As more Chinese students study at home rather than abroad, they are more likely to apply their skills in the domestic economy rather than as expatriate experts – particularly if they are given well-funded opportunities to work in innovative fields. And more of these are now available: China has substantially grown the number of R&D workers in its economy, from about 700,000 in 2001-02 to 1.3m in 2012-13. It now employs more people in this function than the US or any other country. This culture is also creating the next generation of Chinese tech entrepreneurs; last year, 49 companies were launched each day in Beijing's Zhongguancun district, prompting media reports that compared the start-up hub with Silicon Valley.

Shanghai will emerge as a global leader in urban innovation if its ambitions are realised in the coming years. Political determination and investment provide the enabling technology – but the city's ability to secure the necessary talent will determine whether it succeeds or fails. In this, the tailwinds of the world's largest national R&D workforce and the phenomenal growth in the numbers in highly-educated Chinese people will surely help. We'll monitor progress, looking for signs of advanced digital life in the city, and remain alert to other forms of innovation in the country's coastal cities.

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Notes to Editors:

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