



Australian Government

AUSTRALIA IN THE ASIAN CENTURY

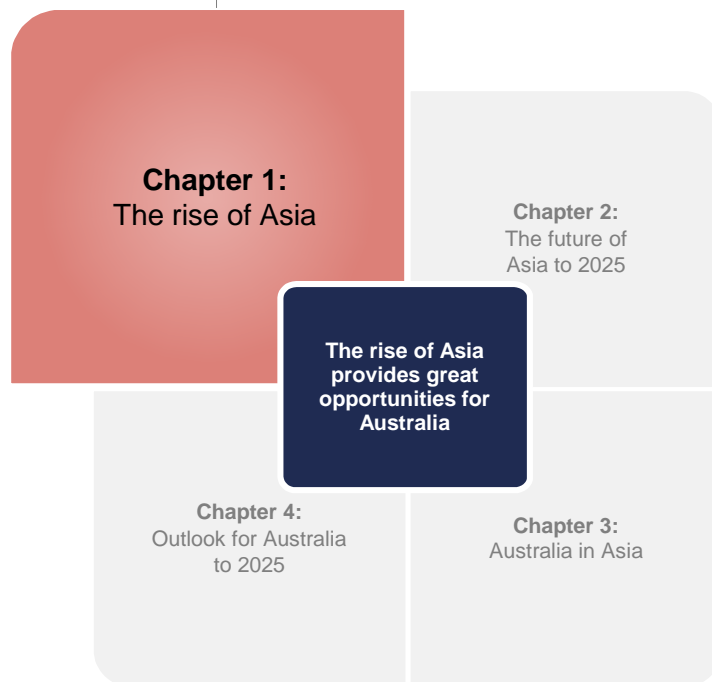


White Paper
October 2012



Chapter 1: The rise of Asia

- staggering scale and pace of rise
- investment in people and capital
- market and institutional reform
- open global trading systems and stability
- Asia has changed the world



Key points

The pace and scale of Asia's rise have been nothing short of staggering.

In a region rich in cultural, social, political and economic diversity, peoples' lives have been transformed just as the globe has been transformed.

Hundreds of millions of people have been lifted out of poverty, parts of the region have experienced a halving in their infant mortality rates and decades have been added to life expectancy.

Nearly all the high-performing economies in Asia deliberately set out to support prosperity by reforming their policy and institutional settings.

Many economies within the region have invested heavily in their people and created a climate that has supported capital investments.

With the benefit of a good education, growing shares of young people have found jobs as they have reached prime working age.

Open global trading systems and infrastructure to reduce transport costs have driven regional and global integration.

More broadly, a global system of rules has allowed for greater stability and spurred increasing levels of interdependence.

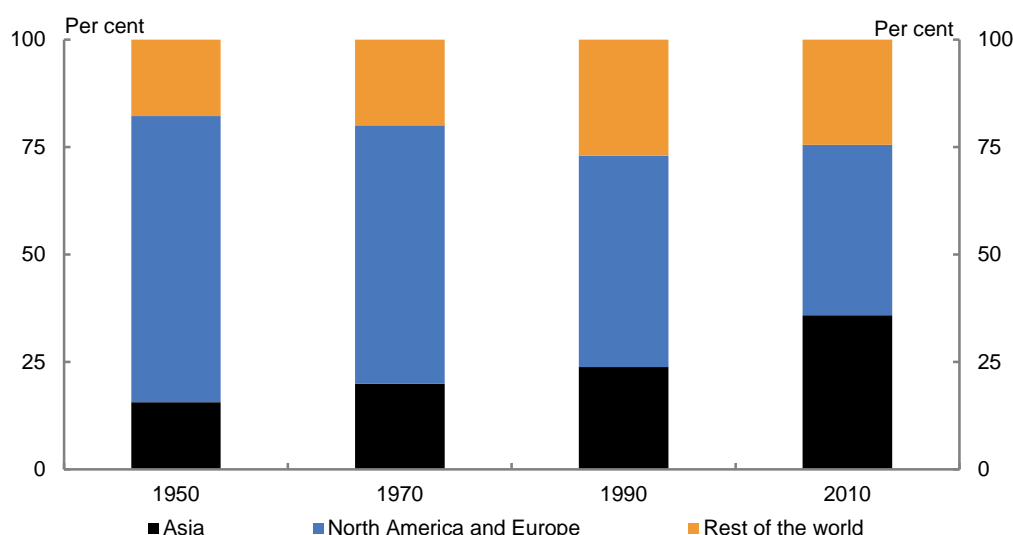
1.1 Introduction

Just over two decades ago, the Australian Government commissioned a study of Australia and the Northeast Asian ascendancy (Garnaut 1989). Since then, Asia has continued to change at an unprecedented pace and scale. This White Paper looks at the group of nations that stretch from India through Southeast Asia to Northeast Asia, including Indonesia, other Association of Southeast Asian Nations (ASEAN) members, China and Japan.

Asia is a region of great diversity—across ethnic groups, languages, history, institutions and natural endowments. Its transformation into the world’s most dynamic economic region has been a defining development of our time.

Over the past 20 years, one-third of the world’s population has re-engaged with the global economy and more are set to do so (Chart 1.1). Living standards for billions of people in Asia have improved at a rate not previously experienced in human history.

Chart 1.1: Asia’s rising
Share of world output



Note: GDP is adjusted for purchasing power parity (2011 prices). See glossary for the definition of country groupings in this chart.

Source: Conference Board (2012).

Between 2000 and 2006, around a million people were lifted out of poverty every week in East Asia alone (Gill & Kharas 2007). Japan, the Republic of Korea (South Korea), Singapore and, more recently, China and India doubled their income per person within a decade. Some went on to repeat this achievement two or three times. To put this into perspective, it took the United Kingdom over 50 years to double its income per person during the epoch-defining Industrial Revolution (Maddison 2010).

This chapter looks at Asia’s success to date and how it has shaped the world.

1.2 The makings of success

Asia's economic rise has been staggering, starting with Japan, whose emergence gathered pace from the 1950s. The region's success has not followed a single 'recipe'. Even where economies have drawn on the lessons of others, they have adapted approaches to suit their own circumstances and have implemented them alongside home-grown initiatives.

The region's economies are diverse. Some started their growth surge earlier; some have enjoyed greater success. Incomes in Singapore, for example, are currently 12 times higher than in neighbouring Indonesia (Conference Board 2012). Economic progress has been uneven within countries too, including in the region's large economies.

But amidst this diversity some common patterns have emerged in recent decades. Nearly all the high-performing Asian economies deliberately set out to support prosperity by investing in people, building capital and undertaking institutional change, including expanding the role of markets.

With the benefits of a good education and employment-creating reforms, large numbers of young people have become productively employed as they reached prime working age, while a global system of rules has promoted stability and interdependence.

Open global trading systems and the construction of vital infrastructure to reduce transport costs have been drivers of integration. Intricate regional production networks have emerged, along with increased flows of intermediate goods between regional partners. Specialisation and scale have given the region a powerful advantage, particularly in manufactures.

Asia's most successful economies have evolved continually in response to new developments. As incomes have risen in population-dense economies such as Hong Kong, Japan, South Korea and Taiwan, and as their labour-intensive activities have become less competitive, Asia's high performers have refocused their production on new areas of consumer demand—developing domestic markets and specialising in high-skill activities.

Notwithstanding its diversity, the region is bound by a shared ambition for economic advancement. The means may have varied, but the effort has been determined and the results staggering.

Asia's demographic dividend

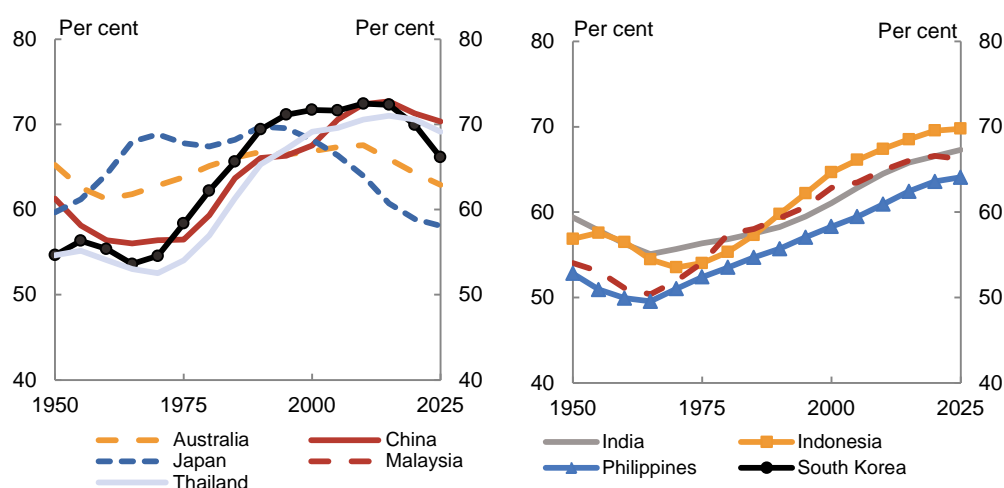
In the early stages of their take-off, many economies in Asia faced a favourable set of circumstances as large numbers of young people approached working age, boosting the productive capacity of economies.

The region's ability to capitalise on its favourable demographics has been a key factor underpinning Asia's stellar income growth over the past four decades.

An East Asian baby boom, which started in Japan in the late 1940s, sparked a series of demographic and social changes that helped shape the region's economic growth trajectory.

As the large 'boom' cohorts reached prime working and saving age (Chart 1.2), the productive capacity of economies such as Japan and South Korea expanded. During this phase—from 1965 to 1990—East Asia's working-age population grew nearly four times faster than its dependent population (Bloom & Williamson 1997).

Chart 1.2: Asia's demographic dividend
Share of working-age population



Source: UN (2011b).

Demography is not destiny. Indeed, despite having experienced similar demographic transitions, Latin America as a whole was unable to achieve a demographic dividend in the 1960s to the 1990s (Bloom & Canning 2004, cited in Wei & Hao 2012). To take advantage of the favourable window provided by a youthful workforce, East Asian economies invested in physical capital, job training and technological progress. With the benefits of a good education, East Asia's large numbers of working-age people became a huge productive workforce.

A virtuous spiral was created: population change increased income growth, and income growth pushed down population growth. The consequent declines in fertility reduced youth dependency rates and further boosted women's participation in the workforce.

East Asia's 'demographic dividend' is estimated to have accounted for between one-quarter and two-fifths of its growth in GDP per person in the late 20th century.¹

Favourable demographic changes were not confined to East Asia's developed economies—other economies have also enjoyed a demographic dividend (Chart 1.2 and Box 1.1). Between 1981 and 2010, the large share of working-age people is estimated to have boosted the growth rate of output per person by more than 1 per cent a year in Indonesia, South Korea, China, Thailand and Vietnam (ADB 2011b).

Box 1.1: Life has changed in Indonesia

The experience of a child living in Indonesia tells the story of what has happened across large parts of Asia.

While there is room for improvement, access to immunisation, sanitation and nutrition means an Indonesian child can now expect to have a life expectancy into their late 60s, compared to just 45 if they'd been born in 1960 (World Bank 2012d).

Around 18 per cent of Indonesians are living in poverty today, compared to 68 per cent in the late 1980s (World Bank 2012d). The size of the Indonesian economy is now larger than Australia's (when adjusted for purchasing power parity) (IMF 2012c).

Young children today will have had at least nine years of compulsory schooling, with plans for 12 years of compulsory education from 2014 (Yudhoyono 2012). Nearly a quarter of students who recently completed their secondary school education are enrolled in tertiary study (World Bank 2012d).

With economic growth and education, job choices have been transformed. As recently as 1990, a young Indonesian was most likely to have a job in agriculture. Now, the prospect of a city-based career in a professional service industry is a reality—and lifestyles are changing rapidly as a result.

Investing in people

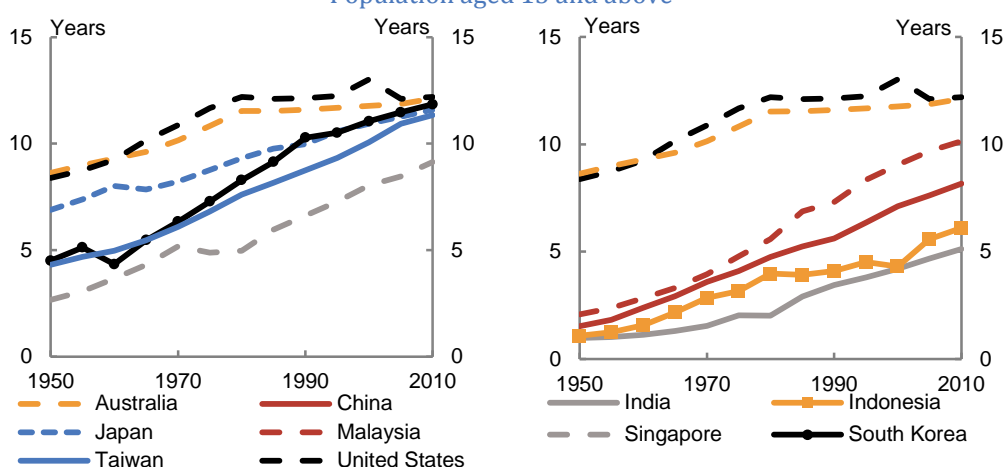
Asia's young people enjoyed marked improvements in their access to education and its quality as governments invested in their youthful populations and dramatically transformed their education and training systems.

¹ See, for example, Bloom & Sachs (1998), Bloom & Williamson (1998), Bloom, Canning & Malaney (2000), Mason (2001) and World Bank (2012c and 2012d).

Many countries started investing in their people, building on a strong base. Primary education was compulsory in many East Asian economies and by 1960 was prevalent in China, Hong Kong, Japan, Singapore, South Korea and Taiwan (Tilak 2002). Some who did not start from as strong a base also improved access to primary education sharply—primary school net enrolment rates are currently nearly 90 per cent in the Philippines and are close to universal in Cambodia and Indonesia (World Bank 2012d).

But the most profound changes occurred in secondary and higher education. Average years of formal education were extended across the region, as more people stayed in education for longer (Chart 1.3).

Chart 1.3: Average years of formal schooling
Population aged 15 and above



Source: Barro & Lee (2010).

Between 1970 and 2001, secondary school enrolment rates in some of the region's largest developing countries—Indonesia, Malaysia, Thailand and China—more than doubled (World Bank 2007). Higher education enrolment rates in the region have increased considerably since the 1970s, in countries such as Hong Kong (increased by a factor of 8), Malaysia (increased by a factor of 10) and Thailand (increased by a factor of 16). South Korea is a standout performer, with almost universal post-secondary education (World Bank 2012d).

As participation improved, the focus in many countries shifted to quality. Today, four of the world's five highest performing education systems are in Hong Kong, Shanghai, Singapore and South Korea (OECD 2010c).

In the more populous developing countries, such as India and Indonesia, efforts to increase access to, and the quality of, education continue. In both these countries, the task is complicated by the diversity and size of their education systems.

India, which has the second-largest education system in the world, has made large strides in improving school enrolment rates and reducing socioeconomic, caste and gender gaps in enrolments at the primary level, but significant challenges remain.

They include very low rates of schooling achievement as measured by test scores, and a lack of qualified teachers (Kochar 2012).

Indonesia's education system, the fourth-largest in the world, has more than 50 million students and 2.6 million teachers in more than 250,000 schools. While average primary school enrolment rates are reasonably high, they vary across the country. Net primary school enrolment rates are about 60 per cent in poor districts compared to almost universal enrolment in more well-off districts (World Bank 2012c).

The region's investment in its people has gone well beyond education. Governments have also invested heavily in improving access to sanitation, housing and clean water. A virtuous circle has been created in which social development has accompanied and supported higher rates of economic growth, and these in turn have contributed to further improvements in broader indicators of wellbeing (Box 1.2).

Box 1.2: Vietnam—big improvements in health and wellbeing

Vietnam's health expenditure per person has quadrupled since the mid-1990s and water supply and sanitation services have improved sharply. Seventy-five per cent of the rural population had access to clean water in 2010.

Better health outcomes have supported economic growth.

Average life expectancy is now 75 years, up from 49 in 1970. And the health of Vietnam's women and children has improved substantially. The share of women dying as a result of childbirth has fallen to around a third of the 1990 rate, with a similar drop in infant mortality, while the mortality rate for children under five has halved.

More than 90 per cent of children in Vietnam are now vaccinated against six common diseases. Polio was eradicated in 2000, and neonatal tetanus was eliminated in 2005.

Tuberculosis and dengue fever persist, however, and Vietnam's rapid development has brought new health challenges. More than 15,000 people die in traffic accidents each year, and non-communicable diseases associated with higher standards of living now account for half of all deaths.

Jump-starting growth through investment

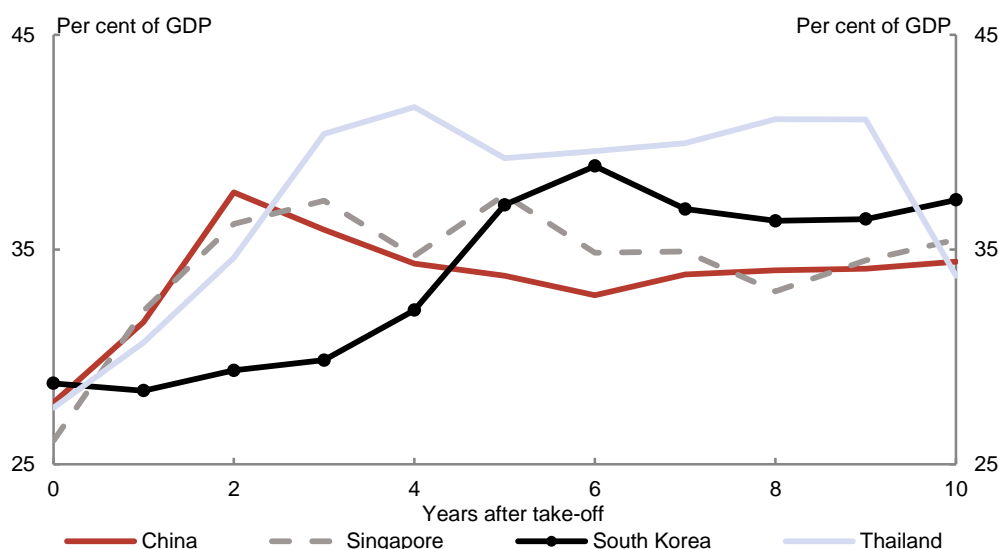
As Asia's economies emerged, they created a climate that supported investment—accelerating growth in the early stages of their development by rapidly investing in physical capital (Chart 1.4).

Higher levels of private and public investment enabled Asian countries to exploit their favourable demographics. With access to better machinery and infrastructure, workers became more productive. Technology and management systems, imported and adapted from overseas, further boosted productivity. And as firms invested and

expanded their operations, competitive pressures on enterprises, including state-owned monopolies, lifted productivity.

The paths taken by Asian economies to stimulate investment have varied, but those that succeeded generally followed a two-pronged approach. First, many built a favourable investment climate through a succession of—typically gradual and rudimentary—institution-building and market-enabling reforms. Second, governments in successful Asian economies actively enabled and complemented markets in different ways that supported investment. Different approaches ranged from putting in place export processing zones to various approaches to exchange rate management, and from industry-incentive arrangements to industry arm twisting.

Chart 1.4: Increasing investment in physical capital
Gross fixed capital formation



Note: The take-off years are 1990 for China, 1969 for Singapore, 1984 for South Korea and 1986 for Thailand (Hausmann et al 2005).

Sources: World Bank (2012d) and Conference Board (2012).

Institution-building and creating markets

In the early phases of Asian countries' rapid economic growth, institutional improvements helped create a favourable climate for human and physical capital accumulation.

Governments put in place more predictable property rights, opened up markets and invested in public goods such as basic knowledge, education and health.

Macroeconomic frameworks and governance more generally were improved. Price controls were liberalised and production quotas were gradually removed. Parts of previously closed economies were integrated into global markets, creating access to markets and finance, and boosting productivity.

It was not just economic institutions that underwent change. So did the formal and informal institutions that shape nations more broadly—governments and the military, the nature of political institutions and societal values and customs.

Countries across the region infused broad approaches to institutional improvement with their own unique practices. Although its development followed that of many other economies in Asia, China in many ways epitomised the gradual and pragmatic approach to reform. Its process is often described, in Chen Yun's phrase, as 'crossing the river by feeling stones' (Li 1995 and Box 1.3).

Box 1.3: China—feeling the stones

Reforms in China started in 1978 with the partial liberalisation of agriculture. Those reforms allowed local farmers, rather than the state, to take responsibility for the profitability of their enterprises and gave them incentives by allowing them to sell produce above state-determined quotas. In the 1980s, reforms also allowed largely communally owned enterprises to take advantage of new market opportunities—providing the engine of Chinese growth for two decades.² This was accompanied by the introduction and expansion of 'special economic zones', which provided concessions for private enterprise and foreign investment while the rest of the economy remained under controls and restrictions.

Over the next two decades, China continued its dual-track approach to reform as it encouraged private sector development while supporting state-owned enterprises in strategic industries. It gradually liberalised price controls and sought to reform state-owned enterprises, financial markets and the housing sector.

China's accession to the World Trade Organization (WTO) in 2001 was a further major step in integrating its economy with the global system. Reforms that supported China's commitment to the global trading system before its WTO accession should not be overlooked—no other member joining the WTO made so many concessions on the way to accession (Drysedale 2000; Brandt, Rawski & Zhu 2007). For example, in the decade before its accession to the WTO, China's effective tariff rate halved to 15 per cent in 2000, and has since continued to fall (World Bank 2012d).

Combined with a governance structure that gave local and provincial governments incentives to experiment with different approaches to growing local economies, China was able to adapt institutions and settings to fit each stage of its development (World Bank & DRC 2012).

2 Known as 'township and village enterprises'. Placing ownership in the hands of communities and local governments arguably struck a trade-off between lifting economic efficiency (by improving market incentives and property rights security) and ensuring that reform momentum was maintained by building constituencies and providing a 'win-win' for further reform (Qian 2003).

Similar patterns of gradual reform are clear in the four small newly industrialised economies that have successfully made the transition to high-income economies.

Hong Kong, for example, took a liberal approach to economic development, setting itself up as a regional and global financial centre. Singapore's path was much more state-led. Its distinctive brand of forward-looking public leadership, governance structures and investment in a high-performing public service allowed the country to take full advantage of its favourable geographical location. South Korea and Taiwan used aggressive strategies to foster entrepreneurship and innovation and established themselves as technological powerhouses.

But as conditions change, so does the usefulness of existing institutions. Over time, the region's more successful economies have managed to adapt many institutions in response to changing conditions and challenges. The benefits of investing in the formal institutions that support exchange increased as the Asian economies became richer, deeper and more complex. It is this ability to maintain the pace of institutional reform that largely explains why some economies—including the highly developed Asian economies—have sustained their initial growth success to reach high-income status.³

The reform path has not always been smooth. For example, while the structure and practices of Japan's financial sector were useful in initially driving rapid economic growth, they also contributed to the late-1980s asset bubble. In response, Japan underwent a reform period focusing on corporate governance and the financial sector in the 1990s. Similarly, the policy models that fuelled unprecedented economic growth in other countries and regions in Northeast and Southeast Asia contributed to asset price bubbles that later collapsed during the Asian financial crisis in 1997, which in turn required policy reform (Box 1.4).

3 For a discussion on the role of institutions in economic growth and development, see, for example, Zhuang, de Dios & Lagman-Martin (2010), Rodrik (2005), Aron (2000), Easterly (2005), Acemoglu & Robinson (2008) and North (1990).

Box 1.4: The Asian financial crisis

Several decades of unprecedented economic growth in many East and Southeast Asian economies came to an abrupt end in mid-1997 with the onset of the Asian financial crisis. Their growth models, particularly the focus on large-scale mobilisation of investments, contributed to asset price bubbles that later burst, leading to capital flight, sharp currency movements and the abandonment of pegged exchange rates (Gill & Kharas 2007).

Many factors lay behind the crisis and accounted for its severity: an inconsistent mix of macroeconomic and exchange rate policy settings, poor prudential supervision against a background of liberalisation of capital markets and underdeveloped domestic financial markets, lack of quick and coherent government action, and an overconfident international financial sector that had underestimated risks in the good years and panicked when economic conditions deteriorated.

The crisis had a devastating impact in several East Asian economies. For instance, in 1998, Thailand's real GDP fell by 8 per cent and Indonesia's by 14 per cent. Gross private financing to Asian emerging market economies collapsed from \$128 billion in 1997 to \$7 billion in 1998. Between 1996 and the second half of 1997, capital movements to Asia swung from annual inflows of almost \$100 billion to outflows of the same size, while international bank loans to non-banks in Asia (excluding Japan) fell by more than \$9 billion in the final quarter of 1997, the largest drop ever.

After the crisis, financial cooperation between ASEAN and East Asian economies became a regional priority, particularly through bodies such as ASEAN+3. This was also a reaction to concerns that the International Monetary Fund (IMF) was dictating policy settings to the crisis-affected countries—Indonesia, South Korea and Thailand—in a manner the region thought to be both intrusive and inappropriate.

In the immediate aftermath of the crisis, Japan offered to underwrite an Asian monetary fund, triggering opposition from the United States and the IMF. The proposal also lacked the support of China. But it eventually led to what has become the Chiang Mai Initiative Multilateralisation, which started as a complex network of bilateral swap agreements and has since become a single, uniform facility to help with managing regional financial crises.

Reforms put in place since the Asian financial crisis have improved the resilience of Asian economies.

Openness, reliability and stability

Asia's rising economies were major beneficiaries of the open global trading system established under United States leadership after World War II. In the early stages of their take-off, open global markets allowed them to take advantage of their large endowments of relatively unskilled, cheap labour.

In the most successful economies, early jobs in low-end manufactures, combined with hefty investments in education and training, enabled workers to learn the skills—and absorb and adapt advanced technology from abroad—that later permitted movement up the value-add chain (Krueger 2005).

Regional efforts also supported greater levels of openness. The Asia-Pacific Economic Cooperation (APEC) forum, for example, helped sustain market-driven integration in the region.⁴

More broadly, an open global trading regime enabled Asia's rising economies to secure energy and resources vital to their growth, including from Australia. This was particularly important for economies such as Japan and South Korea, which lacked large resource endowments.

At the same time, the security guarantees provided by the United States to its key allies in the region, especially Japan and South Korea, and the development of an effective working relationship between Washington and Beijing after 1972, provided strategic (and business) confidence that helped frame and support the region's economic development. The post-Cold War consolidation of ASEAN to incorporate the countries of Indochina helped establish the foundations for Southeast Asia's development.

1.3 Asia has changed the world

As Asia has grown over the past two decades, it has changed the world.

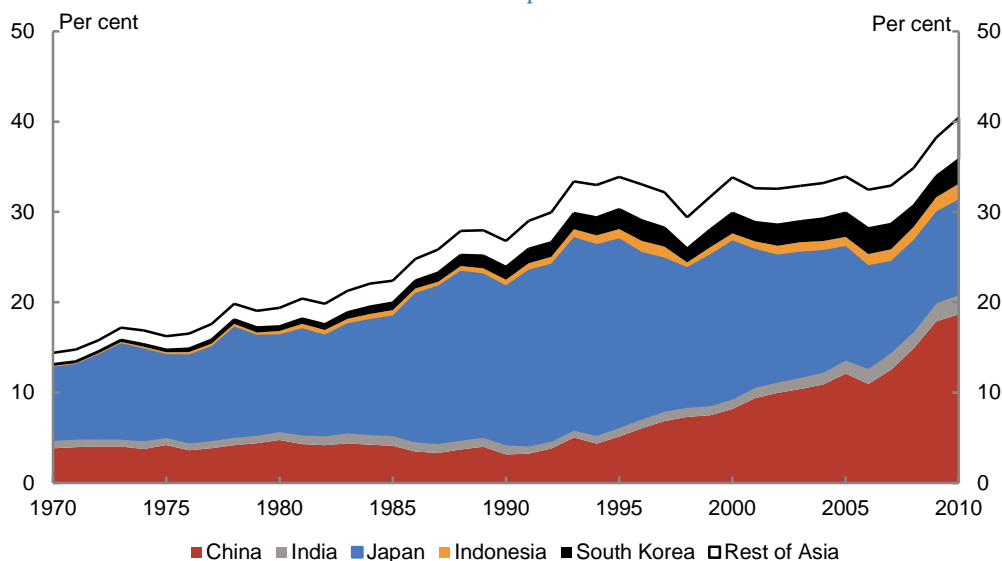
Asia's impact on global markets has been profound. More regional and global firms have emerged from Asia to shape the way businesses operate across the globe. The region's industrialisation and urbanisation have sparked demand for raw materials, creating a resources boom. And Asia's burgeoning middle class has reshaped global markets, including for high-value consumer goods and services—spanning everything from electronics to tourism.

⁴ Average tariffs of APEC members have declined from 16 per cent in 1989 to around 6 per cent in 2010.

Asia has shifted global production, trade and investment

With the emergence of 'Factory Asia', Asia has become the production engine for the world (Chart 1.5). As it has done so, it has also transformed the way the world produces goods and services.

Chart 1.5: Asia's manufacturing output
Share of world production



Note: See glossary for the definition of Asia in this chart.

Source: UN (2011a).

Integrated parts of the production process have spread across several different countries. These cross-border value chains first developed for cars and electronics and had their genesis in Japan's economic rise. As Japan developed, its production costs rose and the yen appreciated. Japanese companies began specialising in higher skill goods and services in Japan, while moving parts of their labour-intensive assembly operations to South Korea, Hong Kong, Taiwan and Singapore. As production costs rose in these economies, businesses relocated assembly processes to ASEAN countries and then to China; China quickly became the main assembly plant for Factory Asia. India, however, has so far followed a different economic development path from that of East Asia (Box 1.5).

Successive relocations and regional infrastructure projects that have increased connectivity have led to intricate regional production networks and greater flows of intermediate goods among Asian partners, and given the region a powerful advantage in many industrial sectors, especially manufacturing.

Box 1.5: India's manufacturing and services sectors

As India's agricultural share of output has fallen, its services share has risen, with the industry and manufacturing shares remaining broadly unchanged. Other economies at a similar stage of development have shown a greater bias towards labour-intensive manufacturing.

India's information technology, business services and financial services industries—the modern services sector—have recently been powering services exports. Their share in India's services export earnings has more than doubled over the past decade, to around 19 per cent in 2011. Software exports now rival India's other major services export—income from international 'guest' labour.

Some of the challenges facing India's industry and manufacturing sectors include its land acquisition and land-use policies, complex and time-consuming regulatory approvals, the quality of supporting infrastructure (including electricity systems) and skills shortages (Government of India Planning Commission 2011).

There are signs of improvement and elements of manufacturing are already globally competitive. For example, India's automotive and automotive components sector has thrived on the back of foreign investment, strong growth in domestic incomes and vibrant export opportunities. In 2010–11, more than 17 million vehicles were produced, most of which were 'two-wheelers'. India's automotive sector now accounts for more than 5 per cent of GDP and directly employs more than 5 million workers.

India has recognised the need to make substantial investments in skills and infrastructure to better equip India's future workforce and improve its competitiveness. Boosting industrial activity and employment is the driving impetus behind its 2011 National Manufacturing Policy.

East Asia now accounts for almost one-third of world trade in manufacturing, and the intermediate goods trade accounts for more than half of all interregional trade in East Asia. China's size, and the growing interconnectedness of production networks across Asia, means that China has become the main trading nation for almost all regional nations (WTO & IDE-JETRO 2011). Now the world's largest exporter, China's share of global value-add manufacturing has doubled over the past decade.

Not all parts of Asia have formed deep economic ties with their immediate neighbours. Links within South Asia have been growing, but they are still relatively modest. These links have been constrained by political tension (despite some promise of change), poor physical connectivity and impediments to cross-border trade and investment.

More recently, Asia's emergence has also reshaped global financial markets.

Over the past decade, regional investment has expanded rapidly and regional financial markets have become closer and more efficient as economies have become more interdependent. And in the decade before the Global Financial Crisis in 2008,

Asia also financed high rates of investment in developed economies—supporting growth in the United States and Europe.

While portfolio flows have oscillated, Asia has become a major net exporter of capital to the rest of the world through both growing foreign exchange reserves and private investment flows. Asia's foreign exchange reserves over the past decade have soared, with about two-thirds of the world's accumulated reserves in 2012 (Bloomberg 2012). China and Japan were the main contributors, at about one-third and one-tenth of global reserves respectively, but the pattern of accumulation has been common across countries in the region (Gill & Kharas 2007).

But, despite the region's impressive progress to strengthen financial systems and build regional connections, Asian financial markets remain relatively underdeveloped and are more closely linked to global markets than to each other.

Asia's rapid growth and urbanisation have transformed global commodity markets

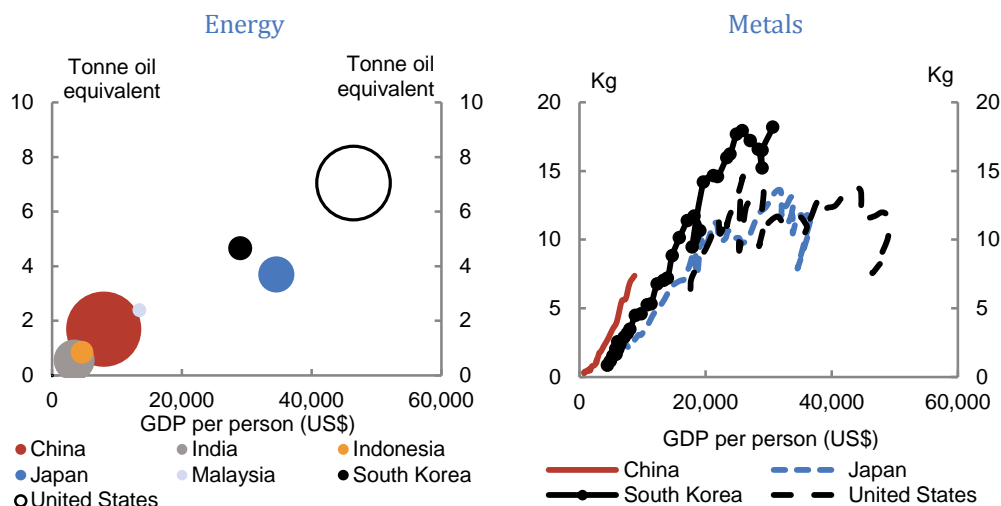
Urbanisation has transformed Asian societies. Urbanisation in Asia involves around 44 million people—around twice the size of Australia's current population—leaving rural areas and being added to the population of cities every year in search of opportunities. The impacts have been staggering. Between 1990 and 2009, energy consumption in Asia more than doubled and the region's share of global energy consumption increased from 25 to 38 per cent (IEA 2011). Demand has not been limited to energy. Between 2001 and 2011, iron ore prices increased by a factor of 13, zinc prices more than doubled, and copper, lead and tin prices all increased at least fivefold (IMF 2012c).

This process—along with the region's rapid growth, massive infrastructure investment and ongoing industrialisation—has boosted demand for a broad range of mineral and energy resources (Chart 1.6), affecting all resource-supplying nations, including Australia.

With its rapid growth, intensive resource use and sheer scale, China has led the pack. It is now the world's largest energy consumer, having gone from consuming less than half as much energy as the United States in 2000, to consuming slightly more today (IEA 2011). Now the world's largest producer and consumer of coal, China accounts for almost half of the world's coal consumption. Having been largely self-sufficient in coal until recently, China has quickly emerged as the world's largest importer of coal (IEA 2012).

China's commodities-intensive growth has also seen it become the world's largest consumer of steel, aluminium and copper, accounting for around 40 per cent of global consumption for each—a share two to three times larger than those of Japan or South Korea at the peak of their respective metals demand cycles (Coates & Luu 2012). China's growth and technological change have also demanded lesser-known materials. Demand has increased for manganese (used in the production of stainless steel), antimony (electronics), scandium (aluminium alloys) and zircon (ceramic glazes).

Chart 1.6: Energy and metals consumption per person, selected countries



Note: Bubble area represents the nation's total energy consumption in 2009. GDP adjusted for purchasing power parity (2011 prices). Metals consumption data are for 1972–2010 for China, 1960–2010 for Japan, 1975–2010 for South Korea and 1960–2010 for the United States.

Sources: World Bank (2012d), IMF (2012c) and Conference Board (2012).

China is a significant, and in some cases a dominant, producer of most energy and mineral resources. While it leads world production in black coal, iron ore, gold, zinc, manganese, rock phosphate, rare earths, tungsten, and lead (Geoscience Australia 2012), China is sourcing an increasing share of its commodity needs on global markets. As China becomes increasingly aware of, and sensitive to, the environmental and social costs of mineral extraction, domestic production is also becoming more expensive, reinforcing the shift toward imports. Both state-owned enterprises and the private sector are investing overseas to diversify supply, partly in response to government encouragement.

India, too, has significant resource endowments and has sought to remain primarily self-sufficient in mineral production, taxing exports in an effort to retain critical commodities like iron ore and metallurgical coal for domestic use. Some argue that domestic production has been hampered by inefficient regulation in areas such as land access and use.

The mature industrial economies of Japan, South Korea and Taiwan have long demanded raw materials for their manufacturing sectors. Primarily import dependent, these economies have established trade and investment relationships with nations rich in raw materials. Japan, for example, has relied on imports for over 80 per cent of its sizeable energy needs. Japan is the world's third-largest net importer of crude oil, second-largest importer of coal and largest importer of liquefied natural gas (EIA 2012).

The region's economic growth has also contributed to fundamental changes in global food demand. Income growth has boosted demand for better quality, higher protein

and more diverse diets, including for more dairy, fish, vegetables, fruits, edible oils and meat. For example, the amount of meat consumed a year in Asia increased by a factor of 14 between 1961 and 2009 (FAO 2012). Asia's urbanisation has further accentuated changes in lifestyle and consumption patterns, bolstering demand for semi-processed and ready-to-eat foods.

As production has become more sophisticated, Asia has emerged as a global innovation hub

While the United States and Europe continue to be world leaders in science and research, Asia is emerging as a world centre of innovation and technological development.

China has overtaken South Korea as a science and research producer and has recently overtaken Japan on a number of measures, such as research and development expenditure and national output of scientific publications. However, in 2010, Japan overtook the United States to become the highest producer of triadic patent families (a set of patents taken at the European Patent Office, the Japanese Patent Office and the US Patent and Trademark Office), while South Korea was fifth (OECD 2012c; Thomson Reuters 2012).

Other emerging economies in Asia are also becoming knowledge creators. India's large and youthful population and growing expenditure on research and development have lifted its publications of scientific papers from 2.1 per cent of the world total in 2000 to 3.5 per cent in 2010 (Thomson Reuters 2012). And it has also had success opening up new markets for high technology through 'frugal innovation'. An example is TATA's Swach, a \$25 water filter that exploits the properties of nanoparticles of silver and runs without electricity or moving parts.

Indonesia more than doubled, and Vietnam more than tripled, their volumes of scientific publications between 2000 and 2010, albeit from modest bases (Thomson Reuters 2012).

The scale and networks provided by Asia's cities have helped spur innovation. With activity increasingly concentrated in cities, businesses have been able to tap into innovative practices and deep and growing pools of talent. In 1993, China had less than half the number of researchers of the United States. By 2007, it had 1 per cent more, employing more researchers than any other country—around two researchers per thousand people in the labour force. This is still significantly lower than advanced Asian economies such as Taiwan and Singapore (both around 10 per thousand) (OECD 2012c).

Not only have Asia's cities become centres of innovation, they have also become engines of growth (Pellegrini 2011). In Malaysia and Thailand, cities contribute more than 90 per cent of GDP. Even in countries such as Sri Lanka and Bangladesh, where urbanisation is still low, more than 65 per cent of GDP is produced in urban areas.

A burgeoning middle class has emerged, poised to transform consumer markets

As incomes in the region have grown, an increasingly wealthy and mobile middle class has emerged, with a resulting shift in the balance of consumer markets towards Asia. With less income being taken up by necessities, demand for a diverse range of goods and services, from health care to household goods, has grown.

Between 2000 and 2011, the number of automobiles per 100 urban households in China is estimated to have risen from less than one to more than 18; the number of computers from eight to 80; the number of mobile phones from 16 to over 200; and microwave ovens from 16 to 60 (CEIC Data 2012). While rates of growth in different consumer durables vary, similar patterns are evident across a whole range of goods.

Intraregional tourism has boomed and popular culture is now shared across Asia as more people throughout the region and the world discovered Japan's pop music and manga, Hong Kong cinema, South Korea's television soaps and India's Bollywood films.

Technology—which is spreading particularly quickly in the region—is changing the way people interact. India now broadcasts more than 800 television channels, compared with only two in 1990 (Indian MIB 2012). More than three in four people in Asia and the Pacific now use a mobile phone, compared with less than one in four in 2005; and 2.3 million more people in Asia and the Pacific are connecting to the internet every week (ITU 2011).

The rise of Asia's middle class has a long way to play out (Chapter 2).

Asia's growing weight is altering the focus of global governance

Finally, Asia is not a self-contained strategic or economic system. The rising influence of emerging economies in Asia is shifting the focus of global governance.

The formation of the Group of Twenty (G20) following the Asian financial crisis—particularly its elevation to a leader level forum in 2008—is an example. Changes to the governance and membership of rules-setting bodies such as the International Monetary Fund (IMF) have also begun. An important sign of the shift in financial relativities was the substantial commitment that emerging economies made to the IMF's crisis reserves at the G20 summit in Mexico in 2012.

ASEAN has consolidated its role in the evolving regional architecture. It provides the framework for the East Asia Summit, which brings together leaders from all major powers involved in the region, with an agenda that covers economic, political, security and environmental issues.

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