

Bowman, Scott; Conway, Patrick

Working Paper

China's recent growth and its impact on the New Zealand economy

New Zealand Treasury Working Paper, No. 13/15

Provided in Cooperation with:

The Treasury, New Zealand Government

Suggested Citation: Bowman, Scott; Conway, Patrick (2013) : China's recent growth and its impact on the New Zealand economy, New Zealand Treasury Working Paper, No. 13/15, ISBN 978-0-478-40359-6, New Zealand Government, The Treasury, Wellington

This Version is available at:

<https://hdl.handle.net/10419/205639>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

China's Recent Growth and its Impact on the New Zealand Economy

Scott Bowman and Patrick Conway

New Zealand Treasury Working Paper 13/15

July 2013



**NZ TREASURY WORKING
PAPER 13/15**

China's recent growth and its impact on the New Zealand economy

MONTH/YEAR

July 2013

AUTHORS

Scott Bowman
NZ Treasury
1 The Terrace
PO Box 3724
Wellington 6008
New Zealand
Email scott.bowman@treasury.govt.nz
Telephone 64 4 917 6024
Fax N/A

Patrick Conway*
NZ Treasury
1 The Terrace
PO Box 3724
Wellington 6008
New Zealand
Email patrick.conway@treasury.govt.nz
Telephone 64 4 917 6957
Fax N/A
* corresponding author

ISBN (ONLINE)

978-0-478-40359-6

URL

Treasury website at July 2013:
<http://www.treasury.govt.nz/publications/research-policy/wp/2013/13-15>
Persistent URL: <http://purl.oclc.org/nzt/p-1577>

ACKNOWLEDGEMENTS

We would like to thank Paul Conway, Jason Young, Wei Zhang, Lee McCauley, Steve Cantwell, Bob Buckle and Simon McLoughlin for their helpful comments, as well as many colleagues at the New Zealand Treasury and Reserve Bank of New Zealand who commented on earlier drafts of this paper. All errors and omissions remain our own.

NZ TREASURY

New Zealand Treasury
PO Box 3724
Wellington 6008
NEW ZEALAND
Email information@treasury.govt.nz
Telephone 64-4-472 2733
Website www.treasury.govt.nz

DISCLAIMER

The views, opinions, findings, and conclusions or recommendations expressed in this Working Paper are strictly those of the author(s). They do not necessarily reflect the views of the New Zealand Treasury or the New Zealand Government. The New Zealand Treasury and the New Zealand Government take no responsibility for any errors or omissions in, or for the correctness of, the information contained in these working papers. The paper is presented not as policy, but with a view to inform and stimulate wider debate.

Abstract

The People's Republic of China has become increasingly important to the New Zealand economy since the start of economic liberalisation in China more than 30 years ago, particularly in the past decade. This paper is the first of three looking at the impact of China on the New Zealand economy. It examines China's recent economic expansion and traces the channels through which this expansion and the subsequent increased demand for commodities have impacted on the New Zealand economy, concentrating on exports in the past decade. The second paper (Bowman & Conway, 2013) examines the outlook for China's impact on the New Zealand economy through these same channels. The third paper (Osborn & Vehbi, 2013) quantifies the impact of China's expansion and commodity demand on the New Zealand economy through the framework of an econometric model.

This paper concludes that China's expansion has had a large positive impact on the New Zealand economy, mainly through increased merchandise exports, but also through services exports, merchandise imports and other channels. Merchandise exports to China were equivalent to 3.3% of New Zealand's nominal GDP in 2012, up from 0.8% in 2000. The trend increase in exports to China since 2000 has mainly been a result of higher volumes, with higher prices providing a boost to incomes. The increase in exports to China has generally not come at the expense of lower export volumes to other markets.

Since 2001, dairy and forestry exports have outperformed the rest of the economy, contributing 7.9 percentage points to expenditure GDP growth, versus an expected contribution of only 1.9 percentage points if they grew at the same rate as the economy as a whole. Chinese demand has also been the main driver of increased dairy and forestry production recently and they have also outperformed the rest of the economy. Since 2008, the dairy and forestry industries have contributed 2.1 percentage points to real production GDP growth versus an expected contribution of 0.2 percentage points.

JEL CLASSIFICATION

F14 – Country and Industry Studies of Trade
F43 – Economic Growth of Open Economies

KEYWORDS

China; New Zealand; commodities; dairy; forestry; merchandise trade;

Table of Contents

Abstract	i
1 Introduction	1
1.1 Historical background and economic linkages	1
1.2 Previous studies, scope and outline	4
2 China's recent economic growth	6
2.1 Composition of China's growth	6
2.2 Cyclical aspects of China's growth	12
3 China's impact on New Zealand	15
3.1 China's demand for primary products	16
3.2 China's demand for services exports	22
3.3 New Zealand's imports from China	22
3.4 China's other direct impacts	24
3.5 China's indirect impact via Australia	25
4 Conclusions	26
5 Bibliography	28

List of Tables

Table 1 – Concentration of NZ trade with China (2012, percent shares, fob/cif)	3
Table 2 – Decomposition of growth (average annual percent change, 2000-2010)	8
Table 3 – China's growth and inflation rates (% per annum)	13

List of Figures

Figure 1 – New Zealand's increasing trade with China	2
Figure 2 – Components of China's GDP	6
Figure 3 – Investment share of GDP and per capita GDP	7
Figure 4 – Drivers of China's growth	8
Figure 5 – Saving, investment and current account balance	11
Figure 6 – Household income and consumption per capita	11
Figure 7 – China's macroeconomic performance	12
Figure 8 – New Zealand exports	17
Figure 9 – Dairy trade	19
Figure 10 – New Zealand export prices	20
Figure 11 – Terms of trade impact on GDP	21
Figure 12 – Short-term visitor arrivals to New Zealand	22
Figure 13 – New Zealand imports	23
Figure 14 – Import prices	23

China's recent growth and its impact on the New Zealand economy

1 Introduction

1.1 Historical background and economic linkages

Since Deng Xiaoping initiated the programme of economic liberalisation in China more than 30 years ago, its economy has averaged annual growth rates of around 10%, doubling real GDP every seven and a half years.¹ In 2010 China became the second largest economy in the world in terms of nominal GDP converted at market exchange rates, overtaking Japan, and is projected to surpass the United States (US) by the mid-2020s; however, per capita GDP in 2012 was only 12% of US levels, showing the scope for further growth. Even by the mid-2020s, China's per capita GDP is expected to be only around 25% of US levels at market rates.²

New Zealand was well positioned to benefit from China's rapid expansion. New Zealand established diplomatic and trade relations with China in 1972 and was the first OECD-member to conclude a free trade agreement with China in 2008. China joined the World Trade Organisation (WTO) in 2001, supporting an increase in its share of world merchandise exports, which grew from 5.9% in 2003 to 10.6% in 2010, and an increase in its share of merchandise imports, which increased from 5.4% to 9.3% over the same period.³

China has become much more important to New Zealand recently as its demand for dairy, meat and forestry products has increased rapidly and other economic linkages have expanded. A surge in merchandise exports between 2008 and 2012 lifted China to New Zealand's second largest market after Australia (accounting for 15% of merchandise exports, just over two-thirds of Australia's 21% share). China overtook the US in 2009 as an export market and its share of merchandise exports was up from 2% in the early 1990s (Figure 1.1 below).⁴

China has also become a major source of imports, increasing from a 1% share of goods imports in 1990 to a 6% share in 2000 (fourth ranked) and a 16% share in 2012, the

¹ The emphasis on economic development was reaffirmed at the 16th National Congress of the Communist Party in 2002 (<http://www.china.org.cn/english/features/49007.htm#4>).

² Calculations based on an extension of GDP and population growth projections and exchange rate assumptions in IMF April 2013 World Economic Outlook, database <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/index.aspx>

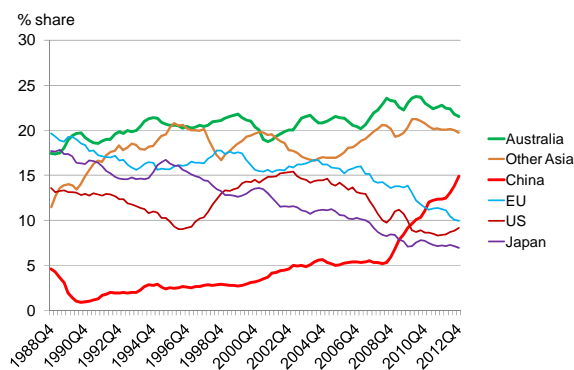
³ World Trade Organisation, International Trade Statistics 2011, http://www.wto.org/english/res_e/statis_e/its2011_e/its11_world_trade_dev_e.htm, Tables 1.6 and 1.7.

⁴ All New Zealand statistics sourced from Statistics New Zealand, unless otherwise noted, www.stats.govt.nz.

largest import source and just ahead of Australia (Figure 1.2 below). Since 1990 the balance of trade has been in China's favour, with New Zealand's imports exceeding exports. The trade deficit peaked in 2008 at NZ\$3.9 billion (150% of the value of exports) and despite the large increase in New Zealand's merchandise exports to China since then, the balance of trade remained in China's favour in 2012 with the value of imports exceeding exports by NZ\$850 million (12% of the value of exports).

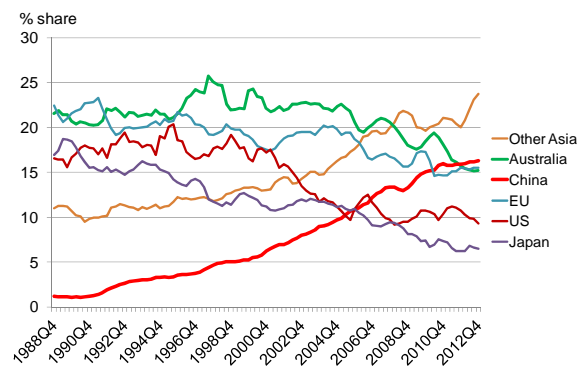
Figure 1 – New Zealand's increasing trade with China

Figure 1.1: NZ goods export shares



Source: Statistics New Zealand

Figure 1.2: NZ goods import shares



Source: Statistics New Zealand

Figures 1.1 and 1.2 also show the increasing share of New Zealand's trade with countries in Asia apart from China and Japan; the other Asian economies have accounted for 15-20% of goods exports for the past 20 years, but their share of goods imports has increased from 10% to 24% over that period, similar to China's increasing share of imports.⁵ Meanwhile, the share of New Zealand's merchandise trade with the US, EU and Japan has steadily declined over the past decade.

New Zealand's trade with China is heavily concentrated in a small number of product areas. Given China's importance overall in New Zealand's external trade, New Zealand is heavily dependent on China as a market or source for those products. The top five export products to China accounted for nearly three-quarters of all goods exports to China in 2012 and in four of those product areas China was the major market (Table 1). Similarly for imports, the top five product groups accounted for more than two-thirds of New Zealand goods imports from China in 2012 and China was the main source for all of them, particularly textiles for which it accounted for nearly three-quarters of imports.

⁵ New Zealand's increasing share of merchandise trade with the rest of Asia reflects the development of regional trade in East Asia, much of it centred on China through vertical integration of manufacturing processes.

Table 1 – Concentration of NZ trade with China (2012, percent shares, fob/cif)

Goods exports	Dairy	Wood	Meat	Wool	Seafood
HS codes	04	44	02	51	03
Share of exports to China	37.5%	18.1%	6.0%	5.7%	4.9%
China's share of product	22.2%	39.2%	8.0%	48.6%	24.3%
China's rank by product	1	1	3	1	1
Goods imports	Machinery, mechanical appliances	Textiles, apparel footwear	Electrical machinery, etc	Furniture, bedding etc	Plastics & plastic articles
HS codes	84	61-65	85	94	39
Share of imports from China	19.6%	18.7%	17.3%	5.3%	3.9%
China's share of product	25.0%	74.1%	34.5%	58.9%	17.5%
China's rank by product	1	1	1	1	2

Source: Statistics New Zealand

China is also an important market for services trade. Services exports to China increased 42% from \$744 million in the year to June 2006 to \$1,054 million in the year to June 2012, accounting for 7.6% of services exports in that year. Short-term visitor arrivals (including students) increased 35% in 2012 from the previous year to 197,000, accounting for 7.7% of visitor arrivals and ranked second after Australia and ahead of the UK and US, and up from 33,500 in 2000 (2% share and ranked ninth). China is still a relatively small services import market, with New Zealand's services imports from China increasing 55% from \$235 million in the year to June 2006 to \$364 million in the year to June 2012, but accounting for only 2.5% of services imports. New Zealand short-term departures to China numbered 66,000 in 2012, 3% of all short-term departures and the sixth largest destination.

There are other channels apart from goods and services trade by which China's recent rapid growth has had an impact on New Zealand, including China as a destination for and source of investment and China as a source of migrants to New Zealand. In addition, there is the impact of these linkages on other dimensions of the New Zealand economy, for example the impact of increased imports on inflation in New Zealand. This paper and the accompanying one⁶ concentrate on New Zealand goods exports and GDP.

China has become even more important to Australia than to New Zealand. China is Australia's major export market, accounting for 30% of merchandise exports in 2012, dominated by mineral resources.⁷ Australia's merchandise exports to China were equivalent to 4.9% of Australia's nominal GDP in 2012. Australia in turn remains New Zealand's largest single export market (Figure 1.1) and so it is expected that there would be some flow-on benefit to New Zealand from Australia's trade with China.⁸

There have been previous periods of strong economic growth in China and demand for raw materials in the past thirty years. New Zealand exports increased throughout the 1980s with wool the major product and China reached nearly a 5% share of total goods

⁶ Bowman and Conway (2013).

⁷ In 2012, more than three-quarters of Australia's goods exports were mineral resources and energy, with just over 10% agricultural products. Australian Bureau of Statistics <http://www.abs.gov.au/>

⁸ Sun (2011) finds that the influence of emerging Asia on New Zealand comes indirectly through Australia, with Australian shocks transmitting almost "one-for-one" to New Zealand, largely through financial factors. See also Osborn and Vehbi (2013).

exports;⁹ in the recent period dairy, forestry and meat products have been the major export categories and have contributed most of the growth. The surge in demand for New Zealand products has occurred since the global financial crisis (GFC) escalated in late 2008, whereas Australia experienced a large increase in demand for minerals prior to the GFC as investment in China increased. After a pause during the crisis, demand for minerals surged again as the monetary and fiscal stimulus in response to the economic downturn boosted investment spending, particularly investment in infrastructure and property; China's annual growth in investment exceeded 20% in 2008 and 2009 in nominal terms.¹⁰

1.2 Previous studies, scope and outline

Much has been written on the drivers and sustainability of China's growth; from a New Zealand perspective, Buckle (2009) traces China's development in the context of the Asia-Pacific region over the past thirty years leading up to the development of the GFC. In New Zealand and Australia, the Reserve Banks and Treasuries have both undertaken research on the impact of China's development on their respective economies.

In Australia, Lowe (2009) identifies Australia's close trade links with Asia, especially China, as supporting it through the GFC and as a positive for the outlook. Battellino (2010) finds that while previous mining booms had considerable benefits for the Australian economy, they led to higher inflation which the floating exchange rate should help avoid in the current boom. Liu and McDonald (2010) examine trends in China's growth and urbanisation and conclude that because economic convergence is far from complete, China will be a major source of minerals demand for some time to come.

Gruen (2011) traces the impact of the emergence of China on the industrial structure of the Australian economy and expects its continued growth to have a significant impact in the future. McKissack and Xu (2011) conclude that China successfully steered its economy through the GFC, but that it faces growing imbalances, particularly increasing inflation. Parkinson (2011) discusses the opportunities and challenges in China's further development and its impact on Australia.

In September 2012, the Australian Treasury, the Reserve Bank of Australia and the International Monetary Fund (IMF) jointly hosted a conference on structural change and the rise of Asia¹¹ and in October 2012 the Australian government released a white paper entitled "Australia in the Asian Century" which makes recommendations on how Australia can take advantage of Asia's continuing development.¹² In December 2012, the Australian Treasury released a special issue of its Quarterly Roundup to mark the fortieth anniversary of the establishment of diplomatic relations between Australia and China.¹³ Plumb, Kent and Bishop (2013) argue that the Australian economy has adjusted relatively smoothly to the terms of trade shock arising from China's increased demand for resources as changes in relative wages and prices have allowed factors of production to move to the resource sector.

⁹ Wool (HS code 51) accounted for 83% of New Zealand exports to China in 1988. China's share of New Zealand exports fell to 1% in 1990 as its demand for wool collapsed.

¹⁰ National Bureau of Statistics of China, China Statistical Yearbook 2011, Table 2-17, <http://www.stats.gov.cn/english/>

¹¹ <http://www.treasury.gov.au/PublicationsAndMedia/Events/Structural-change-and-the-rise-of-Asia>

¹² <http://asiancentury.dpvc.gov.au/>

¹³ Australian Treasury (2012), <http://www.treasury.gov.au/PublicationsAndMedia/Publications/2012/Economic-Roundup-Issue-4>

In the New Zealand context, Bollard and Smith (2006) identify the emergence of China as one of the key global developments affecting New Zealand in the new millennium. Borkin (2006) considers that China's development is likely to have a positive effect on New Zealand's terms of trade through both higher export prices and lower manufactured goods import prices. Stevens (2007) places the growth of China in the context of ongoing globalisation and identifies rising incomes in Asia as a source of increased demand for high-quality agricultural products from New Zealand.

Buckle and Cruickshank (2007) point out that China's growth and integration into the world economy have made a major contribution to growth in the APEC region which is an important trading bloc for New Zealand. Sullivan and Aldridge (2011) argue that strong growth in China is the major driver of higher prices for New Zealand's export commodities, although supply constraints and energy policies are also relevant. Briggs *et al.* (2011) examine developments in the main commodity markets relevant to New Zealand up until 2008, finding that both common and commodity-specific factors were at play.

There has also been a series of IMF Working Papers on the spillovers from China's development, including to Australia and New Zealand.¹⁴ While these papers discuss the impact of China at an aggregate level, they do not examine the impact on the New Zealand economy of the growth in China's demand for specific commodities. This paper addresses that topic; accompanying papers examine the outlook for China's impact on the New Zealand economy (Bowman and Conway, 2013) and quantify the impact of China's growth on the New Zealand economy (Osborn and Vehbi, 2013).

This paper identifies the main features of China's recent economic development and their impact on the New Zealand economy. The analysis concentrates on China's demand for primary commodities, but also refers to services exports and manufactured imports from China. Some other economic impacts are also discussed briefly. It is more concerned with the long-term drivers of China's growth and its impact on the New Zealand economy than with the short-term cyclical forces acting on China's economy, although they are also relevant and may interact with some of the longer-term drivers.

The analysis in this paper is mainly restricted to the direct impacts of increased commodity demand on components of GDP. It does not net out offsetting impacts which are difficult to quantify, for example imported products used to produce exports.¹⁵ In addition, some of the benefits from China may be offset by falls in exports to other countries in cases where New Zealand supply is limited. On the positive side, stronger demand from China for commodity products will have lifted prices in all markets.

The paper is organised as follows. Section 2 traces the nature of China's development over the past three decades. Section 3 examines the impact of China's recent strong growth on the New Zealand economy and the final section draws some conclusions.

¹⁴ Arora and Vamvakadis (2010), Hunt (2010) and Sun (2011).

¹⁵ Given the relatively low imported content of New Zealand primary export products, this effect is likely to be small.

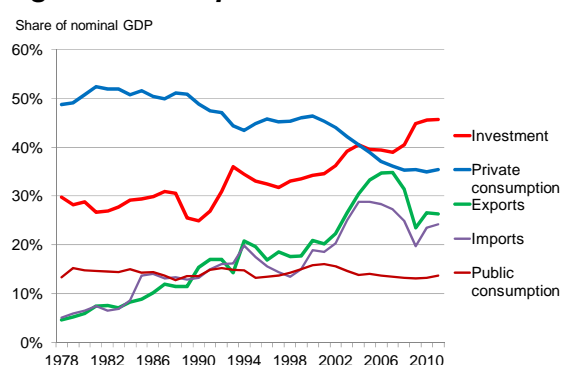
2 China's recent economic growth

The first part of this section traces China's development over the past three decades in terms of the components of expenditure GDP and a growth accounting framework. Over that period, China's expansion has been primarily dependent on export and investment growth, and investment currently accounts for a larger share of GDP than it did at its peak in other emerging Asian economies. The second part of the section suggests that China's economic growth has become more stable in the second half of the period and inflation lower, possibly reflecting the authorities' emphasis on growth and better macroeconomic management.

2.1 Composition of China's growth

Since the start of China's economic liberalisation in 1978, its development strategy has been based on exports and investment.¹⁶ Initially investment accounted for less than 30% of nominal GDP, but three decades later investment's share of output reached 46% (Figure 2). The surge in investment's share of GDP in the past four years is the result of the large fiscal stimulus and credit expansion directed at infrastructure in the wake of the GFC. The value of goods exports

Figure 2 – Components of China's GDP



Source: Haver Analytics

has increased from less than 10% of GDP at the time of liberalisation to peak at around 35% in 2006 and 2007, prior to the GFC. Net exports' contribution to GDP increased from around zero in the early years of the expansion to peak at 8.8% in 2007. The proportion of nominal expenditure GDP accounted for by private consumption has declined over this period from just above 50% in the early 1980s to only 35% recently.¹⁷

2.1.1 Investment and productivity

The high proportion of economic activity devoted to capital formation partly reflects the stage of development of the Chinese economy, in particular the need for investment in infrastructure, both public and private, as the economy expands and household incomes increase. China's high investment-share of GDP also reflects the positive growth prospects for the economy, the ready availability of funds thanks to the high saving rate, a high rate of retained earnings by state-owned enterprises, as well as restrictions on investing offshore or in securitised investment products.¹⁸ The main areas of fixed asset investment in China are manufacturing, infrastructure and real estate.¹⁹

This pattern of a high investment-to-GDP ratio is typical in emerging economies as their GDP per capita increases, but China's investment share of GDP is higher than the peak in

¹⁶ For an account of China's economic development since 1978, see Lee and Hong (2010), World Bank (2012) or Zhuang, Vandenberg and Huang (2012).

¹⁷ IMF (2011) suggests that there may be under-recording of consumption and service sector activity in the national accounts.

¹⁸ For a discussion of the effects of financial repression on China's growth, see Huang and Wang (2010).

¹⁹ For an analysis of the drivers of each of these components, see Barnett & Brooks (2006).

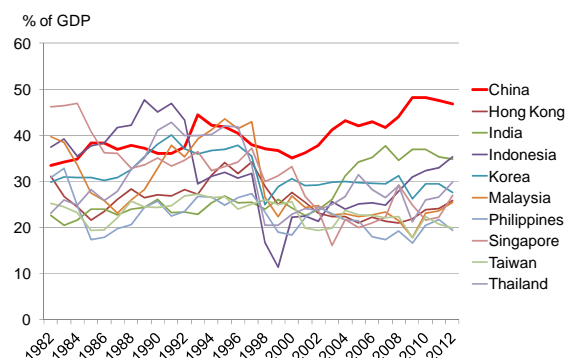
many other emerging Asian economies and has been sustained at that level for some time. Investment's increasing share of GDP implies a rising capital-output ratio and a falling marginal product of capital. The sustainability of the high rate of investment growth is addressed in our second paper (Bowman and Conway, 2013).

Investment has already peaked as a share of GDP in many other Asian developing and newly-industrialised economies but at different income levels in different countries. The investment-to-GDP ratios of nine other newly-industrialised or emerging Asian economies which feature in New Zealand's top 20 trading partners (Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand) ranged between 20% and 45% from 1982 to 1997, but after the Asian financial crisis they mostly fell to a range of 20-30% (Figure 3.1).²⁰ By contrast, China's investment share of GDP has increased over the past 30 years and has been sustained at a high level, making its position atypical.²¹

China's high investment-to-GDP ratio partly reflects its relatively low level of per capita GDP compared with other emerging Asian economies whose investment-to-GDP ratios have already peaked (Figures 3.1 and 3.2). However, even for its level of per capita income, China's investment share of GDP is high. Only Philippines, Indonesia and India have lower GDP per capita than China in purchasing power parity (PPP) terms and their investment shares of GDP are currently much lower (Figure 3.2). China's level of per capita income does not fully explain investment's high share of its GDP.

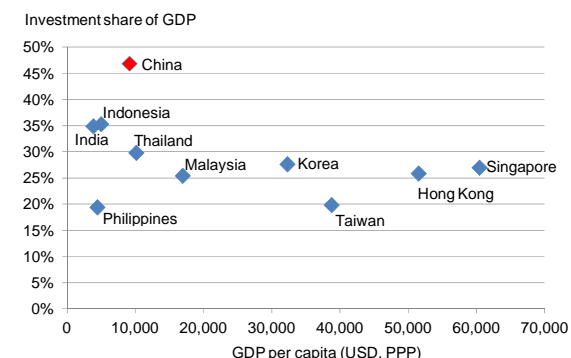
Figure 3 – Investment share of GDP and per capita GDP

Figure 3.1: Investment share of GDP – selected Asian economies



Source: International Monetary Fund (2013)

Figure 3.2: Investment share of GDP and per capita GDP (2012)



Source: International Monetary Fund (2013)

Heavy investment in capital has allowed China to raise its labour productivity and take advantage of its low labour and other costs to export competitively to the rest of the world. Labour productivity growth in China has been high, even compared with other developing economies; employment growth has averaged only around 1% per annum over the past two decades, slightly higher than population growth which has averaged around 0.8% per annum in that period but has fallen to 0.5% per annum in recent years. More importantly, total factor productivity (TFP) growth (ie, growth in output relative to both labour and capital inputs) has been strong in China and one of the highest rates of TFP growth in any economy (Table 2).

²⁰ Most of the data used in the first part of this section are drawn from the IMF April 2013 WEO database.

²¹ Lee *et al.* (2012) estimate that China may have been over-investing by 12-20% of GDP relative to its steady-state desirable value in the period 2007-11.

Table 2 – Decomposition of growth (average annual percent change, 2000-2010)

	GDP	Employment	Labour Productivity	Total Factor Productivity
China	10.7	0.6	10.1	4.1
India	7.1	2.3	4.9	2.0
United States	1.8	0.3	1.5	0.5

Source: Conference Board, <http://www.conference-board.org/data/economydatabase/>

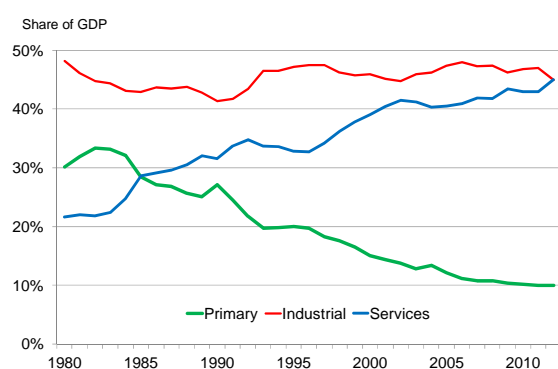
China's high TFP growth rate reflects its low starting point in terms of capital intensity and technology, the fast rate of adoption of new technology and the economy's openness to foreign investment (in some sectors), trade and education.²² Despite the rapid growth, the level of capital stock and technology is still low in China, giving plenty of scope for further development.²³ China's per capita GDP in purchasing power parity terms is still low, giving it ample scope to catch up with some other emerging Asian economies (Figure 3.2).

2.1.2 Urbanisation and industrialisation

The main economic and social processes which have underpinned the high rate of investment in China over the past 30 years are industrialisation and urbanisation. The industrial sector of the economy (comprising manufacturing and construction) has expanded at about the same pace as the economy as a whole, maintaining its share of output at just below 50%. The primary sector's share has shrunk from 30% to 10% between 1980 and 2012, while services doubled their share from 22% to 45% (Figure 4.1). The proportion of people employed in the industrial sector has increased steadily from 18% in 1980 to 30% in 2011 as employment in the primary sector fell from 69% to 35% of the total and employment in the services sector increased from 13% to 35%.

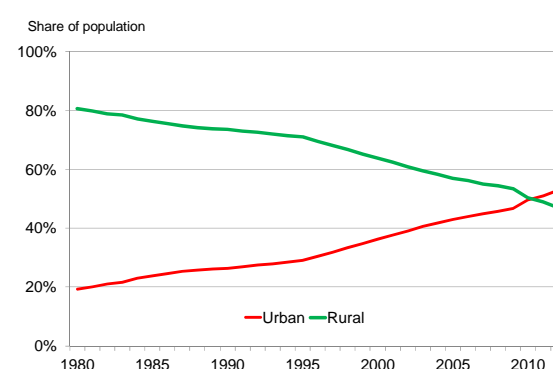
Figure 4 – Drivers of China's growth

Figure 4.1: China's industrialisation



Source: Haver Analytics

Figure 4.2: China's urbanisation



Source: Haver Analytics

There has been a corresponding increase in the proportion of the population living in urban areas from 20% in 1980 to 53% in 2012, the second year in which the urban population has exceeded the rural population (Figure 4.2). Urban population growth averaged 4.2% per annum over the past three decades, while the rural population

²² Cates (2009) discusses the factors contributing to China's high TFP growth.

²³ Roubini Global Economics (2010) estimate that China's per capita capital stock is less than a quarter of the US's on a purchasing power parity basis.

declined by an average of 0.6% per annum over that period and declined by 1.7% per annum in the second half of that period as the rate of urbanisation increased. The migration of workers from the countryside to the cities has required extensive investment in housing and urban infrastructure, just as industrialisation has required the construction of factories and investment in capital equipment. The Twelfth Five Year Plan (2011 – 2015) set targets for service sector value-added to increase to 47% of GDP and for the urban population to increase to 51.5% of the total. The second goal has already been achieved on the figures given above.

2.1.3 Net exports and external sector

Although net exports have not made a large contribution to GDP because of the high level of imports (chiefly raw materials and capital goods), the total value of goods and services exports (on a balance of payments basis) was relatively high at 26% of nominal GDP in 2011; imports were a lesser 24% of GDP, leaving a surplus on the current account of 2% of GDP.²⁴ Exports' share of GDP in China is much greater than in other large economies such as the US and Japan (14% and 15% respectively in 2012). Exports have grown at a faster pace than GDP in the past two decades, although their growth fell sharply during the GFC, and they have been a major driver of investment growth in China in that period.²⁵

China's rapid export growth, combined with a moderately undervalued exchange rate,²⁶ has led to large current account surpluses and the build-up of considerable foreign exchange reserves. Despite some moves towards greater flexibility, the authorities still operate a managed float exchange rate regime which requires them to sell Chinese currency and buy foreign currency to maintain the currency's value within a band. The competitive nature of Chinese exports (owing to low labour and other costs and the undervalued exchange rate), combined with some relaxation of capital controls and the prospect of appreciation of the currency, has led to the central bank accumulating foreign reserves of US\$3.4 trillion at the end of 2012 (approximately 40% of nominal GDP). More than one third of those reserves are held in US government stock, although Chinese investors are diversifying into other government bonds, including New Zealand.²⁷

The composition of Chinese economic growth is related to the development and persistence of global imbalances. China's accumulation of foreign exchange reserves helped fund the US government budget deficit in the 2000s, thereby keeping US (and world) interest rates lower than otherwise, encouraging increased consumption and investment in housing. This in turn led to a large trade deficit for the US, mirroring China's trade surplus. China's current five-year plan advocates a rebalancing of growth away from exports and investment towards consumption. Internal rebalancing of this kind would also help to reduce external and global imbalances. We explore the issue of internal rebalancing further in our second paper (Bowman and Conway, 2013).

²⁴ The current account surplus peaked at 10% of GDP in 2007; see Figure 5 below.

²⁵ Roberts and Rush (2010) argue that China's manufacturing exports have been a significant driver of its demand for mineral resource commodities and that manufacturing was the main driver of investment prior to the GFC.

²⁶ The IMF considers that the renminbi is moderately undervalued against a broad basket of currencies (IMF, 2012, p.20). The IMF maintained this view in its 2013 Article IV Concluding Statement. The extent of under-valuation has decreased as the nominal exchange rate has appreciated and (in real terms) as China's inflation has exceeded its trading partners'.

²⁷ For a description of China's monetary policy framework, see Conway, Herd and Chalaux (2010).

2.1.4 Private consumption

Private consumption has accounted for a smaller share of China's GDP than might be expected. Consumption's share of nominal GDP has declined over the past three decades from more than 50% to only 35% in 2011 (Figure 2 above). However, some analysts have argued that China's private consumption is understated. Wang and Woo (2011) claim that household disposable income was under-reported in official figures by 66% in 2008, with the under-reporting concentrated in high income households. Their study also suggests that household consumption was under-reported by 20% in the same year, implying higher consumer spending and a higher consumption share of GDP (and correspondingly a lower investment share). Barclays Capital (2012) add to this by arguing that consumption growth has also been under-estimated on the basis of retail sales growth; they conclude that the consumption share of GDP has actually increased since 2008. Accordingly, private consumption growth may have been stronger than the official figures indicate.

Private consumption's low share of GDP in China partly reflects a high saving rate by Chinese households which arises from a number of factors.²⁸ The lack of comprehensive state provision of health, welfare and education services has led to increased precautionary saving and so lower consumption.²⁹ In addition, financial markets are not well developed (limiting household borrowing) and there is a strong preference for investing in property with high equity levels (encouraging saving and reducing borrowing).³⁰ Population ageing may also be a factor encouraging increased saving as more people save for old age; it has also been suggested that the gender imbalance of males to females has led to higher savings as young men, often with the help of their parents, save to buy a house to attract a prospective wife.³¹

Private consumption's declining share of GDP over the past three decades also reflects the declining share of national income received by labour, partly as a result of the competitive labour market and low labour-intensity of economic growth.³² There may also be a lag from rising incomes to increases in consumption as households adjust to their new income levels.³³ The industrial structure of the economy, with large state-owned monopolies, has led to high profit levels in the business sector and high saving rates.³⁴ The high profit levels may have also suppressed labour's share of income,³⁵ reinforcing consumption's relatively small share of GDP (relative to a given saving rate).

²⁸ See Aziz and Cui (2007), Chamon and Prasad (2008), Barnett and Brooks (2010), Baldacci *et al.* (2010), Guo and N'Diaye (2010), and Chamon, Liu and Prasad (2010) for discussion of consumption's low share of GDP and the main factors affecting it, the high household saving rate and low household income share of GDP.

²⁹ For an analysis of the determinants of household saving rate, see Nabar (2011).

³⁰ Huang and Wang (2010) conclude that financial repression retarded growth in China by 1.7-2.1 percentage points in 2008, less than the 3.0-3.6 percentage points in 1978.

³¹ Du and Wei (2010) explain China's seemingly overvalued exchange rate and high saving rate in terms of gender imbalance. Golley and Tyers (2012) explore the implications of gender rebalancing in China, including reduced saving, using a global dynamic model.

³² Aziz and Cui (2007) estimate that the wage share of national income declined from 67% of GNP in the early 1980s to 56% in the mid-2000s (p.6).

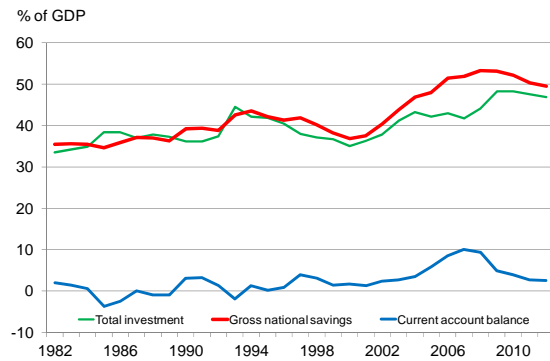
³³ Prasad (2009) argues that the precautionary motive and financial repression are the main drivers of high household savings in China.

³⁴ Kuijs (2005) points out that China's high saving rate is driven more by enterprises and government than by households.

³⁵ Bayoumi *et al.* (2010) argue that Chinese firms do not have a significantly higher saving rate (as a share of total assets) than the global average because corporations in most countries have a high saving rate.

Household saving rates of around a quarter of disposable income, combined with high rates of retained earnings by state-owned enterprises (SOEs), have resulted in the national saving rate peaking at 53.4% of GDP in 2008.³⁶ Gross saving and investment have generally moved together since the early 1980s, increasing from around 35% of GDP at that time to just below 50% currently, although gross saving exceeded investment significantly in the mid-2000s, resulting in the current account surplus reaching 10% of GDP in 2007, just before the global financial crisis (Figure 5). The increase in saving and investment's share of nominal GDP is the mirror image of the decline of consumption (Figure 2 above).

Figure 5 – Saving, investment and current account balance

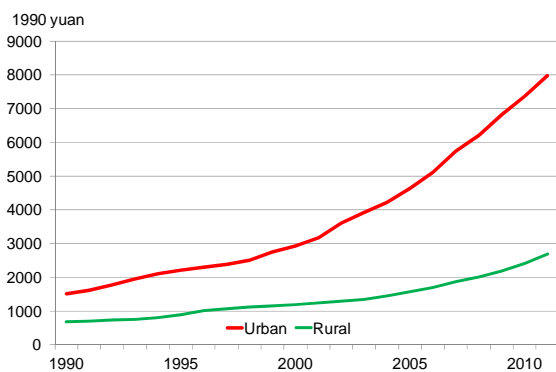


Source: IMF (2013)

Despite private consumption's declining share of GDP and the high household saving rate, household disposable incomes and household consumption expenditure have both increased steadily in absolute terms since liberalisation of the economy began in 1978. The increase has been led by urban households as industrialisation has lifted their disposable incomes substantially. In 1990 real terms, deflated by the urban Consumers Price Index (CPI), urban household disposable incomes have increased five-fold from 1,500 yuan in 1990 to 7,980 yuan in 2011; rural household disposable incomes, deflated by the rural CPI, have increased nearly four-fold from 690 yuan in 1990 to 2,700 yuan in 2011, also in 1990 real terms (Figure 6.1).

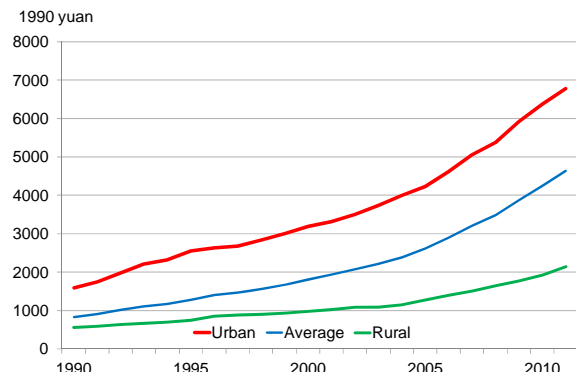
Figure 6 – Household income and consumption per capita

Figure 6.1: Real household disposable income (per capita)



Source: Haver Analytics

Figure 6.2: Real household consumption expenditure (per capita)



Source: Haver Analytics

Household consumption expenditure has also increased significantly over the same period, led by urban households. Urban household consumption expenditure, deflated by the urban CPI, has increased more than four-fold from 1,600 to 6,860 yuan in the past two decades, while rural household consumption expenditure has increased nearly four-fold from 560 to 2,180 yuan, both in 1990 real terms (Figure 6.2). With the change in the

³⁶ IMF (2013).

shares of rural and urban households, average real household consumption expenditure has increased more than five-fold from 830 to 4,700 yuan (1990 terms).

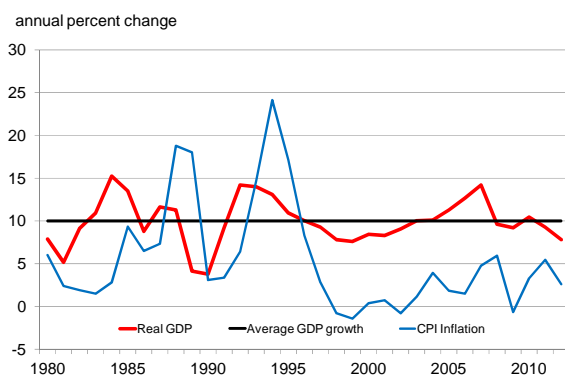
As Chinese real household disposable incomes and consumption expenditure have risen, spending patterns have changed as well, with a smaller proportion of income spent on food and more spent on consumer durables such as household appliances and vehicles. While the CPI weights are not published, after the 2011 review food's share of household expenditure fell by 2.2 percentage points to around one third, while residence spending rose by 4.2 percentage points.³⁷ It would also be expected that there will be a switch within spending on food away from grains towards meat and other protein products, including dairy products. This is the usual pattern of development of expenditure. For example, China's protein supply from meat doubled between 1990 and 2010, while South Korea's nearly quadrupled between 1980 and 2000.³⁸ In China, and many other developing economies, there has also been a change in tastes towards western diets, including items such as hamburgers and pizza which use greater amounts of meat and cheese. These developments are explored further in Section 3 below.

2.2 Cyclical aspects of China's growth

China's rate of economic growth has varied between 4% and 15% per annum over the past thirty years, averaging 10% per annum over that period. In the first half of this period, growth rates were more variable and high growth tended to lead to high inflation. The late 1980s were an example of this: inflation reached more than 18% in 1988 and 1989 following economic growth of 15% earlier in the decade; and again in the early 1990s annual inflation reached 24% in 1994 following economic growth of 14% in the previous two years (Figure 7.1).³⁹

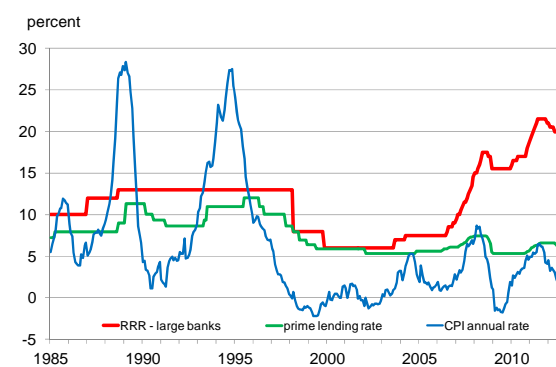
Figure 7– China's macroeconomic performance

Figure 7.1: China's economic growth and inflation



Source: IMF (2013)

Figure 7.2: CPI inflation, lending rate and reserve requirement ratio (RRR)



Source: Haver Analytics

The late 1980s were a period of high inflation worldwide, but most countries were starting to bring their inflation under control by the early 1990s and so high inflation in China at that time seems to have been largely owing to domestic factors, although large

³⁷ ANZ China Monthly Chartbook, 22 February 2011.

³⁸ Food and Agricultural Organisation database: <http://faostat3.fao.org/home/index.html#COMPARE>

³⁹ Conway, Herd and Chalaux (2010) investigate whether a Phillips Curve holds in China; they find that there is a relationship between aggregate demand and inflation, but that there is no long-term trade-off if inflation expectations are forward-looking.

devaluations of the currency would also have contributed. The response of authorities to the high inflation was to tighten monetary conditions to slow growth and reduce resource constraints and price pressures (Figure 7.2). Porter (2010) estimates that on various measures of potential growth, China had a positive output gap in the late 1980s with a rapid reduction in the gap in the early 1990s.⁴⁰

China's real GDP growth dipped below 5% in the late 1980s following the monetary tightening in response to the period of high inflation. However, growth picked up again in the mid-1990s to average 10% per annum over the decade, the same as the 30-year average. Inflation also picked up again and peaked at 27.5% during 1994; the People's Bank of China (PBoC) tightened monetary policy again with the prime lending rate reaching 12.1% in the second half of 1995. The PBoC also uses quantity-based tools and administrative guidance to control credit growth (Conway *et al.*, 2010). Growth dipped below 10% per annum during the Asian financial crisis (although China was not directly involved in it) and the subsequent period of slower world growth following the bursting of the "tech bubble" in the US. Inflation was negative in the late 1990s and early 2000s, but appears to have been on a rising trend since then, with wide fluctuations including a period of falling prices in 2009 when commodity prices fell.

There is some evidence that GDP growth rates were less variable in the second half of the past three decades than in the first half and that inflation was lower and less variable in the second half of the period (Table 3). Average GDP growth rates from 1980 – 1995 were similar to the period since 1997 (10.2% vs. 9.7%), but the standard deviation of growth almost halved from 3.5% in the earlier period to 1.8% in the later period. The change is more marked with inflation: the average inflation rate fell from 8.9% in the first period to 1.9% in the later period and the standard deviation fell from 7.0% to 2.3%.⁴¹ The greater stability in macroeconomic performance in the second half of the period suggests that growth has become more sustainable.⁴²

Table 3 – China's growth and inflation rates (% per annum)

Period	Real GDP growth		CPI inflation	
	mean	std deviation	mean	std deviation
1980 - 1995	10.2	3.5	8.9	7.0
1996 - 2012	9.7	1.8	1.9	2.3
1980 - 2012	9.9	2.7	5.5	6.3

Source: IMF (2013)

There could be several reasons for China's more stable macroeconomic performance in the second half of the three decades since liberalisation. In general, it reflects a renewed emphasis on economic growth in the past decade and better macroeconomic management on the part of the Chinese authorities as they become more adept at running a large and rapidly expanding economy, for example the adoption of a managed float exchange rate regime in 2005. The period from the mid-1980s to the mid-2000s coincided with the "Great Moderation", the period of relatively stable growth and low inflation in the developed economies; China may have benefited from this (as well as

⁴⁰ Porter (2010), p.6.

⁴¹ Negative inflation in some years results in the standard deviation being greater than the mean.

⁴² Growth may not be sustainable on other criteria, eg, property prices, external imbalances, pollution and environmental degradation. We do not consider these dimensions in this paper.

contributed to it) as a result of its closer integration with the rest of the world economy, especially after its accession to the WTO in 2001.

Chinese authorities use both monetary and fiscal policy to control aggregate demand and inflation. Fiscal policy was used extensively to buffer the economy from the effects of the GFC (discussed further in Bowman and Conway, 2013), although much of the expansion was achieved via credit growth through the banking system rather than direct spending or central government borrowing. Credit growth was above 30% per annum for most of 2009 and was 20% in 2010 as part of the response to the GFC, but fell to 16% in 2011 and 15% in 2012. After late 2010, the authorities used monetary policy (interest rates, banks' reserve requirement ratios and quantitative controls) to slow credit growth and thereby economic growth and inflation. However, inflation increased sharply in the first half of 2011 chiefly as a result of rapidly increasing food prices and rising housing costs, peaking at 6.5% in July 2011, and the PBoC responded by tightening monetary policy. A year later annual inflation stood at 1.8% and the PBoC had relaxed monetary policy on three occasions.⁴³

In this section we have shown that investment accounts for a larger share of China's GDP than at its peak in other emerging Asian economies. China's heavy dependence on investment and exports for economic growth has contributed to imbalances in its own economy, with the accumulation of large foreign exchange reserves and consumption's low share of GDP, and in the global economy, with large trade and savings imbalances between countries. China alone is not responsible for the latter development. Despite consumption's low share of GDP, household disposable income and consumption expenditure have grown rapidly and the level of consumption may be understated.

We have also suggested that China's growth has become more stable in the second half of the past three decades and inflation has been lower; this may reflect an emphasis on growth and better macroeconomic management on the part of Chinese authorities, as well as a more stable external economic environment. The nature of China's development, which is heavily dependent on investment and export growth and which has also resulted in rising incomes, has influenced its impact on the rest of the world. In the following section we will trace the impact of these features of China's growth on the New Zealand economy. In the accompanying paper (Bowman and Conway, 2013) we discuss the medium-term outlook for China's growth and its likely impact on the New Zealand economy, including the main risks.

⁴³ For a discussion of monetary policy in China, see chapter 2 of the 2010 OECD China country review (OECD, 2010). See also Conway, Herd and Chalaux (2010). For an overview of the operation of macroeconomic policy in China, see Sadeghian, White and D'Arcy (2013).

3 China's impact on New Zealand⁴⁴

New Zealand's exposure to China has been growing over the past decade, but has increased significantly over the past few years. The growing exposure has been caused by China's rapid economic development, growing international integration and the development of bilateral relations, including New Zealand becoming the first OECD country to sign a free trade agreement with China in 2008. New Zealand has had both direct economic benefits from China and indirect benefits through our largest trading partner Australia. This paper concentrates on direct benefits. An accompanying paper (Osborn and Vehbi, 2013) uses an econometric model to quantify both the direct and indirect effects.

The impact on the New Zealand economy has been through a number of channels. Infrastructure investment, particularly in housing as the result of increased urbanisation, has led to increased demand for forestry products for use in the construction industry, boosted by rebuilding following the 2008 Sichuan earthquake. China's urbanisation and growing incomes have led to increased demand for New Zealand dairy products, aided by food quality concerns in the wake of the 2008 melamine scandal. The expansion of China's manufacturing base, combined with low labour costs and an undervalued exchange rate, has made consumer and capital goods available to New Zealand (and the world) at competitive prices.

Combined with the higher prices arising from increased demand from China for New Zealand's export commodities, lower import prices led to New Zealand's terms of trade reaching a 37-year high in 2011, boosting incomes and supporting the value of the New Zealand dollar. While higher prices over the past decade have boosted incomes, most of the trend increase in exports to China has been owing to higher volumes. Cheaper imports and the high value of the New Zealand dollar have helped contain tradables inflation, offset to some degree by higher food prices, particularly for dairy products. These factors have also helped contain rises in the cost of capital goods for firms.

As trade links between China and New Zealand have grown, foreign direct investment between the two countries has also increased. New Zealand's investment in China increased from \$160 million in 2007 to \$930 million in 2012 and China's investment in New Zealand increased from \$890 million to \$1,860 million over the same period; these amounts are still quite low with country ranks of 15th and 13th respectively. Closer economic ties between New Zealand and China have increased the income and purchasing power of New Zealanders, contributing to higher living standards.

The features of China's growth have had an even greater impact on the Australian economy, particularly China's demand for resource commodities for use in infrastructure investment and to meet growing energy needs. This has led to historical highs in Australia's terms of trade and a high nominal exchange rate, although it eased in mid-2013 as has New Zealand's. Given China's greater importance to the Australian economy,⁴⁵ its impact on Australia has been greater than its impact on the New Zealand

⁴⁴ All figures in this section are from Statistics New Zealand with author calculations, unless otherwise stated.

⁴⁵ Merchandise exports to China were equivalent to 4.9% of Australia's nominal GDP in 2012, whereas New Zealand's merchandise exports to China were equivalent to 3.3% of its nominal GDP in 2012.

economy.⁴⁶ There has also been an indirect impact on the New Zealand economy from this impact on the Australian economy.⁴⁷

China's expansion has also had an effect on the wider world economy, in particular the relocation of manufacturing from advanced economies to China. Globally, manufacturing's share of GDP has been in decline over the past four decades, falling from 27% in 1970 to 16% in 2010 as demand for services has expanded (Reserve Bank of New Zealand, 2013). This decline has been even more pronounced in advanced economies as production has shifted to developing countries. In line with trends in other developed economies, manufacturing's share of GDP in New Zealand has declined from nearly 19% in the late 1980s to just over 16% in 2000 and less than 13% in 2012. At the same time, imports from China (which are dominated by machinery and textiles) have increased from 0.2% of nominal GDP in the late 1980s to 1.6% in 2000 and 3.7% in 2012.

As in other developed economies, New Zealand manufacturing products have become less competitive on the world market owing to lower labour costs in developing countries, especially China. New Zealand manufacturing has also been impacted by an appreciating exchange rate. This is demonstrated by the ratio of New Zealand non-food manufacturing exports to imports falling from 44% in 2000 to 37% in 2012. At the same time, China's development has led to closer trade and economic relations with the rest of East Asia and New Zealand's trade with that region has increased in line with its trade with China. (See Figures 1.1 and 1.2 above.)

There have been other impacts from China on the New Zealand economy, including labour and capital markets. However, this paper concentrates on the impact on trade as these impacts can be more readily isolated, including in the quantification exercise in Osborn and Vehbi (2013). The timeframe adopted here is from around 2000 onwards, which is when China's impact on New Zealand started to increase, coinciding with China joining the WTO in 2001. The rest of this section explores the channels for the direct impacts of China's growth on New Zealand. We concentrate on the trade channels, especially merchandise exports, but also touch on other channels. This section does not look at the implications of the conclusions for policy, which could be the next step in this area.

3.1 China's demand for primary products

The major direct impact China's rapid growth has had on New Zealand is increased demand for primary products. New Zealand's merchandise export values to China grew steadily from 3.3% of total merchandise exports in 2000 to 6.1% in 2008, before the dairy and forestry boom increased China's share of exports to 15.4% in 2012 and made it our second largest export destination after Australia (Figure 8.1). New Zealand exports to China have been led by dairy and forestry products (Figure 8.2), with exports of these products to China making up 5.8% and 2.8% respectively of total all-country exports in 2012, up from less than 0.5% each in 2000. Wool, meat and seafood exports have also increased in value over the past decade (although wool exports are lower than at their peak in the late 1980s/early 1990s), but not to the same extent as dairy and forestry products. New Zealand's exports to China have become less diversified, with the top five products (dairy, forestry, meat, wool and seafood) increasing from 45% of exports to China in 2000 to 72% in 2012. Dairy products account for more than half of this share.

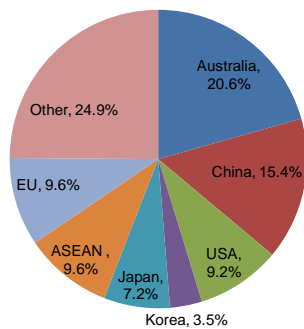
⁴⁶ China is Australia's largest trading partner by a significant margin. See the references given in section 1.2 for an analysis of the impact of China on the Australian economy.

⁴⁷ See Osborn and Vehbi (2013) for an estimation of the impact of China's growth on Australia and its spillover to New Zealand.

The majority of the trend increase in total export values to China since 2000 has been through increased volumes. On an Overseas Trade Index (OTI) basis, total export volumes (including services) to China have increased by more than 460% since 2000, with a 190% rise since 2008 alone. Prices spiked in 2008 and 2011, boosting exporter incomes, but there has not been the same upward trend as in volumes (Figure 8.3). This shows that Chinese demand has been met chiefly by increased volumes supplied to that market, although it has had an effect on the world price for the commodities we export, especially dairy.

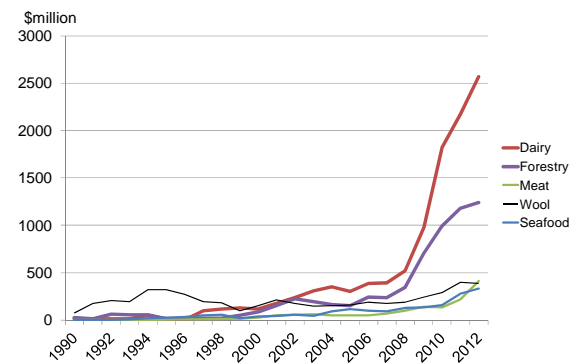
Figure 8 – New Zealand exports

Figure 8.1: NZ merchandise export destination shares (2012)



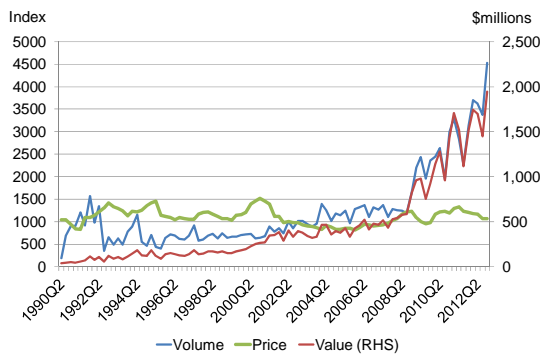
Source: Statistics New Zealand

Figure 8.2: NZ merchandise exports to China



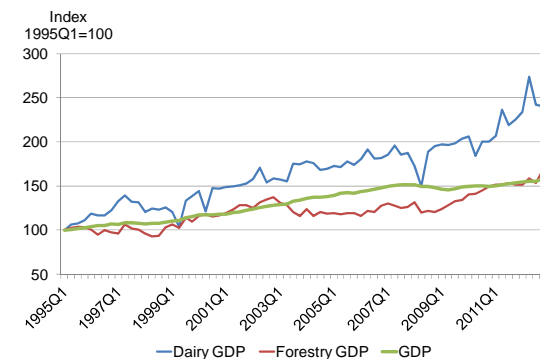
Source: Statistics New Zealand

Figure 8.3: China OTI export volumes and values



Source: Statistics New Zealand

Figure 8.4: Dairy and forestry GDP



Source: Statistics New Zealand

Merchandise exports to China were equivalent to 3.3% of New Zealand’s nominal GDP in 2012, up from 0.8% in 2000. On an expenditure basis, dairy and forestry export volumes have contributed 7.9 percentage points to GDP growth since 2001, out of a total increase in real GDP of 30.0%. This indicates that dairy and forestry exports have accounted for a more-than-proportionate share of total real expenditure GDP growth (not taking into account the offset from imported goods used in these industries), as dairy and forestry exports made up only 6.4% of GDP over the period since 2001. If forestry and dairy export volumes had grown at the same rate as the economy as a whole, they would have contributed only 1.9 percentage points to real GDP growth rather than the 7.9 percentage points they actually did. The impact has been concentrated in the period since 2008 with a contribution to growth of 3.9 percentage points versus an expected contribution of 0.4 percentage points. This shows that dairy and forestry export volumes significantly outperformed the rest of the economy as Chinese demand and the resulting price signals contributed to a reallocation of resources in the economy towards dairy and forestry exporting.

On a production GDP basis, the dairy industry grew in line with the economy as a whole between 2000 and 2007, while the forestry industry lagged behind (Figure 8.4 above). Since 2008, these two industries, have significantly outperformed the rest of the economy, having contributed 2.1 percentage points to the 4.1% growth in New Zealand's economy between 2000 and 2012. If these industries, which made up 5.3% of the economy, grew at the same rate as the economy as a whole they would have contributed only 0.2 percentage points to GDP growth rather than the 2.1 percentage points they did. The dairy and forestry industries have contributed to New Zealand's recovery since the GFC, at least partly owing to strong demand from China. Supply has responded to this higher demand and subsequent increase in prices, demonstrated by a growing dairy herd and ongoing dairy farm conversions. There were 6.4 million dairy cattle at June 30 2012, up more than 20% from 2007. The dairy and forestry industries have increased from 4.8% of real GDP in 2008 to 6.0% in 2012.

The growth in real dairy industry GDP has been outstripped by the growth in real dairy exports since 2001. Dairy GDP has risen 75% over the past 12 years compared to 102% growth in dairy exports. This suggests that growth in export demand, primarily from China, rather than domestic demand has led to the growth in dairy production. This impact has been even more pronounced since 2008, with real dairy export growth of 63% outstripping real dairy GDP growth of 40%. Allocating all of this growth to China's impact on New Zealand would unrealistically assume that all additional output in these industries is owing to increased demand from China. On the other hand, this approach does not take into account other benefits from growth in China, including investment in these industries and service exports boosting real GDP, as well as increased incomes which were lifted by a higher terms of trade and cheaper imports from China. In addition, New Zealand has benefited indirectly from China's growth through Australia which is New Zealand's largest trading partner.

3.1.1 China's dairy imports

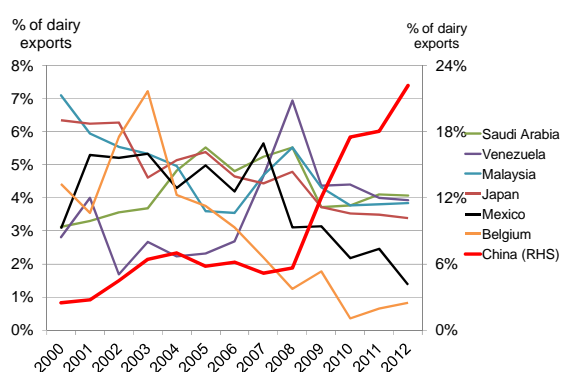
Dairy exports to China were New Zealand's largest export product to a single market in 2012. Since 2000, New Zealand dairy exports to China have increased from \$0.1 billion to \$2.6 billion in 2012; they rose five-fold between 2008 and 2012 alone. Dairy products are imported by China to satisfy the increasing demand for protein resulting from rising Chinese incomes and increasingly westernised diets. Chinese domestic dairy quality concerns arising from the 2008 melamine scandal resulted in China sourcing dairy products from countries with reputations for quality products, including New Zealand. Total Chinese dairy imports increased 190% between 2007 and 2012, making China the largest dairy importer in the world (OECD-FAO, 2012).

The higher prices resulting from increased Chinese demand have encouraged a reallocation of resources within the New Zealand economy, for example sheep and beef farms being converted to dairy, and have led the dairy and forestry industries to outperform the rest of the economy (see above). Also, farmers have been able to spend money on improving productivity with the increased use of irrigation and supplementary feed. Dairy industry GDP increased around 100% between 2000 and 2012 while dairy cattle numbers increased around 50%. This shows significant growth in output per cow. So while higher prices have increased incomes for New Zealand, there has also been an impact on the real economy. New Zealand milk solids production reached a record high of 1,685 million kg in the year to 31 May 2012, up 11% on 2011 and 17% on 2010. It is estimated that drought conditions resulted in a 1% fall in milk solids production in 2013 (Ministry for Primary Industries, 2013a).

China's share of New Zealand dairy exports increased from 2.5% in 2000 to 5.6% in 2008, before surging to 22.2% in 2012. As a result, the shares of some other markets, notably Malaysia, Japan, Mexico and Belgium, fell significantly between 2000 and 2012. In addition, Saudi Arabia and Venezuela experienced falls between 2008 and 2012 (Figure 9.1). While these countries have seen falling export shares, only Belgium has had a significant fall in export values since 2000, while Venezuela and Mexico have seen their values fall since 2008. Even taking into account the increase in dairy export prices over this time, it appears that these are the only countries to have experienced falls in dairy export volumes over this time. This suggests that Chinese demand has been met largely from increased production and that the amount of trade diversion from existing markets has been limited. The value of exports to other countries has also been boosted by the higher prices that Chinese demand created.

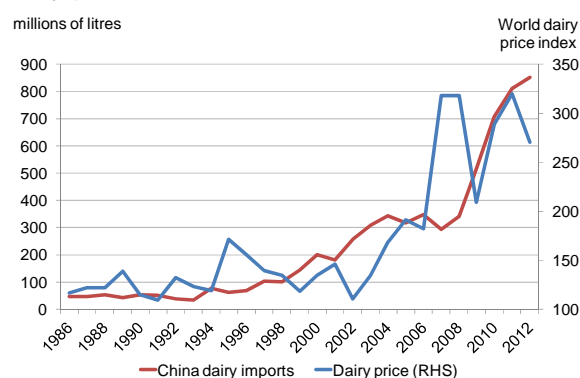
Figure 9 – Dairy trade

Figure 9.1: New Zealand dairy export shares – selected markets



Sources: Statistics NZ, Treasury calculations

Figure 9.2: China dairy imports and world dairy prices



Sources: ANZ, FAO

3.1.2 China's forestry demand

New Zealand forestry exports to China have risen from \$0.1 billion to \$1.2 billion between 2000 and 2012, with a five-fold increase occurring since 2007. The growth in Chinese demand for forestry products was boosted by rebuilding after the 2008 Sichuan earthquake. The earthquake required 5.4 million houses to be repaired or rebuilt. The total budget for the rebuild was 1.7 trillion yuan (around US\$270 billion or approximately 5% of GDP). By February 2012 it was estimated that around 99% of the 30,000 scheduled reconstruction projects had been completed (China Daily, 2012). While New Zealand log exports (mostly radiata pine) have traditionally been used mainly in producing packaging material, their use has been expanded to manufacturing of windows, furniture and plywood as well as being used for interior decoration and as concrete boxing (United States Department of Agriculture, 2010). As a result, the rebuild boosted demand for New Zealand forestry products. Demand was also supported by Russia imposing a 25% export tax in 2008 which resulted in Chinese log imports from Russia decreasing from a peak of 26 million m³ in 2007 to 14 million m³ in 2010.

China's roundwood import volumes increased 175% between 2000 and 2011 (average annual growth of 9.6%). This occurred as domestic production fell 10.9% over the same period (average annual decline of 1.1%). Rising prices over the period meant import values rose 320% (average annual growth of 13.9%). This surge in demand resulted in China's share of New Zealand forestry exports rising from 4% in 2000 to 39% in 2012. The increase in demand lifted forestry export prices 6% higher in the period since 2000 (18% since 2008) than in the preceding decade. These higher prices encouraged

increased forestry harvesting in New Zealand, with roundwood removals increasing 32% from 19.4 million cubic metres in 2008 to 27.5 million cubic metres in 2012 (Ministry for Primary Industries, 2013b).

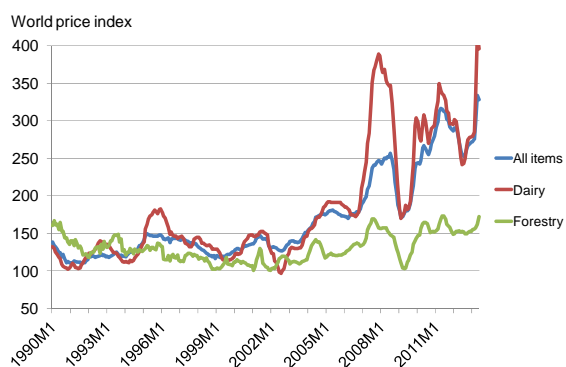
Increased forestry exports to China have partly resulted from a redirection of trade. Since 2000, forestry exports to Japan, Australia, Korea and the US have all fallen in both value and volume terms. Over this period, forestry export volumes have grown at a faster rate than forestry GDP, suggesting that forestry exports to China have partly come at the expense of exports to other countries and domestic use. New Zealand generally exports low-value-added forestry products to China as China can process these products more cheaply than New Zealand. This has had a negative impact on the domestic processing industry, especially sawmilling, with raw logs being exported to China rather than being processed in New Zealand and then either exported or used domestically. This is shown by unprocessed forestry exports increasing 112% between 2000 and 2012, while processed products have increased only 7% over the same period.

3.1.3 China's impact on export prices

While China's substantial import demand has increased New Zealand export volumes and had an impact on the real economy, it has also had an impact on prices. New Zealand commodity prices reached a peak in late 2008, with the main contributor being record dairy prices as a result of strong demand. After falling in 2009 due to the GFC, strong Chinese demand for dairy imports boosted world prices (Figure 9.2 above) and lifted New Zealand commodity prices to fresh highs in 2011 (Figure 10.1). Other factors, including easy monetary conditions in major advanced economies may have also contributed to commodity price increases.

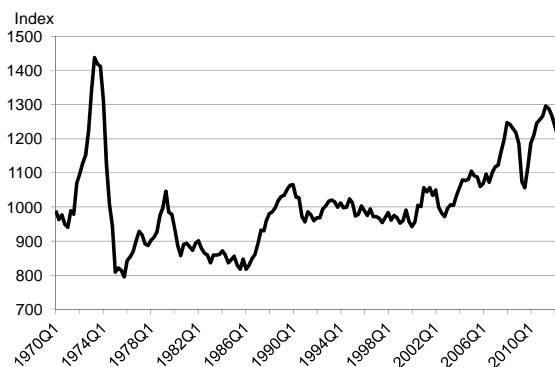
Figure 10 – New Zealand export prices

Figure 10.1: ANZ Commodity Price Index



Source: ANZ

Figure 10.2: OTI terms of trade



Source: Statistics New Zealand

The rise in commodity prices in 2009-2011 was led by dairy, with the dairy section of the ANZ Commodity Price Index (ANZ CPI) rising 106% from its trough in February 2009 to its May 2011 peak. In 2011, the high commodity prices were more widespread than in 2008, with dairy prices below their previous peak. There have also been increases in world forestry prices resulting from Chinese demand, with the forestry sub-index of the ANZ CPI rising 68% from its trough in March 2009 to its peak in June 2011. Commodity prices fell from their peaks in the second half of 2011 and early 2012, with dairy and forestry prices leading the way as supply increased.

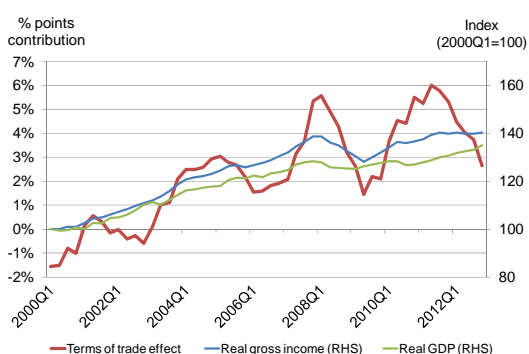
Dairy prices started to recover in the second half of 2012 as supply tightened as a result of the drought in the US and they spiked up in early 2013 as a result of the drought in New Zealand and decreased supply elsewhere. Fonterra announced the milk solids price (the payment to NZ producers) to be \$5.80 per kilogram in the 2012/13 season, down from the 2011/12 season record payout of \$7.60 per kg of milk solids. The lower 2012/13 figure was the result of near-record supply, falling international dairy prices and a high NZ dollar. These producer payments are significantly higher than the \$4.82 average for the previous decade and \$3.44 for the 1990s; much of the higher price is attributable to stronger demand from China since 2009. The 2013/14 season forecast price announced in May 2013 was \$7.00 per kg of milk solids.

The elevated prices for New Zealand export commodities have resulted in historically high terms of trade over the past few years (Figure 10.2). It is likely there would have been some offset to the high export prices, with Chinese demand contributing to higher world prices for some imported commodities (eg, oil). The New Zealand merchandise terms of trade were 37.6% higher in the June quarter 2011 (their peak) than in the March quarter 2000, providing a significant boost to New Zealand incomes, especially for dairy farmers.

The terms of trade have moved from making a negative contribution to real incomes in the early 2000s to a significant positive contribution in the late 2000s and have contributed to nominal GDP growing at a faster rate than real GDP over that period (Figure 11.1). Real GDP has grown 33.3% since 2000, whereas real GDI (real GDP adjusted for the terms of trade) has increased 39.4%, showing that the terms of trade have contributed 6.1 percentage points to real income growth (15.5% of the total). With the significant boost the terms of trade have given the New Zealand economy, real GDI may give a better indication of New Zealand's economic performance over the past decade. Real GDI growth averaged 3.3% per annum between 2000 and 2012, compared to real GDP growth of 2.8%. The terms of trade have also been one of the major drivers of nominal GDP growth over the past decade (Figure 11.2).

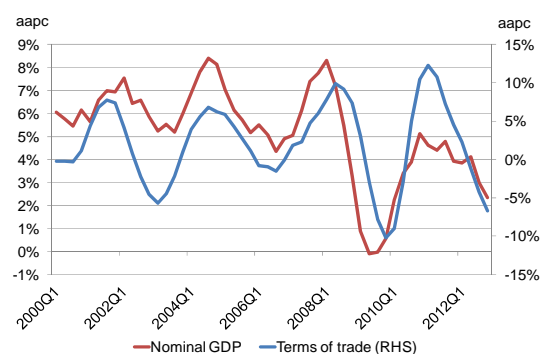
Figure 11 – Terms of trade impact on GDP

Figure 11.1: Real GDP, real gross income and terms of trade effect on GDP



Source: Statistics New Zealand

Figure 11.2: New Zealand terms of trade and nominal GDP



Source: Statistics New Zealand

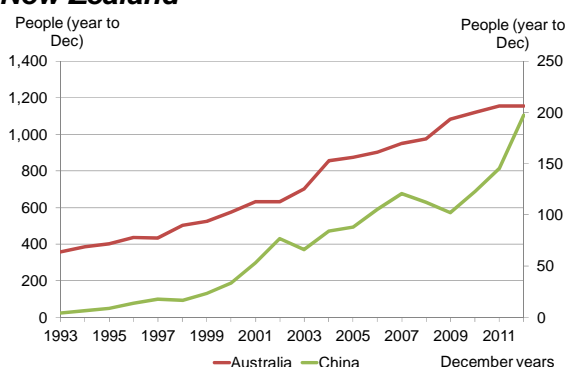
3.2 China's demand for services exports

China's rapid growth has also benefited New Zealand through services exports, mainly tourism and education. Total services exports to China in the year to December 2012 were \$1.2 billion and have grown from \$0.3 billion in 2000, taking them to 7.6% of all-country services exports. The majority of services exports to China are personal travel which is split fairly evenly between education travel and 'other personal' travel (ie, tourism). Total exports to China (merchandise and services) were \$8.1 billion (13.4% of total all-country exports and 3.9% of GDP) in the year to December 2012.

Between 2006 and 2012 the average number of international fee-paying students enrolled in New Zealand from China was 24,256, the highest of any nationality and 26% of the total number of international students. This provides extra revenue for the secondary and tertiary education sector. The majority of the Chinese students are in tertiary education, with 28% at universities, 16% at polytechnics and 42% at other tertiary institutions. Assuming that Chinese students pay the same fees as other international students at each type of institution, their fees would have been \$222 million in 2012 and 30% of the total \$746 million in international student fees (Ministry of Education, 2012). These figures do not include accommodation costs and other expenses incurred by students while studying in New Zealand, which constitute an additional contribution to services exports.

Short-term visitors from China to New Zealand have grown rapidly over the past decade, reaching 197,000 in the year to December 2012 (Figure 12). This is 7.7% of the total and places China second after Australia (up from 2% and eighth place in 2000). Chinese tourists are generally high-spending, with average daily expenditure of \$207 in 2012 being the highest of the major tourism source markets and well above the average of \$111. As Chinese incomes have grown in recent years, so too has average daily expenditure, up from \$107 in 2000. Chinese tourists stay an average of 16 nights, below the 19 night overall average. Chinese tourists spend the second most per stay (after Korea). In the year to December 2012, Chinese tourists spent \$651 million in New Zealand (Ministry of Business, Innovation and Employment, 2012), second after Australians. Part of this pick up in tourist spending can be put down to New Zealand and Australia becoming the first western countries to gain Approved Destination Status from the Chinese Government in 1999.

Figure 12 – Short-term visitor arrivals to New Zealand



Source: Statistics New Zealand

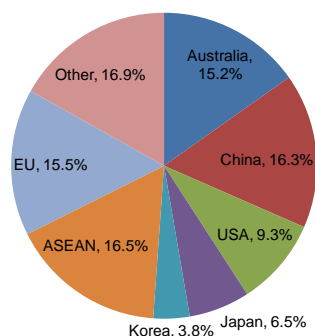
3.3 New Zealand's imports from China

China has recently become New Zealand's largest import provider, rising from 6.2% of total merchandise imports in 2000 to 16.3% in 2012, ahead of Australia at 15.2% (Figure 13.1). This underlines the importance of China as our second largest trading partner overall. The major imports from China are machinery, clothing, furniture and toys (Figure 13.2). Machinery is by far the largest import item and has been the major area of growth over the past decade. Chinese machinery imports have grown from 1.3% of total all country imports in 2000 to 5.9% in 2011. New Zealand's imports from China have

arguably had a greater impact on the New Zealand economy than its exports to China as the total value of merchandise imports has exceeded exports since 1990. New Zealand's merchandise trade deficit with China peaked at \$3.9 billion in 2008 as China exported low-cost manufactured products to the world, before falling to \$0.9 billion in 2012 as China's demand for soft commodity imports surged.

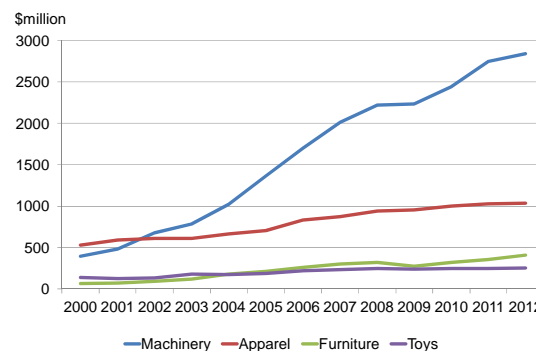
Figure 13 – New Zealand imports

Figure 13.1: NZ merchandise imports sources (2012)



Source: Statistics New Zealand

Figure 13.2: NZ imports from China

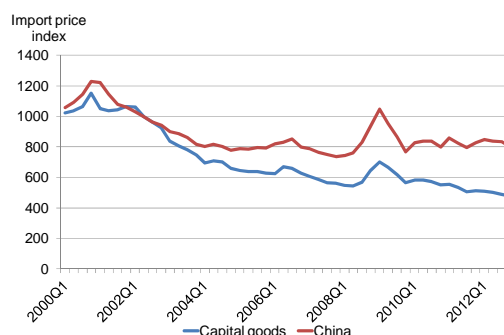


Source: Statistics New Zealand

This growth has coincided with China's industrialisation and rapid manufacturing expansion, becoming the largest manufacturer in the world. China's relatively inexpensive labour put downward pressure on manufactured goods prices worldwide. The negotiation of the free-trade agreement with China allowed for the phase-out of remaining tariffs on Chinese imports. The removal of tariffs will provide mutual benefits for both New Zealand and China. Chinese producers will receive a higher price, Chinese imports will be cheaper for New Zealand businesses and consumers, and there will be increased trade between the two nations. Around 40% of imports from China already enter New Zealand without duty. Some products, including furniture and whiteware, were to have their tariffs phased out by the end of 2012, while clothing and footwear products will have their tariffs removed by 2016.

The growth in imports from China has had benefits for the New Zealand economy, as China's low labour costs have allowed it to manufacture goods for a lower price than most other countries. New Zealand has benefited from this access to cheaper imported goods. Since 2000, when imports of Chinese machinery began to increase, the cost of imported machinery has fallen by around 50% in New Zealand dollar (NZD) terms (Figure 14), assisted by an appreciating NZD with the TWI rising 23% over that period. The fall in the price of imported machinery and the increasing share sourced from China suggest that China has contributed to the fall in import prices.

Figure 14 – Import prices



Source: Statistics New Zealand

Cheaper imports, as well as the high value of the New Zealand dollar (supported by the high price of commodity exports to China), have helped keep tradables inflation low since 2000. Over this period, annual tradables inflation (goods exposed to international competition, including imported products) has averaged 1.6%, whereas non-tradables inflation has averaged 3.5%. Lower tradables inflation has allowed annual CPI inflation to remain within the Reserve Bank's 1-3% target band at 2.7% on average. The downward pressure of cheap imported products from China on tradables inflation may be starting to fade though, with rising wages in China putting pressure on costs.⁴⁸ However, some production is likely to move to other low-cost countries, including India and Vietnam.

A negative impact of this imported price competition is less demand for locally-produced goods in New Zealand, with a fall in domestic production of some goods. Some New Zealand manufacturers have not been able to compete with the cheap cost-base in China, resulting in a decline in the low-value manufacturing industry. Other high-value niche manufacturers have performed better. Manufacturing has been declining as a share of GDP for some time, but output in the industry started falling only in the mid-2000s as manufacturing imports from China began to rise. Some New Zealand manufacturers have moved their production to China to take advantage of the low-cost environment in order to compete internationally. The high NZD, partly resulting from the high commodity prices,⁴⁹ has also made exporters in non-commodity areas less competitive, which can have a negative impact on export demand and economic growth.⁵⁰

3.4 China's other direct impacts

Closer economic ties with China have led to a number of other impacts on the New Zealand economy. As a result of more two-way trade, New Zealand has increased its foreign investment in China from \$0.1 billion at 31 March 2001 to \$0.9 billion (0.6% of New Zealand's total investment) in 2012, becoming the 15th largest investment destination. New Zealand investment in China is in a range of industries including dairy production and processing, wholesale and retail. Over the same period Chinese investment in New Zealand has risen from \$0.5 billion to \$1.9 billion (0.6% of total investment in New Zealand), becoming the 13th largest source of foreign investment.

Investment linkages are likely to be more important in the future as an extension of trade linkages. There is evidence that this is already happening, with large-scale Chinese investment in New Zealand forestry, dairy farms, dairy processing, agricultural services and manufacturing. China's motivation for investing in New Zealand is chiefly to secure supply of high quality food products in order to meet the growing demand for protein and to assist China's agricultural industry to learn from the New Zealand industry which has a reputation for quality.

Permanent and long-term migration inflows from China have risen from an average of 2,100 arrivals per annum in the 1990s (3% of the total) to an average of 7,400 (9% of total arrivals) since 2000. Net migration inflows have been found to make a positive contribution to New Zealand's economic growth.⁵¹

⁴⁸ For more information of the effect of emerging Asia on inflation see Hunt (2007).

⁴⁹ For more information on the drivers of the NZD, see Mabin (2010).

⁵⁰ For more information on the impacts of the NZD on the tradables sector, see Mabin (2011).

⁵¹ For example see Department of Labour (2010).

The dairy industry has been the main beneficiary of New Zealand's growing orientation towards fast-growing China. This has provided many extra jobs in the sector which currently has around 35,000 employees and up to 10,000 self-employed people. It also provides jobs for those in sectors which support the dairy industry.⁵²

Food prices worldwide have increased rapidly in the past few years, partly owing to strong demand from China. There have, of course, been other influences, including higher energy prices, rising incomes in other Asian countries, periodic droughts and use of agricultural land for energy production. This placed upwards pressure on the prices New Zealand consumers pay for food products, causing higher headline inflation in 2008 and again in 2011.

3.5 China's indirect impact via Australia

Australia's strong economic performance, partly as a result of China's powerful growth and consequent demand for hard commodities, has had indirect benefits for New Zealand as Australia is New Zealand's largest trading partner and the two economies are closely integrated. Some of the boost in incomes Australian exporters have received from their surging terms of trade has spilled over into the New Zealand economy. New Zealand merchandise exports to Australia have grown 55% since the mining boom began in Australia in 2005, helping it remain New Zealand's largest trading partner (Figure 1.1).

In an IMF working paper about the spillovers to Australia and New Zealand from emerging Asia, Sun (2011) found that the major benefit New Zealand has received from this region came indirectly through Australia. Using a vector autoregressive (VAR) approach, Sun found that a 1% shock to Australian quarterly GDP between 2000 and 2010 has almost a one-to-one effect on New Zealand. This relationship is much stronger over this period than for the period from 1991 to 2010, indicating that Australia has become more important to the New Zealand economy in the past decade.

Over the same period, emerging Asia has become more important to the Australian economy, with a 1% shock to emerging Asian GDP having a 0.3% impact on Australian GDP, according to Sun (2011). This suggests that over the past decade New Zealand has received indirect benefits from emerging Asia (mainly China) through Australia. On the other hand, emerging Asian shocks are found to have a statistically insignificant direct impact on New Zealand, although this could be because exports to China have accelerated rapidly only since 2008 and New Zealand has significant exposure only to China and not the rest of emerging Asia. No other emerging Asian economies are in New Zealand's top five trading partners, whereas India and South Korea are in Australia's top five trading partners.

The accompanying paper (Osborn and Vehbi, 2013) estimates the growth spillovers from China to New Zealand, including indirect spillovers via Australia, using an econometric model.

⁵² For more information on the effect of the dairy industry on the New Zealand economy see NZIER (2010).

4 Conclusions

China's strong economic growth, urbanisation, industrialisation and international integration in recent times have had a significant positive impact on the New Zealand economy. In the past three decades, China's economy has grown at an average of 10% per annum, which – along with urbanisation and industrialisation – has led to rising incomes and increased demand for soft and hard commodities. Despite consumption having a relatively low share of GDP, household disposable income and consumption expenditure have grown several-fold in real terms in the past twenty years, leading to increased demand for food imports.

New Zealand merchandise export volumes and prices have been the main channel of increased Chinese demand. New Zealand's merchandise export values to China have grown from 3.3% of total merchandise exports in 2000 to 15.4% in 2012, making China New Zealand's second largest export destination, after Australia. Dairy exports have led the way and are now New Zealand's largest export product to a single market.

Services exports to China, mainly education and tourism, have also expanded significantly, while competitive Chinese imported manufactured products, along with the high NZD, have helped keep tradables inflation and business capital costs low. New Zealand has also received indirect benefits from China's growth through its largest trading partner, Australia. These factors have boosted New Zealand incomes, and real GDI (real GDP adjusted for the terms of trade) has grown faster than real GDP over the past decade and gives a better indication of how New Zealand incomes have grown and living standards increased.

Trend growth in total exports to China since 2000 has been driven by higher export volumes. There have been spikes up in export prices to China, boosting incomes, but there is not the same upward trend as for volumes. Dairy exports have been the main beneficiary of increased Chinese demand, with forestry exports having the second largest increase. China's shares of dairy and forestry exports have increased significantly over this period and Chinese demand has lifted dairy and forestry prices higher since 2000 compared with the preceding decade. This has led to a reallocation of resources in the economy, for example sheep and beef farms being converted to dairy and increased forestry harvesting. This impact has been seen recently with dairy and forestry industry GDP significantly outperforming the rest of the economy since 2008.

Rising dairy exports to China have generally not been at the expense of other markets, with most continuing to increase slightly in both value and volume terms, suggesting China's additional demand has been met chiefly by increased supply rather than redirected exports. Growth in dairy and forestry exports to China has outstripped that of other markets and has been the main driver of dairy and forestry export volumes growing faster than dairy and forestry industry real GDP. These results suggest that China has been the main driver of recent increases in dairy and forestry production, rather than domestic demand or exports to other markets.

Chinese demand has become more important for the New Zealand economy with merchandise exports to China being the equivalent of 3.3% of New Zealand's nominal GDP in 2012, up from 0.8% in 2000. On a real expenditure basis, additional Chinese demand has assisted dairy and forestry export volumes to outperform the rest of the economy. These industries contributed 7.9 percentage points to real GDP growth since 2001 out of total growth of 30.0%. If dairy and forestry exports grew at the same pace as the economy as a whole, they would have contributed only 1.9 percentage points to growth.

On a real production GDP basis, increased Chinese demand has assisted the forestry and dairy industries to outperform the rest of the economy since 2008, contributing 2.1 percentage points to the 4.1% real GDP growth. If these industries grew at the same pace as the economy as a whole they would have contributed only 0.2 percentage points. This effect has helped the economy recover from the GFC and the high terms of trade, partly resulting from Chinese demand, have boosted incomes over this period.

5 Bibliography

- Arora, V. and Vamvakidis, A. (2010). "China's Economic Growth: International Spillovers." International Monetary Fund Working Paper 10/165.
- Aziz, J. and Cui, L. (2007). "Explaining China's Low Consumption: The Neglected Role of Household Income." International Monetary Fund Working paper 07/181.
- Baldacci, E., Callegari, G., Coady, D., Ding D., Kumar, M., Tommasino, P., and Woo, J. (2010). "Public Expenditures on Social Programs and Household Consumption in China." International Monetary Fund Working Paper 10/69.
- Barclays Capital. (2012). "China: Beyond the Miracle, Part 4 – the great wave of consumption upgrading." 9 January 2012.
- Barnett, S and Brooks, R. (2006). "What's Driving Investment in China?" International Monetary Fund Working Paper 06/265.
- Barnett, S and Brooks, R. (2010). "China: Does Government Health and Education Spending Boost Consumption?" International Monetary Fund Working Paper 10/16.
- Battellino, R. (2010). "Mining Booms and the Australian Economy." Reserve Bank of Australia Bulletin, March 2010, p.63-69.
- Bayoumi, T., Tong, H. and Wei, S-J. (2010). "The Chinese Corporate Savings Puzzle: A Firm-level Cross-country Perspective." International Monetary Fund Working Paper 10/275.
- Bollard, A. and Smith, M. (2006). "Major global developments in the new millennium." Reserve Bank of New Zealand Bulletin, June 2006, p.26-39.
- Borkin, P. 2006. "Past, Present and Future Developments in New Zealand's Terms of Trade." New Zealand Treasury Working Paper 06/09, July 2006.
- Bowman, S. and Conway, P. (2013). "The Outlook for China's Growth and its Impact on New Zealand Exports." New Zealand Treasury Working Paper 13/16.
- Briggs, P., Harker, C., Ng, T. and Yao, A. (2011). "Fluctuations in the international prices of oil, dairy products, beef and lamb between 2000 and 2008: A review of market-specific demand and supply factors." Reserve Bank of New Zealand Discussion Paper 2011/02.
- Buckle, R. (2009). "Asia-Pacific Growth Before and After the Global Financial Crisis." Victoria University of Wellington Policy Quarterly, Vol.5, Issue 4, November 2009, 36-45.
- Buckle, R. and Cruickshank, A. (2007). "The Challenge of Structural Change in APEC Economies." New Zealand Treasury Working Paper 07/06, July 2007.
- Cates, A. (2009). "Productivity perspectives." UBS Investment Research, 14 October 2009.
- Chamon, M, Liu, K. and Prasad, E. (2010). "Income Uncertainty and Household Saving in China." International Monetary Fund Working Paper 10/289
- Chamon, M. and Prasad, E. (2008). "Why are Saving Rates of Urban Households in China Rising?" International Monetary Fund Working Paper 08/145.

- China Daily. (2012). Reconstruction of quake damage in Sichuan nearly over. Retrieved from http://www.chinadaily.com.cn/cndy/2012-02/25/content_14690479.htm
- Conway, Paul, Herd, R. and Chalaux, T. (2010). "Reforming China's Monetary Policy Framework to Meet Domestic Objectives." OECD Economics Department Working Papers, No. 822
- Department of Labour. (2010). New Zealand Research on the Economic Impacts of Immigration 2005–2010 - Synthesis and research agenda. . Retrieved from <http://www.dol.govt.nz/publications/research/synthesis-research/index.asp>
- Du, Q. and Wei, S-J. (2010). "Seemingly Undervalued Currencies." Paper presented at Reserve Bank of Australia Workshop on "China and east-Asia in the global economy" Sydney, 13-14 December 2010. <http://www.rba.gov.au/publications/workshops/2010/>
- Golley, J. and Tyers, R. (2012). "Gender 'Rebalancing' in China: A Global-Level Analysis." Australian National University Centre for Applied Macroeconomic Analysis Working Paper 46/2012.
- Gruen, D. (2011). "The resources boom and structural change in the Australian economy." Australian Treasury Economic Roundup, Issue 2, 2011, September 2011, pp.123-135.
- Guo, K. and N'Diaye, P. (2010). "Determinants of China's Private Consumption: An International Perspective." International Monetary Fund Working Paper 10/93.
- Huang, Y. and Wang, Y. (2010). "Does Financial Repression Inhibit Economic Growth? Empirical Examination of China's Reform Experiment." Paper presented at Reserve Bank of Australia Workshop on "China and east-Asia in the global economy" Sydney, 13-14 December 2010. <http://www.rba.gov.au/publications/workshops/2010/>
- Hunt, B. (2010). "Emerging Asia's Impact on Australian Growth: Some Insights from GEM." International Monetary Fund Working Paper 10/262.
- Hunt, C. (2007). "Emerging Asia and global inflation." Reserve Bank of New Zealand Bulletin, Vol. 70, No. 1.
- International Monetary Fund. (2011). "People's Republic of China: 2011 Article IV Consultation." IMF Country Report 11/192, July 2011.
- International Monetary Fund. (2012). "People's Republic of China: 2012 Article IV Consultation." IMF Country Report 12/195, July 2012.
- International Monetary Fund. (2013). "World Economic Outlook." April 2013 and associated database.
- Kuijs, L. (2005). "Investment and Saving in China." World Bank China Office Research Working Paper No.1, May 2005.
- Lee, J-W. and Hong, K. (2010). "Economic Growth in Asia: Determinants and Prospects." Asian Development Bank Working Paper, No 220, September 2010.
- Lee, I., Syed, M. and Xueyan, L. (2012). "Is China Over-Investing and Does it Matter?" International Monetary Fund Working Paper 12/277

- Liu, J and McDonald, T. (2010). "China: growth, urbanisation and mineral resource demand." Australian Treasury Economic Roundup, Issue 2, 2010, July 2010.
- Lowe, P. (2009). "The Growth of Asia and Some Implications for Australia." Reserve Bank of Australia Bulletin, November 2009, p.32-39.
- Mabin, G. (2010). "New Zealand's Exchange Rate Cycles: Evidence and Drivers." New Zealand Treasury Working Paper 10/10.
- Mabin, G. (2011). "New Zealand's Exchange Rate Cycles: Impacts and Policy." New Zealand Treasury Working Paper 11/01.
- Mathews, L. (2010). Global Dairy Market Review. Commonwealth Bank of Australia.
- McKissack, A and Xu, J. (2011). "Chinese macroeconomic management through the crisis and beyond." Australian Treasury Working Paper, 2011-01.
- Ministry of Agriculture and Forestry. (2011). Situation and Outlook for New Zealand Agriculture and Forestry.
- Ministry of Business, Innovation and Employment. (2012). International Visitor Survey. Retrieved from <http://www.tourismresearch.govt.nz/Data--Analysis/International-tourism/International-Visitors/IVS-Pivot-Tables/>
- Ministry of Education. (2012). Export Education Levy Key Statistics (1 January to 30 April, 2003-2012). Retrieved 2012, from <http://www.educationcounts.govt.nz/statistics/international/international-students-in-new-zealand>
- NZIER. (2010). Dairy's role in sustaining New Zealand - the sector's contribution to the economy. Report to Fonterra and Dairy NZ.
- Ministry for Primary Industries. (2013a). Situation and Outlook for Primary Industries 2013.
- Ministry of Primary Industries. (2013b). Quarterly estimated roundwood removals from New Zealand forests. Retrieved from <http://www.mpi.govt.nz/Portals/0/Documents/news-resources/statistics/forestry/forestry-and-trade-pubs/2012-dec-production.xls>
- Nabar, M. (2011). "Targets, Interest Rates, and Household Saving in Urban China." IMF Working Paper 11/223.
- NZIER. (2010). Dairy's role in sustaining New Zealand - the sector's contribution to the economy. Report to Fonterra and Dairy NZ.
- OECD. (2010 and 2013). "OECD Economic Surveys: China." OECD, 2010 and 2013.
- OECD-FAO. (2012). Retrieved from Agricultural Outlook 2012-2021: http://www.agri-outlook.org/pages/0,2987,en_36774715_36775671_1_1_1_1_1_1,00.html
- Osborn, D. and Vehbi, T. (2013). "Empirical Evidence on Growth Spillovers from China to New Zealand." New Zealand Treasury Working Paper 13/17.
- Parkinson, M. (2011). "Australia and China – grasping opportunities in an uncertain world." Australian Treasury Economic Roundup, Issue 4 2011, pp.33-48.
- Porter, N. (2010). "Price Dynamics in China." International Monetary Fund Working Paper 10/221.

- Prasad, E. S. (2009). "Rebalancing Growth in Asia." NBER Working Paper 15169.
- Plumb, M, Kent, C and Bishop, J. (2013) "Implications for the Australian Economy of Strong Growth in Asia." Reserve Bank of Australia Research Discussion Paper 2013-03.
- Reserve Bank of New Zealand. (2013). Manufacturing decline not just a dollar story. Retrieved from http://www.rbnz.govt.nz/research_and_publications/speeches/2013/5150125.html
- Roberts, I and Rush, A. (2010). "Sources of Chinese Demand for Resource Commodities." Paper presented at Reserve Bank of Australia Workshop on "China and east-Asia in the global economy" Sydney, 13-14 December 2010. <http://www.rba.gov.au/publications/workshops/2010/>
- Roubini Global Economics. (2010). "Chinese Investment: The Slow Grind Ahead." 23 June 2010.
- Sadeghian, D., White, G. and D'Arcy, P. (2013). "Macroeconomic Management in China." Reserve Bank of Australia Bulletin, June 2013.
- Stevens, W. (2007). "The Risks and Opportunities from Globalisation." New Zealand Treasury Working Paper 07/05, July 2007.
- Sullivan, R. and Aldridge, T. (2011). "The outlook for commodity prices and implications for monetary policy." Reserve Bank of New Zealand, Miscellaneous Research, 12 April 2011. <http://www.rbnz.govt.nz/research/econresearch/4363112.html>
- Sun, Y. (2011). "From West to East: Estimating External Spillovers to Australia and New Zealand." International Monetary Fund Working Paper 11/120.
- United States Department of Agriculture. (2010). Peoples Republic of China: Forest Products Annual Report. Global Agricultural Information Network.
- Wang, X. and Woo, W. (2011). "The Size and Distribution of Hidden Household Income in China." Asian Economic Papers, Vol. 10:1.
- World Bank. (2012). China 2030: Building a Modern, Harmonious, and Creative Society.
- Zhuang, J., Vandenberg, P. and Huang, Y. (2012). "Growing beyond the low-cost advantage: How the People's Republic of China can avoid the middle-income trap." Asian Development Bank, October 2012.