Environment Waikato Technical Report 2009/26

Waikato Economic Report 2009

www.ew.govt.nz
ISSN 1172-4005 (Print)
ISSN 1177-9284 (Online)

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1 December 2009

Document #: 1511248

Peer reviewed by:
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Disclaimer

Acknowledgement

The Waikato Regional Council would like to thank Professor Phillip McCann for his advice and direction, Dr Garry McDonald, Market Economic for his preparation of the Waikato Regional Dynamic Environment and Economy Model and Dr Warren Hughes for his feedback on this report.

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Executive Summary

This report examines the drivers that have shaped of the Waikato economy – geography, history, natural resources and wider events such as globalisation. It provides a summary of the key economic statistics from the 2004 to 2007. By looking at the current drivers and likely future influences, an analysis of the future of the Waikato economy is drawn.

The Waikato economy is tied to global influences on international and sub-national economies. New Zealand is consistently ranked as one of the world's most liberalised economies and the second best country in the world for doing business (Porter et al, 2007). However, even with good macroeconomic and institutional characteristics, the New Zealand economy, GDP and productivity growth continues to be below the Organisation for Economic Co-operation and Development (OECD) average (NZIER, 2006). The three dimensions of globalisation – density, distance, and division provide insight into the drivers of modern economies, and how these affect New Zealand and the Waikato.

The advantages of economic density for businesses and people include: the sharing of infrastructure, greater variety and specialisation in goods, services and employment and a range of mechanisms that enhance knowledge generation and diffusion. The Auckland region is New Zealand's largest and most globally connected urban area exerting a significant pull on firms and labour to migrate to the city. On a smaller scale, the Hamilton urban area provides these benefits for the Waikato region.

Distance from economic density remains vitally important to a region's prosperity. At a sub-national scale, effective distance is important, which takes into account the cost and speed of transporting goods, people and information between regions. Effective distance can be reduced by improving transport and communications infrastructure and reducing congestion. Good links to other regions and international trading partners are therefore vital to the prosperity of the Waikato region.

Economic division occurs when effective distance is increased by anything that impedes the flow of goods, services, capital or migration. International barriers to trade and investment are low in New Zealand, although agricultural exports are still restricted by tariffs and quotas imposed by receiving countries. At a sub-national level there can also be cultural and socio-economic divisions which reduce the social inclusion of some groups within the population.

The New Zealand domestic market suffers from the "branch economy" problem due to its small size, lacking high-value economic activity such as corporate leadership. The Waikato regional economy is subject to the same issues; how to attract and retain high-value economic activity in an era of increasing human and capital mobility.

The Waikato region is the fourth largest regional economy in New Zealand, contributing 9.1 per cent of GDP and 10 per cent of New Zealand's exports. The Waikato economy grew 5 per cent per year (inflation-adjusted) between 2004 and 2007, above the national average of 3.2 per cent.

The largest sectors, by value added to the Waikato economy in 2007, were dairy cattle farming ($1,412 million), business services ($1,243 million), and real estate ($931 million). The sectors which grew the most between 2004 and 2007 (in real terms) were real estate (89 per cent), dairy product manufacturing (80 per cent), and business services (48 per cent). Total international exports from the Waikato region were valued at 3.7 billion dollars in 2007, 10 per cent of the national total.

The are 395,000 residents in the Waikato region, 9.4 per cent of New Zealand's total population. The Waikato region is part of the "Golden Triangle" of population and economic growth, an area stretching from Auckland to the Bay of Plenty. Net migration gain over the period 2001 to 2006 was 6,117 people. A third came from the Auckland region, 13 per cent from Bay of Plenty, 15 per cent from the lower North Island, and 6 per cent from the South Island. A third arrived from overseas; the majority from Australia.

The total employment count in the Waikato region for the year ended March 2007 was 167,400. In addition, there were 29,700 working proprietors. Retail trade had the highest contribution to the Waikato labour force employing 12 per cent, while business services employed 10 per cent. Dairy cattle farming was the sixth largest employment sector, employing 6 per cent or 11,700 people (including working proprietors). When the dairy manufacturing sector is included, the proportion increases to 7.3 per cent (14,400 people).

Average labour productivity was $79,000 per employee, higher than national average of $70,000 in the year ended March 2007. In 2009, the median weekly household income was $1228, slightly lower than the national median of $1234. The Waikato unemployment rate was 2.9 per cent in 2007, but increased to 6.8 per cent in June 2009, higher than the national unemployment rate of 5 per cent.

Looking to the future there are several national and international factors which are expected to have a major influence on the future of the Waikato economy. These are the global economic recovery, free trade negotiations, and environmental issues.

Economic indicators published in the second half of 2009 show an improving national and international outlook. The Waikato region is in a good position because demand for New Zealand commodity exports remains strong, particularly in China. However, the relatively high exchange rate will dampen returns. Income growth may also be constrained by slow wage growth and relatively high unemployment, which is expected to peak in 2010 (Treasury, 2009).

Current and future free trade agreements are expected to benefit Waikato exporters and linked industries, and households who will face lower costs for imported consumer goods. However, Waikato businesses will face increased international competition, and it is difficult to achieve significant economies of scale in a small economy. Closer economic linkages with the new international market hub in Southeast Asia may provide economic opportunities. Improving linkages and reducing transport costs to and from Auckland and Tauranga ports are therefore important.

International and domestic consumer demand for food and fibre produced by environmentally friendly systems is growing. The Waikato economy produces negative externalities such as water pollution, soil contamination, and atmospheric emissions which have a detrimental effect on both the local and global environment. For the most part, neither producers nor consumers are currently paying the full cost of production.

However, a tightening of the environmental policy regime is evident at the national level with the introduction of an Emissions Trading Scheme (ETS) and the proposed National Freshwater Policy Statement, and at the local level, for example by the Waikato Regional Plan proposed 'Variation No. 5' for Lake Taupo and the Waikato-Tainui River Settlement and subsequent Vision and Strategy for the Waikato river – Te Ture Whaimana. This indicates greater account of environmental externalities. It remains to be seen whether recent Waikato economic growth rates will be sustainable in the long term.

1 Introduction

> Of the land of the moa hunter and Tainui tribes, of the swampy wilderness the soldier-sealer knew, just scraps of scrub and shreds of forest remain. Most of the Waikato is serene tapestry of shelter belt, farmhouse, prosperous small town and dairy factory (Cruise Waikato, p.4)

In 2009, the Waikato region is still the fourth largest regional economy in New Zealand, after Auckland, Wellington and Canterbury. In the year ended March 2007, the Waikato region contributed 9.1 per cent of national Gross Domestic Product (GDP). The usual resident population was 395,000 as at the 2006 census, 9.4 per cent of New Zealand's total population. The Waikato region is part of the "Golden Triangle" of population and economic growth, an area of the North Island stretching from Auckland to the Bay of Plenty. It contains a mix of urban, rural and coastal settlements with diverse environments including wetlands, indigenous and plantation forest, pasture, rugged beaches and urban areas.

In 2006, the first Waikato Economic Futures report examined recent economic outcomes for the Waikato region (Market Economics, 2006). Three years later, this report is now providing an update for the period 2006 to 2009. An important tool used in this economic analysis is the 2009 Waikato Regional Dynamic Environment and Economy Model (WRDEEM), recently updated to be consistent with the latest set of national accounts. Other sources of data include economic indicators published by Statistics New Zealand.

In order to understand economic outcomes and the role of the Waikato region in the New Zealand economy, it is helpful to be aware of wider national and international economic trends. The following section (2) of this report provides an overview of the current economic environment and provides a context for the rest of the report.

Section 2.3 of this report presents recent economic outcomes for the Waikato regional economy. This macro-level assessment is based on a variety of economic indicators and the WRDEEM 48-industry input-output model of the economy. Section 3 provides a discussion of employment outcomes and recent trends in migration and population structure in the context of wider national and international trends. Section 4 is a detailed analysis of significant industry sectors and section 5 will briefly discuss trends and characteristics for individual territorial authorities within the Waikato region. Section 6 examines short-term future trends and factors which are expected to influence economic outcomes in the longer term.

Finally, the data and discussions provided in this report are used to draw some conclusions about the past, present and future directions of the Waikato regional economy.

2 National and international context

New Zealand is consistently ranked as one of the world's most liberalised economies and the second best country in the world for doing business (Porter et al, 2007). New Zealand has very low levels of regulation and a flexible labour market, with some of the world's lowest trade barriers. Yet, in spite of the good macroeconomic and institutional characteristics of the New Zealand economy, GDP and productivity growth has been below the Organisation for Economic Co-operation and Development (OECD) average for decades (NZIER, 2006). Income per capita in New Zealand is currently around 82 per cent of the OECD average. The reasons for this relatively slow growth are intertwined with the driving forces of globalisation in modern economies – density, distance, and division.

2.1 The impacts of globalisation

Globalisation in an economic context refers to the integration of national economies through trade, foreign direct investment, capital flows, migration and the spread of technology. The pace of globalisation picked up rapidly during the fourth quarter of the twentieth century, fuelled by lower transportation costs, developments in information and communication technology, and the lowering of barriers to international trade.

With globalisation comes disintegration of production, the spread of supply chains and the growth of offshore outsourcing. International competition is extending into what were previously thought to be non-traded services (call centres and other business services, for example). These trends have been accompanied by the movement of economic activity from Europe and the USA into Asia as multinational corporations look for cost and scale advantages. These external changes are an important influence on economic outcomes in the Waikato region and present both challenges and opportunities.

The 2009 World Bank economic report analysed in depth the three dimensions of globalisation – density, distance, and division. Density refers to both population and economic density as people and production are increasingly being concentrated in smaller areas. The largest cities are also the fastest growing, while many rural areas in New Zealand and all over the world are experiencing population decline. The advantages of economic density for businesses and people include: the sharing of infrastructure, greater variety and specialisation in goods, services and employment and a range of mechanisms that enhance knowledge generation and diffusion. These are known as economies of agglomeration. The Auckland region is New Zealand's largest and most globally connected urban area and thus exerts a significant pull on firms and labour to migrate to the city. The Hamilton urban area also provides agglomeration benefits for the Waikato region, albeit at a smaller scale. However, New Zealand cities are small by international standards and this limits the potential benefits of agglomeration.

Distance is the second dimension of globalisation. Despite falling transport costs and improved communication technologies, distance from economic density remains vitally important to a region's prosperity. New Zealand is the most remote developed country in the world, far from major world markets in the US and Europe. The economic hub in South-East Asia is somewhat closer, but still nine thousand kilometres from New Zealand. This distance imposes significant economic costs. International trade declines dramatically with distance; half of all world trade takes place between trading partners who are less than three thousand kilometres apart (Gyngell, Skilling and Thirlwell, 2007). If one were to inscribe a circle with a radius of three-thousand kilometres around New Zealand, the resulting area would include a vast expanse of ocean, a few small islands, and the eastern edge of Australia. A similar circle around the UK would include most of the European Union and a market of approximately five hundred million people. New Zealand is doubly disadvantaged by geographical isolation and a small domestic market.

Distance is also an important factor influencing prosperity of sub-national regions within countries. Neighbourhoods are important; "a prosperous city seldom leaves its periphery mired in poverty" (World Bank, 2009). The Waikato region benefits from close proximity to Auckland city through economic spillovers. More important than geographical distance is effective distance, which takes into account the cost and speed of transporting goods, people and information between regions. Effective distance can be reduced by improving transport and communications infrastructure and reducing congestion. Good links to other regions and international trading partners are therefore vital to the prosperity of the Waikato region.

The third dimension of globalisation is division. Economic division refers to anything that impedes the flow of goods, services and capital. At a national level this can include border restrictions, barriers to trade, and immigration restrictions. International barriers to trade and investment are low in New Zealand, although agricultural exports are still restricted by tariffs and quotas imposed by receiving countries. At a sub-national level there can also be cultural and socio-economic divisions which reduce the social inclusion of some groups within the population. These divisions can cause undesirable social outcomes such as unemployment, poverty, low education, crime, poor health, and negative spillover effects to surrounding areas.

2.2 National growth and productivity trends

> The prosperity of the colony… is largely due to the prosperity of pastoral interests; the increased price of wool; the large increases in the export of meat and butter. (New Zealand Chronicle, 19 July 1873)

From the early 1900s to 1970, New Zealand had a standard of living above the OECD average and on par with Australia. However, global trends and the increasing importance of economic density and distance disadvantage New Zealand in the modern economy (McCann, 2009). Productivity growth in recent decades has been below the OECD average and the gap in GDP per capita between New Zealand and the top half of the OECD has widened. Average incomes in New Zealand are now 30 per cent lower than in Australia, despite New Zealanders working the fifth longest hours of any OECD country. New Zealand's labour productivity growth briefly exceeded Australia in the early 1990s, but has since slowed again in the early 2000s.

New Zealand's relatively poor productivity performance has some natural and hence unavoidable causes, such as small size and geographical isolation. The worldwide tendancy towards agglomeration makes it challenging to attract and retain skilled labour and companies. Other causes of slow growth include a poor savings rate and heavy reliance on foreign capital. Australia's faster labour productivity growth since 2000 can be largely explained by greater investment in capital, although Australia also relies heavily on foreign investment (Gyngell et al, 2007).

Because of the small size of the New Zealand domestic market it suffers from the "branch economy" problem. This refers to the lack of high-value economic activity such as corporate leadership in New Zealand. Many companies in New Zealand are simply subsidiaries that have head offices offshore in Sydney or Hong Kong, for example. In addition, New Zealand-grown companies which expand into international markets face increasing pressure to move activities overseas to be closer to these markets (Gyngell et al, 2007). New Zealand also scores low in terms of international engagement, with very low rates of outward foreign direct investment.

The Waikato regional economy is subject to the same issues as the rest of New Zealand; namely how to attract and retain high-value economic activity in an era of increasing human and capital mobility. However, the Waikato region also has some unique characteristics and industry clusters which affect local economic outcomes.

2.3 Economic outcomes for the Waikato region

> Is it not enough that the Waikato has within its borders the richest and most permanent goldfield in the colony, the thermal springs and wonderland, forests of most valuable pines, unrivalled water, and the finest dairy lands in the world? (Observer, January 13, 1906)

The Waikato region is the fourth largest economy in New Zealand after Auckland, Canterbury and Wellington. Between the years 2000 and 2004, Waikato economic growth was lower than the national average. But from 2004 to 2007, real Gross Regional Product (GRP) for the Waikato region increased by 5 per cent per year compared with 3.2 per cent for the national average. This faster growth can be attributed to rapidly growing dairy and business services industries, facilitated by proximity to the Auckland city, the main international gateway for New Zealand.

Waikato annual per-capita GRP growth between 2004 and 2007 was also high, being 3.6 per cent compared with the national average of1.6 per cent respectively. Nominal Waikato GRP for the year ended March 2007 is estimated to be $15,606 million compared with $12,493 million in March 2004. Reasons for this above-average growth include favourable international commodity prices, increased labour utilisation (more people employed), and perhaps spillover benefits from proximity to Auckland, the fastest growing economy in the country.

2.4 Economic structure

> It is our opinion that the district around the Waikato river is chiefly a pastoral country, and that dairy and sheep farming will be found to pay best… both town and country would be prosperous. (The Daily South Cross, August 30, 1867)

The Waikato region has traditionally been highly reliant on agriculture, especially dairy. Dairy farming has been the main agricultural activity since the nineteenth century. Figure 1, below, illustrates the differences between Waikato industry structure and New Zealand as a whole. Any point to the left of the 45 degree line indicates that an industry is more significant to the Waikato region than it is to New Zealand as a whole. Some sectors have been aggregated for simplicity.

The dairy farming and manufacturing sectors are over-represented in the Waikato region, as are wood and paper manufacturing and electricity generation. Sectors that are relatively under-represented in the Waikato region include financial services, other agriculture, food and beverage manufacturing and other manufacturing. In between are sectors such as forestry, construction, education, business services and other services, which have the same share in the Waikato region as the rest of the country. The services sectors are concentrated in the urban area of Hamilton rather than spread equally across the region.

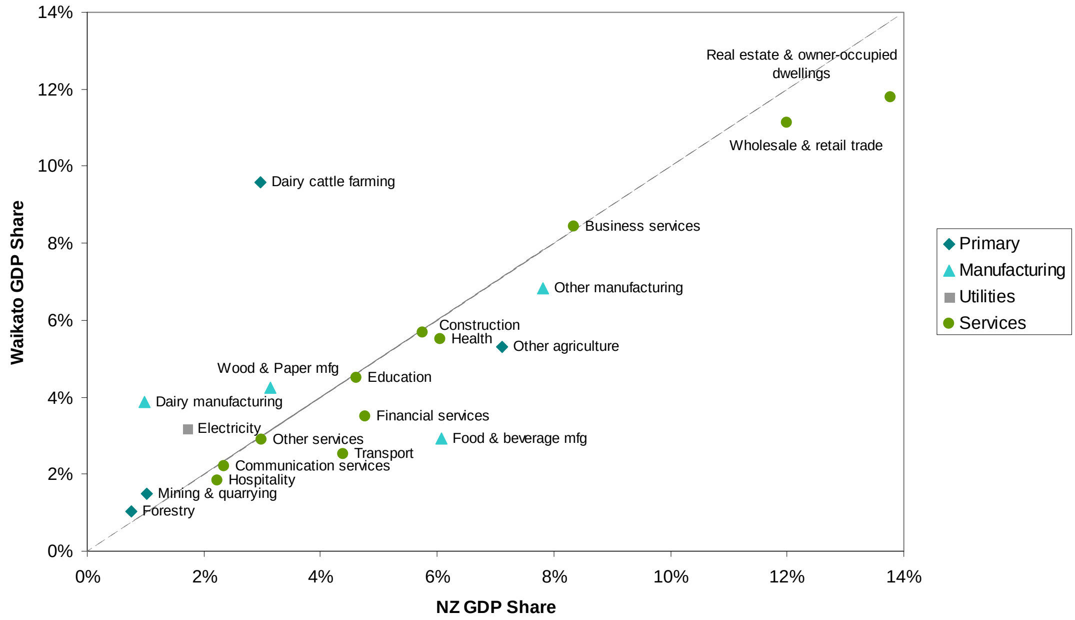

Figure 1: Share of industry for the Waikato region versus New Zealand

2.5 Industry contribution to Gross Regional Product

WRDEEM includes economic results aggregated to 48 industry sectors. The largest sectors, in terms of value added, are dairy cattle farming, business services, real estate, construction, and wholesale trade.

Figure 2 shows the contribution to GDP of the top ten sectors in the Waikato region compared with the rest of the North Island, and the South Island. Dairy cattle farming is the largest sector in the Waikato, contributing $1.4 billion (9 per cent of GRP) or 30 per cent of the national dairy farming total of $4.7 billion. Nationally, dairy cattle farming contributes 2.6% to GDP. When dairy manufacturing is combined with dairy cattle farming, the total dairy sector contributes 13 per cent (2 billion) to Waikato GRP.

Business services is the second largest sector in the Waikato region, contributing $1.2 billion or 8 per cent of GRP, with a smaller share (8 per cent) of the national total of $15 billion for this sector. Nationally the business sector contributes 9.1 per cent of the GDP.

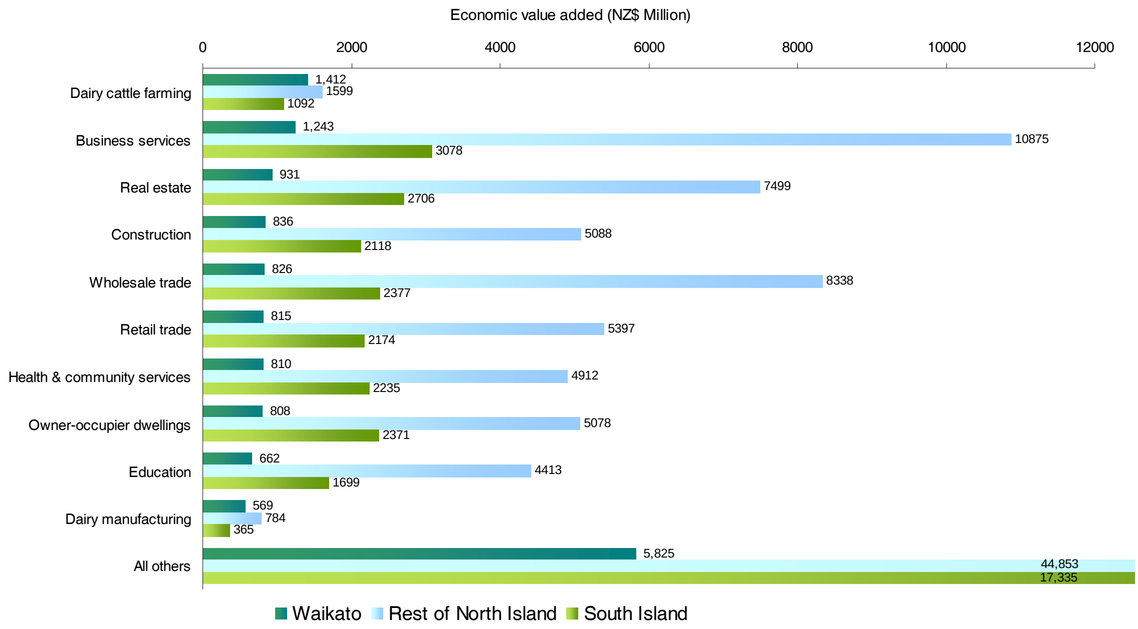

Figure 2: Top 10 sectors by value added for Waikato region and rest of New Zealand

In 2004, ownership of owner-occupier dwellings[1] was the second largest economic sector in the Waikato. The real value of rental returns and home ownership rates declined between 2004 and 2007 due to higher costs of borrowing, so that this sector was overtaken by business services, real estate, construction, trade and health and community services. Residential building activity does increase GDP in the short-term, but is believed to be less useful for inducing technological innovation and long-term growth (Poot, 2007).

Figure 3 shows the percentage change in the largest sectors between 2004 and 2007, both nominal and real[2] (inflation-adjusted). The largest increase was in real estate services, which includes rental property management. While there was a small decline in real terms in value added by dairy cattle farming, there was an 80 per cent increase in the value added by dairy product manufacturing. Higher world food prices had a large influence on the Waikato dairy manufacturing sector. The international dairy price index increased 65 per cent in 2007 (Food and Agriculture Organization of the United Nations, 2009).

1 This is an estimate of the imputed rental services of owner-occupied dwellings.
2 Adjusted using the implicit GDP price deflator index published by Statistics New Zealand.

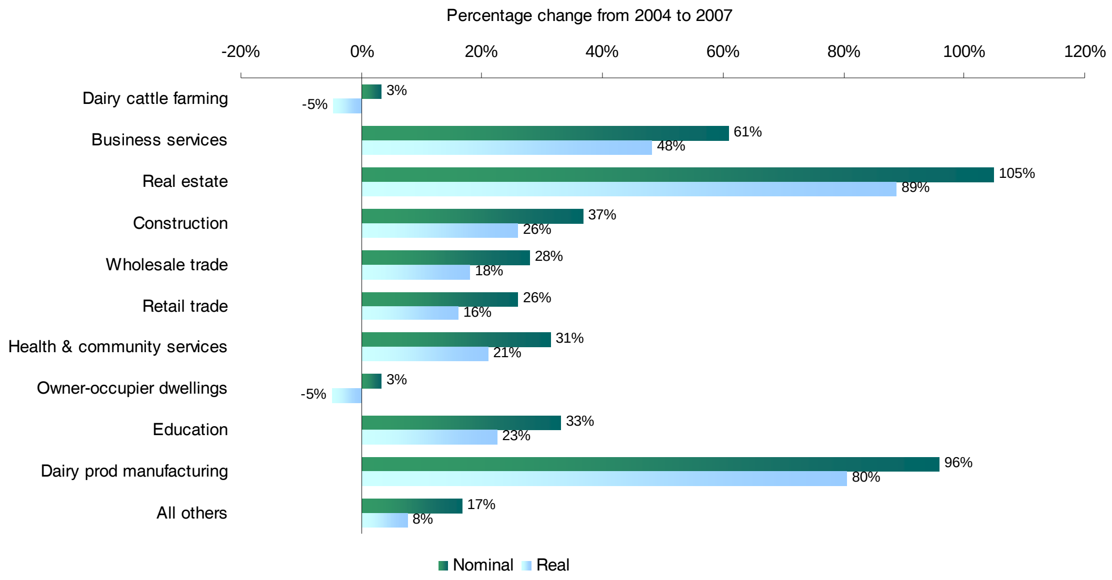

Figure 3: Change in value added for 10 largest Waikato industries, 2004 to 2007

2.6 Comparison of Waikato and New Zealand growth

Nominal Waikato GRP grew 24 per cent from $12.5 billion in 2004 to $15.6 billion in 2007. This was faster than the national GDP growth rate of 18.7 per cent over the same period, from $140 billion to $166 billion[3]. The average annual growth rates were 7.6 per cent and 5.8 per cent, respectively. The inflation-adjusted growth rates were 5 per cent for the Waikato region and 3.2 per cent for New Zealand.

In order to examine the source of this growth, it is useful to look at the break down by industry in the following
Figure 4, which compares 2004-2007 growth by industry in the Waikato region with the whole of New Zealand. Some industries have been further aggregated for simplicity.

The Waikato real estate industry grew much faster than real estate nationally, 105 per cent compared with 59 per cent. In contrast, the 96 per cent growth in Waikato dairy manufacturing was almost identical to the national growth of 97 per cent. Waikato sectors which grew significantly faster than the national average include business services, finance and insurance, construction, health, communications, trade, utilities and transport. Sectors which grew slower than the national average include other agriculture, mining, wood and paper manufacturing, government, fishing and forestry.

It is interesting to note that the growth in the Waikato economy between 2004 and 2007 was largely fuelled by a concurrent boom in the dairy and real estate/construction sectors. However, the business services sector also grew much faster than can be explained by linkages to dairy and real estate/construction alone.

3 Expenditure on GDP in current prices, Statistics New Zealand

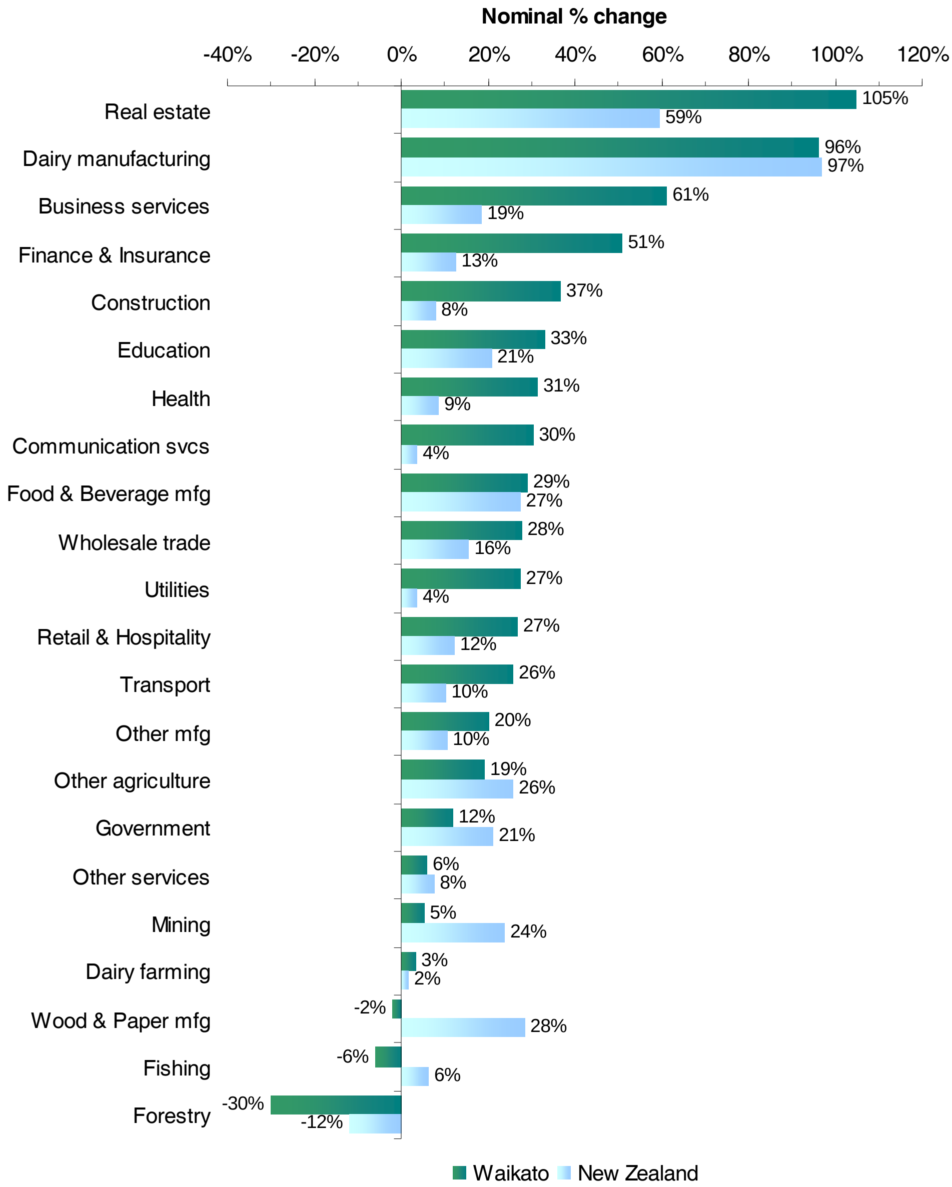

Figure 4: Change in value added between 2004 – 2007, Waikato versus New Zealand

2.6.1 Retail sales

Strong growth in retail sales prior to 2007 mirrored the buoyant international economy. Waikato retail sales grew an average of 7 per cent per year from 2004 to 2009. Even with the contraction in 2008/09 the average annual growth over the five-year period was 3.9 per cent for the Waikato region and 3.7 per cent for New Zealand. It is interesting to note that there is a stronger correlation between Waikato and Auckland retail sales growth than between Waikato and other regions. This is another sign of the close economic linkages with Auckland.

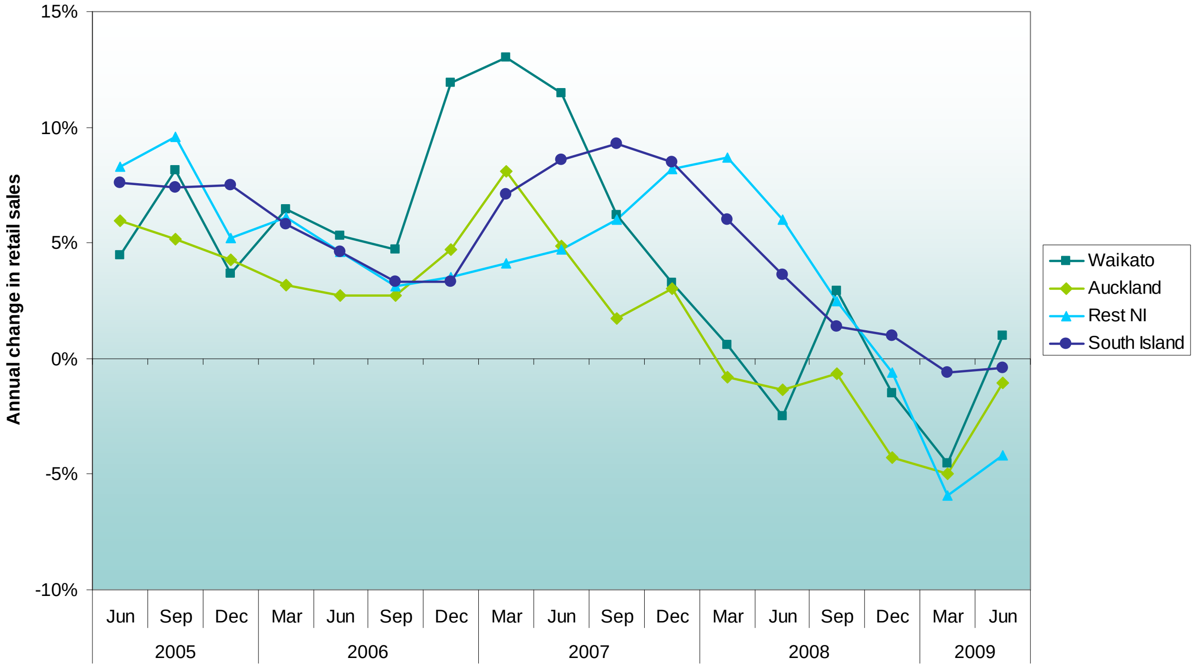

Figure 5: **Retail sales growth - change from same period in previous year (Statistics NZ, 2009b)**

2.6.2 Balance of trade

> New Zealand's position in the frozen meat trade is a really wonderful one. We have sent to England more than half the total number of frozen sheep imported by the country. (Hawke's Bay Herald, February 6, 1892)

In the 21st century, Waikato (and New Zealand) exports are still largely agricultural in nature. Now, however, the largest trading partners are Australia and the United States of America rather than the United Kingdom.

Total international exports from the Waikato region were valued at 3.7 billion dollars in 2007. This is approximately 10 per cent of national exports, which totalled 36.6 billion (Statistics NZ, 2009c). Over a third of Waikato exports were from the dairy manufacturing sector, 18 per cent from other food and beverages, and 26 per cent from other manufacturing.

Total international imports into the Waikato region were worth 4.5 billion dollars. Half of all imports were consumed by private households; the other half was used as inputs into various industry sectors. Construction, retail trade, and dairy cattle farming were the individual sectors with the highest consumption of international imports.

In 2004, Waikato international exports were \$3.7 billion and imports were \$3.2 billion. So the balance of trade declined from \$450 million in 2004 to minus \$740 million in 2007. Figure 6 compares imports and exports by industry groups for 2004 and 2007 (imports are represented by a negative bar). The most obvious change is in the dairy sector (including manufacturing and farming), where export values increased 175 per cent and imports (like fertiliser and feed) increased 50 per cent. Food and beverage manufacturing exports also increased, but other manufacturing exports declined while import costs increased. The construction industry exports very little, however, the strong demand for new buildings led to a 56 per cent increase in imports of materials or machinery.

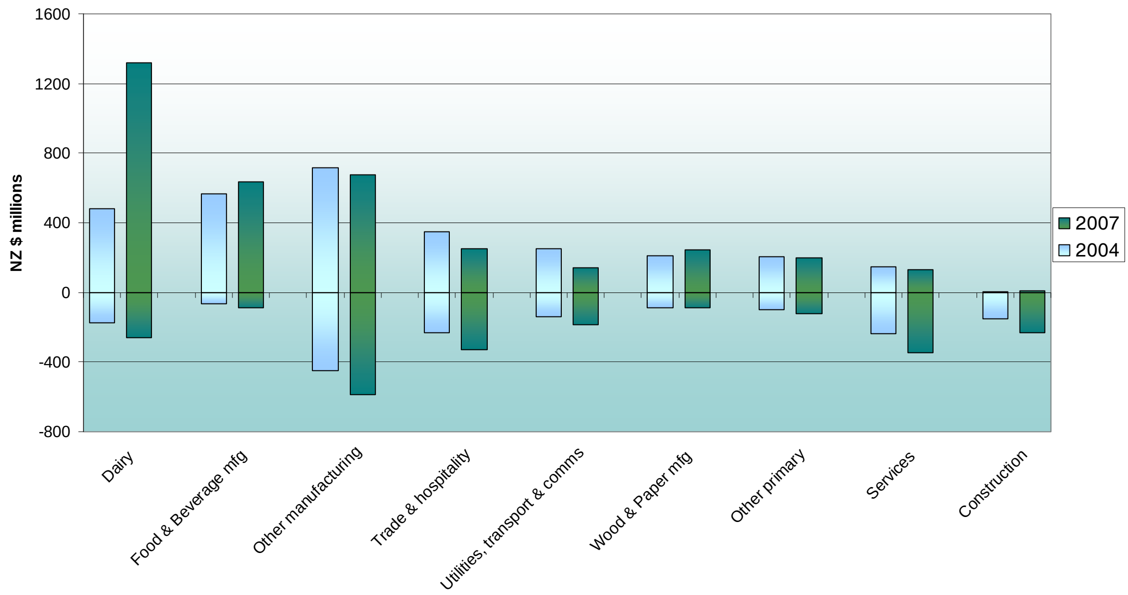

Figure 6: Waikato international exports and imports, 2004 versus 2007

2.6.3 Energy use

Economic activity is highly correlated with energy use from all sources including electricity, oil, gas, solid fuels and renewables. The Energy Efficiency and Conservation Authority (EECA) reported that an estimated 57 petajoules (PJ) of energy was delivered to Waikato homes and businesses in the year ended March 2007. This is a 13 per cent increase over the 50 PJ used in 2004 (Market Economics, 2006). Relative energy intensity decreased from 4.0 megajoules per dollar of GRP in 2004, to 3.7 in 2007.

The largest proportion of energy was used by industry (29 per cent), followed by households (28 per cent) and agriculture (23 per cent). The national breakdown is slightly different, with larger proportions used in industry (40 per cent) and commerce (15 per cent) and lower proportions in agriculture and transport.

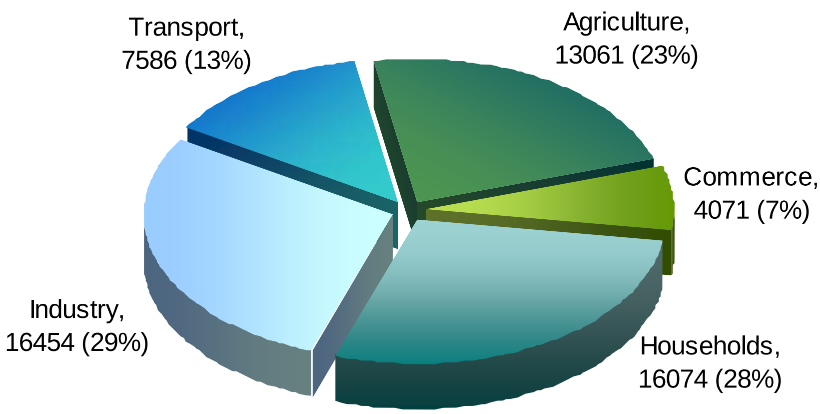

Figure 7: 2007 Waikato delivered energy by sector in terajoules (TJ) (EECA, 2009)

Table 1 shows the relative energy intensity of different industries in the Waikato economy. The wood, paper and publishing sector uses 19 per cent of the energy, but only contributes 2.9 per cent to GRP. However, a large proportion of this energy is biomass. The transport sector (excluding private passenger transport) uses 13 per cent of the energy and this is almost entirely fossil fuels. The dairy manufacturing sector is the third largest energy consumer, using 5.7 PJ (10 per cent). The services sectors are the least energy intensive. The combined business services and communications sectors use only 1 per cent of the energy while contributing 19.3 per cent to GRP.

Table 1: Waikato delivered energy and GRP share by sector

Sector	Delivered Energy (TJ)	% of delivered energy	% contribution to GRP
Wood, paper and publishing	10998	19.2%	2.9%
Transport	7586	13.3%	2.4%
Dairy manufacturing	5730	10.0%	3.6%
Other manufacturing	3227	5.6%	5.8%
Dairy cattle farming	3141	5.5%	9.0%
Trade and Hospitality	2037	3.6%	12.2%
Mining and Quarrying	1716	3.0%	1.4%
Other agriculture	1713	3.0%	4.9%
Other food manufacturing	1409	2.5%	2.8%
Education and Health	831	1.5%	9.4%
Construction	751	1.3%	5.4%
Business services and Comms.	560	1.0%	19.3%
Fishing and Hunting	424	0.7%	0.1%
Forestry and Logging	336	0.6%	1.0%
Other services	377	0.7%	2.8%

Within the Waikato region there is also variation in energy use for each territorial authority. Figure 8 shows the total energy delivered and the fuel sources by territorial authority. Hamilton city uses the most energy, 16,500 TJ in 2007. Fossil fuels comprise two-thirds of the energy used in Hamilton, the equivalent of 1.8 million barrels of oil per year. The Waipa district uses the highest proportion of fossil fuels (76 per cent) while the region average is 62 per cent. Households also consume fossil fuels indirectly from fuels used to generate electricity. Roughly a third of all electricity generation in New Zealand is fuelled by coal or gas, so the true proportion of these fossil fuels used by households is even higher.

South Waikato district is the second-highest energy consumer in the Waikato region, but two-thirds of this energy comes from biomass. This is due to the intensive use of wood and black liquor (a by-product of wood processing) in the wood and paper industries, which are clustered in the South Waikato district. The Taupo district has large reservoirs of geothermal energy which are used to generate electricity. A small amount of geothermal energy (95 TJ) is used directly for heating.

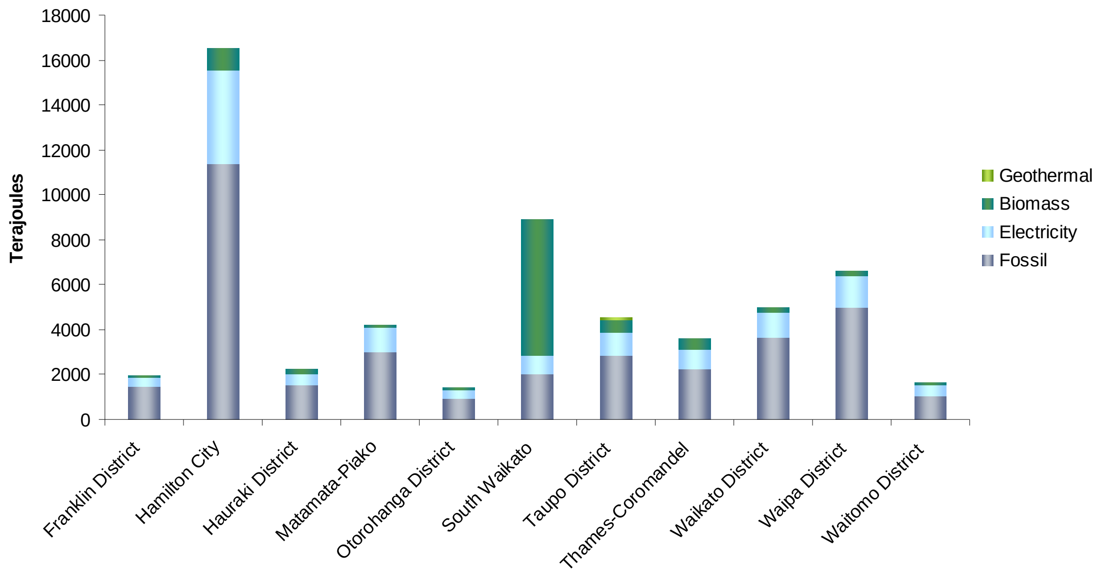

Figure 8: 2007 delivered energy by fuel type and territorial authority (EECA, 2009)

Energy used in the Waikato region in 2007 generated an estimated 3.9 million tonnes of carbon-dioxide equivalent emissions (EECA, 2009). Households accounted for 1 million tonnes; industry 1.3 million tonnes; and agriculture 800,000 tonnes. The end-use with the largest emissions was internal combustion engines, accounting for 1.5 million tonnes. At the transitional price of $25 per tonne[4], the energy-related emissions of the Waikato region are an annual liability of $97.5 million dollars (0.6 per cent of GRP) or around $500 per household.

2.7 Household income and expenditure

In 2009 median household income in the Waikato region is $1,228, slightly lower than the national median of $1,234.

Figure 9 shows that the Waikato region has the sixth-highest weekly household income, with Wellington the highest at $1,359. However, a comparison of median income and housing costs reveals that the Waikato region has more affordable housing than Auckland, Wellington, and Nelson/Marlborough (Massey University, 2009). Income for couples-only Waikato households is expected to grow faster over the next few years than other household types (Norman et al, 2008).

4 The 2009 Climate Change Response Amendment Bill provides a fixed price option of $25 per tonne from 2010 to 2012.

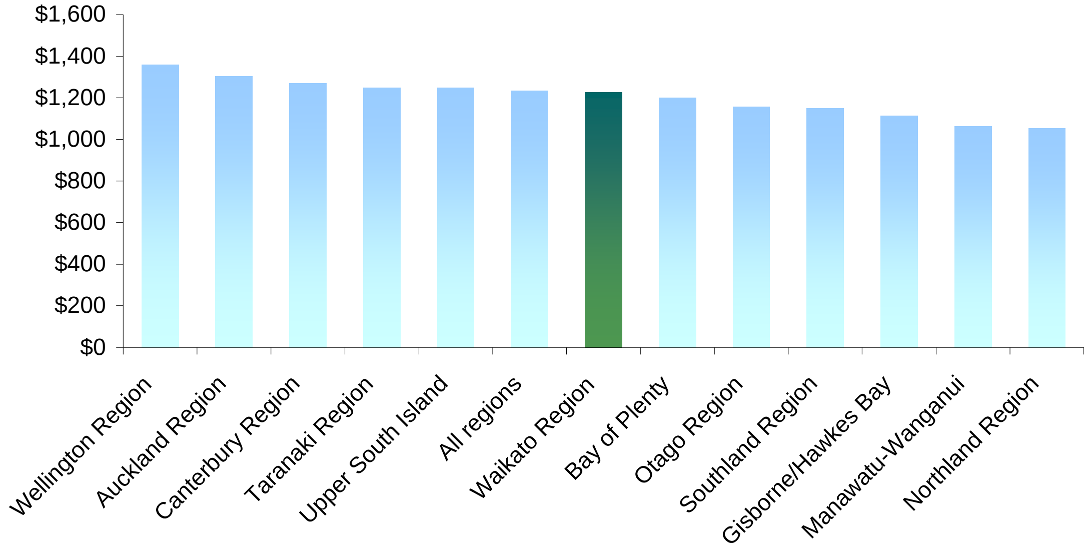

Figure 9: 2009 median weekly household income by region (Statistics NZ, 2009d)

Although the median Waikato household income was slightly lower than the national median, weekly household expenditure was slightly higher. Waikato households spent $986 per week compared with the national median of $956. Waikato households spent less on housing/utilities contents, health, transport, and communication, and spent more on food, alcohol/drugs, clothing, recreation, and other goods and services (Statistics NZ, 2009).

Figure 10: 2009 Weekly household expenditure for Waikato region and New Zealand (Statistics NZ 2009d)

3 Population, migration and employment

Uneven economic growth is a natural consequence of globalisation. Prosperous areas attract more investment and human capital, generating faster growth. Pool (2006) remarked on the dichotomisation of the country into advantaged regions and those of the "forgotten New Zealand". The Waikato region is seemingly well placed geographically to be one of the advantaged regions. However, there is still significant income and human capital disparity within the region. The World Development Report (2008) finds that successful economies do not try to force economic activity to be evenly distributed, for this disregards the benefits of agglomeration. Rather, a more successful strategy is to facilitate agglomeration by reducing divisions, improving linkages, and encouraging labour and capital mobility. In contrast, public institutions should be spatially even so that people in remote rural areas are not deprived of basic social services.

The population in the Waikato region is most densely clustered around the Hamilton urban area with some area units containing more than two thousand residents per square kilometre (see Figure 11). The northern area of Franklin is also relatively densely populated. There are small pockets of density around other town centres but the rest of the region is relatively sparsely populated with less than 10 residents per square kilometre.

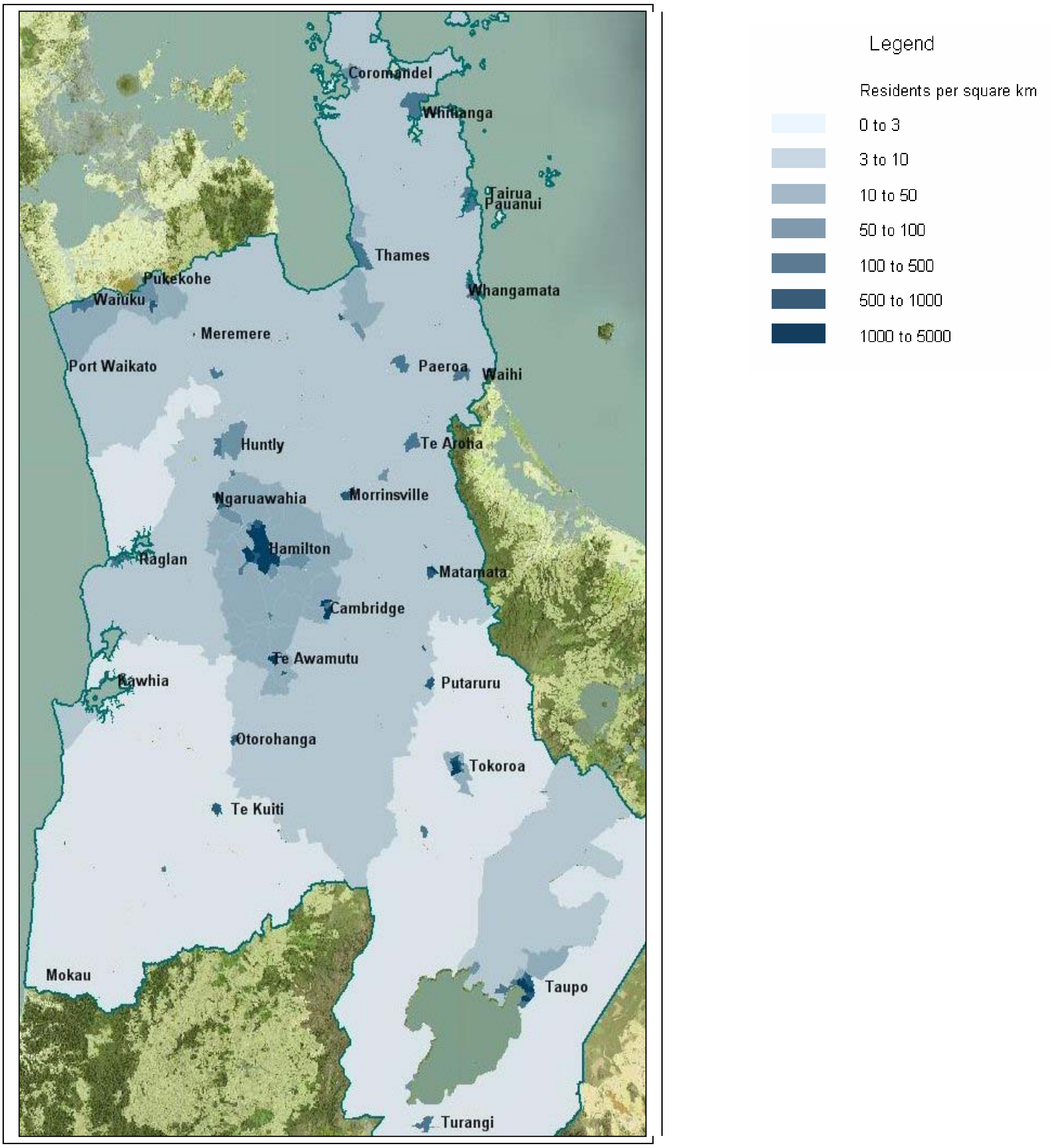

Figure 11: Waikato population density per square kilometre

Figure 12, below, shows the population by territorial authority as at the 2006 census. It also shows the percentage change in population since the previous census in 2001. The national population grew 7.8 per cent between 2001 and 2006. The Waikato region population grew 6.8 per cent to 395,100, but there is large variation in growth rates within the region. The districts with the highest population density are also growing the fastest, consistent with worldwide trends. Hamilton City grew 11 per cent and the least populous Otorohanga district declined 2.9 per cent. The highest growth rate was in

Franklin; however this includes areas outside of the Waikato region. The South Waikato district experienced the largest population decline. This can be explained by relative geographic isolation and the decline of pulp and paper industry in the area.

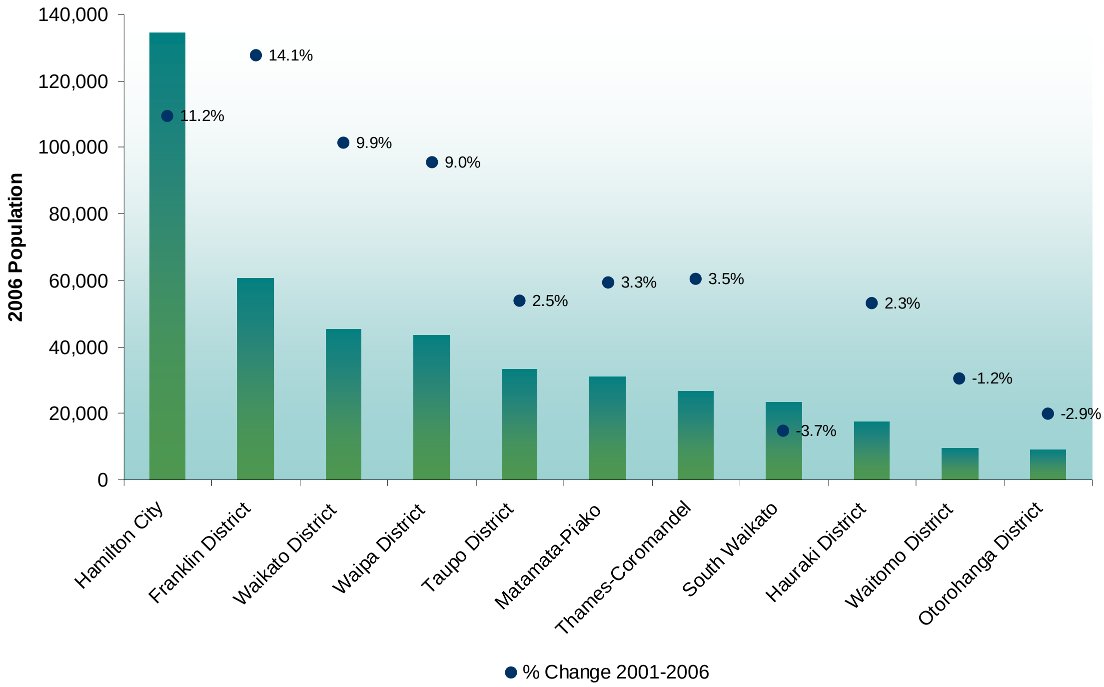

Figure 12: 2006 population and growth by territorial authority (Statistics NZ, 2006)

Figure 13 illustrates the population density/growth relationship for New Zealand[5]. There were a few small districts which experienced large population growth In general cities grew much faster than rural areas. However, it is interesting to note that several areas surrounding Auckland city (Manukau, Rodney, Franklin, and Papakura) actually grew faster than central Auckland. This could be a result of diseconomies of agglomeration (high land prices and congestion) causing growth to spillover to surrounding areas[6]. There may also be spillover growth from Auckland to northern areas of the Waikato region, and from Hamilton to satellite towns such as Huntly, Cambridge and Te Awamutu.

[5] Queenstown-Lakes grew 35 per cent and Selwyn district grew 24 per cent, and were left off the chart to improve readability. The high growth rate in Selwyn district is likely due to peri-urban growth in proximity to Christchurch.

[6] Migration to these surrounding areas is a larger driver of growth than say natural population increase.

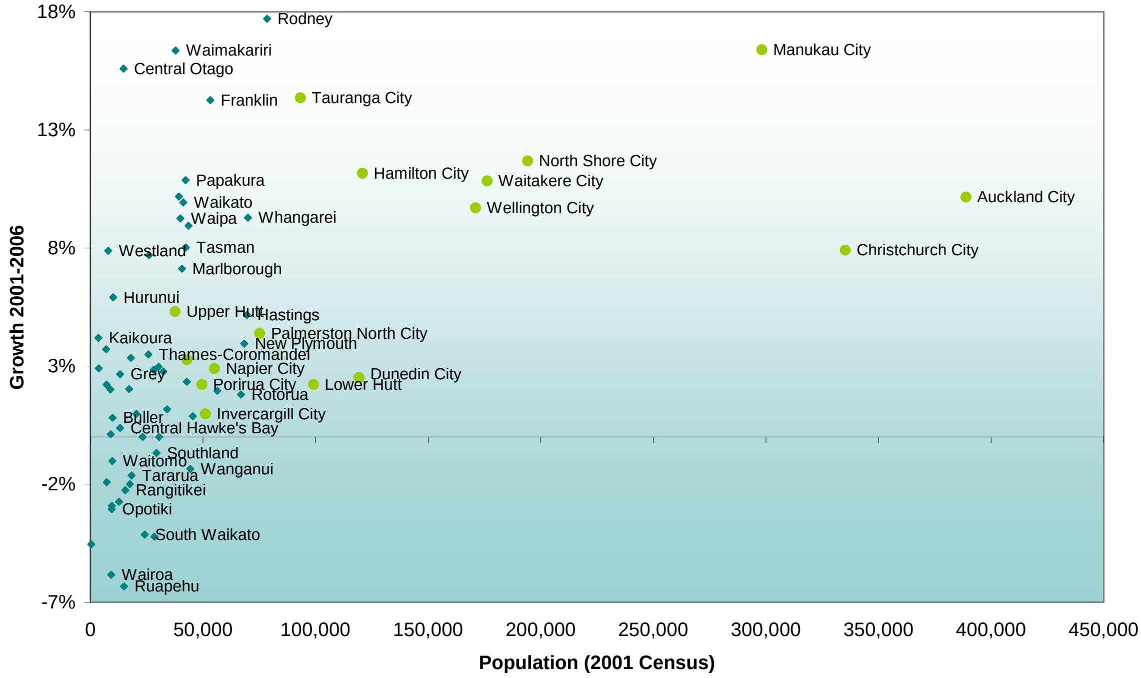

Figure 13: Population versus growth by territorial authority (Statistics NZ, 2006)

3.1 Migration

> In these early days of spring …a steady current of uncouthly dressed men and women carrying bundles and boxes and all manner of baggage. As the season advances the human current will increase (Inangahua Times, October 1, 1884)

New Zealanders are becoming more mobile. In 2006, more than half (58 per cent) of the total usually resident population had changed their usual residence at least once in the previous five years, and almost 1 in 4 people (25 per cent) had moved within the past year, compared with 55 and 24 per cent respectively in 2001. The most mobile regional population was found in the Waikato region, where 3 in every 5 people (60 per cent) had changed their usual residence between the 2001 and 2006 Census. The movement of human capital follows similar patterns to physical capital and financial flows. That is, the majority of flows are between adjacent regions and flows decrease significantly with geographic and cultural distance (shared language and social norms reduce cultural distance).

Migrants tend to be young, leading to aging populations in 'sending regions' and more youthful ones in 'receiving regions' (Poot, 2007). The causality of population change and economic outcomes can run both ways. Strong economic growth in the Waikato region probably induced immigration initially, which then reinforced continuing economic growth.

In the 2006 census there were 70,000 people currently living in the Waikato region who lived in a different region in 2001. A third came from the Auckland region, 13 per cent from Bay of Plenty, 15 per cent from the lower North Island, and 6 per cent from the South Island. A third arrived from overseas, the majority from New Zealand's closest neighbour, Australia. There were also large migration flows within the Waikato region, with 34,000 people moving to a different territorial authority area.

Figure 14 shows the flows to and from the Waikato region. The positive figures represent immigration to the Waikato region between 2001 and 2006; while the negative figures represent emigration. The overall net migration gain for the region was 6,117 people.

The Waikato region gained 27,213 people from Auckland and Northland and lost 17,517. The typical pattern is for human and capital flows move towards the areas of greatest economic density; in this case towards Auckland. However, the reinforcing process can turn around when land scarcity, congestion, pollution, social exclusion, or crime encourage outward migration (Poot, 2007).

Statistics New Zealand (2006a) reported that the 2006 census showed a general reversal of earlier northward migration, and Auckland recorded a net loss on internal immigration. This recent direction reversal is also apparent in the net loss of Waikato residents to the South Island. In regard to the rest of New Zealand, the Waikato region received a small net gain from the lower North Island and a small net loss to the Bay of Plenty region.

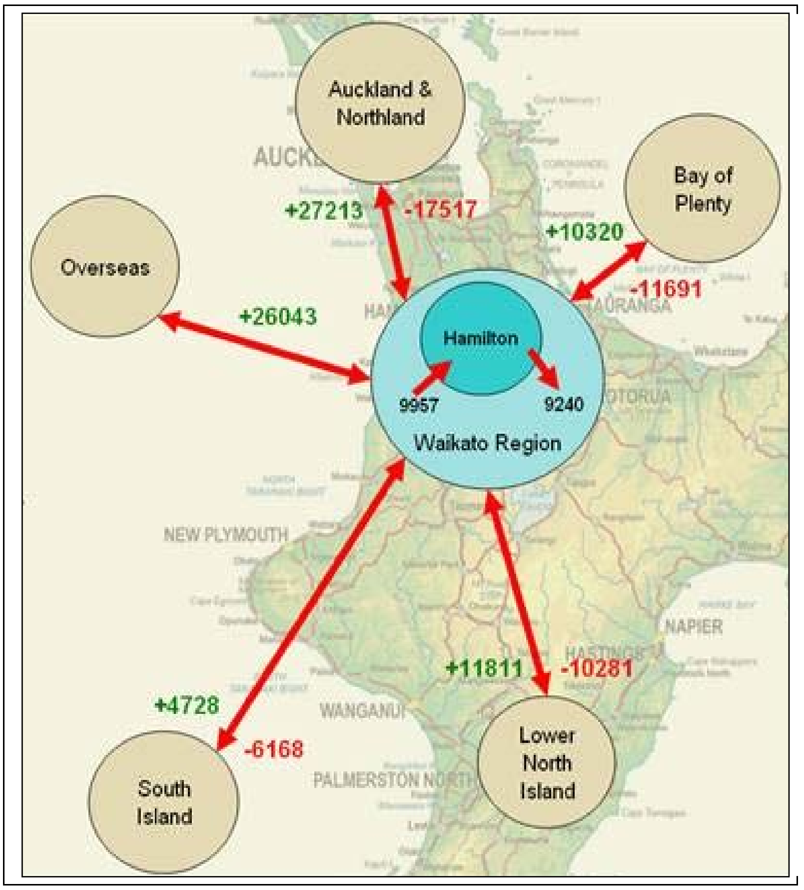

Figure 14: Migration to and from the Waikato region 2001-2006 (NZ Census 2006)

It is not known how many Waikato residents emigrated overseas because the region of origin is not recorded at departure. Figure 14 also shows the flow between Hamilton and the rest of the Waikato region. As the largest urban centre in the region, Hamilton would be expected to attract human capital[7] from surrounding rural areas. The city did gain 700 residents from net migration within the region. Forty per cent of immigrants to Hamilton came from the Waikato region, compared with 22 per cent from Auckland. The profile of emigration is almost identical, with 41 per cent of Hamilton emigrants moving elsewhere in the Waikato region and 22 per cent moving to Auckland.

In 2006, Statistics New Zealand ran a survey "Dynamics and Motivations for Migration in New Zealand" in order to identify motivations for internal migration. Motivations vary by age and length of residence, but the most important reasons for moving to the Waikato region were cited as social (moving to be with friends and family), employment and environment. The most important reasons for moving away were employment, social, then environment. In contrast, living environment was cited as the most

[7] That is the increase in an educated labour force.

important reason for people who moved to Tasman/ Nelson/West Coast districts. It is important to note that this was during a period when unemployment was unusually low. In the 2009/2010 economic climate, employment may be an even stronger motivation for migration.

3.2 Employment

The total employment count in the Waikato region for the year ended March 2007 was 167,400. In addition, there were 29,700 working proprietors. Figure **15** shows the percentage contribution of each sector to total employment. Retail trade had the highest contribution and employed 12 per cent of the Waikato labour force in 2007. This is similar to the proportion of labour employed in retail nationally. Business services employed 10 per cent of the Waikato labour force, compared with 13 per cent in the rest of the North Island and 9 per cent in the South Island.

Dairy cattle farming is the sixth largest employment sector in the Waikato region, employing 6 per cent or 11,700 including working proprietors. If dairy manufacturing is included, the proportion increases to 7.3 per cent (14,400 people). This is significantly larger than the proportion of people employed in dairy and dairy manufacturing than in the rest of the country (2 per cent).

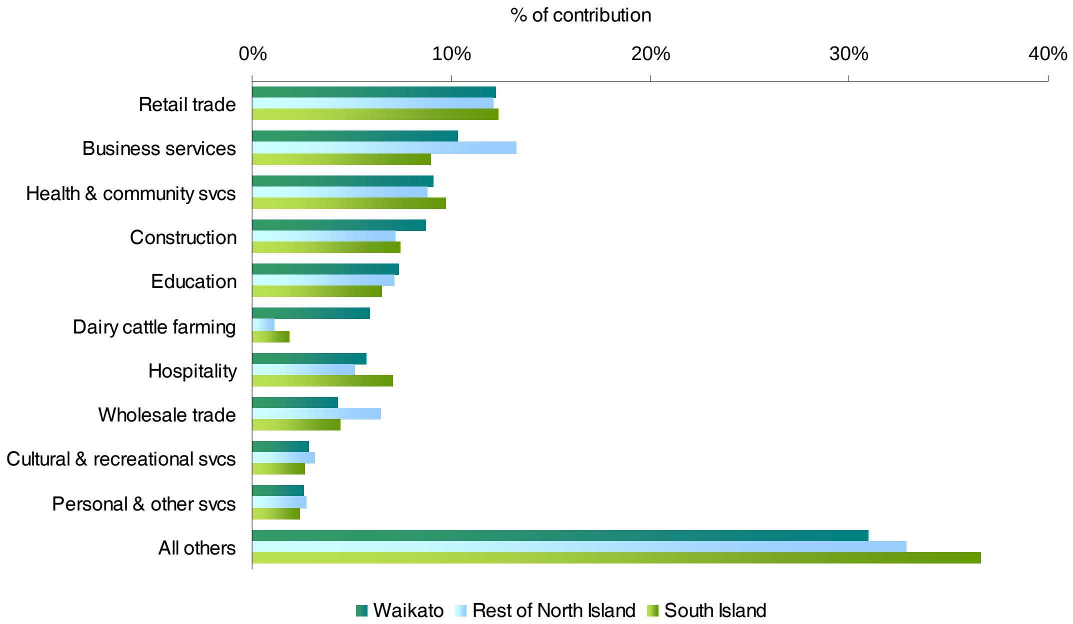

Figure 15: Contribution of each sector to employment

3.3 Labour productivity

Labour productivity is a measure of the amount of economic value added per employee. Over the long term, productivity is the key determinant of a country or regions' material standard of living. As stated previously, the median household income in the Waikato region is lower than the national median. However, average Waikato labour productivity ($79,000) is higher than national average labour productivity ($70,000) in the year ended March 2007. In comparison, average labour productivity in the Auckland region is estimated to be 45 per cent above the national average (Mare, 2008).

Labour productivity per employee is affected by hours worked, capital utilisation, and technological and cultural factors. Seventy-seven per cent of employees in the Waikato region work full-time (at least 30 hours per week), and this is in line with the national average. In Auckland a slightly higher proportion (79 per cent) of employees work full-time. Differences in labour utilisation affect average productivity, but industry structure has a relatively larger impact. Figure 16 shows labour productivity for different sectors of the economy for the Waikato region and New Zealand overall.

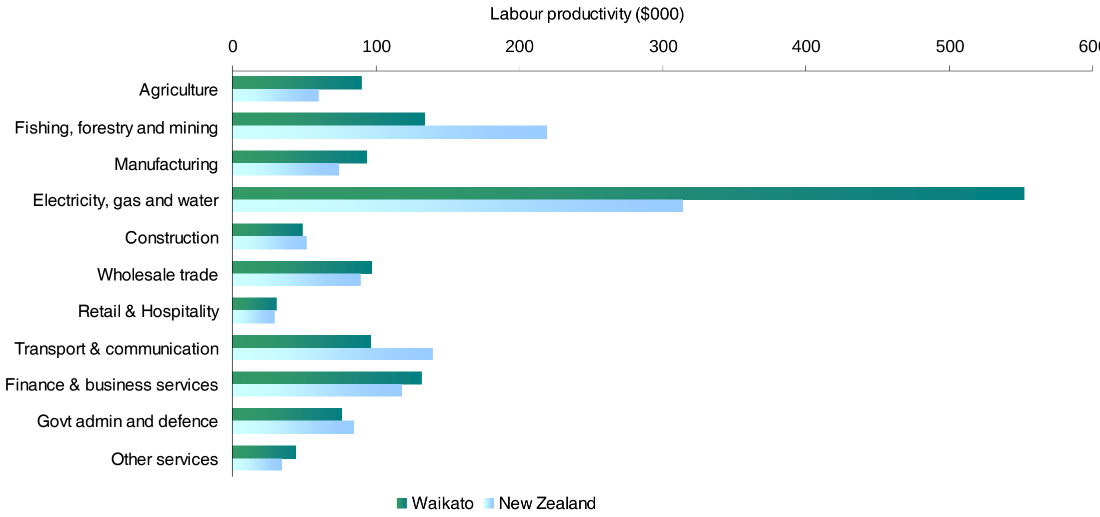

Figure 16: Labour productivity by sector for the Waikato region and New Zealand

Agricultural labour productivity is high in the Waikato region because of a relatively large dairy farming sector, which is more productive than other agricultural sectors. Labour productivity for Waikato dairy farming in 2007 was $121,000, compared with $65,300 for livestock farming. Productivity for sectors producing commodities such as milk powder, are significantly affected by world prices and exchange rates. The agriculture and fishing, forestry and mining sectors are significant exporters, so calculated labour productivity can be expected to fluctuate more than a sector like business services, which primarily supplies the domestic market.

There may also be productivity benefits due to the clustering of dairy farms and processing in the Waikato. The benefits of these “localisation” economies include spillover benefits in knowledge and technology, and better provision of specialised goods and services to dairy. The existence of localised agglomeration economies is perceived to improve the economic performance of the wider region and country (McCann and Shefer, 2005). The geographical proximity of dairy farms in the region may also facilitate technology and process improvements in dairy (Gordon and McCann, 2005).

Manufacturing in the Waikato is largely focussed on dairy, wood, and paper. These sectors may also experience productivity gains from clustering. In the forestry, fishing and mining sector, Waikato labour productivity was below the national average. This probably has more to do with the specific mix of commodities produced rather than less efficient business practices.

Electricity generation in the Waikato has a significant productivity premium over the rest of New Zealand. With a variety of hydroelectric, thermal, geothermal and wind generation the Waikato region is the main energy supplier for the North Island.
While retail, accommodation and restaurants is a large sector in the Waikato economy (see Figure 1: Share of industry for the Waikato region versus New Zealand), it is also a relatively unproductive sector, both for the Waikato region and the rest of New Zealand.

3.4 Unemployment

Unemployment in the Waikato region was more severely affected during the 2008/09 economic downturn than most other regions. Figure 17 shows that in June 2006 the Waikato region was below the national average of 3.6 per cent with an unemployment rate at 2.9 per cent. In contrast, by June 2009 there were 15,000 people (6.8 per cent of the labour force) unemployed in the Waikato region, the highest level this decade. The national unemployment rate was 5 per cent. Only Northland and Gisborne had a higher unemployment rate.

The Waikato labour participation rate (the proportion of working age people in the work force) peaked in December 2007 at 70.8 per cent; it then returned to the 2006 level of 69.7 per cent. The unusually low levels of unemployment and rising mortgage costs in 2006-2007 may have encouraged more people to work who would otherwise not be in the labour force.

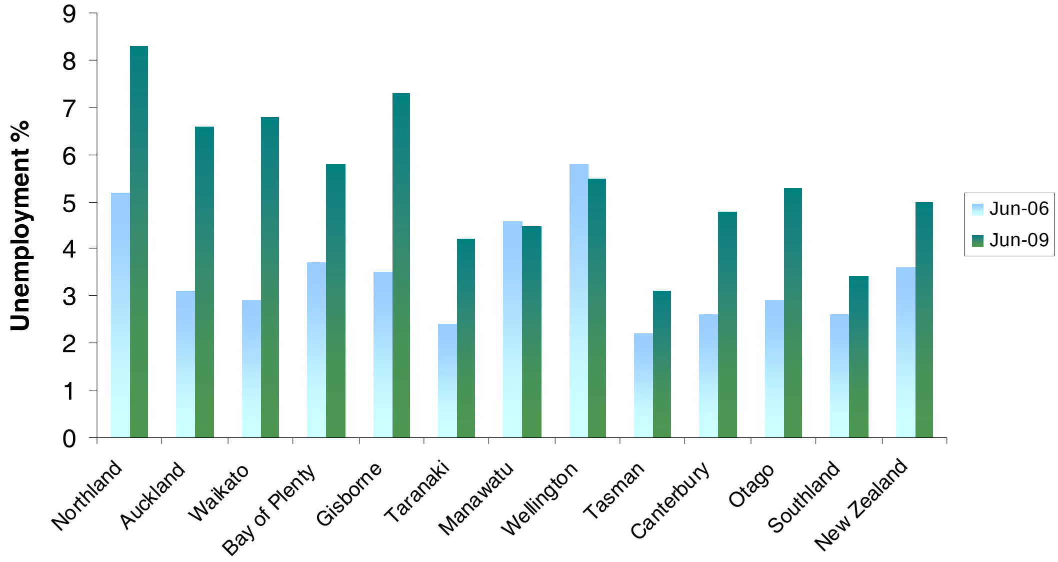

Figure 17: Unemployment by region, June 2006 and 2009 (Statistics NZ)

4 Analysis of sectors

The 2009 Waikato economic model provides a snapshot of the existing Waikato economy and industrial linkages. This section provides a brief background for the major Waikato industries.

4.1 Dairy

> New Zealand's dairy industry got its start in the early 1800s when Samuel Marsden, a Christian missionary born in England, travelled to New Zealand to bring Christianity to Maori. Little did he know that his gift of a bull and two heifers in 1814 would mark the start of an industry that would eventually support much of New Zealand's economy. (Fonterra, 2009)

The Waikato region has a comparative advantage in dairy farming due to fertile soils and excellent pasture growing conditions. In 1886, Henry Reynolds established a butter factory at Pukekura in the Waikato region (Stringleman and Scrimgeour, 2009). The Anchor brand was launched the same year, and is still one of Fonterra’s leading brands (Fonterra, 2009).

The number of dairy factories peaked at about 600 in 1920. From then on, more efficient transport and economies of scale lead to larger factories and the closure of smaller ones. Co-operatives merged until the Fonterra co-operative group formed in 2001. Technological progress and productivity gains significantly improved the profitability of the dairy farming sector. Fonterra is now New Zealand’s single largest private research and development investor.

As stated previously in Section 2.5, dairy cattle farming is the largest sector in the Waikato, contributing $1.4 billion (9 per cent of GRP) or 30 per cent of the national dairy farming total of $4.7 billion.

New Zealand dairy product output in 2007 was valued at 9.7 billion dollars (Stringleman and Scrimgeour, 2009), and the Waikato region produced a third of it. Ninety-five per cent of New Zealand dairy products are exported abroad, a greater proportion than any other country. However, the entire output of New Zealand is only 1-2 per cent of global dairy production, which is estimated to be worth hundreds of billions of dollars (Stringleman and Scrimgeour, 2009).

Recent trends in the industry include large scale conversions from plantation forestry to dairy farming, changes in ownership patterns, higher stocking rates, and more intensive farming practices (Cameron et al, 2009). The ability to increase capital value of the land by increasing productivity helped drive more intensive farming practices. However, intensification and the use of nitrogen fertilisers have come with a cost to the environment in terms of deteriorating water and soil quality (Environment Waikato, 2008).

It is likely that dairy will remain important to the Waikato economy for the foreseeable future (Cameron et al 2009). However, world dairy output grows each year by more than the entire New Zealand output. In 2008 Fonterra sourced 16 per cent of milk solids from overseas, diversifying supply (Oram, 2009). This trend towards an increasingly global focus may have implications for the Waikato dairy industry. While technological progress is expected to provide further productivity gains, the industry may have to face greater international competition, economic volatility in global markets, and pressure to reduce environmental impacts.

4.2 Energy

> We in the North Island … possess a veritable El Dorado in our Waikaremoana, Taupo, and Waikato water supply. Unbounded benefits await the people of the North Island by the installation of hydro-electric power (Poverty Bay Herald, February 27, 1918)

The Waikato region is energy-rich and generates more electricity than any other region. Total installed capacity is 3.5GW in 2007, 39 per cent of the national total. The Waikato region has a unique combination of hydro, geothermal, gas and coal-fired electricity generation. There is also estimated to be two billion tonnes of coal remaining in the ground (Crown Minerals , 2009).

The Waikato region contains more than 75 per cent of the nation's geothermal resource and there has been significant growth in geothermal generation capacity in recent years. The Rotokawa plant is being expanded by 132 megawatts and there are other planned projects totalling 435 megawatts (Environment Waikato, 2009).

Increasing demand for electricity in New Zealand requires approximately 150 megawatts of new capacity to be installed every year. The electricity commission has identify several possible future scenarios for electricity generation in New Zealand (Bishop and Bull, 2009). These scenarios include a "sustainable path" in which Waikato geothermal development plays an important role, but Huntly power plant will shift into a reserve role and eventually be removed from service. The development of wind generation in the Waikato region will also play an important role, and will require significant investment in transmission infrastructure to remote sites and faces environmental hurdles.

An alternative scenario is based on demand side participation where electric vehicle uptake is high and vehicle-to-grid technology is used to manage peaks. This scenario may include the construction of new coal and lignite-fired plants in the Waikato region.

Alternatively, new gas field discovery may lead to the construction of new, efficient gas-fired plants. The diversity of energy resources in the Waikato region, and its location near centres of high demand, mean that the region will most likely continue to have a significant role in energy production under any scenario.

The value-added multiplier of the Waikato electricity sector is 3.52 (Market Economics, 2008). This means for a dollar increase in value added by electricity generation in the region, total GRP will increase $3.52. This includes direct, indirect, and induced effects on linked industries. By comparison, the multipliers for dairy farming and dairy product manufacturing are 1.68 and 5.09 respectively.

4.3 Sheep and beef

> Sheep thrive when bred here, and grow excellent wool, and they do not necessitate so much labour as cattle. Now, the success which has attended the meat-freezing project opens up a wide field for colonial enterprise. (Waikato Times, March 11, 1882)

In the 1880s, successful implementation of a meat freezing project opened up previously inaccessible export markets to Waikato farmers and a significant sheep and beef industry was established. Sheep and beef farming is still a major form of agricultural land use in the Waikato region. However, there has been large-scale de-stocking in the sheep industry and conversions to dairying in the region (Forsyth and Knutson, 2009).

There are continuing technological improvements in the sector such as the introduction of high performance animals, increased lambing and carrying capacity, and automated processing. However, investment in innovation and expansion is limited due to lack of incentives. The industry will continue to face competition for land from dairy farmers, and perhaps forestry if returns improve. This will exacerbate the structural overcapacity in the meat processing industry. New markets may improve the outlook for the sector but Forsyth and Knutson (2009) state that a “business as usual” future scenario is unlikely.

4.4 Forestry

> The subject of tree planting is one of the most important that could engage the settlers in this part of New Zealand. Everyone now-a-days is aware of the influence which forests obtain over the weather… (The Waikato Times, October 12, 1882)

Very little indigenous forest remained in the Waikato region by the late 19th century and some farmers worried about the effects of deforestation on the weather (Waikato Times, 1882). The species Pinus Radiata was introduced from California as part of a reforestation program. It performed well in the Waikato climate and become the dominant species in exotic plantations (Te Ara, 2009a). In 2007, 17.6 per cent of the primary sector Waikato land was under plantation forestry (Cameron et al, 2009). Privatisation of government forests in the 1990s resulted in new investment and new planting. However, log export prices remained flat and returns were poor.

Radiata plantations in the Waikato climate deliver more wood per hectare than any other species grown for solid wood around the world. However, the product compares poorly with international hardwood products. Radiata pine is ideal for manufacturing high quality laminates, but the processing and manufacturing industry is limited by high costs relative to larger processing facilities overseas (Sherwin, 2001).

Another weakness of the forestry industry is the 30 year cycle which generates no income flow until the end of the investment, and is inflexible to short-term changes in the market. The “wall of wood” due to be harvested around the mid-2000s occurred at a time when export prices were already depressed.

There is also increased competition for rural land from agriculture, particularly dairy farming (Cameron et al, 2009). The increase in rural land prices in recent years means that the next generation of plantings are likely to be on marginal or erosion-prone land.

However, the Waikato forestry sector has the potential to play a significant role in “sustainably growing” the economy (Ministry of Agriculture and Forestry, 2009). New opportunities are emerging in relation to carbon storage, bio fuels, secondary crops, and the development of new products from wood fibre. The benefits of environmental services from forestry (such as catchment management and nutrient interception) are also receiving greater attention.

4.5 Tourism

> During the coming summer a large number of visitors to the Waikato may be expected. We trust to learn shortly that, wherever necessary, instructions to travellers will be legibly written and placed in position. (The Waikato Times, October 18, 1873)

As early as the 19th century, the Waikato region hosted large numbers of domestic travellers due to its central location. Hotels were constructed which provided “first class paddocking” and “strict attendance to business and civility” (Waikato Times, 1873); the Waikato tourist industry was born. Geothermal pools were among the earliest tourist attractions in the region, and were promoted for their “curative waters”.

In the 21st century, Waikato Tourism (2009) still promotes the region’s central location, as well as the “bush-clad mountains, stunning waterfalls, hot mineral pools, beaches and magical limestone glowworm caves in Waitomo.”

In 2007, there were an estimated 32 million visitor nights spent in New Zealand. In the Waikato region there were 1.1 million visitor nights, an increase of nine per cent over 2004. One quarter of Waikato visitors were international travellers, lower than the national average of 42 per cent. Figure 18 shows the breakdown of origin of visitors to the Waikato region. Similar to migration trends, the majority of tourism flows are from nearby regions and Australia is the most common international origin.

In 2008, there was a widespread decline in tourism due to the global economic climate. International visitor nights in the Waikato region decreased by 60,000 (21 per cent), while domestic visitor nights increased by 29,000 (4 per cent).

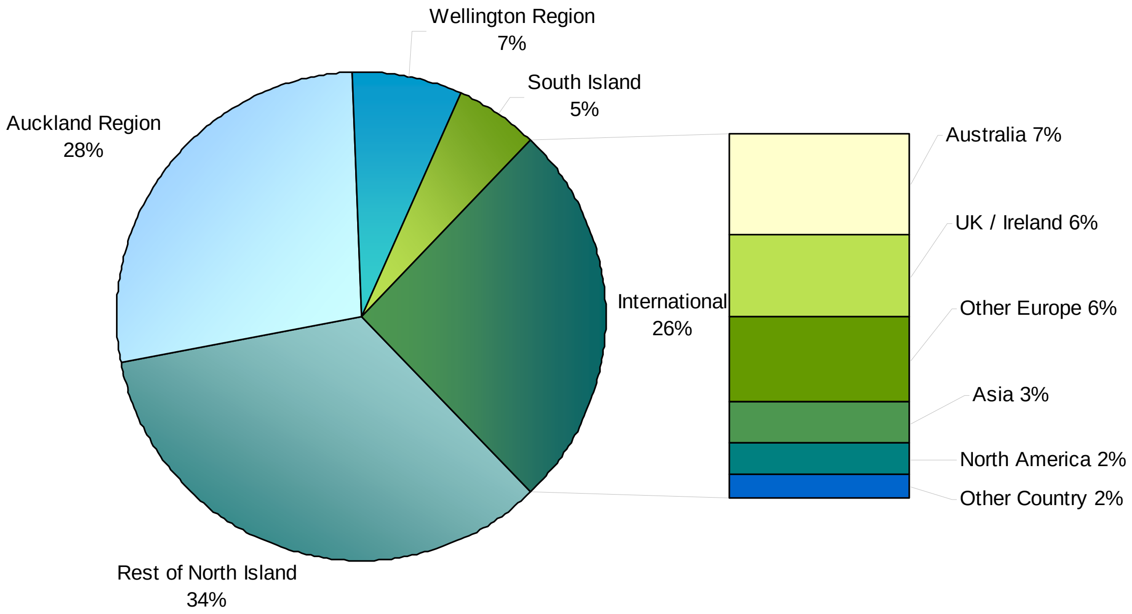

Figure 18: 2007 Visitors to the Waikato region by origin (Ministry of Tourism, 2009)

There is no industry sector specific to tourism. However, the value of tourism to the economy can be calculated by taking the proportion of accommodation services, retail trade, and transport that can be attributed to visitor demand (Statistics New Zealand, 2009). This calculation suggests that visitors added around $800 million[8] to demand for Waikato goods and services in 2007. This is 4 per cent of the national tourism expenditure of $19 billion.

Another approach is to look at average expenditure (Ministry of Tourism, 2009) for domestic and international visitors and multiply by the proportion of nights spent in the Waikato. This suggests that visitors spent around $700 million in the Waikato region in 2007. Either approach shows tourism is effectively the 14th largest business sector in the Waikato economy by output, approximately the same size as wood manufacturing ($740 million) and a bit less than education ($883 million).

5 Analysis of territorial authority economies

There are 12 territorial authorities that make up the larger Waikato region. Each area has a unique combination of economic and social characteristics formed by geography and history.

5.1 Franklin district

In Franklin district the effects of spillover growth from Auckland are most pronounced. There are around 6000 households in the Waikato region's portion of Franklin[9], and these households have the highest median household income of any territorial authority in the Waikato region. In 2006 the median annual household income in Franklin was $60,400, an 18 per cent increase over 2001 and above the Waikato median ($50,200).

The largest industries in Franklin (including the area outside the Waikato region) by employment are retail trade (13 per cent), construction (8.2 per cent) and basic metal

[8] Calculated using the tourism product ratios reported in the Tourism Satellite Account
[9] This analysis is prior to the change in Waikato region boundaries from the Auckland Super City amalgamation.

manufacturing (8 per cent). The total proportion for manufacturing is 16 per cent, higher than the Waikato region average of 14 per cent.

Horticulture is also a relatively important sector. Franklin district produces more horticultural produce than the rest of the Waikato region combined.

Vacant section prices in Franklin have tripled since the start of the decade (Grimes, 2007). Agriculture is under pressure from competing land uses such as semi-urban lifestyle blocks.

5.2 Thames-Coromandel district

Thames-Coromandel district is largely surrounded by sea and is a significant tourism destination for both domestic and international travellers. The shares of retail and accommodation sectors are twice as large in Thames-Coromandel compared with the rest of the region.

Thames-Coromandel also produces the majority of fishing output for the region ($60 million). However, fishing only employs 1.3 per cent of the local labour force. In recent years there was a decline in the forestry and wood processing sectors from 700 employees to 300, while growth in the retail and accommodation sectors more than compensated for this.

In terms of population, the Thames-Coromandel district experienced average population growth (3.5 per cent) and high household growth (11 per cent) between 2001 and 2006. The district has a lot of one-or-two-person households and the largest proportion of elderly residents, 21 per cent compared with the regional average of 12 per cent. This population structure helps explains why 2006 median household income was only $38,000, the second-lowest in the region.

5.3 Hauraki district

Hauraki district has the second highest proportion of elderly residents, 17 per cent. Between 2001 and 2006, the district population grew slowly at 2.3 per cent to 17,650 residents. Median household income in 2006 was $37,800, the lowest in the Waikato region. Median individual income was $20,000, also the lowest in the region.

Despite having relatively low incomes, Hauraki residents have the highest home ownership rates, 58 per cent compared with the region average of 50 per cent.

The largest industry sectors by employment are retail trade (15 per cent), education (11 per cent) and dairy cattle farming (9 per cent).

5.4 Waikato district

Waikato district is the second most populous area in the Waikato region, after Hamilton city. In 2006 there were 45,000 residents and 15,000 households in Waikato. The Waikato district is the second fastest-growing district after Franklin. The population grew 9.9 per cent and the number of households grew 13 per cent between 2001 and 2006. Median household income was $56,000 in 2006, above the regional median. Income growth since 2001 however, was the fastest in the region (37 per cent).

Almost a quarter of the employment and value added in the Waikato district comes from agriculture and agricultural services. Business services is another important industry, and employed 10 per cent of the labour force in 2007. The Waikato district also produces half of the mining and quarrying output ($300 million) and 38 per cent of electricity generation ($530 million) for the region.

The Waikato district experienced the fastest growth in the construction industry of any area in the region. Construction employment grew from 470 to 1130 employees (240 per cent increase) between 2001 and 2008. There was a small decrease to 970 in 2009.

5.5 Matamata-Piako district

Compared with regional figures, Matamata-Piako district has an average home ownership rate (51 per cent), close-to-median household income ($49,600) and below average population growth (3.3 per cent from 2001 to 2006).

Matamata-Piako district has a distinctly rural economy, with the most significant industries being dairy and meat. By employment, the district makes up 21 per cent of the Waikato dairy cattle farming sector, 30 per cent of dairy manufacturing, and 40 per cent of meat manufacturing. The meat manufacturing industry grew steadily from 1160 employees in 2001 to 1520 in 2007. Matamata-Piako also makes up 32 per cent of the Waikato textile and apparel manufacturing sector, although this is only 160 employees.

5.6 Hamilton city

Hamilton city is the largest and densest urban area in the region. Despite having only 2 per cent of the land area in the region, it has a third of the population. In 2006 there were 134,000 residents (46,000 households) in Hamilton. The population grew 11.2 per cent between 2001 and 2006, while the number of households grew 12.5 per cent, following the nationwide trend of decreasing average household size. Household income in 2006 was $53,500, above the regional median of $50,200.

Although Hamilton is a very small city by international standards, it nonetheless provides benefits to the region in terms of diversity of output of goods and services. Hamilton city produces the majority of regional output for apparel, printing and publishing, plastics and chemicals, metal products, furniture, machinery and equipment. While a lot more diverse, the total proportion of Hamilton labour employed in manufacturing (14.5 per cent) is only slightly higher than the regional average (14.3 per cent). Other districts specialise in only one or two manufacturing industries.

Services sectors in Hamilton city contribute 77 per cent to the city economy compared with the regional average of 67 per cent. The largest Hamilton industries are retail trade, business services, health and community services, and education. With two major tertiary institutions and more than 25,000 tertiary students, Hamilton city is a significant source of human capital and knowledge flows.

5.7 Waipa district

The Waipa district is only slightly behind the neighbouring Waikato district in terms of median household income ($54,600), population (43,600) and population growth (9 per cent). However, the home ownership rate in Waipa is higher at 54 per cent compared with 50 per cent in Waikato district.

A significant proportion of the labour force is employed in dairy farming and processing (10.5 per cent), transport equipment manufacturing (6.5 per cent) and horticulture (5.2 per cent). There were 700 employees in dairy processing in the Waipa district in 2007, the third highest after Hamilton (850) and Matamata-Piako (840).

5.8 Otorohanga district

Otorohanga has the smallest resident population of the Waikato districts, 9,670 in 2006. This decreased 2.9 per cent to 9,670 between 2001 and 2006, while the number of households increased 5 per cent. What is interesting is that total employment in the district increased 15 per cent over the same period. This could reflect more people commuting into the district to work, or less people commuting out of the district. Household income in 2006 was $48,300, below the regional median.

Employment in Otorohanga district is largely concentrated in dairy cattle farming (17 per cent), personal and community services (15 per cent) and transport equipment manufacturing (10 per cent). Employment in retail and community services declined from 2005 to 2007. However, manufacturing and road transport made up the difference.

5.9 South Waikato district

The economy of the South Waikato district has undergone significant change in recent years. Employment in forestry, wood and paper manufacturing declined from 2,870 (32 per cent of total employment) to 1,640 (20 per cent) between 2001 and 2007. However, forestry and related sectors remain the most significant industries in the district. South Waikato contributes 30 per cent of forestry and 23 per cent of wood and paper product manufacturing in the Waikato region.

Dairy cattle farming employment increased from 500 to 620 between 2001 and 2007. This was not enough to offset the decline in forestry and total employment declined by 10 per cent.

Similar to Otorohanga, the population in South Waikato district declined 3.7 per cent from 2001 to 2006, but the number of households increased 2 per cent. Median household income was $42,900, the third lowest in the region. South Waikato district has the most youthful population in the district, with 26 per cent of residents in the 0 to 14 age group compared with the regional average of 22 per cent.

5.10 Waitomo district

The Waitomo district is the most sparsely populated district in the region, with a spacious 37 hectares per person. Population in the Waitomo district declined slightly (-1.2 per cent) between 2001 and 2006 although the number of households still grew 2 per cent. Household income in 2006 was $44,250, below the regional median. The home ownership rate is only 40 per cent, the lowest in the region.

The Waitomo economy is largely based on livestock farming, cropping and meat production, which together employ a quarter of the local labour force. Tourism could be considered the next most significant sector, as employment in accommodation, cultural and recreation services are significantly higher than the regional average.

5.11 Taupo district

Taupo district had 33,400 residents in 2006, a 2.5 per cent increase over 2001. Median household income in 2006 was $49,300, only slightly below the regional median.

Tourism is a significant part of the economy in Taupo district. The largest industries by employment are, retail trade (15.7 per cent) and accommodation, restaurants and bars (15.5 per cent). Transport, and cultural and recreational services, also have a higher proportion than the regional average. The only significant manufacturing industry is wood products (26 per cent of the regional total).

Taupo district experienced the second-fastest growth in construction employment after the Waikato district. The construction industry in grew from 570 employees in 2001 to 1,090 in 2007.

5.12 Rotorua district

Only a small, rural portion of Rotorua district falls within the Waikato region (5 per cent of the district's population). The number of households in this area increased 10 per cent to 1,215 between 2001 and 2006. Their median household income in 2006 was $63,500, significantly above the Waikato region median.

6 Future influences on the Waikato region

An extrapolation of productivity and demand trends in the Waikato region would suggest that real gross regional product will expand to $23.8 billion by 2031. This means an annual real growth rate of 1.7 per cent. However, there are several national and international factors which are expected to have a major influence on the future of the Waikato economy. These are the global economic recovery, free trade negotiations, and environmental issues.

6.1 Short-term economic trends

Economic indicators published in the second half of 2009 show an improving national and international outlook (Treasury, 2009). Business confidence is improving and retail sales increased for the first time in two years, perhaps boosted by the increase in net migration.

The Waikato region is in a good position because demand for New Zealand commodity exports remains strong, particularly in China. Fonterra’s monthly online auction showed further increases in foreign dairy prices which are now the highest since October 2008. However, the relatively high exchange rate will dampen returns.

Income growth may also be constrained by slow wage growth and relatively high unemployment, which is expected to peak in 2010 (Treasury, 2009).

6.2 Free trade

Export subsidies are largely prohibited for industrial goods but are a common feature of global trade in meat and dairy. Dairy and meat exports make up more than half of Waikato international exports[10]. Although Waikato farmers are very competitive agricultural producers, these are politically sensitive products in many countries and world agriculture markets are severely distorted by tariffs and subsidies. Market access is limited and New Zealand meat and dairy products frequently have to compete against subsidised products, which depress world prices.

The New Zealand agriculture sector benefited significantly from the Uruguay round of multilateral trade negotiations which reduced agricultural subsidies in the 1990s. The estimated benefits were hundreds of millions of dollars per year (Ministry of Foreign Affairs and Trade, 2009). But there are still significant agricultural market inequalities. The next round of world trade negotiations (the Doha Development round) began in 2001 with the objective of getting wealthy countries to lower farm subsidies by 2013 and developing countries to open up their markets. The successful conclusion to the round remains New Zealand’s top trade priority and should provide significant benefits to the Waikato region. However, negotiations stalled in 2008 and there is some pessimism that the outcome will not measure up to early expectations.

New Zealand has also been active in pursuing bi-lateral trade agreements with other countries. In April 2008 NZ became the first developed country to sign a free trade agreement (FTA) with China. This is expected to provide significant benefit for Waikato exporters of dairy, meat, other food and beverages and education. New Zealand also signed a FTA with the ten Southeast Asian nations (ASEAN) which comes into force on January 1, 2010. This should also benefit Waikato exporters.

Current and future free trade agreements are expected to benefit not only Waikato exporters and linked industries, but also households which face lower costs for imported consumer goods. However, this also means that Waikato businesses will face increased international competition and it is difficult to achieve significant economies of

10 International export figures from the economic model (WRDEEM), 2009.

scale in a small economy. Improving linkages and reducing transport costs to and from Auckland and Tauranga ports are also very important.

6.3 Environmental issues, the Emissions Trading Scheme and regulation

International and domestic consumer demand for food and fibre produced by environmentally friendly systems is growing. The Waikato economy produces negative externalities such as water pollution, soil contamination, and atmospheric emissions which have a detrimental effect on both the local and global environment. For the most part, neither producers nor consumers are currently paying the full cost of production. However, this may change in future.

New Zealand is among the 182 countries that have ratified the Framework Convention on Climate Change (MAF, 2009), and has also signed the Kyoto Protocol in response to concerns over potential global warming. In the Waikato region, similar to most of New Zealand, the largest contributor to global warming is agriculture. If, or when Waikato farmers are required to pay for the environmental costs of agricultural emissions, this is likely to have some detrimental effect on the local economy. However, the scale of the impact will depend on the cost of technologies to reduce emissions, whether international competitors are also facing the same costs, and the final form of the Emissions Trading Scheme (ETS). The ETS may allow some costs to be offset through carbon credits from planting forests.

The Waikato dairy industry in particular also faces increasing pressure to reduce negative impacts of farming on the region's waterways. Environment Waikato's proposed "Variation No. 5" to the Waikato Regional Plan limits the amount of nitrogen that may be leached from rural land in the Lake Taupo catchment, imposing a cap and trade system for allocation of nitrogen discharge rights.

Agrifirst (2009) found that adoption of nitrogen mitigation technologies may increase farm profitability for some farming systems. However, if total dairy output decreases, or productivity growth slows, then there may be a detrimental effect on the Waikato economy. However, the long-run cost of not protecting the environment may be far larger as degradation of soil and waterway health erodes natural capital on which farming systems depend.

The allocation and use of freshwater is also being increasingly scrutinised both regionally and nationally. Proposed "Variation No. 6" to the Waikato Regional Plan deals with these issues and may have implications for agricultural users and potentially affect productivity.

In addition, emerging environmental direction is likely to be provided nationally by the Land and Water Forum and the forthcoming National Policy Statement for Water and already, locally by the Waikato-Tainui River Settlement and subsequent Vision and Strategy for the Waikato river – Te Ture Whaimana, indicating future development pathways for agriculture that take greater account of environmental externalities.

The shift towards long-term sustainability may result in economic benefits to the region in the area of renewable energy generation. As mentioned in section 4.2, the Waikato region has a diverse range of renewable energy sources and is ideally placed to provide geothermal and wind-generated electricity to urban areas.

7 Conclusion

This report has presented recent economic results for the Waikato region and also outlined some of the major trends that have helped shape the economy. History and geography conspired to create a relatively sparsely populated region with a temperate climate and ideal conditions for pasture-based agriculture.

The region is also endowed with historical economic and cultural linkages to the United Kingdom, half a world away, and Australia, New Zealand's closest neighbour. Economic distance and density are important determinants of trade, financial flows, and human capital flows in the twenty-first century, therefore the Waikato region is disadvantaged by the geographical isolation of New Zealand from international markets.

However, most economic indicators show positive results over the period 2004 to 2007, and there is evidence that the Waikato region may be emerging from the global economic downturn relatively unscathed. Closer economic linkages with the new international market hub in Southeast Asia may provide additional economic advantages. It remains to be seen whether recent Waikato economic growth rates will be sustainable in the long term.

References

Acs ZJ, Bosma N, Sterberg R 2008. The entrepreneurial advantage of world cities: evidence from global entrepreneurship monitor data. Working Paper, H200810, SCALES, University of Utrecht and Netherlands Ministry of Economic Affairs

AgFirst Consultants Environmental Ltd. 2009. Upper Waikato nutrient efficiency study. Prepared for Environment Waikato, Dairy NZ, Ballance AgriNutrients and Fonterra. [Hamilton], AgFirst Consultants Environmental Ltd.

Bishop P, Bull B 2008. The future of electricity generation in New Zealand. Paper presented to the 13th annual conference of the New Zealand Agricultural and Resource Economics Society, Nelson, New Zealand; 28-29 August

Cameron M, Barrett P, Cochrane B, McNeill K 2009. Implications of agricultural change in the Waikato region: current trends and future scenarios. Environment Waikato Technical Report 2009/28. Hamilton, Waikato Regional Council (Environment Waikato) – in press

Crown Minerals Group. 2009. New Zealand coal resources. Ministry of Economic Development Fact Sheet. http://www.crownminerals.govt.nz/cms/pdf-library/coal-1/waikato.pdf [accessed 5 August 2009]

Cruise Waikato. 2009. History of the Waikato River. Cruise Waikato Ltd. http://www.cruisewaikato.co.nz/ [accessed 15 September 2009]

Energy Efficiency and Conservation Authority. 2009. Energy end use database. http://enduse.eeca.govt.nz/default.aspx [accessed 23 October 2009]

Environment Waikato. 2008. The condition of rural water and soil in the Waikato region: risks and opportunities. Hamilton, Waikato Regional Council (Environment Waikato)

Environment Waikato 2009. Waikato Regional Energy Strategy. Retrieved from http://www.ew.govt.nz/Policy-and-plans/Regional-energy-strategy/

Forsyth H, Knutson R 2009. Scenario analysis of New Zealand's sheep meat and beef sector over the next 10 to 15 years. Paper presented at the New Zealand Agricultural and Resource Economics Society Conference, 27-28 August 2009. Nelson, NZARES

Fonterra. 2009. Our History: The early years 1800s-1930s. http://www.fonterra.com/wps/wcm/connect/fonterracom/fonterra.com/our+business/fonterra+at+a+glance/about+us/our+history [accessed 11 October 2009]

Food and Agriculture Organization of the United Nations. 2009. FAO food price index. http://www.fao.org/worldfoodsituation/FoodPricesIndex/en/ [accessed 2 August 2009]

Gordon I, McCann P 2005. Innovation, agglomeration, and regional development. Journal of Economic Geography, Vol. 5(5): 523-543

Grimes A 2007. Impacts of land availability, housing supply and planning infrastructure on New Zealand house prices. Paper presented to Treasury and Reserve Bank of New Zealand conference, Wellington, December 2007. http://www.motu.org.nz/files/docs/MEL0285.pdf [accessed 31 July 2009]

Gyngell A, Skilling D, Thirlwell M 2007. Australia and New Zealand in a globalising world. Lowy institute perspectives. Sydney: Lowy Institute for International Policy.

Hawkes Bay Herald. February 6, 1892. Our pastoral wealth. Hawke's Bay Herald; 2. http://paperspast.natlib.govt.nz [accessed 29 October 2009]

Inangahua Times. October 1, 1884. Extracts from social problems. Inangahua Times; 2. http://paperspast.natlib.govt.nz [accessed 29 October 2009]

Krugman P 1997. The age of diminished expectations. Cambridge, MA: MIT Press.

Mare DC 2008. Labour productivity in Auckland firms. Motu Working Paper 08-12. Wellington, Motu Economic and Public Policy Research Trust

McCann P, Shefer D 2005. Agglomeration, economic geography and regional growth. Papers in Regional Science, Vol 84(3): 301-309

McCann P 2009. Economic geography, globalisation and New Zealand's productivity paradox. New Zealand Economic Papers. 43(3): 279-314

Market Economics Ltd. 2006. Waikato region economy-environment futures report. Environment Waikato Technical Report 2006/51, Hamilton, Waikato Regional Council (Environment Waikato)

Massey University. 2009. Home Affordability Report. Vol 19(3). http://property-group.massey.ac.nz/fileadmin/research_outputs/AffordabilitySept09.pdf [accessed 4 October 2009]

Ministry of Agriculture and Forestry. 2009. New Zealand Agriculture and Forestry: The Future. http://www.maf.govt.nz/mafnet/rural-nz/overview/nzoverview018.htm [accessed 27 August 2009]

Ministry of Agriculture and Forestry. 2009a. A forestry sector study. Ministry of Agriculture and Forestry Publications. http://www.maf.govt.nz/forestry/publications/forestry-sector-study-2009/index.htm [accessed 27 August 2009]

Ministry of Foreign Affairs and Trade. 2009. New Zealand and the World Trade Organisation. http://www.mfat.govt.nz/Trade-and-Economic-Relations/NZ-and-the-WTO/Improving-access-to-markets/0-agriculturenegs.php [accessed 8 October 2009]

Ministry of Tourism. 2009. Accommodation by Region. Tourism data files. http://www.tourismresearch.govt.nz/ [accessed 1 November 2009]

New Zealand Chronicle July 18 1873. New Zealand Parliament Legislative Council. New Zealand Chronicle; 3. http://paperspast.natlib.govt.nz/ [accessed 28 October 2009]

Norman D, Nana G, Wu J 2008. Projections of national and regional household income to 2019. Berl Economics report to New Zealand Society of Local Government Managers. http://www.berl.co.nz/861a1.page [accessed 9 October 2009]

NZIER. 2006. The New Zealand–Australian income differential. NZIER Working Paper 2006/05, Wellington.

Observer. January 13, 1906. A Waikato Enthusiast. Observer; 3. http://paperspast.natlib.govt.nz/ [accessed 27 October 2009]

Oram R 2009, September 27. The way forward for farmers and Fonterra. *Sunday Star Times*. http://www.stuff.co.nz/business/2906820/The-way-forward-for-farmers-and-Fonterra [accessed 27 September 2009]

Poot J 2007. Demographic change and regional competitiveness : the effects of immigration and aging. Population Studies Centre Discussion paper No. 64. Hamilton, University of Waikato.

Porter ME, Sala-i-Martin X, Schwab K 2007. World Economic Forum : the global competitiveness report. Basingstoke, Palgrave

Sherwin M 2001. Future Wood Fibre Processing Challenges, Issues and Opportunities. 56th APPITA Annual Conference – Fibre Supply in Asia. http://www.maf.govt.nz/mafnet/profile/speech-notes/appita-conference.htm [accessed 13 September 2009]

Statistics New Zealand. 2006. New Zealand Census. Statistics New Zealand information release, December 2006.

Statistics New Zealand. 2006a. Is the population moving north or south? Internal Migration. http://www.stats.govt.nz/~/media/statistics/publications/internal-migration/pop-moving-north-south/is-the-population-moving-north-or-south.aspx [accessed 30 July 2009]

Statistics New Zealand. 2006b. Trends in migration between regions. Internal Migration. http://www.stats.govt.nz/~/media/statistics/publications/internal-migration/trends-in-migration/trends-in-migration-between-regions.aspx [accessed 30 July 2009]

Statistics New Zealand. 2006c. Reasons for moving between regions. Internal Migration. http://www.stats.govt.nz/~/media/statistics/publications/internal-migration/reasons-moving-within-between-regions/reasons-moving-within-between-regions.aspx [accessed 30 July 2009]

Statistics New Zealand. 2009a. Tourism Satellite Account 2009. Statistics New Zealand publications. http://www.stats.govt.nz/reports/analytical-reports/tourism-satellite-account-2009.aspx [accessed 1 October 2009]

Statistics New Zealand. 2009b. Retail Trade Survey. Statistics New Zealand information release, September 2009. http://search.stats.govt.nz/nav/ct2/industrysectors_retailtrade/ct1/industrysectors/0 [accessed 7 October 2009]

Statistics New Zealand. 2009c. Overseas Merchandise Trade. Statistics New Zealand Information release, September 2009. http://www.stats.govt.nz/methods_and_services/information-releases/overseas-merchandise-trade.aspx [accessed 17 October 2009]

Statistics New Zealand. 2009d. Household Economic Survey. Statistics New Zealand Information release, June 2009. http://www.stats.govt.nz/browse_for_stats/people_and_communities/households/householdeconomicsurvey_hotpyejun09.aspx [accessed 30 July 2009]

Stringleman H, Scrimgeour F 2009. Dairying and dairy products - Beginnings of New Zealand's dairy industry. Te Ara - the Encyclopedia of New Zealand, updated 1-Mar-09. http://www.TeAra.govt.nz/en/dairying-and-dairy-products/1 [accessed 25 October 2009]

Te Ara. 2009a. Exotic forestry - Forestry in the 1800s. Te Ara - the Encyclopedia of New Zealand. http://www.TeAra.govt.nz/en/exotic-forestry/1 [accessed 11 October 2009]

Te Ara. 2009b. Perceptions of the landscape - Scenic New Zealand. Te Ara - the Encyclopedia of New Zealand. www.TeAra.govt.nz/en/perceptions-of-the-landscape/5 [accessed 11 October 2009]

The Daily Southern Cross. August 30, 1867. Editorial. The Daily Southern Cross; 3. http://paperspast.natlib.govt.nz [accessed 27 October 2009]

Waikato Tourism. 2009. Waikato Region. http://www.waikatonz.co.nz [accessed 1 October 2009]

World Bank. 2009. Reshaping economic geography: world development report. Washington DC, World Bank.