

Canterbury Labour Cost Escalation

Assessment of Orion's projections

NZIER report to The Commerce Commission

17 June 2013

About NZIER

NZIER is a specialist consulting firm that uses applied economic research and analysis to provide a wide range of strategic advice to clients in the public and private sectors, throughout New Zealand and Australia, and further afield.

NZIER is also known for its long-established Quarterly Survey of Business Opinion and Quarterly Predictions.

Our aim is to be the premier centre of applied economic research in New Zealand. We pride ourselves on our reputation for independence and delivering quality analysis in the right form, and at the right time, for our clients. We ensure quality through teamwork on individual projects, critical review at internal seminars, and by peer review at various stages through a project by a senior staff member otherwise not involved in the project.

Each year NZIER devotes resources to undertake and make freely available economic research and thinking aimed at promoting a better understanding of New Zealand's important economic challenges.

NZIER was established in 1958.

Authorship

This report was prepared at NZIER by Shamubeel Eaquab.

It was quality approved by John Stephenson.

1. Introduction

The Commerce Commission wants an independent appraisal of Orion’s Canterbury labour cost escalation assumptions (Figure 1). There are two key aspects:

- The magnitude of near term inflation during the start of the earthquake reconstruction process, which is likely to face significant bottlenecks
- The persistence of this inflation shock over a longer time horizon.

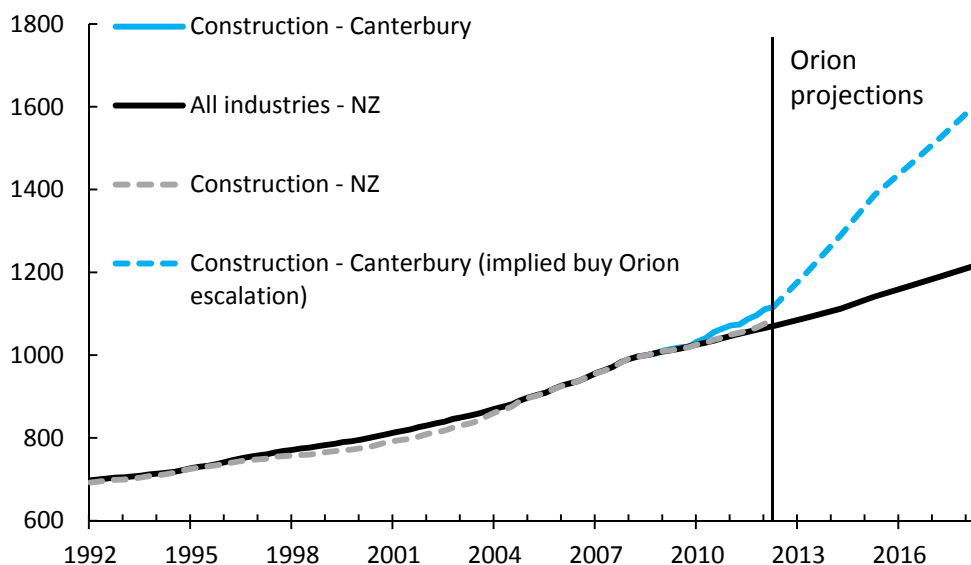
It is our considered opinion that Orion’s escalation assumptions are too high. This is based on our analysis of an economic thought exercise, historical experience and international experience. Orion’s projection of a sustained period of 5%-7.5% wage inflation would see labour costs stretch away from national trends in a persistent manner. Such a sustained deviation in labour costs is unprecedented in New Zealand and internationally, and contrary to economic logic that supply and demand respond to price signals over time.

International experience shows a surge in construction sector inflation in the immediate aftermath of a natural disaster, lasting up to 3 years. The initial surge in inflation is followed by deflation in future periods to return the level of prices to the national ‘norm’ as supply increases and non-essential work is postponed or cancelled due to high costs. In Canterbury, we have seen the immediate surge in construction labour costs averaging 3.4% per year in the 6 quarters to March 2013. There are emerging signs of improving labour supply, seen in rising construction employment as well as improving international net migration.

We have not provided an alternative escalation path, which is outside the scope of this work (terms of reference can be found in Appendix B).

Figure 1 Labour cost index

Index, Jun-09=100



Source: Statistics New Zealand, NZIER, Orion (page 381, section 9.26.5)

Table 1 Labour costs: actual and Orion projections

Annual average of index and annual average % change

March years		Index			Annual average % change			
		Construction LCI - Canterbury	Construction LCI - national	Construction LCI - national	Construction LCI - Canterbury	Construction LCI - national	Construction LCI - national	
2007	Actual		921	922		3.4%	3.2%	
2008			951	951		3.2%	3.2%	
2009				986	986		3.6%	3.6%
2010		1007	1007	1007		2.1%	2.1%	
2011		1028	1023	1023	2.1%	1.6%	1.7%	
2012		1067	1046	1044	3.7%	2.2%	2.0%	
2013		1103	1070	1063	3.4%	2.3%	1.9%	
2014	Orion projections(1)	1185		1091	7.5%		1.9%	
2015		1274		1112	7.5%		2.0%	
2016		1370		1141	7.5%		2.6%	
2017		1438		1166	5.0%		2.2%	
2018		1510		1191	5.0%		2.2%	
2019		1586		1217	5.0%		2.2%	

Source: Statistics New Zealand, NZIER, Orion (Notes: (1) Implied by projections from Orion submission, page 581, section 9.26.5)

2. Practical considerations

2.1. Choice of index

The Orion CPP submission does not explicitly identify its choice of index used to measure labour costs. This makes it difficult to scrutinise the history of the data and how it may react to supply and demand shocks.

Orion's supporting material to the submission for index choice is a good summary of generally accepted practice (pages 574-576, section 9.26.1). Orion identifies the Canterbury Construction Labour Cost Index (CC-LCI) produced by Statistics New Zealand as a candidate, but does not use it as there are no Statistics New Zealand forecasts for it (page 577, section 9.26.4).¹

We agree with Orion that the CC-LCI is a reasonable measure of labour costs in Canterbury. In the absence of a robust historical alternative provided in the submission, our analysis will focus on the CC-LCI.

There are alternative measures such as average hourly wages and regional median weekly wages that may be credible alternatives, but they are affected by composition changes (eg greater use of some skills or type of work done). Composition changes, which the firm has control over, are not usually allowed under escalation clauses. Rather, the composition changes are looked at separately and by applying appropriate escalation to each component.

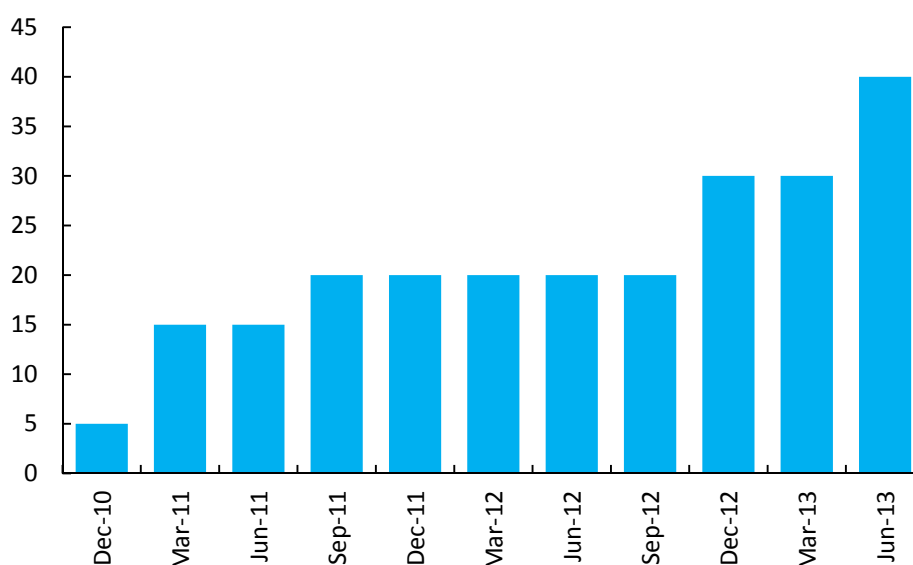
¹ As a side note, Statistics New Zealand does not provide forecasts for any index and we are surprised this is used as a justification for not using this index.

2.2. Heightened uncertainties

There are significant uncertainties with projections for the Canterbury rebuild, in addition to the usual uncertainties with forecasts. The size, scope and timing of the rebuild have changed significantly over time (Figure 2). As such, forecasts should be used with caution and regularly benchmarked against realised experiences.

Figure 2 Estimate of Canterbury rebuild cost

\$billion, 2011 prices



Source: RBNZ & Treasury estimates

2.3. Shortages and reactions

The Canterbury inflation scenario needs to be considered from two perspectives:

- General inflationary pressures that all workers in Canterbury will demand compensation for
- Specific inflationary pressures in the Canterbury construction sector because of supply-demand imbalances in the labour market.

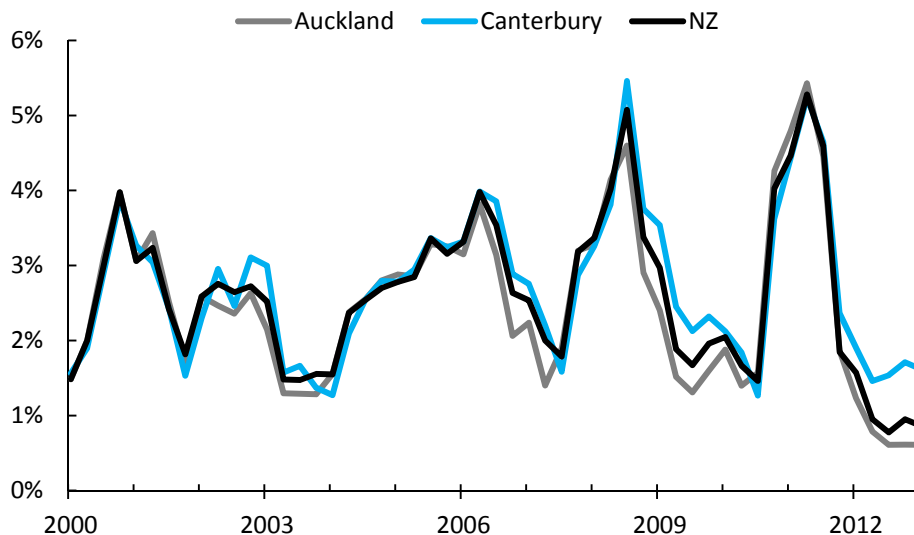
2.3.1. General inflation pressures

If there is endemic inflation in Canterbury it will require additional compensation for workers living there. While broad inflation measures such as the regional CPI are rising faster than the national average, the magnitude is small (Figure 3). Since the Feb-11 earthquake, CPI inflation has averaged 1.5% pa, compared to 0.6% pa in Auckland and 0.8% nationally.²

² Between Jun-11 and Mar-13 quarters.

Figure 3 Consumer price inflation

Annual % change in CPI



Source: Statistics New Zealand, NZIER

2.3.2. Specific inflation pressures

There are practical short term issues that may impact on labour and other costs in Canterbury. These include:

- Shortage of accommodation is leading to rapidly rising rents and house prices which workers require compensation for (Figure 10 & Figure 12). These pressures will ease as new homes are built. Building consents are rising rapidly, which will alleviate housing shortages over time (Figure 11). There can be constraints, such as regulatory hurdles around land supply and pace of consent processing.
- Shortages of skilled labour will lift wages. Demand for labour is high, reflected in very high hiring intentions and advertised vacancies online (Figure 13). Restricted trades may face additional delays due to time required for accreditation. Shortage of labour is increasing wages, which will attract more labour through training programmes, regional migration and international migration (Figure 14). Employment is rising strongly and firms report skilled labour is getting a little easier to find (NZIER QSBO, Figure 15).
- Reaction from the RBNZ if inflationary pressures seep out from Canterbury to other regions. This is not happening yet (Figure 16). The RBNZ will look past short term supply related price pressures in Canterbury, but if price levels continue to stretch away from national averages, they will eventually spill over to the rest of the country. The RBNZ would then raise interest rates to cool the economy. This will free up resources in other parts of New Zealand, which will flow to Canterbury and cool inflationary pressures.

3. Methods of analysis

We analyse Orion's projected escalation assumptions across three key benchmarks:

- economic framework
- historical comparison
- international comparison

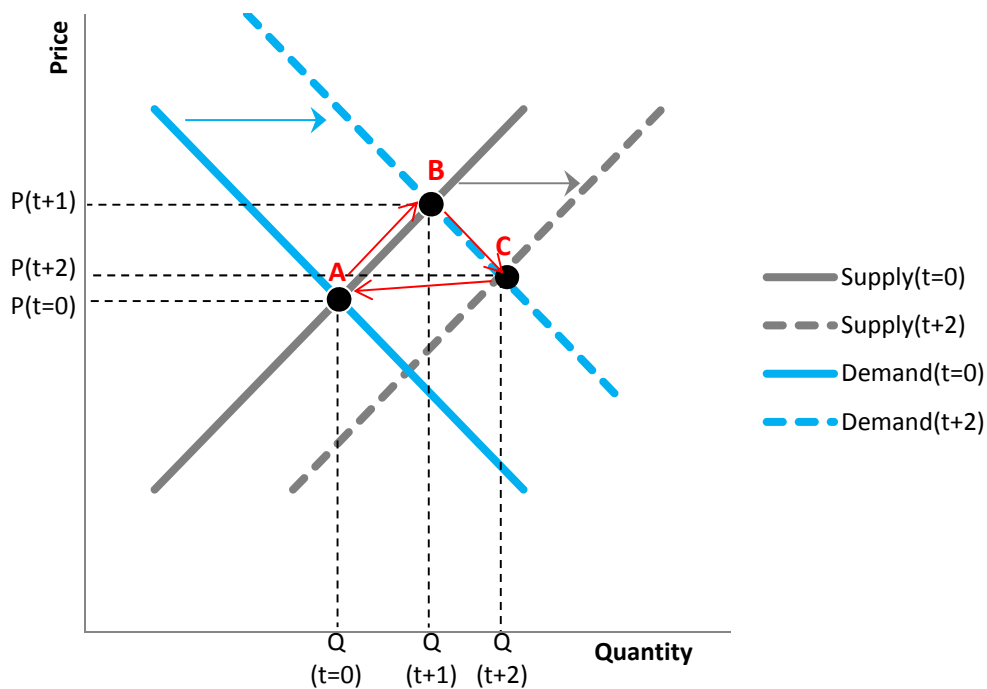
For each of these frameworks we ask two key questions:

- is the initial spike in construction cost inflation reasonable?
- is the persistence of inflation over the longer time horizon reasonable?

3.1. Economic framework

We conduct a simple thought exercise to frame our thinking of the situation.

Figure 4 Stylised demand shock for labour and their price



Source: NZIER

We use classic supply and demand curve analysis. The sequence of events is:

- There is a sudden increase in demand for construction labour following the earthquake. The demand curve moves to the right.
- Supply of labour cannot respond straight away. Competition for labour is high and wages are bid up. Prices shift from $P(t=0)$ to $P(t+1)$, the market clearing point moves from A to B.

- Over time higher wages attract additional labour into Canterbury (from other regions, training and overseas). Increased competition among labour for work drives wages lower from $P(t+1)$ to $P(t+2)$, the market clearing point moves from B to C.
- Over the longer term, demand will shift back to normal once the earthquake related work is completed and supply will too. Prices and demand, relative to the national average, will shift back to the initial state. The market clearing price will fall from $P(t+2)$ to $P(t=0)$, the market clearing point moves from C back to A, the starting point.
- The adjustment in steps three and four explicitly assume that the economy is flexible enough to move resources to the industries and regions where the demand is highest. To have forever higher prices in Canterbury would assume that the economy will not adjust in the forecast horizon.

Assessment: Our economic framework is consistent with Orion's projections of an initial spike in wage inflation. Our framework shows that the initial spike in inflation will be followed by deflation to return the level of prices towards some 'norm' relative to national and sector wages. Orion projects labour costs will be forever higher than sector and national benchmarks. This is unlikely.

In our analysis in the following sections we find that:

- Historical episodes show that:
 - The economy cannot react immediately to a sudden demand increase
 - This leads to a spike in labour and other cost inflation
 - Supply increases, attracted by higher returns. Demand falls, dissuaded by higher costs
 - Prices fall once the surprise in demand is met with adjustments to supply and demand
- International episodes show that:
 - Labour and other costs spike for up to three years following a natural disaster
 - This is followed by a period of deflation to return prices to a more 'normal' level

3.2. Historical comparison

We compare Orion's escalation projections against:

- available history of the CC-LCI
- construction wage inflation in a region with an out-of-phase upturn

3.2.1. History of the CC-LCI

The CC-LCI was put together following the Canterbury earthquakes to provide greater transparency on the largest bottleneck in the rebuild process. The time series is short, but other measures such as the LEED median wage suggest wage patterns in Canterbury were similar to the national average before the earthquakes.

Orion's projections are far in excess of the increases experienced to date (Figure 5). In our economic framework, we expect the highest wage inflation to occur when demand expectations have shifted, but supply has not.

Supply of labour is responding. Slightly out-of-date data to Feb-2012 shows sharp increases in employment across all categories of construction employment in Canterbury (Figure 6).

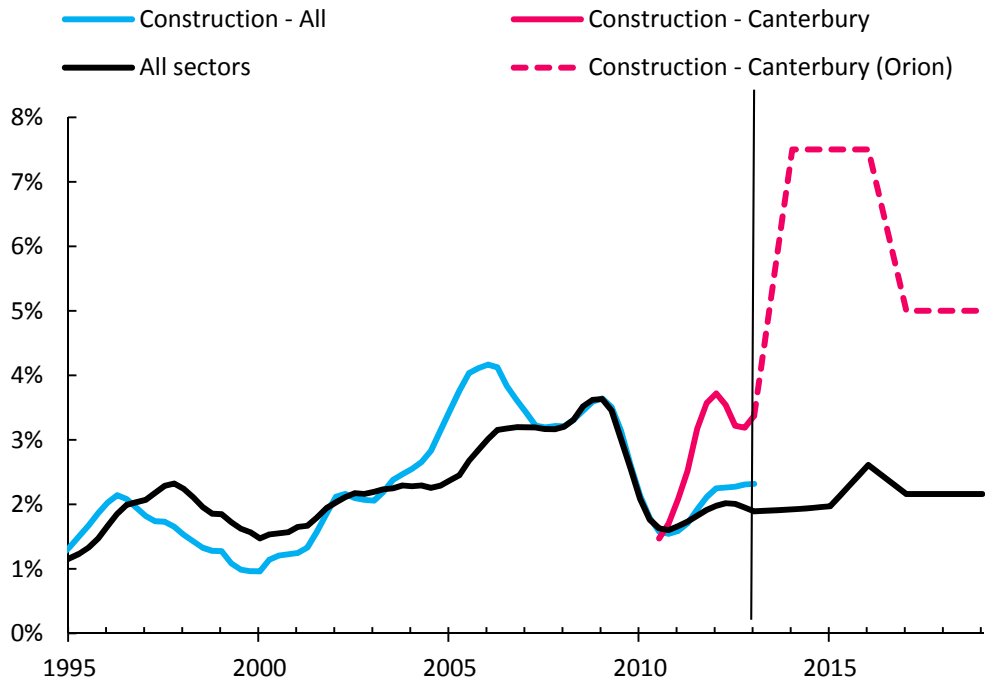
Assessment: Based on the history of CC-LCI it is our opinion that the acceleration in the CC-LCI from 3.4% in FY13 to 7.5% during FY14-FY16 and sustained faster wage inflation of 5% thereafter is too high.

Orion's projections assume that activity will accelerate unexpectedly through the forecast horizon and that the labour market will not respond. As a result the projections imply that labour costs in Canterbury will be forever higher (Figure 1).

These are not reasonable expectations given experience to date, which shows wage increases thus far have been below 4% pa during the period of expected tightest supply constraint and supply is responding with rising employment and increasing international net migration.

Figure 5 Labour cost inflation

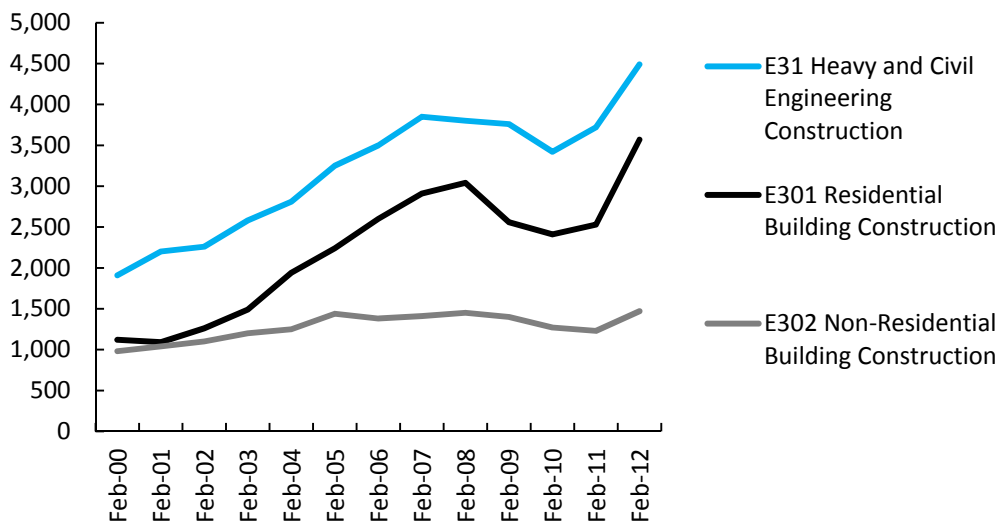
Annual average % change



Source: Statistics New Zealand, NZIER, Orion (page 581, section 9.26.5)

Figure 6 Canterbury filled jobs

Number of filled jobs in the LBD



Source: Statistics New Zealand

3.2.2. Wage inflation in an out-of-phase upturn

We consider general wage inflation in a period of sustained economic outperformance in one region. Considering such a scenario will provide context of how a localised economic boom translates to general wage pressures in that region. Canterbury is undergoing such an episode during the rebuild phase. Auckland provides such an example in two episodes: 1993-1997 and 2006-2008 (shown in the shaded areas of Figure 7).

Regional construction wage inflation is not available for both episodes. As such we look at the performance of total hourly wages from the Quarterly Employment Survey for Auckland relative to the rest of New Zealand, as well as the weekly construction median wage for the second episode. We compare regional economic growth performance based on NZIER's estimates of quarterly regional GDP.

Summary of findings are in Table 2. They show that wages can grow faster during a period of strong economic growth by 0.1%-0.6% pa. The key implications are:

- Wage differentials (Figure 8) are sustained if accompanied by structural productivity gains, as was evident in Auckland from 1992-2002. So, Orion's projections of sustained high construction wage inflation would assume a permanent change in the economic structure and labour productivity of Canterbury. To date, this has not been observed in economic data.
- Countercyclical outperformance in 2006-2008 also saw relative wages in Auckland rise, but they adjusted lower in the aftermath. So, if the rebuild is a one-off boost for Canterbury, this suggests an initial surge in cost inflation followed by a period of deflation.

The Canterbury rebuild is a one-off or counter-cyclical experience, rather than a structural trend. So, we should expect an initial increase in relative wages in Canterbury, and then adjust back to the 'norm' through deflation once the pressures of the rebuild are past.

Assessment: Based on the experience of Auckland in previous out-of-phase economic strength, it is reasonable to expect an initial inflation premium. To date this has averaged around 1.5% pa in the CC-LCI compared to economy wide LCI. To expect this wedge to widen to 5.3% pa in FY14-FY16 and expect it to be sustained at a further 2.8% in the following three years is inconsistent with historical experience.

Table 2 Auckland economic outperformance & wages

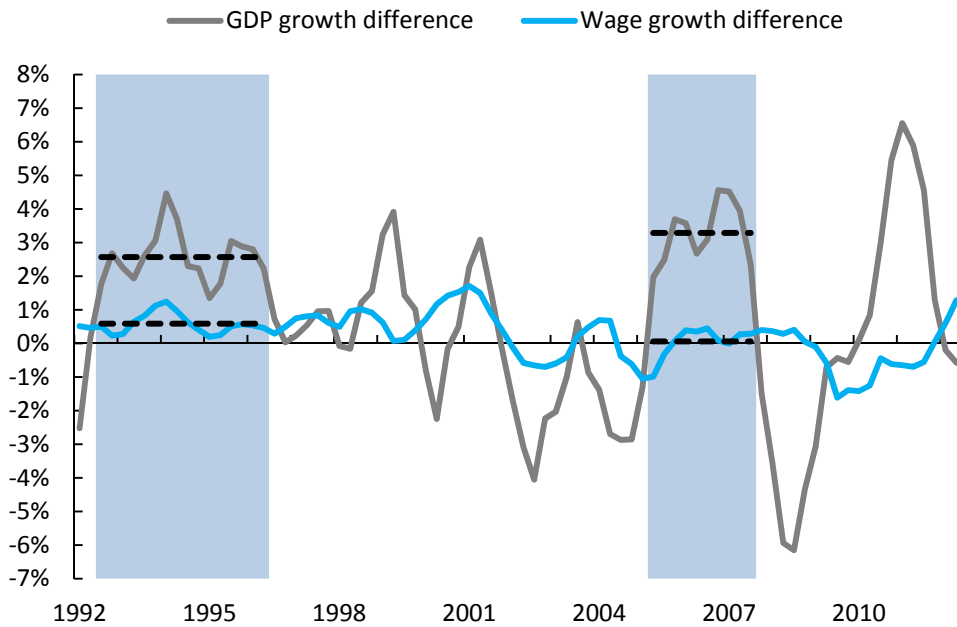
Difference in annual average growth in regional GDP and hourly wages from the rest of NZ

Episode	GDP differential (%pa)	Wage differential (%pa)	Was wage differential permanent?
1993-1997	2.6%	0.6%	Y, part of a structural widening in Auckland wages
2006-2008			N, relative wages fell during the recession after
- LCI all sector	3.3%	0.1%	N, relative wages fell during the recession after
- LEED median weekly wages	3.3%	0.1%	N, relative wages fell during the recession after

Source: NZIER

Figure 7 Auckland economic and wage growth differential to New Zealand

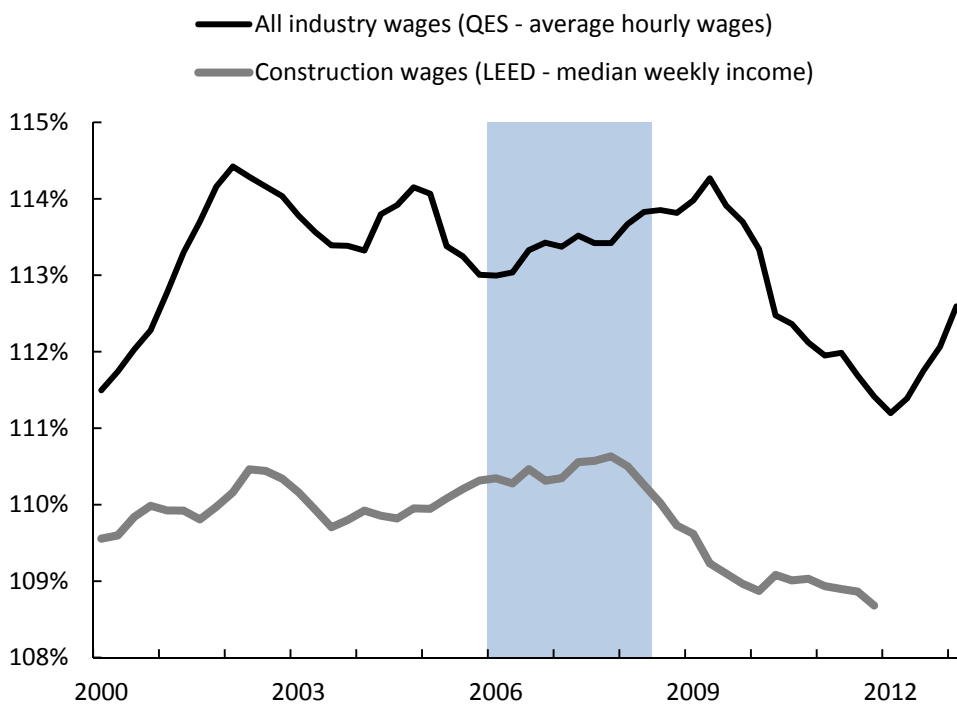
Difference in annual average % change



Source: Statistics New Zealand, NZIER

Figure 8 Auckland wages relative to the rest of New Zealand

Ratio of hourly wages, 4 quarter moving average



Source: Statistics New Zealand, NZIER

3.3. International experience

We also consider the international experience of natural disasters. We have compared a number of relatively recent large scale natural disasters:

- Sri Lanka tsunami in 2004
- Japan tsunami in 2011
- Japan Kobe earthquake in 1995
- Sichuan earthquake in 2006
- Queensland floods in 2011, 2012 & 2013

The data show a number of important features in post-disaster construction inflation profile (Figure 9):

- The initial surge in inflation:
 - The initial surge in inflation tends to take place in the first 1-3 years
 - Kobe was an exception when construction wage inflation peaked in years 4 & 5³
- Following the initial surge:
 - Inflation rate is typically negative as affected sector normalises to the 'norm'.

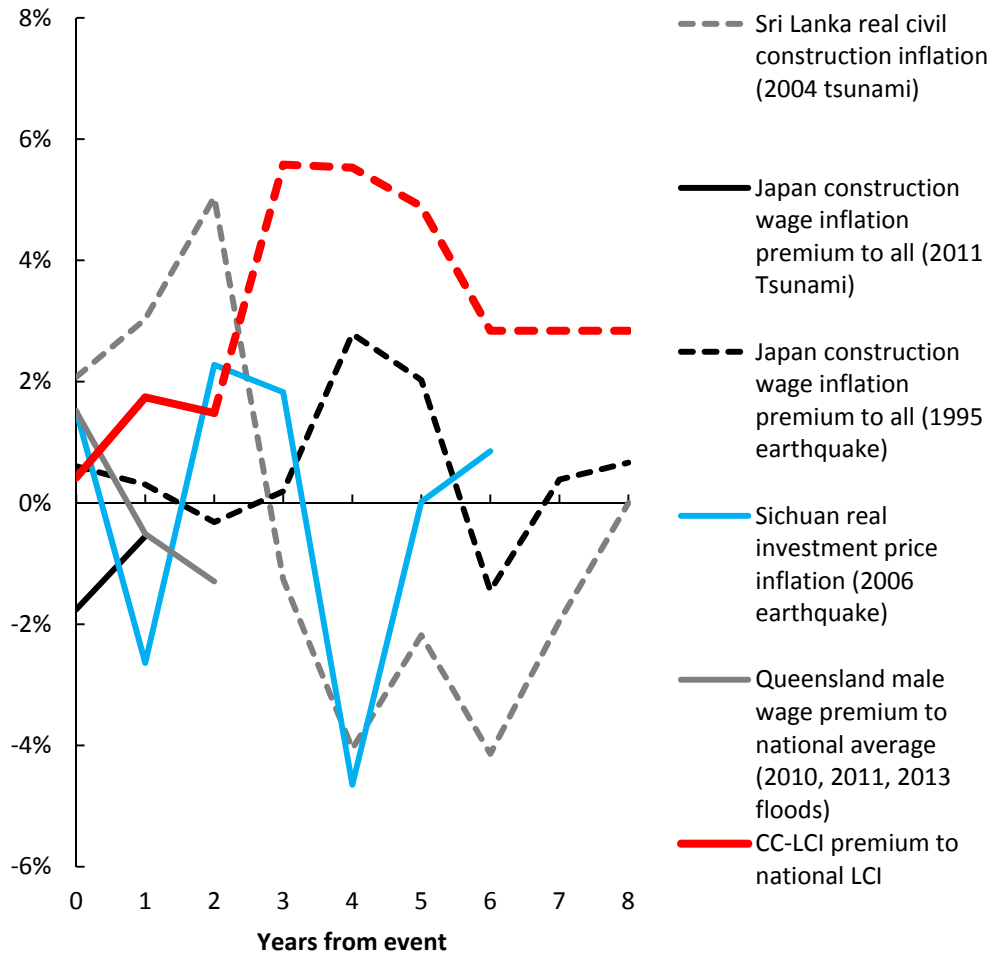
The similarities in the dynamics of the inflation profile are informative. Nevertheless, we exercise care in interpreting international comparisons because the type, magnitude and damage of disasters vary, as do economic composition, economic flexibility and policy settings. Data measurement and quality also vary, so we rely on proxies in many cases and they may not be fully comparable to the Canterbury setting.

Assessment: The international experience suggests that the profile proposed by Orion is aggressively high. The persistence of faster increases in labour costs relative to general labour costs in the economy is not consistent with international experience, where the 'shock' tends to be dissipated over time as the initial surge in inflation is followed by a period of deflation.

³ Japan had very low unemployment and deflation during this period. These very different economic circumstances mean that this should not necessarily be viewed as a readily comparable experience, without additional analysis.

Figure 9 International post disaster inflation experiences

Annual average % change, difference from relevant and available general inflation measure



Source: NZIER

4. Conclusion

Orion’s projections of labour cost escalation of 7.5% pa in FY14-FY16 followed by 5% pa in FY17-FY19 imply Canterbury labour costs will persistently diverge from national labour costs. The initial spike is large relative to experience of Canterbury construction labour costs to date and the persistence of high wage inflation is unlikely given:

- Economics of supply of demand mean that prices will spike higher immediately after a sudden demand increase. Wages will be bid up, supply will increase and demand will fall, wages will fall back.
- Experience in out-of-sync regional economic booms show a similar pattern of an initial price spike followed by deflation towards the national average.
- International experience of natural disasters shows an initial spike in costs in the first 1-3 years, followed by relative deflation.

Table 3 Summary of key indicators

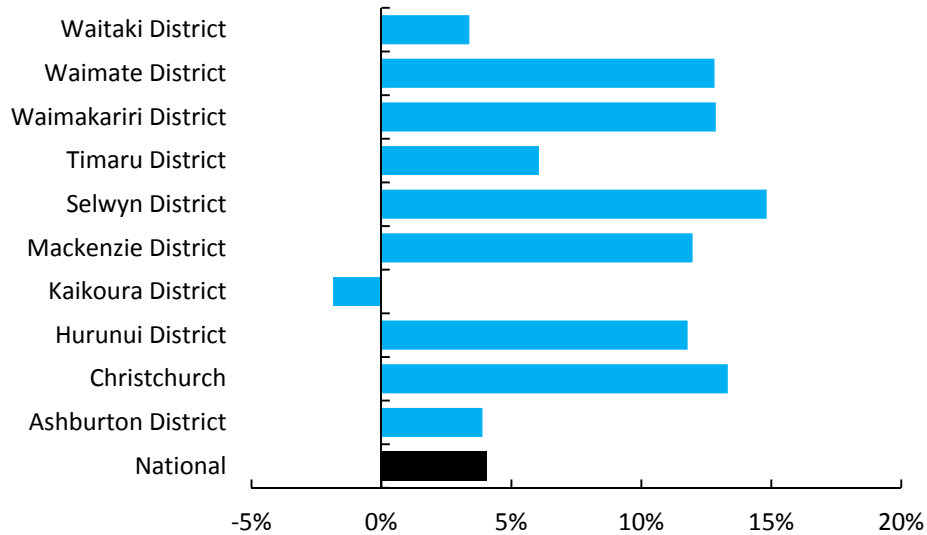
Event	Event date	Indicator	Relative measure	t+0	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8
Canterbury earthquake(1)				2011	2012	2013	2014	2015	2016	2017	2018	2019
Actual	Feb-11	Canterbury Construction LCI	na	2.1%	3.7%	3.4%						
Orion projections	Feb-11	Unknown	na				7.5%	7.5%	7.5%	5.0%	5.0%	5.0%
Auckland out of cycle growth spurt												
Episode 1: 1993-1997	Jun-93	QES all sector Auckland wages	QES all sector NZ wages	0.5%	0.8%	0.6%	0.5%	0.3%	0.8%	1.0%	0.1%	1.4%
Episode 2: 2006-2008	Mar-06	QES all sector Auckland wages	QES all sector NZ wages	-1.0%	0.4%	0.3%	0.3%	-0.6%	-1.3%	-0.7%	1.3%	1.3%
	Mar-06	LEED Auckland construction median weekly wage	LEED NZ all median weekly wage	0.4%	0.0%	0.1%	-0.8%	-0.7%	0.1%	0.0%	0.0%	0.0%
Sample average				0.0%	0.4%	0.3%	0.0%	-0.3%	-0.1%	0.1%	0.5%	0.9%
International natural disasters												
Sri Lanka: 2004 Tsunami	Dec-04	Civil construction deflator	CPI	2.1%	3.0%	5.0%	-1.3%	-4.1%	-2.2%	-4.1%	-1.9%	0.0%
Japan: 2011 Tsunami	Jun-11	Construction wage inflation all regions	All industries wage inflation all regions	-1.8%	-0.5%	na	na	na	na	na	na	na
Japan: 1995 earthquake	Mar-95	Construction wage inflation all regions	All industries wage inflation all regions	0.6%	0.3%	-0.3%	0.2%	2.8%	2.0%	-1.4%	0.4%	0.7%
Sichuan : 2006 earthquake	Jun-06	Investment price deflator	CPI	1.5%	-2.6%	2.3%	1.8%	-4.6%	0.0%	0.9%	na	na
Queensland: 2010, 2011, 2013 floods	Mar-11	Male all industries Queensland wage	Male all industries national wage	1.5%	-0.5%	-1.3%	na	na	na	na	na	na
Sample average				0.8%	-0.1%	1.4%	0.3%	-2.0%	0.0%	-1.6%	-0.8%	0.3%

Source: Statistics New Zealand, DataStream, National statistics offices, Orion (Note: 1. The Canterbury labour cost inflation needs to be compared against some other metric, such as general inflation to compare against other periods, as we do not want to capture general inflationary pressures that may be related particular time periods of geographic locations.)

Appendix A Supporting charts

Figure 10 Rental inflation

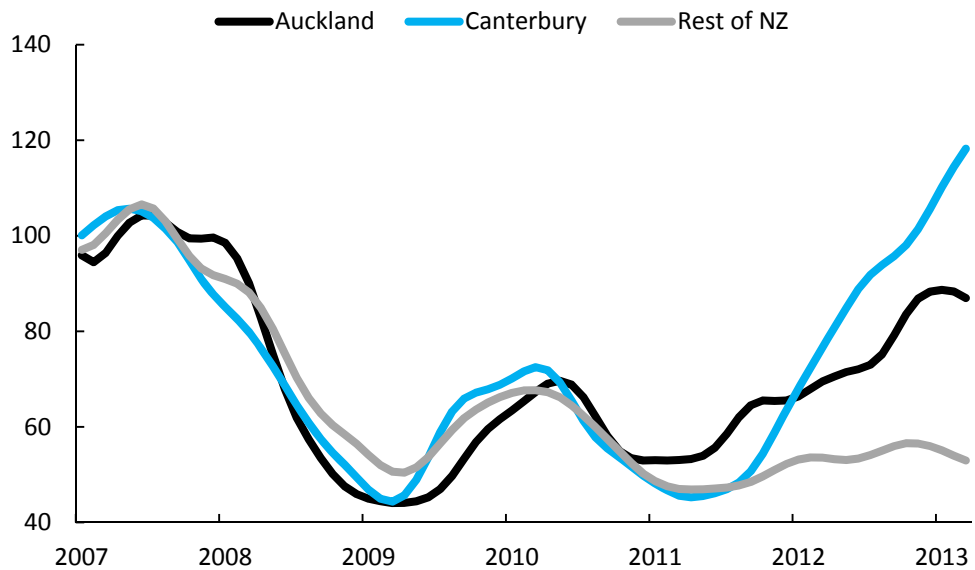
% change, Feb-13 quarter from year earlier



Source: MBIE

Figure 11 Residential building consent trend

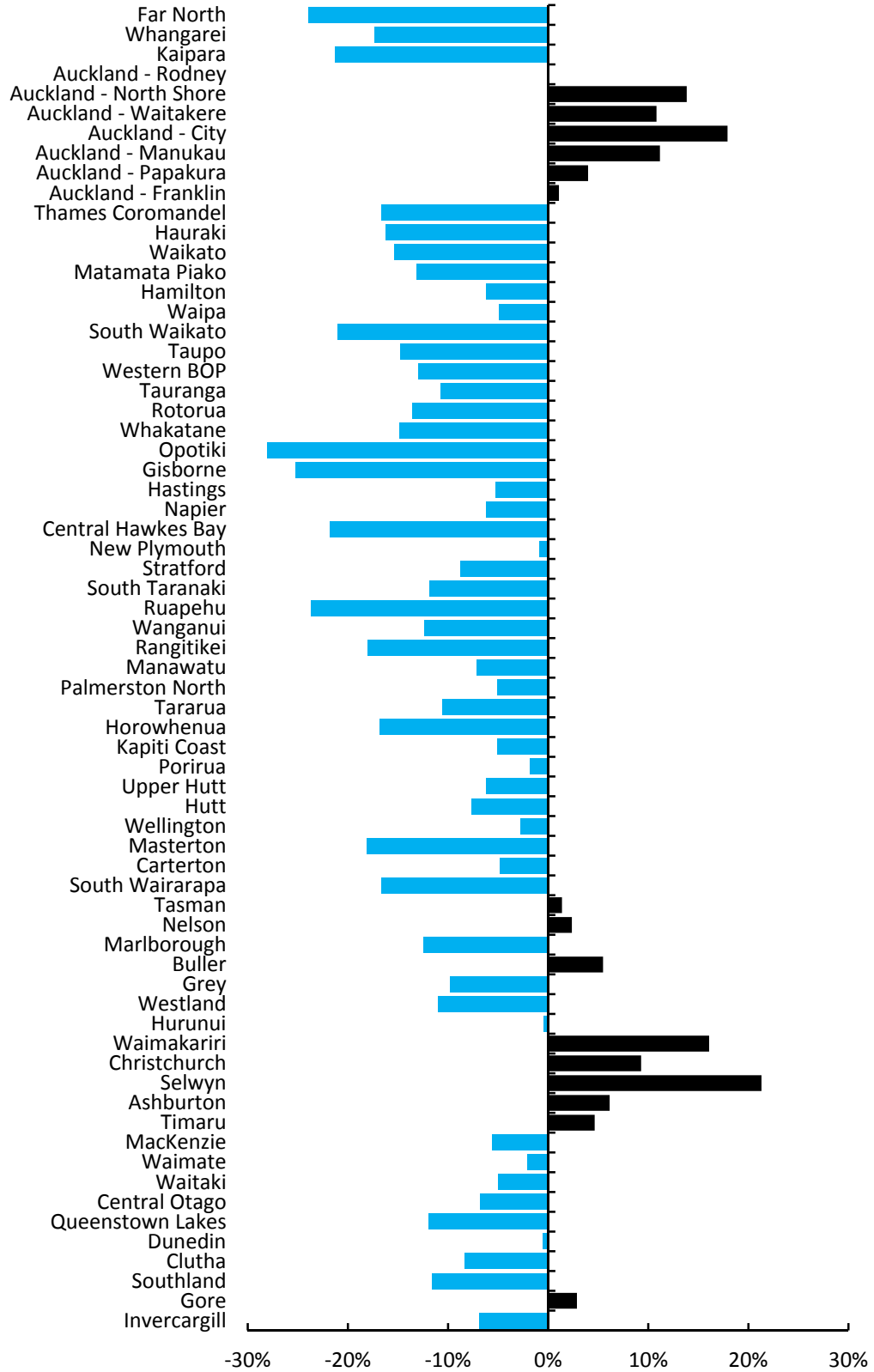
Index, 2007=100



Source: Statistics New Zealand, NZIER

Figure 12 Hosue price change

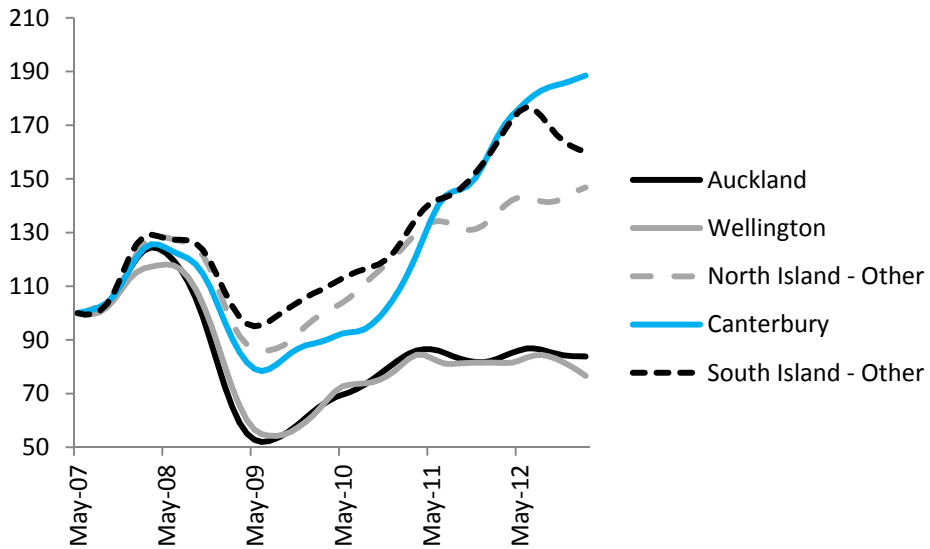
%change, Apr-13 vs 2007 peak



Source: QVNZ

Figure 13 Skilled vacancies index by region

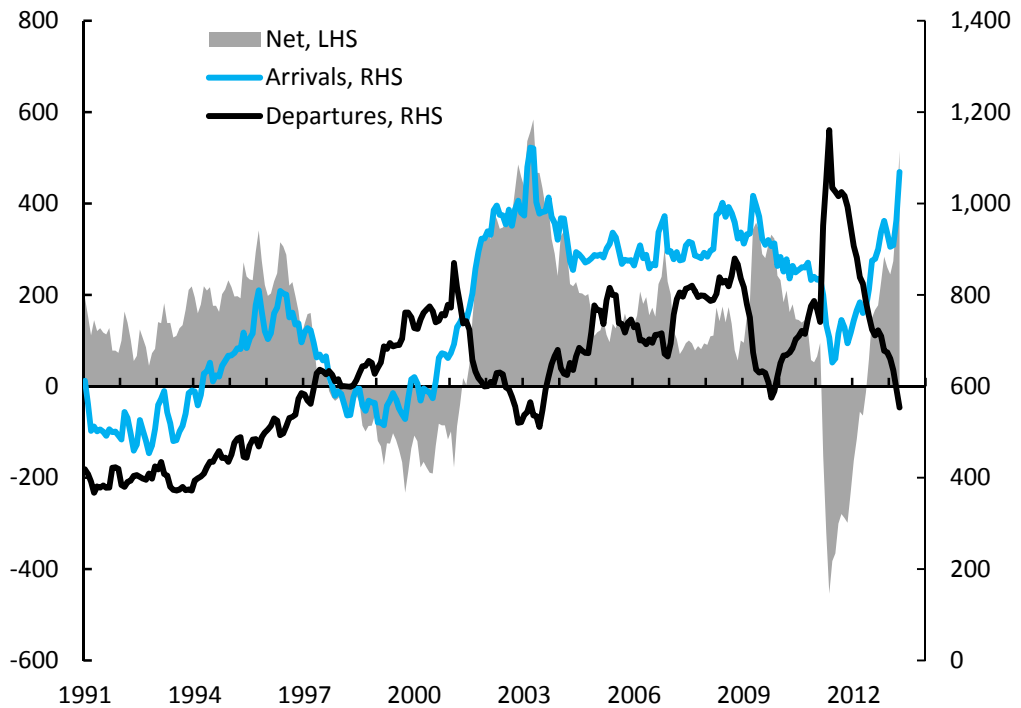
May-07=100, trend



Source: MBIE

Figure 14 Canterbury international migration flows

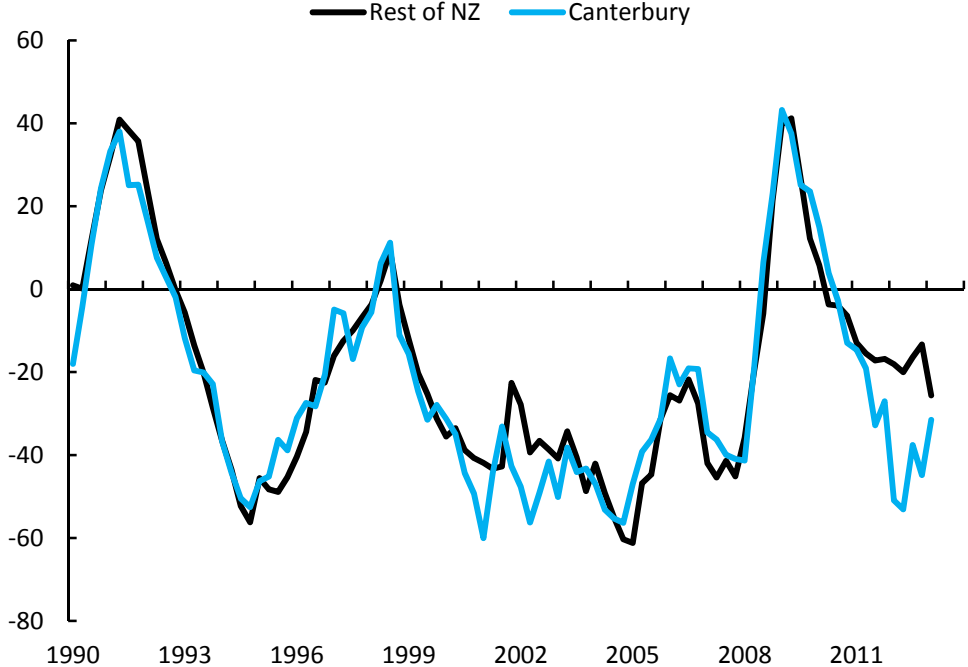
Number of persons (net, left scale; gross, right scale)



Source: Statistics New Zealand, NZIER

Figure 15 Ease of finding skilled labour

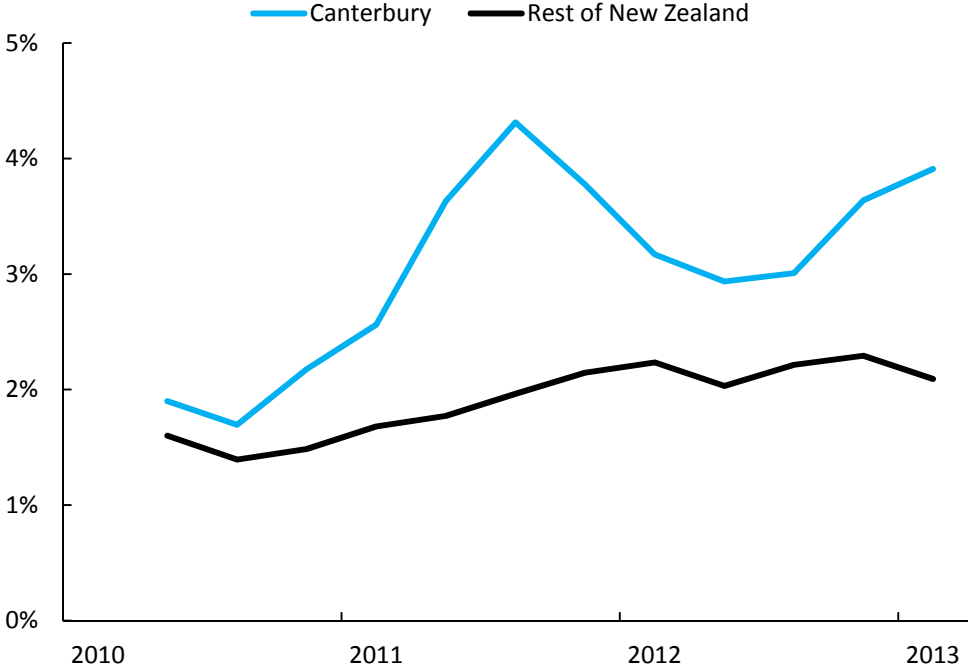
Net % of firms, sa



Source: NZIER QSO

Figure 16 Construction labour cost inflation

Annual % change



Source: Statistics New Zealand, NZIER

Appendix B Terms of reference

An assessment of the methodology and escalation path proposed by Orion. NZIER will do this by looking at the:

- History of the labour cost escalation in the sector and the economy more generally
- Experience of labour costs during a construction surge. We would provide:
 - Local context: housing construction surge in Auckland in 1994-1997, which was out of sync with the rest of NZ
 - Overseas context: experience of construction cost inflation following large events (e.g. the Queensland floods, Kobe earthquake, Sri Lanka tsunami, etc.)

Output: A pithy report summarising our assessment of Orion's proposed escalation path. Our as and supporting evidence from our research of comparable local and overseas experiences.