

Forecasts of Price Level Change Adjustors – 2013 Update

Note to Society of Local Government Managers

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Background

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1 Introduction

These notes have been prepared for the Society of Local Government Managers (SOLGM). This document contains provisional updates of forecasts for price level change adjustors for local authorities (LAs) to use in their budget processes consistent with their Long-term Council Community Plans (LTCCP). It incorporates the latest actual data to June 2013 and forecasts the adjustors to June 2023.

Our earlier reports (2005 to 2012) outlined the approach and methodology and discussed alternative adjustors and reasons why the particular adjustors were chosen for forecasting.

The forecasts provide a medium-term view of the likely movement of the adjustors, rather than the movement over the next year or two. There will always be unexpected reasons why individual costs might rise faster or slower in a particular year. However, this does not necessarily mean that the medium-term forecast will, or should, be adjusted. There will always be regional differences in the rate of change for a particular adjustor.

These adjustors are therefore forecasts at the national level and councils may need to consider if they have further information to show why a difference might occur at the regional level.

BERL has forecast one adjustor for each of the following nine categories for the period to 2023:

1. Roothing and transport costs.
2. Property, reserves and parks costs.
3. Water - clean and dirty - including pipeline costs.
4. Staff costs.
5. Energy costs.
6. Other – adjustor for local government costs.
7. Pipeline costs (a sub-component of water costs).
8. Earthmoving costs (a sub-component of property, reserves and parks costs).
9. Private sector wage costs (a sub-component of categories 1, 2, 3, and 5).

These notes also contain forecasts for an overall cost index for local authorities (LGCI). This index has been developed by BERL and is reported in 'A Local Government Cost Index for New Zealand', BERL reference #4877. The LGCI is based on the cost structures of local authorities and includes operating expenditure and capital expenditure variables.

The operating expenditure of the LGCI includes:

- purchases of goods and services, grants and donations, and all other expenditure;
- employee costs, which includes wages and salaries; and
- interest paid, which includes interest paid on local government debts and is covered by the mortgage interest component of the CPI.

The capital expenditure of the LGCI includes:

- transport, which includes spending on transport projects and in particular roading;
- three waters, which includes water supply, wastewater, and stormwater;

- community, which includes capital expenditure on community facilities such as pools, parks and reserves; and
- other, which is capital expenditure not captured elsewhere.

1.1 Input or output adjustors, capital and expenditure items

The issue of applying adjustors to costs based on input type and/or to activities based on output groups has been extensively discussed (see earlier reports). Previously, it was agreed that individual LAs should apply the adjustors as they determine appropriate in the light of guidelines provided by SOLGM in the *LTCCP Jigsaw* document and its successor *Piecing it Together* document. LAs will also need to consider the most appropriate approach given their own accounting systems and processes.

In this context, the adjustors above do not clearly fall into input or output classes.

It may assist some LAs to view three (staff, energy, and other) of the adjustors as applicable to input costs. A further three (roading, property and water) adjustors have been constructed in order to be applicable to appropriate input categories, where these activities are contracted out by the LA. However, where these activities remain in-house, LAs can use these adjustors for the appropriate output group if they so wish.

The primary focus of the set of adjustors is on operating expenditure. The adjustors may be used on capital expenditure items as the indices include a combined forecast of operating and capital costs. However, because of this mixture in the composition of these indices, they may understate (or overstate) the change in the prices of capital expenditure items.

Therefore, BERL has also provided separate forecasts for the last three adjustors (pipelines, earthmoving and wages) for LAs requiring a more precise adjustor for capital items. These can be applied, as appropriate, to costs based on inputs.

1.2 General price inflation

For comparative purposes, the average level of price inflation over the forecast period is expected to remain consistent with the current Policy Targets Agreement between the Minister of Finance and the Governor of the Reserve Bank.

The appointment of a new Governor instigates the need for a new agreement. Consequently, a new agreement was recently signed, reinforcing the inflation targeting role for the Reserve Bank.

The relevant phrase in this agreement, which targets inflation as measured by the Consumer Price Index (CPI) states:

‘For the purpose of this agreement, the policy target shall be to keep future CPI inflation outcomes between 1 per cent and 3 per cent on average over the medium term, with a focus on keeping future average inflation near the 2 per cent target midpoint.’

2 The economic context

This section outlines the underlying assumptions used in the updated forecasts and our assessment of the New Zealand economy.

2.1 Variables used in forecasting

To generate forecasts for each of the adjustors, we estimate relationships based on historic data between price indices and a set of driver economic variables (e.g. GDP, employment, and investment). These estimated equations required forecasts of the core economic variables.

Table 1 lists the path of the economic variables used in the generation of the forecasts for the adjustors. These economic forecasts are BERL's latest assessment of the likely medium-term path of the New Zealand economy. These are derived from a combination of BERL's short-term forecasts published in *BERL Birds Eye View*¹ and projections over the medium term from BERL's CGE² model of the New Zealand economy.

Table 1: Forecast of economic driver variables: % per annum change

Year ending	Nominal GDP	Real GDP	Non-hsg invtmt	Employment	Interest rates	Oil prices	CPI
Jun 13	2.6	3.0	7.7	-0.1	4.9	-5.1	0.7
Jun 14	4.4	2.6	4.0	0.6	-3.6	2.0	2.0
Jun 15	4.3	2.4	9.0	1.0	-0.4	2.3	1.6
Jun 16	5.3	2.2	3.8	1.1	0.0	2.7	1.7
Jun 17	5.4	2.3	3.9	1.2	0.2	2.7	1.8
Jun 18	5.5	2.5	4.0	1.4	0.4	2.7	1.9
Jun 19	5.5	2.6	4.1	1.5	0.5	2.7	2.0
Jun 20	5.6	2.8	4.2	1.7	0.7	2.7	2.1
Jun 21	5.7	2.9	4.3	1.8	0.9	2.8	2.2
Jun 22	5.8	3.1	4.4	2.0	1.1	2.8	2.3
Jun 23	5.9	3.2	4.5	2.1	1.3	2.8	2.4

2.2 Commentary on the macroeconomic forecast

The world's economy remains in an unstable situation. However, despite downward revisions to growth forecasts from the IMF and the OECD, an almost audible sigh of relief transcends the globe. The US continues to post modest, but respectable, growth figures for both GDP and employment. At the same time European finances, while still delicate, have stopped lurching from crisis to crisis. While the slowdown in the Asian hemisphere is worrying, it remains slight and not totally unexpected.

Consequently, and assisted by markets being awash with funds provided by central banks, many share markets has soared to post-crisis highs. Indeed, the US markets are at stratospheric levels – with the Dow Jones Index at all-time highs in the mid-15,000s. This is a gain of the order of 18% since the start of the year, and well above the pre-crisis high of just over 14,000.

¹ Formerly *BERL Forecasts*.

² Computable general equilibrium (CGE).

Similarly, the Nikkei has soared 31% since the start of 2013, also on the back of central bank largesse. European bourses have recorded rising share prices since the start of 2013, with the German DAX up 9% and the UK FTSE up 12%.

However, share markets in both Australia and China reflect their slowing economies. Across the Tasman, the ASX has gained a comparatively modest 8% this year, and remains well below pre-crisis highs. And concern over the China economy is reflected in the Shanghai index down 12% this year.

Admittedly, the last couple of months have seen increased volatility due to a renewed focus on what happens when central banks turn off the money printing machines. In particular, the likely scaling down of the US quantitative easing (QE3) programme towards the end of this year has resulted in wide daily swings in some indices. Nevertheless, the US Federal Reserve's stated commitment to current interest rates until unemployment rates fall further appears to have been well received.

No doubt, the sustainability of the recovery will be tested should the withdrawal of monetary stimulus be ill-timed or imposed too rapidly. This will be an early baptism of fire for the new Chair of the Federal Reserve, who is due to take office in February 2014. The new Chair is likely to be announced in the coming months, with implications for future US monetary policy set to occupy market minds over the short term.

And the prospect of military action in Syria has also added to uncertainty with oil prices spiking and further volatility on equity and currency markets.

The context for the New Zealand economy over the immediate future is further clouded by concern surrounding a slowing Australian economy, along with potential fallout from consumer markets in response to food contamination scares.

2.2.1 NZ macro picture

The New Zealand economy mirrors the proverbial curate's egg. It is hot on the surface, but distinctly chilly when the outer coating is peeled back.

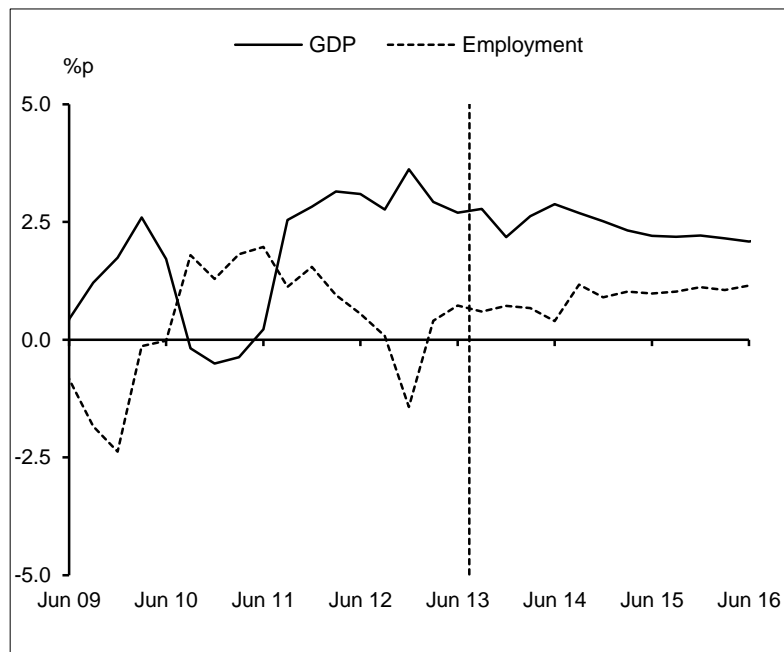
The heat is seen in the residential real estate markets of Wellington and Auckland; the share market prices and confidence indicators. Residential real estate is being fuelled by close to a decade of below average house construction, a slowing of departures as the attractiveness of Australia wanes, low interest rates, and, of course, a nagging feeling amongst many of "not wanting to miss out". Until recently, banks have also assisted in fuelling this bubble by offering increasingly attractive credit conditions as they too, work to ensure they "don't miss out" on their market share.

Share market prices have, in line with many around the globe, staged an impressive recovery this year. In particular, New Zealand's share market has gained 12% since the beginning of the year, as NZ retains its attractiveness in terms of both growth and higher-yielding securities.

However, the financial advances are not as widely reflected in economic activity. The primary impetus to growth over the next few years arises from activities surrounding the rebuild of Christchurch and associated infrastructure. Other sources of growth, namely the export sector and domestic spending are more muted. Further, the government sector remains a net negative on the economy, with restoration of a fiscal surplus in 2014/15 anticipated.

Central government infrastructure investment spending contains few new surprises. The New Zealand Transport Agency's National Land Transport Programme signals a \$12.3 billion investment over the three year period of 2012-2015. This is reported as being up 8% on the actual spend over the previous three year period, which indicates an average boost to overall activity. Other investment spending on education and health has been signalled as arising from funds released through the partial sale of several state-owned assets.

Figure 1: Annual GDP and employment growth



Over the medium to longer term, we see the New Zealand economy heading back towards its capacity growth rate of close to three percent per annum. However, this growth pattern remains skewed in the immediate future towards infrastructure and construction as the rebuilding of Christchurch dominates the outlook.

2.2.2 Context for the inflation outlook

With the reinforcement of the inflation target in the Policy Targets Agreement (PTA) signed in September 2012, consumer price inflation is set to be anchored within the 1 to 3 percent per annum range over the forecast horizon.

Currently, New Zealand's inflation picture remains muted, with consumer and producer price inflation low (if not negative). Indeed, the headline annual growth in the CPI has been below the bottom of this range for the past four consecutive quarters. This has arisen through a combination of modest domestic demand levels as consumers look to reduce their debt holdings, a retail sector that has responded with significant levels of price discounting to attract sales, and a relatively high exchange rate that reduces imported costs. Further, the exchange rate has held down capital equipment prices.

Looking ahead, international inflation pressures will be concentrated on food and energy influences. Both of these influences are driven over the short-term by demand-side factors. In particular, demand from developing countries in Asia will underpin food and energy prices – although subdued demand from European and US economies will provide some counter-balance to these pressures. This will inevitably affect New Zealand’s inflation picture.

The exchange rate is forecast to continue be at the frontline of New Zealand’s inflation targeting mechanism. New Zealand is expected to continue to be seen as a relatively risk-free region for investors and as having relatively favourable interest rate returns. As a result, the New Zealand dollar is not expected to decline significantly over the short term. Thus, the transmission to New Zealand of international inflation pressures is expected to be muted by New Zealand exchange rate movements.

In addition, construction sector inflation is set to remain above average consumer price inflation. This results from capacity considerations; that is, material and labour costs rise in response to insufficient domestic construction capacity.

3 Forecast for adjustors

Table 2 lists the forecast indices for each of the adjustors for the period from the year ended June 2009 to the year ended June 2023. The shaded portion of the table (i.e. up to, and including, June 2013) is based on actual data up to the June quarter 2013.

Table 3 lists the annual percentage change for each of the adjustors.

Table 4 lists the total (or cumulative) percentage change from the year ended June 2013 for each of the adjustors. This table can be used to calculate the increase of future year expenses based on 2013 costs.

In general, adjustors for construction-related activities (i.e. pipelines, earthmoving, roads and water) show the greatest cumulative change over the forecast horizon. Much of this occurs over the early-to-middle years of this period.

Note that Statistics New Zealand recorded a sharp drop in the capital goods pipeline index for pipeline costs in the first two quarters of 2013. The decline was the highest ever recorded. We understand the price decline was caused by a small number of low-price purchases of concrete pipes in the March quarter. Concrete pipes are a large weight in the current pipelines index (around 40%-50%). Statistics NZ is considering revising the capital goods index (e.g. to include PVC pipe costs as well) next year but there is no confirmed timeframe yet.

Consequently, this affected the pipeline and associated water cost adjustors. Our forecasts, note this as a one-off impact. We retain the model forecasts of higher pipeline and water cost adjustors over the future. This is in line with higher construction-related inflation associated with heightened infrastructure demand driven (in the main) out of Christchurch and Auckland activity.

Table 2: Adjustors: Index Jun 2013 = 1000

	Road	Property	Water	Energy	Staff	Other	Earth- moving	Pipe- lines	Private sector wages
Year ending	Cost adjustors NZ Index (Jun 2013 = 1000)								
Jun 11	941	953	970	883	958	949	935	998	961
Jun 12	989	984	1029	1018	980	971	979	1028	981
Jun 13	1000	1000	1000	1000	1000	1000	1000	1000	1000
Jun 14	1022	1023	1016	1023	1022	1027	1022	1013	1021
Jun 15	1048	1045	1036	1057	1045	1051	1051	1038	1044
Jun 16	1090	1069	1065	1093	1069	1077	1100	1078	1069
Jun 17	1137	1095	1097	1133	1095	1105	1150	1129	1094
Jun 18	1190	1123	1132	1177	1124	1134	1202	1180	1121
Jun 19	1243	1153	1169	1225	1153	1167	1255	1232	1149
Jun 20	1298	1186	1210	1278	1184	1201	1310	1286	1179
Jun 21	1355	1221	1253	1336	1217	1238	1367	1342	1211
Jun 22	1412	1258	1301	1399	1252	1278	1426	1400	1244
Jun 23	1471	1299	1352	1468	1290	1321	1486	1460	1280

Table 3: Adjustors: % per annum change

Year ending	Road	Property	Water	Energy	Staff	Other	Earth-moving	Pipe-lines	Private sector wages
	% pa change								
Jun 12	5.2	3.3	6.0	15.4	2.3	2.4	4.7	3.1	2.1
Jun 13	1.1	1.7	-2.8	-1.8	2.1	2.9	2.1	-2.7	1.9
Jun 14	2.2	2.3	1.6	2.3	2.2	2.7	2.2	1.3	2.1
Jun 15	2.6	2.2	1.9	3.3	2.2	2.3	2.8	2.4	2.2
Jun 16	3.9	2.3	2.8	3.5	2.3	2.5	4.6	3.9	2.4
Jun 17	4.4	2.4	3.0	3.7	2.4	2.6	4.6	4.7	2.3
Jun 18	4.6	2.6	3.1	3.9	2.6	2.7	4.5	4.5	2.5
Jun 19	4.5	2.7	3.3	4.1	2.6	2.8	4.5	4.4	2.5
Jun 20	4.4	2.8	3.5	4.3	2.7	3.0	4.4	4.4	2.6
Jun 21	4.3	3.0	3.6	4.5	2.8	3.1	4.3	4.4	2.7
Jun 22	4.3	3.1	3.8	4.7	2.9	3.2	4.3	4.3	2.8
Jun 23	4.2	3.2	3.9	5.0	3.0	3.3	4.2	4.3	2.9

Table 4: Adjustors: cumulative % change from June 2013

Year ending	Road	Property	Water	Energy	Staff	Other	Earth-moving	Pipe-lines	Private sector wages
	cumulative % change from Jun 2013								
Jun 14	2.2	2.3	1.6	2.3	2.2	2.7	2.2	1.3	2.1
Jun 15	4.8	4.5	3.6	5.7	4.5	5.1	5.1	3.8	4.4
Jun 16	9.0	6.9	6.5	9.3	6.9	7.7	10.0	7.8	6.9
Jun 17	13.7	9.5	9.7	13.3	9.5	10.5	15.0	12.9	9.4
Jun 18	19.0	12.3	13.2	17.7	12.4	13.4	20.2	18.0	12.1
Jun 19	24.3	15.3	16.9	22.5	15.3	16.7	25.5	23.2	14.9
Jun 20	29.8	18.6	21.0	27.8	18.4	20.1	31.0	28.6	17.9
Jun 21	35.5	22.1	25.3	33.6	21.7	23.8	36.7	34.2	21.1
Jun 22	41.2	25.8	30.1	39.9	25.2	27.8	42.6	40.0	24.4
Jun 23	47.1	29.9	35.2	46.8	29.0	32.1	48.6	46.0	28.0

4 Forecast for overall LGCI

Table 5 to Table 7 show the forecast annual average percentage change for the overall Local Government Cost Index (LGCI), as well as the OPEX and CAPEX sub-components of the LGCI.

The LGCI has two sub-components – the operating cost index (OPEX LGCI) and the capital expenditure cost index (CAPEX LGCI). Beginning June 2013, the forecast cumulative percent change for the capex cost index is higher than that for the opex cost index.

Table 5: LGCI, Index value (June 2013 = 1000)

Year ending	CAPEX	OPEX	LGCI
Jun 13	1000	1000	1000
Jun 14	1020	1024	1022
Jun 15	1046	1048	1047
Jun 16	1086	1076	1080
Jun 17	1130	1105	1116
Jun 18	1177	1137	1154
Jun 19	1226	1171	1195
Jun 20	1277	1207	1237
Jun 21	1330	1246	1282
Jun 22	1385	1288	1330
Jun 23	1443	1332	1380

Table 6: LGCI, annual average % change

Year ending	CAPEX	OPEX	LGCI
Jun 14	2.0	2.4	2.2
Jun 15	2.6	2.4	2.5
Jun 16	3.8	2.6	3.1
Jun 17	4.1	2.7	3.3
Jun 18	4.1	2.9	3.4
Jun 19	4.1	3.0	3.5
Jun 20	4.2	3.1	3.6
Jun 21	4.2	3.2	3.6
Jun 22	4.2	3.3	3.7
Jun 23	4.2	3.5	3.8

Table 7: LGCI, cumulative % change from June 2013

Year ending	CAPEX	OPEX	LGCI
<i>Jun 14</i>	2.0	2.4	2.2
<i>Jun 15</i>	4.6	4.8	4.7
<i>Jun 16</i>	8.6	7.6	8.0
<i>Jun 17</i>	13.0	10.5	11.6
<i>Jun 18</i>	17.7	13.7	15.4
<i>Jun 19</i>	22.6	17.1	19.5
<i>Jun 20</i>	27.7	20.7	23.7
<i>Jun 21</i>	33.0	24.6	28.2
<i>Jun 22</i>	38.5	28.8	33.0
<i>Jun 23</i>	44.3	33.2	38.0

These forecasts have been derived from econometric models of major cost components of the LGCI including the general goods and services index, the transport capex index and the three waters capex index. Forecasts for other components have been linked to appropriate economic indicators including interest rates, wage rates, and oil prices. The LGCI data and forecasts are consistent with data and forecasts for the 9 costs adjustors presented earlier.

5 Construction of the indicators

This section outlines how the price level indicators were constructed.

5.1 Cost adjustors

As described in earlier BERL reports, cost adjustors are based on historic data from a combination of selected indices within the Statistics New Zealand data for Producer Prices Index, Capital Goods Prices Index and Labour Cost Index. The specific indices used are listed in Table 8.

Table 8: Indices used for each adjustor

Indices used	SNZ Identifier	Description	Main Drivers
Roading/Transport			
PPI inputs - Road transport	PPIQ.SQNII1100		
CGI - Transport ways (other construction)	CEPQ.S2CA	Public transport, roading	Transport industry costs
Total Salary and Wage Rates - Private Sector	LCIQ.SG43Z9		
Property, reserves and parks			
PPI inputs - Cultural and recreation services	PPIQ.SQNRS1100	Maintenance of public buildings and assets (e.g. sports grounds, parks, arts, recreation)	Repairs and maintenance of buildings; grounds maintenance, recreation services
CGI - Earthmoving and site work	CEPQ.S2CD		
Total Salary and Wage Rates - Private Sector	LCIQ.SG43Z9		
Water			
PPI inputs - Electricity generation and supply	PPIQ.SQNDD1100	Drinking water supply and storm water	Repairs and maintenance of water supply
CGI - Pipelines	CEPQ.S2CB		
Total Salary and Wage Rates - Private Sector	LCIQ.SG43Z9		
Energy			
PPI outputs - Electricity generation and supply	PPIQ.SQUDD1100	Electricity generation, supply	Electricity, gas prices
Total Salary and Wage Rates - Private Sector	LCIQ.SG43Z9		
Staff			
All salary and wage rates - Local govt sector	LCIQ.SG13Z9	Council operations	Staff costs
Other			
PPI inputs - Local government administration	PPIQ.SQNOO1100	Local government administration services and civil defence	Staff costs and other administration costs
Pipelines			
CGI - Pipelines	CEPQ.S2CB		
Earthmoving			
CGI - Earthmoving and site work	CEPQ.S2CD		
Private sector salary and wage costs			
Total Salary and Wage Rates - Private Sector	LCIQ.SG43Z9		

PPI - Producer Price Index, CGI - Capital Goods Index, SNZ - Statistics New Zealand

* The official sub-industry group title of Local government administration services & civil defence has been abbreviated.

Established relationships between these national indices and national GDP, employment, investment, interest rates are updated with the latest data available (to the June 2012 quarter). These updated relationships are then used to forecast the changes in each cost adjustor over the coming 10 years, based on BERL's forecasts for the set of national economic driver variables i.e. GDP, employment, investment and interest rates.

Forecasts for the national economic driver variables are from:

- BERL's short-term forecasts of prospects for the national economy from BERL's quarterly publication *BERL Birds Eye View* and
- the medium-term projections from BERL's multi-industry model of the New Zealand economy³.

Forecasts for the national CPI are derived from the short-term *BERL Birds Eye View* combined with the medium-term modelling projections.

5.2 LGCI composition

The development and construction of the LGCI is detailed in BERL report reference #4877, 'A Local Government Cost Index for New Zealand'.

The LGCI has two sub-components – the operating cost index (Opex LGCI) and the capital expenditure cost index (Capex LGCI).

The Opex LGCI includes:

- purchases of goods and services, grants and donations, and all other expenditure;
- employee costs, which includes wages and salaries; and
- interest paid, which includes interest paid on local government debts and is covered by the mortgage interest component of the CPI.

The Capex LGCI includes:

- transport, which spending on transport projects, in particular roading;
- three waters, which includes water supply, wastewater, and stormwater;
- community, which includes capital expenditure on community facilities such as pools, parks and reserves; and
- other, which is capital expenditure not capture elsewhere.

We have used Statistics New Zealand LG operational spending data, and the 2007 *Report of the Local Government Rates Inquiry* to construct the LGCI and its relevant weights.

5.2.1 Opex: Purchase of goods and services

This component makes up the largest individual share of the LGCI, at more than 37 percent. It refers to purchases by local governments of consumables necessary to carry out their responsibilities. It is based on a single price index from the producers price index.

Source indices: PPI – inputs, Local government and civil defence: 1.00

Weighting: 0.374

5.2.2 Opex: Employee costs

Employee costs include wages and salaries and are captured by one existing index from the labour cost index (LCI). Employee costs are around one-sixth of total operational and capital spending captured by the LGCI.

Source indices: LCI – All salary and wage rates, local government sector: 1.00

³ BERL's computable general equilibrium (CGE) model identifies the relationships between 59 separate industries, along with 25 export sectors and eight consumer commodities.

Weighting: 0.166

5.2.3 Opex: Interest paid

Interest paid refers to interest paid on local government debts, and is covered by the mortgage interest component of the CPI. No equivalent series exists in the producers price index.

Source indices: CPI – Mortgage interest: 1.00

Weighting: 0.031

5.2.4 Capex: Transport

This component refers to spending on transport projects, in particular roading. It draws on two price indices – one from the CGI and the other from the PPI. As one of the most financially demanding components of local government expenditure, it accounts for almost one-sixth of the index.

Source indices: CGI – Transport ways (other construction): 0.75

PPI – inputs, Road transport: 0.25

Weighting: 0.156

In other words, we use two existing indices with relative weights of 75:25 to construct the Capex: Transport index, which has a total weighting of 15.6 percent of the Overall LGCI.

5.2.5 Capex: Three waters

In many ways this is the most difficult component to weight with any degree of accuracy, and for which to select the most representative indices. Indices included consider the role of pipeline construction and maintenance; irrigation; and river control.

The first of these indices applies to all three waters – supply, waste, and storm. The second applies to water supply only, and the third, to stormwater only.

We therefore took into account the relative spending on each of the three waters as well as the likely split in spending within each to develop this index.

Source indices: CGI – Pipelines: 0.75

CGI – Irrigation and Land Drainage: 0.125

CGI – Reclamation and River Control: 0.125

Weighting: 0.143

In other words, we use three existing indices with relative weights of 0.75: 0.125: 0.125 to construct the Capex: Three waters index, which has a total weighting of 14.3 percent of the LGCI.

5.2.6 Capex: Community

Capex: Community refers to capital expenditure on community facilities such as pools, parks and reserves. It covers renewal of existing facilities, increases in capacity, and improvements in levels of service. It is based on two price indices, one from the PPI and one from the CGI.

Source indices: PPI – inputs, Cultural and recreation services: 0.50



CGI – Earthmoving and site work: 0.50

Weighting: 0.082

In other words, we use two existing indices with equal weights (50: 50) to construct the Capex: Community index, which has a total weighting of 8.2 percent of the LGCI.

5.2.7 Capex: Other

Capex: Other simply refers to capital expenditure not captured elsewhere. We therefore use the All groups index of the CGI.

Source indices: CGI – All groups: 1.00

Weighting: 0.049

In other words, the Opex: Other index accounts for 4.9 percent of the Overall LGCI.

6 Historical validation

Figure 2 to Figure 10 illustrate the performance of our estimated equations, for each of the adjustors, when compared to the actual data over the period June 1997 to June 2013.

The estimation process is used to develop and then confirm a robust equation that can be used to generate forecasts. The confirmation process tests the fit of the estimated equation with the actual path of the adjustor over a period of time.

In each of the figures below, the dashed line (labelled *predicted*) indicates the estimated path of the adjustor as calculated by our estimated equation. The solid line (labelled *actual*) indicates the actual path of the adjustor as derived from the relevant official Statistics New Zealand data series.

The first two quarters of 2013 has seen a sharp drop in the pipeline and associated water adjustors. This has been caused by a few low-price purchases of concrete pipes in the March quarter. The June quarter has remained low as a result of this. The drop has been the highest ever recorded. Selling prices of concrete pipes are heavily weighted in the current index (around 40-50%). Statistics NZ is considering revising the capital good indices (e.g. including selling prices of PVC pipes) next year but there is no confirmed timeframe yet.

Figure 2: Roading adjustor

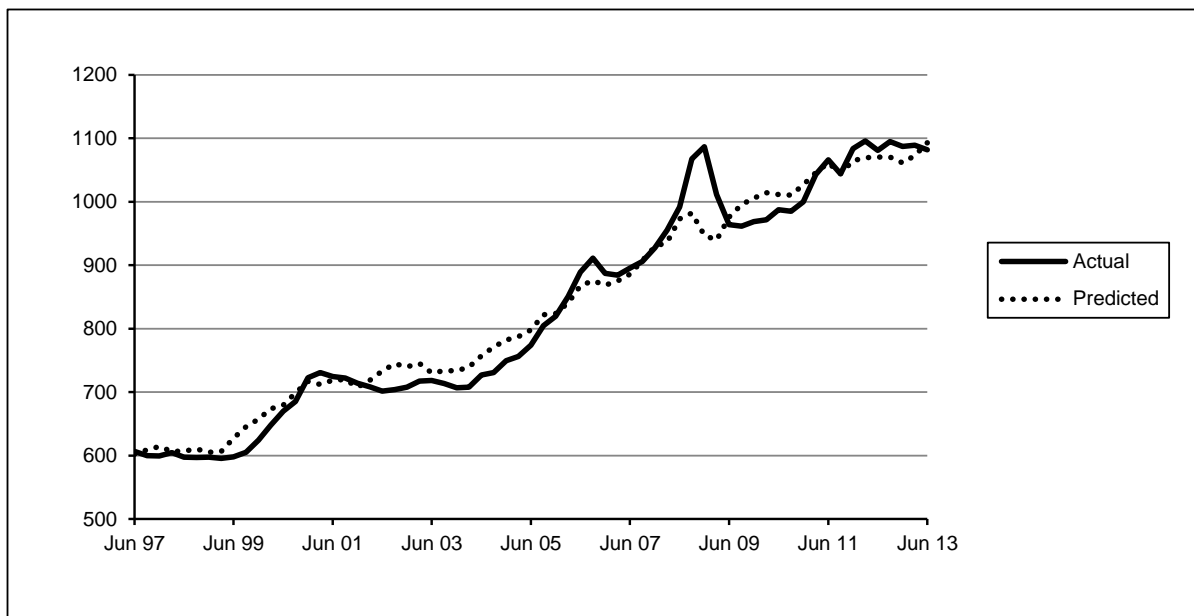


Figure 3: Property adjustor

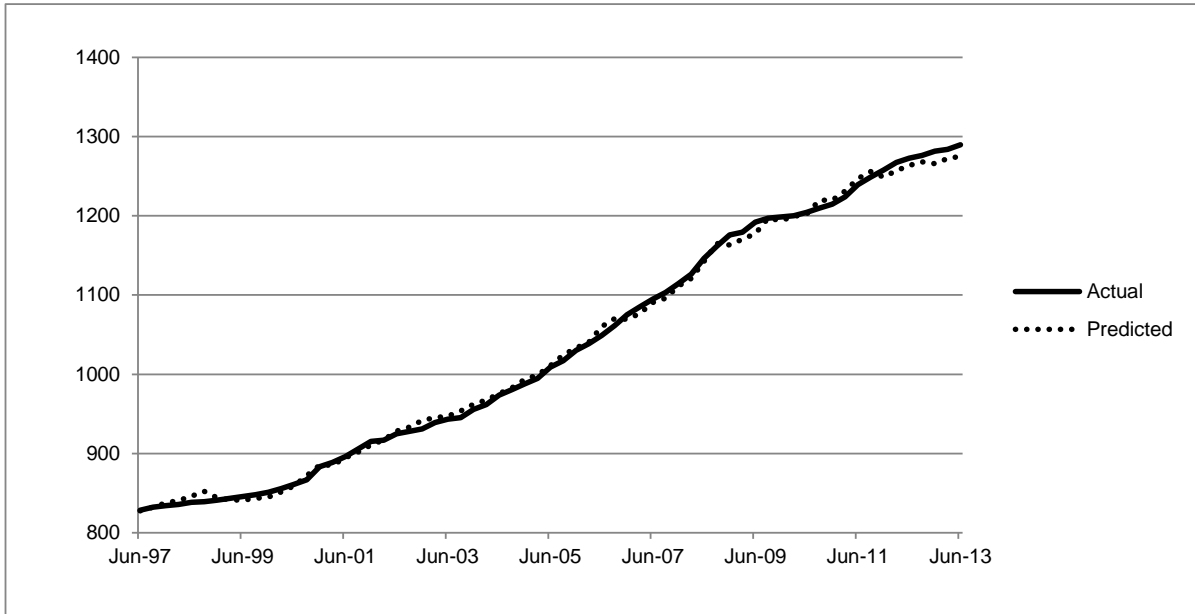


Figure 4: Staff adjustor

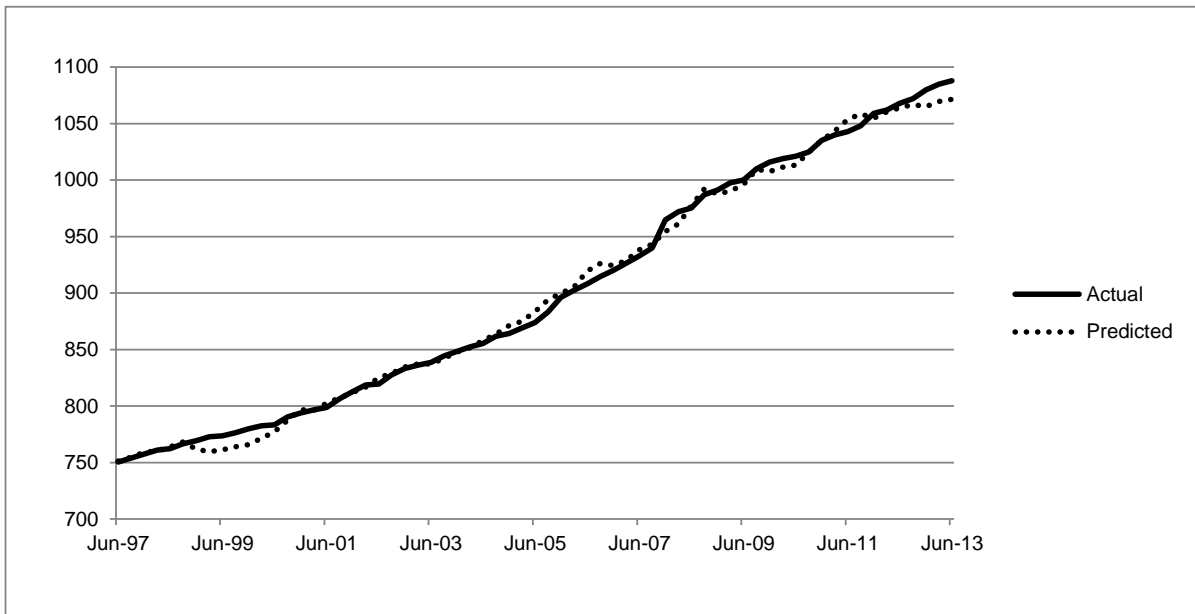


Figure 5: Water adjustor

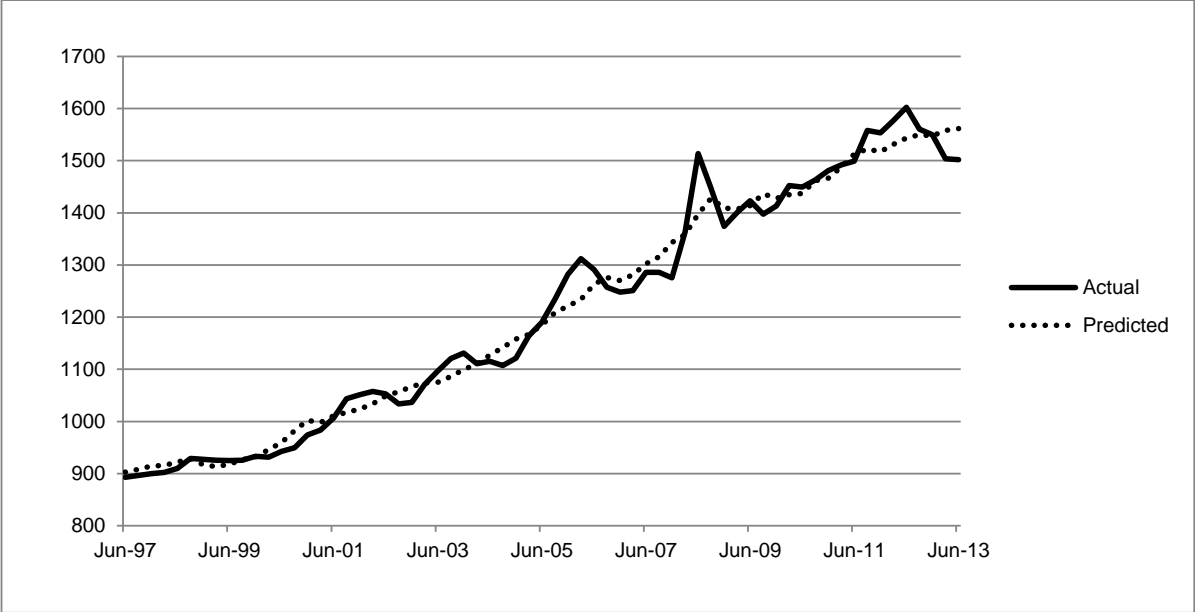


Figure 6: Energy adjustor

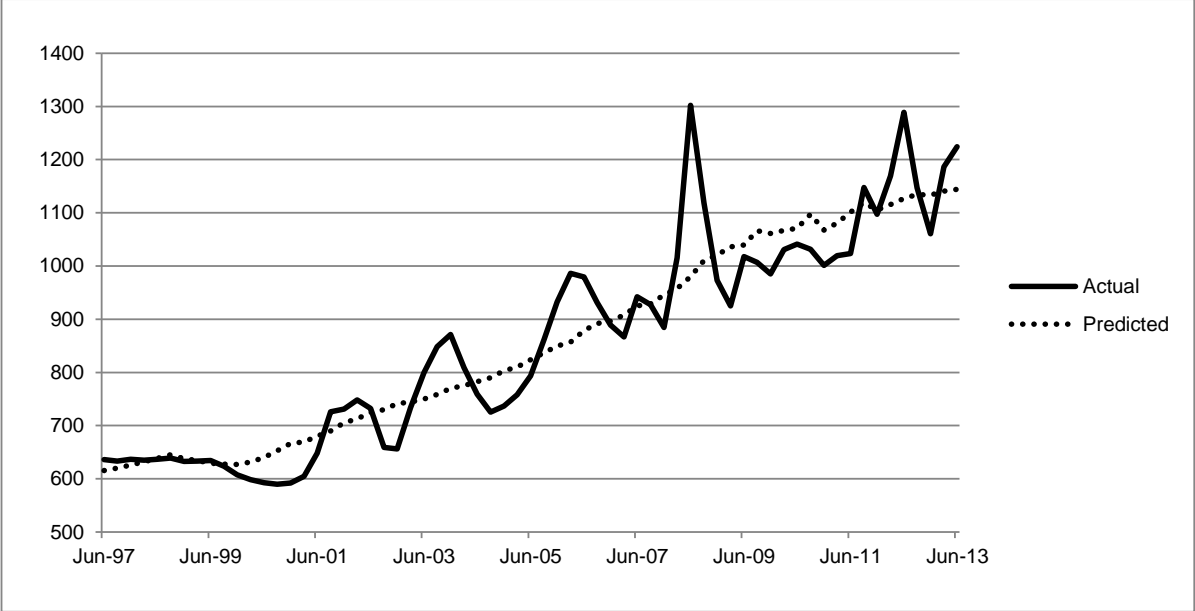


Figure 7: Other adjustor

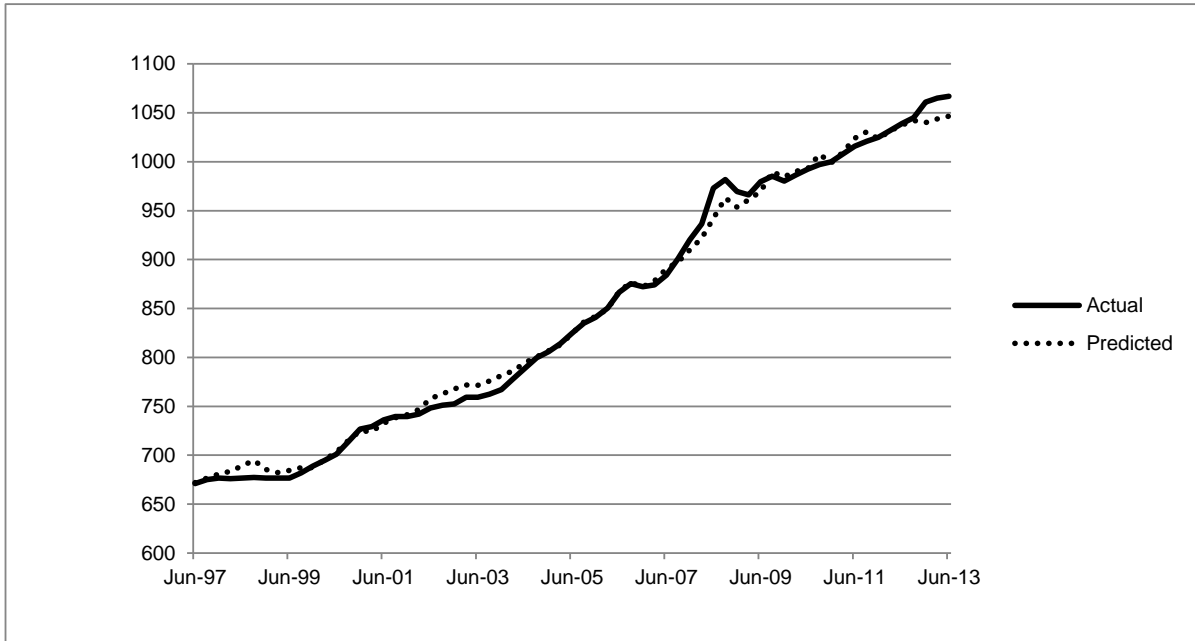


Figure 8: Earthmoving index

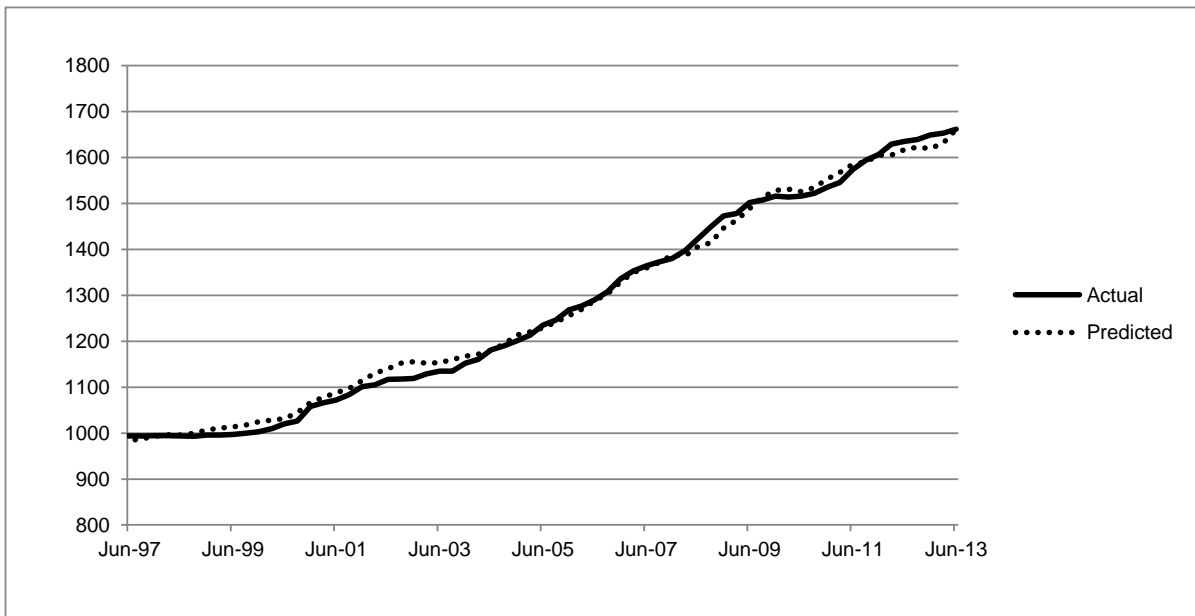


Figure 9: Pipelines index

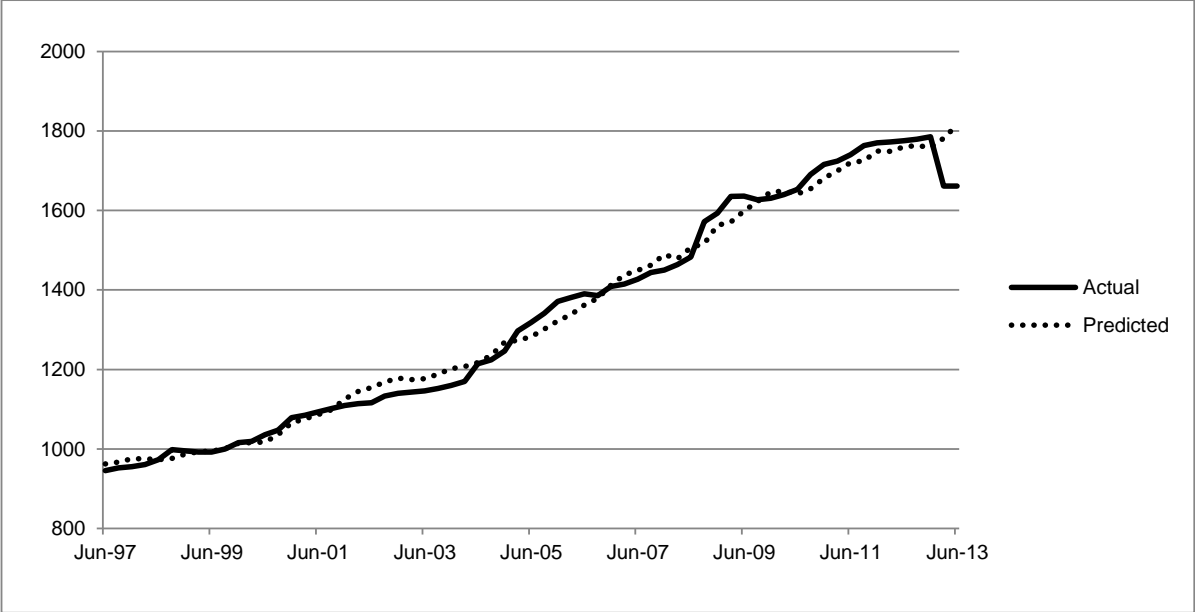


Figure 10: Private sector wage costs index

