

MEMO

To Johnny Findlay, Chorus
From Eilya Torshizian from Principal Economics¹
Date 23 September 2020
Subject Chorus Price Index information and COVID-19

Purpose

This note provides a short (technical) description of the methodology used to account for the impact of COVID-19 on the forecasts for the cost escalation series. The outcomes of the analysis will be used in Chorus's base capital and operating expenditure proposal to the Commerce Commission.

Background

In March 2020, NZIER provided advice on the cost escalation indices relevant to Chorus's cost categories, including network Operating Expense (OPEX), IT Capital Expense (CAPEX), network electronics, greenfield expansion, poles CAPEX, network sustain, building and services, physical network, site lease and fibre lease. The technical methodology of this work was described in an earlier memo dated 31 March 2020. For a list of the recommended data series see Table 3, Table 4 and Table 5.

Given the recent rapid changes in the economy driven by the COVID-19 pandemic outbreak, Chorus commissioned NZIER, along with Principal Economics (together, the NZIER team), to account for the impact of COVID-19 on the real price indicators.

Description of our methodology

Since the data is not available yet and it will take some time for any published data to fully capture the impact of the COVID-19, we use simulation methods, based on stylised facts, to estimate the likely impact.

Given the high level of uncertainty over how this outbreak will evolve, we have modelled the scenarios in line with the V-shaped scenario – as outlined by the Treasury.² A V-shaped scenario predicts that the bottom of the downturn is short and the recovery is relatively quick, while a U-shaped scenario has a longer economic trough and an L-shaped scenario predicts a much longer time to return to a normal economy. The price indices, however, are also affected by global pandemic situation, which will affect commodity prices, such as the price of fibre optic cables.

We primarily focus on the main predictors of price indices and estimate the impact of COVID-19 on them. Table 1 provides a high-level description of the channels of impact on price indices – we discuss these further in the next paragraphs.

¹ Torshizian acknowledges the constructive comments received from Dr Bill Kaye-Blake and the assistance of Dr Milad Maralani and Sarah Spring.

² Treasury, 2020. Treasury Report T2020/973: Economic scenarios - 13 April 2020. The Treasury. Retrieved from: <https://treasury.govt.nz/publications/tr/treasury-report-t2020-973-economic-scenarios-13-april-2020-html>

Table 1 Channel of COVID-19 impact

Index	Impacted through
CPI and All sector LCI and PPI	Easing in non-tradable inflation (driven by the impacts on output gap)
Industry level LCI and PPI	All sector LCI and PPI, changes in net migration and its impact on forecasted population growth
Fibre optic cable	World GDP, impacts on relevant commodity markets (copper prices)

Source: NZIER and Principal Economics

All-sector combined Labour Cost Index (LCI) and Producer Price Index (PPI)

All-sector LCI is one of the factors used for industry-level LCI forecasts and all-sector PPI is one of the factors affecting industry-level PPI forecasts. Both the all-sector LCI and PPI series as well as the Consumer Price Index (CPI) are driven by the easing in non-tradable inflation. Non-tradable inflation affects sectors that provide services locally, such as health, retail and construction sectors.

Based on NZIER's September 2020 *Quarterly Predictions*, we expect weaker crude oil prices will reduce tradable inflation over the coming year. Added to that will be the lagged effects of the recent depreciation in the New Zealand dollar, which makes imported materials more expensive in New Zealand dollars. The ability of businesses to pass on costs will be a key influence.

We also forecast a reduction in non-tradable inflation through to 2021, as the sudden sharp decline in activity creates excess capacity in the New Zealand economy. In particular, capacity pressures have eased in the labour market with businesses in NZIER's June 2020 *Quarterly Survey of Business Opinion* reporting it was now easy to find both skilled and unskilled labour – for the first time in ten years. As demand recovers and businesses and households adapt to the new environment, we expect non-tradable inflation will pick up from 2022.

Overall, NZIER forecasts annual CPI to reach its low point at 0.5 percent in March 2021, and generally hover below the bottom of the Reserve Bank's inflation target band of 1 percent through 2021 before picking up towards the 2 percent inflation target mid-point in the following year.

Population forecasts and net migration

The other series affecting forecasts of industry-level LCI and PPI series are population growth and net migration. According to Treasury (2020), and as summarised in Table 2, the V-shape scenario is based on Alert Levels 4 and 3 being in place for four weeks each and after that there will be 10 months of a mix of Alert Levels 2 and 1. We consider the V-shape as the plausible scenario in this analysis and use that for our estimation of the impact of COVID-19.

Table 2 Description of the V-shape scenario

Channel	COVID-19 Alert Level	Border closure
V-shape scenario	2 months of levels 3/4 10 months of levels 1/2	Borders will be closed to foreign visitors for up to 12 months

Source: Treasury (2020), NZIER and Principal Economics

Accordingly, we assume that net migration will be affected by the border closure until March 2021. After that we assume that the net migration will return to the normal trend at the levels that New Zealand experienced before the pandemic. Our population forecasts are affected by birth and death trends and forecasted net migration. While the birth and death components will continue as normal,³ net migration is affected as described above.

Global market and the price of fibre optic cables

There is a range of factors affecting the price of fibre optic cables. Before the pandemic, an increase in demand was expected in the aviation industry. This part of demand has been affected by uncertainties in the world economy, including a reduction in air travel. The bulk of demand for fibre optic cable is driven by fibre-optic communication, which is a substitute for copper lines. Hence, consistent with the methodology that we used previously, the copper price index and the world gross domestic product (GDP) are the two predictors used for forecasting the price of fibre optic cables.

The changes in the world GDP are forecasted by International Monetary Fund's June 2020 World Economic Outlook.⁴

Fifty percent of demand for copper takes place in China. China's GDP shrank by 6.8% during the first quarter of 2020. The disruption to the supply chain in Europe and the US resulted from extended lockdowns and led to further decreases in demand for consumption of copper. We use the copper price forecasts produced by ANZ.⁵

The changes in real indices are driven by a mix of factors

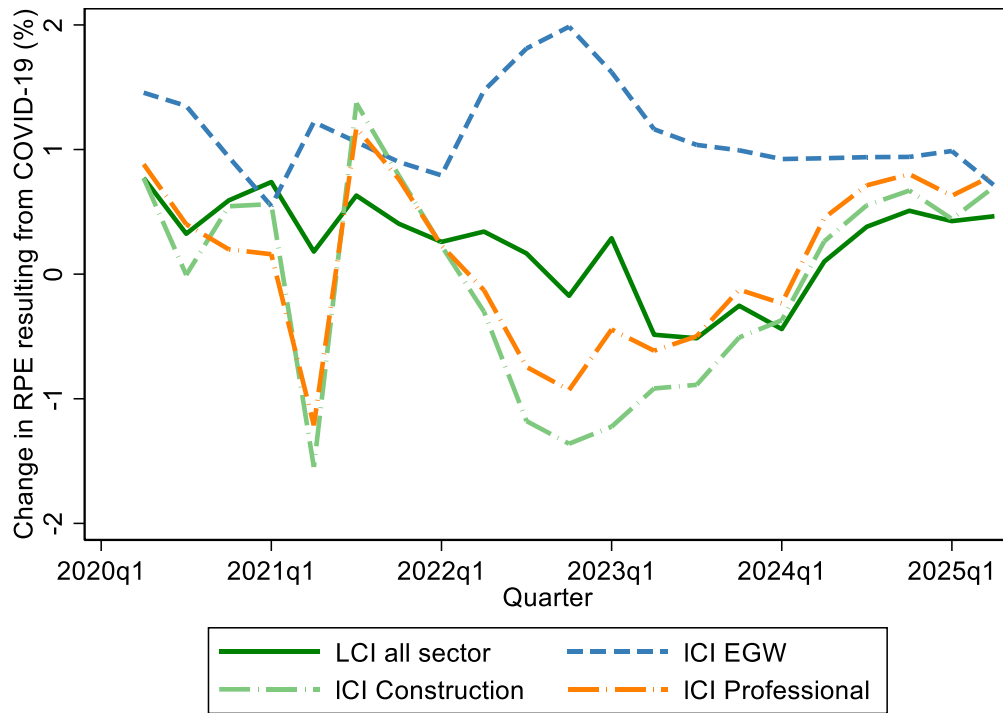
In comparison with our previous forecasts of price indices, we observe mixed effects on price indices. This is driven by changes in the forecasts of the predictor variables, such as net migration and population growth, and the changes in CPI. Figure 1 shows the changes in the all-sector LCI and the industry-level LCIs, for example. For most of the series, there are some decreases in the earlier years and then they recover back to their trend towards the end of the RP1 period. This is driven by the recovery path in the economy that we expect to have based on the V-shaped scenario.

³ Note that deaths in New Zealand have so far fallen during the pandemic lockdown: <https://blogs.otago.ac.nz/pubhealthexpert/2020/07/10/weekly-deaths-declined-in-nzs-lockdown-but-we-still-dont-know-exactly-why/>

⁴ <https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020>

⁵ For further details on the impact of COVID-19 on copper prices see <https://capital.com/copper-price-forecast-2020>

Figure 1 Change in real price LCI indices following COVID-19



Source: NZIER and Principal Economics

Table 3 Operational expenditure price indices

Proposed narrow price index measure

Area	Breakdown of activities/inputs	Narrow index
Network	Rent	PPI - Published output commodities 'Rent of commercial land and buildings'
	Electricity	PPI - Published output commodities 'Electricity: commercial consumers'
	Field technicians (standard, external)	LCI 'Professional and Technical Services'
	Project management (internal)	LCI 'Professional and Technical Services'
Technology	Network electronics service agreements	PPI Outputs 'Electronic and Electrical Equipment Manufacturing'
	IT technical staff (internal)	LCI 'Professional and Technical Services'
	IT project management (internal)	LCI 'Professional and Technical Services'
Business Support	Legal	LCI 'Professional and Technical Services'
	Accounting	LCI 'Professional and Technical Services'
	Communications	LCI 'Professional and Technical Services'
	Product design	LCI 'Professional and Technical Services'
	Marketing	LCI 'Professional and Technical Services'
	Strategy	LCI 'Professional and Technical Services'
	Customer experience	LCI 'Professional and Technical Services'
	Human resources	LCI 'Professional and Technical Services'

Source: NZIER and Principal Economics

Table 4 Capital expenditure price indices

Proposed narrow price index measure

Area	Breakdown of activities/inputs	Narrow measure
IT Capex	IT technical staff (internal)	LCI Professional and Technical Services
	IT project management (internal)	LCI Professional and Technical Services
NGA connections	In-property hardware (e.g. ONTs)	PPI Outputs 'Electronic and Electrical Equipment Manufacturing'
	Field technicians (standard, external)	LCI 'Professional and Technical Services'
	Fibre	USA Producer Price Index by Industry: Fibre Optic Cable Manufacturing
POA connections	In-property hardware (e.g. ONTs)	PPI Outputs 'Electronic and Electrical Equipment Manufacturing'
	Field technicians (standard, external)	LCI 'Professional and Technical Services'
	Fibre	USA Producer Price Index by Industry: Fibre Optic Cable Manufacturing
Network electronics	IT technical staff (internal)	LCI 'Professional and Technical Services'
	Network electronics hardware	PPI Outputs 'Electronic and Electrical Equipment Manufacturing'
	Network electronics service agreements	PPI Outputs 'Electronic and Electrical Equipment Manufacturing'
Greenfield expansion	Ducts	PPI Outputs 'Heavy and Civil Engineering Construction'
	Field technicians (standard, external)	LCI 'Professional and Technical Services'
	Fibre	USA Producer Price Index by Industry: Fibre Optic Cable Manufacturing
	Civil labour (digging)	PPI Outputs 'Heavy and Civil Engineering Construction'

Source: NZIER and Principal Economics

Table 5 Capital expenditure price indices

Proposed narrow price index measure

Area	Breakdown of activities/inputs	Narrow measure
Fibre extension and enhancements	Fibre	USA Producer Price Index by Industry: Fibre Optic Cable Manufacturing
	Ducts	PPI Outputs 'Heavy and Civil Engineering Construction'
	Civil labour (digging)	LCI 'Construction' or PPI Outputs 'Heavy and Civil Engineering Construction'
	Network electronics hardware	'PPI Outputs 'Electronic and Electrical Equipment Manufacturing'
	Field technicians (standard, external)	LCI 'Professional and Technical Services'
IFRS15 customer	IT technical staff (internal)	LCI 'Professional and Technical Services'
	Call centre staff	LCI 'Administrative and Support Services'
Poles Capex	Field technicians (higher spec, external)	LCI 'Professional and Technical Services'
Network sustain	Civil labour (digging up roads)	LCI 'Construction' or PPI Outputs 'Heavy and Civil Engineering Construction'
	Field technicians (standard, external)	LCI 'Professional and Technical Services'
	Replacing equipment	'PPI Outputs 'Electronic and Electrical Equipment Manufacturing'
Building and services	Building maintenance	PPI Outputs 'Non-Residential Property Operation'
	Building services	PPI Outputs 'Non-Residential Property Operation'
Hybrid	Site leases	PPI - Published output commodities 'Rent of commercial land and buildings'
	Fibre leases	USA Producer Price Index by Industry: Fibre Optic Cable Manufacturing

Source: NZIER and Principal Economics