

Cost escalation forecasts

Outlook and forecasting methodologies

NZIER report to Chorus

16 June 2023

About NZIER

NZIER is a specialist consulting firm that uses applied economic research and analysis to provide a wide range of strategic advice.

We undertake and make freely available economic research aimed at promoting a better understanding of New Zealand's important economic challenges.

Our long-established Quarterly Survey of Business Opinion (QSBO) and Quarterly Predictions are available to members of NZIER.

We pride ourselves on our reputation for independence and delivering quality analysis in the right form and at the right time. We ensure quality through teamwork on individual projects, critical review at internal seminars, and by peer review.

NZIER was established in 1958.

Authorship

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1 Purpose

Chorus commissioned NZIER to provide customised forecasts to support its policy decision-making around pricing. Our short report outlines the outlook for the New Zealand economy, which underpins our forecasts, and includes a description of our methodology.

2 The economic outlook underpins our forecasts

Economic backdrop

There are signs activity is slowing in the New Zealand economy and, with it, an easing in inflation pressures. Inflation had surged over the COVID-19 pandemic, reflecting a combination of the effects of supply constraints and the boost in demand from the unprecedented amount of stimulus from the Government and the Reserve Bank of New Zealand (RBNZ). Fiscal and monetary policy stimulus, including wage subsidy and support payments, increased government spending and low interest rates boosted demand across a wide range of sectors.

Since October 2021, the RBNZ has commenced its tightening cycle by increasing the official cash rate (OCR). However, demand has remained resilient up until recent months, reflecting the lagged transmission of the OCR increases onto broader economic activity. This lagged transmission partly reflects the substantial proportion of mortgages in New Zealand on fixed term mortgage rates, which meant that many households do not face an increase in interest rates until their mortgage rates come up for refixing. This meant many were still on historically low fixed term mortgage rates of around 2 to 4 percent, even as the OCR increased at a rapid pace.

In recent months, there have been signs of demand softening in the New Zealand economy, as households face much higher mortgage repayments at refixing their mortgage rates. In particular, retail spending is slowing as households reduce their discretionary spending. With around half of mortgages due to be repriced over the coming year, we expect a further slowing in retail sales and in turn broader economic activity.

Signs of inflation turning

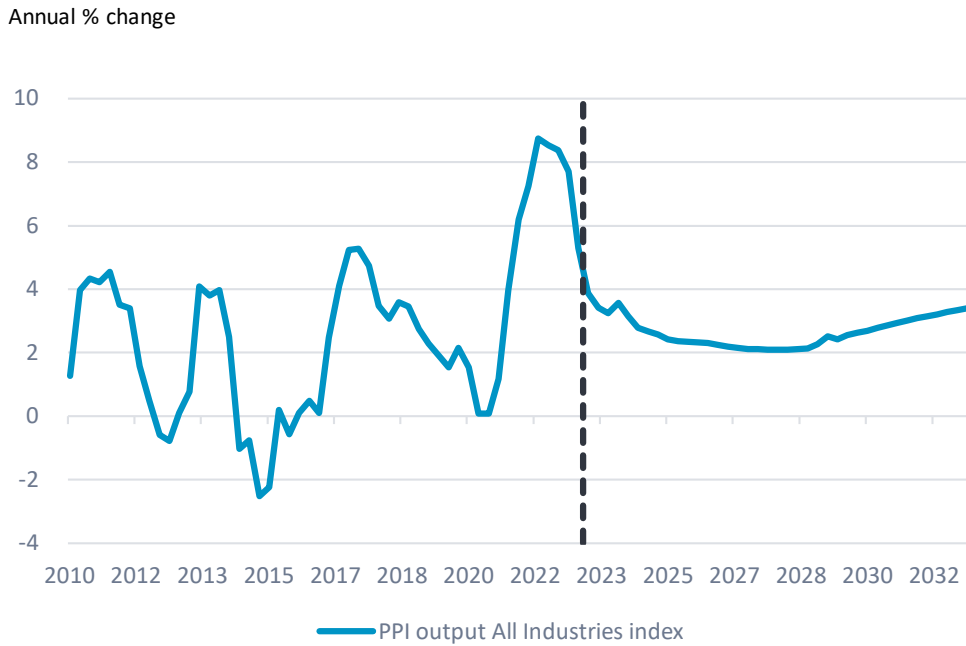
As the effects of higher interest rates transmit through the New Zealand economy, the earlier effects on inflation are being unwound. During the COVID-19 pandemic, businesses experienced severe supply constraints in the form of labour shortages and supply chain disruptions. However, there are signs of these constraints easing in more recent months.

In particular, the March NZIER *Quarterly Survey of Business Opinion* (QSBO) showed fewer businesses reporting difficulty in finding both skilled and unskilled labour. In addition, sales have supplanted finding labour as the top primary constraint for businesses. This shift suggests softening demand is becoming the key concern for more businesses.

The easing in labour shortages partly reflects the reopening of international borders, allowing firms to bring in workers from overseas. We expect continued net inflows of migrants will further ease labour shortages over the coming year.

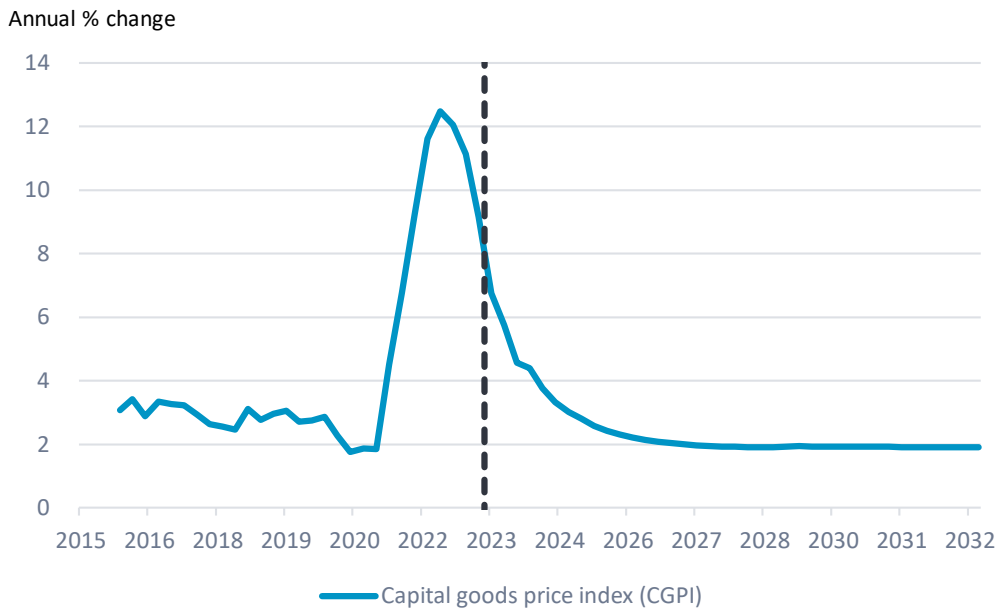
Meanwhile, we expect a continued softening in demand will also contribute to further easing in inflation. This combination of increased supply and easing demand drives our expectations of an easing in annual growth in producer prices and the capital goods price index (CGPI), in line with the broader easing in inflation pressures in the New Zealand economy.

Figure 1 Producer Price Index (PPI) outputs: All Industries



Source: Stats NZ, NZIER

Figure 2 Capital Goods Price Index (CGPI)



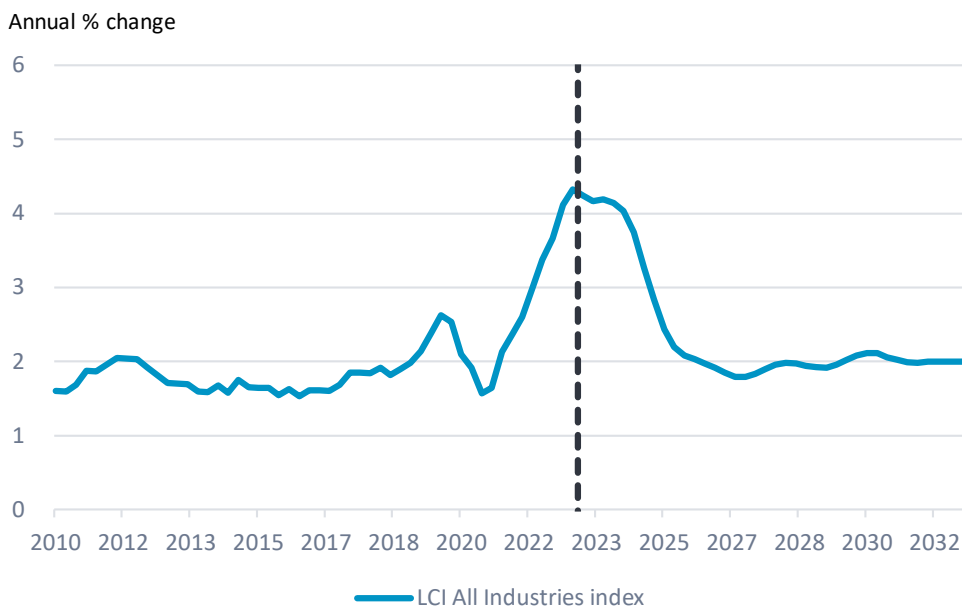
Source: Stats NZ, NZIER

Stats NZ labour market statistics indicate a strong labour market in New Zealand over early 2023. While the Household Labour Force Survey indicates the unemployment rate in the March 2023 quarter stayed at 3.4 percent, the labour force participation rate and employment rate reached record highs – 72.0 percent and 69.5 percent, respectively.

The March NZIER QSBO indicates firms are feeling more positive about hiring. Continued tightness in the labour market is driving continued strong wage growth. Annual increases in Stats NZ Labour Cost Index (LCI) measure of wages and salaries reached a record high of 4.3 percent in the March quarter. Meanwhile, Stats NZ Quarterly Employment Survey’s average hourly earnings also increased by 7.6 percent in the year to March 2023.

However, the Reserve Bank’s Survey of Expectations for the current quarter shows lower wage growth and higher unemployment rate expectations for the two years ahead. Given the labour market tends to lag other economic indicators, we expect wage growth will remain elevated for the coming year. We forecast the easing in wage inflation to become more apparent from the second half of 2024, reflecting a combination of increased labour supply from migration and softening labour demand.

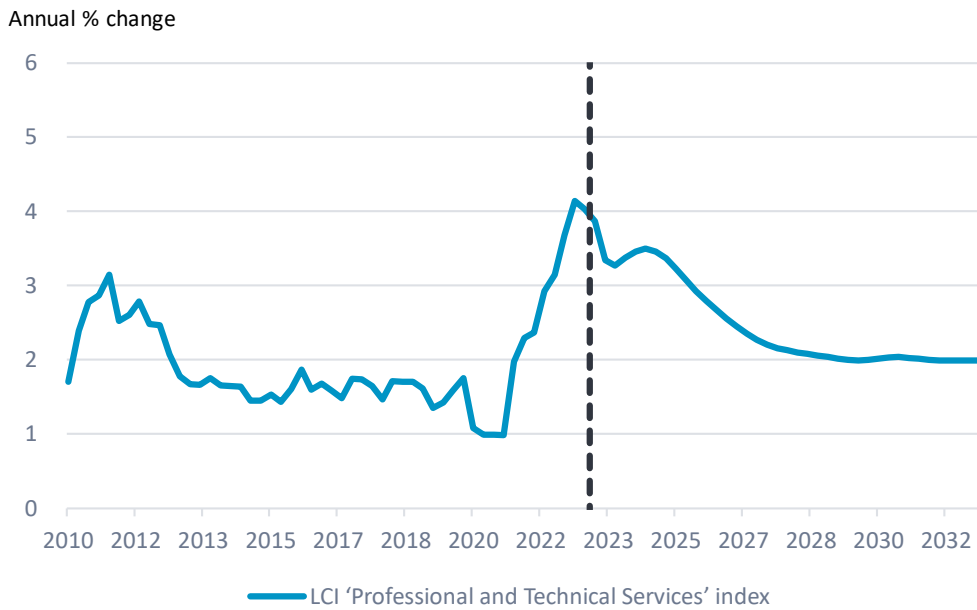
Figure 3 LCI: All Industries



Source: Stats NZ, NZIER

Although wage growth in the Professional and Technical Services industry has lagged that of other industries slightly over the past year, we expect wage growth in this industry to be stronger from last year, reflecting stronger demand in the Professional and Technical Services industry. Over the longer term, we expect wage growth across industries to converge.

Figure 4 LCI: Professional and Technical Services



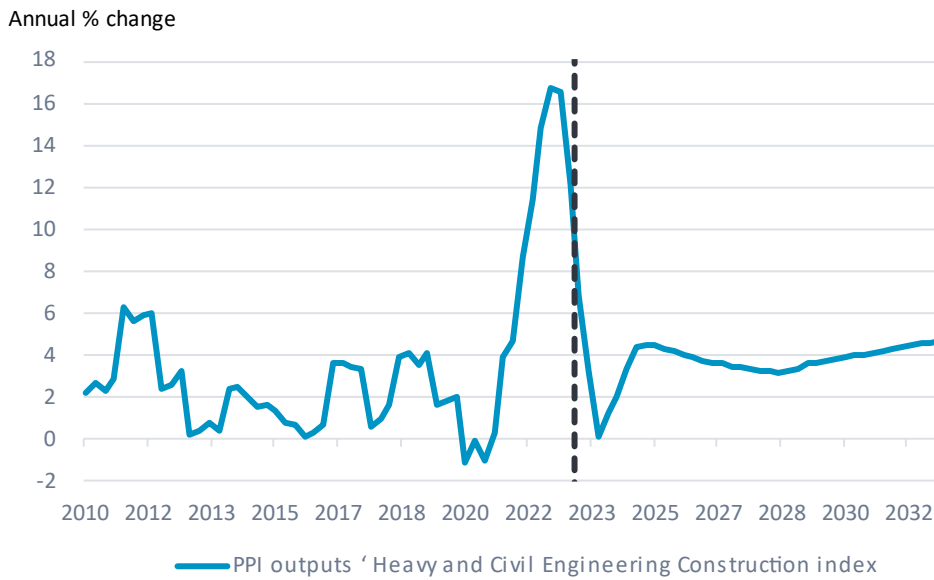
Source: Stats NZ, NZIER

Very strong demand for infrastructure construction, as well as supply constraints, have contributed to severe capacity pressures in the construction sector in recent years. These capacity pressures have driven a surge in construction cost inflation, including a sharp increase in producer prices in the Heavy and Civil Engineering construction industry.

Although we expect demand for infrastructure construction to remain robust over the coming years, capacity pressures have started to ease in the construction sector more broadly. This reflects an easing in materials shortages as supply chain disruptions resolve themselves, while the reopening of international borders has helped to alleviate labour shortages. We expect a further easing in growth in producer prices in the Heavy and Civil Engineering construction industry over the coming year as capacity pressures continue to ease before a modest recovery in the subsequent years.



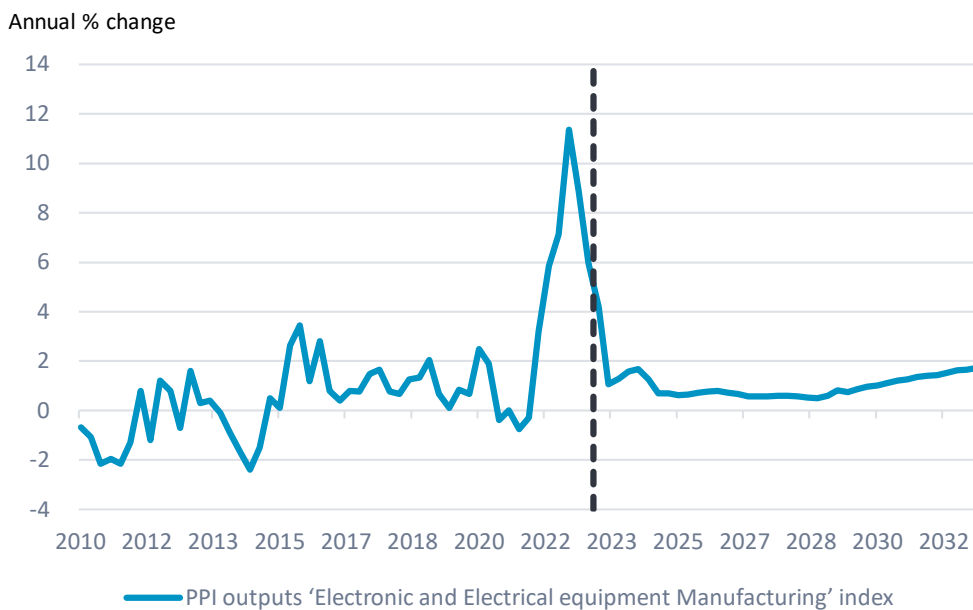
Figure 5 PPI outputs: Heavy and Civil Engineering



Source: Stats NZ, NZIER

Supply chain disruptions arising from the COVID-19 pandemic have driven a surge in the price of imported Electronic and Electrical Equipment Manufacturing in recent years. As these supply chain disruptions have been resolved, price growth has eased. Given the broader easing in capacity pressures in the global economy, we expect price growth to remain subdued over the longer term.

Figure 6 PPI outputs: Electronic and Electrical Equipment Manufacturing

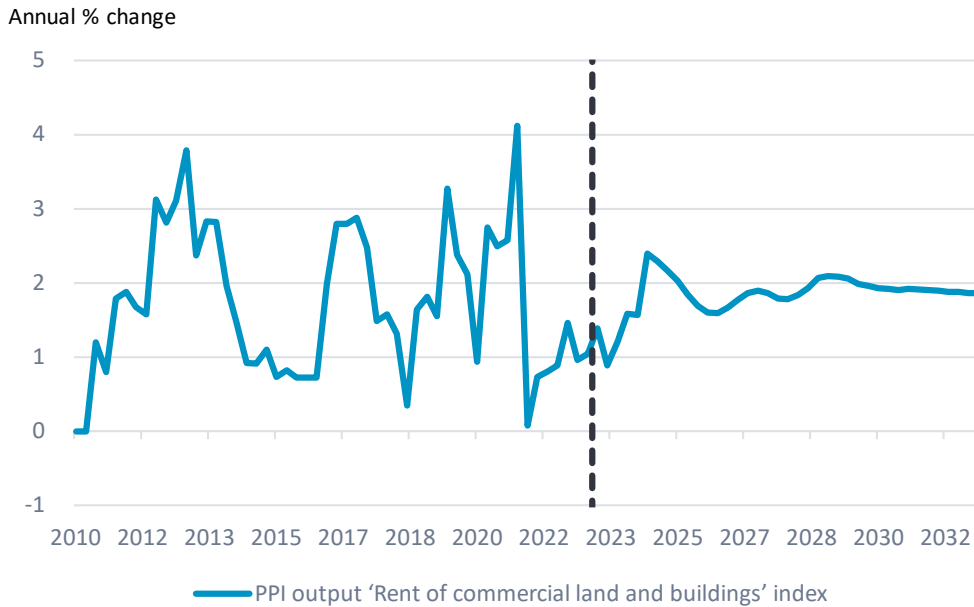


Source: Stats NZ, NZIER



Higher interest rates have weighed on demand for property and, in turn, rental growth of commercial land and buildings over the past two years. With interest rates in New Zealand likely to have peaked, interest in property is slowly returning, and we expect that will drive a recovery in rental growth of commercial land and buildings.

Figure 7 PPI outputs: Rent of commercial land and buildings



Source: Stats NZ, NZIER

Price of fibre optic cables

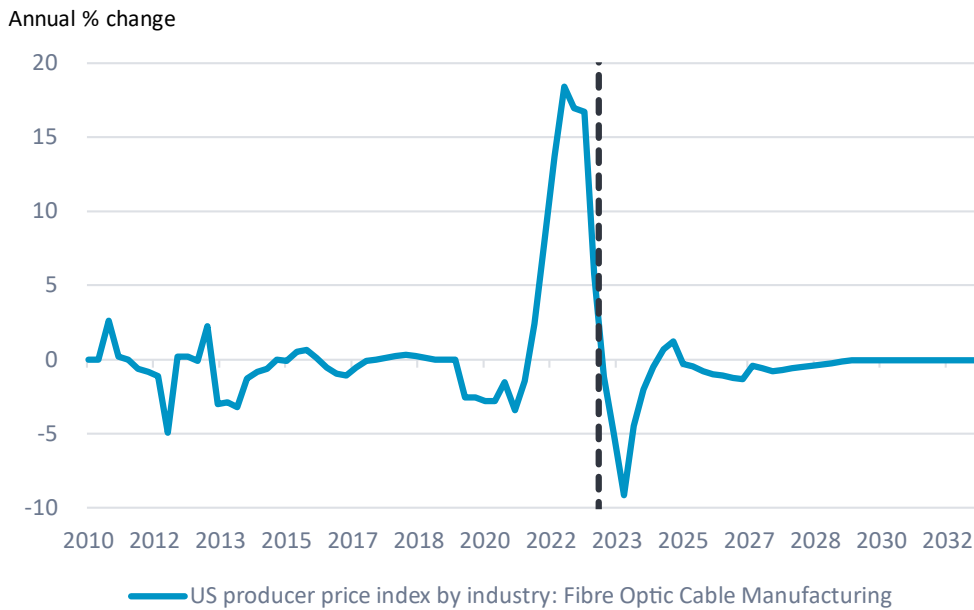
There is a range of factors affecting the price of fibre optic cables. The bulk of demand for fibre optic cable is driven by fibre-optic communication, which is a substitute for copper lines. Hence, consistent with the methodology that we used previously; we continue to use the copper price index as a predictor for forecasting the price of fibre optic cables. In addition, we also included petrol prices as a predictor in the model.

Copper is a widely used metal in infrastructure in the energy sector, like energy transmission and energy storage. It is also widely used in the construction, telecommunications, and high-tech manufacturing sectors. Copper prices reached an all-time high around the second quarter of 2021. The price increase in copper over the pandemic period was driven primarily by the optimism of economic recovery due to the global vaccine rollout and the high demand from China.

In line with the *Energy & Metals Consensus Forecasts*, which are forecasting the global price of copper and petrol to decline before recovering, we forecast the Fiber Optic Cable Manufacturing Index will ease over the coming year before recovering modestly.



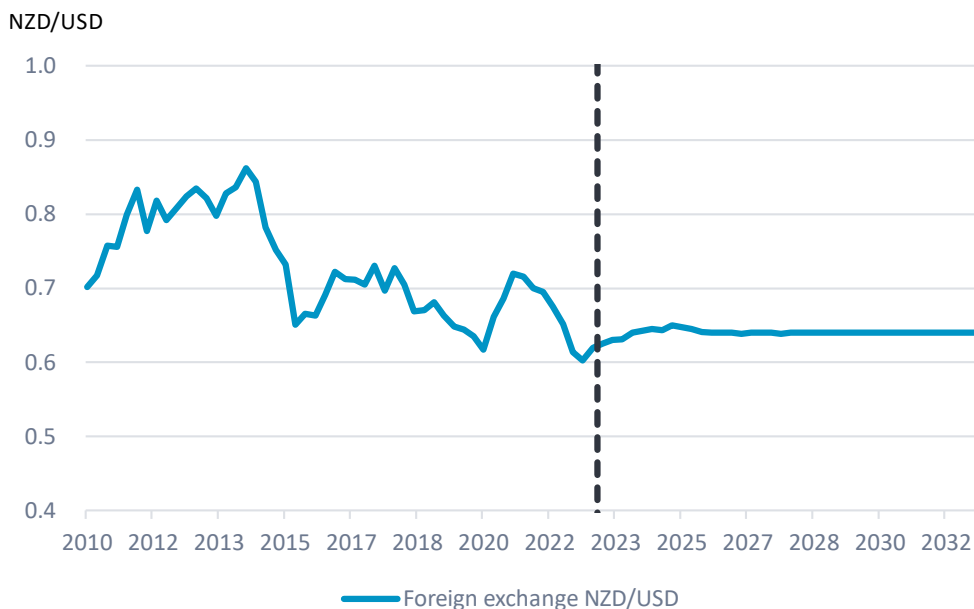
Figure 8 US PPI: Fibre Optic Cable Manufacturing



Source: Stats NZ, NZIER

The NZD/USD depreciated over the past year, largely reflecting strength in the USD as the US Federal Reserve increased interest rates to rein in inflation in the US economy. We expect a modest recovery in the NZD over the coming years before settling into its long-run average of around 64 cents.

Figure 9 Foreign exchange NZD/USD



Source: Stats NZ, NZIER

3 Methodology

3.1 Relevant indices

This report updates the forecasting procedure of the following indices, as requested by Chorus.

- LCI All Industries index
- PPI outputs all industries index
- LCI 'Professional and Technical Services' index
- PPI Outputs 'Heavy and Civil Engineering Construction' index
- PPI Outputs 'Electronic and Electrical Equipment Manufacturing' index
- PPI Outputs 'Rent of commercial land and buildings' index
- US Producer Price Index by Industry: Fiber Optic Cable Manufacturing
- Capital goods price index (CGPI)
- Foreign exchange NZD/USD.

3.2 Forecasting methodology

The labour cost forecast models make use of three inputs from NZIER's regular forecasts and forecast models:

- forecasts of the all-sectors, all salary and wage rates LCI
- forecasts of gross domestic product (GDP):
 - short term forecasts based on sector – and experience-specific cycles in economic activity
 - long term forecasts based on labour force growth and trend historical multifactor productivity growth
- long term trends in industry-specific GDP forecasts based on a descriptive (Vector Auto-Regression) model of trend shares of GDP by industry.

3.3 LCI ALL industries

The forecast of the LCI All Industries is determined jointly with other key measures of macroeconomic activity. The forecasts are produced through an iterative process that considers both demand and supply aspects of the macroeconomy, institutional settings and economic shocks to global demand or local supply.

The forecast can be accurately described as having both a long-term trend component and a cyclical component. The trend component is forecast using the relationship between CPI inflation and overall wage inflation.



3.4 PPI outputs: All Industries

The PPI-outputs index for all industries is forecast using an iterative process that considers both demand and supply aspects of the macroeconomy, institutional settings and economic shocks to global demand or local supply.

The forecast can be accurately described as having both a long-term trend component and a cyclical component. The trend component is forecast using the relationship between CPI and overall PPI inflation.

3.5 PPI outputs: Heavy and Civil Engineering, PPI –output: 'Rent of commercial land and buildings' and PPI Outputs: 'Electronic and Electrical Equipment Manufacturing'

The three PPI series is forecast using an econometric model with two parts:

- A model of the long-term trend in the PPI-outputs index for the series as a function of all-sectors Producers Price Index for inputs
- A model of short-run and cyclical movements in each of the PPI outputs as a function of changes in net migration, the construction sector output gap.

3.6 US PPI by Industry: Fiber Optic Cable Manufacturing

In our forecast for the 'US Producer Price Index by Industry: Fiber Optic Cable Manufacturing' index, we used historical petrol prices and two lags of auto-regressive terms to capture the cyclical moment in this price index. The regression model fits the observed data very well, with an adjusted R square of 0.89.

3.7 Capital Goods Price Index (CGPI)

The CGPI is forecast using an iterative process that considers both demand and supply aspects of the macroeconomy, institutional settings and economic shocks to global demand or local supply.

The forecast can be accurately described as having both a long-term trend component and a cyclical component. The trend component is forecast using the relationship between overall PPI inflation and the output gap for the New Zealand economy.

3.8 Foreign exchange NZD/USD

Our exchange rate forecasts are derived from a combination of growth differentials between New Zealand and the United States in the short run and a reversion to long-run averages over the longer horizon.



Appendix A Modelling output

Table 1 LCI Professional and technical service model

Dependent Variable: LN(LCI Professional and technical service)				
Method: Fully Modified Least Squares (FMOLS)				
Sample (adjusted): 1990Q1 2023Q1				
Explanatory variable	Coefficient	Std. Error	z	Prob.
LN(LCI_All)	0.141	0.028	5.07	0.00
AR(1)	0.856	0.030	28.45	0.00
C	0.019	0.029	0.65	0.514
R-squared	0.99		Adjusted R-squared	0.99

Table 2 PPI Heavy and Civil Engineering

Trend equation

Dependent Variable: LN(PPI Heavy and Civil Engineering)				
Method: Fully Modified Least Squares (FMOLS)				
Sample (adjusted): 2009Q2 2021Q2				
Explanatory variable	Coefficient	Std. Error	z-Statistic	Prob.
LN(PPI_inputs)	1.287	0.025	51.93	0.00
C	-1.959	0.169	-11.60	0.00
R-squared	0.99		Adjusted R-squared	0.99

Cycle equation

Dependent Variable: Residual from trend equation				
Method: Ordinary Least Squares (OLS)				
Sample (adjusted): 2009Q3 2021Q2				
Explanatory variable	Coefficient	Std. Error	t	Prob.
NetMigration(-4)	0.0002	0.0002	1.04	0.299
AR(1)	0.879	0.045	19.60	0.00
R-squared	0.77		Adjusted R-squared	0.76

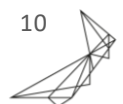


Table 3 US PPI Fiber Optic Cable Manufacturing

Dependent Variable: LN (US PPI Fiber Optic Cable Manufacturing)				
Method: Fully Modified Least Squares (FMOLS)				
Sample (adjusted): 2004Q4 2021Q2				
Explanatory variable	Coefficient	Std. Error	z	Prob.
LN(CopperI_Price) (-1)	0.015	0.007	2.36	0.018
LN(Petrol_Price) (-1)	0.009	0.006	1.58	0.015
AR(1)	1.483	0.107	13.84	0.000
AR(2)	-0.508	0.126	-4.03	0.000
date	0.000	0.000	1.29	0.197
C	0.017	0.306	0.05	0.957
R-squared	0.90		Adjusted R-squared	0.89

