Technical Note: QTC's Quiet Achievers

AUTHOR: TRENT SAUNDERS, QTC PRINCIPAL ECONOMIST

Research article: Re-assessing Australia's economic recovery

Published: 29 April 2021

Economic data often provides a noisy, and sometimes conflicting, set of signals as to current conditions. This is not ideal at the present time when getting a clear, timely sense of the trajectory of the economic recovery is of considerable importance. Therefore, it is important to silence the noise to achieve a cleaner read on the underlying trends in the economy. This is what *QTC's Quiet Achievers* aim to do.

What are *QTC's Quiet Achievers*?

QTC's Quiet Achievers are a group of measures we have developed in QTC's Economic and Market Research team to lower the volume on noisy data and aid in our interpretation of economic trends. To do this, we use signal extraction techniques to find the common trend across a range of key indicators for the economy.

The composite indicators we came up with have several characteristics which make them useful for 'nowcasting'.[1] In particular, the indicators:

- are generally less volatile than the individual input series and
- have a reasonable correlation with (and often a lead over) the corresponding ABS data (Figure 1).

When trying to get a handle on economic conditions, these indices also have the attractive feature of helping us to avoid confirmation bias. That is, while we all know that month-to-month movements in any single indicator can be volatile, research shows that people can give too much weight to information that validates their prior beliefs. Using a purely objective statistical approach allows us to avoid this bias and instead focus on what matters: the underlying trend.

How were these series put together?

QTC's Quiet Achievers are estimated using the Kalman filter, which allows us to separate the signal from the noise across a range of different series. For a given group of indicators, we assume that each of the individual series provides a noisy signal of a common underlying trend.

To do this, we assume that each individual monthly indicator, x_i, is represented by the measurement equation:

$$x_{i,t} = q_t + \epsilon_{i,t} \quad , \quad \epsilon_{i,t} \sim N(0, \sigma_i^2)$$

That is, each series is defined by a common underlying trend, q_t, as well as a series-specific error term, $\epsilon_{i,t}$. For quarterly indicators, the observations are apportioned evenly over the quarter.

$$x_{i,t} = \tfrac{1}{3}(q_t + q_{t-1} + q_{t-2}) + \epsilon_{i,t}$$
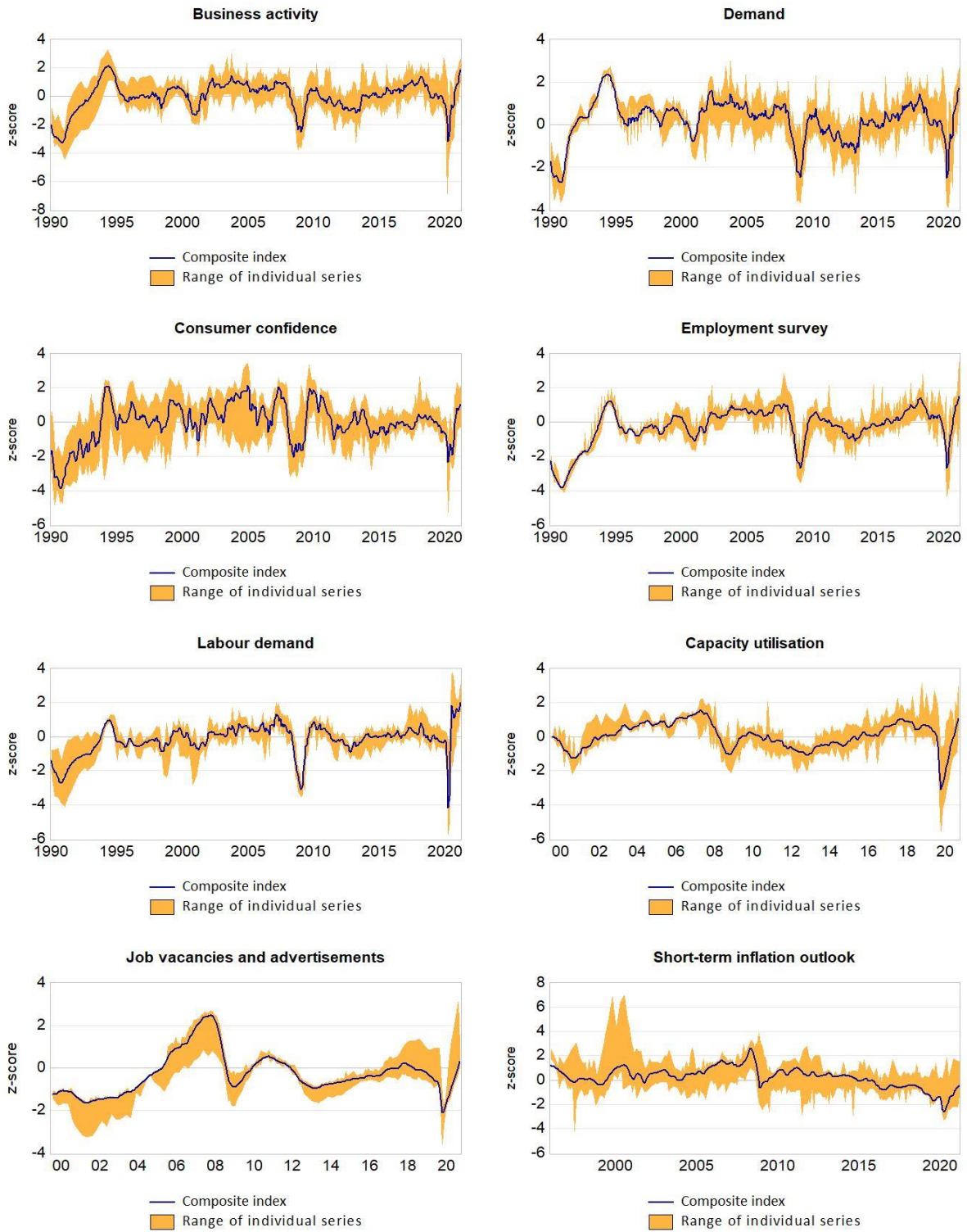
The state equation defines the underlying trend and is specified as:

$$q_t = \rho * q_{t-1} + e_t \quad , \quad e_t \sim N(0, \sigma_i^2)$$

Where ρ measures the degree of persistence in the underlying trend and e_t is the error term. The estimates of q are what we are interested in, as they represent the common trend across the different indicators. These estimates are shown in Figure 1 (the blue lines).

---

[1] Nowcasting refers to estimating or predicting outcomes that are in the present or the very recent past. It is often done in economics when series are released with a considerable lag.

Figure 1: QTC's Quiet Achievers

Business activity

Demand

Consumer confidence

Employment survey

Labour demand

Capacity utilisation

Job vacancies and advertisements

Short-term inflation outlook

* Scaled to have the same mean and standard deviation as the corresponding ABS data

Source: QTC

Technical **Note: QTC's Quiet Achievers**

Appendix

The following tables list the individual series that were used to estimate our composite indices are provided below.

Business Conditions Index

Start date: January 1990

Data provider/survey	Inputs	Frequency
AiG Performance of Manufacturing Index (PMI)	Headline PMI	Monthly
	Production	Monthly
	New orders	Monthly
	Sales	Monthly
AiG Performance of Services Index (PSI)	Headline PMI	Monthly
	Production	Monthly
	New orders	Monthly
	Sales	Monthly
AiG-HIA Performance of Construction Index (PCI)	Headline PMI	Monthly
	Production	Monthly
	New orders	Monthly
ANZ-Roy Morgan	Business confidence	Monthly
Australian Chamber-Westpac Survey of Industrial Trends	Output, last 3 months	Quarterly
	Output, next 3 months	Quarterly
NAB Business Survey (monthly)	Business confidence	Monthly
	Business conditions	Monthly
	Forward orders	Monthly
	Trading performance	Monthly
NAB Business Survey (quarterly)	Business confidence, expected	Quarterly
	Business conditions, expected	Quarterly
	Forward orders, expected	Quarterly
	Trading performance, expected	Quarterly
	Sales, change in next 12 months	Quarterly

Consumer Confidence Index

Start date: January 1990

Data provider/survey	Inputs	Frequency
ANZ-Roy Morgan	Consumer confidence	Monthly
Westpac-Melbourne Institute Consumer Sentiment Survey Refinitiv / Ipsos	Consumer sentiment	Monthly
	Current conditions	Monthly
	Expectations	Monthly
	Economic conditions in 1 yr	Monthly
	Economic conditions in 5 yr	Monthly
	Family finances - current	Monthly
	Family finances in 1 yr	Monthly
	Time to buy a major household item	Monthly
	Wisest place for savings – Spend it	Quarterly
	Consumer Sentiment	Monthly

Demand Index*

Start date: January 1990

Data provider/survey	Inputs	Frequency
AiG Performance of Manufacturing Index (PMI)	Production	Monthly
	New orders	Monthly
	Sales	Monthly
AiG Performance of Services Index (PSI)	Production	Monthly
	New orders	Monthly
	Sales	Monthly
AiG-HIA Performance of Construction Index (PCI)	Production	Monthly
	New orders	Monthly
Australian Chamber-Westpac Survey of Industrial Trends	Output, last 3 months	Quarterly
	Output, next 3 months	Quarterly
NAB Business Survey (monthly)	Forward orders	Monthly
NAB Business Survey (quarterly)	Forward orders, expected	Quarterly
	Sales, change in next 12 months	Quarterly

* We use output, production, sales and orders as a proxy for changes in demand

Employment Index

Start date: January 1990

Data provider/survey	Inputs	Frequency
AiG Performance of Manufacturing Index (PMI)	Employment	Monthly
AiG Performance of Services Index (PSI)	Employment	Monthly
AiG-HIA Performance of Construction Index (PCI)	Employment	Monthly
Australian Chamber-Westpac Survey of Industrial Trends	Employment intentions - 3 months	Monthly
	Hiring difficulty last 3 months	Monthly
NAB Business Survey (monthly)	Employment	Monthly
NAB Business Survey (quarterly)	Employment intentions - 3 months	Quarterly
	Employment intentions - 12 months	Quarterly

Job Advertisements and Vacancies Index

Start date: January 2000. All series are scaled by the size of the labour force

Data provider/survey	Inputs	Frequency
ABS	Job vacancies (total)	Quarterly
	Job vacancies (private sector)	Quarterly
ANZ	Job advertisements	Monthly
Department of Education, Skills and Employment	Job vacancies	Monthly
SEEK	Job advertisements	Monthly

Labour Demand Index

Start date: January 1990

Data provider/survey	Inputs	Frequency
ABS	Job vacancies (total)* – Year-ended change	Quarterly
	Job vacancies (private sector) – Year-ended change	Quarterly
Australian Chamber-Westpac Survey of Industrial Trends	Employment intentions - 3 months	Monthly
ANZ	Job advertisements* – Year-ended change	Monthly
Department of Education, Skills and Employment	Job vacancies* – Year-ended change	Monthly
NAB Business Survey (monthly)	Employment	Monthly
NAB Business Survey (quarterly)	Employment intentions - 3 months	Quarterly
	Employment intentions - 12 months	Quarterly
SEEK	Job advertisements* – Year-ended change	Monthly

* Series are scaled by the size of the labour force

Inflation

Start date: January 2000

Data provider/survey	Inputs	Frequency
Australian Chamber-Westpac Survey of Industrial Trends	Average selling price – Next 3 months	Quarterly
Melbourne Institute Inflation Gauge	Trimmed mean	Monthly
	Excluding volatile items	Monthly
NAB Business Survey (monthly)	Final product prices	Monthly
	Retail prices	Monthly
NAB Business Survey (quarterly)	Final product prices – Next 3 months	Quarterly
	Retail prices – Next 3 months	Quarterly
RBA - Stat Table G3 - Inflation Expectations	Market economists' expectations – 1-year ahead	Quarterly
	Market economists' expectations – 2-year ahead	Quarterly
	Union officials' expectations – 1-year ahead	Quarterly
	Union officials' expectations – 2-year ahead	Quarterly
Bloomberg	Breakeven inflation – 10 year	Monthly
	Inflation swap – 2 year	Monthly
	Inflation swap – 10 year	Monthly

Capacity Utilisation

Start date: January 2000

Data provider/survey	Inputs	Frequency
AiG Performance of Manufacturing Index (PMI)	Capacity utilisation	Monthly
AiG Performance of Services Index (PSI)	Capacity utilisation	Monthly
AiG-HIA Performance of Construction Index (PCI)	Capacity utilisation	Monthly
Australian Chamber-Westpac Survey of Industrial Trends	Capacity utilisation	Quarterly
NAB Business Survey (monthly)	Capacity utilisation	Monthly
NAB Business Survey (quarterly)	Capacity utilisation	Quarterly