

AUSTRALIAN MARKETS WEEKLY

Tracking fruit and vegetable prices in the CPI



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Analysis – Using web-scraping to forecast fruit and vegetable prices in the CPI

- Fruit and vegetable prices are the two most volatile components of the CPI and can have a large effect on headline inflation even though they account for only a small share of household spending.
- This makes forecasting fruit and vegetable prices important when nowcasting the CPI. Large swings in fruit and vegetable prices can also affect the RBA's preferred measure of core inflation by skewing the distribution of prices within the CPI.
- With the ABS now using transactions data to measure up to 31% of the CPI basket, NAB has developed a web-scraping tool to track retail fruit and vegetable prices. Mapping the web-scraped prices across to the CPI, we follow the ABS's approach in allowing households to vary their spending in response to large swings in prices. In this way, big price changes have a more muted impact on the CPI than in the past.
- For Q2 inflation, web-scraping shows the impact of the Queensland floods has been unwound, with falls in fruit and vegetable prices partly offsetting a 10% rise in petrol, such that we expect a 0.4% q/q / 1.4% y/y rise in the headline CPI.

The week ahead – RBA expected to cut to 1% on Tuesday

- The RBA Board meets tomorrow in Darwin for the first time with the Governor speaking later that evening. We expect the RBA to cut the cash rate by 25bp to 1% given that the Governor recently said the June rate cut was not sufficient to “get the [economy] on a better path”. We are mindful that the Governor also said the decision to cut again could be taken in either Darwin or Sydney, so that if the RBA unexpectedly holds steady we would expect the next cut in August. On the data, NAB forecasts a small lift in retail sales of 0.2% in May (mkt: 0.2%) following a 0.1% fall in April. Building approvals are forecast to fall another 1% (mkt: flat) and the trade surplus is expected to lift to \$5.8b (mkt: \$5.25b).
- Offshore, aside from China-US trade tensions, the focus will be on the manufacturing ISM on Monday, the non-manufacturing ISM on Wednesday, and payrolls on Friday. Any disappointment would increase expectations of a July Fed rate cut.

To contact NAB's market experts, please click on one of the following links:

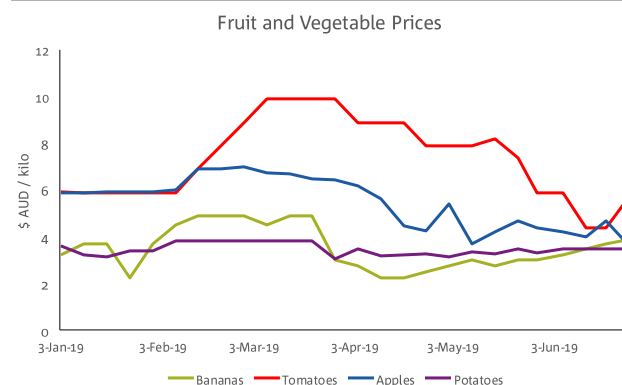
[Ask the Economists](#)
[Ask the FX Strategists](#)
[Ask the Interest Rate Strategists](#)

Key markets over the past week

	Last	% chg week		Last	bp/% chg week
AUD	0.7010	0.6	RBA cash	1.25	0
AUD/CNY	4.79	-0.1	3y swap	1.02	6
AUD/JPY	75.8	1.5	ASX 200	6,652	-0.2
AUD/EUR	0.617	1.0	Iron ore	115	3.2
AUD/NZD	1.044	-0.8	WTI oil	59.8	3.3

Source: Bloomberg

Chart of the week: tracking supermarket prices



Using web-scraping to forecast fruit and vegetable prices in the CPI

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- This makes forecasting fruit and vegetable prices important when nowcasting the CPI. Large swings in fruit and vegetable prices can also affect the RBA's preferred measure of core inflation by skewing the distribution of prices within the CPI.
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- For Q2 inflation, web-scraping shows the impact of the Queensland floods has been unwound, with falls in fruit and vegetable prices partly offsetting a 10% rise in petrol, such that we expect a 0.4% q/q / 1.4% y/y rise in the headline CPI.

Australia and NZ are unique in publishing quarterly CPIs

Australia and New Zealand are outliers among the advanced economies in still publishing inflation quarterly rather than monthly.

Following from a 2010 review of the CPI, the ABS is currently undertaking a feasibility study into producing a monthly CPI, but has not set a target date for switching from quarterly to monthly.

The change in the ABS's thinking on the CPI reflects a reduced cost of producing a monthly index, as well as support for a monthly CPI from the Reserve Bank.

The ABS is using transactions data for up to 31% of the CPI

In the 2010 review, the ABS estimated that it would cost an additional \$15m per annum to produce a monthly CPI. That cost has fallen over time due to improvements in collecting prices, including the use of transactions data:

- Sourced directly from companies; and
- Web-scraping of prices.

The ABS started using transactional – or “scanner” data – in 2014. We calculate that these data are now used to derive prices that have a weight as much as 31% of the CPI basket, up from 25% in 2015.¹ As Table 1 shows:

- Transactions data are extensively used for prices of: (1) food and non-alcoholic drinks, where every expenditure class bar restaurant meals depend at least in part on transactions data; (2) health; and (3) clothing and footwear.
- Transactions data are not currently used for: (1) communication; (2) education; and (3) insurance and financial services.

Table 1: Transactions data are used in deriving prices for up to 31% of the weight of the CPI

	Transactions data %	CPI weight %
1 Food and non-alcoholic drinks	12.7	16.1
2 Alcohol and tobacco	3.0	7.6
3 Clothing and footwear	2.0	3.2
4 Housing	1.5	23.1
5 Furnishings, h'hold equipment & services	2.0	8.8
6 Health	5.1	5.7
7 Transport	3.6	10.2
8 Communication	..	2.5
9 Recreation and culture	0.9	12.5
10 Education	..	4.4
11 Insurance and financial services	..	5.8
CPI	30.8	100.0

Note: Calculated from expenditure classes where some prices are derived from transactions data.
Source: Australian Bureau of Statistics, National Australia Bank

Scanner data allows for better measurement of prices and variable weights for individual goods and services

The main benefit of using transactions data is that it allows for the better measurement of prices for each day of the month, all at a lower cost.

In addition to providing more accurate prices, the transactions data allow the ABS to take into account consumers switching products *within* each expenditure class.

- Taking the fruit expenditure class as an example, this means that instead of assuming that X% of fruit purchased are bananas, this share can vary over time. As a result, a supply disruption – such as Tropical Cyclone Larry, where banana prices quadrupled as banana crops were destroyed in Queensland – would have a more muted effect on fruit prices and hence the overall CPI as consumers bought other fruits instead.

This approach also allows the ABS to easily take into account the seasonality of some items. For example, mangos that are available in summer are almost non-existent in grocery shops in winter. The ABS method means that the weight of mangos in the basket of fruit consumed would vary from practically zero in winter to, say, 5% in summer.

We have been exploring web-scraping to help forecast fruit and vegetable prices in the current quarter CPI

In our view, the increased use of transactions data in the CPI should help in nowcasting the current-quarter CPI.

Most banks, NAB included, usually prepare ‘bottom-up’ forecasts of the CPI, which involves forecasting prices for the 87 “expenditure classes” that comprise the finest publicly-available split of the CPI.

This typically involves a mix of models and judgment, incorporating petrol prices and wholesale fruit and vegetable prices and known price changes.

Since late 2018, we have been using a web-scraper to access the websites of supermarkets to read and save the publicly-available prices of all fruits and vegetables.

We already have weekly petrol prices from the Australian Institute of Petroleum so we concentrated on fruit and vegetable prices, which together with fuel are known as the “volatile items” component of the CPI.

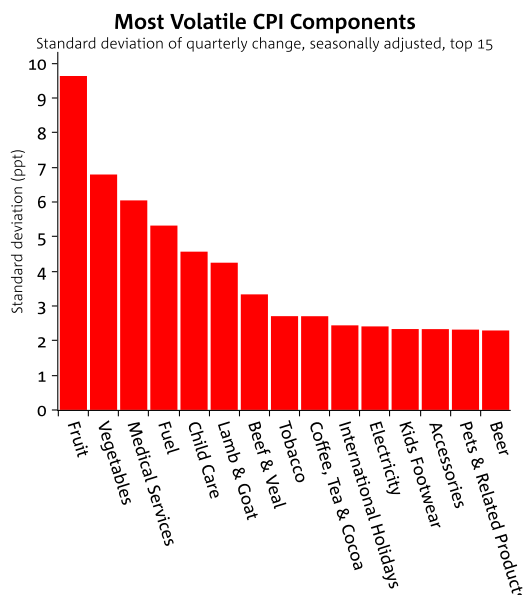
Fruit and vegetables each account for just over 1% of the CPI basket, but the significant volatility of their prices

¹ See Australian Bureau of Statistics, *The use of transactions data to compile the Consumer Price Index*, September 2013 and *Enhancing the Australian CPI: A roadmap*, August 2015.

means that they can have a large impact on the headline CPI.

- The standard deviation of quarterly growth in prices of these two items is very large at 9.6ppt for fruit and 6.8ppt for vegetables. These translate to roughly a 0.1ppt contribution each to quarterly CPI inflation, which is significant considering quarterly headline inflation has averaged 0.5% in the decade to date.

Chart 1: Fruit and vegetable prices are the most volatile components of the CPI

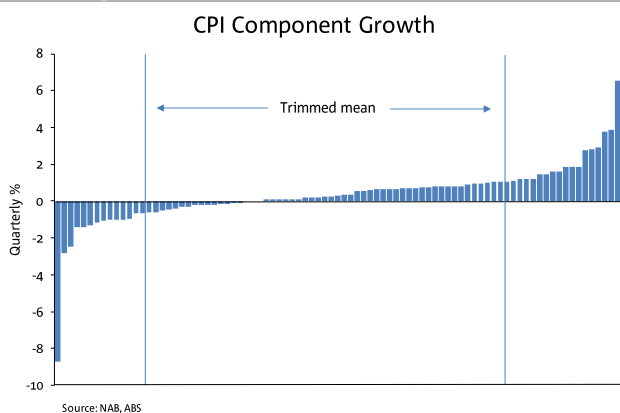


Source: National Australia Bank, ABS

Source: Australian Bureau of Statistics, National Australia Bank

Large movements in fruit and vegetable prices can also impact statistical measures of core inflation by skewing the weighted distribution of quarterly growth in the CPI components. This is important given that the trimmed mean CPI, which is the RBA's preferred measure of underlying inflation, excludes the top and bottom 15% of the distribution.

Chart 2: The trimmed mean CPI takes out the top and bottom 15% of the distribution



Source: NAB, ABS

Note: As at Q1 2019.

Source: Australian Bureau of Statistics, National Australia Bank

Web-scraped prices showed the large impact of the Queensland floods

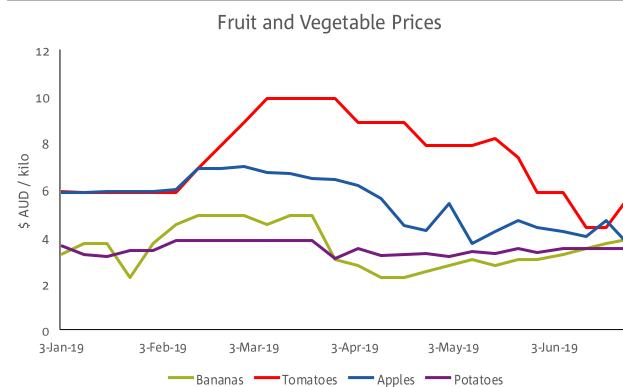
In using the web-scraped prices to forecast fruit and vegetables in the CPI, we picked the most common fruits

and vegetables based on information from the ABS Household Expenditure Survey. We then created weekly time series of unit prices for each fruit and vegetable by averaging daily prices per kilo, for these items to create weekly time series for each fruit and vegetable. This allowed us to calculate monthly and quarterly changes in prices.

Given we started web-scraping late last year, Q1 2019 was the first quarter where we could fully utilise the data. This was a revealing exercise as it showed the clear impact of the Queensland floods, a factor we had already considered in preparing our CPI forecast for the quarter, but would have been difficult to quantify without the web-scraper.

- The flood-driven impact was substantial for broccoli (a 35% price rise in Q1), lettuce (33%), tomatoes (30%), bananas (20%), berries (20%) and apples (15%).

Chart 3: Retail prices of selected fruit and vegetables showed a clear effect from the Queensland floods



Source: Australian Bureau of Statistics, National Australia Bank

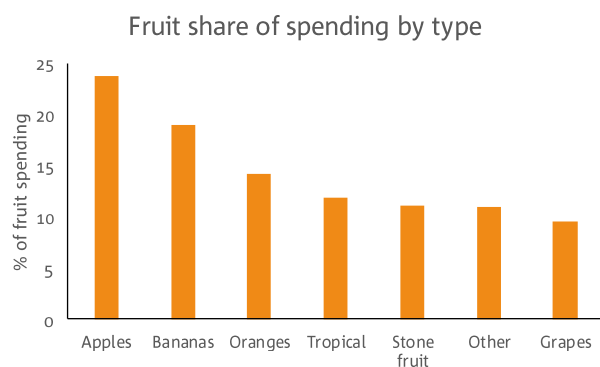
Changing shares of different fruits and vegetables need to be taken into account when nowcasting

In mapping the web-scraped prices to the CPI, our nowcast allowed for households to change their spending in response to price changes.

We calculated the sensitivity of households to price changes by: (1) calculating the relative importance of different fruits and vegetables; and (2) allowing these shares to change as households substituted between fruits and vegetables as prices changed.

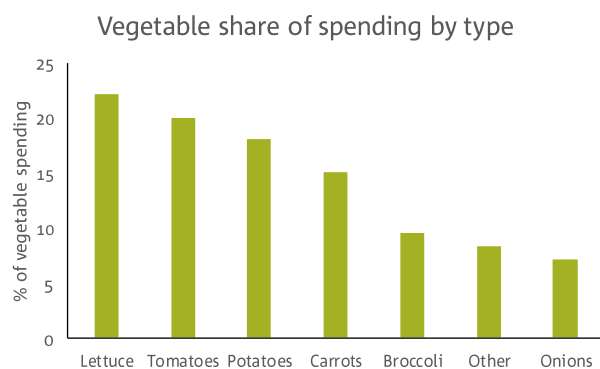
In the first step, we used detailed data from the ABS Household Expenditure Survey (HES) to calculate the shares of different fruits and vegetables in the CPI given the ABS does not publish the CPI weights for individual goods and services.

Chart 4: Apples and bananas are the most common fruits



Note: Calculated from the 2015-16 household expenditure survey.
Source: Australian Bureau of Statistics, National Australia Bank

Chart 5: Lettuce, tomatoes and potatoes are the most popular vegetables



Note: Calculated from the 2015-16 household expenditure survey.
Source: Australian Bureau of Statistics, National Australia Bank

Next, we allowed these weights to change, which has the effect of muting a raw price change when mapping across to the CPI.

To do this we used the estimates of price sensitivities from earlier work by Ulubasoglu et al. (2015) and Horticulture Australia.² Their results suggest that a 1% increase in the price of fruit results in a 0.7 to 1% decline in demand for fruit, while a 1% rise in the price of vegetables reduced demand by 0.5-0.6%. This led us to assume average elasticities within the fruit and vegetable categories of 0.8% and 0.6%, respectively.

Using these figures we let the shares from the HES vary from quarter to quarter based on the extent of the price movements. In this way, we muted the impact of large individual price movements – such as those reflecting the Queensland floods in Q1 – when estimating overall fruit and vegetable prices in the CPI.

Fruit and vegetable prices fell in Q2, reversing the Q1 flood-related rises

Overall, our tracking of produce prices shows fruit prices have fallen 16.4% in Q2 after a 8.1% rise in Q1, while vegetable prices have fallen 3.5% in Q2 after rising by 19.9% in Q1.

Adjusting for substitution to map across to the CPI, we estimate that fruit prices are down a much smaller 2.5%

after a 1.2% increase in Q1, while vegetable prices are down 1.6% after a 9% rise.

This suggests that the sharp price rises in Q1 as the result of flooding in Queensland have largely been reversed, such that fruit and vegetables should subtract 0.05 ppt from the Q2 CPI after adding 0.1ppt in Q1.

Chart 6: The CPI measures of fruit ...

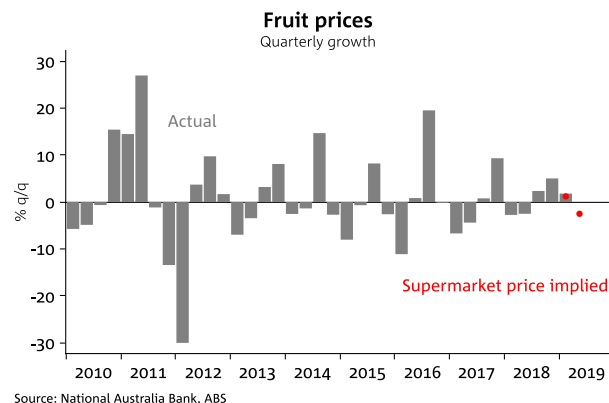
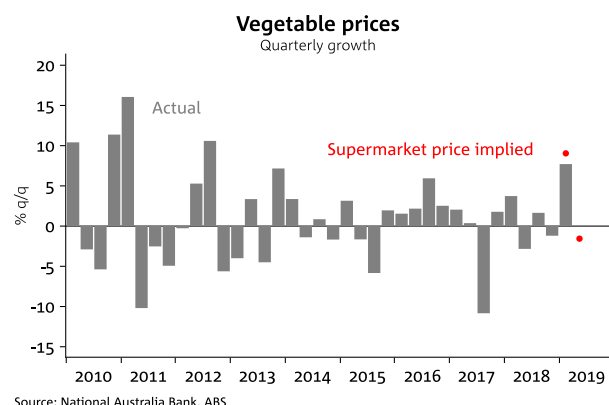


Chart 7: ... and vegetables



Other timely price data suggest there was a 10% rise in petrol prices in Q2, contributing 0.3pp to the Q2 headline CPI. These partial data point to a 0.4% q/q / 1.4% y/y outcome for the CPI in the quarter.

We plan to expand web-scraping to other prices

Given the increased importance of transactions data in the construction of the CPI, we plan to expand our coverage of web-scraping and progressively incorporate the work in our nowcasting of inflation.

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² See [Food demand elasticities for Australia](#), Ulubasoglu, Mallick, Wadud, Hone and Haszler, 2015.

CALENDAR OF ECONOMIC RELEASES

Country	Economic Indicator	Period	Forecast	Consensus	Actual	Previous	GMT	AEST
Monday, 1 July 2019								
GE	Retail Sales MoM / YoY	May		0.5/2.7		-2/4	1 to 3 July	
NZ	RBNZ's Bascand speaks on Macroprudential Policy						21.00	7.00
AU	AiG Perf of Mfg Index	Jun				52.7	22.30	8.30
JN	Tankan Large Mfg Index	2Q		9		12	23.50	9.50
AU	CoreLogic House Px MoM	Jun				-0.1	0.00	10.00
AU	Melbourne Institute Inflation MoM / YoY	Jun		/		0/1.7	1.00	11.00
CH	Caixin China PMI Mfg	Jun		50.1		50.2	1.45	11.45
NZ	Treasury Publishes Monthly Economic Indicators						2.00	12.00
JN	Vehicle Sales YoY	Jun				4.8	5.00	15.00
US	Fed Vice Chairman Clarida Speaks on Monetary Policy						6.15	16.15
AU	Commodity Index SDR YoY	Jun				12.6	6.30	16.30
EC	ECB Vice President Guindos Speaks in Frankfurt						6.45	16.45
CH	PBOC's Yi speaks in Helsinki						7.00	17.00
GE	Markit/BME Germany Manufacturing PMI	Jun F		45.4		45.4	7.55	17.55
GE	Unemployment Claims Rate SA	Jun		5		5	7.55	17.55
EC	Markit Eurozone Manufacturing PMI	Jun F		47.8		47.8	8.00	18.00
UK	Markit UK PMI Manufacturing SA	Jun		49.5		49.4	8.30	18.30
EC	Unemployment Rate	May		7.6		7.6	9.00	19.00
US	Markit US Manufacturing PMI	Jun F		50.1		50.1	13.45	23.45
US	ISM Manufacturing	Jun		51		52.1	14.00	0.00
US	Construction Spending MoM	May		0		0	14.00	0.00
Tuesday, 2 July 2019								
NZ	NZIER Business Opinion Survey						22.00	8.00
NZ	Building Permits MoM	May				-7.9	22.45	8.45
JN	Monetary Base End of period	Jun				511.8	23.50	9.50
AU	RBA Cash Rate Target	2 July	1	1		1.25	4.30	14.30
UK	Nationwide House PX MoM / YoY	Jun		0.2/0.5		-0.2/0.6	6.00	16.00
EC	PPI MoM	May		0.1		-0.3	9.00	19.00
AU	RBA Governor Lowe speaks in Darwin						9.30	19.30
US	Fed's Williams Speaks on Global Economic and Policy Outlook						10.35	20.35
CA	Markit Canada Manufacturing PMI	Jun				49.1	13.30	23.30
US	Fed's Mester to Speak on Economy in London						15.00	1.00
Wednesday, 3 July 2019								
NZ	Dairy Auction Avg. Winning Price MT					3208	early am	
NZ	QV House Prices YoY	Jun				2.3	17.00	3.00
AU	AiG Perf of Services Index	Jun				52.5	22.30	8.30
JN	Markit Japan PMI Services	Jun				51.7	0.30	10.30
NZ	ANZ Commodity Price	Jun				0	1.00	11.00
AU	Building Approvals MoM / YoY	May	-1/-21.8	0/-21.5		-4.7/-24.2	1.30	11.30
AU	Trade Balance	May	5800	5250		4871	1.30	11.30
CH	Caixin China PMI Services	Jun		52.6		52.7	1.45	11.45
GE	Markit Germany Services PMI	Jun F		55.6		55.6	7.55	17.55
PO	Bank of England's Cunliffe Speaks at Conference in Lisbon						10.00	20.00
UK	BOE's Broadbent speaks in London.						12.15	22.15
US	Trade Balance	May		-53.5		-50.8	12.30	22.30
US	Initial Jobless Claims	29-Jun		221		227	12.30	22.30
US	Markit US Services PMI	Jun F		50.7		50.7	13.45	23.45
US	Durable Goods Orders	May F		-1.3		-1.3	14.00	0.00
US	Factory Orders	May		-0.5		-0.8	14.00	0.00
US	ISM Non-Manufacturing Index	Jun		56		56.9	14.00	0.00
EC	ECB's Villeroy speaks in Paris						14.30	0.30
Thursday, 4 July 2019								
AU	Retail Sales MoM	May	0.2	0.2		-0.1	1.30	11.30
AU	Job vacancies	May				1.4	1.30	11.30
EC	ECB Chief Economist Lane Speaks in Frankfurt						7.00	17.00
EC	Retail Sales MoM / YoY	May		0.4/1.6		-0.4/1.5	9.00	19.00
EC	ECB's de Guindos, Enria, Koenig Speak at Conference in Lisbon						9.10	19.10
Friday, 5 July 2019								
AU	AiG Perf of Construction Index	Jun				40.4	22.30	8.30
JN	Leading Index CI	May P		95.4		95.9	5.00	15.00
GE	Factory Orders MoM / YoY	May		-0.2/-6.3		0.3/-5.3	6.00	16.00
CA	Net Change in Employment	Jun		10		27.7	12.30	22.30
CA	Unemployment Rate	Jun		5.5		5.4	12.30	22.30
CA	Hourly Wage Rate Permanent Employees YoY	Jun		2.75		2.6	12.30	22.30
US	Change in Nonfarm Payrolls	Jun		160		75	12.30	22.30
US	Unemployment Rate	Jun		3.6		3.6	12.30	22.30
US	Average Hourly Earnings MoM / YoY	Jun		0.3/3.2		0.2/3.1	12.30	22.30
Upcoming Central Bank Interest Rate Announcements								
Australia, RBA		2-Jul	1.00%	1%		1.25%		
Canada, BoC		10-Jul	1.75%	1.75%		1.75%		
Europe, ECB		25-Jul	-0.4%	-0.4%		-0.4%		
Japan, BoJ		30-Jul	-0.1%	-0.1%		-0.1%		
US, Federal Reserve		31-Jul	2.25-2.5%	2.25-2.5%		2.25-2.5%		
UK, BOE		1-Aug	0.75%	0.75%		0.75%		
New Zealand, RBNZ		7-Aug	1.25%	1.25%		1.5%		

GMT: Greenwich Mean Time; AEST: Australian Eastern Standard Time

FORECASTS

Economic Forecasts																				
	Annual % change				Quarterly % change															
					2018				2019				2020				2021			
Australia Forecasts	2018	2019	2020	2021	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Household Consumption	2.6	1.5	2.3	2.3	0.4	0.8	0.3	0.4	0.3	0.2	0.5	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.6
Underlying Business Investment	0.9	0.9	4.3	3.6	0.6	-1.0	-2.1	0.0	0.6	1.2	0.7	1.8	0.3	1.7	0.4	1.4	0.4	0.9	0.7	1.5
Residential Construction	4.7	-8.2	-8.3	-1.6	4.1	1.7	0.7	-2.9	-2.5	-3.3	-3.0	-2.2	-2.0	-1.8	-1.9	-0.8	-0.2	0.5	0.2	0.8
Underlying Public Spending	5.0	5.4	4.5	4.1	1.4	0.4	2.5	1.6	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0
Net Exports (a)	0.7	0.6	-0.3	-0.4	0.5	0.2	0.3	-0.2	0.2	0.3	0.1	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Inventories (a)	0.1	-0.2	-0.1	0.0	-0.1	0.2	-0.3	0.2	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Domestic Demand (q/q %)	--	--	--	--	0.9	0.6	0.5	0.4	0.1	0.3	0.4	0.7	0.6	0.7	0.5	0.7	0.6	0.7	0.7	0.8
Dom Demand (y/y %)	2.9	1.4	2.3	2.7	3.4	3.2	2.8	2.4	1.6	1.3	1.2	1.6	2.0	2.4	2.5	2.5	2.6	2.6	2.8	2.8
Real GDP (q/q %)	--	--	--	--	1.0	0.9	0.3	0.2	0.4	0.4	0.4	0.8	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.7
Real GDP (y/y %)	2.8	1.7	2.3	2.3	3.1	3.1	2.8	2.4	1.8	1.4	1.5	2.1	2.2	2.4	2.4	2.2	2.2	2.3	2.3	2.4
CPI headline (q/q %)	--	--	--	--	0.4	0.4	0.4	0.5	0.1	0.4	0.4	0.6	0.4	0.4	0.5	0.7	0.5	0.5	0.6	0.7
CPI headline (y/y %)	1.9	1.7	1.8	2.2	1.9	2.1	1.9	1.8	1.4	1.4	1.3	1.4	1.6	1.7	1.8	1.9	2.0	2.2	2.3	2.3
CPI underlying (q/q %)	--	--	--	--	0.5	0.5	0.3	0.4	0.2	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5
CPI underlying (y/y %)	1.8	1.4	1.5	1.9	1.9	1.7	1.7	1.7	1.4	1.4	1.3	1.3	1.5	1.4	1.5	1.6	1.8	1.9	2.0	2.0
Private wages (q/q %)	--	--	--	--	0.5	0.6	0.6	0.5	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Private wages (y/y %)	2.1	2.4	2.7	2.8	1.9	2.1	2.2	2.3	2.4	2.4	2.4	2.5	2.6	2.7	2.7	2.8	2.8	2.8	2.8	2.8
Unemployment Rate (%)	5.3	5.2	5.3	5.4	5.5	5.5	5.1	5.0	5.1	5.2	5.2	5.2	5.3	5.3	5.3	5.3	5.3	5.4	5.3	5.4
Terms of trade	1.8	2.9	-3.8	-1.5	3.2	-1.2	1.1	2.9	3.1	-1.1	-2.6	-1.4	-0.6	-1.0	0.4	-0.2	-0.2	-0.8	-0.8	-0.5
Current Account (% GDP)	-2.0	-0.9	-1.8	-2.5	-2.2	-2.5	-2.1	-1.3	-0.6	-0.5	-1.1	-1.4	-1.5	-1.8	-1.8	-2.0	-2.1	-2.3	-2.6	-2.8

Source: NAB Group Economics; (a) Contributions to GDP growth

Exchange Rate Forecasts						
	1-Jul	Sep-19	Dec-19	Mar-20	Jun-20	Sep-20
Majors						
AUD/USD	0.701	0.71	0.73	0.74	0.75	0.75
NZD/USD	0.67	0.67	0.68	0.69	0.70	0.70
USD/JPY	108.3	107	108	107	106	105
EUR/USD	1.14	1.12	1.13	1.13	1.13	1.14
GBP/USD	1.27	1.22	1.24	1.24	1.25	1.27
USD/CNY	6.87	6.96	6.95	6.92	6.90	6.85
USD/CAD	1.31	1.33	1.30	1.29	1.27	1.28
USD/CHF	0.98	0.98	0.98	1.02	1.02	1.00

Australian Cross Rates						
AUD/NZD	1.04	1.06	1.07	1.07	1.07	1.07
AUD/JPY	75.9	76	79	79	80	79
AUD/EUR	0.62	0.63	0.65	0.65	0.66	0.66
AUD/GBP	0.55	0.58	0.59	0.60	0.60	0.59
AUD/CNY	4.81	4.94	5.07	5.12	5.18	5.14
AUD/CAD	0.92	0.94	0.95	0.95	0.95	0.96
AUD/CHF	0.69	0.70	0.72	0.75	0.77	0.75

Interest Rate Forecasts						
	1-Jul	Sep-19	Dec-19	Mar-20	Jun-20	Sep-20
Australian Rates						
RBA cash rate	1.25	1.00	0.75	0.75	0.75	0.75
3 month bill rate	1.21	1.10	0.85	0.85	0.85	0.85
3 Year Swap Rate	1.05	0.80	0.80	1.10	1.25	1.40
10 Year Swap Rate	1.58	1.38	1.38	1.60	1.75	1.90
Offshore Policy Rates						
US Fed funds	2.50	2.00	2.00	2.00	2.00	2.00
ECB deposit rate	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40
BoE repo rate	0.75	0.75	0.75	0.75	0.75	0.75
BoJ excess reserves rate	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10
RBNZ OCR	1.50	1.50	1.25	1.25	1.25	1.25
China 1yr lending rate	4.35	4.35	4.35	4.35	4.35	4.35
China Reserve Ratio	13.5	12.00	12.00	12.00	12.00	12.00
10-year Bond Yields						
Australia	1.36	1.20	1.20	1.40	1.50	1.60
United States	2.04	1.90	1.90	2.00	2.10	2.20
New Zealand	1.60	1.60	1.65	1.85	2.00	2.20

Sources: NAB Global Markets Research; Bloomberg; ABS

Global GDP				
	2018	2019	2020	2021
Australia	2.8	1.7	2.3	2.3
United States	2.9	2.4	1.7	1.7
Eurozone	1.8	1.2	1.3	1.4
United Kingdom	1.4	1.5	1.4	1.5
Japan	0.8	0.7	0.4	0.9
China	6.6	6.3	6.0	5.8
India	7.1	6.7	7.2	7.1
New Zealand	2.8	2.4	2.6	2.5
World	3.6	3.2	3.3	3.5

Commodity prices (\$US)					
	1-Jul	Sep-19	Dec-19	Mar-20	Jun-20
Brent oil	65.9	68	70	70	75
Gold	1394	1300	1310	1350	1370
Iron ore	118	79	76	72	68
Hard coking coal*	191	178	170	165	160
Thermal coal	72	85	90	93	90
Copper	5982	6400	6300	6225	6150
Aus LNG**	10	12	12	12	12

* FOB quarterly contract prices (thermal coal is JFY contract)

** Implied Australian LNG export prices

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