



Ron Bewley PhD, FASSA

Woodhall's Weekly

- **What is an efficacy rate?**
- **Aussie jobs data are better than expected**
- **Sweden goes into lockdown**

Overview

One of our main reasons for writing these 'Woodhall Weeklies' is to call out people who are misleading and misinterpreting facts – so we can better navigate the incessant stream of information bombarding investors. No one can predict the future with a great deal of confidence but we have no confidence when, deliberately or otherwise, commentators and analysts mislead. If we are reasonably informed, that is about the best we can hope for to make prudent investment decisions.

A good friend and colleague (and an avid regular reader of the Weekly!) called this week to ask what we understood by the term *efficacy rate* in the Moderna (94.5%) and Pfizer (90.0%) COVID-19 clinical trials. We had reported these results in our Weekly. It turns out that we had gone along with the tide. Our friend (and others we later talked to) also misunderstood. In hindsight we think most journalists, politicians, and others are (were) equally in the dark.

Our response to the Moderna number in that phone call was, "If 1,000 people are vaccinated against COVID-19, 945 people will not get the virus when exposed. Conversely, 55 people will still get sick". This understanding is not true!

It turns out (from the Moderna press release that 30,000 people were in the trial with half only getting a placebo (or 'sugar pill'). Of the 15,000 on the placebo, only 90 contracted the virus in a specified period (0.60%) but, of course more in time might

(will) get the virus. Of the 15,000 on the actual vaccine, only 5 contracted the virus! The 94.5% efficacy rate is the result of $5/(90+5)$ being the ratio of those who contracted with the vaccine to the total number so infected. In other words, we are talking only about a very small sample of people in the study (95) who actually tested positive for the virus! The other 29,905 participants in the study are irrelevant in the calculation!

The Pfizer study has since been updated (completed we think) and it now has a 95.3% efficacy rate based on 22,000 people in each group – vaccine and placebo – with 8 and 162, respectively, testing positive for COVID-19. Given that (we believe) the Moderna and Pfizer vaccines are based on the same technology, we take some comfort from the similar rates of efficacy even though the sample sizes of positive results are very small.

Given that different groups of people have different characteristics such as age, gender, race, pre-existing conditions, etc it is important that the samples be properly constructed. Moderna (from its press release) seems to have taken reasonable steps on this front but, since the rate of infection is so low (0.6%), small differences in the proportions of susceptible people in the large study can make a big difference. Just think back to the polling errors for the last two US presidential elections, Brexit, Scottish referendum and the last Australian Federal election! In these major elections, around 50% vote each way – and not just a 0.6% outcome in the Moderna trial. On top of that, people in the COVID-

Woodhall Investment Research Pty Ltd. (ABN 17 141 486 160); www.woodhall.com.au

General Advice Warning: This note has been prepared without taking account of the objectives, financial situation or needs of any particular individual. Any individual should, before acting on the information in this note, consider the appropriateness of the information, having regard to the individual's objectives, financial situation and needs and, if necessary, seek appropriate professional advice. Past returns are no guarantee of future performance.

19 study might come from very different geographical regions – not just by population density, temperature and humidity, etc – but also in terms of lockdowns, occupations, etc. Since we do not know in any great detail what causes transmission, they could not have been properly controlled for in what may later be found to be important factors.

So, if in the Moderna study only 0.6% of people tested positive for the virus (and even less were chronic) without a vaccine, what will happen when the vaccine is readily available? And if no vaccine produces 'only' 0.6% infection rates, why are we so worried? The actual rate of infection in the US is over 3.5% and that does not allow for the probable fact that many people (possibly with no symptoms or mis-diagnosed) do not get tested and do not know that they would have tested positive.

We presume, but we do not know, that the window for the clinical trials is very much shorter than the actual period that the virus has been around. So, if the 0.6% is going to blow out to above 3.5% will the efficacy rate stay the same? Could it be that the vaccine only slows down the period before exposure translates into positive results and, therefore, the real efficacy is unknown? Who knows? We certainly do not know.

A 50% efficacy rate means that the vaccine is of no value (equal numbers in the two groups become infected). A rate of 94.5% only means it is (a lot) better than what would have happened without a vaccine but that number alone doesn't really help us predict what will happen when and if the vaccines are rolled out.

With the placebo infection rate at 0.6%, the new vaccines, as welcome as they are, might still require lockdowns and travel restrictions for quite some time. While we acknowledge these vaccines are a great help, we feel we have little insight into how people may react when actually faced with the virus. Will they feel safe and carry on without social distancing etc? Will they decline to get vaccinated? How long will the effect of the vaccine last?

It is unethical to expose people to the virus. We are taking (on chance) the reactions being measured are from responsible people trying to keep away from the virus. We took part in a global clinical trial for a different condition last year in Australia as part of the control group. It turned out we were given the drug and not the placebo. The trial was terminated for whatever reason. When we spoke to friends and colleagues, we were often asked why we took part. It was onerous in terms of time, blood and urine tests, nasal tests akin to the COVID procedure,

ECGs etc and some discomfort. We took part as a 'public service'. We had some spare time and somebody has to do it or no new drugs would ever pass. We even wear a mask now while putting out the rubbish or going to the local shops. Maybe COVID trial participants are the sort of people who follow rules better than others! We don't know. These data might better reflect public health initiatives rather than precise immunisation effects.

We are not trying to suggest that these new vaccine results are not great results for public health. When it comes to the impact of the virus on the economy (after lockdowns, travel restrictions and the rest) are taken into account what will be the relevant outcomes? We think markets have perhaps got a bit ahead of themselves. That is why we are carrying more cash in our asset allocation than normal. We are ready to pounce if something goes wrong but we would be a lot happier if we had wonder drugs and our returns were a little less because cash earns just about a zero return! Hope for the best but invest for the downside!

Our unemployment rate went up one notch to 7.0% but an even worse 7.2% was expected in the Reuters survey. There were 178,800 new jobs created against a fall expected by Reuters.

Clearly, we are going to get mixed signals as the virus and our economic reactions to it evolve. Sweden started off by going along with the herding immunity approach but just this week gave up and started lockdowns.

The US seems no closer to reaching a COVID stimulus package and the stand-off by Trump isn't helping the situation.

On the bright side, the Boeing 737 Max has been given the green light to fly again by the FAA. But many people don't yet want to fly on any plane!

Australian-China relations continue to be strained with China calling out Australia for its contribution to the situation.

While new highs have been reached on Wall Street, we do not see an easy run into January 20th when Joe Biden will presumably be sworn in. Joe might not hit the ground running as his team is being denied access to key briefings.

Even if Joe had a dream transition, what could he do that hasn't already be done to solve the pandemic and the economic support? Without the January 5th run-off elections in Georgie going his way, the Republicans do not appear to be willing to make it easy for him.

Market expectations

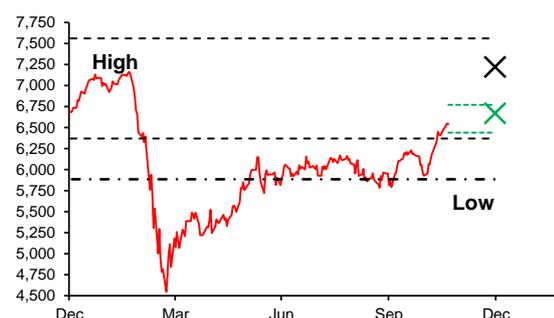
Our start-of-year 2020 eoy forecasts for the ASX 200 are given in Table 1 (left column) together with the latest calculations (right column) and last week's (middle column) for comparison. Chart 1 includes a trace of the index to compare with the forecast highs and lows.

Table 1: ASX 200 range forecasts for 2020

Forecast CY20	Forecast origin		
	31-Dec-2019	13-Nov-2020	20-Nov-2020
Low	6,350	6,300	6,450
High	7,550	6,700	6,750
End	7,200	6,550	6,650
Fair value	6,750	6,200	6,250
Exuberance	-1.3%	3.0%	4.4%
ASX 200	6,684	6,405	6,539

Note: the latest forecasts in the right-hand column do not provide updates of the original forecasts in the left column of numbers. Rather the latest forecasts facilitate an assessment of the degree to which the original forecasts are on track, or not. Moreover, exuberance is assumed to be eroded over a 12-month period and so the 'latest' forecasts are less reliable the closer is the current date to the end-of-year and the greater is any mispricing.

Chart 1: Graphical representation of Table 1



Note: the low and high are based on 'normal' volatility levels. The 'high-volatility' low allows for well above normal volatility and a breach of which starts to suggest the base-line forecasts may no longer be relevant. The dashed black lines are derived from average volatility assumptions; the dot-dash line corresponds to high volatility.

The eoy forecast for 2020 (left-hand column in Table 1) was 7,200 with a forecast high of 7,550 and a forecast low under normal volatility of 6,350. The 'high-volatility' forecast low was 5,900. The updated eoy 2020 forecast (Table 1, last column) is 6,650. Fair value is 6,250.

It should be stressed that when markets are heavily mispriced, the speed with which mispricing is eroded is key to making a good forecast. In this table we assume that it takes 12 months to erode the mispricing which is possibly a very conservative assumption.

Our eoy 2020 forecasts for the S&P 500 are given in Table 2. Because overnight data are not available

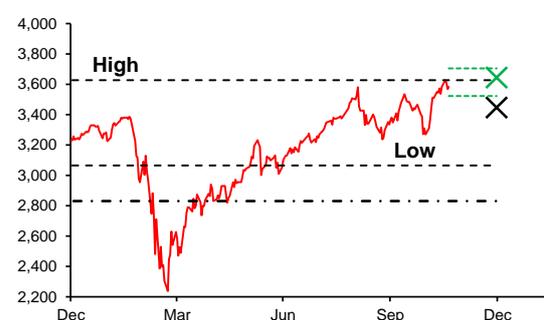
to us until the afternoon, the latest data for Wall Street will usually be presented for the day before the ASX 200 in this *Weekly* that we try to post at around 10am on a Saturday.

Table 2: S&P 500 range forecasts for 2020

Forecast CY20	Forecast origin		
	31-Dec-2019	12-Nov-2020	19-Nov-2020
Low	3,060	3,480	3,520
High	3,630	3,680	3,710
End	3,450	3,620	3,650
Fair value	3,100	3,450	3,470
Exuberance	4.0%	2.6%	3.2%
S&P 500	3,231	3,537	3,582

Note: see notes for Table 1.

Chart 2: Graphical representation of Table 2



Note: see notes to Chart 1.

Our original forecast for eoy 2020 was 3,450 with a high of 3,630 and a low of 3,060. The 'high-volatility' low was 2,830. The updated eoy forecast for the S&P 500 is 3,650. Fair value is 3,470

Market stats

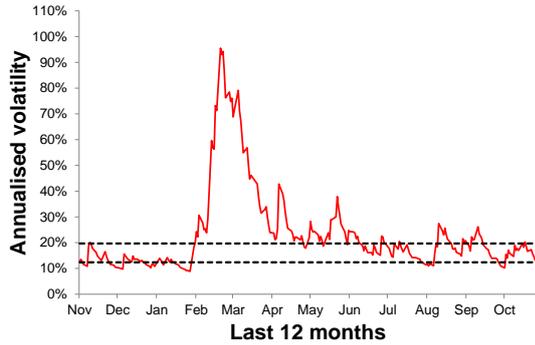
Our market volatility index (Chart A-1 to be found in the Chart Appendix) is average at 12.3%. Our Fear Index (Chart A-2) is in the zone at 8.2%. The VIX stands above average at 23.7. Our Disorder index (Chart A-3) is in the zone at 0.9%.

Our updated 12-month capital gains forecast (Chart A-4) is +25.1%. The market is dear at 4.4% (Chart A-5). So that leaves the adjusted rolling 12-month capital gains' forecast at +19.5%. The comparable 12-month adjusted capital gains forecast for the S&P 500 stands at about +17.0%.

Sector pricing (Chart A-6) is such that the Property (+10.2%), IT (+8.0%), Energy (+7.9%) and Financials (+7.8%) are in the danger zone. Telcos (+4.4%) and Materials (+3.1%) are significantly overpriced and all other sectors are inexpensive or cheap.

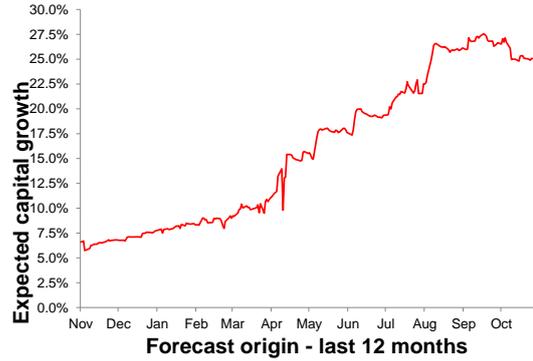
Chart Appendix

Chart A-1: Market volatility



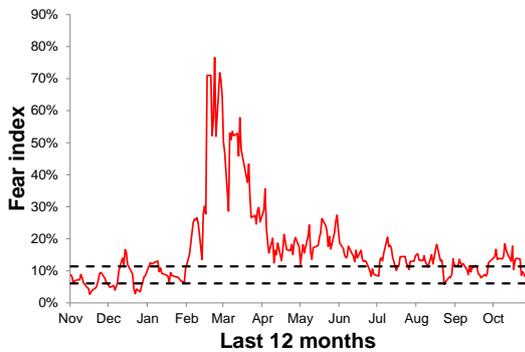
Notes: the lower dotted line depicts the average volatility pre the GFC; the higher dotted line depicts the average level of volatility during the GFC - up to December 2009. The red line is a daily estimate of the ASX 200 index volatility.

Chart A-4: 12-month capital gains forecasts



Notes: Each business day we update our estimates for capital gains on the ASX 200 for the following 12 months. For example, the left-most estimate on the vertical axis is a forecast for the 12 months concluding today. The right hand estimate is for the 12 months from today.

Chart A-2: Fear index



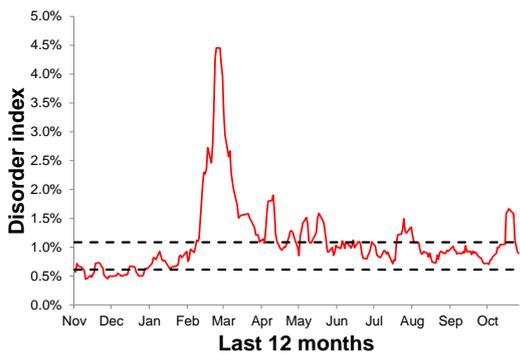
Notes: The fear index is a measure of 'excess' volatility denoting behaviour outside the open/close values each day. The two dotted lines depict the band in which the fear index resided before the GFC in two thirds of days. Extended periods below the lower dotted line might indicate complacency. Extended periods, or extreme values, of the index above the higher dotted line might indicate a propensity for the market to overreact in an irrational manner.

Chart A-5: Market exuberance



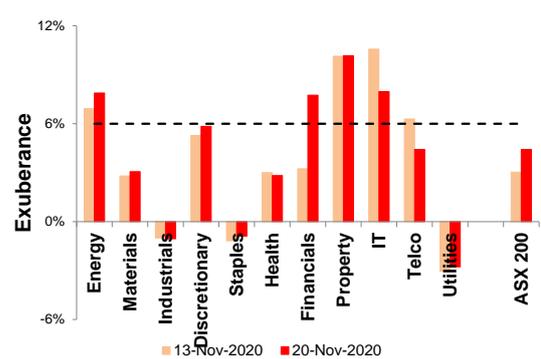
Notes: Exuberance is our measure of mispricing on the ASX 200. A value below the solid black line denotes the market is perceived to be cheap and above that line expensive. Experience suggests that exuberance above +6%, denoted by the dotted line, is an indicator of a potential correction of 6% to 10% - or for the market to move sideways for an extended period.

Chart A-3: Disorder index



Notes: The disorder index measures the degree to which the 11 sectors' daily returns move in harmony. The two dotted lines depict the band in which the disorder index resided before the GFC in two thirds of days. Extended periods below the lower dotted line might indicate belief that there is little information to have different impacts on different sectors. Extended periods, or extreme values, of the index above the higher dotted line might indicate investors and traders are lurching from sector to sector in search of a new trend.

Chart A-6: Sector exuberance



Notes: The estimates in this chart are based on the same notions as for Chart A-5. More detailed information on mispricing is contained in our companion weekly publication in the same section of our website

Glossary

Abenomics – Japan's former Prime Minister Shinzo Abe came to power early in 2013 and has brought a new economic style to managing that economy. PM Suga has vowed to continue the policies.

ASX forecasts – We have further supplemented our forecasting process for the ASX 200 by including not just a forecast of the peak (at some unspecified time during the year) but also the low. Thus, we now have an end point (e-o-y forecast) and a range for the whole year. Naturally, on a rising market the low is more likely to occur earlier in the year and the high nearer the end. Since we publish our forecasts to the nearest 50 points to reduce the sense of false accuracy a change of just a couple of points can kick the forecast over by 50 points at around the 25 and 75 marks.

Australian debt ceiling – Labor brought in a debt ceiling in mid 2008 of \$75bn to self-impose some fiscal discipline during the onset of the GFC. Within seven months that ceiling was almost trebled to \$200bn and it has since been raised to \$300bn during Labor's term in office. Since before 2008 we had no debt ceiling that is equivalent to an infinite ceiling!!!

Bad debt, good debt – Whether one is referring a household or national debt, the classification implies the following. Good debt is expected to produce income or other returns in the future – such as from infrastructure spending or buying a principal place of residence. Bad debt is used to finance 'recurrent' expenditure such as pensions or family holidays.

Black Friday – This term is used for the Friday after Thanksgiving in the US to denote the start of the shopping season for the holidays. Black refers to the accounts going back into the black from increased sales – it is certainly not a negative term!

Brexit – on 23rd July 2016 Britain voted to leave the European Union. The process was expected to be finalised by the end of 2020 but negotiations continue.

CAIXIN (formerly HSBC) flash PMI – CAIXIN publishes an alternative to the official PMI for China. It is based on a survey of predominantly small to medium sized firms – unlike the official version. The number on the 1st of the month gets much less attention than the official but the preliminary, or 'flash', reading gets attention as a read a week or two before the official numbers.

China's shadow banking – In essence, the China government dictates what all banks must lend at and pay for deposits. As a result, if a potential borrower is deemed too risky at the prevailing rate, the banks refuse to lend (rather than increase borrowing rates as may happen here). The 'failed' borrower may then seek funding from the shadow banking system that is not so regulated.

FOMC – The Federal Open Market Committee determines monetary policy in the United States. It can be thought of as being similar to our Reserve Bank board.

GOP – stands for Grand Old Party which is an alternative name for the US Republican Party.

High-Yield Sectors: by this, we mean Financials, Property, Telcos and Utilities.

International Monetary Fund (IMF) – Managing Director, Kristalina Georgieva (French), since 1st Oct 2019. The IMF is charged with fostering global monetary cooperation.

ISM - Institute of Supply Management produces a 'PMI-like' number for the US economy. Like the PMI, 50 is the cut off between improving and worsening expectations.

Long-run mispricing – Our measure is based on analysing trends over more than a century of data. The average period of over-

under-pricing is about 18 months. That is, we do not expect the market to rapidly approach its fair value.

MYEFO (Mid-year economic and fiscal outcome) is a mid-year update on the Australian Budget situation – usually in December.

PMI – This acronym stands for Purchasing Managers Index. There is one for most countries and separate statistics for manufacturing and services. Manufacturing typically gets more attention. The official statistics are published in the first few days of each month – with China on the 1st. A reading less than 50 means the sector is decreasing in its growth rate – so if China growth slows from 8% to 7%, its PMI should be below 50. If the US speeds up from 2% to 2.5%, its PMI should be above 50. Note also the existence of the CAIXIN measure and its 'flash' or preliminary estimate.

Savings ratio – In Australia, the ratio of net savings to household disposable income defines the savings ratio.

Short-run mispricing – Our exuberance measure is our mispricing statistic reported in Chart 5. It is based on 12-month-ahead forecasts of the ASX 200. See the notes under Chart 5.

Tapering – It was the name given to the exit strategy from QE3. It is not a tightening monetary policy – just an increasingly less accommodative stimulus.

US non-farm payrolls data – are usually published on the first Friday of each month. They are generally considered to be the most reliable indicators for employment and unemployment in the US. Roughly speaking, a 200,000 increase in jobs is considered strong. Of course, less new jobs are needed when the economy is running at full employment.

Key people

Australia – Prime Minister, Scott Morrison, (Liberal) since 24th August 2018; Treasurer, Josh Frydenberg, since 24th August 2018; Governor of the Reserve Bank of Australia (**RBA**), Dr Philip Lowe, since 18th September 2016.

China – President Prime Minister, Xi Jinping, since 14th November 2013; Premier, Li Keqiang since 15th March 2013; Yi Gang, President of the People's Bank of China (**PBOC**) since March 2018.

Europe – President of the European Central Bank (**ECB**), Christine Lagarde, since 1st November 2019; Chancellor of Germany, Dr Angela Merkel, since 22nd November 2005; President of France, Emmanuel Macron, since May 2017.

Japan – Prime Minister, Yoshihide Suga, since 16th September 2020; Emperor, Akihito, enthroned 12th November 1990; Governor of the Bank of Japan (**BoJ**), Haruhiko Kuroda, since 20th March 2013.

New Zealand – Prime Minister, Jacinda Arden, October 2017; Governor of the Reserve Bank of New Zealand (**RBNZ**), Adrian Orr, since 27th March 2018.

United Kingdom – Prime Minister, Boris Johnson, since 24th July 2019; Chancellor of the Exchequer, Rishi Sunak, since 13th February 2020; Governor of the Bank of England (**BoE**), Andrew Bailey, since February 2020.

United States of America – President, Donald Trump, from January 20th 2017 (4-year term); Chair of the Federal Reserve Bank (**Fed**), Jerome "Jay" Powell, since 5th February 2018 (4-year term)