

KNOWING what you don't know



Hamish Douglass,
Chairman and Chief
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“ This thing is different. Everybody talks as if they know what’s going to happen and nobody knows what’s going to happen.”

Charlie Munger, 17 April 2020

Donald Rumsfeld, the former US Secretary of Defense in the administrations of George W Bush and Gerald Ford, provided a useful framework to evaluate problems when he stated: “Reports that say that something hasn’t happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say, we know there are some things we do not know.” It is valuable in deciding on a course of action to have a framework of known knowns and known unknowns about the situation or opportunity. Known unknowns could have material or immaterial consequences if they were to occur and you need to have a reasonable basis to assess their impact and likelihood of occurrence.

At Magellan, our task is to carefully assess facts, known and unknown, and then decide what course of action to take. In some circumstances, we will be optimistic when others are fearful and in other situations the reverse will apply. We are not predisposed to action, nor are we driven by a fear of missing out, nor by a concern that we might underperform a benchmark in the short term. We will do what we assess is the appropriate course of action, after a careful assessment of the facts, and not what other people are doing or saying. We suspect this might have been the failing of the George W Bush administration in deciding to invade Iraq as it appeared predisposed to action.

The Rumsfeld framework is useful in assessing what course of action we should take at the

present time. I have set out what we know and what we don’t know about the severe acute respiratory syndrome coronavirus 2 virus (SARS-CoV-2), the search for a cure and the economic impact of the pandemic. The analysis will show why the many known unknowns are making us cautious.

THE VIRUS

It is helpful to explain the nomenclature for the virus and the disease it causes. SARS-CoV-2 is the virus and covid-19 is the disease it causes. This is analogous to HIV being the virus that results in the AIDS disease.

THIS IS WHAT WE KNOW ABOUT THE VIRUS THAT CAUSES THE ILLNESS KNOWN AS COVID-19:

- The SARS-CoV-2 virus is highly contagious, spreads early and often before the host shows any symptoms. This makes it harder to control than other coronaviruses, such as the Middle East respiratory syndrome (MERS) and the severe acute respiratory syndrome (SARS), and other deadly viruses such as Ebola and HIV. The severity of the covid-19 disease ranges from asymptomatic cases and very mild cases to severe and deadly ones, particularly for the elderly and people who have underlying health conditions such as hypertension, diabetes and cardiovascular disease. It is estimated about 5% of people infected with covid-19 progress to a severe case of the disease.

- The pandemic is global with 188 countries affected. As at July 1, there had been over 10 million cases identified and over 500,000 reported deaths. There are some countries (including Australia, China, Japan, New Zealand, South Korea, Taiwan and Vietnam) that have substantially contained the virus with limited ongoing spread. There are other countries with declining levels of transmission but they are still experiencing substantial community spread; these countries include much of Europe and the UK. In other countries, the disease is still accelerating including much of Asia (with concerning trends appearing in India and Indonesia), Africa, the Middle East and much of Latin America (especially in Chile, Brazil and Mexico) and the US.



“There is some evidence that mutations have made the virus more infectious.”

- In response to the mounting economic cost and community pressure, many countries have commenced reopening their economies by removing restrictions on the movement and gatherings of people. In many cases, restrictions are being lifted prior to the virus being contained. By the end of June, 40 US states had experienced an accelerating rate of incidence and increasing hospitalisations while restrictions were being relaxed.

HERE IS A LONGER LIST OF THINGS WE DON'T KNOW ABOUT THE VIRUS:

- How will mutations affect the behaviour of the virus? There is some evidence that mutations have made the virus more infectious. It is unknown if mutations will make the virus more, or less, deadly. The rate and nature of mutations are important issues in the search for a vaccine.
- Are people immune if they have had the virus or will their immunity fade over time and can they be reinfected? Some scientists believe that with coronaviruses people can become reinfected.
- How many people have been infected who have not been identified? If infections are

much more prevalent than thought then it is possible some countries could be closer to achieving community or 'herd' immunity, assuming people cannot be reinfected.

- In the absence of a vaccine, how long will it take to achieve global herd immunity? The 1918–19 Spanish Flu lasted about 12 months in the US and spread in three waves – the first wave occurred in March 1918, the second wave in the northern winter of 1918 starting in October and the third wave in March 1919. Will the lockdown measures in many countries and voluntary social-distancing measures elongate the time frame for herd immunity?
- Will the opening of economies, protests and other gatherings lead to an acceleration of community transmission? Will it be possible to 'contact trace' all the people any infected protestor was near?
- How large will the pandemic become in the Middle East, Central and South America, Africa and Asia (excluding China, Japan, South Korea and Taiwan)? The transmission of the virus appears to be accelerating in many countries in these regions. Can it be contained given the limited ability to test, 'contact trace' and self-isolate? How large will be the loss of life given the limited hospital facilities to treat patients?
- Which countries will suffer a second wave of infection? This appears to be occurring already in countries that are reopening prior to controlling community transmission to minimal levels.
- Will there be a second wave of infections in the northern hemisphere winter later this year, as happened with the 1918–19 Spanish Flu?
- Is it possible to reopen borders, or create travel bubbles between certain countries, prior to a vaccine, without triggering a second wave of infection?
- Will testing, contact tracing and isolation contain a second wave? Some countries such as China and South Korea appear to have effective testing and contact-tracing infrastructure. Which other countries will be able to replicate this infrastructure? What will be the uptake of contact tracing apps in countries where they are voluntary?
- How might governments respond to a second wave of infection? Will countries reintroduce lockdowns? Will governments provide similar amounts of financial support to those affected as was provided in the first wave? How will people respond to a second wave? Will people self-isolate even if governments don't reintroduce lockdown measures?

A CURE

THIS IS WHAT WE KNOW ABOUT A POSSIBLE CURE:

- There is no known cure for covid-19 but there are three possible solutions – herd immunity, a vaccine and therapeutic treatments.
- To achieve herd immunity, it is considered that 60% to 70% of the population would need to develop antibodies to the virus either via infection or vaccination. Given the mitigation measures being taken in many countries around the world, it is possible global herd immunity could take years in the absence of a vaccine. This of course assumes that a person cannot be reinfected.
- In relation to the possibility of, and time frame for, developing a vaccine there is some encouraging news:
 - The virus appears to be mutating slowly. This is a significant advantage over the HIV virus. No vaccine for HIV has been developed in nearly 40 years of research.
 - Scientists are not starting from scratch in developing a vaccine. They understand that similar to MERS and SARS the virus has a spike-like structure on its surface called the S protein that attaches to the surface of human cells. After entering a cell, the virus delays the usual immune response, allowing the virus to spread. A vaccine that targets the S protein would prevent it from binding to human cells and stop the virus from spreading.
 - The scale of vaccine development is encouraging. Reportedly more than 120 different vaccines are under development and 10 vaccines are under clinical evaluation. Regulatory bodies are allowing accelerated clinical trials and governments are funding investment in vaccine production technology and manufacturing capabilities.
- A sobering reality is that no vaccine has been developed for any of the known coronaviruses. There are three approaches to developing a vaccine. They are:
 - Live vaccines that use a weakened form of the virus to cause an immune response without causing the disease. Live vaccines are used for measles, mumps, rubella, smallpox and chickenpox. Live vaccines require extensive safety testing.
 - Inactivated vaccines that use a killed version of the germ that causes the disease to trigger an immune response. Inactivated vaccines are used to prevent

the flu, hepatitis A and rabies. These vaccines usually result in lower immune response and require multiple boosters to provide long-term immunity. The most well-publicised inactive vaccine under development is the ChAdOx1 vaccine developed by the University of Oxford Jenner Institute. This vaccine was developed for the MERS virus, a coronavirus closely related to SARS-CoV-2. A clinical test in chimpanzees showed that no animals treated with this vaccine developed signs of MERS. The vaccine is being studied in phase I human trials in the UK and Saudi Arabia.

- Genetically engineered vaccines that use genetically engineered RNA or DNA to instruct cells to make copies of the S protein to prompt an immune response to the virus. US-based biotech company Moderna Inc is developing and trialling a genetically engineered vaccine known as mRNA-1273. The vaccine has undergone an initial phase I clinical trial involving

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45 adults aged 18 to 55. Preliminary results showed eight patients developed antibodies to the virus. The trial is being expanded to 60 people aged over 55 years old. Moderna has announced that it intends to commence a phase III clinical trial involving 30,000 participants commencing in July. On July 1, Pfizer and BioNTech announced they have commenced phase III clinical trials for a similar genetically engineered vaccine. No genetically engineered vaccine has been approved for human use to date.

- There are significant challenges to developing a vaccine.
 - To ensure safety for a vaccine to be given to billions of people, it will need to be thoroughly tested via extensive clinical trials. Any vaccine will need to go through three phases of clinical testing; phase I is a small trial to test the safety of the vaccine in humans; phase II is to test the formulation and establish the dose of the vaccine to prove effectiveness; and phase III is where

safety and efficacy is established in a wide population. While regulators are attempting to short-cut the approval process, it is unlikely a vaccine will be approved for wide use in fewer than six months from commencing clinical trials. Many experts do not believe a vaccine will be widely available to the public until sometime in 2021 at the earliest.

- To be effective, a vaccine will need to provide people with long-term protection. There are no clinical short cuts to testing the long-term effectiveness of a vaccine and it can only be done by time-based longitudinal studies.
- A particular challenge for finding an effective vaccine for SARS-CoV-2 is to have a vaccine that is effective and safe for elderly people, given the significantly higher mortality rates for older people. The concern is that the elderly don't usually respond as well as young people to many vaccines.
- There are over 200 potential therapeutics being tested in more than 1,100 clinical trials. To date, none of the therapeutic drugs that have been evaluated for the treatment of covid-19 have proven to be effective cures. Therapeutics can target the virus or the host's immune response at different stages of the disease. Simplistically, various drugs are being tested that can be used at the initial or latter stages of the disease:



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- There are numerous drugs and therapies being developed to prevent progression of covid-19 in its initial stage. As at mid-June, only one drug, Remdesivir, had 'emergency use authorisation' by the US Food and Drug Administration. Similar approval for hydroxychloroquine/chloroquine was withdrawn on June 15.
 - o Remdesivir is an antiviral medication that was originally developed by the US-based Gilead Sciences for the treatment of hepatitis C. It was subsequently trialled in the treatment of Ebola and has shown effectiveness in the laboratory

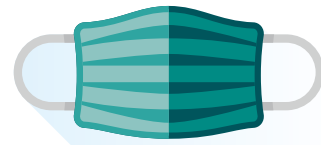
and in animal tests as an antiviral against various coronaviruses. A recent clinical study showed that Remdesivir appeared effective in shortening hospital recovery time for patients with covid-19 (from 15 to 11 days) but did not materially alter mortality outcomes. The clinical study concluded that treating covid-19 with an antiviral drug alone is unlikely to be sufficient.

- There is significant research being undertaken for the development of harvested or manufactured antibodies (either convalescent plasma or monoclonal antibodies) for the treatment of covid-19. Convalescent plasma or monoclonal antibodies are injected into patients to trigger the immune response to fight the disease. Monoclonal antibodies are the most effective treatment for Ebola. There are several phase I clinical trials of monoclonal antibodies being undertaken. The drawback of convalescent plasma and monoclonal antibodies is they are unstable and will be effective only as long as the antibodies are alive. Numerous medical experts believe manufactured antibodies could be a temporary solution to protect health and other 'front line' workers who are at high risk of being infected and to treat infected people.
- There are several drugs being used during the progression of covid-19 to treat its medical complications. Drugs are being tested to:
 - o suppress the immune response that is associated with the exaggerated immune response 'cytokine storm' that leads to acute respiratory distress syndrome (ARDS). Drugs being tested include anti-cytokine therapies and anti-inflammatory therapies that suppress immune response. In June, the University of Oxford announced it had undertaken a trial that showed Dexamethasone, an anti-inflammatory steroid, was effective in reducing mortality. For patients on ventilators, the steroid reduced the risk of death from 40% to 28%. For patients needing oxygen, it cut the risk of death from 25% to 20%; and
 - o address life-threatening complications such as blood clots. Drugs being tested include anti-clotting agents such as Heparin.
- Based on experience with the treatment of viruses where no vaccine exists such as HIV, hepatitis C and influenza, it is likely a combination of therapeutic drugs will be required for the effective treatment of covid-19.

THIS IS WHAT WE DON'T KNOW ABOUT A CURE:

- Will scientists be successful in finding a vaccine? In 1984, the US Secretary of Health and Human Services predicted that a vaccine for HIV would be found within two years. Thirty-six years later no vaccine has been discovered for HIV because the way the virus mutates in a single infection makes finding a vaccine difficult. The good news is that SARS-CoV-2 appears to mutate slowly. The bad news is that no vaccine has ever been developed for the known coronaviruses.
- How long will it take to test the safety and efficacy of a vaccine for a widespread rollout? To effectively test the safety and efficacy of a vaccine, extensive human trials will need to be undertaken across a wide cross-section of people. There are few short cuts to full-scale randomised human phase III trials and no short cuts for time-based longitudinal studies.
- How long will it take to scale manufacturing to billions of doses of the vaccine?
- Will a vaccine provide effective protection for elderly people? A vaccine that is not effective for older people will have more limited efficacy given the materially increased mortality rates of covid-19 for people over 65. It is therefore possible that a vaccine will not provide universal protection to all age groups.
- What level of immune response do coronavirus vaccines need to elicit to confer protection? The answer to this question has been elusive among coronaviruses.
- How long will protection last once someone has been immunised? Can a person be reinfected once they have recovered from covid-19? Some scientists believe that even after infection with coronaviruses reinfection can occur.
- Will a vaccine trigger a life-threatening response in some people? Some animal studies suggest that certain SARS and MERS vaccines might upon viral challenge be associated with eosinophilic pulmonary infiltrates lung disease. The dengue fever vaccine triggered a life-threatening response in some children and was pulled post launch.
- Will doctors find a combination of existing therapeutic drugs that materially improves the standard of care, substantially reducing mortality rates, in the next six to 12 months? The time frame for discovery and approval of a new therapeutic drug means that it is extremely unlikely any new drugs will be available within the next 12 to 18 months.

“Will a vaccine provide effective protection for elderly people?”



- Will manufactured or harvested antibodies be effective to trigger a sufficient immune response to protect people against the virus? How long will protection last? Will manufactured or harvested antibodies, if effective, be widely available within 12 months or will they only have limited application for some front-line workers and gravely ill people? Will an antibody treatment be effective in a gravely ill person or might it trigger an exaggerated immune response?
- How many people will be willing to have any vaccine, especially if it has been developed on an accelerated time frame, which would limit the knowledge of the potential risks associated with getting it?
- In the event of a vaccine, how will groups such as anti-vaxxers and state actors use social media to influence outcomes away from scientific and government advice? There is evidence that state actors have already promoted misinformation on the pandemic in social media to sow discord.

THE ECONOMIC IMPACT

The economic impact from the pandemic and the response from policymakers have no parallels in modern economic history. There are many variables that will have a material effect on the depth of the economic downturn and the shape of the economic recovery.

THIS IS WHAT WE KNOW ABOUT THE ECONOMIC IMPACT:

- The response to the pandemic has resulted in the largest reported loss of economic output in modern history in many countries. In April, industrial production in the EU plunged by 17% from March and gross domestic product (GDP) collapsed by 20% in the UK. The World Bank's central case is for a 5.2% contraction in global GDP in 2020, which would mean the deepest global recession in decades, despite the extraordinary support from governments and central banks.
- The government and consumer responses to the pandemic have resulted in massive

job losses in many countries. The reported unemployment in the US has jumped to 11.1% in June from 3.7% a year earlier, resulting in the loss of about 15 million jobs. (The total number of people employed in the US has dropped from 157 million in June last year to 142 million in June this year.)

- The fiscal response in many developed countries has broadly ranged from 1% to 10% of GDP. In most countries, the fiscal response to date has been materially less than the forecast contraction in output, which means the remainder of the burden of the contraction is being borne by individuals and businesses through a material loss of income. The fiscal support from many countries broadly falls into the following categories:
 - supplemental unemployment payments, such as Australia's JobSeeker supplement;
 - programs to subsidise wages to keep people employed during the pandemic, such as Australia's JobKeeper Program, the US's Paycheck Protection Program and the UK's Coronavirus Job Retention Scheme;
 - grants and interest-free loans to small businesses;
 - deferrals of tax payments for businesses; and
 - payments to individuals.



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- The major central banks have taken aggressive action to:
 - ensure the financial system has sufficient liquidity to function;
 - loosen monetary policy via reductions in policy rates. For example, the US Federal Reserve has reduced the overnight cash rate by 1.5 percentage points to between 0% to 0.25%;
 - implement large asset-buying programs (via quantitative easing) to inject liquidity, lower long-term interest rates and to

support fiscal policies. Since February to mid-June, the Fed, the European Central Bank and the Bank of Japan had collectively purchased US\$3.7 trillion of assets under their quantitative-easing programs; and

- provide credit support for investment-grade companies to refinance and issue debt.
- Central banks are expected to keep interest rates at very low levels for many years. In June, the Fed said it expects to keep its policy rate at zero at least until the end of 2022.
- In many countries, banks and landlords have been required to defer loan and interest repayments and defer foreclosures and evictions during the pandemic.
- Consumer expenditure appears to be rebounding as governments relax restrictions and economies reopen. Mastercard has released data that indicated that payment volume on its payment network in the US has improved from minus 18% in April (compared with a year earlier) to an increase of 5% in the week ended June 21. In the rest of the world, Mastercard numbers improved from minus 27% in April to minus 5% in the week ended June 21.

HERE'S WHAT WE DON'T KNOW ABOUT THE ECONOMIC IMPACT:

- What is the true level of unemployment? Millions of people remain employed with their wages being subsidised by government-funded job-protection programs. How many more people would be unemployed in the absence of these programs? For example, 10 million people in the UK are receiving state wage subsidies as are millions of Australians, Americans and Europeans. How many people will businesses let go when government wage-subsidy programs expire? Will these programs be extended and, if so, for how long? Australia has announced that it will not extend these programs outside of a few heavily hit industries such as tourism.
- In many countries, there are supplemental unemployment benefits being paid to people out of work. What is the stimulus impact of the supplemental unemployment benefits? What will be the economic impact when unemployment benefits are reduced to normal levels?
- What will be the economic impact if there is a material second wave of infections?
- How will consumers and businesses change their behaviour post the pandemic? Will the pandemic shock lead to a prolonged increase in the savings rate? Will consumers

stop travelling even after the reopening of borders before a vaccine is widely distributed? Will business substantially reduce expenditure on travel and conferences and adopt video conferences and virtual conferences? Will business reduce their real-estate footprint by adopting work-from-home practices?

- Will increasing tensions with China lead to a material pull back in expenditure by Chinese nationals on tourism and education in certain countries?
- As the economic fallout from the pandemic becomes clearer, will governments continue to run extremely large fiscal deficits for prolonged periods or will they wind back spending? Will there need to be other fiscal adjustments such as increased taxes?
- How will banks respond at the end of servicing holidays? Can they continue to 'extend and pretend' or will they need to foreclose on borrowers? How long will they hold off on foreclosing? How many businesses and consumers will go bankrupt?
- What will be the impact of credit downgrades of borrowers from investment grade to sub-investment grade? Could this lead to the 'fallen angel crisis' resulting in substantial losses for debt investors? How will central banks respond to such a crisis?
- Notwithstanding unprecedented central-bank support, there are limitations on what central banks can do. What is the risk of an emerging-market currency crisis? The Fed is providing US dollars to many emerging countries via cross-currency swaps secured via US Treasuries held by the emerging country seeking US dollars. What is the risk of emerging countries running out of acceptable US-dollar collateral to obtain US dollars from the Fed? Could this trigger a collapse in the currency of an emerging market? How will the Fed be able to provide US dollars to emerging countries without acceptable collateral? The acceleration of the virus in many emerging markets may be increasing this risk. Other risks that may be hard for central banks to contain include large defaults or credit downgrades in the high-yield markets and defaults of structured products, particularly collateralised loan obligations.
- What is the risk of a European sovereign debt crisis if the situation deteriorates?
- Will commercial and retailing rents collapse? What will happen to property prices?
- Will inflation and interest rates remain low for the foreseeable future as expected or will the large government deficits financed with large

increases in the size of central-bank balance sheets lead to inflation?

- How will the pandemic influence domestic and global politics, particularly given the erosion of globalisation and increasing sensitivities around trade?

WHAT IS OUR RISK APPETITE?

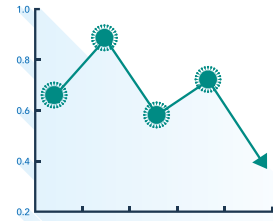
We remain cautious and have positioned our portfolios to withstand a further downturn in the economic outlook and markets. We don't know whether the world is on a bridge to recovery or on a bridge with a cliff at the other end. As we don't know, we will not speculate or gamble with our clients' money. We understand the limits of our knowledge. We have no fear of missing out. We feel it is prudent to be cautious when we cannot assess the probabilities of the pathway forward. The events of the past six months are without precedent and the way forward is subject to a multitude of highly uncertain, complex and interdependent variables. This means the range of potential outcomes remains vast. Due to the extreme uncertainty pertaining to so many critical interconnected variables, we have no reasonable way of assessing what the economic impact will be in the next 12 to 18 months. There is a tendency for people to simplify highly complex matters.

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This is understandable. Many investors have been gaining in confidence following the massive government stimulus and central-bank support, the move by many countries to reopen their economies, the strong recovery of equity markets from the nadir in March and the positive headlines on numerous vaccines and therapeutics. In simple terms, it could appear the worst is over. Unfortunately, the current situation is highly fluid and we don't believe there is any way of assessing whether the worst is behind us. There are simply too many known unknowns with material consequences. As Albert Einstein said: "Everything should be made as simple as possible, but no simpler."

It is plausible that we will have a widely distributed vaccine, or a widely available effective therapeutic, the economic bridges put in place

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by governments and central banks will prove effective, and an economic recovery will be well under way within the next 12 months. It is also possible that we will not have a vaccine or a widely available effective therapeutic within this time frame and a cure might be years away, and a second or even a third wave of infections occur in many countries later this year or next year, banks start foreclosing on borrowers, tenants default on rental obligations, credit-ratings agencies downgrade hundreds of billions of dollars of debt from investment grade to sub-investment grade, companies cut back on expenditure forcing more job losses, emerging markets enter crisis territory and the world enters a very deep and multi-year prolonged recession. The answer to which pathway the world heads down in large part depends on the course of the virus and this will depend upon science (and the leading scientists do not have the answers). The most dangerous thing to do is to be overconfident that you know the answers to critical questions when it is not possible to know the answers with the limited state of knowledge. Margaret Thatcher said: “Those who think that they know, but are mistaken, and act upon their mistakes, are the most dangerous people to have in charge.”

Even if we get an early breakthrough and we get an early vaccine or therapeutic, investors need to assess what might happen at the end of the government-funded ‘economic bridge’. There are vast numbers of people and businesses that are surviving on government support. Once this pandemic passes this support will inevitably be removed and it is difficult to predict what will happen when this support is taken away. This will depend upon many variables that are almost impossible to predict. These include the scale of the lost economic output, the extent of change in consumer behaviour as a result of the pandemic (and again this will also be interdependent on the duration of the pandemic and the scale of economic loss), actions taken by business to cut costs as a result of losses suffered from the pandemic (the extent of cuts will be a function of the duration of

the pandemic, the scale of loss, the level of unemployment, the propensity of consumers to spend and other changes in consumer behaviour; for example, an acceleration of online commerce could result in permanent job losses at many traditional retailers) and the extent of business failures. The extent of business failures will depend upon, among other things, the duration of the pandemic, the level of ongoing government assistance, changes to consumer behaviour resulting from the pandemic, and forbearance by banks and landlords in response to financial stress.

Investors should not take any comfort in the fact that world markets rallied 39% by the end of June from their nadir in March nor take comfort from the reopening of economies around the world or apparently positive news on the development of a vaccine or cure. There are simply too many interdependent uncertain variables in play at present. It isn’t unusual during an extended crisis for markets to bounce strongly followed by a second sharp sell off. While we do not know how things will play out, investors should be prepared for a wide range of potential outcomes in the next 12 months. There is a real possibility of a collapse in equity markets, just as there is for a continued grind higher in equities supported by low interest rates. These aren’t predictions but warnings that such outcomes are foreseeable at present.

Given the complexity and uncertainty of the situation, we are taking a cautious positioning until we can more clearly assess the probabilities on the pathway forward. We feel it is best to heed the sage advice of Warren Buffett when he said: “To finish first, you must first finish.”

Hamish Douglass
Chairman and Chief Investment Officer

10 July 2020

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