

Insuring for Pandemics Study

Insurance Council of Australia



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28 July 2020

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Dear Karl,

Insuring for Pandemics Study

Please find enclosed our report on insurance for pandemics.

We look forward to discussing our findings with you.

Yours sincerely

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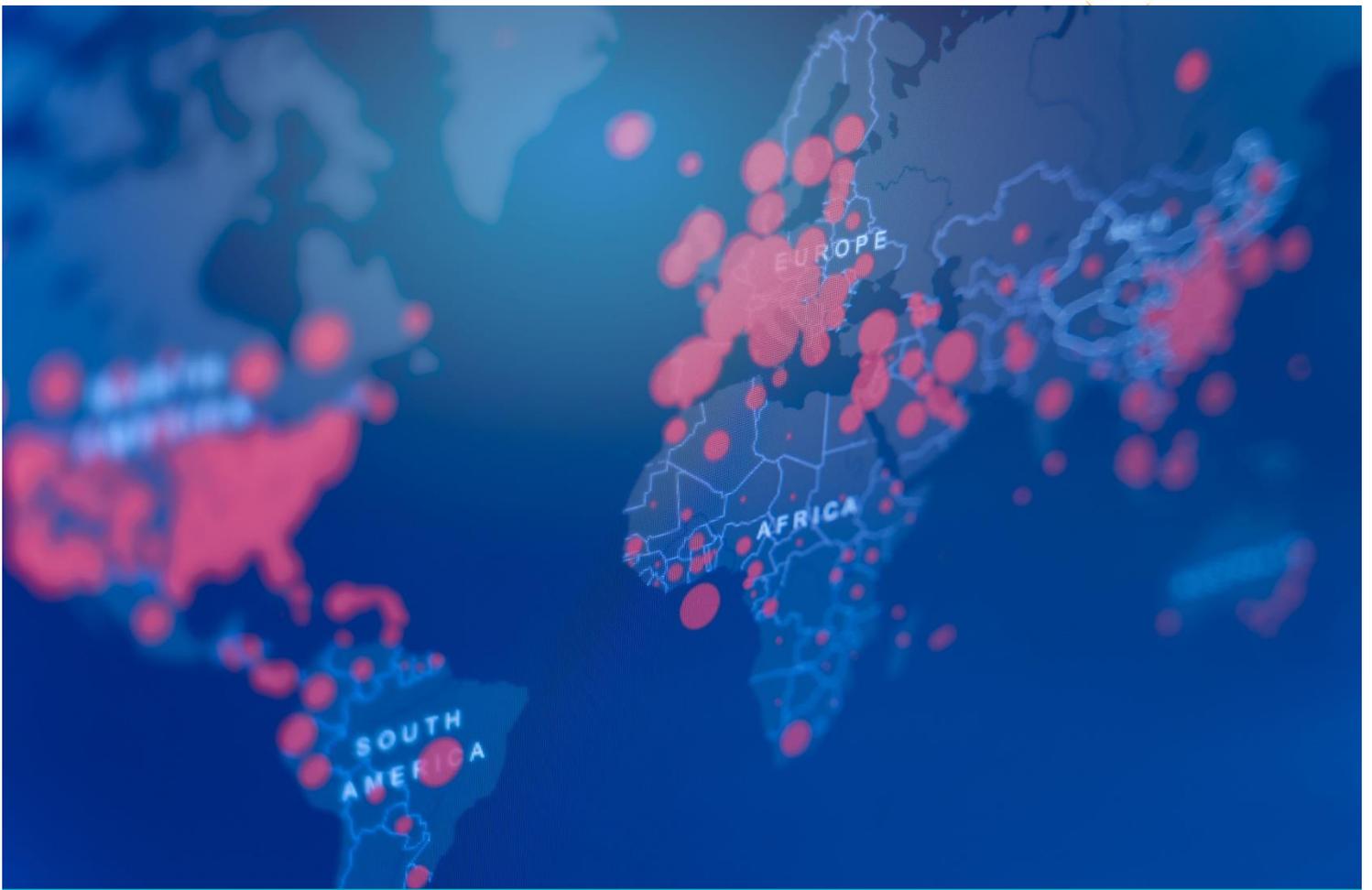
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Part I – Executive Summary



Part I Executive Summary

1 Purpose of this report

Finity has been engaged by the Insurance Council of Australia (ICA) to identify insurance-related options that the Australian Government may undertake to mitigate the economic effects of future pandemics, including where insurance based mechanisms may be relevant and the potential role of the private insurance sector.

2 Role of insurance in disaster recovery

The insurance sector is an important part of the Australian economy. It provides critical protection against the financial consequences of both attritional events like automobile accidents or workplace injuries and large catastrophes like earthquakes or tropical cyclones. During the recent summer it helped Australians recover from devastating bushfires and storms. It is important to study how this vital industry can help address the consequences of future pandemic events, but care must be taken to avoid disrupting its ability to provide Australians with high quality protection for other risks.

COVID-19 has had far reaching effects on both global health and economic activity, triggering a severe global recession. While Australia's rates of infection and death have been low by global standards, the economic effects far exceed previous disasters. The country is experiencing its first recession in 29 years, GDP is expected to fall by 7% in the 2nd quarter of 2020, and unemployment is forecast to rise to 9.25%.

3 Private sector alone cannot currently insure pandemics

Pandemic risk violates most principles of insurability, with the main issues as follows:

- The magnitude of the losses is significant, well in excess of insurance sector capital.
- Global aggregation of loss means risk cannot be diversified (a key tenet of insurance mathematics).
- The premiums would be high, and most likely unaffordable.
- The losses are hard to define.
- Losses (at least currently) are not calculable prior to a pandemic occurring. Current limitations in modelling of insurance loss are a significant factor, which we discuss below.

These issues make a traditional private sector insurance risk transfer solution to address pandemic risk effectively impossible at this time. Government policy plays an important role in structuring solutions where principles of insurability are not satisfied. The type of intervention best suited will need to be specific to the risk (there is no one size fits all intervention), which we discuss below.

4 Insurance and reinsurance of pandemics

To date, the pandemic's effect on Australian insurers has been relatively contained due to widespread exclusions. Claims arising from travel insurance, trade credit, and landlords have been offset by lower frequency of motor claims, though actions such as voluntary refunds and premium waivers have reduced the benefit to insurers of lower claim frequency. Higher losses are expected in consumer credit due to unemployment and volume is expected to decline in Workers Compensation. Due to conservative practices, investment losses have been relatively small. The limited effect of COVID-19 on the industry also reflects actions taken to protect against huge potential losses from pandemics, spurred by stress tests prompted by APRA after pandemics in the 2000s. Internal estimates by Finity suggest that without these coverage limitations COVID-19 would have devastated the Australian insurance industry, with losses far above capital held for commercial property insurance.

A key part of funding extreme events is the global reinsurance system. Given the nature of pandemic risk, reinsurers face similar challenges. The issues listed above differentiate pandemic risk from other extreme events such as natural disasters and render it difficult or impossible to reinsure. This has led reinsurers to also implement pandemic exclusions. While we note that some types of reinsurance contracts provide "follow the fortunes" type coverage that could include pandemic, generally these are not highly exposed to pandemic risk. Based on discussions with reinsurance experts we do not see any prospect for significant private sector reinsurance support for widespread pandemic coverage in the foreseeable future. Because of this, Australian insurers will not be able to offer such coverage without an alternative way to secure protection.

5 Insurability will improve with research and mitigation

Insurance mechanisms require a way to quantify potential losses to function. In the case of extreme events where stable loss data is unavailable, simulation models are used. While pandemic modelling is developing rapidly, it is unlikely that sufficient modelling tools will exist in the near future to allow for the type of risk quantification required to support tens of billions of risk capacity (in the form of capital and reinsurance) necessary to underwrite pandemic risk in the same way that bushfire, flood, tropical cyclone, or earthquake is.

The economic disruption from COVID-19 is likely to trigger a large increase in funding for mitigation measures from both public and private sectors. Responses to the current pandemic such as investments in vaccine research, new technologies, and stronger pandemic response plans may change the nature and size of the threat posed by future pandemics. In due course this may reduce the risk of pandemic and make private insurance solutions more viable. We observe that this has occurred to some extent with terrorism.

6 Considerations for government solutions and Public Private Partnerships

Public sector involvement in a pandemic solution could overcome roadblocks to private sector coverage, including risk modelling difficulties, size of potential losses, lack of geographic risk diversification, and the lack of secondary markets. There are several ways an insurance based solution (whether by government or in partnership with the private sector) could add value, including risk assessment, pre-funding, and helping to quantify risk to inform decisions on mitigation investment. Involving the private sector could allow government to utilise existing insurer infrastructure, such as claims settlement. The private sector can play an important role in any future framework, including in an advisory capacity.

A solution involving government would need to address a number of important factors in its design; including defining its objectives and participants, whether participation is compulsory, the definition of coverage afforded, time horizon, funding and financing mechanism, whether coverage/terms are uniform across the market, the scope of coverage, and a scheme's flexibility to adapt to changing conditions. Key overall considerations include a scheme's cost, its capacity, and its potential to disrupt otherwise healthy insurance markets.

There is merit in a government backed insurance solution to pandemic risk for the following reasons:

- It could provide predictable coverage for future events.
- It could provide a price signal to inform risk mitigation investments.
- It could create a way for government to charge a premium or levy on the beneficiaries of government support to either pre or post fund the loss. Currently, the government is essentially underwriting the cost for COVID-19 for which it has not been compensated.
- It may allow existing insurance infrastructure to be utilised to collect premiums or levies, define coverage, and/or target government payments based on a contractual agreement.

7 Frameworks for further consideration

Finity has identified four "Frameworks" for further consideration. Each is discussed with pro/con and an indicative magnitude of cost:

- **Framework 1 is the status quo**, with limited insurance cover available and support for future pandemics provided by programs like those used in the current event. We offer this as a baseline outcome against which other ideas can be tested.
- **Framework 2** would be similar to the **targeted programs** implemented by the UK and EU for trade credit, where narrowly defined solutions would be created for specific industries, for example trade credit, travel, or lenders mortgage where the government felt there was particular leverage for involvement.
- **Framework 3** would be a **newly created form of business protection** designed to provide a short term (i.e. 1-3 month) limited benefit distributed by insurers to cover certain business expenses and payroll. The coverage would be distributed by commercial insurers, have simple coverage and pricing, have the government take underwriting risk, and have insurers collect revenue and pay benefits.
- **Framework 4** would be a pandemic facility, perhaps modelled after the current cover for terrorism in Australia and other countries. In exchange for participating insurers removing pandemic exclusions, the facility would provide **low cost reinsurance for traditional business interruption** cover.

Some degree of direct government intervention to respond to the specific circumstances of each future pandemic post-event is inevitable (e.g. Framework 1).

Any short-term solutions (e.g. Framework 2) will likely need to be targeted assistance, such as specific and time limited support for trade credit insurers. This is consistent with what is occurring overseas.

More robust solutions, such as Frameworks 3 and 4, will require more study and costing to implement. These solutions are more complicated due to the need to specify the coverage they will provide and integrate them with existing insurance products. Option 4 has additional complications due to wide variations in business interruption wording, among other issues.

We note that there are other possible frameworks which could be further investigated in a subsequent study.

8 The right solution for Australia

When considering whether a public or public-private partnership insurance framework makes sense, and the merits of those proposed, it is important to consider whether each solution will:

- Offer the right level of support to Australian workers.
- Help businesses to survive, remain open, or re-open, and how.
- Offer the right protections for businesses for pandemic risk that might prevent restarting or delay restarting (e.g. deep cleaning, disinfecting).
- Encourage investment.
- Be effective at improving business and consumer confidence.
- Maintain a financially secure finance and insurance sector.
- Only commit the government to financial obligations it can reasonably assume without harming the economy in the long term.
- Not detract from government obligation and right to govern, but support it.
- Support efforts to mitigate risk and lower potential losses.
- Have sufficient flexibility to adapt to what may be a rapidly changing threat.

We note that the solutions which narrowly focus on providing support for traditional business interruption coverage may not address several of the issues above and involve significant operational complexity.

Other countries are investigating various approaches to providing some insurance coverage for pandemics. Generally, countries that have enacted insurance solutions to date have focused on narrow goals, such as supporting trade credit. More complex solutions, such as a “Pandemic Re” and “Black Swan Re” facilities, require more study.

Finally, we note that pandemic response is a broader societal issue, of which insurance is a part. Any insurance solution must be incorporated into a broader policy framework including risk reduction, standby policies on border control, health policy, and coordination with global organisations like the WHO, among other things.

9 Reliances and limitations

Many things may change in the future. We have formed our views based on the current environment and what we know today. The uncertainties are pronounced for COVID-19 as the situation continues to develop. Key uncertainties include the effectiveness of Australia and other global economies to contain the spread, government actions and the availability of vaccines, amongst many others. If future circumstances change, it is possible that our findings may not prove to be correct.

The reliances and limitations form an important part of this report. The reader is referred to Section 9 for the detailed reliances and limitations to this report.



Part II – Detailed Findings



Part II Detailed Findings

1 Introduction

1.1 Background

The COVID-19 pandemic has triggered a severe economic crisis which represents a unique challenge to both the global and Australian economic systems. In other types of extreme events, the insurance sector is normally a key player in restoring communities, rebuilding, protecting jobs through business interruption cover, and providing economic signals through premiums to encourage loss reduction following major catastrophes.

The insurance industry provides some pandemic related cover, such as for event cancellation (if insurance has been bought), but for the most part pandemic risk is intended to be excluded in general insurance policies. There are many reasons pandemic risk is often excluded, including that some policy types (e.g. motor) are not intended to provide coverage for pandemics and that some types of cover are considered too risky due to the number or magnitude of potential claims to insure through normal channels (e.g. business interruption).

Going forward, insurers will review exposure from pandemics and have already begun to further restrict cover, as occurred with terrorism following 11 September 2001 (9/11). At the same time, demand for cover is likely to increase due to the awareness of the threat.

We anticipate consumers and businesses across Australia will want some form of pandemic cover in insurance policies going forward. In the near term, this may affect the pace of economic recovery as businesses will be reluctant to invest while COVID-19 remains a threat. Long term, the insurance industry will need to work with government to clarify its role in future pandemic events. In considering what that role might look like we should expect that there will be aggressive efforts by governments and businesses to reduce the threat, which may result in a very different exposure to loss from pandemic than is currently being experienced.

1.2 Scope

Finity has been engaged by the Insurance Council of Australia (ICA) to identify insurance-related options that the Australian Government may undertake to mitigate the economic effects of future pandemics, including where insurance based mechanisms may be relevant and the potential role of the private insurance sector.

This study considers only issues pertaining to general insurance products. The impact of pandemic on life and health insurance is outside the scope of this report. All references to 'insurance' or 'insurance industry' in this report relate to the general insurance industry unless otherwise stated.

This study is intended to define the problem at hand and set out various solution frameworks for discussion (i.e. Phase 1). Later phases (outside of scope for this report) will focus on narrowing down the various options available and exploring the details of potential solution(s) in the event one or more feasible options are identified in Phase 1. Our suggested future phases include the following:

- Investigation into potential solutions, including coverage levels, funding models, structures, pros and cons, etc.
- Financial modelling and comparison of a smaller set of preferred models.
- Design of the preferred model and translating the design into legislation.

1.3 Approach

Finity has engaged with key stakeholders to understand the effects COVID-19 has had on the Australian economy and specifically what role, if any, insurance can play in managing risks for future pandemics. The following stakeholders have been consulted in our review:

- Australian Treasury
- Nine Australian insurers representing a significant cross-section of the market
- Reinsurers and reinsurance brokers
- Direct insurance brokers
- Overseas experts in the UK and US in both government and actuarial organisations
- Other stakeholders: Industry trade groups, RMS (pandemic modeller), Professor Paula Jarzabkowski (Cass business school)

Additionally, we have undertaken desktop research on COVID-19 impacts on the economy and other literature relevant to pandemic risk.

1.4 Structure of this report

This report has been structured as follows:

Section 1: Introduction

Section 2: Overview of the impact of COVID-19 on the economy and insurance markets so far

Section 3: Background on pandemic risks for the Australian insurance industry

Section 4: The role of government in 'uninsurable' risks

Section 5: Is there an insurance PPP solution for pandemics?

Section 6: Recent international developments on pandemic cover

Section 7: Framework models for consideration

Section 8: Concluding remarks

Section 9: Reliances and limitations

Appendices

2 COVID-19 impact on the economy and insurance

Key messages



- COVID-19 has had far reaching effects on both global health and economic activity, triggering a severe global recession.
- While Australia's rates of infection and death have been low by global standards, the economic effects have been large. The country is experiencing its first recession in 29 years, GDP is expected to fall by 7% in the second quarter, and unemployment is forecast to rise to 9.25%.
- Stimulus measures enacted to combat the economic contraction so far total \$289 billion, or 14.6% of GDP.
- To date the effect on Australian insurers has been relatively contained due to widespread exclusions for pandemic. Claims arising from travel insurance, trade credit, and landlords have been offset by lower frequency of motor claims. Due to conservative practices investment losses have been relatively contained.
- Globally, the pandemic is likely to be the largest loss in history for the insurance industry when both higher claims and reduced asset values are considered.

The intent of this section is to summarise the effects that COVID-19 has had in respect of the economy at the time of writing this report, with a focus on impacts relevant to the discussion of potential insurance responses to COVID-19 and future pandemics. The scientific body of knowledge around COVID-19 continues to evolve.

2.1 Economic impact of COVID-19

In addition to the health impacts (around 15.76 million cases and 0.64 million deaths worldwide by 26 July 2020¹); the economic impacts of COVID-19 are far-reaching. There has been a drop in economic demand precipitated by government actions to contain the spread of the virus, which has subsequently led to increased rates of unemployment and business failures.

Importantly, the economic effects are almost simultaneously mirrored across all global economies, with a projected global GDP loss of 5.2% in 2020, and 7% for advanced economies². COVID-19 is expected to trigger a global recession that will take several years to recover from.

In Australia, the economic effects of COVID-19 include:

- Australia will experience its first recession in 29 years.
- An ABS survey at the commencement of shutdowns³ showed that 10% of small businesses were not operating in the week commencing 30 March 2020. 6% of businesses were not operating because of

¹ <https://covid19.who.int/>, accessed 24 July 2020

² <https://www.worldbank.org/en/news/feature/2020/06/08/the-global-economic-outlook-during-the-covid-19-pandemic-a-changed-world> accessed 25 June 2020

³ ABS Survey 5676.0.55.00, Business Impacts of COVID-19

Government measures on COVID-19⁴. The survey also reported that for the 90% of businesses still trading 64% reported a reduction in demand.

- By June 2020, an ABS survey reported two thirds of businesses had experienced decreased revenue compared to the same period last year⁵. The number of jobs (based on payroll data) reduced by 7.5%⁶, with some industries especially affected as shown in Figure 2.1 below.
- The Commonwealth Treasurer⁷ announced the following economic impacts on 23 July 2020:
 - ▶ Real GDP to reduce by 7% in the June 2020 quarter.
 - ▶ Unemployment rate is expected to increase to 9.25% by December 2020.
 - ▶ \$289 billion of Commonwealth economic support has been announced, equivalent to around 14.6% of GDP.
- Repayment on \$200 billion of mostly residential mortgages has been deferred⁸.

Figure 2.1 shows the change in payroll jobs by industry to 27 June 2020.

Figure 2.1 – Changes in payroll jobs by industry between 14 March 2020 and 30 May 2020



Source: ABS 6160.0.55.001 - Weekly Payroll Jobs and Wages in Australia, Week ending 27 June 2020

Most industries have been impacted by COVID-19, though accommodation/food services and arts/recreation have been by far most affected.

2.2 Insurance impact of COVID-19

Insurance impacts of COVID-19 are significant, although much less than they would have been without the range of pandemic exclusions in place across most insurance classes (pandemic exclusions are discussed later in Section 3.1).

⁴ The survey reports that 70% of businesses not operating reported that this was due to COVID-19 and of these, 84% reported that it was due to government measures.

⁵ ABS Survey 5676.0.55.003 - Business Indicators, Business Impacts of COVID-19, June 2020

⁶ ABS Survey 6160.0.55.001 - Weekly Payroll Jobs and Wages in Australia, Week ending 30 May 2020

⁷ Hon. Josh Frydenberg, 23 July 2020, Economic and Fiscal Update

⁸ Hon. Josh Frydenberg, 12 May 2020, Ministerial Statement on the Economy, Parliament House, Canberra

2.2.1 Australian Insurance impacts

Table 2.1 summarises the impacts on insurers observed to date by insurance product. The premium and claims estimates shown below relate to APRA regulated insurers, and exclude non-insurer mutuals, Lloyd's, offshore insurers, and overseas captives.

Table 2.1 – COVID-19 impacts on Australian Insurers

Insurance products	Effects observed to date
Business interruption (\$5.5b total Fire and ISR written premium, of which approximately 10% would be allocated to business interruption cover)	<p>The policy wording for business interruption can vary substantially, and any claims would be individually assessed against the wording. Nonetheless, pandemic exclusions are expected to significantly limit potential business interruption claims⁹.</p> <p>Without these exclusions in place, the losses would have been devastating for the insurance industry. Based on the number of businesses that have either ceased or reduced trade due to government restrictions, Finity estimates the total business interruption losses would be around \$5-10 billion for a 3 month period (if COVID-19 disruptions were compensated). However, only 30% of SME businesses have business interruption insurance, which leaves a majority of SME businesses uninsured for losses.</p> <p>Estimating the potential claims arising from large businesses is difficult. We estimate potential claims from large businesses to be in the tens of billions.</p>
Travel (\$1.2b estimated annual premium)	<p>Travel insurance policies mostly have pandemic exclusions, although coverage varies by insurer. Travel insurers would generally provide cover where travel was booked prior to COVID-19 being a known event, i.e. late January 2020. Most travel insurers ceased writing policies as travel restrictions were announced, which limits future losses.</p> <p>Without exclusions, the claims cost to travel insurers is estimated to be in the order of \$150 million to \$250 million¹⁰.</p>
Trade credit (\$0.2b estimated annual premium)	<p>There will be an uplift in claims for defaults on trade credit across all trade sectors. Insurers may adjust credit limits to counterparties for future sales to stem further losses, but existing exposure is still covered by the insurer. Coverage allows confidence from the supplier to its counterparties to trade on extended credit terms, which otherwise might be reduced without the support from the insurer.</p>
Consumer credit (\$80m written premium in 2019)	<p>A significant increase to unemployment related claims is already occurring, and likely to continue. Duration of the economic shock will be a major driver of the ultimate cost. Government supports such as JobKeeper may prevent some claims, or alternatively delay claims to after the program finishes.</p>
Lenders mortgage (\$0.9b written premium in 2019)	<p>Banks have allowed home loan borrowers repayment holidays for six months. This has been taken up for around \$200b worth of home loans and means that any mortgage stress due to the pandemic is unlikely to occur until the repayment holiday period ceases. The lenders mortgage insurance losses will depend on the level of unemployment and falls in home prices after the repayment holiday.</p>
Landlords (\$1.0b estimated annual premium)	<p>The moratorium on evictions of tenants means that rental default products are unlikely to be triggered during the period of the moratorium. We understand that some insurers have considered (and paid) rental loss claims where a tenant has negotiated reduced rental due to hardship. Without the moratorium on evictions, it is estimated rental default losses would be in the order of \$300m.</p>

⁹ At the time of writing this report, we understand that there are potential legal challenges to these exclusions.

¹⁰ Casamento, Danielle, 11 May 2020, <https://www.finity.com.au/2020/05/11/travel-insurance-covid-19>

Insurance products	Effects observed to date
Workers compensation (\$1.8b estimated annual premium)	COVID-19 is expected to negatively affect workers compensation as lower claims from reduced economic activity is likely to be offset by lower premiums. However, the economic uncertainty will possibly lead to an increase in duration of claims, with the risk of mental health issues being exacerbated.

The total general insurance premium in 2019 was \$51 billion, supported by \$20 billion of total capital (excluding LMI, and of which around \$12 billion of this is the regulatory minimum). While there were major catastrophe losses due to bushfire and storm during the summer preceding the pandemic, strong reinsurance protections and otherwise profitable results placed the industry in a healthy position before the pandemic. Capital could foreseeably be eroded from claims if pandemic exclusions were not in place, leading to significant financial difficulties for insurers that are exposed to the above classes. The claims pressures are occurring concurrently with significant declines and pressure in investments markets, though conservative investment strategies generally adopted by Australian regulated insurer (due to capital rules) will mitigate the level of investment losses.

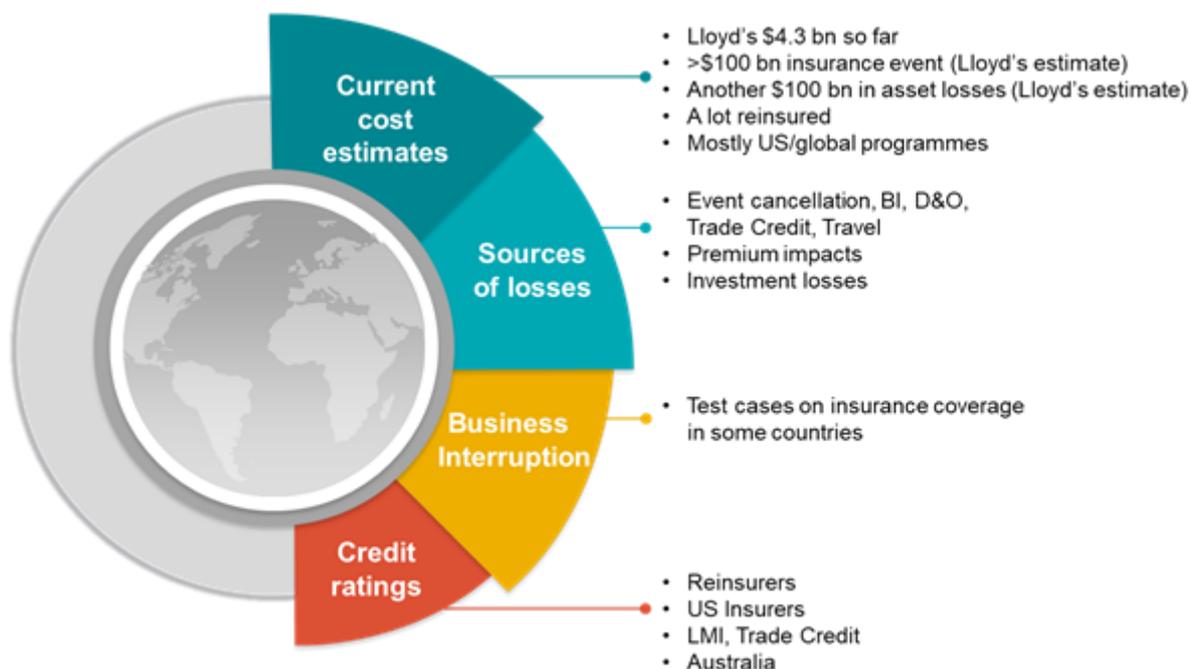
Offsetting the potential losses above, COVID-19 is expected to have modest positive impacts on other classes of insurance, including:

- Stay at home orders has meant fewer vehicles on the road and therefore lower collisions; there are expected to be fewer home theft claims as homes are more likely to be occupied. We note that many insurers have taken actions such as voluntary refunds and premium waivers which have reduced the benefit to insurers of lower claim frequency.
- Liability claims are likely to be lower over the lockdown period due to lower business activity.
- Medical indemnity costs are likely to be lower due to lower levels of elective surgeries being performed.

2.2.2 Global insurance impacts

Figure 2.2 below summarises Finity’s view of the global effect of COVID-19 on the insurance industry.

Figure 2.2 – Finity summary of global insurance impacts



Lloyd's currently estimates it will pay up to \$4.3 billion of losses in respect of COVID through current months. Claims arise from Event Cancellation (30%), Property (30%, we presume mostly from business interruption), Other (20%), and Credit (10%). 58% is global and worldwide programs.

Globally, COVID-19 is likely to be the biggest insurance event ever. Over \$100bn in losses are estimated by Lloyd's in an economic study, which compares to 2015 hurricane losses of \$116bn. Lloyd's estimates another \$100bn in reduction in asset values. COVID-19 is unique in that it has seen large underwriting losses at the same time as a significant reduction in asset values.

In contrast, Australia so far has not been affected to this level – direct claims have mainly come from travel so far. Decisive government intervention to support the economy has played an important role in limiting the impact on the wider economy, which has indirectly benefitted insurers. We expect indirect losses to play out over the next few years.

An area of uncertainty across global insurance markets is whether business interruption policies would respond to COVID-19. Specifically:

- In the US there has been litigation and legislation attempting to compel insurers to cover business interruption claims retroactively. At this time, it is unclear whether any of these efforts will result in significant payouts. In addition, there have been regulatory orders to provide customers with premium credits or refunds in some states, and several insurers have done so voluntarily across the country. See Section 6.1 for more details.
- In the UK, the Financial Conduct Authority (FCA) is seeking clarity from the courts on whether the wording of some insurance policies should provide cover during the pandemic. At this time, it is unclear how the court will rule and whether it will result in additional losses for insurers. See Section 6.2 for more details.
- In China insurers have started to provide coronavirus related products at the direction of the Chinese Government, including liability and BI cover.

In Australia, pandemics are generally considered to be excluded from most business interruption covers (see Section 3.1.1). We understand that this might be challenged in the Australian courts, but the outcome of this is speculative at the time of writing this report.

3 Private sector insurance for pandemic risk

Key messages



- Stress tests prompted by APRA after pandemics in the 2000s led to a careful review of exposure by general insurers and the implementation of exclusions and other coverage limitations in many policies.
- Reinsurers also implemented similar limits, reflecting the fact that pandemic exposure poses many risks that differentiate it from other extreme events such as natural disasters or terrorism and render it difficult or impossible to reinsure.
- Based on our discussions we do not see any prospect for significant private sector reinsurance support for widespread pandemic coverage in the foreseeable future, either through traditional contracts or pandemic bonds.
- While pandemic modelling is developing rapidly, it is unlikely that sufficient modelling tools will exist in the near future to allow for the type of risk quantification required to support tens of billions of risk capacity (in the form of capital and reinsurance) necessary to underwrite pandemic risk in the same way that bushfire, flood, tropical cyclone, or earthquake is.
- Due to violation of several principles of insurability, a traditional insurance risk transfer solution to address pandemic risk is effectively impossible on its own.
- The economic disruption from COVID-19 is likely to trigger a large increase in funding for mitigation measures, which in due course may reduce the risk of pandemic and make private insurance solutions more viable. We observe that this has occurred to some extent with terrorism.
- COVID-19 is but one of many possible infectious diseases that can affect large populations, including ones that can affect agricultural production.

COVID-19 has demonstrated that pandemics have the potential to cause economic chaos. While there is a clear societal need to mitigate and manage pandemic risk (and to support and protect consumers, businesses and the broader economy from its impacts), a key question for policymakers is the role that insurance could (and should) play in pandemic risk management.

Section 3.1 summarises the current ‘state of play’ with regards to insurance and pandemics. Section 3.2 considers whether pandemic risk is one that is insurable by the private sector, by assessing pandemic risk against key insurability principles. Section 3.3 highlights some key considerations that need to be addressed in defining a pandemic for the purposes of insurability.

3.1 Insurance and Pandemics – the current state of play

3.1.1 Pandemic exclusions in Australia

In 2006 the industry regulator, Australian Prudential Regulatory Authority (APRA), asked all life and general insurance companies to consider their potential claims exposure to pandemics to understand the possible financial impacts following escalating concerns from the avian flu (H5N1), which arose shortly after the SARS outbreak in 2002. APRA observed the following (paraphrased)¹¹:

- About half of general insurers reported no impact to their operations. Total gross claims are estimated to increase by more than 50 per cent above the claims reported by the affected insurers, or by \$3.2 billion.
- The bulk, and by far the largest amount, of additional gross claims arise from business interruption and industrial special risk (ISR) policies (the latter often include business interruption as standard coverage). The percentage increase in claims for business interruption averaged more than 400 per cent, with ISR policy claims increasing about 120 per cent over the base case claims level.
- Coverage for infectious disease under business interruption and other commercial policies is somewhat unique to Australia. While [at that time] some insurers do not include infectious disease coverage, or cover losses only if the insured business is closed by order of public authority or have relatively low sub-limits, others provide fairly liberal coverage for closure or disease reported anywhere within a specified radius of the insured business.
- Consumer credit and travel insurance were noted as likely to have some, but relatively limited, increase in claims cost.
- Adverse claims outcomes were observed across employer's liability, public and product liability, medical indemnity insurance, mortgage insurance policies, and insurance for agricultural industries.

The stress tests conducted by APRA identified costs arising from closure of businesses due to infection on premises. The economic impacts from COVID-19 are likely more significant than in APRA's stress tests (i.e. COVID-19 has resulted in more stringent government policy to restrict of movement, State and national borders closures, and restrictions on business). Economic modelling at the time for Australia and other countries generally found that a moderate or worse pandemic would have a similar impact on economic growth as a typical business-cycle recession, although the effects would be short-lived.

As a result of the analysis conducted by APRA in 2006, most general insurers reduced their coverage of pandemic infectious disease in business interruption policies by implementing pandemic exclusions. Similar pandemic exclusions were being introduced to travel insurance policies by some insurers at the time of APRA's industry stress test.

Appendix A summarises typical exclusions that we observe in the Australian insurance market prior to COVID-19.

3.1.2 Reinsurance market appetite for pandemic

The availability of reinsurance cover is an important consideration for insurers in determining the events which can be covered by its insurance policies. Reinsurance is critical to funding claims from extreme events, which often result in losses far larger than annual premium volume. Insurers aim to match the cover from reinsurers to minimise the potential for coverage gaps. The response of Australian insurers to pandemic risks will largely align with cover offered by global reinsurers.

¹¹ APRA Insights, Issue 3 2007

Reinsurers, like primary insurers, require that risks be quantifiable and can be diversified across the global financial system. They generally rely much more on complex modelling tools than primary insurers due to the fact they operate on less frequent and more unusual events, meaning there is usually less loss experience available to inform pricing and underwriting decisions. Reinsurers have been able to underwrite many types of extreme and unusual types of risk. Appendix B summarises what makes risks able to be reinsured.

Numerous studies published prior to the current pandemic outlined the potential for huge losses to the insurance system, reinforcing the need for severe limitations on or exclusion of pandemic coverage in reinsurance contracts. For example, in 2018 the Cambridge Centre for Risk Studies (“CCRS”) published a pandemic study which predicted a total loss to the insurance industry of US\$456 billion to US\$775 billion after consideration of existing pandemic exclusions in most non-life policies¹². By comparison, a McKinsey report estimated total property and casualty premiums of €1.39 trillion in 2016, or around US\$1.75 trillion in 2019 and current exchange rates¹³.

Pandemics pose the following key problems for the global reinsurance system:

- Pandemics pose significant modelling challenges, as discussed in Section 3.1.3.
- Pandemics can affect multiple countries at the same time.
- Pandemics can trigger significant economic dislocations in addition to morbidity and mortality.
- Potential losses from pandemics may be far more than the system’s financial capacity.
- Losses can occur over extended periods and come in waves, making it difficult to define loss events.

For these and other reasons pandemic has been largely excluded from most reinsurance contracts. There are some notable exceptions, including certain “low risk” commercial policies, LMI, travel, life insurance, and event cancellation covers.

During this study we interviewed insurers buying reinsurance, reinsurance brokers, and major reinsurers. Following are some broad observations from those discussions:

- There were significant market headwinds before the current pandemic, including the bushfire and storm losses from last summer.
- The pandemic has been a very large loss to reinsurance markets from both claims (such as event cancellation) and asset declines.
- Rating agencies may be taking action on some reinsurers.
- Reinsurers have been reviewing exclusions and tightening language in respect of pandemics.
- The reinsurance market is “hardening” – i.e. capital is less freely available, meaning that reinsurers will provide less reinsurance capacity and/or a higher premium.
- The scale of potential losses is too large for there to be any broad reinsurance solution for pandemic losses from business interruption in the foreseeable future.

Based on our discussions we do not see any prospect for significant private sector reinsurance support for widespread pandemic coverage in the foreseeable future. Pandemic exclusions are likely to be tightened and continued. Any insurance solution for pandemic will require government support to fill the financing gap created by the absence of reinsurance support.

¹² <https://www.nortonrosefulbright.com/en/knowledge/publications/76c1c621/reinsurance-and-the-covid-19-pandemic>

¹³ Allowing for growth of around 4% p.a., and €1 = US\$1.13 at 2 July 2020.

3.1.3 Pandemic bonds

The first pandemic bond was issued in 2003 by Swiss Re - a \$400m offering established to provide coverage against extreme mortality events (including pandemics). Since then, a total of 27 additional catastrophe bonds have been issued with a pandemic component. Prior to COVID-19, none of them had been triggered.

To date, pandemic bonds have mainly been used by life insurers and annuity providers to protect from extreme mortality risk. The World Bank also issued pandemic bonds in July 2017 (with a maturity date of July 2020) to 'provide an additional source of financing to help the world's poorest countries respond to cross-border, large-scale outbreaks'. The World Bank bonds were triggered in April 2020.

Advocates for pandemic bonds argue that there are broad benefits to their use (beyond offsetting the potential costs associated with future outbreaks), including:

- A greater awareness of pandemics and their costs.
- Access to a broader capital base than traditional (re)insurance – benefiting both cedants and investors.
- The ability for thousands of potential investors (vs a single institution) to provide an unbiased pricing of a pandemic (which can be used to inform government policy responses – including investment that acts to reduce the likelihood and/or severity of an outbreak).

Conceptually pandemic bonds could form part of a broader solution for general insurance, although there are a number of challenges to overcome, including:

- Limitations with risk modelling (and thus the ability to accurately price the bonds).
- Challenges with achieving the type of diversification benefits that broader cat bonds usually do because of the correlation of pandemic and economic disruption.
- Defining triggers.
- Securing enough capacity so that the value of the issued bonds is large enough to have a meaningful impact.

Due to the challenges with modelling, the limited use to date of these bonds in the general insurance space, and the disruptions being experienced in the capital markets, we do not see pandemic bonds as a viable near-term solution to providing capital support for insurers wishing to write pandemic cover. However, in the medium to long term, pandemic bonds may offer governments a source of financing for pandemic risk.

3.1.4 Modelling

Modelling is critical to the insurance or reinsurance system's ability to offer coverage for infrequent, extreme events such as pandemic. Modelling vendors have been building probabilistic models of pandemic for approximately 15 years. Many were initially developed following the SARS outbreak noted above and refined after later events, including the avian flu, swine flu, MERS, and Ebola. Vendors will be further refining models to incorporate learnings from COVID-19 in coming years.

Pandemic models draw upon epidemiological models. Our interview with a leading modelling vendor indicated the following are key variables informing pandemic modelling:

- Pathogen transmissibility and virulence.
- Demographic response (age group).
- Pharmaceutical availability.
- Vaccine development.
- Government intervention.

Pandemic models focus on projecting daily number of deaths, cases, or hospitalizations. Current models do not estimate the economic consequences of the pandemic.

The models are much better at projecting the likely outcome of an event once its parameters are known, and not as good at estimating the likelihood of events in the first place. Other limitations include:

- A limited experience base of historical events, unlike long term records of thousands of weather or seismic events available for natural catastrophe perils.
- Effects of rapidly changing technology make historical information less relevant (for example, development of air travel between the 1918-1919 event and COVID-19).
- The ability of threats to mutate and change in response to countermeasures.
- The huge role government action (or lack thereof) plays in the exposure to events and their aftermath.

For these reasons insurance and reinsurance markets have not developed the level of comfort with their ability to measure and price for pandemic risk that exists with natural perils. While pandemic modelling is developing rapidly, it is unlikely that sufficient modelling tools will exist in the near future to fully support a robust private market for pandemic cover.

3.2 Insurability of pandemics

3.2.1 Principles of Insurability

There are several foundational principles upon which (private sector) insurance is based:

- **Risks that are 'pure' in nature** – indemnifying only for risks where there is opportunity for loss but not financial gain (vs speculative risks that can result in a loss or a gain).
- **A large number of similar risks** – to enable risk pooling such that the 'losses of the few are shared by the premiums of the many'.
- **Meaningful losses** – the size of the potential loss needs to be meaningful from the perspective of the insured to insure against it.
- **Accidental losses** – losses need to be the result of an unintentional action, unexpected in exact timing and impact.
- **Definable losses** – the quantum of a loss needs to be able to be identified, ideally with the ability to determine the time, place, and cause of loss.

- **Calculable losses** – the value of expected losses (incorporating both frequency and severity) must be able to be estimated with a reasonable degree of confidence, as discussed in section 3.1.3.
- **Ability to limit overall losses** – this could be through:
 - ▶ Diversification (such that individual losses are not correlated); and
 - ▶ Limiting total exposures (so that individual losses are not severe enough to bankrupt an insurer).

Reinsurance is a key mechanism used by primary insurers to limit exposures (particularly those of a catastrophic nature), so the existence of functional reinsurance markets is an important key pre-condition to meet this principle.

- **Affordable premiums** – premiums need to be affordable relative to the amount of protection offered.

3.2.2 Comparing pandemics to insured catastrophes

Table 3.1 compares insurability of natural disasters, terrorism, and pandemics, highlighting inherent differences that exist in key characteristics and adherence to insurability principles.

Table 3.1 – Comparing pandemics to insured catastrophes

Insurance Type	Natural Disaster	Terrorism	Pandemic
Aspect			
Geography	Local or regional	Local (but can be multiple localities)	National or international
Duration	Days/weeks	Days/weeks	Months/Years
Primary exposures	Property & Infrastructure People Business disruption	Property & Infrastructure People	People Economic and business disruption
Degree of advance warning	Low	Low	Moderate to High
Insurability Principle 'Compliance'			
Pure risks	✓	✓	✓
Large number of risks	✓	✓	✓
Meaningful losses	✓	✓	✓
Accidental losses	✓	? The significant level of government involvement in potential losses (e.g. effectiveness of airport screening) makes insuring them challenging.	? The significant level of government involvement in potential losses (e.g. effectiveness of border closures or vaccine development) makes insuring them challenging.
Definable losses	✓	✓	Complexity in defining losses.
Calculable (frequency)	✓ Can predict and model. Higher frequency supports better modelling.	X Difficult to model. Frequency is low. New types of threat (e.g. cyber) are emerging.	X Cannot predict or model. Frequency is low (but growing).

Insurance Type	Natural Disaster	Terrorism	Pandemic
Calculable (severity)	✓	? Difficult, but given an event definition severity modelling is possible.	✗ Extremely difficult, exacerbated by longer duration.
Limit losses (diversification)	✓ High geographical diversification (to date). Little to no correlation to financial / capital markets.	✓ (but limited) Some geographical diversification (to date). However, some correlation to financial / capital markets.	✗ Little to no geographical diversification. Strong correlation to financial / capital markets.
Limit losses (total exposures)	✓ Insurance and reinsurance markets exist.	✗ RI markets exist but are limited – exposures cannot be covered solely by the private insurance market.	✗ RI markets are very limited (more so than terrorism). Exposures cannot be solely covered by the private insurance market.
Affordable premiums	? In most, but not all, instances. Government involvement is usually motivated by affordability concerns.	✗	✗

Some key takeaways from this include:

- Natural disasters are in the main insurable - with the key hurdle being affordability (in some but not all circumstances)
- Prima facie both terrorism and pandemics are uninsurable solely by the private sector, given the inability to calculate expected losses, the dependence on government action, and the need to limit loss amounts to levels that can be supported by premiums, capital, and reinsurance.
- Pandemics are 'less insurable' than terrorism, with the magnitude of losses, lack of diversification ability, and correlation with economic shocks major inhibitors to insurability.

3.2.3 Roadblocks to insuring pandemics

The ability for the private sector to provide pandemic coverage is significantly inhibited by a range of factors:

- *Risk modelling (both frequency and severity) is extremely difficult, as discussed previously*
- *Ultimate losses are dependent on post-event government actions which are almost impossible to model and require international cooperation to be of optimal effect.*
- *Losses can be huge relative to annual premium, requiring a large capital commitment to assure resources are available to pay claims. This drives up the price to levels which make coverage unaffordable to many.*
- *Diversification is difficult if not impossible:*
 - ▶ *Losses are correlated with declines in the value of assets.*
 - ▶ *Geographic risk diversification is largely unavailable due to the global nature of pandemics.*

- *Limited reinsurance market coverage* (at least at this point in time), means that insurers cannot significantly reduce their total exposure through reinsurance (and so must rely on policy exclusions to do this).

A traditional insurance risk transfer solution to address pandemic risk is effectively impossible on its own. The role of governments in ‘uninsurable’ risks, and potential for Public Private Partnership (PPP) solutions are explored in Sections 4 and 5.

3.2.4 Adapting to pandemic risk will make it more insurable

It is important to observe that our society has and will continue to face unforeseen but significant events that cause great harm, which at first appear to be “uninsurable”. Through action by society, business, and governments these risks often become better understood and subsequently managed. Some examples of this include:

- Following the 11 September 2001 *terrorist attacks*, the risk of catastrophic property damage from terrorist actions was considered uninsurable and therefore a market failure. In ensuing years the risk has been reduced through efforts such as military action against terrorists, stricter aircraft security measures, and investment in understanding potential terrorism cost. As a result, the private sector now participates in terrorism insurance risk programs across the world supported by a robust reinsurance market, though government support is still needed.
- *Natural perils* insurance claims, especially flood and cyclones, are sometimes hard to insure in an affordable manner. There are several examples across the world of building standards changing or governments investing in loss control infrastructure as a result of insurance price signals and improved risk modelling.
- While commercial launch vehicles have been insured by the international *space insurance* market for many years, satellites in the government programs were often not covered until the mid-2010s. The rapid increase in private sector space launches and equipment has fostered the development of a robust private sector space insurance business, though major governments such as the United States provide backup coverage for liability arising from large potential disasters¹⁴.

These examples show that investment to understand and quantify risks can lead to steps to both reduce the risk and increase the ability of the private sector to insure the risk. Better understanding of risk will identify how the risk can be mitigated and therefore reduce the remaining risk. The enormous magnitude of economic disruption experienced from the COVID-19 pandemic has already, and will continue to trigger governments to further invest significant sums in protection against these types of events, like what occurred following 9/11 on terrorism. This is likely to significantly improve countries’ ability to respond to future events and may eventually overcome some of the problems which make it difficult to provide pandemic insurance at this time.

With respect to COVID-19 and pandemics, there are risk mitigants already in effect or being developed, including:

- *Risk models are being refined to understand the spread and damage arising from pandemics.* Current models have focused on mortality and morbidity; future models will incorporate more economic tools. COVID-19 experience will yield valuable information to improve modelling.
- *Medical advancements such as a vaccine for corona virus type infections and rapid testing technologies are being fast-tracked.* While in the near term this is focused specifically on COVID-19, this research may have wider benefits in respect of future viruses.

¹⁴ <https://www.gao.gov/assets/690/683671.pdf>

- *Increased government involvement in the development of vaccines.* The economics of the pharmaceutical industry inhibit development of many vaccines without government support; going forward governments are likely to increase funding to overcome this problem.
- *Societal changes are occurring,* such a social distancing measures and use of personal protective equipment (such as in Asia following SARS in the early 2000s).
- *Digital solutions,* such as contact tracing apps, may lead to faster tracing of the virus source and slow the virus spread.
- *Contingency plans for rapid intervention and response can be informed by this event.* Experience in COVID-19 shows that countries that decisively intervened controlled the pandemic with little death and less overall disruption. It is likely that other countries will learn from this and have much more robust plans in place for the future.

We expect that improvements such as these will change the risk profile of pandemics in a positive way over time. While this may not be sufficient to allow for a largely private sector insurance solution as is the case for many natural perils, it does suggest that any solution developed in 2020 should be reviewed periodically to assess if it is still fit for purpose.

3.3 Defining a pandemic event

Insurability requires that a pandemic loss be definable. This section highlights some of the difficulties in defining a pandemic for the purposes of triggering an insurance response.

3.3.1 Examples of recent pandemics

COVID-19 was classified as a pandemic by the WHO on 12 March 2020. The WHO defines a pandemic as “an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people” (with an epidemic defined as “The occurrence in a community or region of cases of an illness, specific health-related behaviour, or other health-related events clearly in excess of normal expectancy”).

The WHO website currently lists 20 pandemic or epidemic diseases, of which COVID-19 is one¹⁵. Other recent high-profile diseases listed by the WHO include:

- SARS (2002-2003)
- MERS-CoV (2012 to now)
- Ebola (2014-2016)
- Zika virus disease (2015-2016)
- Influenza (including the various ‘pandemic’ strains)

The WHO also lists several diseases that persistently affect the human population such as cholera and meningitis. Australia has generally been less affected by pandemics and epidemics prior to COVID-19. Nonetheless, the economic effects in Australia have been widespread due to the response to contain COVID-19.

3.3.2 Pandemics in Australian Law

Nationally, infectious diseases are covered by the Biosecurity Act 2015 (with most provisions commencing from 16 June 2016). It is generally considered that the Biosecurity Act replaced the Quarantine Act 1908, which was

¹⁵ <https://www.who.int/emergencies/diseases/en/>

repealed on 16 June 2016. Australian insurance policies commonly refer to either the Biosecurity Act or the Quarantine Act.

The Biosecurity Act does not define what constitutes a pandemic nor does it specifically mention pandemics. The Act does, however, set out powers to declare and manage risks associated with biosecurity emergencies, including human biosecurity emergencies. The legislation also gives the Health Minister special powers to give effect to recommendations made by the World Health Organisation (WHO) under the International Health Regulations.

Similar legislation exists in each state. For example, in NSW the Public Health Act 2010 gives powers to the Minister to deal with public health risks, including issuing directions or closing public premises.

3.3.3 Triggers for pandemic insurance

The above list shows that a wide variety of diseases are classified as pandemics, some of which do not necessitate the level of commercial and social restraint that has occurred with COVID-19. This highlights that any compensation solution will need to carefully consider the following:

- What constitutes a pandemic?
- Are multiple triggers needed (e.g. an economic impact trigger with a pandemic declaration)?
- What length of time will a pandemic event last for, or more specifically, over what length of time will compensation be paid?

For any solution a definition or wording has to be found, and currently definitions of pandemics used internationally and within Australia may not be suitable by themselves. There will be a trade-off between being too specific which will provide more clarity, or less specific to respond to a wider range of circumstances. A trigger may also include a government declaration, as is the case for terrorist incidents.

4 The role of government in ‘uninsurable’ risks

Key messages



- Public sector solutions can be effective where principles of insurability are not satisfied.
- Public sector solutions have been implemented for large risks from flood, earthquake, and tropical cyclone. These address protection gap issues while also creating incentives for implementation of building code and land use policies.
- Terrorism has proved challenging to cover solely in the private market, but there are many examples of successful government terrorism pools. Terrorism shares some characteristics with both natural disasters and pandemic.
- Programs have been enacted by the Australian Government to address large funding needs, including Export Finance Australia, the Future Fund, Disaster Recovery Funding Arrangements, and the Australian Reinsurance Pool Corporation.
- A public sector pandemic solution could overcome roadblocks to private sector coverage including risk modelling difficulties, size of potential losses, a lack of geographic risk diversification, and the lack of secondary markets.

This section provides an overview of key differences between private and public insurance, why government insurance pools are created, and (in Appendix C) outlines a number of examples where PPPs have been developed to address otherwise ‘uninsurable’ risks.

4.1 Rationale for public sector insurance solutions

Public sector insurance solutions are usually created to solve an affordability or availability problem (i.e. a market failure) which leads to a material protection gap between what is deemed a desirable level of insurance protection and what is available or what can be purchased at an “affordable” price.

Affordability and availability issues arise for several reasons, including:

- *There is a high probability of an event occurring or if an event is infrequent it can be very severe.* In the case of COVID-19, pandemic insurance would be expensive for businesses in affected industries because while pandemics are relatively rare, they can cause very large losses and affect large numbers of insured risks simultaneously if insurance coverage exists.
- *Insurers are required to “fully fund” insurance liabilities.* This means that insurers must hold capital and/or purchase reinsurance for all potential events up to a high return period of perhaps 1:200 years. This can require a large “risk premium” more than the provision for expected losses.

- *Potential losses are difficult to estimate reliably.* The capital problem can be compounded by an “information risk load” due to large uncertainty in the modelling tools required to measure risk.
- *Insurers are required to hold capital for adverse claims development or future catastrophic events.* Uncertainty regarding what losses are covered under insurance contracts can lead to insurers having to hold capital to protect against adverse claim development.

Public sector solutions can be effective where principles of insurability are not satisfied. Public sector insurance solutions can address these affordability and availability issues in the following ways:

- *Governments can cross subsidise risk* by using sovereign power to compel low risks to pay more than a risk-based cost, by using taxation powers to provide revenue, or by issuing bonds which compel future payment for past events. For example, the government can collect a small charge from a larger group (through tax, levy, or other mechanism) to reduce the affordability issue for high risk policyholders. Cross-subsidies can reflect the positive externalities. For example, funding of JobKeeper through tax may be considered a positive externality as it protects the broader economy and those paying for it (taxpayers) are also the beneficiaries. If JobKeeper were a private sector insurance product, it would ordinarily be paid for by business owners alone, making it less affordable.
- *Governments are not required to fully fund insurance liabilities in advance.* This especially makes sense when there is no certainty an event will occur. Government can do this as it has the unique ability to fund its risk over time, which private insurers cannot.
- *Where an insurance loss is significant and highly uncertain, holding capital for that loss can be inefficient* (i.e. building a large pool of money that may not be called upon, which in turn requires a return on capital). Government insurance solutions can operate with no capital.

Government, as effectively the funder of last resort, has been left with much of the cost for COVID-19. The question for the future becomes whether it is advantageous to have a pre-event framework to guide government responses and alternates to taxation or sovereign debt to fund these risks.

4.2 Examples of PPPs for ‘uninsurable’ risks

The core question addressed by this study is whether the government should form some sort of public-private partnership to make pandemic insurance coverage available through General Insurance policies. A natural place to look for models of such public-private partnerships is global examples of natural disaster pools and the existing terrorism pool in Australia. While the problem of pandemic is different, considering several examples of pools can help illustrate the types of problems other pools have been able to solve and why they may not serve as a good model for pandemic.

4.2.1 Natural catastrophes

Globally, there are many examples of government pools designed to address availability or affordability issues in relation to natural disasters. These pools fall into two broad categories: reinsurance pools and primary insurance pools. Pools have a variety of public policy goals, which can include:

- *Providing a low-cost form of capital* from government bonding to supplement capital from private sources.
- *Providing a mechanism for subsidies* to high risk insureds, funded by levies on low risk insureds or taxpayers.
- *Providing incentives for mitigation*, either at the macro (market) or micro (individual risk) level.

- *Serving as a vehicle for national governments to encourage action at a local level, such as changes to building codes or land use policies.*

Representative examples of government natural disaster pools (both reinsurance and primary insurance) are summarised in Appendix C.

These and other pools covering natural disasters have several key characteristics which have led public policy makers to see them as advantageous:

- They cover a specific peril or set of perils limited by geography and time due to their link to specific events.
- They cover a type of loss similar to that covered by private sector insurance policies, making it possible to use the insurance system (distribution, premium collection, administration, and claim settlement) to administer the program in most cases.
- They cover perils for which there exist well established models for pricing and loss exposure.
- They cover perils which are generally diversifiable in the global reinsurance system, providing access to non-government financing.
- Where government financing is required, the size of the commitment is small relative to government financial metrics such as the tax base or debt issuance.
- The pools serve multiple governmental purposes, such as providing a means to promote affordable coverage, loss mitigation, and research.
- The events which affect the pools are generally not large enough to adversely affect the broader economy.

The above list is intended to outline the reasons why some countries have found pools to be a useful tool to address issues with funding large natural disasters and to highlight factors which may make them appropriate for natural catastrophes but not pandemic. We note that pools can have negative consequences, such as encouraging overdevelopment in high risk areas, reducing mitigation incentives, making low risk consumers pay more to subsidize high risk ones, and exposing government to loss.

4.2.2 Terrorism

Following the 11 September 2001 terrorist attacks, insurers responded by introducing terrorism exclusions for commercial property risks. The reasons for this withdrawal of insurance capacity are like what we are observing with COVID-19 – large losses from the attack and unquantifiable future losses leading to tightened reinsurance wordings and consequentially Australian insurance wordings. This left a material protection gap for property owners for future terrorist attack, which reduced confidence in large property assets.

In response Australia enacted the Terrorism Insurance Act (TIA), which provided reinsurance capacity up to \$10 billion to commercial property insurers. This meant that in the event of a terrorist incident, commercial property owners would be assessed and paid by the insurer the same way as any other property claim, with the cost shared between commercial insurance policyholders and taxpayers.

In return, insurers pay a reinsurance premium to the Australian Reinsurance Pool Corporation (ARPC), the government enterprise established to administer the reinsurance operation. The reinsurance premiums have allowed the ARPC to fund smaller terrorist attacks and to access global markets to provide around \$3 billion of capacity to reduce government exposure. The purchase of retrocession capacity is made possible and more efficient by ARPC's function of being a bulk purchaser by aggregating Australian risks. We also note the reintroduction of private sector insurance coverage of terrorism risk was facilitated by investments ARPC made in modelling terrorism losses.

The United Kingdom had an existing reinsurance PPP for terrorism risk through Pool Re, established in 1993 after IRA bombings in London. Pool Re collects premiums from insurers and has built up a large fund in case of a terrorist attack. Nonetheless, Pool Re is ultimately supported by an unlimited government backstop.

The United States enacted a similar reinsurance backstop, the Terrorism Risk Insurance Act of 2002 (TRIA). TRIA is different to the TIA in that there is no pre-funding.

Terrorism is an example of where extreme losses are not economically insurable through traditional insurance structures. That is, they would involve building up a large capital base for an event that may or may not happen. This is why a government backstop is often utilised, which effectively post-funds the cost of a large event rather than inefficiently tying up capital for this purpose.

4.3 Existing Australian Government risk financing structures

There are several examples of Commonwealth Government entities being set up to manage future risk and/or support the efficient operation of the private sector. Some relevant examples for this report include:

- **Export Finance Australia** (EFA, formerly known as Export Finance and Insurance Corporation) provides loans, bonds and guarantees to assist Australian businesses that export overseas. The support includes improving access to bank finance through EFA guarantee to deliver on export transactions. The EFA is an example of a targeted solution.
- The **Future Fund** is Australia's sovereign wealth fund with \$205.4 billion¹⁶ of assets. The majority of the fund has been earmarked for the Commonwealth's unfunded superannuation liabilities, though other funds for future drought and emergency natural disaster response also exist. The Future Fund is an example of pre-funding future financial risks to Australia.
- **Disaster Recovery Funding Arrangements** (DRFA) provide financial assistance directly to the states to assist them with costs associated with certain disaster relief and recovery assistance measures. Under the DRFA, the Australian Government provides financial assistance up to 75 per cent to the states in respect of eligible expenditure on relief and recovery assistance.
- The **Australian Reinsurance Pool Corporation** (ARPC) is a public sector enterprise established to administer reinsurance for terrorism risk to commercial properties. ARPC has flexibility to adapt its funding of risk based on the amount, type and cost of private sector capacity, in order to balance value for money and the evolving terrorism threat.

We have highlighted the above as examples of existing frameworks that may be adaptable to a solution for pandemic risk.

4.4 Potential role of government for pandemic risk

In Section 3.2.3 a number of roadblocks to private sector coverage of pandemics were identified, which exist now and will into the foreseeable future. A public sector pandemic solution can address these roadblocks as follows:

- *Risk modelling difficulty* (i.e. reliable estimates of future cost): Accurately estimating the risk cost and collecting appropriate risk premiums is less important to a government insurer as it can post-fund any shortfalls.
- *Losses are large, which requires a large capital commitment*: Government insurers do not need to hold capital to pay claims when they arise. Other avenues for funding exist for a government.

¹⁶ As at 31 March 2020

- *Diversification is difficult:* Government insurers can spread costs over both space (through reinsurance) and time, while private sector insurers can only spread losses temporally through reinsurance.
- *Lack of secondary market:* Government does not require a secondary market to operate as it is well placed to absorb the cost of pandemic risks (for the reasons above).

5 The potential role of the private sector in pandemic cover

Key messages



- There have been widespread calls for PPP solutions globally.
- There are several ways an insurance solution could add value, including risk assessment, pre-funding, utilisation of insurer infrastructure (such as claims settlement), and helping to quantify risk to inform decisions on mitigation investment.
- Solutions which involve the insurance industry's infrastructure need to be crafted carefully to ensure that operations in other parts of the system are not adversely impacted.
- We have identified a number of factors which should be considered in the design of a scheme, including defining its objectives and participants, whether participation is compulsory, the definition of coverage afforded, its time horizon, its funding and financing mechanism, whether coverage/terms are uniform across the market, the scope of coverage, and a scheme's flexibility to adapt to changing conditions.
- Key considerations include a scheme's cost, its capacity, and its potential to disrupt an otherwise well-functioning insurance system.

In Section 3 we demonstrated that a traditional insurance risk transfer solution is not a viable option to address pandemic risk. In Section 4 we provided examples of where PPPs have been successful in providing an effective solution to otherwise 'uninsurable' risks. In this section we explore whether such a PPP model could provide the basis for a future pandemic solution (and if/where such a solution may be better than the COVID-19 response – being essentially post-event government funding to support the economy alongside the existing limited insurance coverage).

We note that generally insurance solutions have important benefits even if they are not a traditional private sector risk transfer mechanism. For example, insurance frameworks can provide for partial pre-funding of losses, reduce government's exposure to unbudgeted expenditures, and provide consumers and businesses with a clear picture of what coverage will be available before an event, facilitating planning and risk management.

Many global experts have been suggesting that a PPP solution is desirable. For example, Christian Mumenthaler, Group Chief Executive of Swiss Re, recently wrote:

A workable solution would be a pandemic pool, a pre-agreed risk-sharing arrangement between the public sector and the re/insurance industry to cover losses from a global pandemic like COVID-19. Similar schemes have been tried and tested for less predictable threats like flood and terrorism risk. A public-private pandemic pool would not only give customers clarity about what is or isn't covered, but also provide protection at an affordable price which insurers would otherwise not be able to offer.

I'm convinced that such a collaborative approach would greatly strengthen society's resilience in crises like the current pandemic, and I am pleased to say that Swiss Re is actively engaged in discussing such plans with public policy representatives in several countries¹⁷.

5.1 Where might an insurance solution add value?

If there is to be any benefit from a hybrid insurance/government solution there needs to be demonstrated value to the public from insurer participation in such a model (vs. a government only model alongside status quo insurance coverage/exclusions).

Areas where an insurance framework, be it private, public, or a combination, could conceivably add value to a pandemic solution could be in one or several of the following areas:

- Insurer claims processes can be leveraged to deliver specific benefits.
- Having an insurance mechanism can allow businesses to select and partially prefund benefit levels in advance of an event, thereby smoothing funding over time and providing incentives for risk mitigation.
- Having insurance may allow more coverage customization (although this would vastly complicate a government funding process as some way needs to be developed to make the funding “fair” for different coverages).
- Defining coverage and potential claims exposure before an event can help public policy planners understand the cost-benefit of mitigation measures. For example, in property insurance reductions in expected future insurance costs can serve as a proxy for the benefit of mitigation measures such as stronger building codes or investment in infrastructure.

We note that solutions which involve the insurance industry's infrastructure need to be crafted carefully to ensure that operations in other parts of the system are not adversely impacted. For example, both loss control and claims processes have been severely stressed by recent bushfires and other events, in addition to insurers having to overcome challenges associated with working remotely due to the pandemic. It is not clear to us that insurance involvement would be practical unless steps are taken to streamline products and reduce the complexity of coverage, pricing, or claims handling. This is because the current way business interruption cover is provided involves relatively complex processes, such as determining the amount of turnover which would have occurred without an event, which may be difficult to administer in a situation where a large proportion of businesses in the country are experiencing a loss event.

Australia currently benefits from a well-functioning insurance system which delivers cost-effective products to Australians in many lines. Care must be taken to avoiding disruption to that system to address the challenges arising from pandemic.

¹⁷ <https://www.swissre.com/risk-knowledge/risk-perspectives-blog/lessons-from-covid-19-how-science-partnership-driven-approach-risk-can-win-battle.html>

5.2 What key issues need to be addressed in a Pandemic PPP?

Development of a pandemic (or any other) PPP model requires several key decisions to inform model design.

Table 5.1 summarises the main areas we have identified for consideration with respect to a pandemic solution.

Table 5.1 – Key considerations for a Pandemic PPP

Decisions	Comments
Scheme objectives	<p>The most important decisions involve the nature and timing of payments that are necessary during a pandemic. Australian Government programs (across all States and bodies) put in place during COVID-19 (JobKeeper, JobSeeker, support for business loans, eviction moratoriums, etc.) have focused on assisting businesses, maintaining employment/wages, and preventing housing affordability issues during the lockdown.</p> <p>Any future scheme needs to be clear on what the objectives are before designing the associated elements.</p>
Scheme participants	<p>What businesses or individuals should be protected by a scheme? Should it be broad-based or focused? For example, should the scheme be targeted towards specific industries (e.g. aged care) or business processes (e.g. trade credit)? Alternatively, should it be broader to offer coverage such as business interruption to a wide range of businesses? We estimate that less than 30% of SME businesses have business interruption cover.</p>
Participation (Compulsory or voluntary)	<p>Should participation be compulsory or voluntary for the entities and individuals that will benefit from the scheme? How can government provide incentives to those who act responsibly by participating in a scheme (and contributing to funding through premiums) vs. those not participating and waiting for post-event relief?</p>
Scheme benefits and coverage	<p>The supports from government are different to benefits payable under insurance policies (notwithstanding pandemic exclusions that apply). Therefore, consideration is needed on what payments should a scheme pay in the event of a pandemic, and whether this can be sufficiently met through an insurance policy without materially sacrificing the policy objectives.</p> <p>For example, business interruption cover would typically reimburse businesses for lost profits and fixed expenses. It may cover some or all payroll expenses depending on the type of cover and limit selected. Business interruption coverage may need to be modified if it were to provide universal benefits similar to JobKeeper.</p> <p>Triggers to provide benefits will need to be identified and articulated so that it is clear when benefits will be paid. Having specific triggers may, however, restrict flexibility to deal with new and unforeseen circumstances.</p> <p>Should the cover be a pure pandemic or a broader one including all kinds of infectious diseases?</p>
Time horizon	<p>The time horizon for which benefits will be paid must be specified. SME business interruption policies typically cover a 12-month period of loss, though in cases where coverage is included for payroll expenses these may be limited to a shorter period. A scheme might consider a shorter period of cover to provide a bridge between the onset of a pandemic and enactment of government programs to address severe disruption.</p>

Decisions	Comments
Funding of scheme	<p>Scheme funding is a critical design consideration. What is the right balance of scheme funding (between policyholders through premiums/levies, by the government through taxation or a broad levy)?</p> <p>An additional funding consideration is whether the scheme should be pre-funded, part-funded, or post-funded?</p> <p>The uncertainty around the occurrence and cost of future pandemics means pre-funding may lead to a large accumulated balance which could be inefficient (other than in some limited circumstances). The experience of comparable catastrophe schemes suggests small upfront part funding provides working capital for the responsible organisation to understand and manage risks. We would expect that most the cost of future pandemic would be post-funded.</p>
Competition	<p>Should insurers be allowed to compete based on the coverage and price for pandemic cover? Where insurers are permitted to compete based on the cover provided, the insurer should also retain more of the risk. Greater government participation requires largely standardised coverage and price that maintains competitive neutrality across insurers.</p>
Financing mechanism	<p>Administration of the program (including policy issuance, collection of any premiums, and payment of benefits) can be either directly from government or through an insurer. For example, benefits can be paid by government either direct to recipients (e.g. JobSeeker and JobKeeper), passed through an insurer (e.g. New Zealand’s Earthquake Commission), or as a reinsurance arrangement with insurers (e.g. Australian Reinsurance Pool Corporation).</p>
Flexibility	<p>A PPP solution could be targeted narrowly at a pandemic similar to COVID-19 or designed more flexibly to address other types of extreme events, either arising from health emergencies (such as antibiotic resistant “superbugs”) or others such as geomagnetic storms, agricultural diseases, or cyber-attacks.</p>
Phasing	<p>Is a phased/staged implementation approach more desirable? Any comprehensive PPP solution will involve a high degree of complexity as it could affect every segment of society, all types of businesses, require significant administrative structures, and entail large revenues or expenditures. If done now it would need to be designed during the current event without a clear understanding of what else may emerge before this event ends. That may argue for a phased approach, where some high priority targeted initiatives are begun while a more comprehensive solution is studied. An example of a targeted initiative could be trade credit as is being done in some other countries, or event cancellation.</p>

In addition to the policy position decisions above, there are practical considerations that need to be assessed. These include:

- **Cost**, such as:
 - ▶ Total commitment of the scheme if a pandemic or other covered event occurs.
 - ▶ Increase to insurance premium levels required to fund a scheme, etc., if it is partially or fully prefunded.
 - ▶ Building up capital that can be better utilised elsewhere.
- **Capacity**, such as the ability to deliver anticipated benefits of the scheme in a timely manner.
- **Disruption**, such as the potential of a scheme to adversely impact otherwise well-functioning insurance markets.

6 Recent international developments on pandemic cover

Key messages



- Other countries are investigating various approaches to providing some insurance coverage for pandemics.
- In the US there are three federal proposals, one to form a reinsurance facility like that which exists for terrorism, another modelled on the way FEMA provides flood insurance, and a third which is a hybrid of the two. There is also a call for support of trade credit insurance.
- In the UK HM Treasury has already implemented a trade credit support solution, the FSA has asked the high court to review pandemic coverage in private insurance contracts to resolve coverage questions, a multi-stakeholder group has been formed to study proposals for “Pandemic Re”, possibly using the existing Pool Re terrorism facility as a model, and Lloyd’s has issued a report on insurance response to COVID-19 which includes 3 frameworks (Recover Re, ReStart, and Black Swan Re) designed to protect against COVID-19 and other future systemic risks.
- In the EU several governments have enacted trade credit support programs.

This section summarises some key issues and discussions in the US, UK, and Europe in respect of insurance responses to COVID-19.

6.1 United States

There are currently three proposals in the US to provide pandemic insurance coverage through government programs by making available coverage like that in traditional business interruption coverage. There is also an effort to secure government support for trade credit insurance.

6.1.1 H.R. 7011, the Pandemic Risk Insurance Act of 2020

The Pandemic Risk Insurance Act of 2020 (PRIA) uses the existing Terrorism Risk Insurance Act (TRIA) and Terrorism Risk Insurance Program (TRIP) as a template. The bill authorises the creation of the Pandemic Risk Reinsurance Program (PRRP) which could be triggered once aggregate insured losses from a public health emergency exceed \$250 million. Once the PRRP is triggered, the program would pay 95% of insured losses exceeding a participating insurer’s deductible, set at 5% of direct earned premiums during the preceding calendar year. The PRRP would have a reinsurance cap at \$750 billion of Federal compensation, beyond which the Treasury Secretary would order losses be reduced on a pro-rata basis.

Participation in the program would be voluntary and insurers would elect to become participating insurers. Coverage for pandemic related business interruption will be like that for other perils. The program would allow insurers to buy additional private market reinsurance.

Current drafts of the bill leave several key issues to be determined by Treasury, including the specifics of what coverage must be offered. At this time it appears that the program would not charge an upfront premium to participating insurers.

The bill has been endorsed by major brokers, The Council of Insurance Agents & Brokers, RIMS, and the Risk Management Society. At this point it does not have widespread support from insurers.

The US Academy of Actuaries has offered a comment letter on the bill which illustrates the high degree of complexity in designing a program of this magnitude¹⁸.

6.1.2 Business Continuity Protection Program (BCPP)

An alternative bill, the Business Continuity Protection Program (BCPP), is being proposed by a group of insurance trade organizations, including the American Property Casualty Insurance Association, the National Association of Mutual Insurance Companies, and the Independent Insurance Agents and Brokers of America. At this time it has not yet been formally filed in Congress.

Unlike PRIA, which is designed as a reinsurance program to backstop policies priced and underwritten by insurers, the BCPP is designed to operate similarly to the National Flood Insurance Program (NFIP). It would have a standard policy providing business revenue replacement assistance that would reimburse up to 80 percent of payroll, benefits, and expenses for three months. Businesses would elect a level of revenue replacement and purchase policies through insurance entities that voluntarily participate in the BCPP. The Federal Emergency Management Agency (FEMA) would administer the program.

The BCPP would collect premiums set by FEMA through participating insurers, which would also administer claims. Participating insurers would be paid a servicing fee, likely a percentage of premium. All losses would be paid by FEMA. The proposal calls for the program to develop risk mitigation guidelines and safety standards for business.

6.1.3 Chubb proposal

On 8 July 2020 Chubb shared its views on insuring for future pandemics with the release of the 'Pandemic Business Interruption Program'¹⁹. It envisages two key programs - the 'Business Expense Insurance Program' (BIP) for small businesses, and 'Pandemic Re' for medium and large businesses.

The BIP provides immediate cash infusion when a pandemic is declared, so that small businesses 'can continue to pay employees and ongoing business expenses, thereby limiting economic disruption'. The program requires all business insurers to participate, with the federal government assuming the majority of the risk through US Treasury funding to insurers for the program.

The objective of the medium-large business program is to 'promote market-based pandemic risk mitigation for medium and large businesses'. Government support is provided through 'Pandemic Re' - a newly created government reinsurance entity. The program would be voluntary, with both the insurance industry and the government are paid an appropriate risk-adjusted price for pandemic cover. Participating insurers retain a portion of each risk and reinsure the rest to Pandemic Re.

At the time of writing it had not yet been formally filed in Congress.

¹⁸ https://www.actuary.org/sites/default/files/2020-06/Pandemic_Risk_HR_7011.pdf

¹⁹ https://www.chubb.com/us-en/_assets/doc/pandemic-business-interruption-program.pdf

6.1.4 Trade Credit Insurance

US trade credit insurers have approached the Treasury Department and Federal Reserve seeking financial backing for claims payments to support business supply chains affected by the current pandemic²⁰. Media reports indicate trade credit insurers are seeking \$60 billion of support, which follows reductions of 10-15% in the amount of coverage offered.

6.2 United Kingdom

There are four major initiatives with regard to pandemic insurance: implementing emergency trade credit assistance, fast-tracking a High Court test case to clarify the court's view of pandemic exclusions, the formation of a broad working group to study the concept of "Pandemic Re", and a proposal from Lloyd's.

6.2.1 Trade Credit Assistance

ON 4 June HM Treasury announced a temporary scheme, backdated to 1 April and running to the end of the year, to provide £10 billion of support to trade credit insurers operating in the UK market. According to HM Treasury "The Trade Credit Reinsurance scheme, which has been agreed following extensive discussions with the insurance sector, will see the vast majority of Trade Credit Insurance coverage maintained across the UK."

HM Treasury also says:

- The scheme will be delivered through a reinsurance agreement that is open to all insurers currently operating in the UK market, covering both domestic and overseas trade with payment terms of up to 2 years.
- The scheme rules will also require participating insurers to comply with certain undertakings regarding the conduct of their business during the period of the scheme. This includes conditions that insurers will forgo profits and will not pay dividends or bonuses for senior staff for their guaranteed Trade Credit Insurance business.
- To protect businesses that the private market cannot insure, export credit insurance is also available from UK Export Finance to cover UK exports to 180 countries. Government-backed export insurance from UKEF can protect the 230,000 businesses that export from the UK against the risk of not getting paid when selling internationally.
- Implementation of the scheme is subject to state aid approval, agreement of full form documentation with insurers and acceptance of applications from insurers for participation.

6.2.2 Pandemic Test Case

The UK Financial Conduct Authority (FCA) is seeking clarity from the courts on whether the wording of some insurance policies should provide cover during the pandemic. It selected 17 examples from business interruption (BI) insurance policies used by 16 insurers, eight of whom were asked to take part in the court case. Insurers which agreed to participate in the test case said the objective is to provide clarity for interested parties as to the operation of policy wordings as quickly as possible. This will serve several purposes by consolidating litigation, allowing for more rapid claim settlement, and informing further government actions. The FCA expects the court case to be heard in the second half of July²¹.

²⁰ <https://www.insurancejournal.com/news/national/2020/06/08/571317.htm>

²¹ <https://uk.reuters.com/article/uk-health-coronavirus-britain-insurance/uk-watchdog-sets-framework-for-insurers-covid-19-court-battle-idUKKBN2381G6>

6.2.3 Pandemic Re

An industry group has assisted the formation of a project committee to examine various ideas for providing coverage for future pandemics. The group is comprised of a diverse collection of volunteers from brokers, insurers, reinsurers, modelling firms, medical experts, and academia. There are six work streams: Customer Engagement and Distribution, Technical Insurance, Modelling and Data, Scheme Structure/Operating Models, Pandemic Preparedness and Mitigation, and Legal, Regulatory and Government Affairs.

Following are organisations represented on the working groups, which demonstrate a wide range of expertise. This group could serve as a model for a similar study in Australia:

- **Academia / research:** Cambridge Centre for Risk Studies and Imperial College
- **Insurance brokers:** Aon, Gallagher, Hyperion, Marsh, and Willis Towers Watson
- **Consulting/advisory:** Deloitte, KPMG, Oliver Wyman and PWC
- **Data:** Dun & Bradstreet, Mastercard, Metabiota, Risk Management Solutions (RMS) and Verisk
- **Industry associations:** Association of British Insurers (ABI), British Insurance Brokers Association (BIBA), Confederation of British Industry (CBI), Lloyd’s Market Association (LMA) and London Market Group (LMG)
- **Re/insurers:** Allianz, Asta, Aviva, AXA, Chaucer, Chubb, Convex, Ecclesiastical, Flood Re, Hiscox, Lloyd’s, Munich Re, Pool Re, RSA, Swiss Re and Zurich
- **Legal firms:** Arnold & Porter, Clifford Chance and Herbert Smith
- **Medical:** National Health Service.

6.2.4 Lloyd’s proposed open source frameworks

Lloyd’s has released a report, “The insurance response to COVID-19”, which proposes three open source frameworks to for business insurance coverage for businesses affected by COVID-19. The open source frameworks proposed include:

- An immediate measure for the current COVID-19 through **Recover Re** (a government backed vehicle offering after the event cover).
- A potential second wave cover through a combination of Recover Re and **ReStart** (pooled insurance capacity).
- Cover for future pandemics and other largely uninsurable catastrophic events through **Black Swan Re** (a government backed vehicle to insure against future systemic risks).

The frameworks proposed by Lloyd’s appear to provide cover like business interruption insurance, though issues such as coverage and insurance benefit have not yet been proposed.

6.3 European Union

Several EU governments are implementing trade credit support schemes, including France, Germany, and the Netherlands. The EU Commission has approved these efforts under provisions of the EU treaty which enable measures implemented to remedy serious disturbances in member states’ economies. The Commission adopted a temporary framework effective through the end of the year to allow for various types of state aid to industries, including support for export (trade) credit insurance. The EU is also exploring a Europe-wide solution to trade credit issues.

As an example, France in April announced a €10 billion scheme to support trade credit insurance. According to the Commission, the French scheme “(i) the guaranteed insurance products are offered only to compensate for the lack of sufficient private offer, (ii) the guarantee will only be provided until the end of this year, (iii) the guaranteed insurance products can be offered by all credit insurers in France, (iv) the guarantee mechanism ensures risk sharing among its users, and (v) guarantee fee premiums provide a sufficient remuneration for the French State.”²²

²² <https://insurance-edge.net/2020/04/13/eu-approves-state-aid-plan-for-french-credit-insurance-market/>

7 Framework models for consideration

Key messages



- Finity has identified four “Framework” proposals for further consideration. Each is discussed with pro/con and an indicative magnitude of cost.
- Framework 1 is the status quo, with limited insurance cover available and support for future pandemics provided by programs like those used in the current event. We offer this as a baseline outcome against which other ideas can be tested.
- Framework 2 would be similar to the targeted programs implemented by the UK and EU for trade credit, where narrowly defined solutions would be created for specific industries, for example trade credit, travel, or lenders mortgage where the government felt there was particular leverage for involvement.
- Framework 3 would be a newly created form of business protection designed to provide a short term (i.e. 1-3 month) limited benefit distributed by insurers to cover certain business expenses and payroll. The coverage would be distributed by commercial insurers, have simple coverage and pricing, have the government take underwriting risk, and have insurers collect revenue and pay benefits. This is like the BCPP proposal in the US.
- Framework 4 would be a pandemic facility like what is being considered in the US and UK, perhaps modelled after the current ARPC cover for terrorism. In exchange for participating insurers removing pandemic exclusions, the facility would provide low cost reinsurance for traditional business interruption cover.

As outlined in Section 5.2, there are a number of key policy issues as well as practical considerations to be addressed in deciding whether to create a scheme, and if so how it should be designed. The remainder of this section outlines several Framework models for further consideration. While theoretically multiple different combinations of models are possible (based on decisions against the issues above), there are naturally some models that work better than others. Four frameworks, including maintaining the current status quo, have been considered in more detail below.

We have attempted to include an indicative estimate of the magnitude of the programs described under each framework. This has been included only to provide a guide on the relative size of each program. A detailed costing of the solutions has not been completed, and this is intended for later study phases.

7.1 Framework 1: Status quo

7.1.1 Overview of framework

The status quo is the current environment where no pandemic scheme exists. Instead, a series of government responses are formulated as the global circumstances around the pandemic became known.

7.1.2 Pros and cons

Table 7.1 outlines some pros and cons of the ‘status quo’ approach.

Table 7.1 – Pros and cons of Framework 1

Pros	Cons
Benefits can be tailored to meet specific circumstances of the pandemic and respond as the circumstances change	Requires fast response of government policy, which may lead to unintended consequences of policy and errors
Payments are promptly made to businesses and individuals utilising existing government infrastructure (e.g. ATO, Centrelink)	Uncertainty for businesses and individuals; nature of support depends on decisions of the Commonwealth and State governments
Flexibility and ability to respond to very large events	Economy wide programs can be blunt and lead to some overspend
Everyone will benefit, even if they are uninsured	No opportunity for private market participation, with all losses funded by government
	Transfers an insurance/risk financing solution to a taxation solution, with a mismatch between those that benefit and those that pay

7.1.3 Approximate magnitude of program

This status quo approach has resulted in support to businesses and employees through programs like JobKeeper. JobKeeper is estimated to cost \$70 billion for 6 months of support to employees of affected businesses.

7.2 Framework 2: Targeted coverage areas

7.2.1 Overview of framework

The experience of COVID-19 has highlighted several areas that are particularly vulnerable to pandemic. Some examples of this are shown in Table 7.2 (this list is not intended to be comprehensive).

Table 7.2 – Potential areas for targeted intervention

Vulnerable areas	Related/affected insurance products
Tourism industry and other travel related services	Travel insurance, business interruption for businesses relying on tourism
Overseas student education	Business interruption for education providers
Film industry (and other arts industries)	Business interruption; cancellations
Sporting and other events	Event cancellations
Domestic and foreign trade	Trade credit, business interruption
Housing and availability of finance	Lenders mortgage insurance

Framework 2 aims to provide support to specific areas that are considered particularly vulnerable to pandemic risk, and can broadly be described as follows:

- The pandemic scheme will target systemically important areas of the economy (i.e. those that have broader economic benefits to Australia) that are most vulnerable to pandemic.
- Pandemic exclusions will be limited or made not effectual through legislation.

- Insurers will be required to pay claims that arise from a pandemic.
- Government support will be provided through a reinsurance model, for which the government will charge a reinsurance cost.

We have included Lenders Mortgage Insurance in this list despite the fact that it is designed to respond to economic stresses such as a recession. Our reason for doing so is the line's importance in protecting home loan lenders (and by association, the provision of all types of credit by regulated ADIs), supporting ongoing home lending through all stages of the credit cycle, and enabling homeownership with the associated broad economic benefits. Even though it is designed to withstand economic downturns it is possible that the effects of a severe pandemic may place stress on the line in excess of what would be considered "normal".

7.2.2 Pros and cons

Table 7.3 outlines some pros and cons of this model.

Table 7.3 – Pros and cons of Framework 2

Pros	Cons
Limits government intervention to target areas, which lowers the cost to government	It can be difficult to define eligible businesses or processes, and to maintain the relevance of the scheme for changes to the economy over time
Economic return on spend for government is tailored	Many businesses (and individuals) will not fall under the scheme and therefore have no pandemic protection
A high level of pre-funding is possible if the breadth of the scheme is controlled	In the absence of other government policies, Framework 2 does not limit business failures outside of the target areas nor prevent unemployment
Some private sector participation through levies	Only businesses that are insured will benefit
Insurers can individually assess claims and adjust losses to specific circumstances	Design and administrative complexity
Can be phased, and new industries added	Increased insurance costs

Notably, we have not included retail and hospitality businesses as these represent many affected businesses across Australia. Framework 3, discussed next, would be better suited if cover were to be provided to retail and hospitality sectors.

7.2.3 Approximate magnitude of program

The magnitude of a targeted program will clearly depend on which sectors are being targeted.

Trade Credit, for example, where government interventions are being implemented in a number of European countries, is a sector which generates around \$250 million of premium per year in Australia. During the Global Financial Crisis, the loss ratio for this segment increased by well over 100% of the premium volume, meaning a similar impact today might cost more than \$250 million. COVID-19 is expected to have a more significant impact than the GFC.

7.3 Framework 3: Broad business protection

7.3.1 Overview of framework

The intention of this Framework is to provide a limited cover to a broad range of businesses so that they can stay in operation and keep staff employed. Framework 3 can broadly be summarised as follows:

- Insurers will offer a “pandemic business continuation” (PBC) product to policyholders. The PBI will pay for fixed costs and a reduced salary for the business’s employees²³. The PBC will be triggered if a pandemic leads to temporary closure of the business. Insurers will assess and pay claims if a pandemic arises. Ideally, the benefits payable will be readily assessable by the insurer so that claims can be quickly processed. Insurers may be reimbursed for costs from managing claims.
- PBC will be provided for a set period, say 1-3 months. This provides government with time to formulate its policy for the pandemic event.
- PBC will be compulsory for all insurance policies for SME businesses (regardless of whether business interruption cover is taken or not).
- The PBC would be issued by a government insurance entity, such as the ARPC, which will have some flexibility to manage premium levels, study the risk and how it is being mitigated, and ultimately look at avenues for private sector participation in the future.
- A levy will be collected by insurers for PBC on behalf of the government, with the government taking all the risk arising from the PBC. The levy would only part-fund the scheme.

7.3.2 Pros and cons

Table 7.4 outlines some pros and cons of this Framework.

Table 7.4 – Pros and cons of Framework 3

Pros	Cons
Broad coverage of Australian businesses and employees	Uninsured businesses will not be protected
Benefits would include both business expenses and payroll, overcoming a limitation of traditional business interruption which may only cover some business costs	Cover would be different than is currently afforded by insurance contracts
Leverage infrastructure of insurance sector to individually assess claims, minimise leakage, and reduce the need for short term hires for government departments/agencies	Some administrative complexity as SME businesses sometimes have policies with different insurers
Provides some certainty to businesses in advance of pandemic related closures on cover	Workload for insurers, and ability to scale up quickly, will need to be considered, though simplified coverage and pricing could be much easier to implement than a traditional business interruption solution
Some prefunding to reduce post-event government borrowing	Increased insurance costs to businesses

²³ Note that the proposed PBI coverage differs from traditional business interruption which does not always provide cover for all payroll, though some payroll cover may be available depending on coverage options and limits selected.

7.3.3 Approximate magnitude of program

This Framework is intended to be broadly the same scale and breadth as JobKeeper, which is estimated to over \$10 billion per month that benefits are paid. However, this option will provide opportunity to fine-tune the benefits (which could save cost), though there might be increases if other types of business costs are compensated (e.g. some rental assistance or coverage for fixed costs such as utilities).

This framework provides compensation to government for the risk it undertakes from businesses through levies that will be charged (both pre and post an event).

7.4 Framework 4: Government reinsurer

7.4.1 Overview of framework

Our fourth Framework applies the structure of the government providing reinsurance cover, such as through the Terrorism Insurance Act (TIA), to pandemic. Framework 4 can broadly be described as follows:

- Legislation enacted for broad based removal of pandemic exclusions from existing business interruption policy wording. The other terms and conditions of the business interruption policy would continue to apply (i.e. coverage limits).
- Insurers can choose to reinsure pandemic risk with the government reinsurance body. An insurer can choose not to reinsure with the government and carry the risk on its own. However, an insurer will either be all-in or all-out, and not be allowed to “cherry pick” specific policies to reinsure and to retain. This is similar to the approach currently contemplated in US legislation which would require insurers to decide whether to participate in the scheme. If they opt in, the insurer would not be allowed to exclude pandemic risk and would receive government reinsurance. If they opt out, they would not be required to provide pandemic cover.
- A reinsurance premium is paid by the insurer to the government. Government reinsurance picks up 100% of the risk (a small policyholder and insurer deductible could be incorporated, but this will not materially affect the cost to the government).
- If losses exceed a predetermined limit, claims would be pro-rated (as is done under the TIA).

The TIA has a scheme limit of around \$10 billion. This caps the government’s exposure to largest terrorist events and means that large properties will only recover a proportion of their property loss if the total damage exceeds \$10 billion. A low scheme limit is likely to be counterproductive for a scheme designed to protect against economic damage during a pandemic – i.e. hitting the scheme limit will mean businesses will not be fully protected for their fixed costs and therefore more likely to fail.

7.4.2 Pros and cons

Table 7.5 outlines some pros and cons of this Framework.

Table 7.5 – Pros and cons of Framework 4

Pros	Cons
Broad cover including larger businesses	There are numerous variations of business interruption cover wording, and eliminating pandemic exclusions would not guarantee that all policies would respond
Provides insurers with a choice, and some price competition, for pandemic coverage	Business interruption policies do not guarantee staff will be retained or directly provide benefits to workers; breadth of scheme increases its complexity and cost
Certainty for businesses in the event of a pandemic	Government will commit to a very high cost if an event occurs and/or there is no assurance that insurers will participate
Existing structure (ARPC) through which to implement this option	Capacity of insurers to assess losses for affected businesses in a short timeframe is limited
Can be offered by simply removing an exclusion	Only businesses that purchase business interruption cover will benefit (historically about 30% of businesses), so much of the economy will not receive any benefit
Claim proration assures losses remain within scheme capacity	Applying a cap is problematic because the event duration is unknown A cap on reinsurance capacity would also be counter-productive to ensuring business confidence remains during and post a pandemic

7.4.3 Approximate magnitude of program

Publicly available information on business interruption sums insured is not readily available. However, we note that it is readily foreseeable that some form of JobKeeper benefits would still be required on top of the payment of business interruption benefits. This means that the cost of Framework 4 to the government, through both supporting business interruption on top of income support, will exceed \$10 billion per month and probably by some multiple of this amount.

This framework provides compensation to government for the risk it undertakes from businesses through reinsurance premiums that will be charged (both pre and post an event).

7.5 Other Considerations

- Should the scheme be time limited, like Flood Re in the UK, or subject to periodic review, like TIA in Australia?
- Should parameters of scheme automatically adjust over time where no pandemic occurs or after one occurs? (e.g. the reinsurance retention of insurer participation increases as capital is accumulated for each pandemic-free year and drops after a large event, or premiums adjust over time).
- How is a pandemic event defined? How long does it last?
- Should a scheme be set up for any extreme event (e.g. Black Swan Re) to allow for other types of uninsurable exposures (geomagnetic storms, rising sea levels, agricultural pandemics, etc.)?

8 Concluding remarks

The authors of this report make the following concluding observations:

- (i) Pandemic risk is not insurable by the private sector alone at this time, so government intervention is required.
- (ii) A significant degree of direct government intervention to respond to the specific circumstances of each future pandemic post-event is inevitable (e.g. Framework 1).
- (iii) Both public and private responses to the current pandemic, such as investments in vaccine research, new technologies, and stronger pandemic response plans, may change the nature and size of the threat posed by future pandemics. This has been observed in terrorism, where strong actions by governments around the world have reduced risk and allowed a private market for some insurance coverage to emerge.
- (iv) There is notable merit in designing a government backed insurance solution to pandemic risk for the following reasons:
 - (a) It could provide predictable coverage for future events.
 - (b) It could provide a price signal to inform risk mitigation investments.
 - (c) It could create a way for government to charge a premium or levy on the beneficiaries of government support to either pre or post fund the loss.
 - (d) It may allow existing insurance infrastructure to be utilised to collect premiums or levies, define coverage, and/or target government payments based on a contractual agreement.
- (v) Any short-term solutions (e.g. Framework 2) will likely need to be targeted assistance, such as specific and time limited support for trade credit insurers. This is consistent with what is occurring overseas.
- (vi) More robust solutions, such as Frameworks 3 and 4, will require more study and costing to implement. These solutions are more complicated due to the need to specify the coverage they will provide and integrate them with existing insurance products. Framework 4 has additional complications due to wide variations in business interruption wording, among other issues.
- (vii) Finally, we note that pandemic response is a broader societal issue, of which insurance is a part. Any insurance solution must be incorporated into a broader policy framework including risk reduction, standby policies on border control, health policy, and coordination with global organisations like the WHO, among other things.

9 Reliances and limitations

9.1 Reliances

We have relied on the accuracy and completeness of all data and other information (qualitative, quantitative, written and verbal) provided to us for the purpose of this report. We have not independently verified or audited the data but we have reviewed it for reasonableness and consistency.

This report and the results, opinions and conclusions herein contained are presented as at the date of the report set out in the covering letter. They may be rendered inaccurate by developments after these dates.

9.2 Uncertainty

Many things may change in the future. We have formed our views based on the current environment and what we know today. The uncertainties are pronounced for COVID-19 as the situation continues to develop. Key uncertainties include the effectiveness of Australia and other global economies to contain the spread, government actions and the availability of vaccines, amongst many others. If future circumstances change, it is possible that our findings may not prove to be correct.

9.3 Distribution and Use

This report is being provided for the sole use of the ICA for the purposes stated in above in the report. It is not intended, nor necessarily suitable, for any other purpose. This report should only be relied on by ICA for the purpose for which it is intended. We understand that the ICA may wish to:

- Provide a copy of our report to its member organisations.
- Provide a copy of our report to the Treasury.
- Release our report into the public domain.

Permission will be granted for such distribution of our report on the condition that the entire report, rather than any excerpt, be distributed. No other distribution, use of or reference to our report (or any part thereof) will be permitted without our prior written consent.

Third parties should recognise that the furnishing of this report is not a substitute for their own due diligence and should place no reliance on this report or the data contained herein which would result in the creation of any duty or liability by Finity to the third party.

Any reference to Finity in reference to this analysis in any report, accounts or any other published document or any other verbal report is not authorised without our prior written consent.

The underlying exhibits and appendices contained in our report are an integral part of this report and should be considered in order to place our report in its appropriate context. We have prepared this report in conformity with its intended use by persons technically competent in insurance matters. Judgements as to the conclusions drawn in this report should be made only after considering the report in its entirety.

We remain available to answer any questions which may arise regarding our report and conclusions. We assume that users of this report will seek such explanation and/or amplification of any portion of the report that is not clear.



Part III - Appendices



Part III Appendices

A Typical pandemic exclusions in Australia

There are many variations in how pandemic exclusions are worded. The table below generalises exclusions at a high level.

Table A.1 – Typical pandemic exclusions in Australia

Insurance cover	Typical coverage and pandemic exclusions
Business interruption (typically sold as an extension to property damage policies)	Business interruption cover typically provides cover for disruption to trade following property damage events. Policies have evolved to include closure of premises from infectious diseases to be considered “property damage” for the purposes of triggering cover. The pandemic exclusion typically applies to the extension of coverage for closure due to infectious diseases.
Travel insurance	There is no typical wording for travel insurance coverage around pandemics and pandemic exclusions. However, there is generally no coverage if the policy is purchased after the occurrence of a “known event”, for losses related to that event.
Trade credit	Trade credit insurance covers a supplier of goods and services against the risk of non-payment by its customers because of default or insolvency. There is limited use of pandemic exclusions, though trade credit insurers are able to regularly adjust exposure to certain counterparties, which can be used during periods of economic uncertainty.
Consumer credit¹	Consumer credit policies typically cover loan repayments in the event of disability which prevents the policyholder from working, or involuntary unemployment. There are typically no pandemic exclusions.
Lenders mortgage insurance (LMI)	LMI protects mortgage providers in the event of loan defaults, for the shortfall in the value of the asset can be realised. There are typically no pandemic exclusions.
Personal lines (home, motor, landlords)	There are typically no pandemic exclusions on personal lines policies. Rental default is an optional cover for landlords’ policyholders.

¹ Only consumer credit policies sold by general insurers have been considered in this report.

Insurance exclusions are to a large extent guided by the wording on reinsurance coverages purchased by Australian insurers. Reinsurance is provided by large international reinsurers. As a result of COVID-19 we understand, and have indeed already observed, reinsurers revising wording to include or strengthen exclusions for communicable diseases.

Australian insurance policy wordings will also evolve to include similar exclusions to prevent any gaps in coverage from occurring. The implication is that the short-term response will be tighter exclusions around pandemics and/or introduction of pandemic exclusions where they currently do not exist. One notable example of this is for landlords cover, where future cover for rental default may include pandemic exclusions.

B Risks that can be reinsured

Reinsurers have been able to underwrite many types of extreme and unusual types of risk. Generally, those risks have some or all of the following characteristics:

- The frequency and severity of potential events can be modelled, making it possible to measure the risk assumed and the adequacy of capital.
- Losses are either independent of or lightly correlated with general economic conditions, making it possible to diversify the risk in the financial system.
- Events are localized, in the sense that they do not simultaneously affect multiple countries or regions, making it possible to diversify the risk geographically.
- Individual risks are not sufficiently large to endanger the solvency of the system.
- Losses can be funded with premiums which are “affordable” to primary insurers, both in terms of their magnitude and relative stability over time.
- The types of losses are reasonably foreseeable, bounded in time, and can be clearly documented in contracts.

Certain hazards meet all or most of these criteria, including earthquakes, tropical cyclones, bushfires, or floods affecting homes, businesses, or industrial facilities. Reinsurance is widely available for a range of exposures including injuries from motor accidents or workers compensation, physical damage to buildings, or losses to marine cargo.

Some hazards are considered too extreme to reinsure and are usually excluded. A common example is war risk. Wars are almost impossible to model, can cause extreme levels of destruction, would represent financial risks far more than the insurance systems’ resources, and are subject to actions of government that cannot be anticipated. Further, wars often produce economic shocks in addition to physical damage. As such, war risk violates many of the conditions of insurability and is generally not covered by reinsurance.

C Summary of the characteristics of selected pools

C.1 Reinsurance pools

Table C.2 – Reinsurance pool examples

Pool	The Florida Hurricane Catastrophe Fund (FHCF)	Flood Re (UK)	Caisse Centrale de Réassurance (CCR, France)
Primary Driver	Availability.	Affordability and Availability.	Affordability and Availability.
Background	Formed in 1992 following hurricane Andrew to address a significant shortfall in available capital (when computer modelling exposed the size of potential losses to be >\$100 billion compared to previous estimates of \$20-\$30 billion).	Historically, the U.K. Government and insurance industry agreed that in exchange for insurers making flood cover available to residential risks the government would make investments in flood defences sufficient to mitigate extreme losses. Following floods in 1998 and 2000 the insurance industry alleged the government was not making sufficient investment in defences, triggering a process whereby in 2016 the government established Flood Re.	Established in 1946, today CCR ranks among the world's top 25 reinsurers. It was incorporated as a limited liability company (Société Anonyme) and is owned by the French Government. It covers natural catastrophes in addition to war risk, nuclear risk, and terrorism.
Structure / Coverage	Offers low cost reinsurance to insurers underwriting residential risks.	Insurers provide flood cover on all policies. Insurers can reinsure high-flood-risk properties with Flood Re, with subsidized premiums which do not vary by individual property flood risk characteristics.	A public-private partnership whereby all French residential insurance policies provide coverage for natural catastrophes. CCR provides reinsurance to private insurers for 50% of natural catastrophe losses
Funding	The FHCF is funded by a combination of premiums charged to insurers and standby levies on all insurance policyholders (including motor) in the state.	Flood Re collects a levy on insurers based on market share designed to cover the subsidy. Flood Re purchases reinsurance in the global market, so that it is intended to be self-funding. Insurers set prices independently of Flood Re for retail customers, meaning the premium subsidy is indirect.	Funded by a combination of premiums and government guarantees.
Other Comments	Has been successful in stabilizing the market, allowing private insurers to operate, maintaining private reinsurance, and paying losses without large long term debt. The FHCF devotes a portion of its income to funding mitigation projects. The FHCF has no specific termination date.	The program is periodically reviewed and projected to expire in 25 years.	Insurers pay 12% of premiums to fund mitigation projects. The program is intended to be long lasting and does not have a specific end date.

C.2 Primary insurance pools

Table C.3 – Primary insurance pool examples

Pool	Earthquake Commission (EQC, New Zealand)	National Flood Insurance Program (NFIP, US)	The California Earthquake Authority (CEA, US)
Primary Driver	Affordability and Availability.	Availability.	Availability.
Background	The EQC began as a war damage commission. Earthquake was added following the Wairarapa Earthquake of 1942. That event exposed that many buildings were uninsured, leading to serious reconstruction issues. Over the years the EQC has responded to many earthquake and landslip events.	The NFIP is the primary provider of residential and small business flood insurance in the US, insuring over 5 million properties.	The CEA was established in 1996 following the Northridge earthquake to address a significant availability problem in the market.
Structure / Coverage	Provides a limited layer (\$150,000 of building and \$20,000 of contents) of earthquake protection for all residential policies in New Zealand. Charges a flat premium to all regardless of risk, currently \$240 plus GST. Coverage is identical for all risks. The program is administered by insurers which collect the premium on all home and contents policies with fire cover.	The NFIP issues policies through a number of private insurers, which collect premiums and administer claims. It has been used by the US Government to provide flood insurance to property owners at subsidized rates and to force local governments to enact building code and land use policies to reduce losses. It does so by only offering policies in locations which have taken sufficient mitigation actions.	It offers coverage through participating insurers to residential risks. It charges significant premiums with high deductibles, resulting in a low take-up rate of under 20%.
Funding	EQC is funded by insurance premiums, accumulated funds, and government guarantees.	The NFIP is funded by insurance premiums and can borrow from the US Treasury to cover deficits.	Funded by a combination of premiums, insurer assessments, and bonding, but does not have access to direct government payments. It uses premium revenue to purchase reinsurance and catastrophe bonds.
Other Comments	EQC purchases reinsurance on the global market, buying \$6.20 billion vs. \$1.75 billion in 2019. EQC invests in various earthquake science and mitigation initiatives in New Zealand. Prior to the Christchurch earthquake it had amassed a large surplus, but required government assistance to cover claims in that event.	It has run large deficits and required frequent government bailouts. Arguably, it has encouraged excessive development in high risk areas and displaced private insurance.	If funding is insufficient to pay all claims it can prorate loss settlements, though its modelling indicates that it can pay up to a 1:400 year event. CEA offers grants to retrofit houses and discounts for mitigation actions.