



The insurance sector and economic stability

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The Reserve Bank is responsible for promoting the maintenance of a sound and efficient financial system. The New Zealand insurance sector forms a key part of the financial system, and makes an important contribution to economic growth and development. Disruption to the insurance sector and the services it provides can have adverse consequences for the real economy. This article describes the New Zealand insurance sector and its role in the economy, and explains the factors that might disrupt the provision of insurance services in New Zealand.

1 Introduction

The insurance sector makes an important contribution to New Zealand's economic welfare and growth. Insurers spread the costs of risk events across time and the population, helping to reduce the impact of major risk events on the wider economy. This enables individuals and firms to take on and manage risk, thereby encouraging investment and innovation, and helping to underpin economic activity. Insurers also provide long-term investment finance to the economy, by channelling into investments the reserves from the premiums they receive.

The corollary is that the failure of one or more insurers could cause the market for insurance to be disrupted, with negative implications for the real economy. For example, disruptions to the market for property insurance could affect people's ability to build and buy houses, or disruptions to the business interruption insurance market could affect business investment. Failures could lead, for a time, to unstable or missing

insurance services,² forcing individuals and firms into self-insurance, or to cut back on risk-taking. Consequently, the benefits the insurance system creates for economic growth and financial stability may be compromised.

This article explores what factors might cause disruption to insurance services in New Zealand. The New Zealand insurance sector has unique characteristics compared to insurance sectors in other countries (section 2), which has implications for what would be the most likely sources of disruption in a New Zealand context (section 3), and the implications of such a disruption for the wider economy and financial stability (section 4).

2 The New Zealand insurance sector

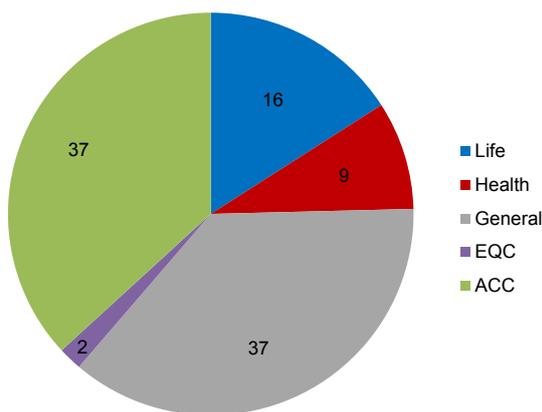
The New Zealand insurance sector has several features that differentiate it from insurance sectors in other countries. Firstly, the Government is a key player in the provision of non-life insurance. Personal injury is compensated by the Accident Compensation Commission (ACC), while natural disaster damage for residential land,

¹ The authors would like to thank Chris Hunt, Michael Reddell and other colleagues at the Reserve Bank for their helpful comments.

² In the sense that insurance is unavailable, or its cost has sharply increased (FSB, 2009).

buildings and contents that are (privately) insured against fire is partly compensated by the Earthquake Commission (EQC). As a result, only about half of non-life premium income is written by the private sector (figure 1).³

Figure 1
New Zealand public and private insurance markets by premium and levies
(percent of total, June 2013)

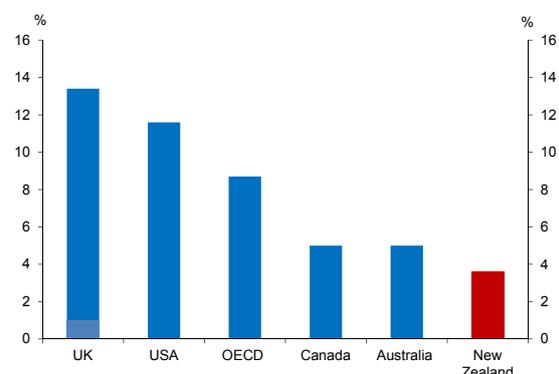


Source: Insurance Council of New Zealand, Health Funds Association of New Zealand, Financial Services Council, EQC, ACC, RBNZ estimates.

Note: EQC and ACC charge levies, while private insurers charge premiums.

Secondly, the private insurance sector is comparatively small by world standards (figure 2). Private premium income was equivalent to just over 3 percent of GDP in 2012, below the OECD average of 8.7 percent of GDP in the same year. This is a reflection of, among other things, the New Zealand population not being big enough to generate a sufficient financial pool to cost-effectively cover all significant events; the small extent to which insurance products are part of New Zealand's retirement savings infrastructure; and the comparatively large role of government in the provision of insurance services.

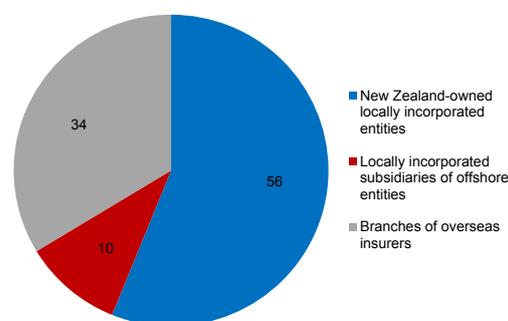
Figure 2
Private insurance premiums of selected OECD countries
(percent of GDP, 2012)



Source: OECD, Statistics New Zealand, RBNZ estimates.
Note: New Zealand excludes ACC and EQC.

New Zealand's small size leads to the third feature – there is a large overseas presence in the sector. Insurance relies upon the law of large numbers, with size a prerequisite for effective pooling and diversification of risks (IAIS, 2013). The New Zealand insurance market has the necessary scale and diversity required in large part due to a significant overseas presence, operating either directly as owners of primary insurers, or indirectly by providing reinsurance.⁴ Around 44 percent of licensed insurers are branches or subsidiaries of overseas insurers (figure 3).

Figure 3
Origin of New Zealand licensed insurers
(percent of total)



Source: RBNZ.

⁴ Primary insurers enter into contracts to provide insurance to individuals and firms. Primary insurers may transfer part of this insured risk to reinsurers, which helps the primary insurer to effectively manage their risk of having to pay large claims.

³ The data used in this article to describe the New Zealand insurance sector comes from a variety of sources. The Reserve Bank has recently embarked on a consultation process to establish a data collection and reporting system for all licensed insurers, which will standardise data to facilitate comparison across individual insurers and better aggregation. It is anticipated that this new data will be published in late 2015. For further information see: http://www.rbnz.govt.nz/regulation_and_supervision/insurers/4295441.html

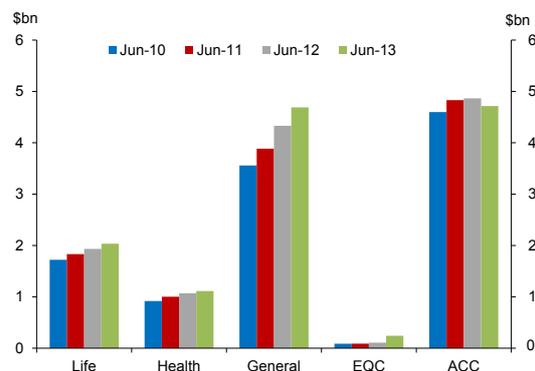
Fourthly, private insurers carrying on insurance business in New Zealand have only been prudentially regulated since 2010. The relative lack of regulation may have contributed to there being a large number of small insurers in the industry, with as many as 150 firms offering some form of insurance prior to 2010. All private insurers carrying on insurance business in New Zealand are now required to be licensed by the Reserve Bank under the Insurance (Prudential Supervision) Act 2010 (IPSA). The advent of IPSA has resulted in rationalisation of the industry and, as at June 2014, there were 98 licensed insurers, ranging in size from \$600,000 in total assets to more than \$5 billion.

The 98 licensed insurers comprise 26 life insurers and 72 non-life insurers, the latter including health and general insurers, and reinsurers. Unlike legislation in some other jurisdictions, IPSA does not constrain which insurance market an insurer may operate in, so some insurers operate in both the life and non-life markets, providing a variety of products.

By premium, the biggest private insurance market is for general insurance, comprising property and accident insurance, which represents about 60 percent of premiums paid. The share of life insurance, at 26 percent of premiums, is low by international standards, due to life insurance not being an integral part of the retirement savings infrastructure as it is in some other countries.

Over the past three years, the major growth in premium income has been in the general insurance market (figure 4). This has largely been as a result of the 2010/11 Canterbury earthquakes, which have led to an increase in property insurance premiums. General insurance premium income has increased by about 10 percent per annum, with life and health insurance premiums showing more modest growth. Levies charged by the government insurers have also grown, with EQC levies more than doubling, albeit from a comparatively low level.

Figure 4
Premiums and levies received by public and private insurance markets 2010-2013



Source: Insurance Council of New Zealand, Health Funds Association of New Zealand, Financial Services Council, EQC, ACC, RBNZ estimates.

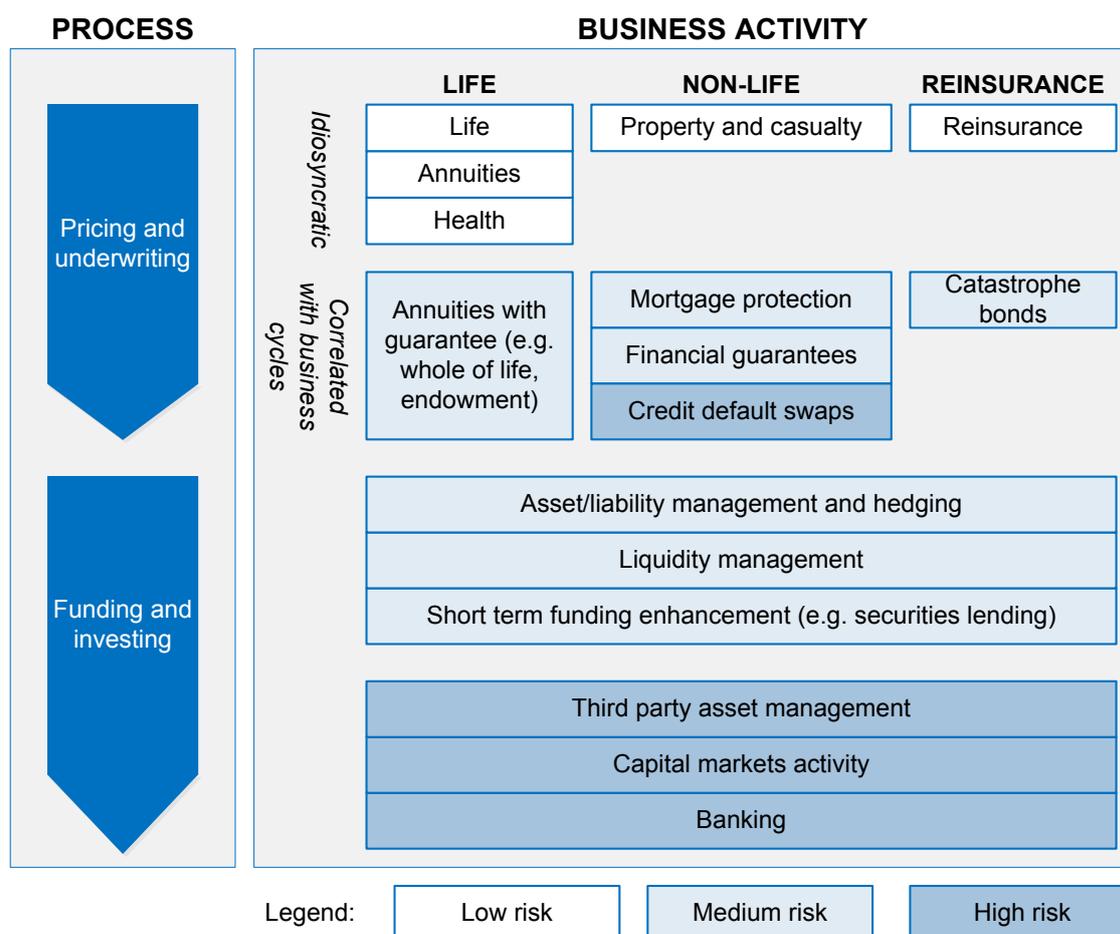
Finally, the New Zealand market is relatively straightforward, both in terms of the nature of the risks it carries, and the ways in which it manages those risks. New Zealand insurers currently do not tend to offer higher risk products that are exposed to fluctuations in the business cycle, and life insurers have largely ceased offering products with guaranteed payments (particularly whole-of-life and endowment policies). Insurers' investment strategies are also relatively straightforward in comparison to insurers in some other jurisdictions. Insurers also tend to focus on their core business of insurance, and not undertake non-insurance activities as occurs in some other countries.

3 The insurance business model

An insurer's business model typically encompasses two main processes: pricing and underwriting, and funding and investing (figure 5, overleaf),

Pricing and underwriting involves the decision to provide insurance, and the price and terms upon which it is provided. Insurers' core business has been to underwrite (i.e., agree to insure) risks that are 'idiosyncratic', such as life insurance or property insurance policies, where claims are generally bound to the occurrence of specific events. Idiosyncratic risks, because they are typically unrelated to the business cycle, are generally considered to pose lower risk to the financial system. However, insurers can also underwrite risks that are correlated with the business cycle; for example, insurers providing mortgage

Figure 5
Insurance activity



Source: Adapted from Eling and Pankoke (2012).

protection insurance are likely to have to pay out more claims in an economic downturn. This correlation with economic activity has the potential to increase insurers' risk of exposure to a shock common to the wider financial system, such as a fall in asset prices.

Pricing and underwriting activities are generally lower risk than funding and investing, but they can nonetheless be a source of individual insurer failure (Cummins and Weiss, 2014; Leadbetter and Stodolak, 2009; Massey, *et al*, 2002). Inadequate pricing and under-reserving (inadequate assets on hand to settle claims) was a cause of 40 percent of insurer insolvencies in Canada from 1995-2005, and 63 percent of insurer insolvencies in the US from 2003-05 (Leadbetter and Stodolak, 2009).

Funding and investing involves managing the pool of premiums received so that claims can be paid out as required. Investment activities can increase the risk profile of an individual insurer, by exposing it to asset risk,

interest rate risk and, in some cases, foreign currency risk (Dean, 2011). They also expose insurers to the business cycle, and to other financial system participants such as banks.

Insurers, particularly life insurers providing guaranteed products, are also at risk of maturity mismatches (Standard and Poor's, 2013). This arises where the duration of assets and liabilities do not match, affecting the insurer's ability to meet its obligations as they fall due. Non-life insurers are less likely to be exposed to the risks associated with funding and investing. They collect premiums before they pay claims upon the occurrence of an event, so they are not at risk of 'runs'.⁵

⁵ 'Runs' are where customers simultaneously seek to withdraw their deposits from (typically) a bank, due to concerns about the bank's solvency, increasing the probability that the bank will default. In the case of an insurer, policyholders concerned about an insurer's solvency are not able to make a claim against the insurer unless an insured event has occurred, preventing a run on the insurer.

Table 1
Insurance firm failure in New Zealand (1952-2014)

Period	Firms	Cause of stress
1952	Maoriland Life	Under-pricing and under-reserving.
1961	Standard Insurance Company	Mismanagement of offshore operations.
1980	Guarantee Mutual Life	Insufficient information available as to cause of stress.
1989	Superannuation Mutual Tasman Mutual Capital Life ACL Life Insurance.	Funding and investing activities, including liquidity issues and a lack of diversification in investments.
2010/11	AMI Insurance Western Pacific Insurance	Concentrated exposures Under-pricing and under-reserving.

New Zealand insurers have experienced stress in the past from both pricing and underwriting activities, and funding and investing activities (table 1). The new requirements introduced under IPSA, such as the solvency standards, are designed to help reduce the probability of these stresses arising in the future.

Table 1 shows there have been nine instances of insurer failure since 1952. By comparison, the banking sector has experienced only one major failure during the same period (Hunt, 2009).

As insurers and banks have different economic functions – insurers are risk transferors, whereas banks are maturity transformers (borrowing short and lending long) – the nature of failures can be quite different (RBNZ, 2014). Firstly, if an insurer fails, policyholders' claims generally remain contingent upon an event occurring, and do not necessarily require immediate payment, if payment is required at all. The winding up of an insurer, particularly a life insurer, could therefore be spread over several years, allowing normal business activity to continue while the issue is resolved, or a market solution is found.⁶ The claims of a bank's depositors, however, are not contingent upon a particular event, and can generally be withdrawn on demand or within a pre-determined time. There is also a large immediate impact arising from the failure of a bank to settle with other banks in the payments system.

Secondly, it is less likely that the failure of an insurer

will have a negative impact on other insurers, beyond potential reputational effects. New Zealand insurers are also not highly connected with other financial institutions, as discussed further below. Banks, on the other hand, hold balances with each other, are connected through the payments system, and can be highly susceptible to losses in confidence arising from the failure of another bank. This can result in contagion, where the distress or failure of one bank triggers distress or failure in another.

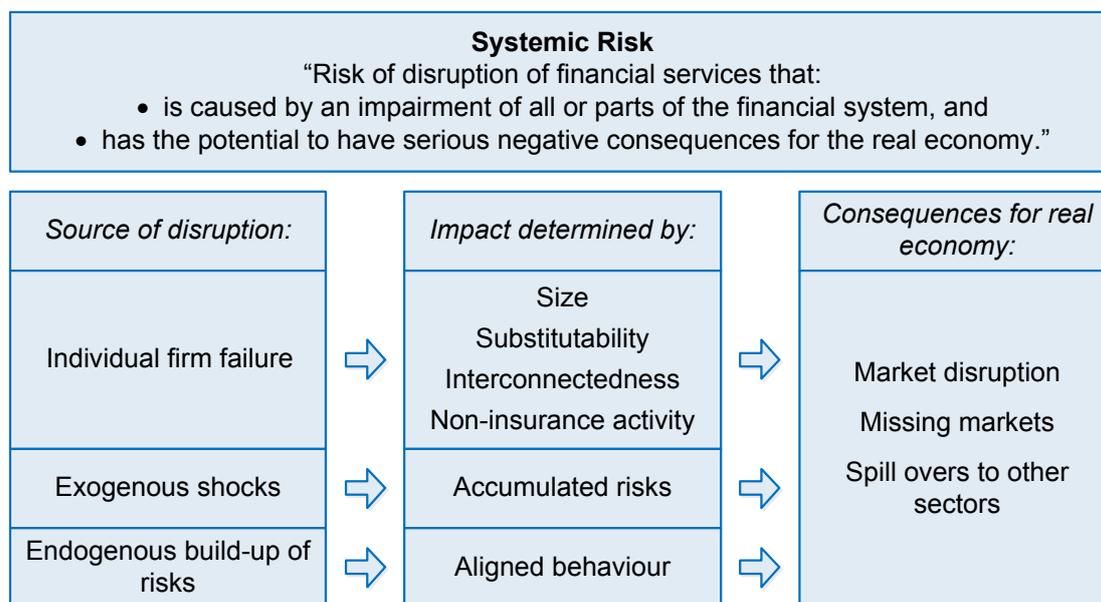
Finally, banks are much larger relative to the size of the economy. New Zealand banks' liabilities are more than 170 percent of GDP, whereas Statistics New Zealand's *Annual Enterprise Survey* data shows that insurers' liabilities in 2013 were only around 14 percent of GDP. A failure of a significant participant in the banking system is therefore likely to have a larger impact on the economy than a significant failure in the insurance sector.

4 Stability impact assessment in the New Zealand context

As noted above, the failure of an insurer, or of multiple insurers, could constrain the ability of individuals and firms to transfer risk to those better able to bear it. This has broad implications for the sound functioning of the financial system and economy (Brady, 2014). It is the broader implications – such as market disruption, missing markets, or spill-overs to other sectors – that the Reserve Bank is primarily interested in, rather than the individual financial institutions per se (Fiennes and O'Connor-Close,

⁶ An exception might be a catastrophe event where a higher-than-anticipated number of claims come due at the same time, exposing the insurer.

Figure 6
Impact framework



Source: FSB (2009), Eling and Pankoke (2009).

2012).⁷ The Reserve Bank is responsible for promoting the maintenance of a sound and efficient financial system,⁸ and the use of insurance to transfer risk has stability and efficiency benefits. A lack of provision of insurance to certain markets, or provision that is uneconomic, limits these benefits. Insurer failure could also drag on economic growth, given that insurers increase the production possibilities available to society by enabling growth and innovation from otherwise risk-averse agents (Bach and Nguyen, 2012).

The Financial Stability Board has identified the central role of economic outcomes in its definition of systemic risk (FSB, 2009):

Systemic risk is the risk of disruption to the provision of financial services that:

- *is caused by an impairment to all or parts of the financial system, and*
- *has the potential to have serious negative consequences for the real economy.*

Disruption to the financial system could arise from individual firm failure, or the failure of multiple firms, as illustrated in figure 6. First, an individual failure may be

of such a size and nature that it has a material impact on the economy as a whole. The characteristics that determine the impact of failure are discussed in section 4.1. Secondly, an ‘exogenous’ shock that comes from outside the insurance sector may expose risks that have accumulated within the sector. Thirdly, an ‘endogenous’ build-up of risk due to the aligned behaviour of the insurers may expose the insurance sector to financial stress. The two latter types of risk are discussed in section 4.2.

4.1 Characteristics determining the impact of failure

Insurers are not all equally important from a risk perspective (Brady, 2014). The FSB (2009) has identified three criteria for evaluating whether an idiosyncratic failure is likely to have serious negative consequences for the real economy.

The first factor is the failing firm’s size relative to its market or sub-market. Although size generally reduces the risk from underwriting activity by fostering effective pooling and diversification of risk (IAIS, 2013), the failure of a dominant firm in a particular market or sub-market can disrupt the supply of insurance services that can have broader adverse effects. One example is the failure of HIH Insurance in Australia in 2001 (see box A). In New

⁷ See also section 3 Insurance (Prudential Supervision) Act 2010, which focuses on the insurance sector.

⁸ Section 1A of the Reserve Bank of New Zealand Act 1989.

Box A

HIH Insurance Australia

HIH had taken just 20 years to become the second largest insurer in Australia by the time of its failure in 2001. Its growth model was biased towards the opportunity for investment market earnings from an enlarged premium base, rather than a focus on sustainable underwriting earnings. HIH came to dominate the market for mandatory builders' warranty insurance, and also expanded into new markets, including the Californian workers' compensation scheme market in the late 1990s.

HIH failed as a result of poor corporate governance, under-pricing and under-reserving. The effect of the failure was considered to be systemic because the markets for certain insurance products (including builders' warranty and workers' compensation) were severely disrupted for a period. Australian government support was required to ensure the provision of certain services.

Sources: The Geneva Association (2010), Standard and Poor's (2013).

Zealand, one or more firms have gained significant market share in all the major market segments (general, health, and life).

The second factor is 'substitutability' – the extent that other insurers can provide the same or similar service in the event of failure. This will depend on the speed of the failure, and whether the failure can be 'absorbed' by the financial system (The Geneva Association, 2010). Substitutability is likely to be affected by the market share of the failed insurer, and so is linked to the size factor (MAS, 2011). In New Zealand, the dominance of some firms in their market or sub-market creates the possibility that other firms may not be able to quickly substitute

for their services if they experience significant financial stress, making failure of those firms more likely to cause market disruption. The experience of AMI Insurance after the 2010/2011 Canterbury earthquakes is an example of how this might occur (see box B).

The third factor is the interconnectedness of a firm, in the sense of its direct and indirect linkages with other participants in the economy. The more interconnected the failing insurer, the greater the impact on the financial system and the economy. Both an insurer's pricing and underwriting activities and its funding and investing activities contribute to interconnectedness. Figure 7 illustrates four key connections of the insurance sector:

Box B

AMI Insurance

AMI Insurance was New Zealand's fourth largest general insurer, and had a 35 percent share of the Christchurch market when the 2010/2011 earthquakes occurred. AMI's reinsurance cover of \$600 million was sufficient to meet the claims from the September 2010 earthquake, but it was insufficient to meet the claims arising from the subsequent February 2011 earthquake with any certainty.

The implications of a failure of AMI were considered to be wide-ranging:

- The impact on the speed and scale of the rebuild, in view of the potential wealth destruction in Canterbury if AMI could not meet its claims commitments.

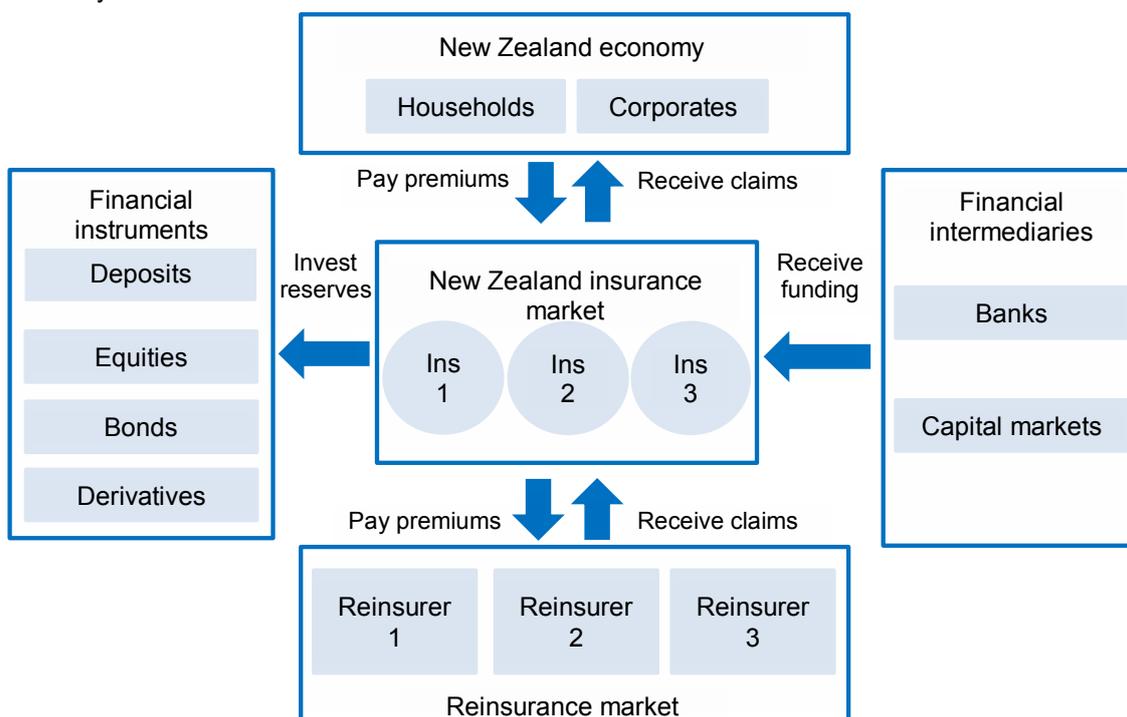
- The impact on the availability and pricing of insurance, both in Canterbury where other insurers may not be prepared to substitute for AMI, and more generally in New Zealand.
- The reputational impacts for New Zealand's economic and financial stability at a sensitive time two years after the Global Financial Crisis (GFC), with potential impacts on the exchange rate and interest rate spreads.

As a result, the Government assumed AMI's Christchurch liabilities, and the non-Christchurch business was sold to another insurer.

Source: New Zealand Treasury and Reserve Bank of New Zealand (2011).

Figure 7

Interconnections between the insurance sector, the financial system, and the New Zealand economy



1. to economic agents (households and corporates) by the receipt of premiums and the payment of claims;
2. to financial intermediaries from which it receives funding, and whose collateral it insures. For example, insurers may receive funding from banks, and may also insure the houses on which banks secure their mortgage loans;
3. to financial markets by the investment of insurance reserves; and,
4. to the reinsurance market by the partial transfer of insurance risk to reinsurers.

The interconnectedness of the New Zealand insurance market is relatively low. Insurers represent less than 4 percent of banking sector deposits and less than 1 percent of banking sector lending (RBNZ estimates). Life insurance funds represent only 6 percent of total managed funds (RBNZ estimates). The main source of interconnectedness is likely to be indirect connections such as common asset holdings. Solvency requirements, while lessening investment risk, are likely to make insurers' investment portfolios more similar, which could amplify the effects of any shock to their portfolios.

IAIS (2013) considers interconnectedness, as well as non-traditional, non-insurance (NTNI) activity to be the most important factors when assessing the systemic importance of insurers. Adams (2014) describes business as 'non-traditional' if the promises an insurer makes can be met only through extensive use of market instruments. This can arise when the insurer is part of a conglomerate and the NTNI activities of other parts of the conglomerate put the insurer's otherwise healthy activities at risk. The failure of AIG at the height of the GFC in 2008 is an oft-cited example of this. AIG was involved in derivative and securities lending markets and these activities, rather than its core insurance business, caused its failure and threatened financial stability (Debbage and Dickinson, 2013).

New Zealand insurers typically do not offer higher-risk products that are exposed to business cycle risk, or engage in NTNI activity. However, many insurers operating in New Zealand are subsidiaries of overseas conglomerates, which potentially exposes them to risky behaviour on the part of offshore business lines, whether

⁹ Section 82 IPSA requires a life insurer to have at least one statutory fund, which is a fund established in the records of a life insurer and relates solely to the life insurance business of the life insurer.

this is insurance business or some other activity. IPSA introduces certain requirements, such as the rule that an insurer must hold a separate fund specifically for its life insurance business, to provide protections to the New Zealand market from such an occurrence.⁹

4.2 Risks determining the impact of failure

Just as the above characteristics determine the impact individual firm failure will have, accumulation of risk in the sector and the behaviour of participants will determine the effect that exogenous shocks and endogenous build-up of risk will have on the economy.

Exogenous shocks come from outside the insurance sector, and can have far-reaching consequences when coupled with an accumulation of risk within the sector. This leads to an external shock having a negative impact on all or most insurers simultaneously and, as a consequence, they cannot offer their full range of services (Eling and Pankoke, 2012). Accumulation risks can occur slowly: for example, demographic changes that gradually affect the viability of health insurers. They can also occur more rapidly, such as when a major catastrophe exhausts the insurance capacity of property insurers.

New Zealand is exposed to both slow and fast-moving exogenous shocks. For New Zealand health and life insurers, increasing longevity gradually exposes them to new health risks. New Zealand's location on the Pacific 'ring of fire' makes it vulnerable to a variety of natural catastrophes, and to multiple-catastrophe events. The Christchurch earthquake in 2011 was one of the largest insured catastrophe events worldwide (Swiss Re, 2012), with the total cost expected to represent about 15 percent of New Zealand GDP (New Zealand Treasury, 2011). Since late 2011, the solvency standards imposed under IPSA have addressed New Zealand's unique risks from exogenous shocks by requiring insurers to reserve for one in 1,000 year events, which is more stringent than normal international practice.

Endogenous risk arises within the sector, out of the collective behaviour of participants. Insurers might under-price the insurance they provide, or they might engage in overly aggressive investment strategies. Failures in the United States life insurance industry in the early 1990s are an example of insurers investing aggressively in illiquid

real estate assets. Similarly, United Kingdom insurers' increased asset allocation to equity markets in the 1990s created industry-wide stress when equity markets fell abruptly in 2001. These behaviours can occur when there has been an extended period of benign claims, or stability in investment markets.

Endogenous risk is amplified when insurers' behaviour is aligned, which could be due to a combination of insurers having similar liabilities, utilising the same investment consultants or investment models, as well as regulatory constraints. Aligned behaviour can amplify the cyclicity in the financial cycle. For example, if insurers are all selling the same assets in a downturn, this could amplify the negative impact on the price of those assets (Bank of England and the Procyclicality Working Group, 2014). This may cause some insurers to be unwilling to provide certain services, such as more risky products, or to invest in certain assets.

New Zealand insurers are not immune to aligned behaviour. The New Zealand industry is a price taker of international reinsurance rates, which exhibit cyclicity: for example, rates may be lower when New Zealand is experiencing a long period of benign claims. If a primary insurer can obtain reinsurance at low rates, this may incentivise them to under-price risk and set their premium rates too low. If under-reserving results, the insurer may not have the capacity to pay out claims that exceed its reinsurance.¹⁰ Prior to the Canterbury earthquakes of 2010/11, reinsurance rates for New Zealand declined significantly after a relatively benign period for natural catastrophes (Cummins and Weiss, 2009). Since the earthquakes, there has been a significant reappraisal of catastrophe risks. The price of property insurance has increased across the country, and more restrictive terms have been introduced for residential property insurance, which suggests that the absolute level of risk was possibly being under-estimated by at least some insurers prior to the earthquakes (Standard and Poor's, 2013).

The solvency standards introduced under IPSA should limit the potential for insurers' activities to create

¹⁰ Furthermore, if the reinsurer has under-priced risk, a significant catastrophe could cause the reinsurer to be unable to meet its obligations to the primary insurer in New Zealand, which would affect the ability of the primary insurer to meet its obligations to New Zealand policyholders.

endogenous risks by placing constraints on insurers' investment and asset allocation decisions. For example, the standards explicitly require insurers to hold more capital against higher risk assets.

5 Conclusion

The insurance sector makes an important contribution to the economic development and welfare of New Zealand by enabling risk transformation. In this way, the insurance sector supports investment, innovation and economic growth, making it important that there is a healthy and well functioning insurance sector.

Disruption to insurance services may occur if the failure of an insurer has economy-wide effects due to its size, its services not being easily or effectively substitutable, its interconnectedness with other financial institutions, or the extent of non-traditional non-insurance activity. Exogenous shocks, or the endogenous build-up of risk in the sector, can also create sector-wide distress that could, for a time, disrupt insurance services.

The Reserve Bank has been responsible for promoting the soundness and efficiency of the insurance sector since the introduction of IPSA in 2010. The supervisory framework developed under IPSA is designed to mitigate the impacts that may stem from individual firm or system-wide stress. The Reserve Bank will continue to advance this framework, for example by developing an impact assessment for individual insurers that measures their potential to disrupt the financial system and the economy should they fail (Brady, 2014). As part of this, it is important to have sound information upon which to monitor the sector, and data collection will continue to evolve so that effective monitoring and analysis of developments in the sector can be achieved.

References

Adams, J (2014) 'Global systemically important insurers: issues, policies and challenges after designation', speech to The Geneva Association, 24 March 2014, Bank of England.

Bach, W and T Nguyen, (2012) 'On the Systemic Relevance of the Insurance Industry: Is a Macroprudential Insurance Regulation Necessary?', *Journal of Applied Finance and Banking*, 2(1), pp. 127-149.

Bank of England and the Procyclicality Working Group (2014) 'Procyclicality and structural trends in investment allocation by insurance companies and pension funds: A discussion paper by the Bank of England and the Procyclicality Working Group', July.

Brady, P (2014) 'The Reserve Bank's approach to supervising insurers, and the role of directors', speech to Finity Consulting Directors Forum in Auckland, New Zealand, 19 February 2014, Reserve Bank of New Zealand.

Cummins, J and M Weiss (2009) 'Convergence of Insurance and Risk Markets: Hybrid and Securitized Risk-Transfer Solutions', *Journal of Risk and Insurance*, 76(3), pp. 493-545.

Cummins, J and M Weiss (2014) 'Systemic Risk and the US Insurance Sector', *Journal of Risk and Insurance*, published online 20 March 2014.

Dean, R (2011) 'Insurer solvency standards – reducing risk in a risk business', Reserve Bank of New Zealand *Bulletin*, 74(4), pp. 28-33.

Debbage, S and S Dickinson (2013) 'The rationale for the prudential regulation and supervision of insurers', *Bank of England Quarterly Bulletin*, Q3, pp. 216-222.

Eling, M and D Pankoke (2012) 'Systemic risk in the insurance sector - what do we know?', University of St.Gallen Institute of Insurance Economics *Working Papers on Risk Management and Insurance*, No 124.

Fiennes, T and C O'Connor-Close (2012) 'The evolution of prudential supervision in New Zealand, Reserve Bank of New Zealand *Bulletin*, 75(1), pp. 5-13.

Financial Stability Board (2009) 'Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations', Report to the G20 Finance Ministers and Governors, October.

Hunt, C (2009) 'Banking crises in New Zealand - an historical perspective', Reserve Bank of New Zealand *Bulletin*, 72(4), pp. 26-41.

International Association of Insurance Supervisors (2013) *Macroprudential Policy and Surveillance in Insurance*, July.

Leadbetter, D and P Stodolak (2009) *Why insurers fail – Inadequately pricing the promise of insurance*, Canadian Property and Casualty Insurance Compensation Corporation.

Massey, R *et al* (2002) *Insurance Company Failure*, paper prepared for the United Kingdom Institute and Faculty of Actuaries' General Insurance Convention at Paris, France, October.

Monetary Authority of Singapore (2011) *Financial Stability Review*, November 2011.

New Zealand Treasury (2011) *Pre-Election Economic and Fiscal Update*, 25 October 2011.

New Zealand Treasury and Reserve Bank of New Zealand (2011) *Joint Report to the Minister of Finance and the Minister for Earthquake Recovery: Christchurch Insurance Update*, Report T2011/391, 11 March.

Reserve Bank of New Zealand (2014) *Financial Stability Report*, May 2014.

Standard and Poor's (2013) *What May Cause Insurance Companies To Fail – And How This Influences Our Criteria*, Standard and Poor's RatingsDirect, June.

Swiss Re (2012) 'Swiss Re's sigma on natural catastrophes and man-made disasters in 2011 unveils USD 116 billion in insured losses and record economic losses of USD 370 billion', press release 28 March.

The Geneva Association (2010) *Systemic Risks in Insurance - An analysis of insurance and financial stability*, The Geneva Association Systemic Risk Working Group, March.

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