

Banking crises in New Zealand perspective¹

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1893

This article examines 'systemic' banking crises in New Zealand. While there are examples of individual institutional failures in New Zealand's early colonial development for example, there are only two episodes that have involved a significant erosion of banking system capital – our definition of a systemic banking crisis. The first episode occurred in the late 1880s and early 1890s after a credit-fuelled rural land boom in the 1870s, while the second occurred in the late 1980s as a result of another credit-driven asset price boom and bust cycle following financial deregulation earlier in the decade. Both episodes can be understood within a framework that places at centre stage the propensity for economic agents to under-price risk, thereby creating balance sheet vulnerabilities for financial intermediaries, which can occasionally erupt into financial panic and crisis.

1 Introduction

Triggered by rising credit losses on US residential mortgages over the period 2007–09, the global economy experienced its most significant financial shock since the Great Depression. The crisis first involved a 'run' by counterparties centred on the 'shadow banking system' (Geithner 2008; Gorton 2009; McCulley 2009).² Traditional banks could not absorb the subsequent withdrawal of liquidity from the financial system, in part because they had sponsored many of the off-balance sheet vehicles containing complex financial instruments that were part of the shadow banking system. In hindsight, the default risk inherent in these new financial products was not priced appropriately, nor was the correlation of default risk fully understood across the financial system. Banks therefore were ultimately exposed to the decline in the prices of these complex and opaque financial instruments that were backed by residential mortgages, and sustained heavy credit losses

as a feedback loop emerged between disruptions to the financial system and the real economy.³

Ongoing balance sheet distress of major global financial institutions has resulted in unprecedented government intervention, firstly to stabilise illiquid institutions and markets, and ultimately to prevent failures of institutions at the centre of the financial intermediation process. Specific government intervention in the financial sector, together with fiscal and monetary policy support, appears to have stabilised current financial market conditions. The global economy has begun a tentative recovery as confidence returns and the worst of the asset price deflation is over.

Notwithstanding specific problems in the non-bank finance company sector, the New Zealand financial system has weathered this global shock remarkably well. While asset quality and profitability have declined – driven by the deterioration in broader economic conditions – New Zealand banks have not suffered the same erosion of capital buffers witnessed elsewhere. Banks in New Zealand were not generally exposed to the complex financial assets directly at the heart of the global crisis. Moreover, funding and liquidity risks – which were significant given the banking system's reliance on short-term wholesale funding – have been attenuated by: (i) the provision of crisis liquidity facilities by the Reserve Bank; (ii) the government guarantee

¹ This article is based on an earlier (and longer) paper presented at the RBNZ/Victoria University Professorial Fellowship Workshop, *The global financial crisis: historical perspectives and implications for New Zealand*, June 17, 2009, available at www.rbnz.govt.nz/research/workshops.

² The shadow banking system comprises a complex array of institutions which, like the conventional banking system, perform the crucial role of intermediating borrowers and lenders. Examples include investment banks, hedge funds, special investment vehicles (SIVs), conduits, money funds and monolines. In early 2007 the assets of the shadow banking system exceeded the US\$10 trillion of total US banking system assets (Geithner 2009). Many of these institutions were very highly leveraged, a result of not being subject to the same regulatory and prudential supervision of traditional deposit-taking banks.

³ The IMF estimates that total writedowns of credit originated in mature economies over 2007 to 2010 will total US\$3.4 trillion, of which US\$2.8 trillion will be borne by global banks (IMF *GFSR*, October 2009).

2 Sept
1893

of wholesale funding to enable banks to continue to issue debt; and (iii) ongoing support by the Australian parents of the big-four banks in New Zealand. Thus, while there have been important pressures and vulnerabilities exerted on the banks in New Zealand, the banking system avoided the deep systemic crises seen in other banking systems, which ultimately necessitated recapitalisation, or even nationalisation, of financial institutions in Europe and the US.

By 'systemic crisis' we refer to a major disruption in the process of financial intermediation that can result from both depositors and other creditors seeking to withdraw their funds from banks – the classic notion of a banking panic – or threats to insolvency from large declines in the loan portfolio. Both imply an erosion of a large proportion of banking sector capital (Bordo 2008, p. 11).⁴ This definition distinguishes between failures of individual banks and a crisis that undermines the ability of the financial or banking system as a whole to function properly. However, in highly concentrated banking systems, problems that might be specific to any individual institution can take on systemic importance, if that institution constitutes a large enough weight in the financial system and there is the risk of contagion or spillover effects to other parts of the system.

With this definition in mind, this article examines systemic banking crises in New Zealand's past and identifies two such episodes. The first banking crisis occurred in the late 1880s to the mid-1890s and culminated in a bailout of the Bank of New Zealand (BNZ) in 1895 following a credit-fuelled rural land price boom in the 1870s and its subsequent collapse in the 1880s.⁵ The second such episode, which also involved

the BNZ, followed a similar asset price boom and bust cycle associated with financial deregulation in the mid-1980s. The primarily government-owned BNZ was recapitalised twice, the first time in 1989 and again one year later.

Although this paper is organised around a case study analysis of the two episodes, the next section elaborates a framework of financial booms and busts based on the work of Charles Kindleberger and Hyman Minsky, which allows us to identify some of the commonalities associated with both episodes. This framework is used to present the detailed case studies in sections 3 and 4. Section 5 compares the two cases and also makes reference, very briefly, to two 'counter-factual' examples where New Zealand has not experienced a systemic banking crisis – the Great Depression of the early 1930s and today's global financial crisis. New Zealand suffered a large exogenous shock following the Wall Street collapse of 1929 and a sharp fall in export prices, but the financial system proved remarkably resilient in the face of this shock. Financial instability and crises are the result of a complex interaction between various shocks (be they of a global or domestic nature), pre-existing vulnerabilities often associated with credit-fuelled booms and government policy.

2 The Kindleberger/Minsky framework of financial manias and panics

Charles Kindleberger, in his classic work *Manias, panics and crashes: a history of financial crises* (1996), draws from financial theorist Hyman Minsky to provide a simple framework for understanding financial cycles and crises. At its core, the framework focuses on the build-up in risk-taking over time, and the self-reinforcing feedback mechanisms that can operate both within the financial system, as well as between the financial system and the real economy. The framework is set out schematically in figure 1.

⁴ Definitions of banking crises vary from the fairly general to the specific and can influence the identification of specific banking crises episodes. This is particularly important for cross-country research which uses large datasets spanning, in many cases, several centuries (see for example Laeven and Valencia (2008) and Reinhart and Rogoff (2008 a&b)). For a discussion on some of the issues associated with banking crisis definition and measurement see Boyds *et al* (2009).

⁵ The precise dating of banking crises in general, and of the late nineteenth century New Zealand episode in particular is somewhat problematic. As Boyds *et al* (2009) argue, what is typically measured as a banking crisis is "effectively a government response to a perceived crisis – not the onset or duration of an adverse shock to the banking industry" (p. 4). While the government of the day intervened in 1894-95, the

banking system was essentially in crisis from the late 1880s onwards, with a significant erosion of banking system capital clearly evident, at least in hindsight.

A boom is initially triggered by an exogenous shock to the macroeconomic environment that changes economic agents' expectations about future profits. This displacement could be something specific to the real economy (eg, a positive terms of trade shock), the financial system (financial innovation), or something related to the political sphere (the end of a political conflict or a reunification of a country). In the current context, one example of this displacement might be the integration of China into the world economy and the emergence of a global financial architecture that funnelled emerging market savings to the advanced economies, effectively subsidising credit for Western households and firms.

This 'displacement' is then followed by a boom fed by credit creation (often via foreign capital inflow) as economic agents respond to new actual or perceived profit opportunities. This credit creation might take place within the existing banking system or through new financial institutions and products – such as the shadow banking system and securitised assets. At some point, what initially might be a rational response by economic agents is followed by euphoria or 'overtrading'. Something then occurs to change expectations at the height of the ensuing mania, be it a decline in the price of the primary object of speculation (such as US house prices), the revelation of financial fraud, or an external shock.⁶ This change in expectations sets in train a 'revulsion' against the objects of speculation and a period of 'discredit', with financial institutions reducing lending and deleveraging to repair balance sheets and possibly 'crash' and 'panic' if solvency is threatened.

However, the Kindleberger/Minsky framework does not provide a formal micro-founded model to explain how risk becomes under-priced during an upswing and how this amplifies the business cycle, but does assume some degree of irrational myopia on the part of economic agents. Indeed, no such model currently exists to adequately capture the endogenous cycle view of instability (Borio and Drehmann 2009). Nevertheless, one can point to models that link credit and assets prices arising from the use of collateral (eg, the

'financial accelerator' hypothesis) to explain financial system pro-cyclicality (Bernanke, Gertler and Gilchrist 1996); and models that explain banking crises as self-fulfilling panics (Diamond and Dybyig 1983). More recent work from the Bank of International Settlements (BIS) in particular has also been important in articulating an endogenous view of the financial cycle in the spirit of Kindleberger/Minsky (Borio, Furfine and Lowe 2001; BIS 2008; Borio and Drehmann 2009). The emphasis of this work is on the way in which certain cognitive biases can explain the way economic agents can come to mismeasure risk (particularly changes in risk over time). Even if risk is measured correctly, agents can respond to risk in socially sub-optimal ways.⁷

While the framework outlined above suggests that boom and bust cycles are endemic to the economic system, financial crises are not an inevitable end product of financial cycles. First, not every financial cycle has the same degree of overtrading/speculation or amplification of the real economy. This might be explained by the absence of significant displacement factors that initially give rise to an upswing. Or it may be that the market is able to discipline banks and other financial intermediaries effectively in certain circumstances. In some instances, government policies (eg, prudential regulation) may be effective in attenuating a build up in risk and associated vulnerabilities.

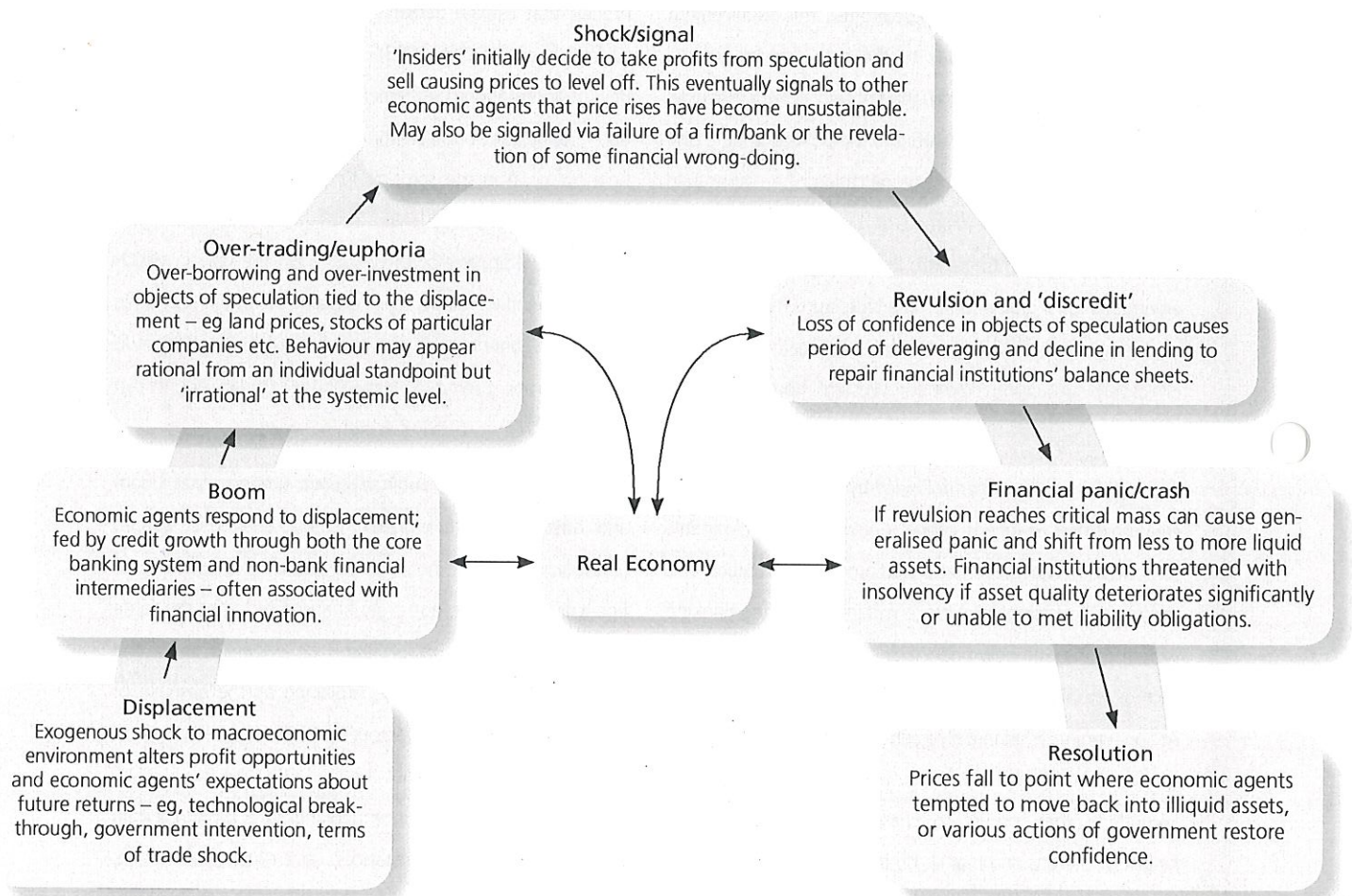
Second, every banking crisis is the product of a certain set of unique conjunctural factors – the institutional and macroeconomic environment. Calomiris, for example, offers an alternative view that "banking crises are not an historical constant, and therefore the propensity for banking crises

⁶ The external shock might be completely unrelated to domestic developments, or it could reflect a change in international perceptions related to domestic developments.

⁷ Cognitive biases include the tendency to underestimate the likelihood of high-loss low probability events (disaster myopia) and the way agents tend to interpret information in a biased way that reinforces any prevailing belief (cognitive dissonance). The failure to internalise other's actions and the difficulty in coordinating responses suggest actions that appear reasonable at an individual level might not collectively equate to desirable social outcomes. In a downturn it might be rational for an individual bank to tighten lending, but in aggregate this could protract the downturn and further harm the balance sheets of financial institutions. Conversely, in an upswing it might appear rational for any individual bank to keep extending credit and possibly reduce underwriting standards for fear of losing market share. But in aggregate this results in an over-extension of credit, creating systemic vulnerabilities.

Figure 1

The Kindelberger/Minsky framework



cannot possibly be said to be the result of factors that have been constant over time and across countries for hundreds of years, including business cycles, human nature, or the transformation inherent in bank balance sheets" (2009, p. 3). Calomiris explains banking crises as essentially stemming from government failure, or the current 'microeconomic rules of the banking game', rather than endogenously from the actions of economic agents and their inherent tendency for risk-taking.⁸ Economic agents continue to behave rationally while government actions can distort the environment in which these rational decisions are made.⁹

⁸ Although poor government intervention can certainly exacerbate the build-up in financial vulnerabilities by distorting the incentives of agents.

⁹ Calomiris (2009) explains the current crisis as the outcome of an expanded government safety net (deposit insurance in the context of the US) and government involvement in directing credit (eg, subsidising housing ownership via Fannie Mae and Freddie Mac).

Nevertheless, the argument that 'this time is not different' (Reinhart and Rogoff 2008a, p.1) is fairly compelling. Financial crises are common, if not actually inevitable – "[t]echnology has changed, the height of humans has changed, and fashions have changed. Yet the ability of governments and investors to delude themselves, giving rise to periodic bouts of euphoria that usually end in tears, seems to have remained a constant" (Reinhart 2008). Moreover, a behavioural perspective which suggests that economic agents are not constantly optimising or perfectly rational seems to square better with observed outcomes than one which places emphasis on government as opposed to market failure. Indeed, the two systemic New Zealand banking crises do suggest that credit-fuelled asset price booms can contain a degree of myopia on the part of economic agents, where over-exuberance can eventually turn to retrenchment and ultimately financial panic and crisis.

3 The banking crisis of the late 1880s and early 1890s

The first systemic banking crisis in New Zealand's history occurred in the late nineteenth century and culminated in the recapitalisation of the BNZ by the government in 1895. The crisis was ostensibly the result of a long drawn out period of subdued growth beginning in the late 1870s – a period termed the 'Long Depression' by a number of economic historians. The crisis centred on the BNZ as the largest and most systemically important bank. Other banks suffered serious losses and some, such as the National Bank,

required substantial recapitalisation from shareholders.

This crisis was not the first instance of difficulties New Zealand financial institutions had experienced – individual banks had failed before.¹⁰ Despite such failures, and notwithstanding the problems later in the century, the New Zealand banking system had exhibited a high level of stability, certainly relative to the US for example, where banking panics were frequent.

A timeline of the crisis is provided in figure 2 and further details can be found in Hunt (2009).

Figure 2
The banking crisis of the late 1880s and early 1890s – chronology

1870s	Vogel boom: government borrowing to fund infrastructure development, growth averages 8% pa. Land prices increase.
1875	Export prices peak.
1878	Failure of City of Glasgow bank: initial tightening in supply of credit from London.
1880-mid 1890s	'Long Depression': real GDP growth averages 2% pa.
1885	National Bank writes off 30% of paid-up capital.
1888	Problems revealed to BNZ shareholders. Losses of £800,000 recognised including from Australian operations. 30% of paid-up capital written off, fresh capital issued. Bad assets of £3.5m administered by separate department of the BNZ.
1890	Further £300,000 of BNZ losses identified, capital written off and fresh capital issued. Headquarters shifted to London. Estates Company established to manage bad assets of BNZ. Barings Crisis: general stop in capital flows to emerging markets.
1891	National Bank writes off more capital.
1891-93	Australian financial crisis – 54 non-bank financial institutions fail 1891-93. In 1893 13 of the 23 trading banks suspended deposit payments in 1st 5 months of the year.
1893	Minor bank run on Auckland Savings Bank.
1894	Government passes Bank Note Issue Act making bank notes legal tender - designed to stem bank runs. Government guarantee of portion of BNZ's liabilities (£2m preference shares issued in London). Headquarters shifted to Wellington.
1895	Recapitalisation of BNZ from existing shareholders (double liability) and government (£500,000). Asset Realisation Board (ARB) formed to dispose of bad assets. Takeover of Colonial Bank by the BNZ to expand depositor and asset base.
1902	First dividend paid on ordinary shares of the BNZ.
1906	ARB wound up – total of £1.5m of bad assets disposed of over 11 years.

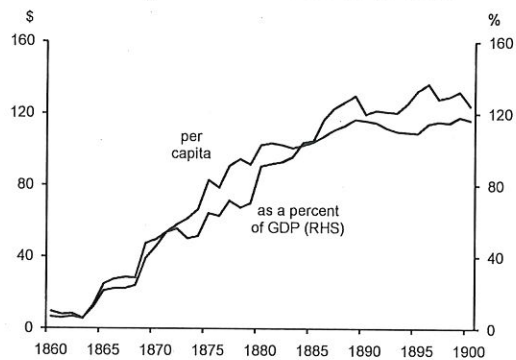
¹⁰ For a useful overview of the early development of New Zealand's banking system, see Hawke and Sheppard (1984). For specific institutional banking histories, see Chappell (1961) for the BNZ; Holmes (1999 and 2003) and Hawke (1997) for the National Bank; and Merrett (1985) for the ANZ.

Displacement and the Vogel boom

The 1870s witnessed an explosion of government borrowing to fund infrastructure development and promote migration (figure 3). New Zealand's implicit credit rating had improved following the conclusion of the New Zealand wars in the late 1860s-early 1870s, and assumption of provincial government debt by the central government, followed by the end of the provincial system of government in 1876. Government debt increased four-fold from 1870 to 1880. In addition, the increase in export prices in the early part of the decade (figure 4), coupled with the positive externalities associated with this infrastructure development, resulted in future returns to farming being capitalised in the market price of land.

Figure 3

Total central government debt 1860-1900



Source: Statistics New Zealand Long-term Data Series; author's calculations.¹¹

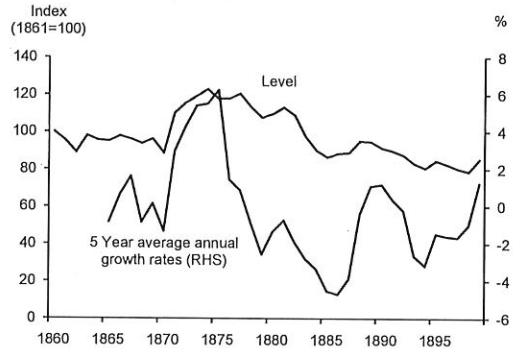
Thus, in the Kindleberger/Minsky framework, government borrowing to fund development constituted the 'displacement' – the exogenous shock to the macroeconomy that changed expectations about future profit opportunities. To take advantage of such opportunities, economic agents increased their level of gearing, and were able to do so by the extension of credit by trading banks and other financial institutions. As Bedford summarises, "[a]n extravagant State borrowing policy encouraged the dependence upon credit. Before long everybody was pledging his assets to the utmost to extend his credit and thereby take the fullest advantage

¹¹ Statistics New Zealand and the Treasury have collected a number of long-term socio-economic data series from a variety of sources. The coverage varies depending on the series in question. For the original source of the data underlying each series, see www.stats.govt.nz

of the prosperity which seemed to mark every enterprise" (1915, p. 174).

Figure 4

New Zealand export prices 1861-1900



Source: Briggs (2003).

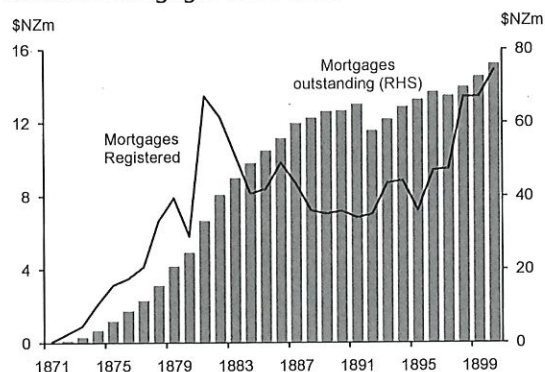
Financial innovation and the Vogel boom

The demand for credit was willingly met by increased supply from non-bank institutions (pastoral finance companies) as well as by trading banks. Pastoral finance companies dominated institutional lending to the mortgage market, and with institutional lending to the mortgage market accounting for 50-60 percent of overall mortgage lending, these institutions were the main players in the mortgage market (Arnold 1981). These companies raised funding by the issue of debentures, mainly in Scotland. These debentures were yielding 5-6 percent, while mortgage rates in New Zealand were 8-9 percent. By contrast, the yield on British assets ranged from 2-3 percent, so the relative return on investing in New Zealand assets attracted the British investor.

British capital also flowed through the retail deposits accounts at the London branches of New Zealand banks. This allowed trading banks to extend credit in New Zealand, although the share of total mortgages outstanding accounted for by the trading banks was relatively small. That said, trading banks, over time, developed a close relationship with, and even sponsored, the pastoral finance companies, so the effective exposure to the sector was much higher.

The other key part of the mortgage market was direct lending between individuals, both from Britain and within New Zealand. This financial disintermediation was facilitated by a network of land agents, solicitors and merchants.

Figure 5
Value of mortgages 1871-1900



Source: Statistics New Zealand Long-term Data Series; author's calculations.

Overtrading/speculation

Before long, what seemed like a rational response to a change in circumstances turned into 'land gambling' (Condliffe 1930). As Chappell describes in his history of the BNZ, "[e]very class of the community was bitten by the prevailing mania, and the price of every description of land was forced far in excess of real values. From the seeds sown in this era sprang many of the troubles which beset the bank [BNZ], no less than other lending concerns, in after years" (Chappell 1961, p. 90). Contemporary accounts of the period abound with this imagery of 'land grabbing' and speculation in rural land prices.

Bedford, writing in 1915, also makes much of the shift away from the traditional function of trading banks (or the London orthodoxy), which enabled the speculation of the era, either directly, or via their proxies, the pastoral finance companies. The London orthodoxy was premised on matching short-term liabilities (ie, deposits) with short-term assets, with these assets being mainly bills of exchange to facilitate the sale of goods in transit over the period. The provision of longer-term finance for agricultural development constitutes what we would now view as the core function of banks – transforming short-term liabilities into long-term assets. But at the time commentators such as Bedford considered this 'illegitimate business' and, indeed, almost immoral (1915, p. 174). Nevertheless, as Bedford implicitly highlights, this new business model required different risk management techniques, and it appears that trading banks may have had very lax lending standards through this period.

The 'Long Depression' and the change in expectations

It is difficult to point to any single event that signalled an end to the euphoria and overtrading characteristic of the Vogel boom. Export prices peaked in 1875 for example, while land prices continued to increase until the early 1880s, as did the strong credit growth which underpinned the mortgage market. Eventually, lower-realised farm returns placed severe pressure on farmers' ability to service their debt over the course of the 1880s, a situation compounded by rising ex-post real interest rates in the face of a global deflationary environment. There was also a tightening in the supply of foreign capital following the failure of the City of Glasgow bank in 1878, which is important in some narratives of the period (Easton 2009).

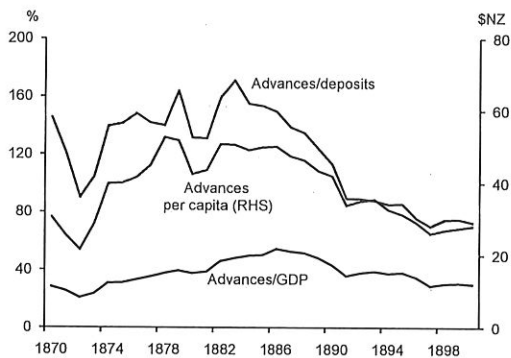
The fall in export prices signalled the limits of the existing structure of the economy, one based on extensive wool-based production (Hawke 1985; Preston 1978). This decline in the economy's growth potential was eventually reflected in rural land prices, which declined over the course of the 1880s. Thus the decline in the value of the collateral backing a vast majority of the loans in the economy, coupled with farmers' difficulties in servicing debt, left banks with depreciated and non-performing assets on their books.

Discredit

The subdued economic conditions of the era revealed the balance sheet weakness of the trading banks. As credit losses mounted, the trading banks were forced to take over the assets of the pastoral companies they had sponsored as these entities found themselves unable to meet their debenture obligations. As a result, banks were forced to delever their balance sheets and pare back lending to the economy. The supply of credit to the economy was further depressed as banks sought opportunities across the Tasman, given the relatively buoyant conditions there.

Figure 6

New Zealand trading bank lending 1870-1900



Source: Statistics New Zealand Long-term Data Series; author's calculations.

The supply of credit from offshore also dried up as British investors came to reassess the risk-return trade-off in the late-1880s as problems with illiquid assets became more apparent in New Zealand. This reduced the level of London retail deposits, the volume of debenture financing for pastoral finance companies and direct lending from individuals. By contrast, direct lending from individuals within New Zealand increased over the course of the Long Depression and helped to mitigate the contraction in credit supply from financial institutions (Arnold 1981).

Financial panic and the BNZ bailout

The BNZ was the single largest financial institution in New Zealand, accounting for around 50 percent of domestic retail deposits and a similar level of lending by the early 1880s (Hawke and Sheppard 1984, p. 29). In addition, by 1888, the BNZ had become the single largest land owner by virtue of the assumption and subsequent management of the non-performing loans secured by rural land. Balance sheet issues had gradually accumulated over the course of the 1880s but were, according to Bedford, hidden for many years "under roseate balance sheets...with grossly over-valued assets and grossly under-valued bad debts, until 1888, when the accumulated difficulties of the Bank made disclosure unavoidable" (1915, p. 144).

This disclosure to shareholders resulted in 30 percent of paid-up capital being written off and fresh capital issued. In addition, the bad assets were partitioned off in a special liquidation account on the bank's balance sheet. Further

losses were identified in 1890 and a special-purpose vehicle (the Estates Company) was set up to administer the bad assets funded by a debenture issue in London. However, the Estates Company was unable to sustain a profit from the management and disposal of the bad assets and therefore was unable to meet its debenture obligations, effectively forcing the BNZ to underwrite its liabilities.

Problems came to a head in 1894 as the spectre of a depositor run on the bank increased, given problems with the Estates Company and the charade associated with separation of the good and bad parts of the bank into separate entities. In addition, there was a general nervousness directed across the Tasman at the banking crisis that was unfolding in the Australian colonies and possible contagion effects, given the presence of a number of Australian banks operating in New Zealand. In June 1894, the government of the day stepped in and guaranteed £2 million worth of new liabilities issued by the bank.

This action did restore a degree of confidence to depositors and prevented a classic depositor run on the BNZ. However, it did little to address the pressing issue of the non-performing loans of the Estates Company, where the BNZ still had a very large item on the asset side of its own balance sheet associated with its shareholding in the company. One year later, and with a full picture of the balance sheet position of the BNZ including that of the Estates Company, the government injected £500,000 into the BNZ in the form of preference shares. This injection amounted to 11 percent of government expenditure at the time. Double liability – a condition whereby existing shareholders were liable, up to the value of paid-up capital, if the bank faced liquidity or solvency pressures – was also evoked to write off losses and to raise fresh capital.

Resolution

The resolution of the crisis was a drawn-out affair. As part of the bailout, in 1895 the government orchestrated the takeover by the BNZ of another distress bank, the Colonial Bank, in order to widen the asset and depositor base. In addition, the bad assets were finally severed completely from the bank with the setting up of the Asset Realisation

Board (ARB), which was tasked with disposing of the assets. This process took eleven years and was facilitated by the return to prosperity in the late 1890s and the rebound in rural land prices. By 1902, the bank was able to pay its first dividend on ordinary shares.

The government intervention in the mid-1890s prevented the demise of a systemically important financial institution, and with it, helped mitigate any further impact on the economy from a major disruption to the process of financial intermediation. Over time, the government was fully compensated for the risk it took in the 1890s, with total dividends received by the government from 1895-1933 of £3.5 million, for an average return on capital of 10.75 percent (Moore and Barton 1935, p. 58).

The recovery in export prices in the late 1890s and the technological advances in the agricultural sector associated with refrigeration meant that economic agents were once again tempted to move back into illiquid assets and take on long-term debt. However, in the aftermath of the crisis, there were structural changes in the provision of credit in the economy, which facilitated this renewed accumulation of debt. In the mortgage market, for example, the share of credit provided by direct lending from New Zealand individuals increased from 32 percent in 1886 to 54 percent in 1901 (Arnold 1981, p. 61). Financial institutions lost ground, driven by the collapse of the pastoral finance companies, and the share of direct foreign lending also fell considerably. The composition of financial institutional lending changed. The creation of the Government Advances for Settlers department in 1894 meant that by 1901 the State was providing one quarter of New Zealand's mortgage financing. The role of this government funding, coupled with other policies, helped the economy benefit from the technological changes linked to refrigeration.¹² In addition to this government source of mortgage finance, insurance companies became relatively more important in this segment of the market and together largely filled the void left by the pastoral finance companies. The share of trading bank credit in the mortgage market remained relatively constant.

¹² These other policies included the power of compulsory purchase to break up large land holdings into smaller more efficient farming units, graduated land taxes on farm size, alternative tenure arrangements and the creation of the Department of Agriculture in 1892.

4 The banking crisis of the late 1980s

The Kindleberger/Minsky framework also illuminates the second case study of a systemic banking crisis. This second case primarily concerned one major institution of systemic importance – again the BNZ, but this time as a predominately State-owned entity. In addition New Zealand's seventh largest financial institution, the Development Finance Corporation (DFC) failed, while other smaller institutions faced a variety of financial pressures, including a run by depositors on the United Building Society in 1988 and the recapitalisation of a small bank (NZI Bank) by its owners in 1989. A chronology of the crisis is provided in figure 7, opposite.

Displacement

The reforms that accompanied financial sector deregulation and the broader economic restructuring of the period constituted the 'displacement' in the Kindleberger/Minsky framework. In 1984, a whole raft of controls on the economy were lifted. In the space of two years, the quantity restrictions and interest rate controls that had previously applied to financial institutions were abandoned, the exchange rate was floated and, for the first time since the 1930s, there were no material restrictions on capital portfolio flows.

The financial reforms radically altered the operating environment for financial institutions and their ability to affect the intermediation process. Prior to the reforms trading banks were bounded by controls implemented mainly for monetary policy purposes. These included reserve requirements, mandated low interest rates and the regulation of asset portfolios. In this constrained environment, trading banks found themselves at a competitive disadvantage, and disintermediation occurred as a result.¹³ The growth of the non-bank sector in the post-war period, which embodied such disintermediation outside the banking sector, required

¹³ There were concessions given to trading banks in this period, including the ability to open their own savings banks as subsidiary companies in order to compete with the trustee savings banks and other deposit-taking institutions in 1964. With the reforms of the 1980s, the rationale for a separate retail savings bank subsidiary focused on retail banking disappeared.

Figure 7

The banking crisis of the late 1980s – chronology

Mid-1980s	Financial sector deregulation and economic restructuring. Stock prices triple between 1984 and 1987. Commercial property prices increase 120% between 1984 and the peak in 1988.
1987	BNZ fully nationalised since 1945 became 87% government owned following public share offering. Stock market crash: NZ index lost nearly 15% on 'Black Tuesday' 20th October.
1988	Government puts BNZ up for sale.
1989	Following profit warning from BNZ early in year, government takes BNZ off the market. June: BNZ announces \$648m loss. Government orchestrates private sector dominated recapitalisation of BNZ worth \$610m, dilutes government shareholding to 52%; Capital Markets Equity Ltd has 30% shareholding. Collapse of Development Finance Corporation (DFC) in October: NZ's 7th largest financial institution. Resolution of DFC ultimately costs government \$112m.
1990	BNZ announces profit of \$124m: but overstated by creative accounting. November: new National Government recapitalises BNZ (\$200m), while Capital Markets Equity Ltd injects \$50m. Asset management company (Adbro) set up to dispose of bad assets (\$2.8b).
1991	BNZ records \$71m loss.
1992	BNZ sold to National Australia Bank (NAB) for 80c per share. Assets of Adbro brought back onto BNZ's balance sheet.

layers of controls to be progressively applied to finance companies and other such institutions.

Credit creation and euphoria

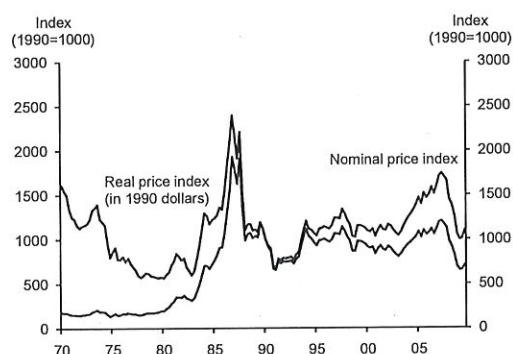
Financial institutions suddenly found themselves in an environment with little formal restrictions on their ability to create credit, but with little actual experience in extending unfettered credit in a prudent manner. As Singleton describes "[u]ntil the share market collapsed in 1987, a spirit of optimism – in some cases amounting to hubris – pervaded the financial industry" (Singleton 2006, p. 105). Such confidence was tied to the displacement in economic agents' expectations related to benefits of financial deregulation and the ability of the economic reforms to improve the economy's long-run growth potential.¹⁴ This change in expectations manifested

itself in rising asset prices, particularly for equities and commercial property. Stock market prices tripled between September 1984 and their peak in September 1987 (figure 8), while commercial property prices increased 120 percent between 1984 and mid-1988 (figure 9). Speculation in commercial property was enabled by the extension of credit by banks to a raft of new investment corporations and large property developers. An influx of foreign capital enabled banks and other financial institutions to take advantage of the deregulated environment and meet the demand for credit by the new corporate high-fliers such as Equiticorp, Judgecorp and others.

In hindsight, internal controls and market discipline proved inadequate to prevent widespread imprudent lending on the part of some institutions. In addition, New Zealand's prudential regime was only in the early stages of development following the passage of the Reserve Bank Amendment Act in 1986. The new regime, which created the concept of the registered bank, may have initially accentuated the decline

¹⁴ Note, while the New Zealand household was not centre stage in the accumulation of financial imbalances, household liabilities did grow reasonably strongly during the mid-1980s (at around 15 percent), a result of the relaxation of credit controls imparted by financial liberalisation. Residential house prices did increase over the period, but not to anywhere near the same extent as commercial property prices (figure 9).

Figure 8
New Zealand equity prices 1970-2009



Source: Datastream, author's calculations.

Note: The price index has been constructed from the Barclays, NZSE 40 and NZX 50 price series. The nominal price series has been deflated using the CPI index.

in credit standards as the BNZ and others may have felt compelled to compete more aggressively with new banks that came into existence at the time.

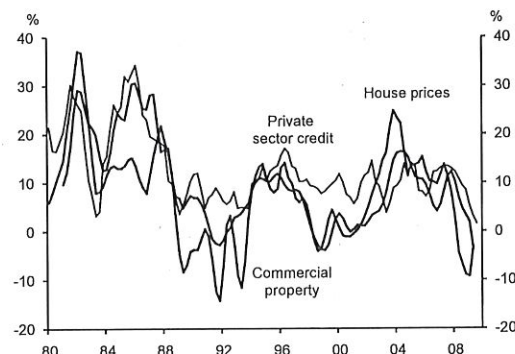
Shock, revulsion and discredit

The trigger event that seemed to expose much of the fictitious prosperity of the era, based on overvalued equity prices and an over-build in commercial property, was the October 1987 stock market crash. The New Zealand stock market fell nearly 15 percent in a single day following a crash on Wall Street overnight. By the trough in stock prices in February 1988, the share market had lost 60 percent of its value (figure 8). To this day, the stock market has not recovered to a level comparable to that prevailing before the crash – either in nominal or real terms (figure 8).

The fall in the listed share price of the investment companies and property developers subsequently caused the price of the assets that these companies had invested in to fall precipitously (figure 9). The decline in property prices was driven by the fire sales of property as these companies delevered, coupled with a fundamental excess supply of property from overbuilding. In turn, the balance sheets of financial institutions that had lent to these corporates were exposed to the falling value of collateral that backed lending – collateral that not only included real assets such as property, but shares and debentures as well.

The stock market crash set in train a deleveraging process

Figure 9
New Zealand property prices and credit growth
1980-2009
(annual percent change)



Source: Quotable value (QV) Ltd; RBNZ.

that wiped out huge amounts of wealth, bringing down many of the corporate high-fliers of the mid-1980s. It also impaired the health of financial systems in both New Zealand and Australia. This in turn contributed to the decline in economic activity over the late 1980s and early 1990s. The reduced access to credit implied by the deleveraging process was, however, one of a number of factors that affected GDP growth, or the "long recession", as Easton (2009) terms the period from 1987–1993. Other factors included disinflationary monetary policy, with concomitant high real interest rates, the high real exchange rate and the global recession of 1991 induced by monetary policy tightening across a number of countries, together with an oil price shock following the first Gulf War.

The BNZ bailout

At the beginning of the 1980s, the BNZ was fully government owned and was the largest trading bank by share of assets. However, at the start of the reforms, its relative share of corporate lending was much lower than its share of the retail market. Financial deregulation emboldened the bank to aggressively increase its lending to the corporate sector, and it subsequently developed a close relationship with the likes of Rada, Equiticorp and others. Large loans were often negotiated with little more than a handshake, according to contemporary media accounts, and such loans were directed primarily to the investment and property sectors.

In June 1989 the BNZ announced a large loss of \$648

million, which immediately prompted the first of two recapitalisations. The first recapitalisation involved a government underwritten rights issue of new shares worth \$405 million, where the government, as the 87 percent owner of the BNZ, gave up its rights to the new shares to Capital Markets Equity Ltd – a Fay Richwhite entity. The other element to the recapitalisation involved the issue of preference shares worth \$205 million – these were USD capital securities placed with Japanese investors. These were placed later in the year, and in the interim, the government also provided ‘bridging finance’ in the form of \$200 million in redeemable preference shares.

The second recapitalisation occurred over a year later following further pressures on the BNZ’s balance sheet from exposures in Australia, whose own banking system was coming under significant pressure following the fallout of the stock market crash and the unwinding of the credit-fuelled asset price boom. The BNZ’s two major shareholders – the government and Capital Market Equities Ltd – injected \$250 million directly into the BNZ.

Resolution

In addition to the direct infusion of capital, an asset management company (Adbro) was set up to manage \$2.8 billion of non-performing loans, 81 percent owned by the Crown and 19 percent by Fay Richwhite & Co Ltd. It was thought that \$1.1 billion of these bad assets would ultimately be recoverable.

The BNZ recorded another loss over the 1990-91 financial year and the government decided to sell the BNZ. The National Australia Bank (NAB) bought the bank for \$1.48 billion.¹⁵ The re-privatisation of the bank caused much public alarm, but the National government resisted mounting pressure to proceed with a Parliamentary inquiry concerning the circumstances of the sale.

As in the 1890s, the systemic importance of a single institution was judged to necessitate government intervention to prevent what may have resulted in a much larger disruption

¹⁵ The sale netted the government \$850 million and Capital Markets Equity Ltd \$400 million. The sale price of 80 cents per share was 10 cents higher than Capital Markets Equity Ltd had paid in 1989.

to the financial system, and ultimately to economic activity. The gross fiscal cost of the recapitalisation amounted to around 2.7 percent of government expenditure and 1 percent of GDP.¹⁶ This cost is a lot lower than the direct cost of the 1890s bailout. It is also lower than the direct recapitalisation costs incurred by the Nordic countries during their banking crises of the late 1980s and early 1990s. The gross cost of the recapitalisation of the banking systems for Finland, Norway and Sweden was 8.6, 2.6 and 1.9 percent of GDP respectively (Laeven and Valencia 2008).

5 Crisis episodes compared

The Kindleberger/Minsky framework provides a useful way of situating our two case studies within a broader understanding of financial development and crisis. Some of the salient features are summarised in table 1.

In both instances, one can identify plausible events that served to displace economic agents’ expectations about the future path of the economy. The resulting boom was centred on particular objects of speculation related to property and was fed by the extension of credit by financial institutions, who acted as conduits for foreign capital.

Balance sheet vulnerabilities increased as boom turned into bubble, and in both cases market discipline proved insufficient to prevent an under-pricing of risk and imprudent lending. Moreover, both were periods with comparatively little prudential regulation. In the mid-1980s the regulatory framework was in its infancy as the process of financial liberalisation unwound decades of financial repression and direct controls on financial institutions. In the 19th century there was no lender of last resort and only minimal regulations contained in the Act of Parliament establishing each bank’s right to operate in New Zealand.

In both cases there are identifiable international shocks that help mark the limits of the preceding boom, or indeed trigger the unfolding banking crisis. In the late nineteenth century these include the decline in export prices from the late 1870s, the change in international risk aversion associated with the failure of the City of Glasgow bank in

¹⁶ These figures include a contribution of \$112 million to the resolution of DFC’s debt obligations.

1878, the Barings Crisis in London 1890, and contagion from the Australian banking crisis of the early 1890s. In the more recent episode, the 1987 global share market crash was the obvious trigger.

Moreover, the domestic banking crisis was part of a wider global banking crisis. In Australia, 13 of 23 banks temporarily closed their doors in 1893, while Argentina, Italy and the US also experienced banking crises around the same time. In the late 1980s, the Nordic countries suffered severe output losses emanating from problems in their respective banking systems. A number of Australian banks also experienced problems in the early 1990s related to exposure to commercial property.

Banking crises are products of their specific institutional and macroeconomic environs and certain features distinguish each episode. In the case of the nineteenth century event, the banking crisis was the result of both a lengthy expansion period following by a sustained period of subdued economic growth. Credit growth and the resulting 'land gambling' contributed to average annual growth rates of 8 percent over the Vogel boom, whereas annual growth fell to around 2 percent from 1880–95. By contrast, the financial euphoria associated with the mid-1980s reforms was much shorter-lived and the banking crisis more immediate coming just four to five years following the initial displacement. Moreover, the mid-1980s was not a period of generalised prosperity despite the optimism embedded in the stock market and speculation in commercial property. Growth averaged just over 2 percent between 1984 and 1987, and was essentially flat between 1988 and 1992 as many parts of the economy, including the rural and manufacturing sectors, adjusted to the removal of subsidies and other forms of protection.

The resolution process was more drawn out and more costly in the earlier episode. The direct cost of the recapitalisation in 1895 was 11.5 percent, while the government bailout in the 1990 episode was 2.7 percent of government expenditure. However, the gross fiscal costs in terms of GDP are more comparable, given the much smaller share of government expenditure in national output in the 1890s. As a percentage of GDP, the gross recapitalisation cost was 1.6 percent in the mid-1890s, compared to 1 percent of GDP in the latter case.

The respective banking systems were also situated within different monetary and exchange rate regimes. New Zealand in the nineteenth century was tied, indirectly to the Gold Standard, with domestic monetary conditions governed by the trading banks' holding of sterling reserves in London (Hawke 1985). Any negative economic shock had to be mediated via an internal adjustment in the price level (deflation) given the fixing of the New Zealand pound to the pound sterling at parity by the trading banks. A floating exchange rate in the 1980s gave a buffer to external shocks while allowing authorities the ability to affect domestic monetary conditions. However, the imperative to reduce accumulated inflation pressures that had been built up since the 1970s meant that there was no attempt to offset the effects of financial sector deleveraging by monetary or fiscal stimulus. This contrasts with the current financial crisis, where authorities in many countries, including New Zealand, have responded with fiscal and monetary stimulus to support domestic demand.

Examples of episodes where global financial and economic crises have not coincided with a systemic banking crisis in New Zealand are also instructive. Some of the relevant features of the Great Depression and current global financial crisis are also summarised in table 2. In the Great Depression, for example, New Zealand suffered a severe real-side shock to the economy in the form of a 45 percent decline in export prices between 1929-31, and an accompanying decline in real GDP of 12 percent from 1931-33.

However, New Zealand, like Australia and a handful of other countries, did not experience a systemic banking crisis or the currency and sovereign debt crises characteristic of the period. Fisher and Kent (1996) suggest the lack of pre-existing balance sheet vulnerabilities in the Australian banking system in the 1930s protected Australia from a systemic banking crisis. A similar story rings true in the New Zealand context, where the economy did not experience a credit-fuelled asset price boom during the 1920s. Moreover, trading banks appeared much more circumspect during the second rural land boom associated with refrigeration, which ended in the early 1920s. Bank balance sheets were therefore sufficiently robust to manage the decline in asset quality arising from subdued economic conditions in the

Table 1
Financial crisis episodes compared

	Late 1880s	1930s	Late 1980s	2007–2009
Global context	<p>Robust growth 1880s.</p> <p>Secular decline in world export prices from late 1870s.</p> <p>Economic weakness 1890s: disruption in capital flows and banking crises.</p>	<p>'Roaring twenties'.</p> <p>1929 Wall St crash and sharp decline in global growth.</p> <p>Sharp decline in export prices.</p> <p>Banking, currency and sovereign debt crises.</p>	<p>Global financial liberalisation and deregulation.</p> <p>Boom in asset prices.</p> <p>Stock market crash 1987.</p> <p>Banking crises.</p>	<p>Sustained expansion in global growth.</p> <p>Financial innovation and sub-prime mortgages.</p> <p>Sharp decline in global growth 2008-09.</p> <p>Global banking crises.</p>
Domestic economic conditions	<p>'Vogel boom' 1870s.</p> <p>'Long Depression' late 1870s-mid-1890s.</p>	<p>Sustained period of economic weakness/uncertainty from early 1920s.</p>	<p>Mid-1980s economic restructuring & financial deregulation.</p> <p>Disinflationary policies late 1980s.</p>	<p>Longest post-war economic expansion.</p> <p>Household debt accumulation.</p>
Asset price boom and credit growth	<p>Rural land to early 1880s.</p> <p>Enabled by access to UK capital (via London retail deposits of NZ banks and debenture financing by pastoral finance companies).</p>	<p>Rural land (up to early 1920s).</p> <p>Increasing role of State provision of mortgage finance.</p> <p>Enabled by government overseas borrowing.</p> <p>More prudent bank lending.</p>	<p>Commercial property & equities.</p> <p>Bank lending enabled by increasing access to global sources of funding.</p>	<p>Residential property & rural land.</p> <p>Enabled by bank offshore wholesale funding.</p>
Prudential regulation	<p>Minimal regulations contained in each bank's enabling legislation.</p>	<p>Government informal oversight via ownership stake in largest bank (BNZ).</p>	<p>Regulatory framework in state of flux.</p>	<p>Well established.</p> <p>NZ banks not exposed to sub-prime.</p>
Wider financial issues	<p>Widespread failures of pastoral finance companies.</p> <p>Major capital write-downs for National Bank.</p>	<p>Severe balance sheet distress for rural sector (and urban unemployed), mitigated somewhat by policies of forbearance on part of banks.</p>	<p>Failure of investment companies and property developers.</p> <p>Failure of 7th-largest financial institution (DFC).</p> <p>Issues with smaller institutions.</p>	<p>Finance company failures.</p> <p>Increase in bank NPLs, but low by international comparison.</p> <p>Funding liquidity risks for banks.</p>
Government intervention	<p>Bank Note Issue Act 1894 to stem bank runs.</p> <p>Government guarantee of BNZ's liabilities 1894.</p> <p>Bailout 1895 and asset management company set up.</p>	<p>Legislation to reduce mortgage interest rates.</p> <p>'Voluntary' conversion of internal government debt.</p>	<p>Organised private sector-dominated recapitalisation of BNZ 1989.</p> <p>Recapitalisation of BNZ 1990 and setting up of asset management company.</p>	<p>Retail and wholesale guarantees.</p> <p>RBNZ liquidity facilities.</p>
Systemic banking crisis	<p>Yes</p> <p>Duration – nearly 10 years</p> <p>Long resolution period (11 years)</p> <p>Direct fiscal costs – 11.5% of government expenditure</p>	<p>No</p>	<p>Yes</p> <p>Duration 2-3 years</p> <p>Relatively short resolution period</p> <p>Direct fiscal costs – 2.7% of government expenditure</p>	<p>No</p>

1920s and the sharp deterioration in economic activity in the early 1930s. Capital buffers were much larger, and as Hawke illustrates in his account of the history of the National Bank, the "1930s were a period of reduced profitability, but they were not so much a struggle for survival as the 1880s had been" (1997, p. 173). Indeed, faith in the soundness of the banking system saw the level of fixed deposits increase between 1930 and 1934, at the expense of other forms of investment (Moore and Barton 1935, p. 226).

New Zealand entered the financial crisis of 2008–09 having experienced a credit-fuelled run-up in asset prices – both residential and rural land prices and a prolonged period of economic growth. Lending risks through this period may have been under-priced, at least for some types of lending, but the relaxation of lending standards on the part of banks has not been to the same extent seen in the mid-1980s. Banks have been better able to manage the risks associated with this traditional lending with well-established risk management frameworks, as well as the subsequent decline in asset quality. New Zealand banks were also not involved in the particular opaque products associated with sub-prime lending and securitised assets that have been at the heart of the global financial crisis.

6 Conclusion

This article has provided a detailed account of banking system crises in New Zealand, of which there are but two examples. Both banking crisis episodes illustrate a model of financial development and crisis where an exogenous shock to the expectations of economic agents, interacting with the provision of credit by financial institutions can lead ultimately to overoptimism, speculation and mania, creating vulnerabilities that then become cruelly exposed following some negative shock. This negative shock precipitates an unwinding of imbalances accumulated during the euphoric period. While it is not necessarily the only possible model to understand the respective banking crises, the Kindleberger/Minsky framework does arguably provide a plausible one in both cases.

The initial condition of the financial system proves to be key in determining whether any shock – real or financial –

constitutes a threat to the health of financial institutions that are at the heart of the intermediation process. The Great Depression is a useful example, where one of the largest macroeconomic shocks New Zealand has experienced did not undermine the solvency of the financial system as a whole.

In the current environment, New Zealand's financial system has proved reasonably resilient to the on-going global financial shock. New Zealand banks did not purchase the US mortgage assets that subsequently proved so toxic, while heightened global risk aversion and the concomitant re-pricing of risk has not entailed a full-blown sudden stop in capital flows. Nevertheless, the banking system's reliance on overseas funding does create obvious vulnerabilities, and current resilience should not be taken for granted.

References

- Arnold, M (1981), "The market for finance in the late nineteenth century New Zealand with special reference to rural mortgages" MA Thesis, Victoria University Wellington.
- Bedford, H (1915), "The history and practice of banking in New Zealand", D.Litt Thesis, University of New Zealand.
- BIS (2008), "Addressing financial system procyclicality: a possible framework", note for the FSF Working Group on Market and Institutional Resilience, September 1.
- Bernanke, B, M Gertler and S Gilchrist (1996), "The financial accelerator and the flight to quality," *The Review of Economics and Statistics*, Vol. 78(1), pp. 1-15, February.
- Bordo, M (2008), "Growing up to financial stability", *Economics E-Journal*, April 17.
- Borio, C and M Drehmann (2009), "Towards an operational framework for financial stability: 'fuzzy' measurement and its consequences", *BIS Working Paper* No 284, June.
- Borio, C, C Furfine and P Lowe (2001), "Procyclicality of the financial system and financial stability: issues and policy options", *Managing the Macro and Microprudential Dimensions of Financial Stability*, BIS, March.
- Boyd, J, G De Nicolo and E Loukoianova (2009), "Banking Crises and Crisis Dating: Theory and Evidence", *IMF Working*

Paper 09/141, July.

Briggs, P (2003), *Looking at the numbers: a view of New Zealand's economic history*, NZIER, Wellington.

Calomiris, C (2009), "Banking crises and the rules of the game", *NBER Working Paper* 15403, October.

Cecchetti, S, M Kohler and C Upper (2009), "Financial crises and economic activity", paper prepared for the Federal Reserve Bank of Kansas City's Symposium at Jackson Hole Wyoming, August 9.

Chappell, N (1961), *New Zealand banker's hundred: a history of the Bank of New Zealand*, BNZ, Wellington.

Condliffe, J (1930), *New Zealand in the making. a survey of economic and social development*, Allen and Unwin Ltd, London.

Diamond, D and P Dybvig (1983) "Bank runs, deposit insurance and liquidity", *Journal of Political Economy*, 91(3), pp.401-419.

Easton, B (2009), "It's the same this time? Cycles and depression in New Zealand", *Policy Quarterly*, 5(1), pp. 17-23.

Fisher, C and C Kent (1996), "Two depressions, one banking collapse", *RBA Research Discussion Paper*, 1996-06.

Geithner, T (2008), "Reducing systemic risk in a dynamic financial system", Remarks at the Economic Club of New York, New York, June 9.

Gorton, G (2009), "Stopped in the face by the invisible hand: banking and the panic of 2007", paper prepared for the Federal Reserve Bank of Atlanta's 2009 conference: Financial Innovation and Crises, May 11-13.

Hawke, G (1973), *Between governments and banks: a History of the Reserve Bank*, A R Shearer, Wellington.

Hawke, G (1985), *The making of New Zealand: an economic history*, Cambridge University Press, UK.

Hawke, G (1997) *The Thoroughbred among banks in New Zealand: 1972-1947 the early years*, Vol 1, The National Bank of New Zealand Ltd, Wellington.

Hawke, G, and D Sheppard (1984), "The evolution of New Zealand trading banks: mostly until 1934", *VUW Working*

Papers in Economic History, 84/2, March.

Holmes, K (1999), *The thoroughbred among banks in New Zealand: 1945-1984*, Vol 2, The National Bank of New Zealand Ltd, Wellington.

Holmes, K (2003), *The thoroughbred among banks in New Zealand: banking in new territory 1984-2000*, Vol 3, The National Bank of New Zealand Ltd, Wellington.

Hunt, C (2009), "Banking crises in New Zealand – a historical overview", paper presented at the RBNZ/VUW Professorial Fellowship Workshop, The global financial crisis: historical perspectives and implications for New Zealand, Wellington, June 17.

IMF (2009), *Global Financial Stability Report*, October.

Kindleberger, C (1996), *Manias, panics and crashes: a history of financial crises*, 3rd Edition, John Wiley & Sons, NY.

Laeven, L and F Valencia (2008), "Systemic banking crises: a new database", *IMF Working Paper* 08/224.

McCulley, P (2009), "The shadow banking system and Hyman Minsky's economic journey", *Global Central Bank Focus*, PIMCO, May.

Merrett, D (1985), *ANZ bank: an official history*, Allen and Unwin, Australia.

Moore, B and J Barton (1935), *Banking in New Zealand*, NZ Bank Officers Guild, Wellington.

Reinhart, C (2008), "Eight hundred years of financial folly", *VOX*, 19 April [www.voxeu.org].

Reinhart, C and K Rogoff (2008a), "This time is different: a panoramic view of eight centuries of financial crises", *NBER Working Paper* 13882, March.

Reinhart, C and K Rogoff (2008b), "Banking crises: an equal opportunity menace", *NBER Working Paper* 14587, December.

Reinhart, C and K Rogoff (2009), "The aftermath of financial crises", *NBER Working Paper* 14656.

Singleton, J (2006), *Innovation and independence: the Reserve Bank of New Zealand 1973-2002*, Auckland University Press, Auckland.