STAFF MEMO

What do banks lose money on during crises?

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What do banks lose money on during crises?

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We look at a wide range of national and international crises to identify banks' exposures to losses during banking crises. We find that banks generally sustain greater losses on corporate loans than on household loans. Even after sharp falls in house prices, losses on household loans were often moderate. The most prominent exception is the losses incurred in US banks during the 2008 financial crisis. In most of the crises we study, the main cause of bank losses appears to have been property-related corporate lending, particularly commercial property loans. In a box, we also summarise characteristics of developments in the banking industry ahead of banking crises.

Introduction

The primary task of banks is to channel credit. Banks procure capital from various funding sources and lend to enterprises and households. Losses on bank loans can also be an important driver of banking crises.[1] We should therefore be aware of the risks normally inherent in banks' lending.

In this Staff Memo, we describe the characteristics of bank losses during crises in the light of Norwegian and international experiences. We find that many characteristics of banking crises are similar over time and across countries. Both national and international experiences show that banks generally sustain larger losses on corporate loans than on household loans. During the Norwegian banking crisis (1988–1993), both commercial banks and savings banks recorded by far the largest losses on corporate loans (see Charts 1 and 2). Losses on corporate loans also exceeded losses on household loans in periods without major solvency crises (see Chart 3). The crisis in the United Kingdom at the beginning of the 1990s also illustrates this (see Chart 4). Even in Iceland, where the share of problem loans to household was greater than in other countries, corporate loans accounted for the largest losses during the 2008 financial crisis (see Chart 5). Moreover, during the financial crisis corporate loans were also the main source of losses in the euro area (see ECB (2011)). The exception is the considerable losses of US banks on household loans during the 2008 financial crisis.

Losses on household loans

Even after sharp falls in house prices, losses on household loans have generally been small as a percentage of total losses (see Table 3). While loans to households accounted for approximately 35 percent of commercial bank loans and 60 percent of loans from savings banks, household loans only accounted for between 15 percent and 20 percent of total problem loans after real house prices dropped by more than 40 percent during the Norwegian banking crisis 1988–1993 (see Official Norwegian Report (NOU) (1992), and Table 1). Corresponding percentages applied during the banking crises in Sweden and Finland in the 1990s (see Table 1). When losses[2] peaked in 1992 and 1993, 3 percent of household loans in Sweden were recognised as non-performing (see Wallander (1994)). This figure includes losses on loans to sole proprietorships, which would normally be riskier than residential property loans. In Finland, only 1 percent of household loans were actually written off.

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[1] Losses during crises may differ from losses during normal periods. For example, losses on commercial property loans may well be small in normal periods, since collateral values will generally be sufficiently large to cover minor fluctuations in property prices. During a crisis, however, collateral values may fall sharply, resulting in large bank losses.

[2] Crystallised losses and problem loans.

Table 1: Problem loans[1)] in Norway, Sweden and Finland. Percentage of total problem loans

	Norway		Sweden		Finland	
	1988	1992	1991	1993	1991	1993
Corporate	80	77	84	75	59	58
Of these:						
- Building and construction	5	8	-	-	13	14
- Property sector	16	30	75	50	16	12
Households	15	20	7	11	21	25

Source: Drees and Pazarbasiouglu (1988)
1) Non-performing loans and loans with a high probability of default.

Definition of loss concepts

The concept "loss" is not precise. Before realising a loss, a bank must first recognise that the loan is in default, then write down the debt and, finally, net the write-down against any reversals. In practice, information is rarely available about actual realised losses. Most often, write-downs are the closest we come, while in other cases we have to use data on non-performing loans and loans with a high probability of default as an estimate of losses.

We use the concept write-down as a synonym for loss. Wherever other definitions apply, these are specified.

Non-performing loans:
Generally speaking, a loan where no interest or principal payments have been made for 90 days or more. The exact number of days may vary over time and between countries. Banks will often write down loans in default. The size of a write-down depends on how much the bank expects to be able to recover.

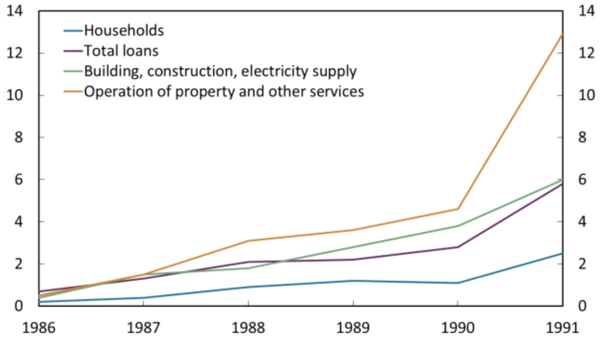
Loans with a high probability of default:
Loans that are not yet recognised as non-performing, but where the bank expects to realise a loss based on the information concerning the loan. Banks therefore often take an individual write-downs on loans with a high probability of default.

Problem loans:
This is the sum non-performing loans and loans with a high probability of default.

Write-downs:
There are two types of write-downs: individual impairment losses and collective impairment losses. Individual impairment losses are linked to specific assets. Collective impairment losses are often linked to problem sectors where the bank expects losses to occur, but does not yet know which customers will be at the origin of the losses.

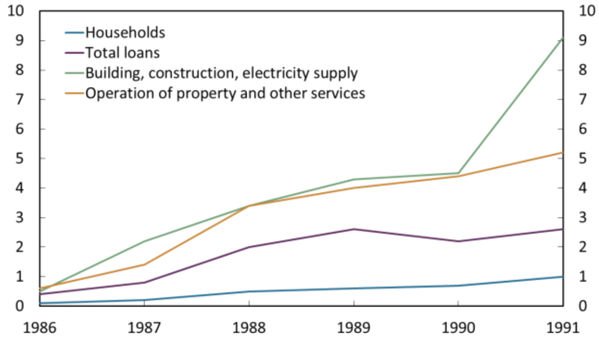
Losses:
Net impairment losses plus net recognised losses that have not previously been written down.

Chart 1: Losses[1)] as a percentage of loans to different sectors. Norwegian commercial banks. 1986–1991



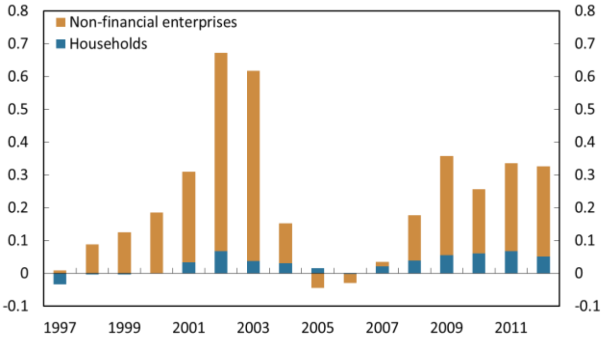
Source: Official Norwegian Report (NOU) (1992)
1) Write-downs

Chart 2: Losses[1)] as a percentage of loans to different sectors. Norwegian savings banks. 1986–1991



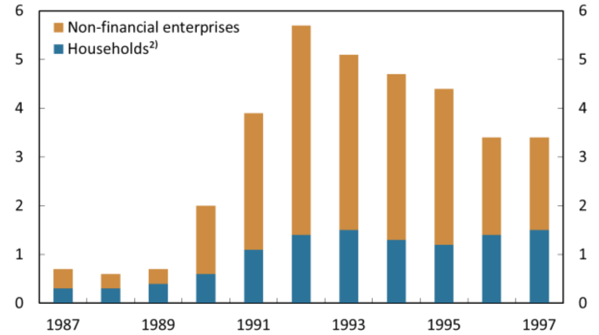
Source: Official Norwegian Report (NOU) (1992)
1) Write-downs

Chart 3: Individual write-downs as a percentage of loans to households and non-financial enterprises. Norwegian parent banks. 1997–2012



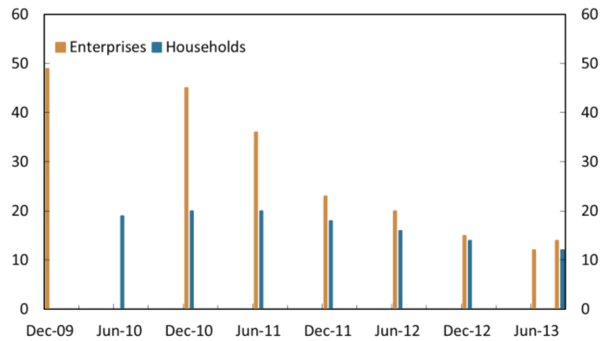
Source: Norges Bank

Chart 4: Losses[1)] of all banks in the United Kingdom. GBP billion. 1987–1997



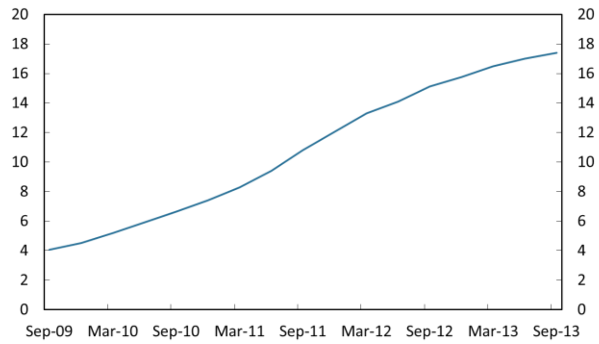
Source: Bank of England (1998)
1) Write-downs
2) Losses on household loans secured on residential property constitute a small proportion of total household losses. The earliest available breakdown is for 1992, and shows that loans secured on residential property accounted for around 20 percent of total losses on household loans.

Chart 5: Problem loans[1)] as a percentage of loans to households and enterprises. Icelandic banks.[2)] December 2009–August 2013



Source: Central Bank of Iceland (2013)
1) Non-performing (more than 90 days' delay in payment) and loans with a high probability of default.
2) All figures are for parent banks and refer to book values. The data relate to the three largest commercial banks in Iceland. The household data also include the Icelandic House Financing Fund.

Chart 6: Residential property loans in default[1)] as a proportion of outstanding balances. Irish financial institutions that arrange residential property loans. Percentages. Q3 2009–Q3 2013



Source: Central Bank of Ireland (2014)
1) More than 90 days' delay in payment.

Table 2: Losses[1)] of US banks in connection with the subprime market. August 2007–May 2008

	Losses		
	USD billion	Percentage of profits	Percentage of core capital
20 largest commercial banks	197	102	21
Five largest investment banks	64	163	24

Source: BIS (2009)
1) Write-downs

The US Savings and Loan Crisis in the late 1980s and early 1990s, as well as the UK's small-bank crisis at the beginning of the 1990s, also show that banks' losses on household loans have been low. When overall losses of US commercial banks peaked in 1991, loans secured on residential property accounted for 3 percent of total losses. Losses as a proportion of total residential property loans amounted to 0.2 percent (see Chart 8). When the losses of UK banks peaked in 1992, losses on household loans secured on residential property accounted for only 4 percent of total losses (see Bank of England (1998)).

Moreover, during the 2008 financial crisis, most households continued to meet their obligations. Danish financial institutions incurred losses of about 2 percent of all household loans in 2009, but losses on loans secured on residential property were significantly smaller (see Randvig et al. (2013) and Nationalbanken (2013)). At the height of the crisis in 2009, Danish mortgage providers, which almost exclusively provide residential property loans, had to write down only 0.2 percent of their loans to households. Aggregated for the euro area, banks' losses on household loans secured on residential property have remained stable at around 0.1 percent (see ECB (2011)).

Spain, Iceland and Ireland experienced a greater increase in the number of non-performing loans than other countries. At its peak, around 5 percent of all loans secured on residential property were classified as problem loans in Spain. These problem loans accounted for 16 percent of total problem loans (see Banco de España (2014)). The figures appear low given the country's increase in unemployment from around 8 percent in 2007 to more than 26 percent at the end of 2013. For Iceland, on the other hand, household loans in foreign currency boosted the problem loan ratio of households to 20 percent during the financial crisis (see Chart 5). Among Irish financial institutions, the problem loan ratio for residential property loans rose to more than 17 percent, not least due to a drop in house prices of around 50 percent (see Chart 6, Central Statistics Office (2013) and Central Bank of Ireland (2013)). Actual losses were not necessarily this large.[3]

The most prominent example of large-scale actual losses on household loans is found in the US. Prior to the 2008 financial crisis, there was a marked increase in loans to segments of the US housing market comprising customers with low credit-worthiness, i.e. subprime loans. These loans were based on the expectation that house prices would rise and that customers would then be able to refinance their loans. When US house prices began falling in 2006, refinancing became more difficult, and default rates increased considerably. When losses for US commercial banks peaked in 2009, losses as a proportion to loans secured on residential property amounted to about 3 percent and accounted for around 30 percent of total losses (see Federal Reserve System (2014)). Marked-to-market valuation also resulted in substantial unrealised losses on securities. Subprime-related losses at the largest banks were

[3] Sources at the Central Bank of Ireland to whom we have spoken have stated that the actual realised losses on household loans are small.

substantial in the period August 2007–May 2008 (see Table 2).

However, the lending practices of US banks prior to the financial crisis differ substantially from those applied in other countries, including Norway. First, many subprime loans were arranged by commission-based lending agents whose sold their mortgages to large banks for securitisation. The transfer and sale of loans reduced the agents' vested interest in assessing credit risk thoroughly to avoid losses. Second, borrowers had greater leeway to abandon their loans in return for surrendering the mortgaged asset. This differs from normal practice in Norway, where borrowers are liable for the full amount of the loan. Accordingly, when house prices fell sharply, a substantial portion of the risk was transferred to the banks.

Losses on commercial loans

Property-related loans

Losses on loans to enterprises vary widely, although property-related investments in, for example, commercial property and building and construction projects have been an important cause of bank losses in many crises (see Table 3 for a detailed overview). This is because this type of investment constituted a significant proportion of bank assets, and because problems in the commercial property sector can trigger greater losses through a number of different channels.

Commercial property caused problems for the banking sector as early as during the Christiania crash of 1899 (see Gerdrup (2003)). The failure of the company Chr. Christophersen heralded a drop in prices and caused banks to adopt more restrictive lending practices. Certain property companies were unable to raise the capital they required to complete their buildings. The number of new property companies sank from 59 in 1899 to 14 in 1900, and total sales dropped from NOK 75 million in 1897 to NOK 4 million in 1901. The crash in the property sector was accompanied by a wave of bankruptcies in the banking sector.

Norwegian banks again lost large amounts on property-related investments during the Norwegian banking crisis (1988–1993) (see Charts 1 and 2). Rapid growth in production and ample access to credit resulted in considerable investment in commercial buildings and production facilities ahead of the crisis (see Official Norwegian Report (NOU) (1992)). The completion of new buildings peaked at the same time as the economy turned in 1988. Corporate bankruptcies increased the volume of vacant business premises. Production premises often had little alternative value, and property sold on the secondary market was generally sold at low prices. Property values quickly fell below the loan amounts. In addition, banks were left with large property portfolios on their balance sheets as customers were unable to service their loans. In 1991, as a result of a review of their assets and securities, several large commercial banks had to write down the values of buildings, properties, shares in subsidiaries and properties they had taken over. In 1992, commercial property and building and construction accounted for around 38 percent of total problem loans (see Table 1).

Other countries also experienced considerable property-related losses in the 1990s. In 1992 and 1993, building and construction and commercial property accounted for 12 percent of total loans at Swedish banks. Despite this moderate proportion, these sectors accounted for 44 percent of all losses (recognised losses and problem loans). Some 42 percent of all loans related to building and construction and commercial property had to be written off in 1992 and 1993 (see Chart 7). In Finland, these sectors accounted for between 26 percent and 29 percent of total problem loans. When losses peaked in 1991 during the US Savings and Loan Crisis, losses on commercial property came to approximately 26 percent of total losses. At that time, losses amounted to 2.6 percent of total commercial property loans; see Chart 8. Losses on commercial property were also a major factor behind the large losses made by UK banks at the beginning of the 1990s and the 1997 Asian financial crisis (see Benford and Burrows (2013) and Zhu (2003)).

Echoing the crises of the 1980s and 1990s, bank losses during the 2008 financial crisis reflect the difficulties presented by property-related investments. Danish financial institutions incurred considerable losses after rapid price inflation in the commercial property market was followed by a sharp drop in prices (see Randvig et al. (2013)). In 2009, commercial property and building and construction featured the highest loss ratios among financial institutions, at 3.3 percent and 5.6 percent, respectively (see Chart 9). Among Icelandic banks, close to 50 percent of all loans to enterprises were classified as problem loans in 2009. Building and construction and the property sector are said to have been hit particularly hard (see Central Bank of Iceland (2010 and 2013)). In the United Kingdom, around 6 percent of all commercial property loans were written down between 2008 and 2012 (see Benford and Burrows (2013)). When total losses at US commercial banks peaked in 2009, commercial property loans accounted for 25 percent of total losses. At that time, losses amounted to 2.9 percent of total commercial property loans (see Chart 8).

During the 2008 financial crisis, Ireland and Spain were hit particularly hard by problems in the commercial property sector. In Ireland, the problem loan share for commercial property loans came to some 61 percent in the third quarter of 2013 (see Central Bank of Ireland (2013)). From September 2008 to September 2013, property-related activities and building and construction accounted for more than 50 percent of all problem loans in Spain (see Chart 10). At its peak, this share exceeded 60 percent.

Losses on other commercial loans

Other business sectors have also been at the origin of bank losses, and primary industry appears to have been a challenging sector for banks in many cases. Back in 1864, several banks in Norway folded as a result of problems in the timber industry (see Gerdrup (2003)). In 1990, the aquaculture industry was a source of large-scale losses for commercial banks as excess supply gradually resulted in losses for fish farmers (see Official Norwegian Report (NOU) (1992)). Furthermore, agricultural loans, particularly relating to agricultural property, have led to losses for Danish banks in recent years (see Randvig et al. (2013)). In 2011, losses in the agricultural sector amounted to 4.5 percent of loans and guarantees, compared to 1.1 percent in the case of the loan portfolio as a whole. High property prices, partly as a result of sharp increases in corn prices, provided incentives to borrow money to invest. When prices began to fall, farmers were left with debt incurred at a time when collateral values were considerably higher.

Nevertheless, the variety of bank losses is eye-catching. In the period 1920–1928, Norwegian banks incurred losses on overdrafts provided to agents who assisted enterprises in securing capital and listing on Oslo Stock Exchange (see Gerdrup (2003)). In the period 1988–1993, the manufacturing industry, goods trade and hotel and restaurant sector also suffered considerable losses, although the proportion of total losses was moderate. In 1922, the Danish *Landmansbanken*, Danske Bank's predecessor, had to be rescued by the Danish state after it made substantial losses, including as a result of the bankruptcy of a trans-Atlantic trading company with significant international exposure (see Lidegaard (2013)). During the 2008 financial crisis, Icelandic banks also made large losses on loans to holding companies (see Central Bank of Iceland (2010 and 2013)).

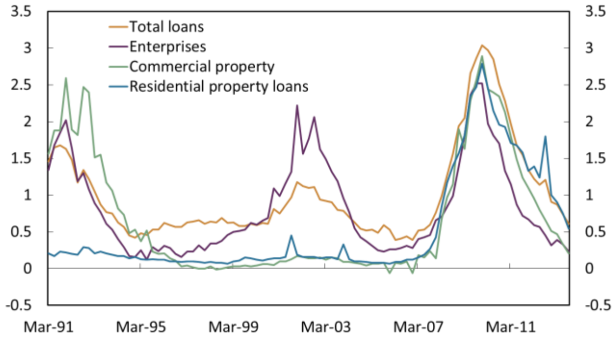
Conclusion

Normally, banking losses during crises appear to be driven by losses on commercial loans. Loans for building and construction projects and (particularly) commercial property loans have historically been vulnerable. Losses on household loans appear to be a less significant factor, although there is no rule without exceptions. Note, for example, the US during the 2008 financial crisis. However, the terms of these loans differ markedly from the terms faced by Norwegian households.

Chart 7: Losses[1] suffered by Swedish banks during the banking crisis of the 1990s. Percentages

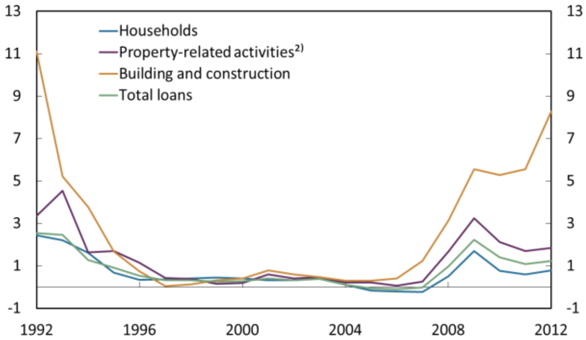
Source: Wallander (1994)
1) Losses comprise crystallised losses and problem loans.

Chart 8: Losses[1] as a proportion of total loans to the group. All US commercial banks[2]. Percentages. Seasonally adjusted. Q1 1991–Q3 2013



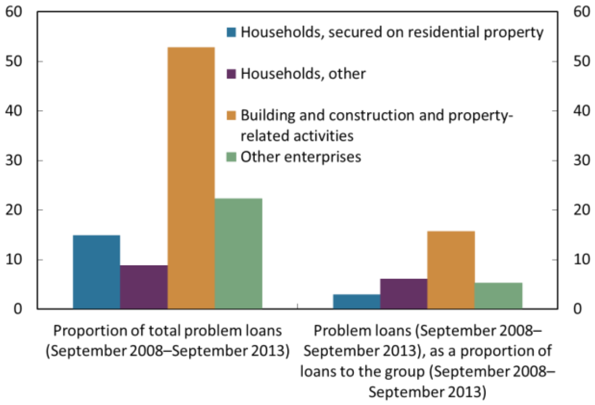
Source: FED (2014)
1) Write-downs
2) The loss ratios for total loans and enterprises relate to loans issued by both foreign and domestic offices. Commercial property and residential property loans concern loans issued by domestic offices. Residential property loans are defined as "single family residential mortgages", while commercial property loans are defined as "commercial real estate loans (excluding farmland)".

Chart 9: Annual loss ratios[1] of Danish financial institutions. Percentages. 1992–2012



Source: Nationalbanken (2013)
1) Write-downs as a percentage of loans made.
2) Property-related activities also include some other manufacturing activities.

Chart 10: Problem loans[1] among Spanish banks that accept deposits. Percentages



Source: Banco de España (2014)
1) Problem loans comprise loans in default (payment delayed by 90 days or more), and loans carrying a particularly high risk of losses.

Developments in the banking industry that typically precede banking crises

When we compare banking crises in different countries and different periods, we find many similarities. Strong concentration and rapid credit growth often appear to be good indicators of risk build-up. Although growth in an individual bank may indicate a strong business model, it may also be a sign of laxer lending practices. If many banks increase their exposure to a given sector, developments in that sector should be monitored closely. Table 4 provides an overview of developments prior to crises.

Laxer lending practices and increased concentration of loans are often closely related to high lending growth. The loan volume of Norwegian banks doubled prior to the onset of the Norwegian banking crisis (1988–1993) (see Official Norwegian Report (NOU) (1992)). The banks with the highest lending growth recorded greater losses on loans during the Swedish banking crisis (see Wallander (1994) and Englund (1999)). In the UK, the banks that suffered problems had an average growth rate of around 30 percent in 1989, compared to a rate of about 15 percent for other banks (see Logan (2000)). In Denmark, average lending growth for the financial institutions that failed came to more than 40 percent between 2005 and 2007, compared with a growth rate of 25 percent for financial institutions as a whole (see Randvig et al. (2013)). At parent-company level, the three largest commercial banks in Iceland had an average annual growth rate of almost 50 percent from 2004 to 2008 (see Special Investigation Commission (2010)). During the second half of 2007, the same banks increased their loans to foreign customers by more than 120 percent.

Crises are often preceded by deficient and weak credit management. Prior to the Christiania crash, new commercial banks hired young managers unfamiliar with previous crises (see Gerdrup (2003)). Before the bank losses of the 1920s, commercial banks offered overdrafts to agents without demanding security or with shares as collateral. During the Norwegian banking crisis (1988–1993), banks expanded into geographical regions and sectors where they had little experience.

There appear to be three particular factors that characterise periods of weak credit management. First, banks' lending practices have proven inadequate when banks move out of their traditional business areas into areas with which they are less familiar. Second, there has often been a shift towards management and boards without adequate risk management experience. Third, collateral requirements are often eased during upturns based on expectations of continued price inflation.

At times, poor credit management by banks can resemble outright fraud by borrowers. Before the most recent banking crisis in Denmark, various small and medium-sized financial institutions lent capital based on mortgage deeds where the loans often exceeded the real market value of the underlying property. One group of property companies traded mortgage deeds and property with each other, thereby inflating the prices of the properties involved far above their actual market values. The prices of the affected properties rose to the extent that, in some cases, interest costs alone totalled up to ten times the revenue generated by the property. The market was entirely dependent on reselling at a profit (see Randvig et al. (2013)).

Greater concentration may increase the likelihood of losses. In the US, commercial property loans as a percentage of total loans increased from 6 percent in 1980 to almost 30 percent among the banks that failed during the Savings and Loan Crisis (see FDIC (1997)). In Denmark, 12 of the 15 hardest-hit financial institutions had a property share of more than 20 percent in 2007 (see Randvig et al. (2013)). In Denmark, a group of 17 persons with ownership interests in around 1 700 companies represented a considerable concentration risk (see Randvig et al. (2013)). In Iceland, loans to the Baugur group at one point corresponded to more than 50 percent of the three largest banks' equity (see Special Investigation Commission (2010)). Further examples are provided in Table 4.

Table 3: Distribution of bank losses during previous crises in Norway and internationally

Crisis	Households	Commercial property and building and construction	Losses on other commercial loans[1)]	Sources
Norway (1899–1905)	Small losses, only 5 percent owned their own homes.	The property sector pulled several banks into bankruptcy. All six of the commercial banks established in the 1890s folded.		Gerdrup (2003)
Norway (1920s)			Losses on overdrafts and agriculture	Gerdrup (2003)
US (late 1980s and early 1990s)	Loans secured on residential property accounted for around 3 percent of total losses when losses peaked in 1991. Losses as a proportion of total residential property loans amounted to 0.2 percent.	Around 26 percent of total losses when losses peaked in 1991. Losses as a proportion of loans amounted to 2.6 percent.		FED (2014)
United Kingdom (1990s)	Very small losses on loans secured on residential property. In 1992, these accounted for 20 percent of total household losses and 4 percent of total losses.	Major factor	Goods trade and service provision	Bank of England (1991 and 1998), Benford and Burrows (2013)
Norway (1988–1993)	15 percent to 20 percent of total problem loans.	21 percent to 38 percent of total problem loans.	Aquaculture	NOU (1992), Gerdrup (2003), Drees and Pazarbasioglu (1988)
Sweden (1990s)	In 1992 and 1993, household loans (including loans to sole proprietorships), amounted to 29 percent of total loans, but only 8 percent of total losses (crystallised losses and problem loans). 3 percent of household loans had to be written off in 1992 and 1993.	In 1992 and 1993, these sectors accounted for 12 percent of total loans, but some 44 percent of total losses (crystallised losses and problem loans). 42 percent of all loans to these sectors had to be written off in 1992 and 1993.		Wallander (1994)
Finland (1990s)	21 percent to 25 percent of total problem loans, but only 1 percent of household loans were in fact written off.	26 percent to 29 percent of total problem loans.		Drees and Pazarbasioglu (1988)
Denmark (financial crisis)	Financial institutions wrote off around 2 percent of all household loans in 2009. Considerably lower figure for loans secured on residential property. For example, mortgage providers lost only 0.2 percent that year.	Financial institutions wrote down 3.3 percent and 5.6 percent of commercial property and building and construction loans, respectively, in 2009. The highest write-down percentages were found among enterprises.	Agriculture	Randvig et al. (2013), Nationalbanken (2013)
Euro area (financial crisis)	Stable at around 0.1 percent of residential property loans.	Losses on commercial loans up from 0.3 percent of loans to the sector in 2008 to around 1.3 percent in 2011.		ECB (2011)

United Kingdom (financial crisis)	On average, loans secured on residential property accounted for 4 percent of the total losses made by UK banks and building societies between Q2 2009 and Q2 2011.	Losses on commercial loans averaged 40 percent of total losses made by UK banks and building societies between Q2 2009 and Q2 2011. Around 6 percent of all commercial property loans were written down between 2008 and 2012.		Benford and Burrows (2013), Bank of England (2014)
US (financial crisis)	Losses as a proportion of loans secured on residential property amounted to around 3 percent and accounted for about 30 percent of total losses when total losses peaked in 2009.	Approximately 25 percent of total losses when total losses peaked in 2009. Losses as a proportion of loans amounted to 2.9 percent.		ECB (2009), Furlong and Knight (2010), FED (2014)
Spain (financial crisis)	In 2013 Q2, loans secured on residential property amounted to 16 percent of total problem loans among banks that accept deposits. In 2013 Q3, around 5 percent of all loans secured on residential property were classified as problem loans.	Peaked at more than 60 percent of total problem loans. Q2 2012 figures for banks that accept deposits. Clearly the largest contribution to the increase in the number of problem loans. In 2013 Q3, around 33 percent of all such loans were classified as problem loans.		Banco de España (2014)
Iceland (financial crisis)	The problem loan ratio for household loans peaked at 20 percent. Described as hard-hit.	In 2009, almost 50 percent of all loans to enterprises were classified as problem loans. Building and construction and the property sector are described as particularly hard-hit.	Holding companies and other sectors	Central Bank of Iceland (2010 and 2013)
Ireland (financial crisis)	Ordinary residential property loans: in 2013 Q3, 141,520 residential property loans were recorded as being in default (payment delayed by more than 90 days). This totals 18.4 percent of the total number of loans and 17.4 percent of outstanding balances. Residential property loans for letting purposes: in 2013 Q3, 40,426 residential property loans were recorded as being in default. This comes to 27.4 percent of all such loans and 29.3 percent of outstanding balances.	In 2013 Q3, the problem loan ratio for commercial property loans was 61 percent. In total, commercial property accounted for 18 percent of Irish banks' balance sheet. During the same period, other enterprises had a problem loan ratio of 27 percent and accounted for 19 percent of banks' balance sheet.		Central Bank of Ireland (2013), Central Bank of Ireland (2014)

1) This category does not provide a complete list, but does include sectors that have been highlighted with respect to individual crises.

Table 4: Factors that affect bank losses

Crisis	Lending practices/credit management	Lending growth	Increased concentration	Sources
Norway (1899–1905)	The commercial banks that were established in the 1890s employed a number of young managers unfamiliar with earlier crises.	Particularly among commercial banks in the 1890s.		Gerdrup (2003)
Norway (1920s)	Commercial banks offered overdrafts to brokers without demanding collateral or with shares as collateral. Expanded into geographical regions and sectors in which they had little experience.	Particularly among commercial banks during WWI.	In 1920, some 74 percent of commercial bank loans took the form of overdrafts, up from 45 percent in 1913.	Gerdrup (2003)
Norway (1988–1993)	Little or no experience of competition in the newly liberalised credit market. Expanded into geographical regions and sectors in which they had little experience. Weakened internal controls and credit assessment. Commercial property: banks generally accepted high prices in the second-hand market as security. Many banks also offered top-up financing that gave them lower priority than other lenders.	Lending volume doubled in the period 1984–1987.		Gerdrup (2003), Steigum (2004)
US (late 1980s and early 1990s)	Guidelines issued by senior managers were weakened. Little or no equity in new commercial property loans.	Loans for property-related investments tripled, commercial property loans quadrupled.	Commercial property loans as a proportion of total loans increased from 6 percent in 1980 to almost 30 percent among the banks that folded. Other banks increased from 6 percent to 11 percent. The majority of the more than 1 000 banks that failed had a higher proportion of commercial property-related loans than the banks that survived.	FDIC (1997), ECB (2008)
Sweden (1990s)	Several banks issued an alarmingly high proportion of loans without prior board approval. The reason given for this was that the issue of the loan was “very urgent”. In 1989–1990, GOTA had a loss ratio of almost 40 percent, and characterised 50 percent of its loans as “very urgent”. In contrast, in 1992 Handelsbanken had a share of “very urgent” loans of 4 percent and a loss ratio of 10 percent.	Banks that featured very high lending growth prior to the Swedish banking crisis of the 1990s also featured higher loan losses during the crisis.	Larger losses at banks with large portfolios of property-related loans. A small number of investments accounted for a large proportion of losses.	Wallander (1994), Englund (1999)

United Kingdom (1990s)		In 1989, the banks that failed had a growth rate of around 30 percent on average. During the same period, other banks had a growth rate of around 15 percent on average.	Banks were particular concentrated in the property market.	Logan (2000)
Denmark (financial crisis)	Around half of Danske Bank's losses from 2008 until the first half of 2012 (totalling DKK 70 billion), derived from the bank's Irish and Nordic investments. Several banks had managers with poor knowledge of financial conditions, and credit risk management was generally weak among financial institutions.	Growth rate of more than 40 percent among problem banks in the period 2005–2007, compared to 25 percent among other banks. In particular, problem banks experienced rapid growth in loans to the property sector.	12 of 15 hard-hit financial institutions had a property ratio above 20 percent in 2007. A group comprising just a few people presented a major loss risk.	Randvig et al. (2013)
US (financial crisis)	Loans to subprime borrowers. Loans made based on expectations of continued price inflation. To a much larger degree than during previous crises, payment problems related to residential property loans and a sharp increase in the share of problem property loans translated into actual losses.	Yes	Subprime	IMF (2008) and Furlong and Knight (2010)
Ireland (financial crisis)	New banks introduced residential property loans featuring, for example, 100 percent debt financing for first-time buyers. An increasing number of banks were managed and run by persons with less experience of practical risk management than before. Among banks that received explicit state guarantees during the crisis, loans lacking construction or lease agreements accounted for an increasing proportion of total property-related loans (including residential property loans). From 2002 to 2007, the proportion of such loans rose from 8 percent to 21 percent. All banks that received explicit state guarantees deviated from their own formal credit policy requirements to boost their lending.	From 2002 to 2008, property-related loans (including residential property loans), increased by EUR 200 billion. This amounted to 80 percent of all credit growth during the period. In the period 2004 to 2006, net lending to the building and construction sector and for property-related activities (excluding residential property loans), increased by almost 45 percent a year. This is high compared to an average credit growth rate of around 22 percent.	Property-related loans accounted for less than 45 percent of total credit in 2002, but more than 60 percent of total credit in 2008.	Commission of Investigation into the Banking Sector in Ireland (2011)
Spain (financial crisis)	Large losses on loans to foreign households, a group of borrowers of which banks had little experience.	Total annual credit growth of more than 25 percent.	In 1998 Q4, building and construction and property-related loans accounted for 12 percent of total loans. In 2007 Q4, these sectors accounted for more than 26 percent.	Banco de España (2009, 2014)

Iceland (financial crisis)	One-third of loans issued without security. A large proportion of bank loans (70 percent to enterprises), were issued in foreign currency to unhedged borrowers without income the foreign currency. Strong growth in foreign loans, of which banks had little previous experience. Investors who owned the three largest banks were also major customers. There are indications that this resulted in disproportionately large loans to these investors.	At parent-company level, the three largest commercial banks – Glitnir, Kaupthing and Landsbanki – recorded average annual growth of almost 50 percent from 2004 until problems arose in 2008. In the second half of 2007, these banks increased their loans to foreign customers by more than 120 percent.	An increasing number of loans to holding companies and foreign customers. At their peak, loans to the Baugur group were the equivalent of more than 50 percent of the three largest banks' equity. Several of the banks had also made considerable loans to other companies and individuals.	Central Bank of Iceland (2009 and 2010), Special Investigation Commission (2010)

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