

Research

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Are We There Yet?

Credit Crunches & Bank Stock Prices: A Look Back At History

- **Euros Getting There On Price Falls** — Bank and financial share prices typically decline by 80-85% during systemic credit crunches. Based on our sample of four systemic crises — US (1929-1932), Sweden (1989-1993), HK (1997-1998) and Japan (1995-2011) — share prices declined c85% peak-to-trough. Taking into account only the more modern crises (eg excluding US 1929-1932), the average share price decline is 79%. Peak-to-trough (2007-09), the pan-European (SX7P) and Euro area (SX7E) bank indices declined over 80%. Peak-to-today they are down 75% and 80%, respectively. To reach the 2009 trough, the pan-European bank index needs to decline 30% and the Euro Area only 12%. ***So based on peak-to-trough share price moves, we may be getting there for the SX7E.***
- **Bank Shares Trough Not Long After Loans Peak** — There is normally a 1-3 years gap between the peak in bank and financial share prices and the peak in total loans; the peak in share prices normally happens first. Perhaps more interestingly, share prices trough only 1-2 years after the previous peak in loans: this was the experience in the US 1932, Sweden 1993 and HK 1998. Japan initially also follows this pattern (shares trough 1998 after loan peak 1997) but then the Japanese financial sector sold off again. Is Europe like Japan? Euro Area GDP may be as bad as Japan, but we do not believe the stock market will be. ***With much of the Euro Area de-leveraging starting only in 2011, based on historical precedents of systemic credit crises, bank stocks could trough in 2012 or even 2013 — we may have a while longer to endure.***
- **Credit Crunches Are Tough** — In the four systemic credit crunches we looked at, loan balances on average dropped by one-third and declined for six years from peak-to-trough. Loan balances relative to GDP decline further in quantity and duration compared to the change in nominal loan balances alone. Loan/deposit de-leveraging lasts even longer. The Euro Area de-leveraging likely has only just begun. The only GIIPS country that has deleveraged properly is Ireland, shrinking its loans balance c30% since end 2008. Other GIIPS markets have just begun de-leveraging in 2010-11. The overall Euro Area loan balances only began to decline in late 2011. In the near term, as de-leveraging accelerates, this implies lower earnings and declining consensus estimates. ***We remain fundamentally cautious on Euro Area banks until we are further through this de-leveraging process.***

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

■ Equities

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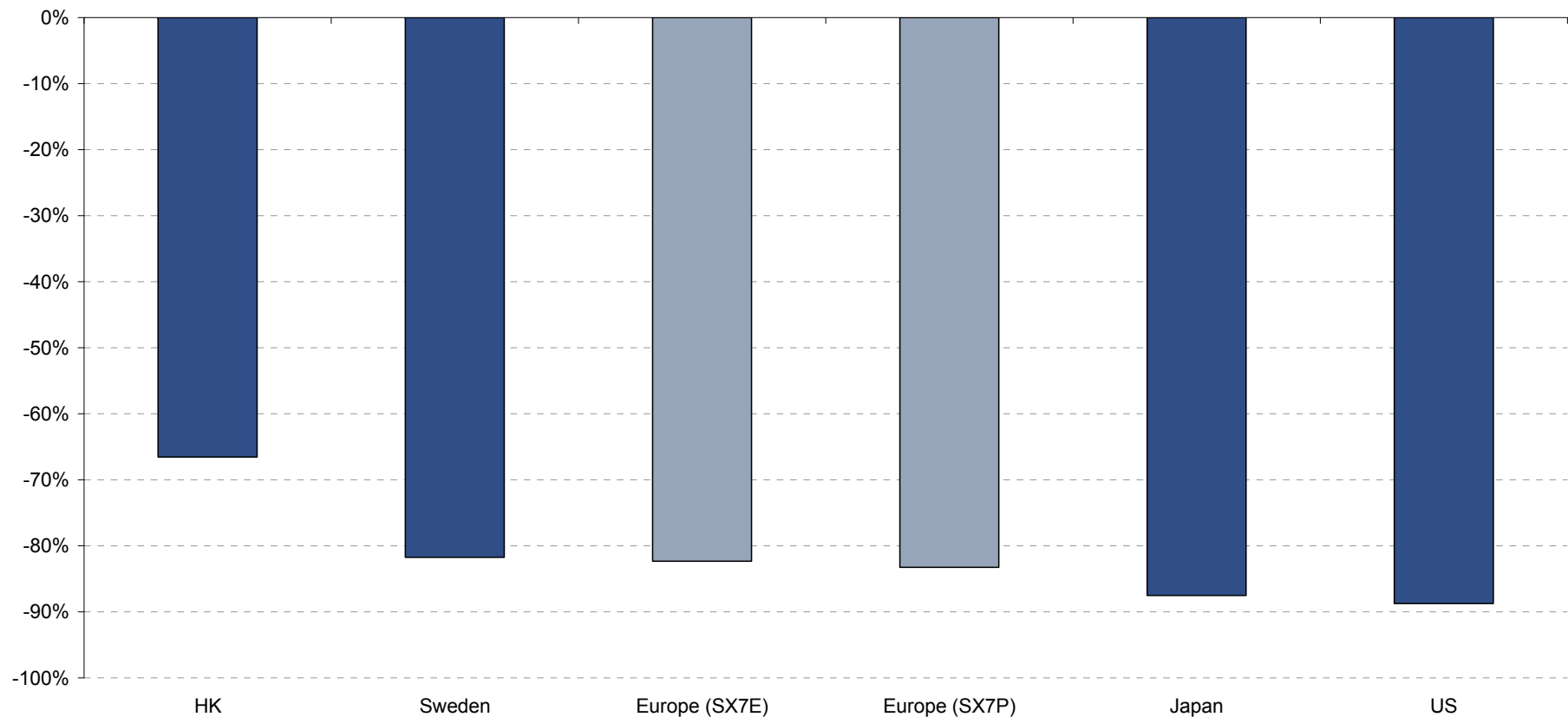
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Systemic Crises Crunch Bank Equity

Bank and financial share prices typically decline by c80-85% in systemic credit crunches. Peak-to-trough (2007-09), the pan-European (SX7P) and Euro area (SX7E) bank indices declined over 80%; peak-to-today they are down 75% and 80%, respectively. To reach the 2009 trough, the pan-European bank index needs to decline 30% and the Euro Area only 12%. ***So based on peak-to-trough share price moves, we may be getting there for the SX7E.***

Figure 1. Country Financial Indexes Peak to Bottom (%)



Source: Bloomberg

Studied periods included are: Japan (1995-2011), Sweden (1989-1993), Europe (2007-2009), US (1929-1932) and Hong Kong (1997-1998). We have used Hang Seng Bank to represent the Hong Kong stock price performance, the average performance of SEB and SHB for Sweden, DJIA for USA and Topix 17 for Japan

Systemic Crises Bank Equity and Loans Evolution

There is normally a 1-3 years gap between the peak in share prices and the peak in total loans. Perhaps more interestingly, share prices tend to trough only 1-2 years after the previous peak in loans — this was the experience in the US 1932, Sweden 1993 and HK 1998. Japan initially also followed this pattern (shares trough 1998 after loan peak 1997) but then the Japanese financial sector sold off again. **With much of the Euro Area de-leveraging starting only in 2011, based on historical precedents of systemic credit crises, bank stocks could trough in 2012 or even 2013.**

Figure 2. USA — Share Price and Loans Cumulative (Rebased at 100% to year end peak level)

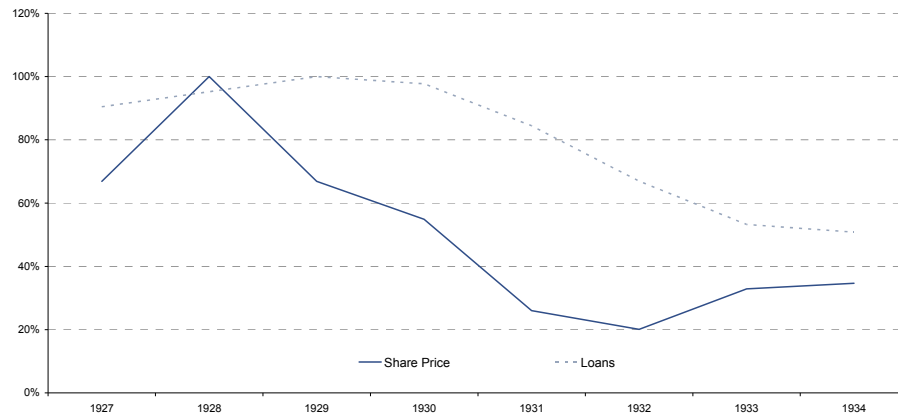
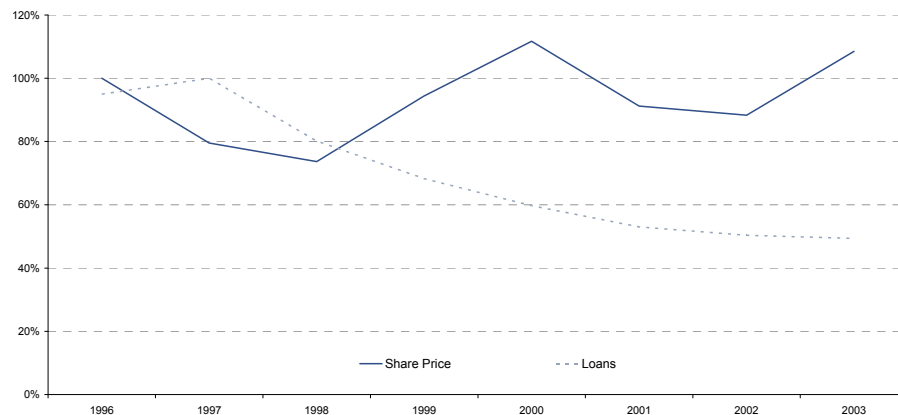


Figure 4. HK — Share Price and Loans Cumulative (Rebased at 100% to year end peak level)



Source: Bloomberg, Local regulators and Citi Investment Research and Analysis

Figure 3. Sweden — Share Price and Loans Cumulative (Rebased at 100% to year end peak level)

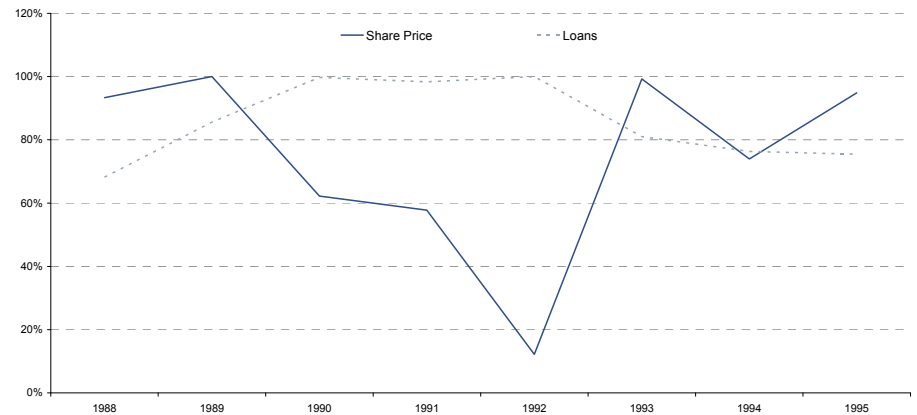
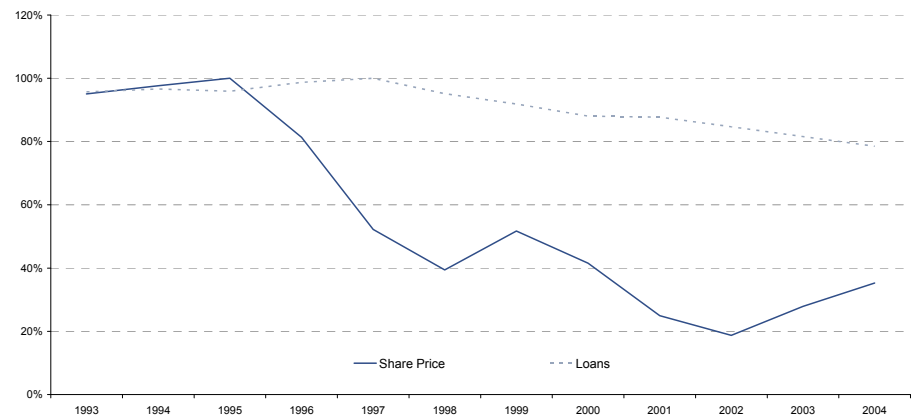


Figure 5. Japan — Share Price and Loans Cumulative (Rebased at 100% to year end peak level)

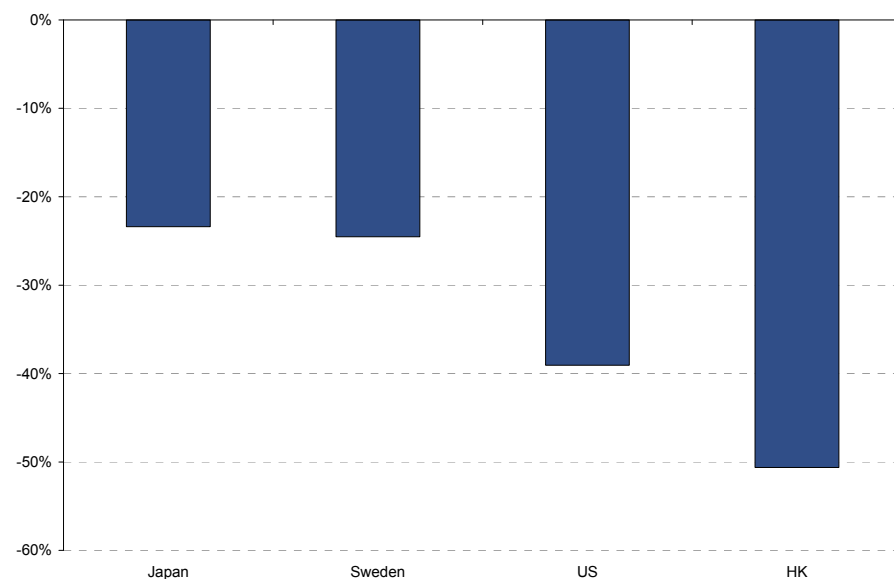


Source: Bloomberg, Local regulators and Citi Investment Research and Analysis

Loan Balance Shrinkage

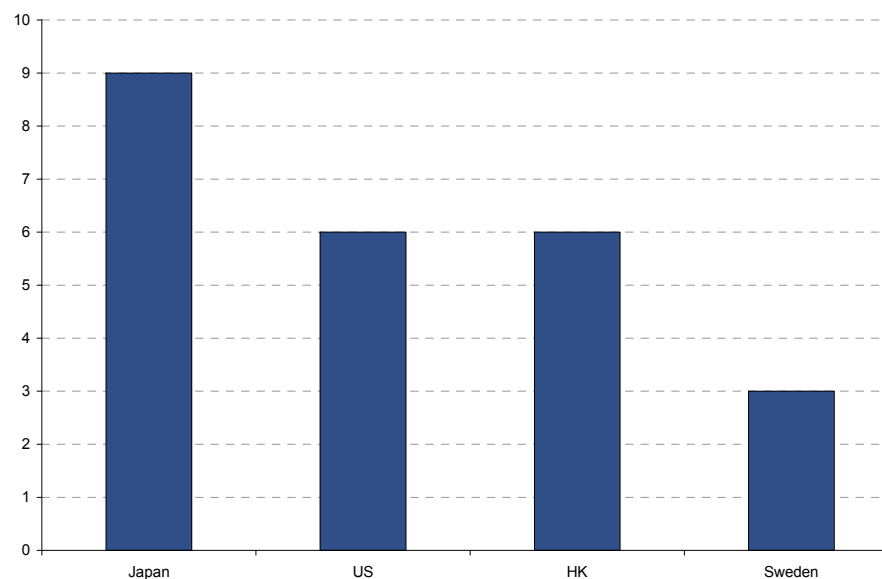
In the four systemic credit crunches we looked at, loan balances on average dropped by one-third and declined for six years from peak-to-trough. In nominal terms, loan balances declined the most in the US (1929-1935: -40%) and Hong Kong (1997-2003: -50%). Loans “only” declined by a quarter in Japan and Sweden. The duration from peak-to-trough for loan balances was shortest in Sweden (3 years) and longest in Japan (9 years). HK and US loan balances declined for 6 years each.

Figure 6. Banking System Loans Deleverage Peak to Bottom (%)



Source: Local regulators and Citi Investment Research and Analysis

Figure 7. Banking System Loans Deleverage Peak to Bottom (# of Years)



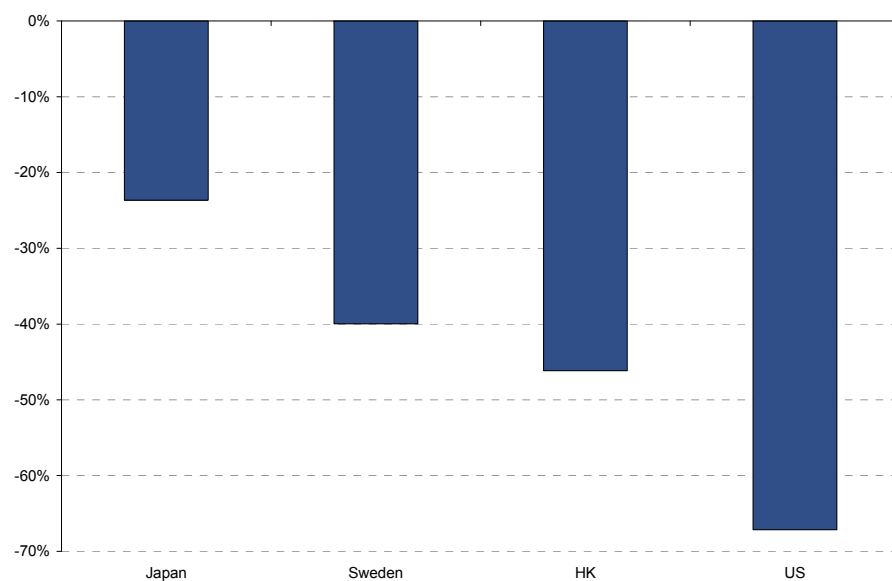
Source: Local regulators and Citi Investment Research and Analysis

Studied periods included are: Japan (1997-2006), Sweden (1992-1995), US (1929-1935) and Hong Kong (1997-2003).

Leverage: Loans to GDP

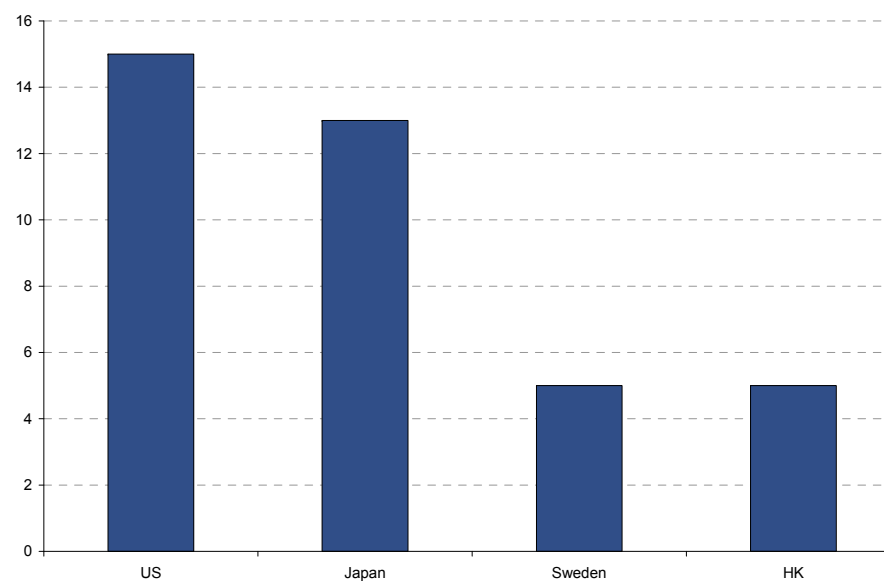
Loan balances relative to GDP tend to decline further in quantity and duration compared to the change in nominal loan balances alone. On average, the loans-to-GDP ratio decline was c45ppt for our four systemic crisis case studies (compared to one-third decline in loan balances) and the decline lasted for 10 years from peak-to-trough (compared to six years for loan balances). The largest loan/GDP decline, and also for the longest duration, was the US post 1929. Hong Kong and Sweden bounced back fastest. Conclusion: the economy (GDP) recovers before the loans-to-GDP ratio recovers. Bank lending lags, not leads, the economic recovery.

Figure 8. Banking System Loans to GDP Deleverage Peak to Bottom (%)



Source: Local regulators and Citi Investment Research and Analysis

Figure 9. Banking System Loans to GDP Deleverage Peak to Bottom (# of Years)



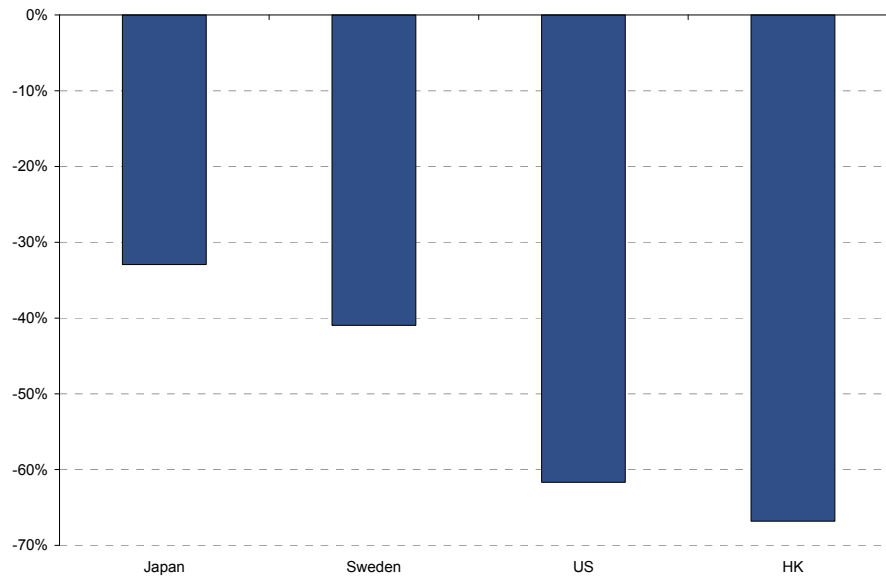
Source: Local regulators and Citi Investment Research and Analysis

Studied periods included are: Japan (1993-2006), Sweden (1990-1995), US (1932-1947) and Hong Kong (1997-2002).

Loans to Deposit Ratio

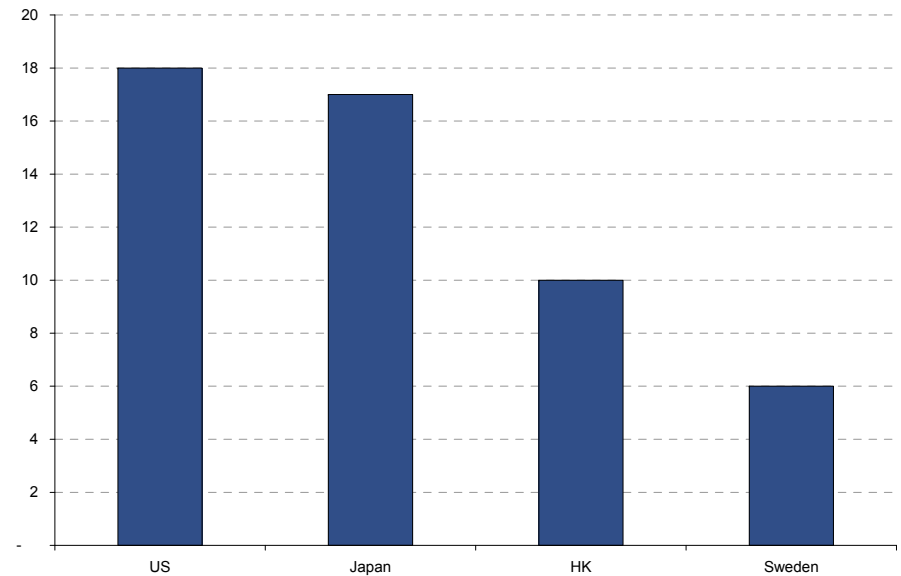
Loan/deposit de-leveraging usually lasts even longer than loan/GDP and nominal loan balance sheet shrinkage. On average, the loan/deposit ratio decline was c50ppt for our four systemic crisis case studies and the decline lasted c13 years. The largest declines in loan/deposit was in HK (1997-2007: -67%) and US (1929-1947: -65%). The longest declines were in the US (18 years) and Japan (17 years). Savings rates increase for longer than loan balances reduce.

Figure 10. Banking System Loans to Deposits Ratio Peak to Bottom (%)



Source: Local regulators and Citi Investment Research and Analysis

Figure 11. Years to reach the Peak Loan to Deposits Ratio Level Again (# of Years)



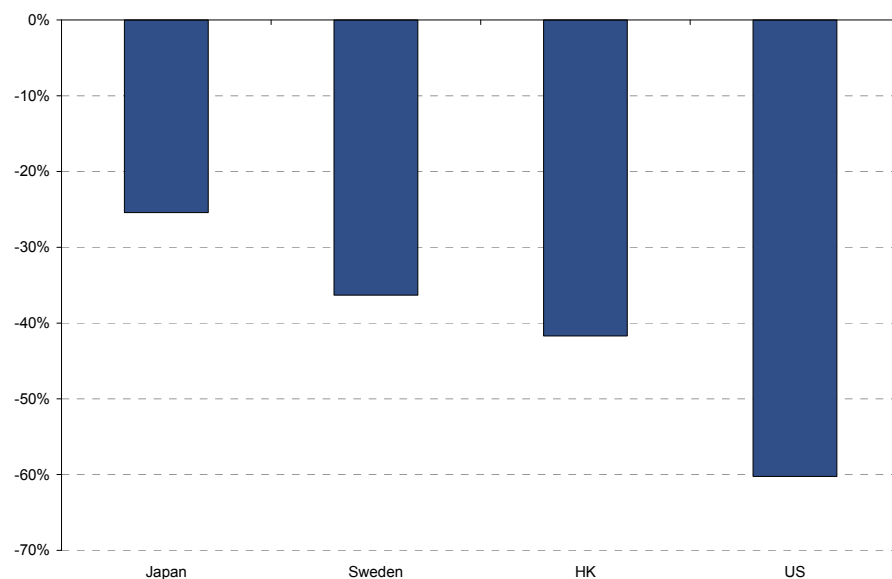
Source: Local regulators and Citi Investment Research and Analysis

Studied periods included are: Japan (1994-2011), Sweden (1990-1996), US (1929-1947) and Hong Kong (1997-2007).

Loans-to-Assets Ratio

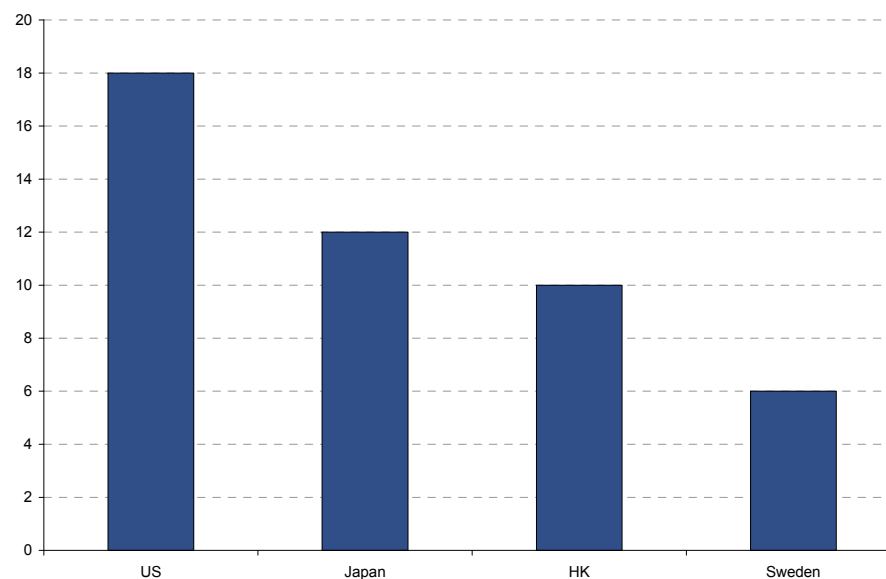
Loans-to-assets ratio contraction tends to be less aggressive than the Loans/deposit de-leverage: the duration for both processes is similar but the loans-to-assets contraction can happen later in time. On average, the loans-to-assets ratio decline was c40ppt for our four systemic crisis case studies and the decline lasted c12 years. The largest declines in loans-to-assets ratios were in the US (1929-1947: -60%) and HK (1997-2007: -42%). The longest declines were in US (18 years) and Japan (12 years).

Figure 12. Banking System Loans to Assets Peak to Bottom (%)



Source: Local regulators and Citi Investment Research and Analysis

Figure 13. Years to reach the Peak Loan to Asset Ratio Level Again (# of Years)



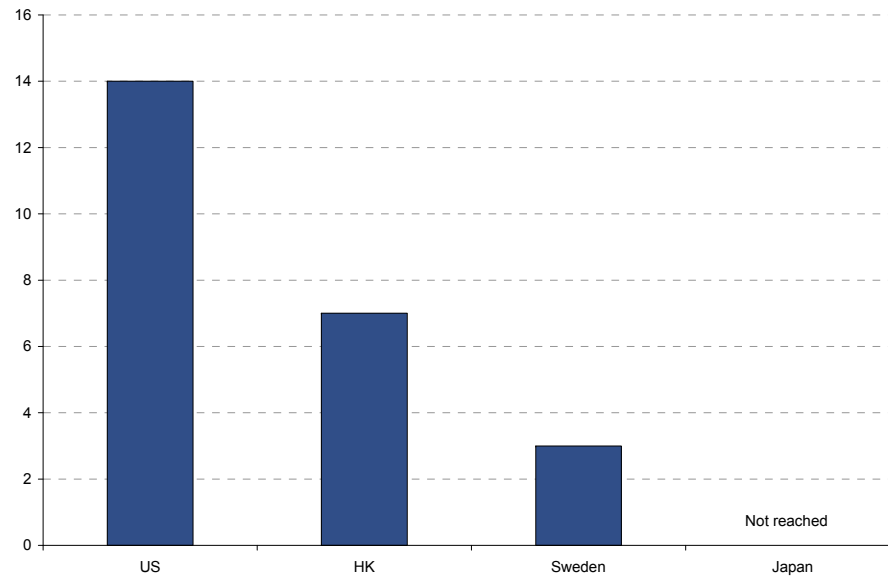
Source: Local regulators and Citi Investment Research and Analysis

Studied periods included are: Japan (1999-2011), Sweden (1992-1998), US (1929-1947) and Hong Kong (1997-2007).

Recovering to Historical Levels

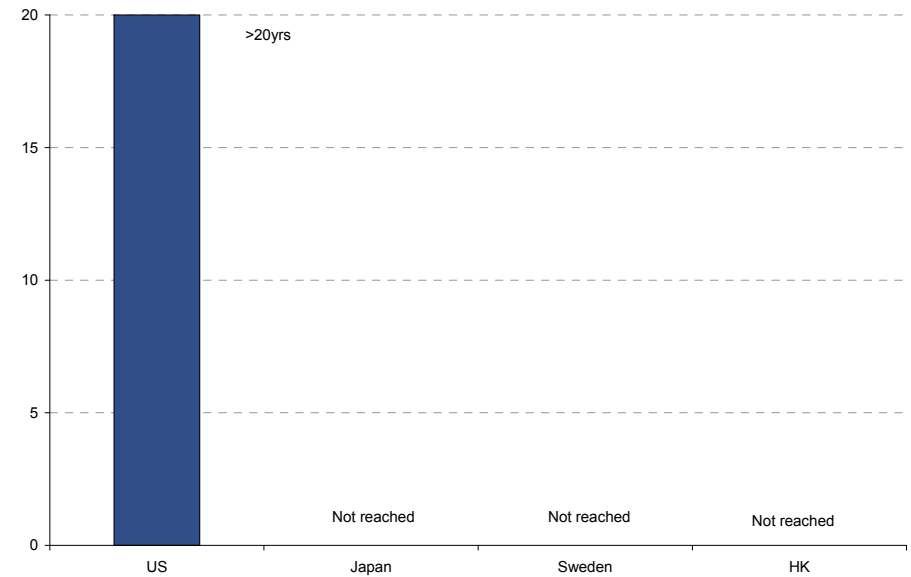
The re-leverage process takes long on an absolute basis and even longer on a relative basis. Three out of the four crises we have analysed have recovered the absolute level of loans in a period of between 3 to 14 years: Sweden showed the quickest recovery (3 years), while the US showed the longest (14 years). None of the crises that happened after 1996 (15 years ago) have recovered the loans-to-GDP level they had before their downturn started and in the US, it took more than 20 years.

Figure 14. Years to reach the Peak Level of Loans Again (# of Years)



Source: Local regulators and Citi Investment Research and Analysis

Figure 15. Years to reach the Peak Loans to GDP Level Again (# of Years)

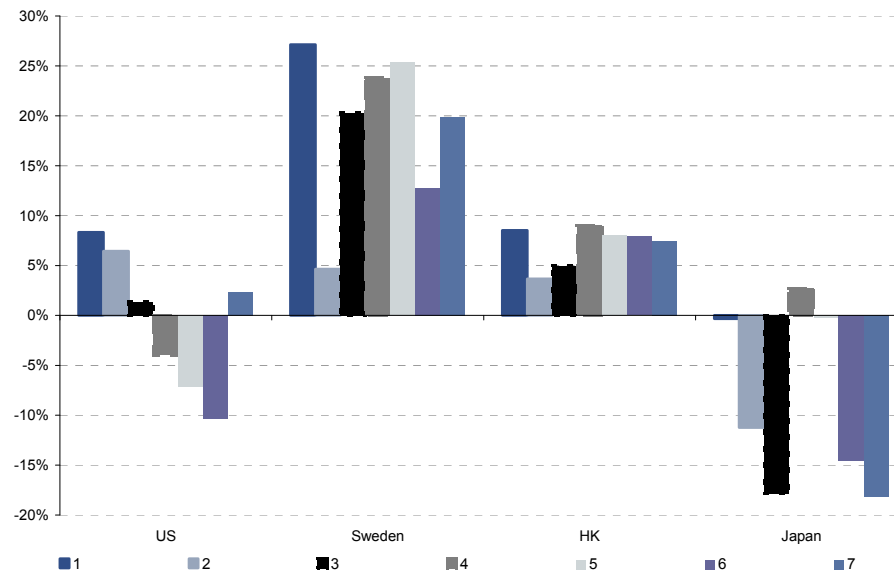


Source: Local regulators and Citi Investment Research and Analysis

Profitability Ratios during Crisis Periods

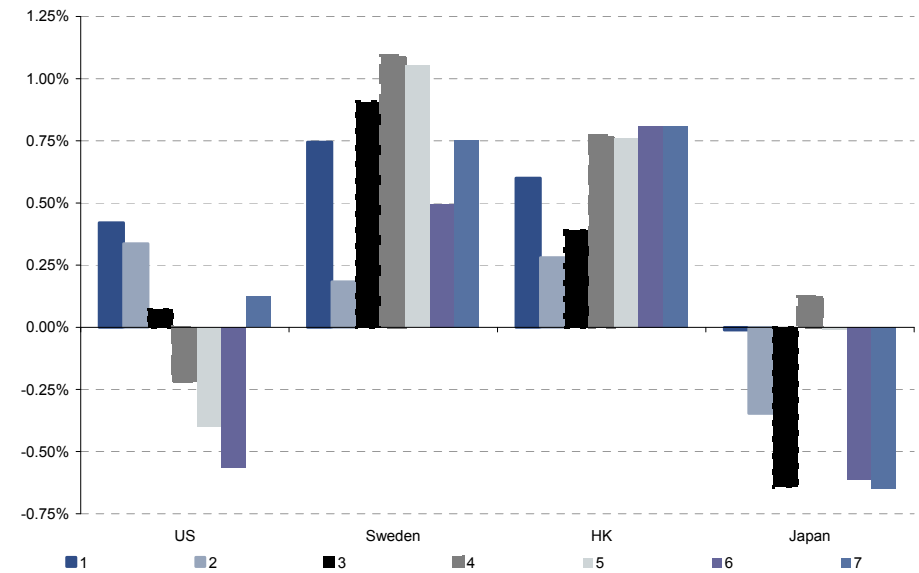
The longest crises (Japan & US) resulted in losses for the banks; in shorter crises (Sweden & Hong Kong), the banking sector was profitable during the whole period. The Swedish banking market managed to have an ROE above 10% during the first 5 years after the crisis started. In Hong Kong, banks' ROE was kept between 5-8% during the whole process. In Japan, the banking market made losses in 8 out of 9 years (1996-2004). In the US, banks had losses three years in a row (1932-1934).

Figure 16. Return on Equity Since the Beginning of the Crisis



Source: Local regulators and Citi Investment Research and Analysis. Note: Studied periods included are: Japan (1997-2006), Sweden (1992-1995), US (1929-1935) and Hong Kong (1997-2003)

Figure 17. Return on Assets Since the Beginning of the Crisis

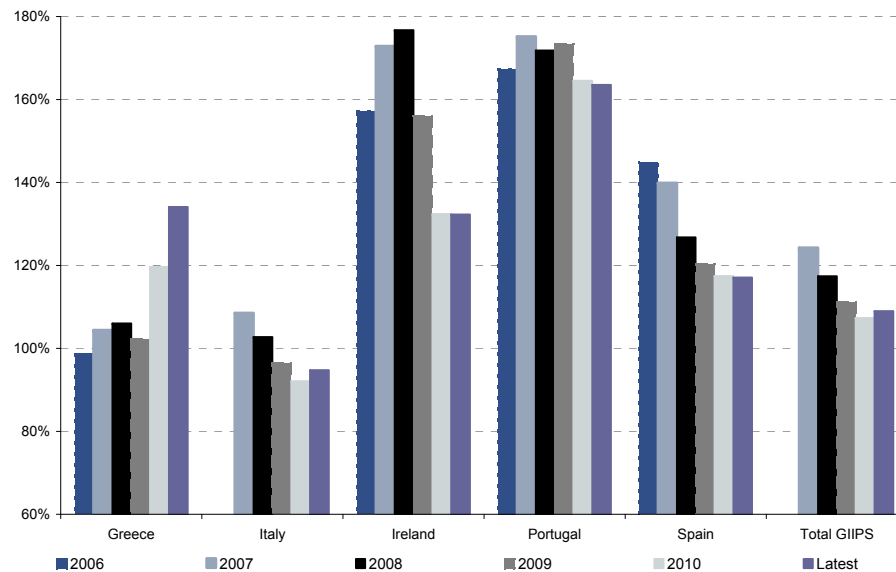


Source: Local regulators and Citi Investment Research and Analysis. Note: Studied periods included are: Japan (1997-2006), Sweden (1992-1995), US (1929-1935) and Hong Kong (1997-2003)

GIIPS Comparison: LDR and Loans/GDP

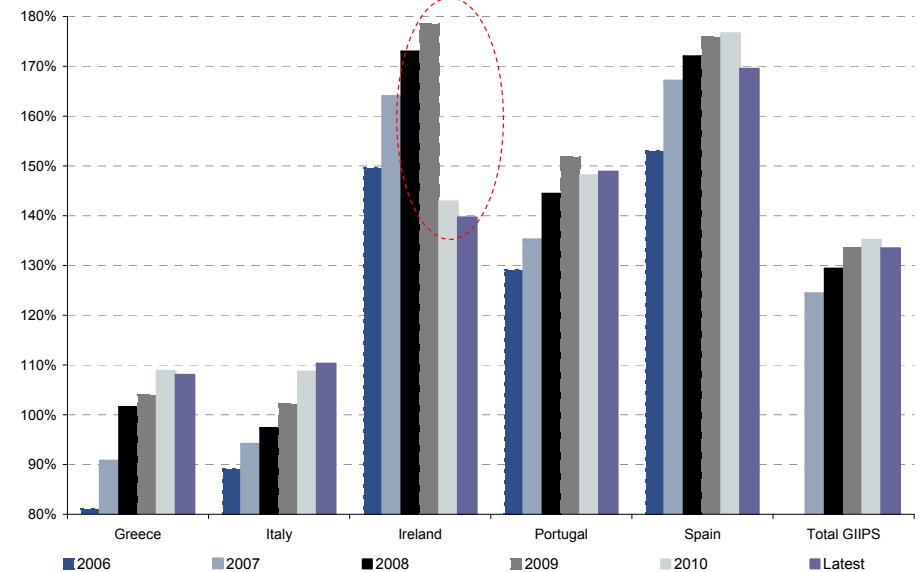
The deleverage process hasn't really started in any of the GIIPS except for Ireland. While Ireland reduced its LDR ratio to 132% in 2011 from 177% in 2008; Italy, Spain, and Portugal have kept the ratio broadly stable, while Greece has increased it significantly. Similar trends hold true for loans-to-GDP data: Ireland has reduced its ratio to 140% in 2011 from 178% in 2009; Portugal, Greece and Italy were broadly stable; Spain starting to de-leverage during 2011.

Figure 18. GIIPS — Loan to Deposit Ratio, Since 2006



Source: Local regulators and Citi Investment Research and Analysis

Figure 19. GIIPS — Loans to GDP, Since 2006

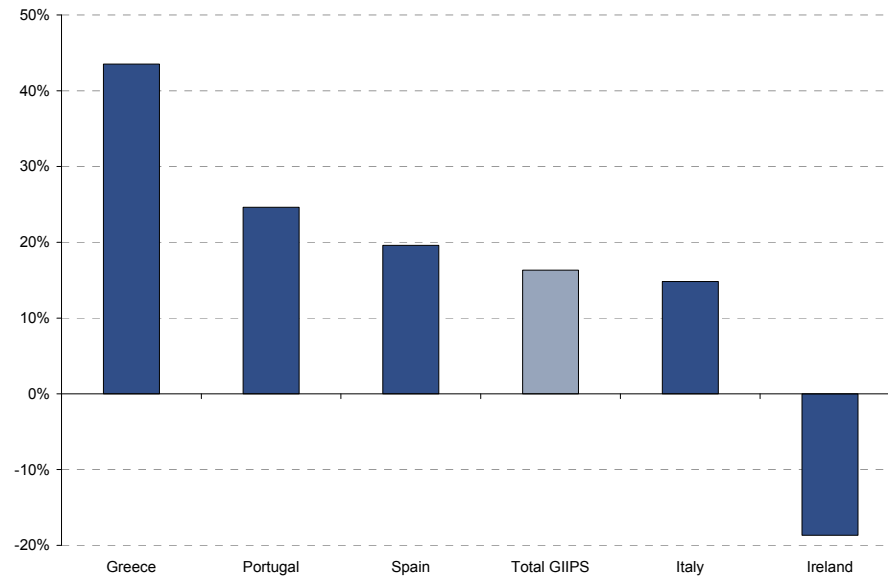


Source: Local regulators and Citi Investment Research and Analysis

GIIPS Comparison (2): Loan Balances

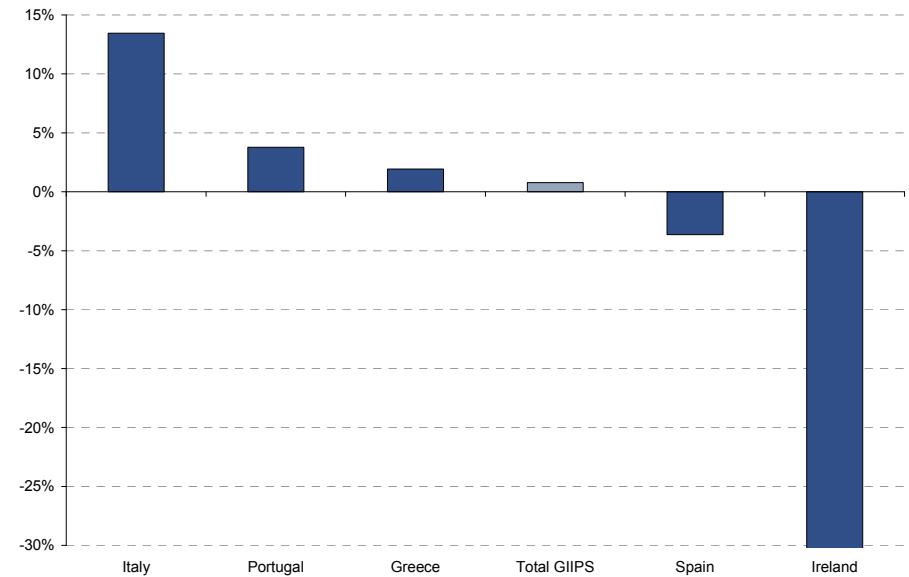
The only GIIPS country that has deleveraged in the 2006-2011 period is Ireland (loans down c20% since 2006 and c30% since 2008). If we take into account the period 2006-2010, the increase in GIIPS loans is c15%. The only country actually deleveraging in the 2006-2011 period was Ireland, shrinking its loan balances c20%. If we analyse the data since 2008, Italy has grown its loans by almost 15%, while Ireland has shrunk its loans by almost 30%.

Figure 20. GIIPS — System Loan Evolution Since December 2006 until Today



Source: Local regulators and Citi Investment Research and Analysis

Figure 21. GIIPS — System Loan Evolution Since December 2008 until Today



Source: Local regulators and Citi Investment Research and Analysis



Selected Economies Key Leverage Statistics

De-leveraging arrived in Ireland early. For the Euro Area overall, it has only begun in 2011 (Loans/GDP and LDR -1ppt yoy) and loan balances in recent months are flat-lining. Leading Euro Area wholesale banks have also announced publicly plans to reduce balance sheets and shrink risk-weighted assets, especially US\$ assets, in recent months. The data for loan balances, Loans/GDP and Loans/Deposits (LDR) is set out in the table below.

Figure 22. Selected Economic Areas — Key Banking Statistics (Billions of Local Currency)

	<u>Greece</u>			<u>Italy</u>			<u>Ireland</u>		
	Total loans	Loans to GDP	LDR	Total loans	Loans to GDP	LDR	Total loans	Total loans	Total loans
2006	171	81%	99%				267	267	267
2007	206	91%	104%	1,455	94%	109%	311	311	311
2008	241	102%	106%	1,526	97%	103%	311	311	311
2009	243	104%	102%	1,553	102%	96%	287	287	287
2010	251	109%	120%	1,682	109%	92%	223	223	223
Latest	246	108%	134%	1,726	110%	95%	217	217	217

	<u>Portugal</u>			<u>Spain</u>		
	Total loans	Loans to GDP	LDR	Total loans	Loans to GDP	LDR
2006	207	129%	167%	1,508	153%	145%
2007	229	135%	175%	1,759	167%	140%
2008	248	144%	172%	1,871	172%	127%
2009	256	152%	173%	1,842	176%	120%
2010	256	148%	165%	1,857	177%	117%
Latest	258	149%	164%	1,803	170%	117%

	<u>Euro Area</u>			<u>Total GIIPS</u>		
	Total loans	Loans to GDP	LDR	Total loans	Loans to GDP	LDR
2006	9,976	116%	126%	-	-	-
2007	11,128	123%	124%	3,784	119%	109%
2008	11,769	127%	121%	4,010	124%	103%
2009	11,806	132%	117%	3,973	127%	96%
2010	12,267	134%	116%	4,046	128%	93%
Latest	12,432	133%	115%	4,250	133%	109%

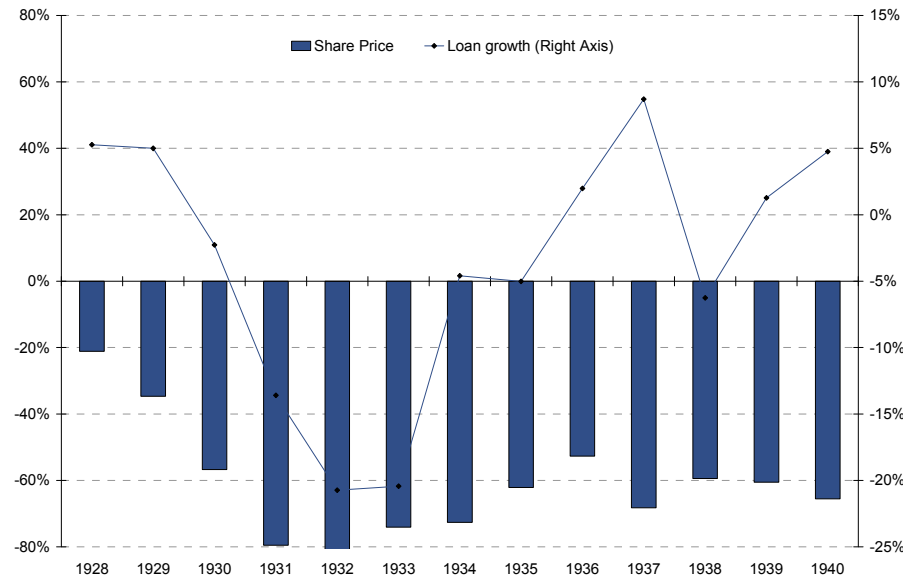
Source: Local regulators and Citi Investment Research and Analysis

Appendix: Four Systemic Crises, Some More Data

Historical Crisis – USA

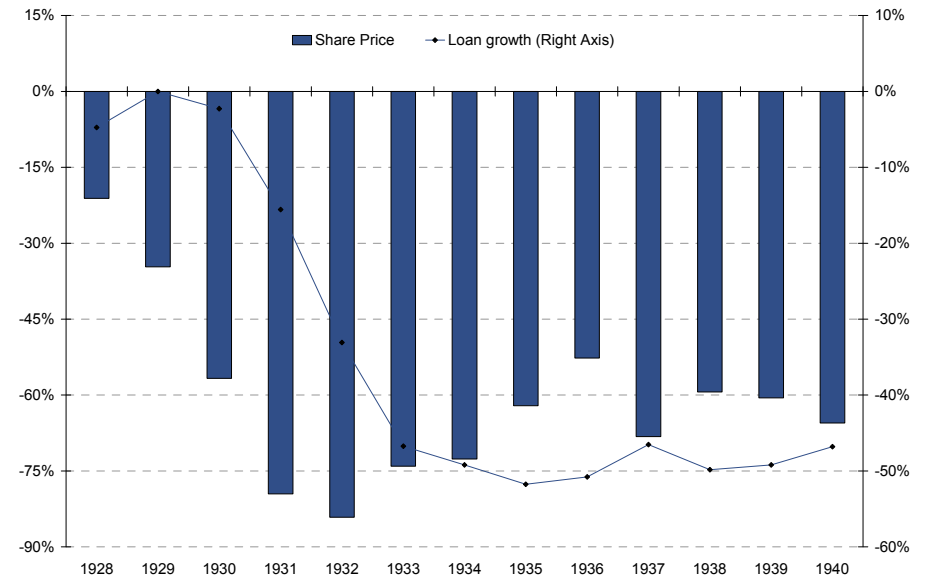
Six Down Years: loan balances in USA peaked in 1929 and after a 52% drop reached a trough in 1935 and began to recover. Bank share prices peaked in 1928, one year before loan balances peaked. Bank share prices reached a trough in 1932, about three years before loan volumes reached a trough. Figure 23 below shows the annual change in loan balances and share prices and Figure 24 shows the cumulative change in loan balances and share prices from peak-to-trough.

Figure 23. USA — Share Price and Loan Growth (Rebased at 0% to year end peak level during the period)



Source: Local regulators and Citi Investment Research and Analysis

Figure 24. USA — Share Price and Loan Growth Cumulative (Rebased at 0% to year end peak level during the period)

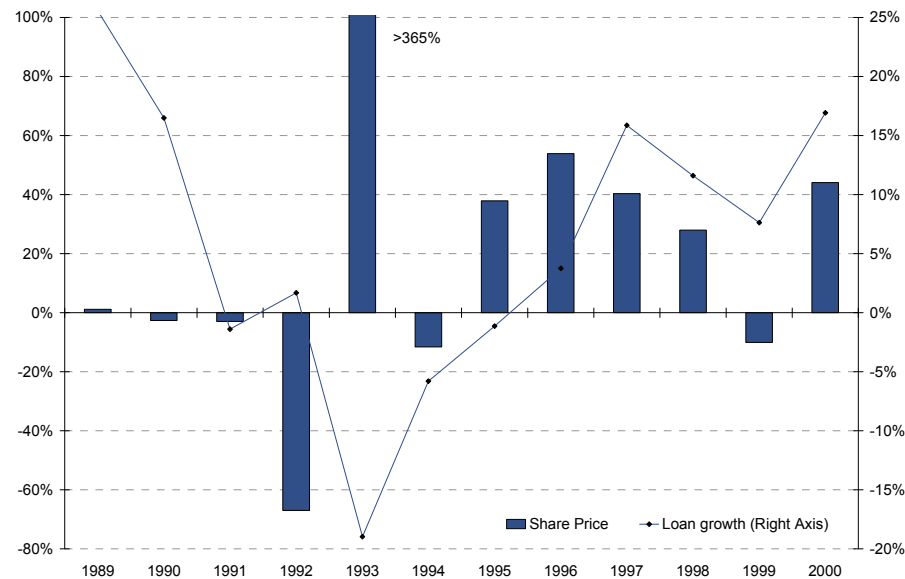


Source: Local regulators and Citi Investment Research and Analysis

Historical Crisis - Sweden

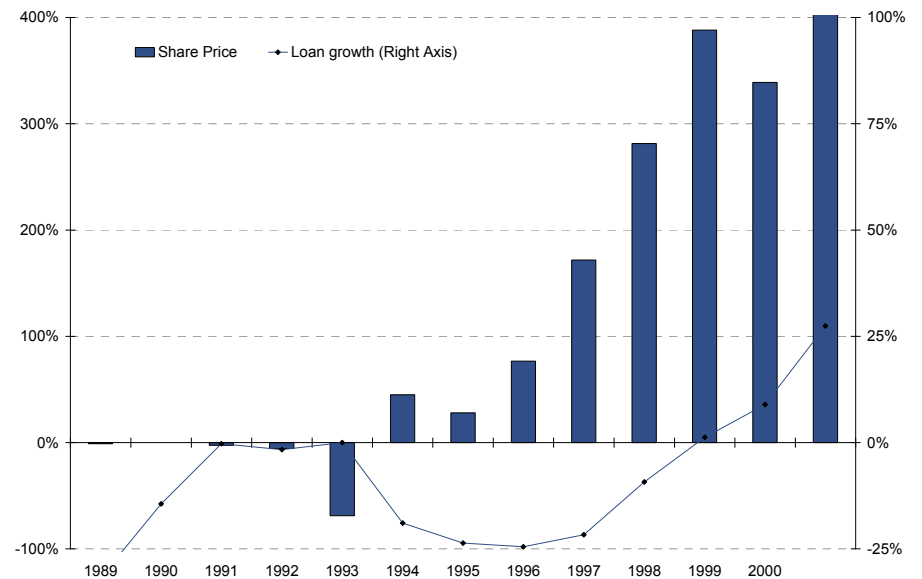
Three Down Years: loan balances in Sweden peaked in 1992 and after a 25% drop reached a trough in 1995 and began to recover. Bank share prices peaked in 1989, three years before loan balances peaked. Bank share prices reached a trough in 1992, about three years before loan volumes reached a trough. Figure 25 below shows the annual change in loan balances and share prices and Figure 26 shows the cumulative change in loan balances and share prices from peak-to-trough.

Figure 25. Sweden — Share Price and Loan Growth (Rebased at 0% to year end peak level during the period)



Source: Bloomberg, Local regulators and Citi Investment Research and Analysis

Figure 26. Sweden — Share Price and Loan Growth Cumulative (Rebased at 0% to year end peak level during the period)

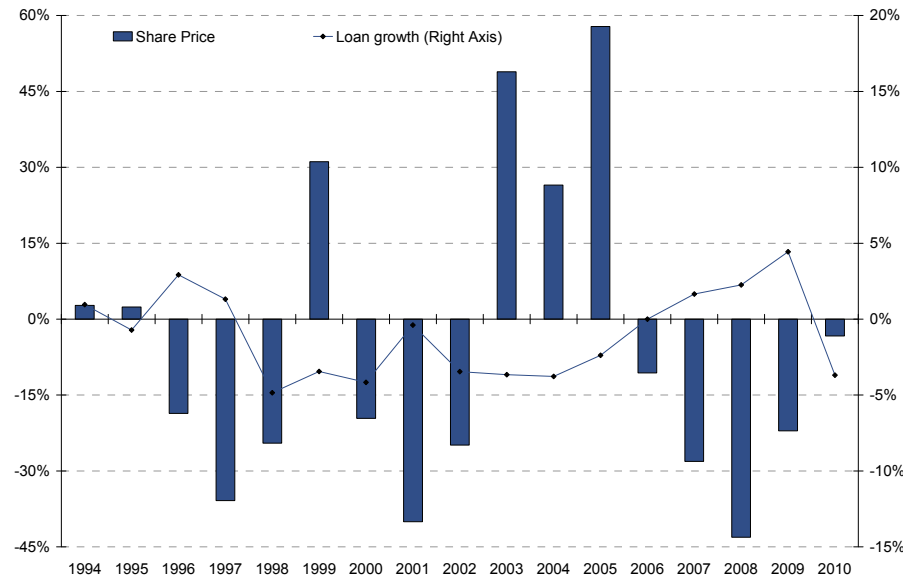


Source: Bloomberg, Local regulators and Citi Investment Research and Analysis

Historical Crisis - Japan

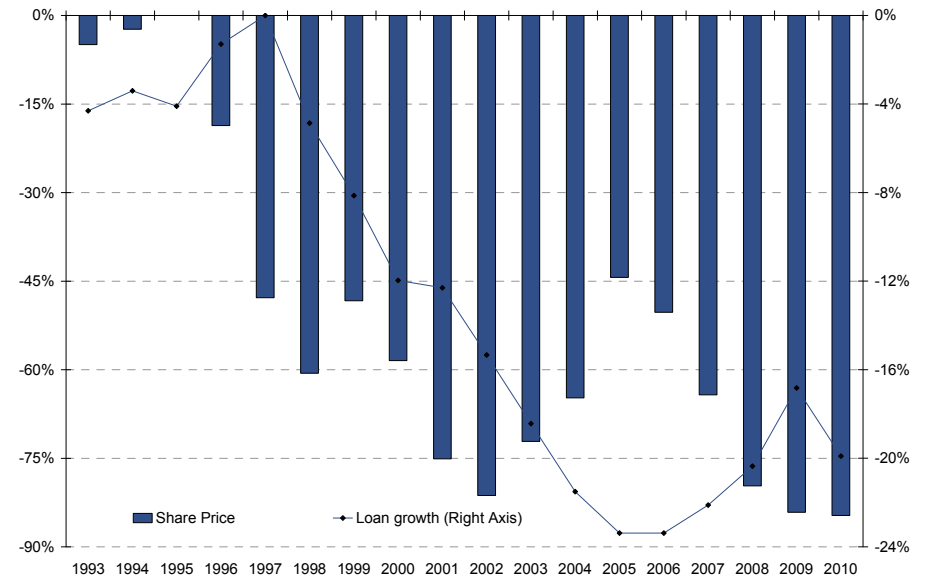
Nine Down Years: after a 23% drop from the peak (1997), loan balances reached a trough in 2006. The recovery has been quite weak since then. Financial share prices peaked in 1995 and reached a trough in 2002, about four years before loan volumes reached a trough. Figure 27 below shows the annual change in loan balances and share prices and Figure 28 shows the cumulative change in loan balances and share prices from peak-to-trough.

Figure 27. Japan — Share Price and Loan Growth (Rebased at 0% to year end peak level during the period)



Source: Bloomberg, Local regulators and Citi Investment Research and Analysis

Figure 28. Japan — Share Price and Loan Growth Cumulative (Rebased at 0% to year end peak level during the period)

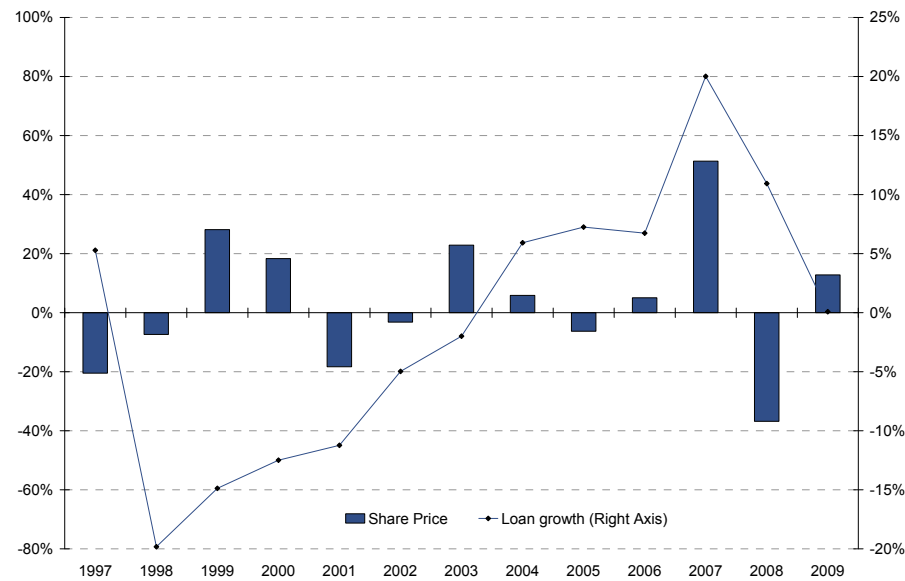


Source: Bloomberg, Local regulators and Citi Investment Research and Analysis

Historical Crisis – Hong Kong

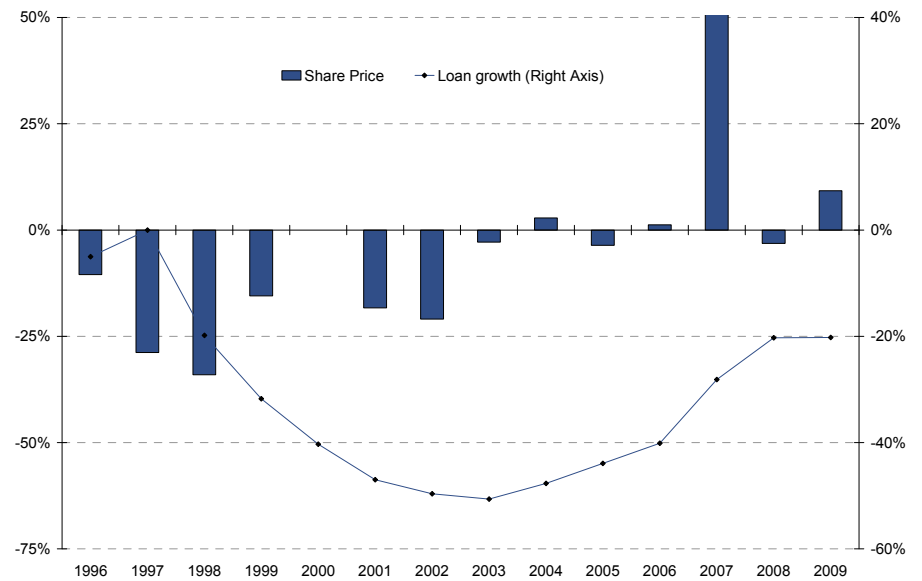
Six Down Years: loan balances in Hong Kong peaked in 1997 and after a 51% drop reached a trough in 2003 and began to recover. Bank share prices peaked in 2000, three years after loan balances peaked. Bank share prices reached a trough in 2002 about one year before loan volumes reached a trough. Figure 29 below shows the annual change in loan balances and share prices and Figure 30 shows the cumulative change in loan balances and share prices from peak-to-trough.

Figure 29. Hong Kong — Share Price and Loan Growth (Rebased at 0% to year end peak level during the period)



Source: Local regulators and Citi Investment Research and Analysis

Figure 30. Hong Kong — Share Price and Loan Growth Cumulative (Rebased at 0% to year end peak level during the period)



Source: Local regulators and Citi Investment Research and Analysis



Notes



Notes



Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

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<i>Data current as of 9 Oct 2011</i>	12 Month Rating			Relative Rating		
	Buy	Hold	Sell	Buy	Hold	Sell
Citi Investment Research & Analysis Global Fundamental Coverage	59%	34%	7%	10%	79%	10%
<i>% of companies in each rating category that are investment banking clients</i>	45%	42%	37%	50%	43%	46%

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