PRINCETON UNIVERSITY
Economics Department
Bendheim Center for Finance

FINANCIAL CRISES
ECO 575 (Part II)

Spring Semester 2003

Section 2: Historical and Recent Crises

April 7, 2003

Franklin Allen

(All materials available on my website:
http://finance.wharton.upenn.edu/~allenf/)

1. Crises in the nineteenth and early twentieth centuries

Banks issue *liquid liabilities* in the form of deposit contracts but invest mainly in *illiquid assets*. Historically, this mismatch resulted in frequent banking panics.

One of the main roles of central banks has been to try to eliminate panics.

Different histories of crises in Europe and the US:

    Europe: Crises eliminated by central banks in the last half of the nineteenth century

    US: Crises endemic in the last half of the nineteenth century

Panics in Europe

Kindleberger (1993, p. 264) in his book *A Financial History of Western Europe* points out that financial crises have occurred at roughly ten year intervals over the last 400 years.

The first true central bank was the Bank of Sweden founded over 300 years ago in 1668. Others, such as the Bank of England, were founded soon after. Initially they had a variety of roles. Over time one of the main roles of central banks came to be to intervene in times of crisis.

The Bank of England was the first bank to perfect these techniques.

- The last true crisis in England was the Overend and Gurney Crisis of 1866. Since then there have been no true crises.

- A number of historians ascribe this absence to the experience gained by the Bank of England and their skill in manipulating the discount rate.

- UK was able to avoid crisis of 1873 with help from a highly volatile discount policy.

- Many other countries such as Germany, France, Sweden and Canada followed the Bank of England's example and crises became a historical curiosity in these countries (Bordo 1986).

In his famous book *Lombard Street* Bagehot (1873) laid out his famous principles of how a central bank should lend to banks during a crisis

- Lend freely at a high rate of interest relative to the precrisis period

- But only to borrowers with good collateral (i.e. any assets normally accepted by the central bank)

- The assets should be valued at between panic and pre-panic prices

- Institutions without good collateral should be allowed to fail as they were insolvent

Crises in the US

Alexander Hamilton, the first US Secretary of the Treasury, had been impressed by the example of the Bank of England.

This led to the setting up of the First Bank of the United States [1791-1811] and the Second Bank of the United States [1816-1836].

But in the US there has always been a strong distrust of centralized power. In a report on the Second Bank John Quincy Adams wrote

"Power for good, is power for evil, even in the hands of omnipotence"

Although the bill for rechartering the Second Bank was passed by Congress it was vetoed by Andrew Jackson and the veto was not overturned.

Between 1836 and 1913 the US had no central bank

During this time it had many crises

Table 1

National Banking Era Panics

NBER Cycle Peak–Trough	Panic Date	%Δ(Currency/ Deposit)*	%Δ Pig Iron†
Oct. 1873–Mar. 1879	Sep. 1873	14.53	−51.0
Mar. 1882–May 1885	Jun. 1884	8.80	−14.0
Mar. 1887–Apr. 1888	No Panic	3.00	−9.0
Jul. 1890–May 1891	Nov. 1890	9.00	−34.0
Jan. 1893–Jun. 1894	May 1893	16.00	−29.0
Dec. 1895–Jun. 1897	Oct. 1896	14.30	−4.0
Jun. 1899–Dec. 1900	No Panic	2.78	−6.7
Sep. 1902–Aug. 1904	No Panic	−4.13	−8.7
May 1907–Jun. 1908	Oct. 1907	11.45	−46.5
Jan. 1910–Jan. 1912	No Panic	−2.64	−21.7
Jan. 1913–Dec. 1914	Aug. 1914	10.39	−47.1

*Percentage change of ratio at panic date to previous year's average.

†Measured from peak to trough.

(Adapted from Table 1, Gorton (1988), p. 233.)

2. Crises and stock market crashes

Wilson, Sylla and Jones (1990) consider the four major financial panics accompanied by stock market crashes in the US:

September 1873

June 1884

July 1893

October 1907

- The banking panics and stock market crashes tended to occur together

- Stocks tend to rally two or three months after a panic

- Bonds and commercial paper also tend to rally two or three months after a panic

- Stock price volatility leaps up from prior levels in the month of the panic

- Peak stock price volatility comes 2-7 months after the panic

Many of the crises spread internationally. Frequently banking crises were accompanied by currency crises. These are the so-called "twin crises".

French banker in 1907:

The US is a "great financial nuisance".

Federal Reserve Bank founded in 1914 but banking crises were not eliminated in the US until 1933

Strong banking regulations and controls were put in place and these eliminated crises

After the War most countries put strong banking controls in place and from 1945-1971 banking crises were virtually eliminated

After the collapse of the Bretton Woods system of fixed exchange rates in the early 1970's banking crises and twin crises have reemerged as the world has moved back towards global capital markets

Crises have occurred in both developed countries such as Norway, Finland, Sweden and Japan as well as in developing countries

3. A comparison of crises

How do recent crises compare with previous crises?

Bordo and Eichengreen (2000) have addressed this issue.

They distinguish four periods

Gold Standard Era: 1880-1913

Interwar years: 1919-1939

Bretton Woods period: 1945-1971

Recent period: 1973-1998

There are many similarities between the periods but also some important differences

Table 1. Costs of Crises in Lost Output Relative to 5 year Trend 1880-1913 (21 countries)

	Number of crises	Average recovery time	Loss of output per crisis %	Crises with output losses %	Loss of output per crisis with output loss %
Currency crises					
All Countries	9	3.1 (2.5)	8.0 (7.0)	89	9.0 (6.7)
Industrial Countries	2	3.0 (1.4)	6.8 (3.6)	100	6.8 (3.6)
Emerging market	7	3.1 (2.8)	8.3 (7.9)	86	9.7 (7.6)
Banking crises					
All Countries	12	2.3 (1.2)	6.8 (6.2)	92	7.4 (6.0)
Industrial Countries	3	2.7 (2.1)	6.6 (8.8)	100	6.6 (8.8)
Emerging market	9	2.1 (0.9)	6.9 (5.7)	89	7.7 (5.4)
Twin Crises					
All Countries	10	3.0 (4.1)	16.3 (30.7)	70	23.2 (35.0)
Industrial	1	2.0	1.7	100	1.7
Emerging market	9	3.1 (4.4)	17.9 (32.1)	67	26.8 (37.0)
All Crises					
All Countries	31	2.6 (2.7)	9.9 (18.3)	83	11.8 (19.5)
Industrial	6	2.7 (1.5)	5.9 (6.2)	100	5.9 (6.2)
Emerging market	25	2.6 (3.0)	10.8 (20.3)	79	13.7 (22.0)

Sources: Bordo and Eichengreen (1999), Bergman, Bordo and Jonung (1998)

Note: 1) Cumulative loss of gdp growth was calculated relative to the 5 year pre crisis trend.

2) Standard errors are given in brackets.

Table 2. Costs of Crises in Lost Output Relative to 5 year Trend 1919-1939 (21 countries)

	Number of crises	Average recovery time	Loss of output per crisis %	Crises with output losses %	Loss of output per crisis with output loss %
Currency crises					
All Countries	18	1.7 (1.1)	11.2 (15.2)	61	18.3 (15.8)
Industrial Countries	13	1.5 (0.8)	7.8 (13.0)	54	14.5 (15.1)
Emerging market	5	2.4 (1.7)	20.0 (18.3)	80	25.0 (16.8)
Banking crises					
All Countries	17	2.0 (1.5)	11.1 (16.2)	65	17.2 (17.4)
Industrial Countries	10	2.3 (1.9)	14.6 (18.5)	80	18.2 (19.1)
Emerging market	7	1.6 (0.8)	6.3 (11.7)	43	14.7 (15.0)
Twin Crises					
All Countries	14	3.0 (2.7)	16.1 (20.8)	71	22.5 (21.6)
Industrial	12	2.7 (2.6)	13.4 (21.3)	67	20.0 (23.6)
Emerging market	2	5.0 (2.8)	32.3 (6.4)	100	32.3 (6.4)
All Crises					
All Countries	49	1.9 (1.3)	10.0 (12.5)	65	15.3 (12.6)
Industrial	35	1.7 (1.1)	8.6 (10.9)	66	13.0 (11.0)
Emerging market	14	2.1 (1.7)	13.6 (15.9)	64	21.1 (15.2)

Sources: Bordo and Eichengreen (1999), Bergman, Bordo and Jonung (1998)

Note: 1) Cumulative loss of gdp growth was calculated relative to the 5 year pre crisis trend.

2) Standard errors are given in brackets.

Table 3. Costs of Crises in Lost Output Relative to 5 year Trend 1945-1971 (21 countries)

	Number of crises	Average recovery time	Loss of output per crisis %	Crises with output losses %	Loss of output per crisis with output loss %
Currency crises					
All Countries	31	2.1 (1.7)	5.0 (6.7)	74	6.7 (7.0)
Industrial Countries	15	2.0 (2.2)	2.0 (3.3)	67	3.0 (3.7)
Emerging market	16	2.2 (1.2)	7.7 (7.9)	81	9.5 (7.7)
Banking crises					
All Countries	0	-	-	-	-
Industrial Countries	0	-	-	-	-
Emerging market	0	-	-	-	-
Twin Crises					
All Countries	1	1.0	2.7	100	2.7
Industrial	0	-	-	-	-
Emerging market	1	1.0	2.7	100	2.7
All Crises					
All Countries	32	2.1 (1.7)	4.9 (6.6)	75	6.5 (6.9)
Industrial	15	2.0 (2.2)	2.0 (3.3)	67	3.0 (3.7)
Emerging market	17	2.1 (1.2)	7.4 (7.7)	82	9.0 (7.6)

Sources: Bordo and Eichengreen (1999), Bergman, Bordo and Jonung (1998)

Note: 1) Cumulative loss of gdp growth was calculated relative to the 5 year pre crisis trend.

2) Standard errors are given in brackets.

Table 4. Costs of Crises in Lost Output Relative to 5 year Trend 1973-1998 (53 countries)

	Number of crises	Average recovery time	Loss of output per crisis %	Crises with output losses %	Loss of output per crisis with output loss %
Currency crises					
All Countries	117	1.7 (1.1)	4.3 (6.3)	63	6.8 (6.8)
Industrial Countries	37	1.4 (0.6)	1.9 (2.8)	62	3.1 (3.0)
Emerging market	80	1.8 (1.2)	5.4 (7.2)	64	8.4 (7.4)
Banking crises					
All Countries	24	2.7 (1.8)	7.6 (9.4)	71	10.7 (9.6)
Industrial Countries	6	3.2 (2.4)	6.9 (8.3)	50	13.9 (5.2)
Emerging market	18	2.6 (1.6)	7.8 (10.0)	78	10.0 (10.3)
Twin Crises					
All Countries	30	3.4 (3.1)	15.6 (14.9)	93	16.7 (14.8)
Industrial	5	5.4 (3.5)	17.7 (14.3)	100	17.7 (14.3)
Emerging market	25	3.0 (2.9)	15.2 (15.3)	90	16.5 (15.2)
All Crises					
All Countries	168	1.8 (1.3)	5.2 (7.1)	68	7.6 (7.4)
Industrial	48	1.9 (1.4)	3.4 (4.9)	65	5.3 (5.2)
Emerging market	120	1.7 (1.3)	5.9 (7.7)	70	8.5 (8.0)

Sources: Bordo and Eichengreen (1999), Bergman, Bordo and Jonung (1998)

Note: 1) Cumulative loss of gdp growth was calculated relative to the 5 year pre crisis trend.

2) Standard errors are given in brackets.

Table 5. Lost Output Relative to 5 year Trend 1880-1913 (21 countries)

	Number of incidents	Average recovery time	Loss of output per incident (%)	Recessions (crises) with output losses (%)	Loss of output per incident with output loss (%)
Recessions without crises					
All Countries	66	1.9 (1.3)	5.7 (11.0)	79	7.3 (12.0)
Industrial Countries	24	2.0 (1.4)	5.9 (8.4)	88	6.7 (8.6)
Emerging market	42	1.9 (1.3)	5.6 (12.4)	74	7.6 (14.0)
Recessions with crises					
All Countries	16	4.2 (3.5)	19.5 (22.7)	88	22.3 (22.9)
Industrial Countries	1	1.0	12.8	100	12.8
Emerging market	15	4.4 (3.5)	20.7 (22.9)	87	23.9 (23.0)
Crises that happened during recessions					
All Countries	18	3.1 (3.2)	13.4 (21.3)	83	13.6 (21.9)
Industrial Countries	1	4.0	9.4	100	9.4
Emerging market	17	3.1 (3.3)	13.6 (21.9)	82	16.6 (23.2)

Sources: Bordo and Eichengreen (1999), Bergman, Bordo and Jonung (1998)

Note: 1) Loss for crises that happened during recession start from the first year after peak.

2) Cumulative loss of gdp growth was calculated relative to the 5 year pre crisis trend.

3) Standard errors are given in brackets.

Table 6. Lost Output Relative to 5 year Trend 1919-1939 (21 countries)

	Number of incidents	Average recovery time	Loss of output per incident (%)	Recessions (crises) with output losses (%)	Loss of output per incident with output loss (%)
Recessions without crises					
All Countries	30	2.6 (2.9)	12.1 (17.8)	77	15.8 (18.9)
Industrial Countries	21	2.9 (3.4)	13.5 (20.4)	76	17.8 (21.8)
Emerging market	9	2.0 (1.1)	8.8 (9.7)	78	11.3 (9.6)
Recessions with crises					
All Countries	24	3.2 (1.6)	20.2 (18.9)	96	21.1 (18.8)
Industrial Countries	16	2.9 (1.3)	17.9 (18.3)	94	19.0 (18.3)
Emerging market	8	3.6 (2.0)	25.0 (20.3)	100	25.0 (20.3)
Crises that happened during recessions					
All Countries	28	2.3 (1.5)	15.4 (15.3)	79	19.6 (14.6)
Industrial Countries	19	2.3 (1.3)	14.3 (15.1)	79	18.1 (14.8)
Emerging market	9	2.3 (1.9)	17.7 (16.4)	78	22.8 (14.9)

Sources: Bordo and Eichengreen (1999), Bergman, Bordo and Jonung (1998)

Note: 1) Loss for crises that happened during recession start from the first year after peak.

2) Cumulative loss of gdp growth was calculated relative to the 5 year pre crisis trend.

3) Standard errors are given in brackets.

Table 7. Costs of Crises in Lost Output Relative to 5 year Trend 1945-1971 (21 countries)

	Number of incidents	Average recovery time	Loss of output per incident (%)	Recessions (crises) with output losses (%)	Loss of output per incident with output loss (%)
Recessions without crises					
All Countries	66	2.8 (2.0)	8.7 (12.9)	85	10.3 (13.4)
Industrial Countries	52	3.1 (2.1)	10.2 (13.9)	92	11.1 (14.2)
Emerging market	14	1.6 (0.8)	3.1 (4.7)	57	5.5 (5.1)
Recessions with crises					
All Countries	14	2.6 (1.7)	10.1 (11.2)	86	11.8 (11.2)
Industrial Countries	3	2.0 (1.7)	4.2 (2.2)	100	4.2 (2.2)
Emerging market	11	2.8 (1.7)	11.8 (12.1)	82	14.4 (11.9)
Crises that happened during recessions					
All Countries	12	2.8 (1.6)	9.6 (8.1)	100	9.6 (8.1)
Industrial Countries	2	3.5 (2.1)	5.8 (5.9)	100	5.8 (5.9)
Emerging market	10	2.7 (1.6)	10.4 (8.6)	100	10.4 (8.6)

Sources: Bordo and Eichengreen (1999), Bergman, Bordo and Jonung (1998)

Note: 1) Loss for crises that happened during recession start from the first year after peak.

2) Cumulative loss of gdp growth was calculated relative to the 5 year pre crisis trend.

3) Standard errors are given in brackets.

Table 8. Lost Output Relative to 5 year Trend 1973-1998 (53 countries)

	Number of incidents	Average recovery time	Loss of output per incident (%)	Recessions (crises) with output losses (%)	Loss of output per incident with output loss (%)
Recessions without crises					
All Countries	73	2.8 (2.1)	6.6 (7.1)	78	8.4 (7.0)
Industrial Countries	30	3.4 (2.6)	7.5 (7.1)	83	9.0 (6.9)
Emerging market	43	2.5 (1.7)	5.9 (7.0)	74	7.9 (7.1)
Recessions with crises					
All Countries	86	4.1 (3.2)	16.7 (17.3)	95	17.5 (17.3)
Industrial Countries	28	4.4 (3.1)	13.8 (14.3)	96	14.3 (14.3)
Emerging market	58	3.9 (3.2)	18.1 (18.5)	95	19.1 (18.5)
Crises that happened during recessions					
All Countries	105	2.1 (1.6)	7.1 (7.7)	82	8.7 (7.7)
Industrial Countries	31	1.9 (1.4)	4.0 (5.4)	71	5.6 (5.6)
Emerging market	74	2.1 (1.7)	8.4 (8.2)	86	9.8 (8.1)

Sources: WEO (1998), Bordo and Eichengreen (1999), Bordo and Jonung (1998)

Note: 1) Loss for crises that happened during recession start from the first year after peak.

2) Cumulative loss of gdp growth was calculated relative to the 5 year pre crisis trend.

3) Standard errors are given in brackets.

Main conclusions:

- Banking crises, currency crises and twin crises have occurred under a variety of different monetary and regulatory regimes

- Over the last 120 years crises have been followed by economic downturns lasting on average from 2 to 3 years and costing 5 to 10 per cent of GDP

- Recessions with crises are more severe than recessions without them

- Twin crises are associated with especially large output losses

- Period 1945-1971 was special because the regulation of bank balance sheets was pervasive and there were no banking crises or twin crises as a result

- Period 1919-1938 was special because banking crises and currency crises were widespread and the associated output losses were exceptionally large

- Period 1880-1913 was most like the recent period. Speed of recovery from currency crises is faster today but the speed of recovery from banking crises is slower

- Political will to solve crises appears to be difficult to marshall in the recent period (e.g. Japan)

4. Concluding remarks

- Crises occur in a wide range of circumstances

- Crises seem to occur in any market system where the central bank and/or government do not actively prevent them

- Is there a market failure associated with crises?

- If so what is the market failure?

- Are crises optimal?

   (In 1870 the UK was the richest country by far in terms of GDP per capita but by 1914 the US had overtaken it and was significantly more wealthy)

- Are financial systems stable or unstable?

- Are the causes of crises monetary?

   (e.g., mistakes in decisions about the money supply, banking or debt conversion)

- Are the causes real?

   (e.g., beginning and end of wars, good and bad harvests and waves of investment based on innovations such as the railroad, automobile, internet)

A wide range of different theories have been suggested to explain crises. These are not necessarily mutually exclusive.

1. Financial panic (multiple equilibria)

2. Business cycle (essential crises)

3. Inconsistent government macroeconomic policies

4. Bubble collapse

5. Amplification theories (fragility and contagion)

6. Government guarantee models

We will discuss these different theories. The analysis of crises then involves trying to understand which theory(ies) are relevant in any particular case.

References

Bagehot, W. (1873). *Lombard Street: A Description of the Money Market*, London.

Bordo, M. (1986). "Financial Crises, Banking Crises, Stock Market Crashes and the Money Supply: Some International Evidence, 1870-1933," in Wood,-Geoffrey-E., ed. Financial crises and the world banking system. New York: St. Martin's Press, 1986, pages 190-248.

Bordo, M. and B. Eichengreen (2000). "Is the Crisis Problem Growing More Severe?" working paper, Rutgers University (On the Riksbank (Swedish Central Bank) website www.riksbank.com under the conference on Asset Prices and Monetary Policy held on June 16-17, 2000).

Bordo, M., B. Eichengreen, D. Klingebiel and M. Martinez-Peria (2000). "Is the Crisis Problem Growing More Severe?" working paper, University of California, Berkeley. Updated version of previous paper. http://socrates.berkeley.edu/~pifa/papers.html - this link also allows you to download the figures: scroll down the page until you reach the link to the paper and figures - see also http://www.haas.berkeley.edu/~arose/BEKSc.pdf

Kindleberger, C. (1991). *A Financial History of Western Europe* (second edition), New York: Oxford University Press.

Wilson, J., R. Sylla and C. Jones (1990). "Financial Market Panics and Volatility in the Long Run, 1830-1988" in *Crashes and Panics* edited by E. White, Illinois: Dow-Jones Irwin, 85-125.