

Chapter 14 – Credit and Financial Crises

The credit system plays a crucial role in the business cycle:

- Broadly defined credit is far larger than narrowly defined money.

Adjusted monetary base -- \$691.605 b -- the sum of Federal Reserve deposits, vault cash held by domestic depository institutions, currency held by the public and an adjustment for the effect of changes in reserve requirement ratios.

M1 -- \$1202.5b -- meant to be transaction balances (the sum of currency held by the nonblank public, total checkable deposits and travelers checks).

M2 -- \$5782.3b -- meant to include all balances that can be quickly converted into transaction balances (the sum of M1, savings including money market deposit accounts, small savings and time deposits and retail money funds).

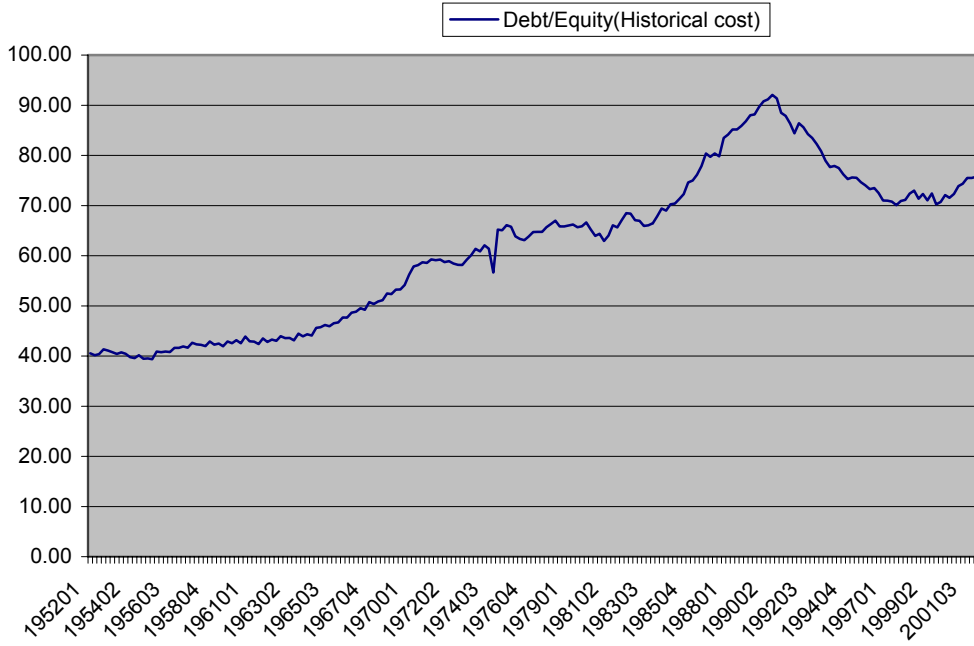
Total non-federal, non-financial debt \$16,491.2b.

- Credit fluctuates more over the business cycle than money.

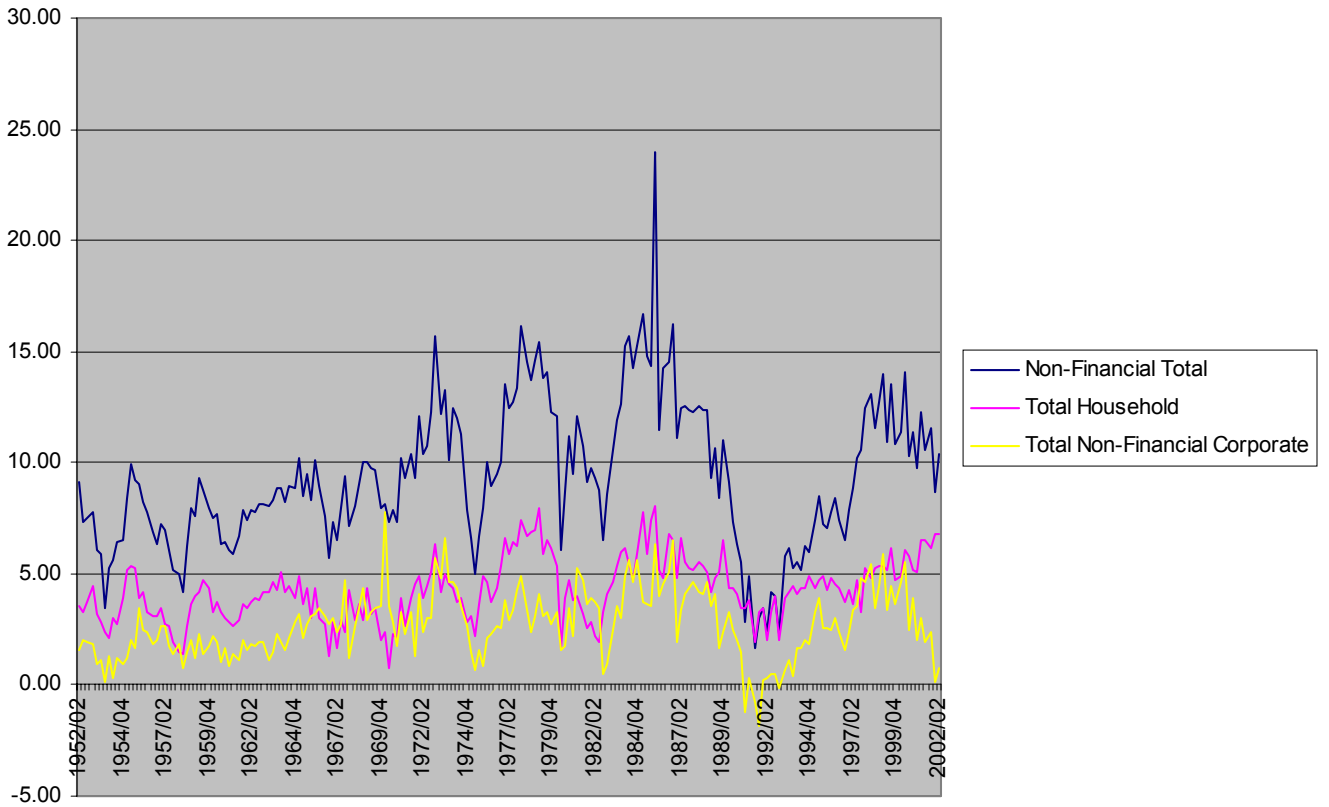
	1970 - 1991	
	Expansion	Contraction
	<u>Amplitude</u>	<u>Amplitude</u>
Real money supply M2 --	11.4	-0.5
Real money supply M1	4.7	-1.4
Change in business credit o/s	45.7	-63.7

- The corporate sector has a long-term trend toward higher credit balances. This raises the risk level for corporations (and the banks that have outstanding loans to them) in contractions.

NonFarm, NonFinancial Corporations



Borrowings as % GDP



- Credit increases the growth of the economy in an expansion more than the multiplier-accelerator would do if it were based only on real factors. We previously developed a model where investment is a function of the accelerator times the increase in real income. Now, however, the availability of credit at low interest rates may have two effects:
 1. increase investment beyond the increase in real income (thus increasing debt) and possibly beyond objective prospects for profits. Investment is no longer limited by savings.
 2. consumers may overestimate their long-term income and buy more on credit than they can repay out of income.

When a contraction occurs, profits decline, businesses may be unable to sell all the goods produced and yet debt payment for interest principal and require cash flow. Consumers have lower real wages (or are unemployed) and also have to make debt payments.

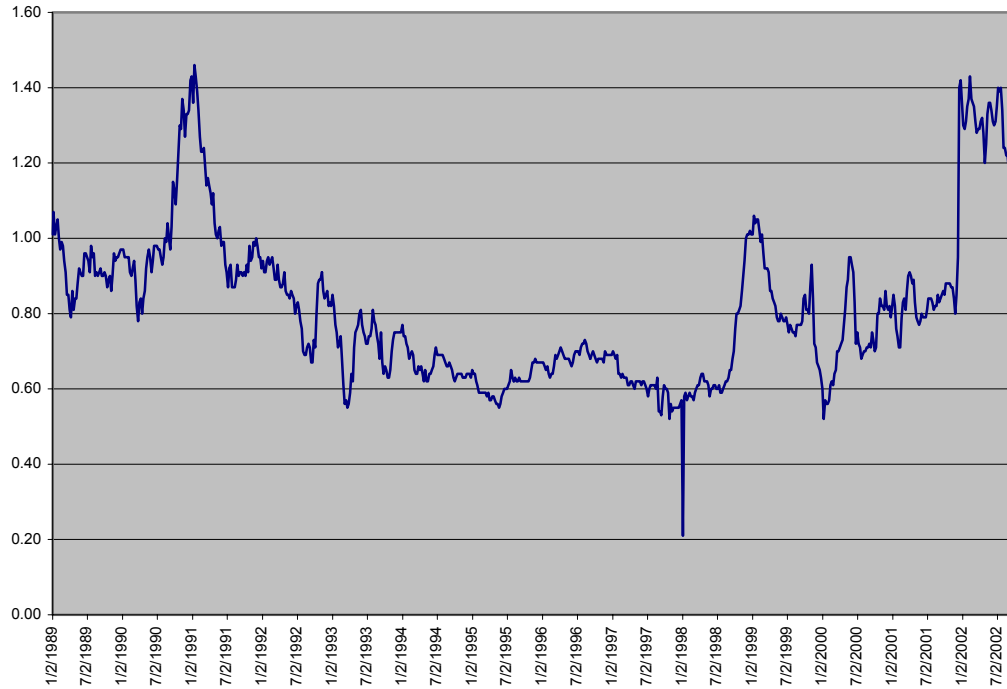
- Business and consumer borrowing is pro-cyclical. After a downturn has begun, the demand for credit continues to rise for a while (often to pay old debts), so the level of consumer and business credit is a lagging indicator (4 months after peak or trough). However, the change in business loans and consumer credit are leading indicators (9-10 months lead at peaks and troughs).
- Corporate profits decline (and rise) for endogenous reasons (the ones we have studied and developed a model for). Real corporate profits turn down (up) well before changes in consumer credit or business loans at peaks (troughs). However, the existence of increasing financial fragility (high debt levels) in the expansion always has the potential to make a downturn deeper and last longer than it otherwise would.
- The use of credit introduces the cyclical importance of interest rates (and their effect on profits). Short-term interest rates (federal funds rate and the discount rate on 90-day U.S. Treasury bills) are pro-cyclical but lag at peaks and troughs. Mitchell found that interest rates peak in stage 6 and trough in stage 2 of the next cycle. Long-term interest rates (10-year U.S. Treasury bond, AAA-rated corporate bonds) are also pro-cyclical. Long-term interest rates do not fluctuate as much as short-term interest rates.

	1970-1991	
	Expansion	Contraction
	<u>Amplitude</u>	<u>Amplitude</u>
Long-term interest rate	16.9	-8.8
Short-term prime rate	36.9	-31.3

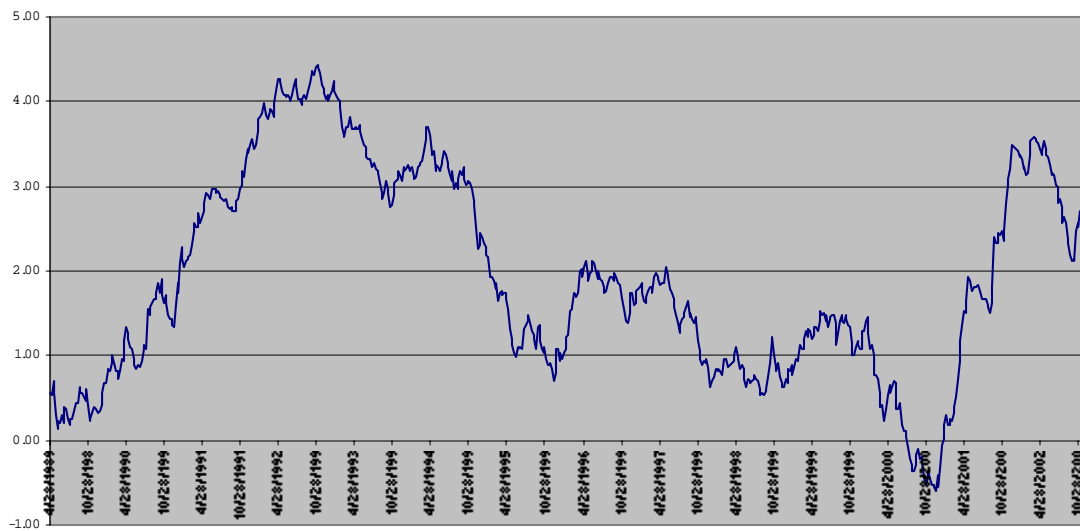
This difference in rates of growth results in the **interest rate spread** (also known as the duration spread) being a leading indicator. The interest rate spread is the difference between the rate on short-term notes (usually the 90-day U.S. Treasury) and a long-term bond (usually the 10-year U.S. Treasury bond). The

interest rate spread must use instruments with the same credit rating. Another interesting interest rate indicator is the **credit quality spread** – the difference between long-term bonds with different credit ratings (often AAA-rated 10-year corporate bonds versus BBB-rated 10-year corporate bonds). The credit quality spread is a coincident indicator.

Credit Quality Spread



Interest Rate Spread



- The classic quantity of money theory was $MV = PT$ where:

M = quantity of money

V = the velocity of money. (the number of times money is re-spent)

P = the price level

T = all transactions.

In the classical theory, V is a constant over the business cycle (it is assumed to change slowly over the long-term). Empirically, V is pro-cyclical and coincident with the phases.

- **Theories of the Business Cycle and Money.**

Monetarists (Milton Friedman) -- Money is simply a medium of exchange. It is not held (stored spending power) and is therefore not endogenous to the business cycle. Changes in the money supply have no effect on the long-run values of real variables such as real GDP. Real GDP is determined by resources and technology. Changes in the money supply do determine nominal income and the price level (velocity changes only very slowly over time and real production is determined by resources and technology). Some monetarists do allow changes in the money supply to affect real GDP in the short-term, but not in the long-term.

Monetarists believe the change in money supply is determined exogenously, by government policy (the Fed's open market operations). Review p262 - 263.

The money supply is the most important policy variable because too much money will result in inflation and too little money will result in unemployment.

Therefore, the business cycle results from the policy mistakes of the Federal Reserve. The monetarist view is that government fiscal and monetary shocks to the economy are the main destabilizing factors in the U.S. economy.

Strict monetarists believe that a simple monetary rule (a designated growth rate) should be adopted. There should be no counter-cyclical monetary policy. Given the lags in money supply changes, any discretionary monetary policy will be more damaging than helpful. Also, most discretionary monetary and government policy will end up being inflationary.

Post-Keynesians – These economists see the economy as money-credit economy, and they emphasize the uncertainty of the investment process. Businesses try to cope with the uncertainty (price monopoly and collusion and labor contracts), but the economy is inherently unstable. Uncertainty makes people want to hold money rather than continuously circulate it. This liquidity preference is based on a need for money for current transactions, holding precautionary reserves and speculation. Keynes himself believed that the money supply was exogenous, **but the post-Keynesians view the money supply as determined by the economy.**

Expansions increase output, which produces demand-side pressures for more money and credit in the financial markets. Banks usually give credit as needed and then look for ways to find enough reserves. The reserves come from two sources:

- 1. The Federal Reserve system which uses the interest rate (the federal funds rate and the discount rate) to control the demand for reserves but basically allows banks to get the reserves they need.**
- 2. The private financial system finds a way to generate the reserves through liability management and innovative new financial arrangements. If the Federal Reserve is too restrictive, banks will use interest rates to lure funds from liabilities with high-reserve requirements to other types of liabilities with lower reserve requirements. This tends to raise interest rates over the expansion. Banks become more vulnerable to economic downturns as their liabilities become more volatile and expensive.**

Therefore, post-Keynesians believe that the money supply is endogenous.

In the long-run, monetarist policies will be ineffective. If private (and government credit) continues to expand in an expansion, high interest rates will result (because the money supply is not accommodative) and new financial instruments will be created in the private sector that substitute as money (money-market funds, CD's). The money supply that the Federal Reserve controls will shrink as a percentage of the total money supply, and may even become irrelevant.

These economists recommend that the Federal Reserve monitor and target a broad-based monetary and credit aggregate. They support their argument with empirical data that shows the velocity of wide-aggregates have been more stable than narrow monetary definitions.

- All of our analysis so far in this course supports the conclusion that the private enterprise economy internally generates the business cycle. Fiscal, monetary and credit conditions are thus endogenous to the economic system – they are determined by the intersection of the business cycle phase and long-term business interests. Read text pp 262 – 271.**

The close relationship between the peaks and troughs of the business cycle and credit crises has led to many studies of the credit cycle. Business and consumer credit acts a stimulant to economic expansion, but it also makes the economy more fragile and vulnerable. One of the best of these studies is “Financial Crises, Understanding the Postwar U.S. Experience”, by Martin H. Wolfson. It covers the period from the mid-1960’s (1966) to the early -1990’s (1991). This was a period racked by financial crises.

<u>Date of Business Cycle Peak</u>	<u>Date Financial Crisis</u>	<u>Months Crisis Lags Peak</u>
*June 1996	August 1966	2
December 1969	June 1970	6
November 1973	May 1974	6
January 1980	March 1980	2
July 1981	June-August 1982	11-13
July 1990	January 1991	6
March 2001	November 2001	8

* All the dates are determined by the NBER except 1966 -- which was a “growth-recession”.

August 1966 -- “Credit Crunch of 1966 -- Financial conditions declined rapidly in 1966 as a result of an over-heated economy. Interest rates rose sharply in early 1966 and profits peaked in the first quarter of 1966. Corporations therefore had a difficult time making their debt payments. The Federal Reserve began tightening the money supply from April to July 1966 by raising reserve requirements, lowering the maximum allowed interest rates on time deposits (Regulation Q) and actively limiting access to the discount window by member banks. Commercial banks responded by selling off their portfolios of municipal bonds, thus causing a crisis in the tax-exempt markets. By September 1966 the Fed became concerned about the severity of the downturn and it began to ease monetary policy. Note the importance of institutional structures.

June 1970 – Non-financial corporate profits peaked in 1968 and were sharply down in 1969. This reduced their cash flows to finance capital expenditures and resulted in a sharp increase in the “financing gap”. Corporations responded by borrowing large amounts in commercial paper (an innovation – note short-term) and banks raised reserves from borrowing in Eurodollars from foreign branches. The Federal Reserve set a high marginal requirement on borrowings from foreign branches, but it tried to avoid the abrupt cutoff of funds as in 1966. In June 1970 Penn Central, one of the largest commercial paper issuers, filed for bankruptcy and a financial crisis ensued. The Fed responded by announcing that the discount window would be available to assist all banks having difficulty rolling over their commercial paper. Thus, the Fed stepped in as the lender of last resort.

May 1974 -- Profits of non-financial corporations peaked in the first quarter of 1973, but investment in plant and equipment continued. The U.S. economy was depressed by the Arab oil embargo, which started in early 1973. Non-financial corporations borrowed heavily using bank loans. Banks relied on large negotiable CD's as their funds source because the Federal Reserve Board had suspended the interest rate ceilings on them. The odd combination of weakening economy was combined with rising inflationary pressures from the oil embargo (stagflation). The interest rate coverage ratio of corporations fell to a new low in early 1974. In December 1973 the U.S. National Bank of San Diego (\$932 million in deposits) failed, and in May 1974 it became known that the Franklin National Bank (the 20th largest bank in the U.S.) was doomed as it announce large currency trading losses. The Federal Reserve made large loans to Franklin from May to October to prevent a complete meltdown of the financial system, it FDIC assisted another bank in purchasing Franklin's assets and assuming its liabilities and eventually the Federal Reserve Bank of New York directly acquired \$725 million in Franklin's foreign-exchange liabilities to prevent the crisis from spreading to the international markets.

March 1980 – In early 1979 the U.S. was hit by a second oil shock. Oil supplies were disrupted and the price of oil rose rapidly. The automobile industry was especially hard-hit, and the Chrysler Corporation was granted a government loan guarantee in January 1980. Profits dropped sharply in 1979, unit labor costs rose and the financing gap widened. Although economic activity slowed, the FOMC did not ease monetary policy during this period due to concerns over inflation. In fact, in October 1979 the Federal Reserve (very concerned about the rise in the monetary aggregates) announced an increase in the discount rate to 12%, a change in the operating procedures to targeting borrowed reserves instead of the federal funds rate (a change that ultimately resulted in 2 recessions) and new reserve requirements on large CD's, Eurodollar borrowings, repurchase agreements and federal funds borrowed from non-members. The Fed especially targeted speculative lending by requesting that banks refrain from making any loans for speculative purposes. The economy peaked in January 1980, but by then the Hunt brothers (Bunker and Herbert) had accumulated over 41 million ounces of silver bullion and owned 14,500 futures contracts (each for 5000 ounces of silver) over the years from 1973 to 1980. The price of silver began a precipitous decline, the Hunt brothers owed huge margin debts to Bache Halsey Stuart Shields, which in turn, owed huge debts to ten banks (the First National Bank of Chicago was very close to liquidation). The crisis was resolved when a consortium of banks agreed to re-negotiate the Hunt's loans and collateralize them with oil properties.

June-- August 1982 – In July 1981 the economy entered a recession. Profit levels at corporations had been sub-par since 1979 (there were two back-to-back recessions in 1980 and 1981. Business loans surged as companies tried to maintain debt payments, but there was a record number of bankruptcies in 1982. There were three separate crises in 1982. The Drysdale Government Securities firm, a small government securities firm was unable to repay a large loan to Chase Manhattan Bank in May 1982. The Penn Square Bank, a small bank in Oklahoma, had made bad loans in the oil and gas industry and it failed in July 1982. It had sold loan participations to a number of larger banks. The FDIC paid only insured deposits (those less than \$100,000). The Fed eventually calmed

the crisis by accepting receiver notes as collateral. In August a serious foreign currency crisis erupted in Mexico. Mexico had been wounded by the U.S. recessions, a decline in worldwide oil prices in 1982 and the very high interest rates on its debt. Mexico had to restructure its debt burden with the U.S.

January 1991 – Corporate profits peaked in the first quarter of 1988 and were in a downtrend until 1991. The SEC charged Drexel Burnham and Michael Milken with securities violations in September 1988. The mid- to late 1980's was a period of corporate restructuring (i.e. leveraged buyouts), and most of the restructuring was done with junk bonds. Drexel Burnham was the largest junk bond dealer in the country. This was quickly followed by the thrift bailout in August 1989 (the Financial Institutions reform, Recovery, and Enforcement Act – FIRREA). Interest rates had been de-regulated in 1978 partly to avoid disintermediation in the thrifts. Retail money market certificates were authorized in 1978 and the thrifts were deregulated in the early 1980's. However, the thrifts abused these regulations and invested heavily in risky commercial real estate. The Tax Reform Act of 1986 sharply reduced the tax breaks for passive real estate investments. By 1986 there were nearly 1000 insolvent thrifts. In January 1991 the Bank of New England suffered a massive depositor run and had to be closed by the Fed.

November 2001 – Enron's massive fraud and resulting bankruptcy.

Supplementing the Business Cycle with Credit Analysis

The Wolfson model is a cyclical model of financial crises, and is summarized in the nine points below:

1. Increased reliance on debt during the expansion phase of the business cycle causes corporations' financial condition to increasingly deteriorate.
2. As corporate profits decline, corporations experience increasing difficulty meeting debt payment requirements and other fixed commitments such as those due to involuntary investment.
3. Corporations borrow to try to obtain the funds they need to meet debt payment requirements and involuntary investment commitments; they rely primarily upon bank loans, and, for large corporations, also on commercial paper borrowing.
4. Banks begin to suffer losses on their business loans, which adversely effect their own financial condition and are, at the same time, restricted by tight monetary policy. Banks tighten their lending policies (for new loans and new customers), but at the same time attempt to meet the necessitous loan demands from their long-standing customers.
5. Banks decrease the growth rate of investments in relation to loans and the growth rate of nonbusiness loans in relation to business loans by restricting the business loans they extended to new customers (as opposed to established customers), and rely on purchased funds, particularly large negotiable certificates of deposit.
6. A surprise event – either the sudden imposition of an institutional constraint or an unexpected bankruptcy (or the threat of one) – disrupts these financing patterns.

7. The disruption of financing patterns initiates a financial crisis – a sudden, intense demand for money.
8. The urgent demand for money comes from corporations or banks whose sources of funds were disrupted, or from investors who fear the loss of their funds. Note that this model includes stock market losses which may precipitate a financial crisis.
9. The immediate crisis is resolved by lender-of-last-resort operations of the central bank, the Federal Reserve Board.

Conclusions to Crises Analysis and the Business Cycle

1. Institutions and institutional rules also matter to the business cycle (e.g., derivatives and hedging, corporate reporting standards). Each business cycle has unique characteristics that result from the economic environment.
2. Since the business cycle is caused by endogenous processes, the characteristics of a phase can often be seen or anticipated near the end of the preceding phase – crisis analysis. Financial conditions deteriorate over an expansion. If the financial system is strong, then there may be no financial crises. If, however, the financial system is fragile as the expansion begins, a financial crisis may appear even before the end of the expansion.
3. This “crises analysis” taught us to add credit indicators to our list of business cycle indicators. Not all business cycles in the past were accompanied by financial crises. In the period 1966-1982 financial crises increased in frequency and severity. Since 1982, financial crises have become more associated with speculative activity (Enron, the internet bubble and LTCM), more likely to occur before the business cycle peak and more threatening to global stability (1997 and 1998).

Additional Business Cycle Indicators -- many of these will require using data from the Flow of Funds Accounts of the United States, Release Z.1 of the Board of Governors of the Federal Reserve System.

www.federalreserve.gov/releases/Z1/Current/data.htm

1. Ratio of corporate debt to corporate equity ??
2. Debt Maturity Ratio – the ratio of loans and short-term paper as a percentage of total credit market borrowing for non-financial corporations.

3. Liquidity Rate – liquid assets as a percentage of total short-term liabilities for non-financial corporations.
4. Interest Coverage Ratio – the ratio of profits before tax plus depreciation and net interest to net interest for non-financial corporations. Dept of Commerce BEA NIPA accounts.
5. Financing Gap – The financing gap is the difference between capital expenditures and internal funds. This is computed as a percentage of capital expenditures for non-financial corporations.

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