

What are the limits on Commercial Bank Lending?

Jacky Mallett

Distributed Systems Architect, CCP Hf.

warlock@alum.mit.edu

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What is Money?

- For the purposes of this presentation, Money is the deposits at commercial and central banks against which loans can be created within a reserve based banking system.
- Broadly – M1
- Nb. M2, M3 and M4 monetary measures all include different forms of debt instruments.

Types of Lending in Economy

Transfer Loans – money is transferred between two entities

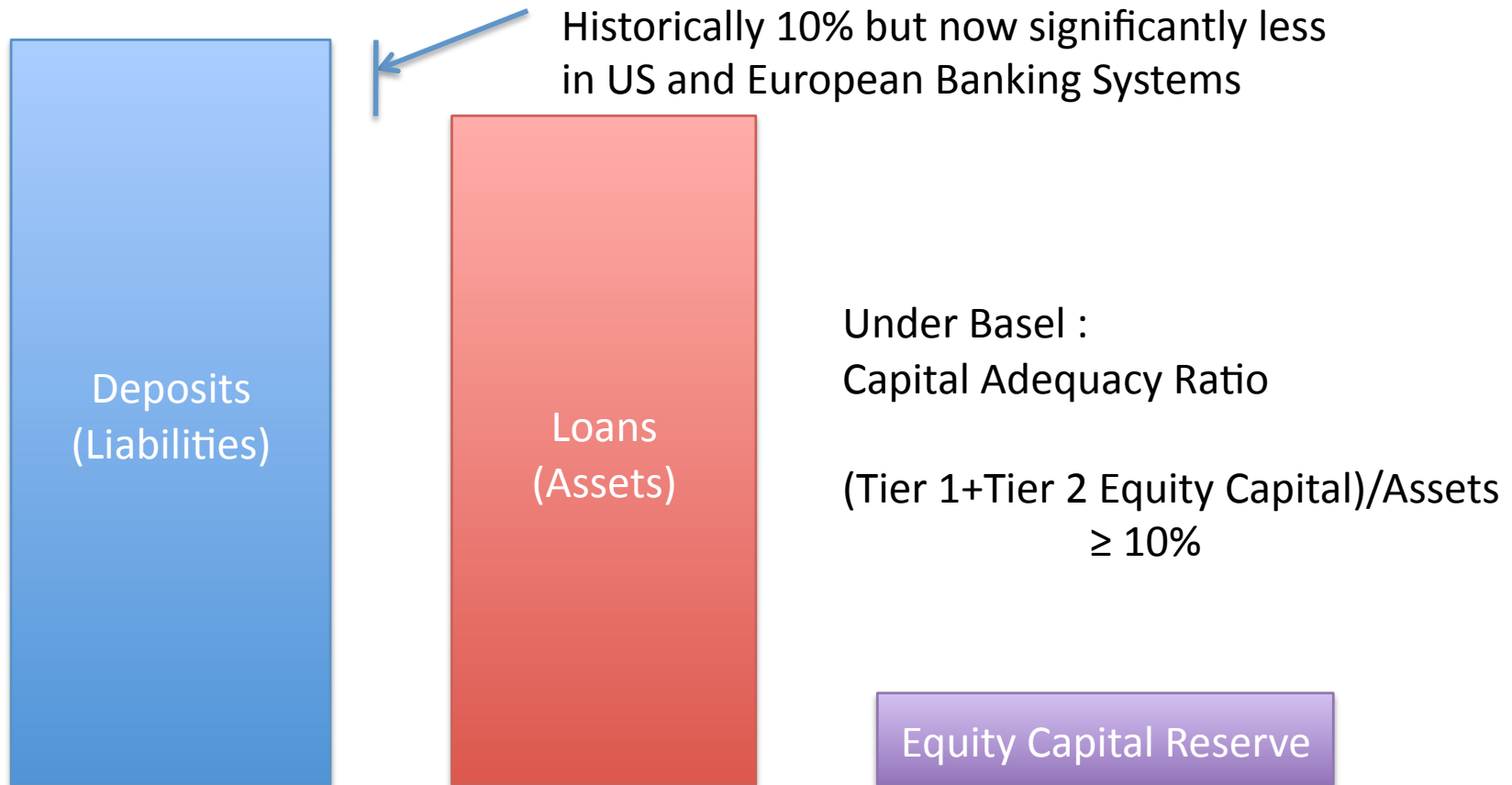
- Amount of transfer debt within society can fluctuate, and problematic scenarios can be engineered, but should be self balancing
- ***No money supply implications***

Commercial Bank Loans

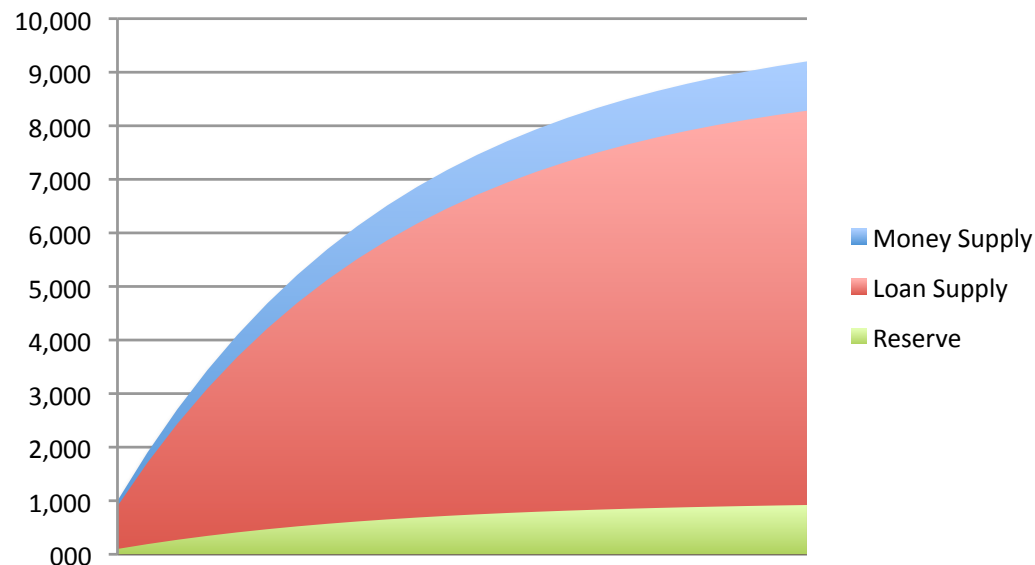
- *Recursive, feedback* based system that in theory is regulated through reserve requirements to be self-damping
- ***Commercial Bank Lending may effect the money supply as loans are re-deposited into the system, or when they are repaid.***

Single Bank View

$$\text{Reserve Requirement} = \frac{\text{Deposits} - \text{Loans}}{\text{Deposits}}$$



Banking System, Textbook Model, with Reserve Requirements



With a reserve requirement of 10 %

$$\Sigma \text{ Money} = 10 * \text{Initial Deposit}$$

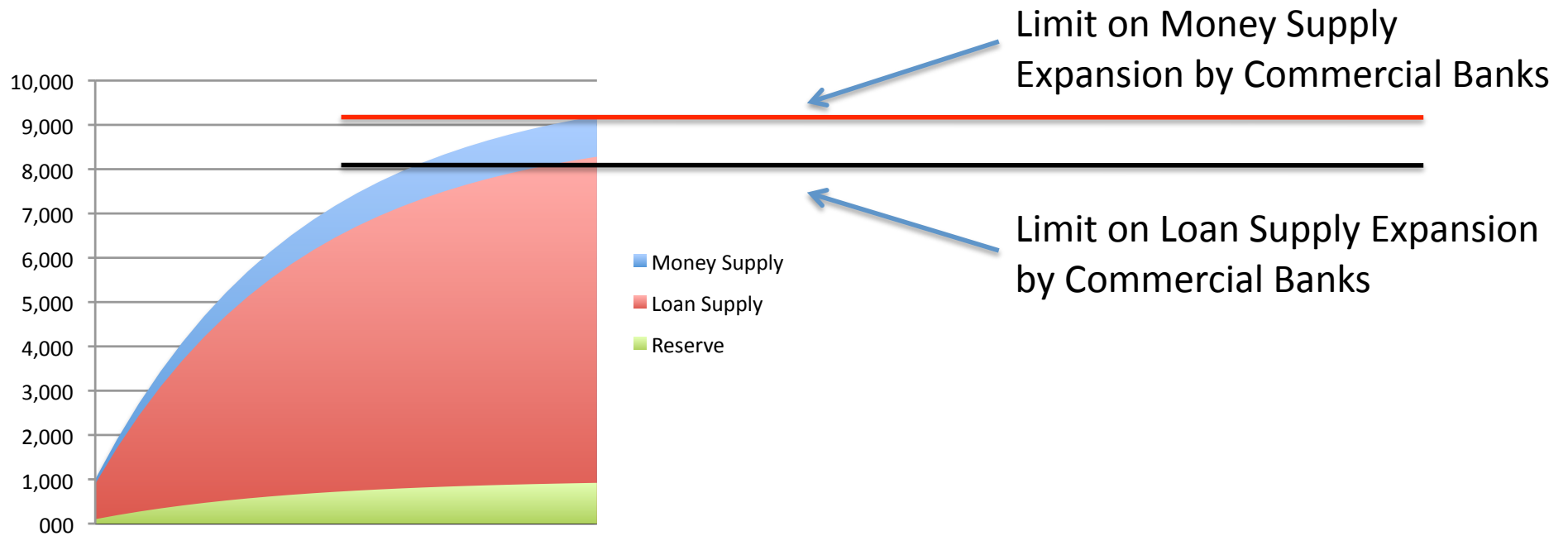
$$\Sigma \text{ Loans} = 9 * \text{Initial Deposit}$$

$$\Sigma \text{ Reserves} = \text{Initial Deposit}$$

Under textbook Economics assumptions, limit on the total commercial bank Loan Supply is 90% of total Money Supply

Note: there is no mechanism in this model to remove deposits when loans default.

What is a credit bubble?



Under the assumption that all Banks maximize their lending, we would expect progressive expansion of the Money and Loan Supplies to the limits allowed by the reserve requirements.

At the limit as Loans were repaid, more loans could be made, within a broadly stable regime.

Does a credit bubble then represent variation within the permitted limits, or a failure in regulation allowing them to be circumvented?

Possible Causes of Credit Bubbles

Banking System is expanding and contracting within its allowed limits

- Growth is too large, and has been continuous since 1940's

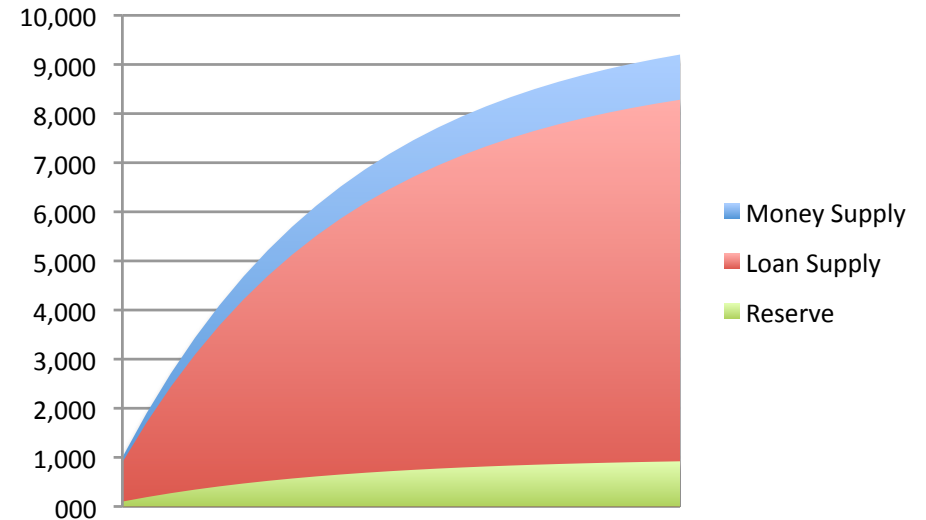
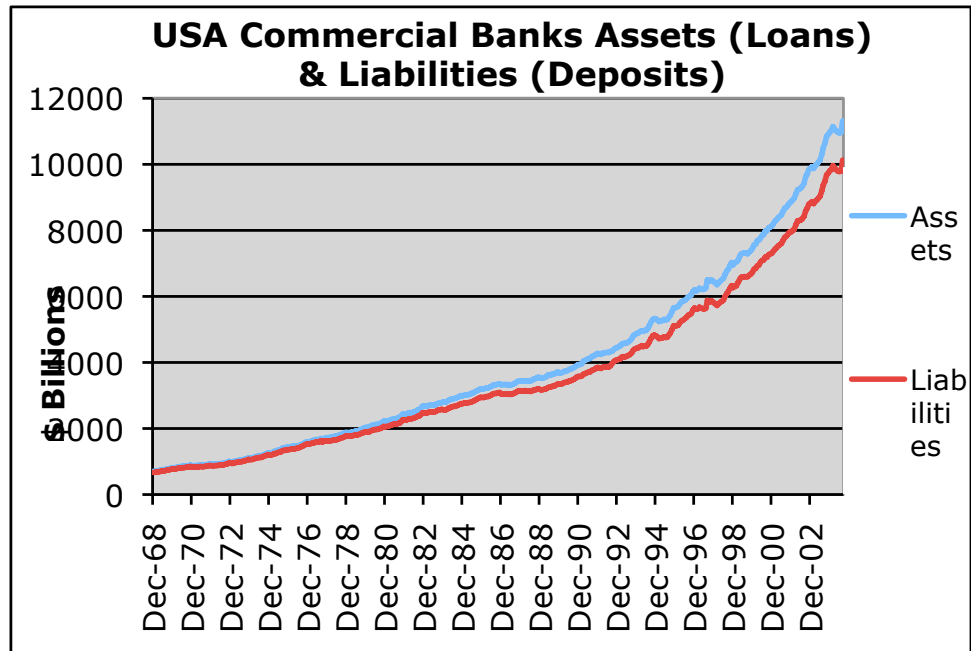
Central Banks are *deliberately* creating money and injecting into system

- Quantitative easing (UK) introduced to address credit crisis, not to cause it.
- Government borrowing does not automatically create money (It creates treasury instruments)
- No evidence in central bank statistics (For G8 economies)

Commercial Banking System is not being successfully regulated

- Existing rules are being circumvented (Unlikely given amount of scrutiny)
- ***Existing rules do not create a stable monetary system***

USA



Appears to be some divergence between actual behaviour and the textbook model

Source: Table H8 Federal Reserve Statistical Series (NSA)

Note: Assets includes Equity Capital reserves

Asset Backed Securities

Sale of Bank Loans to entities outside of the regulated banking system.

Fannie Mae, created in 1938 , purchases and securitises bank loans in order to create liquidity for loans. (Loans were primarily sold to pension funds, and individual retirement funds)

1973 Lewis Ranieri as part of then Salomon Brothers, created Mortgage Backed Securities (MBS)

1980's Extended to other types of loans, credit card, car loans, etc.

Use spreads internationally, in particular UK, Australia, Ireland, New Zealand, Belgium, Holland, etc.

Late 1990's, begins to be used within financial system to finance lending to speculators – Hedge funds and private equity in particular.

Criticized for causing banks to lend irresponsibly as there was no impact on the bank from loan defaults

Infinite Loan Loop

1)

Bank	Deposit	Loan	Equity Capital
Bank A	1000	900	100
Bank B	1000		100

Money Supply = 2000 Loan Supply = 900

Bank A sells the Loan to the Depositor at Bank B

2)

Bank	Deposit	Loan	Equity Capital
Bank A	1000	0	100
Bank B	100		100


\$900 ABS is created.

Money Supply = 1100 Loan Supply = 900

Infinite Loan Loop

3)

Bank	Deposit	Loan	Equity Capital
Bank A	1000	900	100
Bank B	1000		100



\$900 ABS

Money Supply 2000 Loan Supply 1800

Bank A makes another loan, which is re-deposited at bank B

4)

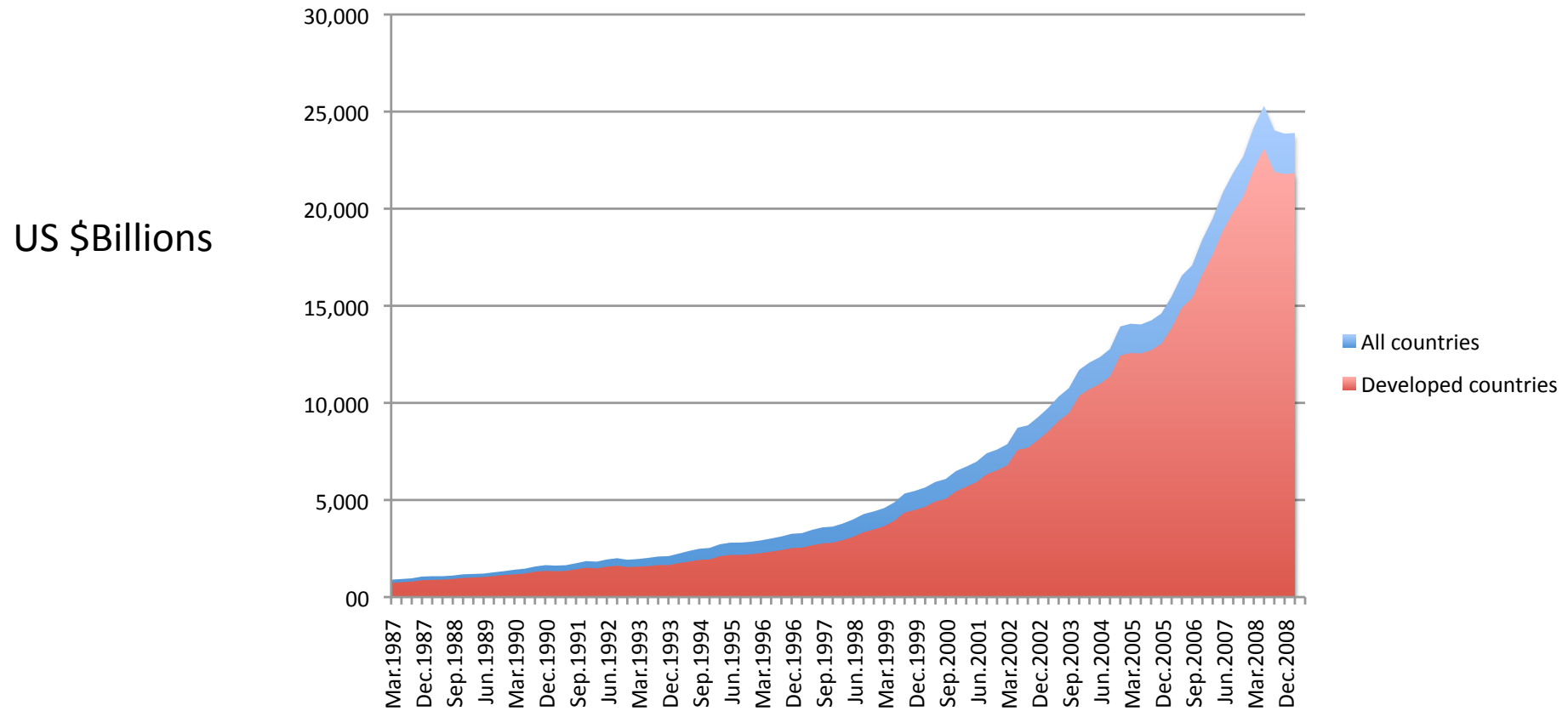
Bank	Deposit	Loan	Equity Capital
Bank A	1000	0	100
Bank B	100		100

\$1800 ABS

Bank A sells the loan to the depositor at bank B

Money Supply 1100 Loan Supply 1800

International debt securities – amounts outstanding

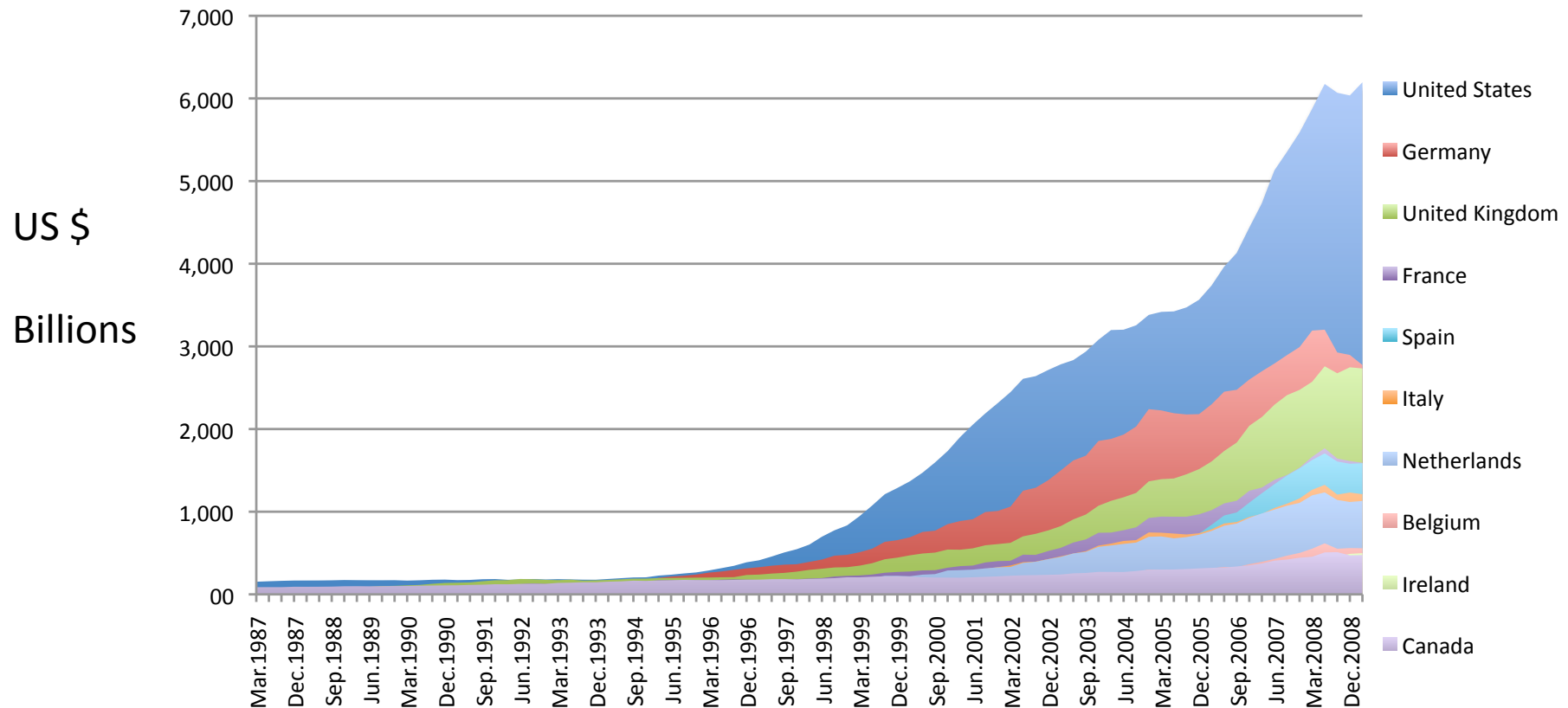


Source: Bank of International Settlements, Securities statistics and syndicated loans.

Table 12A

<http://www.bis.org/statistics/secstats.htm>

Top 10



Growth in 1990's linked to development of CDO – Collateralised Debt Obligation (Structured MBS debt into tranches.)

Credit Default Swaps introduced in 1997 allows faster expansion

Visual impact – count the building cranes to gauge local exposure.

BIS Table 11 International Debt Securities Net Issuance Developed Countries

	Net issues					
	2007	2008	Q2 2008	Q3 2008	Q4 2008	Q1 2009
9						
1	2,977.0	2,436.3	1,166.4	221.9	519.1	669.7
7	2,532.7	2,420.8	1,139.3	214.3	548.3	647.5

Credit Crash appears to have been primarily a failure in the ABS issuance.
Latest figures (Q1 2009) indicate recovery to ~2006 levels

Money Supply Growth

- ABS Exploit does not explain the Money Supply Growth, in commercial bank deposits.
- Purely operates on Loan Supply
- Absent another problem in the systemic regulation, it would have blown out very quickly, as total capital and interest repayments exceeded the available money supply.

Equity Capital Bug

- Modern Banking system has progressively removed 19th century central bank reserve requirements
- Replaced by regulated Equity Capital amounts
 - Basel 1 & 2 concentrates on removing risk of individual Bank default

What controls the total amount of equity capital within the banking system?

- There is no central bank regulation of the quantity of equity capital, but there is regulation on the financial instruments that can be included in it

Limit then, is the quantity of these instruments available within banking system

Basel Equity Capital Regulation

Mortgage Backed Securities can be included in Tier 2 capital

41. Loans fully secured by mortgage on occupied residential property have a very low record of loss in most countries. The framework will recognise this by assigning a 50% weight to loans fully secured by mortgage on residential property which is rented or is (or is intended to be) occupied by the borrower.

(Basel Capital Accords. International Convergence of Capital Measurement and Capital Standards. <http://www.bis.org/publ/bcbasc111.pdf?noframes=1>)

Equity Capital Bug

1)

Bank	Deposit	Loan	Equity Capital
Bank A	1000	900	100
Bank B	1000	0	100

Bank A sells the \$800 of the ABS to depositor at Bank B for \$900, and keeps the remaining \$100 AAA tranche

2)

Bank	Deposit	Loan	Equity Capital
Bank A	1000	0	100
Bank B	100	0	100

\$800 ABS owned by Bank B depositor
\$100 ABS owned by Bank A

Bank A uses profits from sale of loan to increase equity capital
Specifically, it adds the \$100 ABS instrument

3)

Bank	Deposit	Loan	Equity Capital
Bank A	1000	0	150 (\$100 ABS)
Bank B	100	0	100

Now Bank A can lend \$1000 since it has excess equity capital
\$900 is re-deposited at Bank B and \$100 at Bank A

4)

Bank	Deposit	Loan	Equity Capital
Bank A	1100	1000	150 (\$100 ABS)
Bank B	1000	0	100

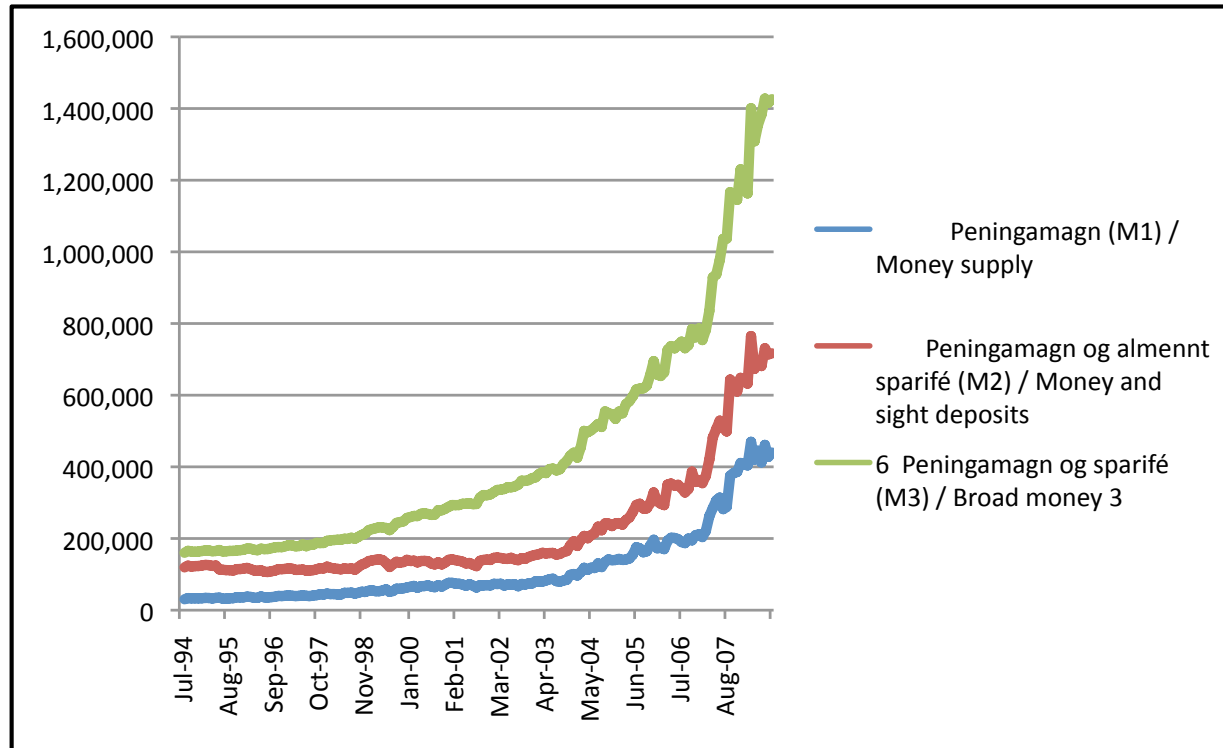
Money supply is now growing. Owing to the redeposit of funds within the banking system, this is at a multiple to the equity capital base.

Reserve Banking System

- No longer a fractional reserve banking system
- Regulation of the Loan Supply and consequent expansion of the Money Supply is now dependent on equity capital reserves
- Which are allowed to include a portion of debt instruments (MBS)

In Economic theory, Central Banks regulate the Money Supply through control of overnight and short term lending, and interest rates.

Icelandic Deregulation



Icelandic Central Bank reacted to expansion by increasing interest rates (textbook response)

This sucked more money into the system from overseas investors

M1 money supply doubled in 2007

M1	Jan-00	Jan-01	Jan-02	Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08
	65.200	76.300	73.651	80.721	96.659	143.127	173.964	204.078	407.262

Consequences

Build up of these effects is relatively slow – it takes months and years to create the loans that are being sold.

→ decade scale impact

But – they are fundamentally exponential.

→ The most damage is done in the last rounds of the expansion

Profits on the sale of loans and fees from granting loans are essentially free money for the banks.

→ Build up of money within the financial sector (salaries and bonuses)

→ Contributing to increased real estate inflation in core financial cities

But the real problem is created as loans are repaid..

Under a *Fractional* Reserve Banking regime loans are a fraction of total deposits

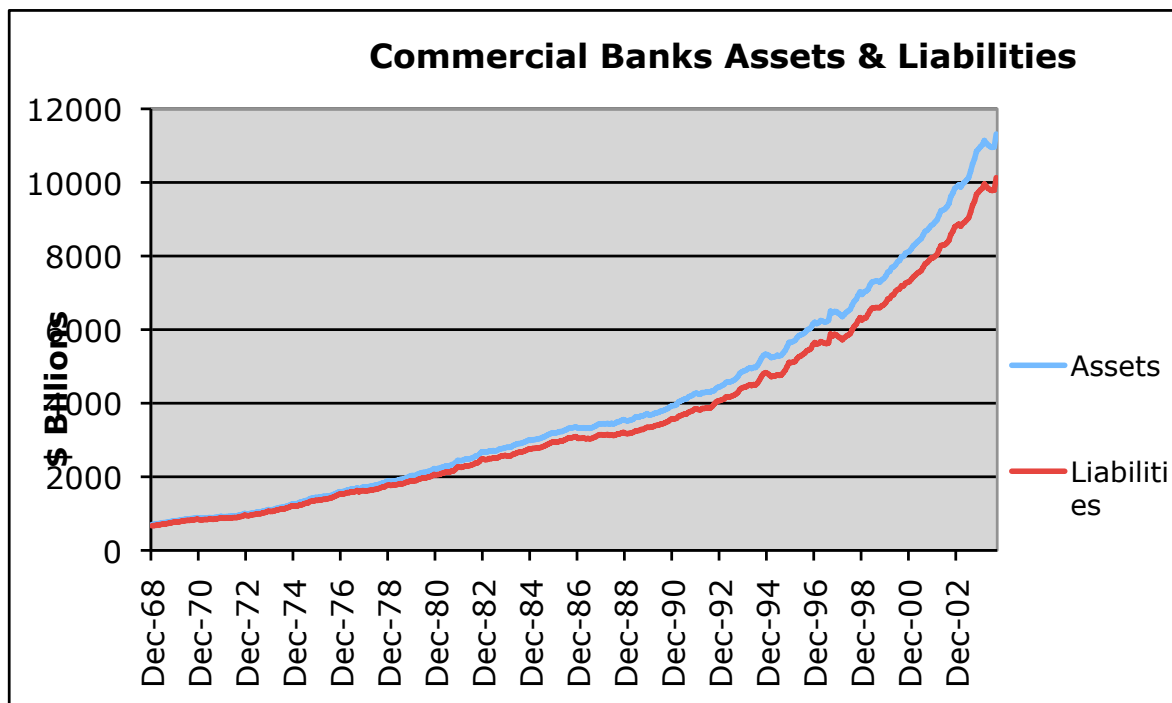
→ If all loans were repaid, system would be left with the original deposit

With the excess of loans created by ABS sales, there is now more credit than money in the system

→ If all loans were repaid, there would be no money left, and a fairly sizable outstanding loan amount.

In addition, Money is being rapidly concentrated in the financial sector as fees and bonuses are extracted from these processes.

Total Commercial Bank Lending - USA



Estimated 2008:

\$10 trillion commercial bank assets (loans)

\$6 trillion asset backed securities
? Fannie Mae, Freddie Mae, FHA holdings

Versus \$10 trillion liabilities (deposits)

Situation is replicated to a lesser degree in most major economies.

General Solutions

If the sale of loans is banned, the current banking system will implode.

- Debt and Capital repayments will progressively remove all deposits from the system

Quantitative easing – injecting money can prevent this mathematically

- Where in the financial system do you inject?
- Directly into the banking system simply rewards the guilty and further concentrates wealth (i.e. economic control) there.
- Distributing it to the general population (Germany Year 0 solution) may be best alternative.
- Politically very hard to explain, and currently impossible to accurately predict the consequences
- In the battle of Regulators vs Financial Industry – the financial industry has much faster computers.

US and UK governments both encouraging restart of loan sales

- Only source of 'profits' which can rescue their banks from their current issues

US to reboot securitisation market

Sharon Flaherty | [FTAdviser](#) | Published Wednesday , July 15, 2009

New measures were put forward today (15 July) to overhaul the US securitisation market by the American Securitization Forum (ASF).

The ASF said restarting securitisation was vital for economic recovery, but that the process of how securitisation is carried out requires significant changes.

Tom Deutsch, deputy executive director of the ASF, said: "Securitisation is an essential tool used by financial institutions to provide the capital required to finance global demand for mortgage, consumer and business credit.

"Restarting the securitisation market is essential to economic recovery, yet the process of securitisation requires significant changes to restore institutional investors' willingness to commit capital to these markets."

Have your say

Jupiter ask advisers to have their say

By Ed Vertisment 21-Aug-2009 14:00PM

Jupiter have created a virtual broker pack for advisers containing investment intelligence, historical analysis and business ideas to help you guide your clients through today's markets.

Visit mindsonmarkets.co.uk to post your own opinion and check out other IFAs' too.

See beyond today's challenges.

Icelandic Solution

(only applicable to small economies,
with independent currencies)

Stabilize the money and loan supplies

- Inflation will drop as quantitative issues are resolved
- Rescues people with index linked loans

Foreign currency loans still a problem

- Assume that UK, USA and Euro will not correct their problems in a timely fashion
- ABS profits have created a multi-billion dollar industry

ABS/Equity Capital exploiting currencies will continue to inflate

Relative to exploiting currencies this will shift the currency relationship over time, allowing non-exploiting currencies to recover.

In the interim, don't allow any foreign investment that is funded by debt

Reykjavik Manifesto

Central Banks should be required to provide a clear description of the details of their local implementation of the reserve banking system.

Urgent attention to computer simulation and understanding of the *systemic* behaviour of reserve based banking systems

Money and Loan supplies should be held constant or allowed to vary only within a narrow range

Rewriting History – Credit Bubbles

Loan Demand vs. Credit Supply

- 0 Day bug exists in the loan supply control mechanisms
- An increase occurs in the demand for loans. This can be random, or due to increased capital investment for new technologies, or new financial instruments
- **Rational** speculation then emerges based on increasing prices caused by increased lending, and the resultant asset inflation.
 - Possible to make substantial profits over relatively short periods simply by performing temporal arbitrage
 - “trading”
- Increased speculation occurs, and the demand for credit rises as a result.
- More Loans are created, further fueling the speculative asset bubble
- Eventually the larger monetary economy is no longer able to support the loan servicing costs, and loans default
- Triggers a Fisher debt deflation cascade for those parts of the economy now dependent on continuously renewing debt.
- The resulting economic misery for individuals reduces demand for Loans, as does the Banks inability to supply them.
- Bug is quiescent for years until triggered again by increased demand for loans.

Within Computer Science, Recursive Feedback Systems are regarded as difficult to design correctly, and are not renowned for their stable behaviour.

It is generally recommended that they be avoided when building critical, real time, systems.