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James B. Berger

# THE ROOTS OF A FINANCIAL CRISIS

A Guide for Finding What Led to the Financial Crisis of 2008



**“The Roots of a Financial Crisis”**  
First Edition

by James B. Berger

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e-mail: [jimberger@FreeMarketCenter.com](mailto:jimberger@FreeMarketCenter.com), or  
Write James B. Berger, P. O. Box, Denver, Colorado 80250.

URL: <http://www.FreeMarketCenter.com/crisis>

## I. Preface

I began this paper as a letter to the chairman of the Financial Crisis Inquiry Commission (FCIC)—the commission given the task of determining the root causes of the financial crisis of 2008. Having seen some of the people called to testify I realized that the commission would probably receive the same misinformation dished out by economists and commentators. “It was caused by greed.” “Lack of regulation allowed it to happen.” “Wall street bankers brought the system down.” Etc. I thought I could clarify the matter with a simple statement: If you really want to know the root cause of the financial crisis, look at the money. Examine the effects of the artificial expansion of the quantity of money. To understand the role of money in boom and bust cycles study the Austrian Business Cycle theory.

Then I realized that such a brief statement would not suffice. Since most economic commentators seem to ignore the importance of money, whether they understand it or not, I felt that I needed to suggest a process that would lead the readers of my letter to the source of the problem. I decided to suggest a simple four step process:

1. Understand the performance of complex systems. Use that understanding for steps 2 through 4.
2. Describe the ideal behavior of the economic system.
3. State the current (or recent) behavior of that system.
4. Determine how to make current behavior more like ideal behavior.

Each of those four steps, however, required a bit of explanation. The process of clarifying those four simple steps led to the paper you have here.

To completely answer the question, "What caused this crash and how do we prevent another?" would require a book. Thus, I do not pretend to provide comprehensive detail here. I use the details I have provided as examples. I want only to point you in the right direction for finding the answer to that question.

Although considerably longer than a most letters, I still intend this paper as simply a guide to finding the root causes to what many see as a crisis. Use what I have laid out here to test the logic of the statements that you have heard from other sources.

To that end, understand one point: ***IF YOU DO NOT COMPREHEND THE ROLE OF MONEY IN THE ECONOMY, YOU CANNOT UNDERSTAND WHAT CAUSED THE RECENT BUST.***



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# THE ROOTS OF A FINANCIAL CRISIS

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## A Guide for Finding What Led to the Financial Crisis of 2008

### II. Introduction

Humans seem to have an embedded code that tells them to look for someone to blame for their crises. We frequently hear cries for *accountability*. But, does affixing blame really lead us to a deeper understanding of the crisis in question? Or, does it just make us feel better?

On May 20, 2009, the President signed the Fraud Enforcement and Recovery Act of 2009, creating the Financial Crisis Inquiry Commission (FCIC). The law gave that commission the mission to "examine the causes, domestic and global, of the current financial and economic crisis in the United States." Congress appointed the 10 members of the bi-partisan Commission on July 15, 2009. They must submit a report of their findings to Congress, the President, and the American people on December 15, 2010. Based on the 22 specific and substantive areas of inquiry related to the financial crisis, that mission seems to charge the commission with finding someone to blame—Wall Street, big banks, greedy real estate lenders, or maybe former Federal Reserve Board Chairman Alan Greenspan.

But no individual, or group of individuals, bears the blame for that mess.

Understanding the reasons for a broad-based failure of a complex system requires understanding what really influences systemic performance—generally and specifically. With a deeper understanding of the influences of systemic performance, the commission could develop an effective strategy for its investigation. This commission does not, however, seem to comprehend the nature of complex systems.

In the balance of this paper I will offer guidance for the FCIC—and any other reader—for the pursuit of the real roots of the financial crisis that crested in the fall of 2008. I will not make an exhaustive study of the details leading up to that crisis, for the commission has the resources needed to generate all the detail it wants. Also, I do not think they require that much detail to understand the root causes of the problem. I intend to point readers in the right direction.

As a preview I have divided this paper into four major parts:

First, I will describe a general approach for gaining an in-depth understanding of the performance of a complex system. I will format the next two sections using the factors outlined in the first part.

Second, I will briefly describe a sustainable economic system. Before we can understand why a system failed, we must first understand how that system should work properly.

Third, having established the sustainable system as a standard of comparison, I will describe our unsustainable system. This comparison should make the roots of this crisis apparent.

Fourth, I will suggest transformative changes to the system, which should prevent events like this crisis and eliminate the fluctuating patterns to which this event belongs.

## III. Understanding the Performance of Complex Systems

Fully understanding the performance of a system requires examining that system at three levels: 1) events, 2) patterns of behavior, and 3) systemic structure.

### A. Events

Understanding the performance of a system begins with observing events—single results or sets of results. Events provide examples of results the system can produce. Without further research, however, we cannot tell whether we have observed typical events or not. We should not use single events to predict future results. Any single event might not represent typical behavior.

A hypothetical set of examples involving two systems—an automobile and an airplane, should help clarify the distinction between these three levels. First the event:

An automobile and an airplane leave Denver for Phoenix at the same time. The plane arrives at Phoenix several hours before the car. Knowing the results of this event, however, tells us little about why one system—the plane—performed better than the other system—the automobile.

### B. Patterns of Behavior

When we examine a series of events over a period of time a pattern of behavior may begin to emerge. A "behavior over time" chart graphically illustrates these patterns. From this chart we can discern the range of variation in results produced by the system. We can also see any trends in those results. Although they help us distinguish typical from atypical behavior, *patterns of behavior* give us little insight into the causes of those patterns and the events within them—the main reason to study the performance of systems.

To continue with the automobile and airplane example:

The automobile and airplane take this same trip—from Denver to Phoenix—several times. After plotting the travel times of these two systems we can see that the plane consistently arrives sooner than the car. The different arrival times also fall within a fairly narrow range of time. Although the plane seems, from this pattern, like a consistently quicker method of travel, we don't—from this data alone—know why.

### C. Systemic Structure

To fully understand the influences on systemic performance, and to make reasonable predictions about future behavior, we need to view one more level of the system: the systemic structure. The structure of a system consists of the elements that make up the system, the interconnections between those elements, and the information feedbacks between various elements in the system. The systemic structure includes tangible and intangible elements. In human systems<sup>1</sup> the mental models of the people in the system comprise an important—perhaps the most important—element in the systemic structure.

Let's look at systemic structure in the automobile and airplane example:

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<sup>1</sup> Human systems consist of complex systems that have humans as a significant element.

From the start, we noticed significant differences in the physical structure of these two systems. The plane, for example, has wings; the car does not. Less obvious, but just as important, the airplane pilot uses a different mental model than does the driver of the car, e.g. the pilot envisions himself operating different controls to perform different processes than does the driver of the car. These structural differences, physical and mental, represent the fundamental influences in the different performance of the two systems. They explain past behavior—events and patterns, and they help predict future behavior.

In this contrived example<sup>2</sup>, I feel fairly certain that you saw the structural differences from the start. People tend to intuit the influence of structure on simple systems. But, when examining more complex systems, people tend to focus on events or maybe patterns of behavior. They find the systemic structure and its influence significantly less apparent.

When distressed airplanes land safely, people tend to credit the pilots for the successes. They do not recognize the influence of the airplane's design, which allow the pilots to control the plane even in distress.

When companies succeed or fail, we tend to attribute that result to the chief executives. Seldom do people acknowledge the influence of the shared mental models of the people in each organization.

#### D. Summary Understanding of Systemic Performance

In studying the results created by a system one must look at events and patterns of behavior, but, most importantly, one must study the structure of the system. An event shows only one result a system can produce. Typical behavior of a system—results of common causes<sup>3</sup>—will form a distinct pattern over time. Events and patterns may give some insight into expected behavior, but fully understanding the performance of a system requires understanding the primary influence on the behavior of the system—structure. (Figure 1. Systemic Performance shows the relationship of events, patterns of behavior, and systemic structure.)

Most authors and commentators discussing the collapse of the financial markets in 2008 have focused on the events and the actions of people just prior to that collapse. A very few recognized the pattern of behavior leading up to the crisis. But, by ignoring the systemic structure, they reveal an incomplete understanding of the influences that brought on the collapse.

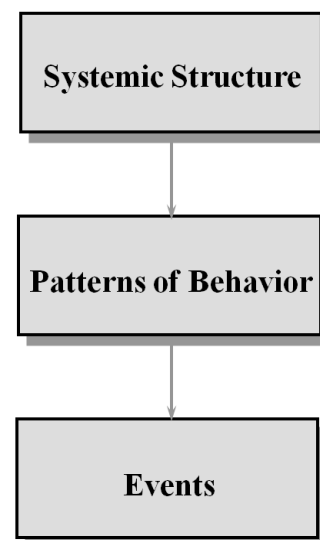


FIGURE 1. SYSTEMIC PERFORMANCE

<sup>2</sup> I have used an example in which you certainly saw the structural differences immediately. Intuitively you see the influence of structure on the performance differences between small systems—big men lift more than small, horses run faster than squirrels, drag racers accelerate faster than passenger cars. With larger systems, however, the complexity of the systemic structure causes you to either ignore structure or overlook some of the interconnections.

<sup>3</sup> Results generated by the normal structure of the system have *common causes*. Results influenced by anomalies inside or outside the structure of the system have *uncommon causes*.

## IV. A Sustainable Economic System

*"Before we can even ask how things might go wrong, we must first explain how they could ever go right."*

F. A. Hayek

Discussions of economic disasters frequently delve directly into the events leading up to the problem without giving the slightest mention of how things should have been. That approach might work if everyone agreed as to how the system should work. But, they don't.

To set the stage for my discussion of our problematic system, I will provide a brief description of the events, patterns of behavior, and structure that one would expect to find in a sustainable system.

### A. Events in a Sustainable Economic System

The events in a sustainable system would tend to involve only individual persons or businesses. People would take actions freely, based on their own preferences. In every transaction, both parties would gain—receiving something they value more than what they gave up. Some productive endeavors of these individual actors will succeed and others will fail.

Of course, these events would affect other market actors in close proximity. The repercussions of market actions, however, would die out the further away in time or distance. Economy-wide events would not occur as the result of endogenous factors. For example, an individual stock might crash, but a market crash would occur only under unique and exogenous influences—e.g. asteroids, tsunamis', droughts.

### B. Patterns of Behavior in a Sustainable Economic System

Although the prices of individual products might rise and fall—as affected by changes in the supply and demand for those product, the general trend for prices across the economy would show few dramatic changes. In a steadily growing economy money prices for products would trend downward—not the effect of what people refer to as "deflation,"<sup>4</sup> rather, it refers to the effect of growing supply. And, business cycles would either not exist, or they would appear as long, low waves. The continual adjustments of individual prices would dampen the effects of each other in the general economy.

The general downward trend in money prices would provide a symptom of another pattern unique to a sustainable economic system—a fixed quantity of money (which also represents a structural difference). Without the artificial changes in the quantity of money, money prices would reflect the relative changes in the supply and demand of the goods for which people use money to trade. (I will cover this point in more depth in the section titled "Systemic Structure—A Sustainable Economic System" on page 5.)

A fixed money supply would allow the money pricing mechanism to send accurate signals to the players in the market about the relative supply and demand of products traded. Rising money prices would signal relative shortages; falling money prices would signal relative surpluses. With more dependable information, buyers, sellers and entrepreneurs would make more reliable decisions than they do with our current inflationary money system (which I will discuss below).

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<sup>4</sup> Throughout this paper I use the terms *inflation* and *deflation* correctly. **Inflation** means an increase in the quantity of money. **Deflation** means a decrease in the quantity of money. Generalized increases and decreases in prices do not consist of inflation and deflation, but find their causes in them respectively.

The general, broad-based, downward trend in money prices would reflect relatively stable economic value. The subjective values of buyers and sellers would not change much, for the market, through better pricing signals would send more accurate information about the relative supply of goods in which they trade. They would make continual adjustments in their preferences that would, in turn, influence money prices and dampen economic cycles—as measured in money terms.

Finally, the sustainable system would exhibit an important pattern that we have not seen in this country for a long time. The rate of real savings—production not consumed—would remain relatively high, and the level of accumulated savings (substantive and money) would grow. People in the sustainable economic system would rely on themselves, more than they do today, for both short-term contingencies and retirement in the long-term. This savings pattern would create more economic growth—in terms of products, not prices—and less wasteful spending.

### C. Systemic Structure—A Sustainable Economic System

Although we must consider an economic system as an interconnected whole, breaking it down into segments will help understand the processes that operate in an economy. I will begin with a description of a basic economic structure that shows the interactions of some basic factors at work in any economic system. I will also use this first segment to introduce the causal loop diagrams<sup>5</sup>, which I will use to describe the economic structure.

Within its boundaries the sustainable economic system has two sets of processes that keep it in balance. First, **reinforcing processes** act to make the system grow and expand. Second, **balancing processes** act to keep the system from running out of control. I have used causal loop diagrams to show these two processes.

I need to make it clear for those who want to model the economic system that the whole economy consists of a level of complexity beyond what a computer program or a diagram can represent. In these diagrams I have included primary elements that relate to the influences on economic growth and contraction primarily in those areas of the economy that are the subject of this paper.

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<sup>5</sup> **CAUSAL LOOP DIAGRAMS** provide one schematic way in which one can depict the interrelationships in complex systems. Although I prefer the use of **STOCK AND FLOW DIAGRAMS**, I have chosen to use **CAUSAL LOOP DIAGRAMS**, because, although less precise, they lend themselves to easier comprehension.

**STOCK AND FLOW DIAGRAMS** more accurately depict the differences between flows (or rates) and stocks (or levels) thereby avoiding confusing the two. (e.g. Deficits amount to flows, which occur over specific time periods. Debt amounts to a stock, which consists of an accumulation of flows and exists at a point in time. Thus, the term “mounting deficits” makes little sense.)

## 1. Basic Structure

Every economic system has a deceptively simple basic structure. That structure consists of three elements: 1) production, 2) consumption, and 3) saving. The **rate** of production amounts to the quantity of goods produced over a give unit of time. The **rate** of consumption amounts to the quantity of goods consumed over the same unit of time. The **rate** of saving amounts to the quantity of goods remaining when the **rate** of production exceeds the **rate** of consumption over the same unit of time.

The **level** of savings amounts to the accumulated saving less the accumulated consumption over the life of the system. Of course, the **rate** of consumption over a specific period of time cannot exceed the **rate** of production over that same period of time plus the **level** of accumulated savings at the beginning of that period.

These relationships remain inviolate over time and space based on laws of physics—e.g. market actors cannot consume what someone has not previously produced. Yet, as we will see in the unsustainable system, we try to violate these relationships.

Additional factors in an economy simply amount to combinations or permutations of these elements—e.g. a market transaction simply amounts to a transfer of accumulated savings from one owner to another.

*NOTE:* To facilitate the explanation of these concepts I have inserted into this paper four sections in which I describe interactions in the economic system using "causal loop diagrams." Although I have not included these insertions as part of the narrative, they do play an important role in conveying the concepts in this paper.

## Basic Structure

Figure 2. Basic Structure provides a diagrammatic depiction (using causal loops) of the major elements of a market economy. The labels represent various factors in the economy that interact with each other. The arrows define the relationships between the factors. The influence of the factors flows in the direction of the arrows—the factor at the tail of the arrow influences the one at the head of the arrow. The “positive” and “minus” signs tell the direction of the influence. A factor has a positive influence if it influences the affected factor to move in the same direction. Conversely, a factor has a negative influence if it influences the affected factor to move in the opposite direction.

I think an explanation of this simple diagram will make this clearer. I will describe each of the factors in this diagram and the nature of its influence on the factor it influences.

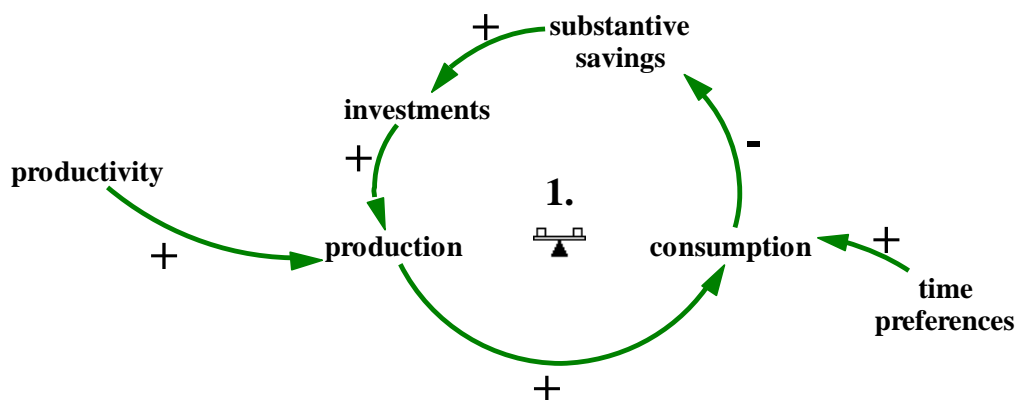


Figure 2. Basic Structure

**Production**, which consists of the making of economic goods, has a positive relationship with consumption. When production increases (decreases), consumption will also tend to increase (decrease).

**Consumption**, which consists of using up economic goods, has a negative relationship with substantive savings. When consumption increases (decreases), substantive savings will decline (increase).

**Substantive savings**, which consists of the residual of the flow of production less the flow of consumption, has a positive relationship with investments. When substantive savings increase (decrease) investments will tend to increase (decrease). Goods not saved for consumption in the near future either become investments or get traded for investments.

**Investments** (producer goods), which consist of economic goods used for the production of other goods, have a positive relationship with production. Increased (decreased) investments will cause production to increase (decrease).

**Productivity**, which amounts to the fraction of change in production for each change in the units of production input, has a positive relationship with production. An increase (decrease) in the

fraction of productivity will cause an increase (decrease) in production.

**Time preferences** consist of the relative preference to consume in the present over consumption in the future. A higher time preferences means a greater preference to consume in the present over the future. Time preferences have a positive relationship with consumption; an increased (decreased) time preference will lead to an increase (decrease) in consumption.

# 1. **Production** → **consumptions** → **substantive savings** → **investments** -  
balancing loop.

In combination these factors—**production**, **consumptions**, **substantive savings** and **investments**—form balancing loop #1 (indicated by the number and the balance symbol), which keeps the economic system in check. This loop acts as a balancing mechanism because, in addition to the factors with positive reinforcing influence, it has one factor with negative influence that slows movement too far in any one direction.

Although more production supports more consumption, additional increases in consumption in the future require restricting consumption in the present. When the rate of consumption stays below the rate of production, substantive savings increase. More substantive savings provide for increased investment and increased production, which supports more consumption. The system will continue to expand, but within internally controlled limits. If consumption rises too high, it reverses the trend, ultimately bringing future production and consumption back to the trend.

In addition to the balancing loop, this system has a couple of exogenous constraints. First, **time preferences**, which influence the level of current consumptions, and second, **productivity**, which determines the level of production.



## 2. Reinforcing Processes in Banking

Owners of quantities of goods in savings will always trade them for other goods that they value more. If they did not value the other good more, they would not trade. As long as they have a supply of the goods in savings, and can continue to find goods for which to trade, they will continue making transactions. If the supplies of both goods were inexhaustible, the volume of transactions would continue to grow.

The same principle holds true of money, which simple consists of another type of economic good. Bankers have a rational drive to trade money for notes that promise to pay them a sufficiently greater sum of money in the future. Similar to other goods they will continue to trade as long as they have money to exchange.

On the other side of that transaction, the other party we call the borrowers will continue to exchange notes for money as long as they value the money more. They will value that money more based on their perceived value of the goods for which they plan to exchange the money. Thus the more they can buy, the more they will borrow.

Since banks have the power to create money, they begin a reinforcing cycle in which more money creates more demand for money to which they respond by creating more money. If the reinforcing processes of money creation by banks operated without limiting forces, the creation of money would create more demand for money without end.

The following insert shows a causal loop diagram that depicts the reinforcing money creation process in the banking system.

## Reinforcing Processes of Banking

The basic structure (shown in the insert above) provides a foundation for understanding the dynamic economic system—and hopefully your understanding of the causal loops diagrams. But that basic structure does not explain the relevant factors that became involved in the financial crisis. To understand those factors we must look at the structure of the consumer bank loan market. (Later, I will combine these reinforcing processes with the basic structure to make a complete structure.)

The reinforcing processes in any dynamic system tend to push each other, and the whole system, in the same direction. Thus, when the system grows the reinforcing processes tend to make it grow more. And, when the system declines the reinforcing processes tend to make it decline more.

Reinforcing processes consist of loops in which one factor positively influences another factor. That second factor positively influences the next. The positive influence of each factor eventually returns, directly or through other factors, with greater force to the first factor. Because all factors in the loop have positive influences, with each cycle of this system the behavior of each factor receives further reinforcement. I think this will become clearer with the description that follows Figure 3. Reinforcing Processes of Consumer Loans (below).

As with the causal loop in Figure 2 (above) I will first describe each of the factors and its influence on other factors. Then I will describe the reinforcing loops which they form.

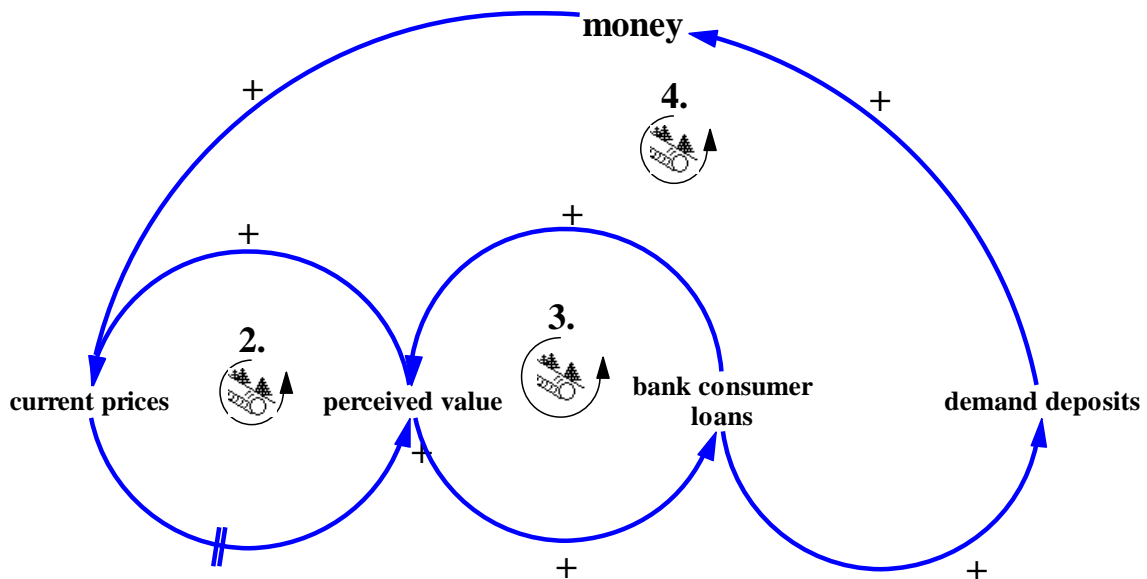


FIGURE 3. REINFORCING PROCESSES OF CONSUMER LOANS

**Current prices** consist of the quantity of dollars exchanged for an economic good (in this case houses). After a delay (indicated by the double hash mark), current prices have a positive influence on perceived value. This means that when current prices increase (decrease), perceived value, after a time, will also increase (decrease).

**Perceived value**, which represents the amount of money buyers will voluntarily give up to buy a particular house, has a positive relationships to both bank consumer loans and current prices. When perceived value rises (declines) both bank consumer loans and current prices tend to increase (decrease). The relationship with current prices closes a reinforcing loop #2 (designated by the number 2 and the snowball symbol) which causes both to change in the same direction.

**Bank consumer loans** represent loans made to individuals to purchase economic goods, including houses. The willingness of banks to make loans on consumer goods has a positive relationship with perceived value—particularly of houses. Banks fund consumer loans and received payments through demand deposits. Bank consumer loans thereby have a positive relationship with demand deposits.

**Demand deposits** consist of bank account balances against which customers can issue checks or other forms of direct payment. As a form of immediate payment they play a role as money and thus have a positive relationship with the quantity of money.

The change in the amount of money (see definition in section 0 on page 44) available through the changes in demand deposits, will cause current prices, in dollars, to change in the same direction. Although it does not happen often, any decline in the quantity of money available will cause dollar prices to fall.

Acting together these five factors create a series of reinforcing loops. In Figure 3. Reinforcing Processes of Consumer Loans (above) I have assigned each loop a number to use as a reference in the following description.

### #2. Current prices → Perceived Value – Reinforcing Loop

In a market of rising prices when current prices of a product (houses in this case) increase, information about those increasing prices will, after a delay (indicated by the double slash marks) influence people to increase their perception of the value of that product. Next, perceived value has a positive relationship with current prices. That means that when perceived value increases (decreases) it will influence current prices to increase (decrease). Thus, changes in current prices and perceived value reinforce each other. If this loop operated in isolation, both current prices and perceived value would continue to increase (decrease) forever. (The snowball image in the center of these loops indicates the building force of these loops.)

### #3. Perceived Value → Bank Consumer Loans - Loop

A very similar causal relationship exists between perceived value and bank consumer loans. As perceived value increases banks have a greater propensity to make loans based on houses as collateral. A greater availability of bank consumer loans encourages buyers to increase their perceived value.

The influence of each element spreads throughout the system, as you can see in just a couple of loops. Increased perceived value leads buyers to bid more for the product, which causes current prices to increase (as you saw in the previous loop). Thus, increased current prices lead to increased perceived value which leads to increased bank consumer loans. The feedbacks then

work their way back through the system: increased bank consumer loans lead to increased perceived value which leads to current prices.

Keep in mind that positive reinforcement works for both rising trends and declining trends. Thus, if any force caused any of these elements to decline, that decline would set in motion a process of reinforcing declines through these connected elements.

#4. Bank Consumer Loans → Demand Deposits → Money → Current prices –  
Reinforcing Loop

Even in the sustainable system, banks would issue demand deposits when they make loans. In the U.S. banking system the ability to transfer deposit account balances from one account holder to another represents a common form of money. More money available to purchase a product would cause its current money price to increase. If bank consumer loans decreased, the reinforcing process would have a reverse effect—a decline in demand deposits, a reduced quantity of money, and reduced current, money, prices.

As you might suspect the sustainable system would include more than just the basic structure or reinforcing processes in isolation. The balancing process I describe next will tie these two segments together into a complete system.

### 3. Balancing Processes in Banking

We saw in the basic structure ("Basic Structure" on Page 6) how the balancing process ties the growth rate of production to the level of savings. The banking system in a sustainable system contains a balancing process that ties the banks' ability to create money (in the form of credit) to the quantity of commodity money not held for demand deposits. When depositors have money in time deposits, banks can lend money. When banks have lent all the money in time deposits they must stop lending.

In a sustainable system this balancing process becomes a reliable control because the quantity of commodity money stays fixed<sup>6</sup>.

The next insert shows a causal loop diagram that depicts the balancing processes in banking that limit the impact of the reinforcing processes I describe in the preceding section.

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<sup>6</sup> Money does not get consumed in the exchange process. To destroy or consume money simply reduces the buying power of the holder. Since money does not increase the welfare of economic actors, no incentive exists to produce more money. To produce more only distorts the money price mechanism.

# Balancing Processes in Banking

If unchecked, the reinforcing processes in the system would cause it to run out of control, expanding (or contracting) without limit. But, natural, sustainable systems usually contain, along with the reinforcing processes, a set of balancing processes that keep the system on a path of steady, healthy, sustainable, growth.

Figure 4. The Sustainable System With Balancing Processes adds the balancing processes to the reinforcing processes described in Figure 3 above. I will continue the description by discussing the added factors and loops.

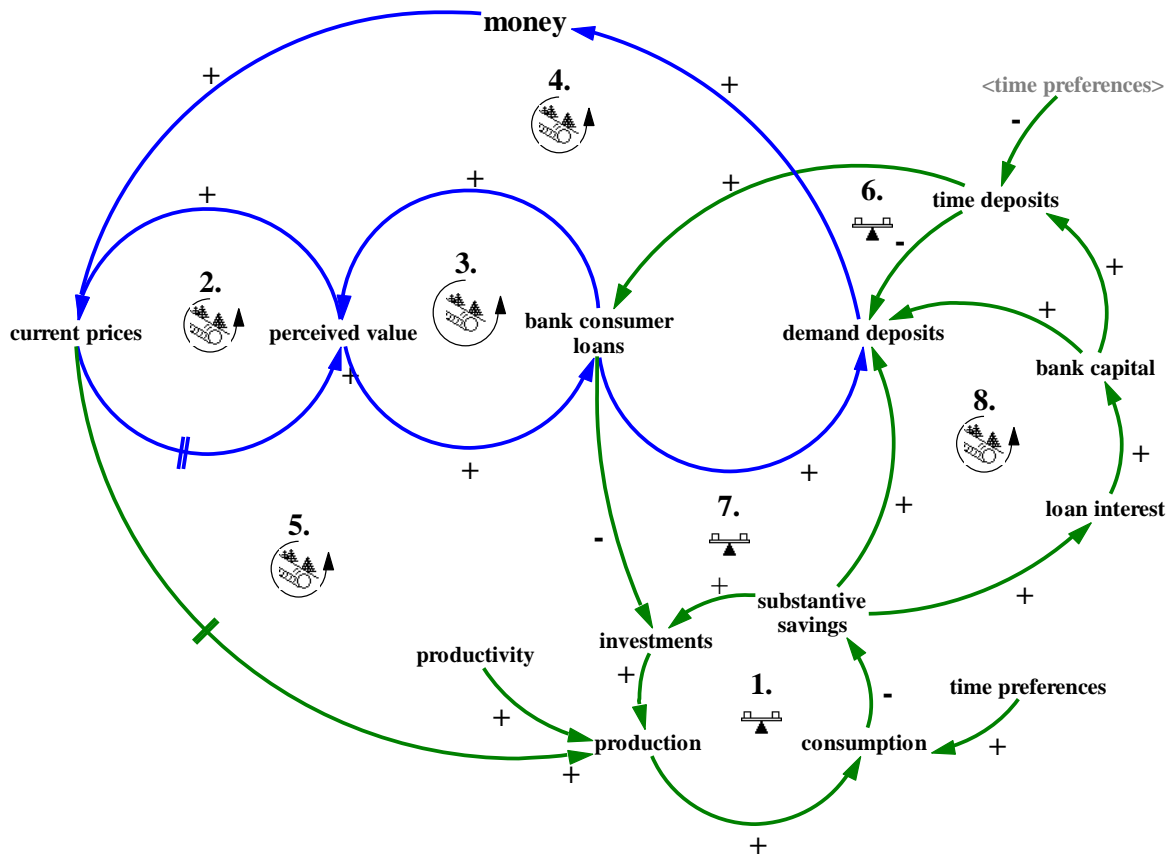


FIGURE 4. THE SUSTAINABLE SYSTEM WITH BALANCING PROCESSES

In addition to affecting *perceived value*, in the combined system *current prices* have positive influence on *production*. Rising prices signal relative shortages and potential profit opportunity. In response, producers increase *production*. Falling prices signal relative surpluses and limited profit opportunity. In response, producers reduce production.

**Substantive savings** also have additional influences in the combined system. Many consumers who sacrifice (consume less) to save convert those savings into money, which they deposit in a bank, increasing **demand deposits**. Borrowers also must sacrifice (consume less) to build **substantive savings**, which they convert to money, in order to make their loan payments. A portion of those money savings go to pay **loan interest**. Of course, if consumers increase **consumption**, that reverses all of these effects.

Because consumers use the proceeds of loans to purchase consumer goods, **bank consumer loans** have a negative influence on **investments**. Thus, bank consumer loans indirectly reduce **production**. Of course, reductions in consumer loans, through loan payments, put investment capital back into the system.

**Loan interest**, money received as the interest portion of loan payments, increases **bank capital**.

**Bank capital**, which consists of an initial investment plus earnings (derived from loan interest in this case), has a positive influence on both **demand deposits** and **time deposits**, which I will describe in a moment. In a sustainable system, banks would maintain a predetermined ratio of **bank capital** to deposits to cover any contingent problems in their investment portfolio. In general, the greater the amount of **bank capital** the greater the amount of deposit liabilities the bank will accept. In the unfortunate case that the bank loses money they will restrict the amount of deposits (both demand and time).

I mentioned **demand deposits** above. Now I will address **time deposits** and their extremely important influence on the system. I said that **bank consumer loans** had a positive influence on **demand deposits**, but they do not provide the source of the funds added to **demand deposits** when banks make loans. **Time deposits** do. In a sustainable system the money held on account for **time deposits** provides the only source for bank loans. Banks should keep dollar for dollar reserves to bank **demand deposits**, which customers can call on at any time. In the case of **time deposits**, however, the bank can give a borrower a call on money reflected by a **time deposit**, because the owner of a time account has agreed to not ask for their money until some specified time in the future.

Changes in **time deposits**, therefore, have different influences on **bank consumer loans** and **demand deposits**. Increases (decreases) in **time deposits** increase (decrease) the quantity of money available for loans. Because this system has a fixed quantity of money changes in **time deposits** have a negative influence on **demand deposits**. When **time deposits** increase (decrease) the amount of **demand deposits** will decrease (increase). These influences have a limiting effect on the reinforcing processes involved in **bank consumer loans**, which I will describe in more detail in my discussion of loops below.

What provides the determining factor for the bank customer's decision to put money into a time deposit? **Time preferences**, which we discussed earlier in relation to **consumption**, also influence, negatively, the level of **time deposits**. Customers with high **time preferences** will tend to spend their money quickly reducing the amount of money placed in **time deposits**. On the other hand, those with lower **time preferences** will tend to spend less today and save more money for the future, which will increase the level of **time deposits**.

These additional factors tie together the balancing loop of the basic structure with the reinforcing factors of the consumer loan processes.

#5. *current prices* → *production* – Reinforcing Loop

The addition of the connection between *current prices* and *production* creates a reinforcing loop. Increasing prices signal relative shortages and entrepreneurial opportunity. Thus, after some delay to verify the trend, producers will act to increase *production*. When prices decline they will act to reduce *production*.

#6. *time deposits* → *demand deposits* and *bank consumer loans* – Balancing Loop

In a sustainable system, bank lending and money creation would have an important balancing loop, which I did not complete in Figure 3 above. Banks could only lend money backing *time deposits*—banks would have to retain the backing for *demand deposits*. Because of the negative relationships between *demand deposits* and *time deposits*, *time deposits* would increase only with an equivalent decrease in *demand deposits*.

So, although bank lending would increase the quantity of money in circulation, lending would cease when bank loans equaled an amount equivalent to *time deposits*. Loans could increase only when bank customers took money out of circulation by shifting account balances from demand to *time deposits*.

The total amount of money—1) reserves not loaned represented by *time deposits*, plus 2) money in circulation represented by *demand deposits*—would remain the fixed.

To clarify this important point I have created an example, which I have shown in Table 1. Loans, Deposits, & Money.

		Money Transactions				Money Balances		
		Assets		Liabilities		In Circulation	Reserves less Demand	Total
		Commodity Reserves	Demand Deposits	Time Deposits	Bank Loans			
Step 1	Beginning Balances	20,000	(20,000)			0	20,000	
Step 2	Transfer to Time Account		15,000	(15,000)	5,000	15,000	20,000	
Step 3	Loan to Borrower 1		(6,000)		11,000	9,000	20,000	
Step 4	Loan to Borrower 2		(9,000)		20,000	0	20,000	
Step 5	Loan Payment		1,000		19,000	1,000	20,000	

TABLE 1. LOANS, DEPOSITS, & MONEY

**Step 1:**

Beginning Balance: Depositors deposit 20,000 units of a commodity money (you can think in terms of gold, if you like) in this hypothetical bank, for which the banks creates 20,000 units of demand deposit liabilities. The total amount of money equals 20,000 units.

**Step 2:**

The customers transfer 15,000 units from demand to time deposit accounts. The total amount of money still equals 20,000 units—5,000 units in circulation plus 15,000 units available for loan.

**Step 3:**

Some customers borrow 6,000 units, which puts 6,000 units back in circulation. Total amount of money continues to equal 20,000 units—11,000 units in circulation plus 9,000 units available for loan.



**Step 4:**

A second set of customers borrow 9,000 units, which puts another 9,000 units back in circulation. Total amount of money continues to equal 20,000 units—20,000 units in circulation and no units available for loan.

**Step 5:**

Some borrowers make loan principal payments of 1,000 units. That payment reduces the bank's deposit liabilities by 1,000 units, which takes 1,000 units out of circulation and makes them available for loan. But, the total amount of money still equals 20,000 units—19,000 units in circulation plus 1,000 units made available for loan again by the payment.

This balancing loop has particular importance because it keeps bank loans and the quantity of money in check.

The quantity of total money would have no influence on *current prices*. The only monetary influence would come from the willingness of buyers to give up market commodities, including money.

#7. bank consumer loans → investments and substantive savings → demand deposits – Balancing Loop

The factors included in this loop together depict the price paid by consumers who choose to borrow against future savings to finance current consumption.

To make this loop more understandable for those who foolishly believe that a residential house amounts to an investment. In fact, a home consists of a long-term consumption good. It does not, like most investments, produce an economic good that can improve a living standard from year to year. Once acquired the residential house provides the same level of shelter from year to year

Since the typical house loan amounts to significantly more than annual savings, that loan actually withdraws investment capital from the system, which, if left available, would end up supporting the growth of *production*. Thus, because of the size of house loans, the net effect of this loop limits the growth of the very income (generated from *production*) required to retire the loan. That fact does not make *bank consumer loans* a bad thing. It does, however, mean that they have consequences not foreseen by most people.

#8. *substantive savings* → *loan interest* → *Bank capital* → *demand & Time deposits* – reinforcing Loop

The final set of factors—*substantive savings*, *loan interest*, *bank capital*, and *demand & time deposits*—create a reinforcing loop which, by itself, will support the continual increase in house loans. It can also, in the case of sizeable loan defaults, accelerate the decline in bank deposits and loans. In coordination with the other factors and loops in this system this loop generally does no more than aid a healthy growing market.

#### 4. Free Markets & Exogenous Factors

The most distinguishing characteristic of the structure of a sustainable economic system would consist of **the lack of violent intervention**, i.e. sustainable markets = free markets.

The causal loop diagrams demonstrate how a sustainable economic system would have few exogenous influences, other than forces of nature (e.g. tornadoes, floods, droughts). Of the two arguably exogenous factors I have included in this description one—time preferences—represents choices made by actors in the system. The second—productivity—consist primarily of changes in technology—also produced by market actors. A sustainable economic system would have a noticeable lack of exogenous influences from violent interventions by government or others.

For anyone still suffering the delusion that we actually have free markets now, let me describe some key distinctions in the structure of a free market.

##### a) Commodity Money

A free market would not have any mechanism that could artificially expand (or contract) the quantity of money. Whatever form of money the market chose to use, no central bank could influence its production. Actors in the market would prevent the use of fractional reserve banking as we know it today. People would simply take their money out of banks that issued any "funny money".

##### b) No Government Spending

A free market would not suffer the plague of the forced redistribution of economic resources—what we kindly refer to as *government spending*<sup>7</sup>. Government would not have the power to shift resources from more-productive uses to less-productive uses as they do today. The coercive power of government would not have a distortive influence on the effective, efficient and adaptive allocation of resource in the economy. Without the ability to "spend," government would also have little incentive to gain the power to control and inflate the currency.

##### c) Savings & Investment

The structure of a free market would contain high levels of savings and capital accumulation, alluded to above. Capital accumulations would occur naturally in the absence of money manipulation and forced redistribution. Because of its importance capital accumulation deserves special mention. In spite of the good work of laborers the health of an economy depends on one thing: **capital**. The hard-working carpenter accomplishes more with a hammer than without. The hard-working farmer produces more with a tractor than without. The hard-working auto-worker produces more cars with a factory than without.

##### d) Economic Value Honored

Economic value represents a fundamentally important element in the structure of any economic system, yet logically flawed theories of value continue to dominate the thinking of influential economists. If you trace the source of value espoused in common theories of economic value, you will eventually reach a

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<sup>7</sup> I have resisted the temptation to use some other phrase to describe what people commonly refer to as government "spending." Government does not spend money. The word spend connotes giving up or sacrificing something you own. Government covers its disbursements by confiscating the private property of its citizens. To avoid confusion I will bow to convention and use the term "government spending."

logical cul-de-sac—a chain of logic with no reasoned end. **Economic value** has a single source: the **subjective preferences of individuals**.

I cannot do the subject of economic value justice in this short paper but I will cover a couple of important points:

*First*, prices do not represent measures of value. A price consists of the ratio of goods exchanged in a transaction in which the actors value what they get more than what they give up. Humans establish prices in voluntary exchange transactions by acting on their values or preferences. Thus, value does not consist of price; value precedes price.

Consider, for example, purchases you have made in which you might have willingly paid \$10 yet you bought the item on sale for \$8. You valued the item more than \$10, because you would have given up the \$10 to have the item; so you cannot measure the value as \$8 on any objective, cardinal, scale.

No economic theory has established an objective unit of measure for value. If objectively recorded prices do not reflect value, what does establish value? Subjective preferences of consumers establish value.<sup>8</sup>

*Second*, individual economic actors determine ordinal—one thing before another—values based on their subjective judgments. The method of making value judgments varies with each individual, and only that individual can make that determination.

The subjective and ordinal nature of value means that people act only on their ranked preferences—one good over or below another. Even the individual cannot place an objective measure on his list of preferences. He can only tell that he prefers one good over another.

The subjective and ordinal nature of value also makes it impossible to calculate value. Even if you could obtain the preference tables of all economic actors you could not calculate a value for an item that appeared on all those tables. Ordinal concepts like *less* and *more* do not have units of measure with which you can calculate. You cannot add the first item to the second item because they have no unit in common.

Not having the ability to calculate the value of economic actors also means that you cannot calculate, ahead of time, market prices of economic goods. Market action alone sets prices within the actors' range of values.

The inability to calculate value and price means that no external force—e.g. government—can determine the best allocation of resources in the market. They cannot establish prices before hand, for only individuals, acting based on their preferences, can establish prices—as a historical measure.

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<sup>8</sup> The subjective theory of value lies at the heart of the economic theory of the Austrian school of economics. It provides the only logically consistent explanation of the source of values in any economic system. I suggest that you explore this concept in depth. Most popular economic theories contain the fatal flaw of not having a logically defensible theory of value.

## D. Summary of a Sustainable System

Barring external influences, sustainable systems exhibit quite stable and balanced behavior. Events remain local and small. System-wide patterns of behavior show minor fluctuations as the patterns of subsystems—individuals and businesses—tend to dampen each other's influence. This seemingly undramatic behavior occurs because of the overall balance in the structure of the system. Reinforcing processes, which make behavior patterns grow, stay in check because of offsetting balancing and limiting processes built into the system.

We should view economic systems as a type of ecological system. They monitor their own behavior and make rapid adjustments at the local level, which contributes to the sustainability of the whole system. Anything that we do to inhibit the natural processes of the economic system will inhibit its sustainability and cause it to suffer patterns of excessive, localized growth, which spreads to the rest of the system, followed by sickness and decline.

After reading the description of what might seem like an idyllic system, you may think either that such a system could not exist or maybe what we have really does not work so well. We will only come to know the viability of the system I have sketched if we try it. We currently have an unsustainable system—subject to repeated booms and busts. I will discuss that system next.

## V. Our Unsustainable System

With a brief description of a sustainable system as a basis of comparison, I will step through the events, patterns of behavior, and systemic structure of our current economic system. To determine the roots of the recent financial crisis we need to know whether it amounted to an anomalous event or if it fits into a pattern of behavior. If this crisis fits into a pattern, what relationships of reinforcing and balancing factors made this event, and the pattern to which it belongs, inevitable?

### A. Events in an Unsustainable System

Prior to the recent crash the history of our economic system included many dramatic economic *events*. "Bubbles" of differing magnitude seemed to occur with regularity. In proximity to "bubbles," our economy experiences crashes—also of varying magnitude. These "bubbles" and "crashes" occur as system-wide events. Around the year 2000 we had the "dot com bubble" and the "dot com crash." Before that, the market crashed in 1987. Throughout our history similar events have occurred many times. Between and during these events individual companies continually succeeded and failed, as one would expect, but these healthy events fade into the background as system-wide failures dominate the news.

The recent market collapse represents a repetition of history—only more dramatic. The significant events surrounding this financial crisis consisted of: 1) real estate loan defaults, 2) a decline in house prices, 3) a drop in stock prices, and 4) a slow-down in auto sales. These events preceded a "crash" in nearly all of the credit markets<sup>9</sup>.

The news headlines contained the names of individual corporations— Lehman Brothers, AIG, IndyMac, Fannie & Freddie Mac, and a number of overseas buyers of U.S. securities—in the reporting of widespread failure, but only because of their importance to the overall system.

These events contain little useful information to enlighten us about the fundamental causes of this crisis; however, media, authors, and legislators have persisted in focusing on these *events*. They seek to place blame. They use terms like: predator, greedy, and incompetent.

I trust others to cover these events in agonizing detail. These events will not, however, provide relevant answers as to the roots of this crisis. Patterns of behavior will also not give us all the answers we seek, but they will give us some clues as to where we should look.

### B. Patterns of Behavior in an Unsustainable System

To gain some understanding of what happened before crisis we need to look at the patterns of behavior preceding the crisis. We cannot go back in time to relive these events, but we can look at the charts of certain patterns of behavior in various segments of the economy before the crash. After that we can look at how those patterns changed after the crash.

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<sup>9</sup> The term "credit markets" refers to all markets in which investors buy the liabilities of entities that have borrowed money. Banks buy the liabilities of their borrowers in return for the liabilities of other banks, i.e. "deposits" with other banks. These bank liabilities (a.k.a. "deposits") amount to a form of money.

## 1. Before the Crash

I will show 7 charts to provide some idea of the behavior of the system before the crash: 1) Nominal Gross Domestic Product (GDP); 2) Real Estate Loans; 3) House prices; 4) Stock Market Index; 5) Bank Deposits; 6) Money Supply; 7) Money Supply & Interest Rates. Certainly I could have chosen other (or more) indicators, but I think these will make my point about looking at patterns of behavior.

*Note:* The following chart represents data on a semi-log scale. That means that the distance on the vertical axis that represents a 10X increase remains the same with all values, e.g. a change from 10 to 100 has the same distance as a change from 1,000 to 10,000. Using this logarithmic scale on the vertical axis makes the slope of the line equal to the rate of growth. With this type of scale, an 8% increase in early years (on a smaller base) has the same slope as an 8% increase in later years (on a larger base). I have used the semi-log scale throughout this paper where appropriate.

**a) Nominal<sup>10</sup> GDP**

The general economy, depicted in terms of Gross Domestic Product (GDP), provides the backdrop for the system before this collapse. It should give us some idea of the health of the economy in which this crisis occurred.

Figure 5. U. S. Annual Gross Domestic Product provides little definitive evidence of general economic weakness that would precipitate this crash. The repeated up and down cycles fade within this time perspective. Although the 2000 decline threw GDP off its trend line, it returned to the same upward slope thereafter. A slight slowing in the general trend of GDP growth became evident after 2000, but what does that tell us? Did it foretell the crash?

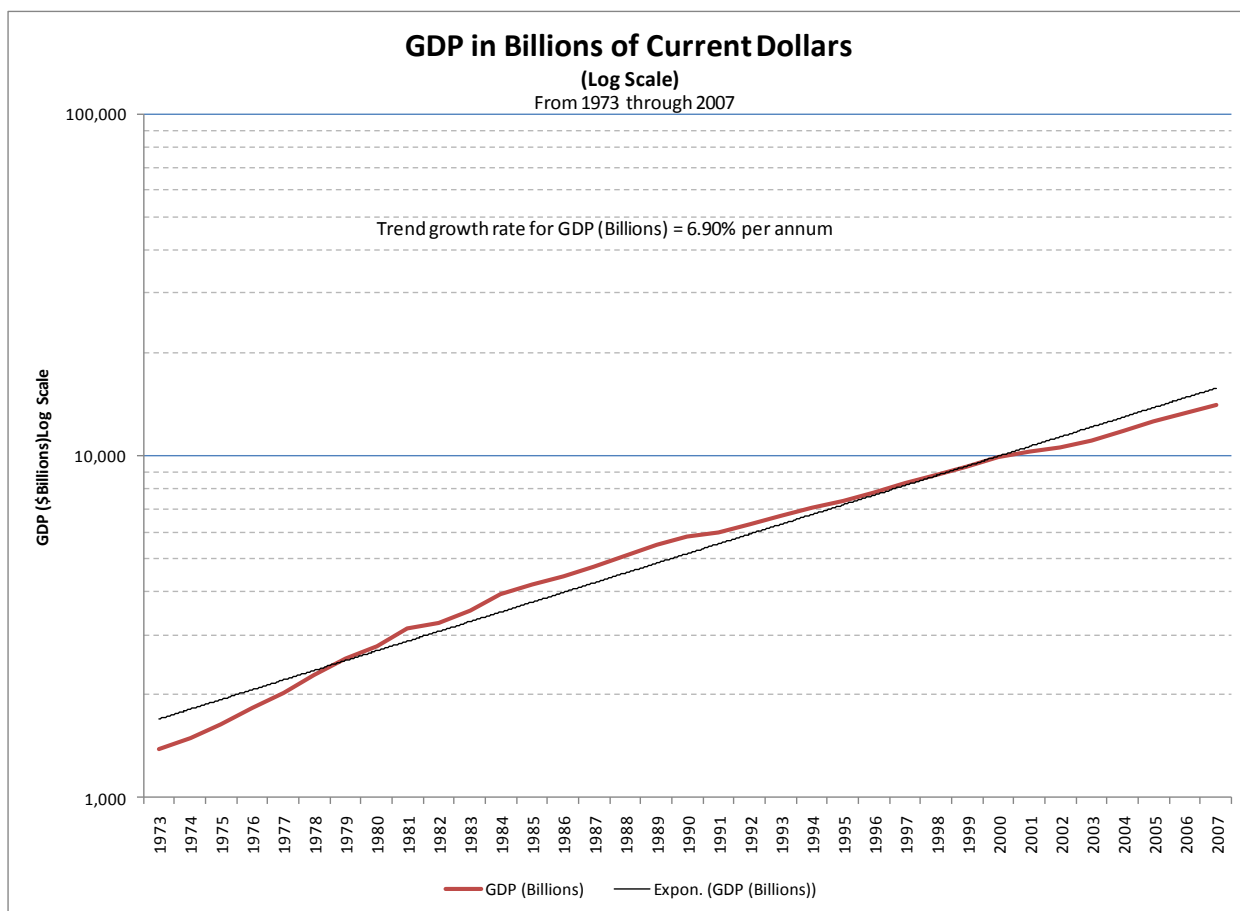


FIGURE 5. U. S. ANNUAL GROSS DOMESTIC PRODUCT (BUREAU OF ECONOMIC ANALYSIS: NATIONAL ECONOMIC ACCOUNTS, 2010)<sup>11</sup>

<sup>10</sup> I have presented charts of “nominal” data wherever I could find it. (Also see note 11.)

<sup>11</sup> I have presented current dollar GDP here because I believe that “inflation adjusted” figures give a flawed measure of economic activity. Using a dollar based index to adjust a dollar based measure amounts to making a circular adjustment of adjustments. Current dollar GDP has its own flaws. Economic activity can appear to increase simply because of monetary expansion. See my own adjustment in the appendix on page 75.

**b) Real Estate Loans**

Real estate lending played a significant role in this financial crisis. But, did it cause the crash or did it become a victim of it?

In Figure 6 I have presented the volume of real estate loans at commercial banks in comparison to some other categories of loans. You can see that real estate loans have grown faster than any other loan categories in commercial bank loan portfolios. Around 1988 real estate lending surpassed the historical mainstay of commercial banks—commercial and industrial loans.

The volume of real estate loans grew steadily at about 9.7% per annum. Although the trends seems fairly steady, the combined facts that real estate lending grew faster than GDP and commercial and industrial loans grew unsteadily at about 5.7%—less than GDP—should raise some questions about the influence of the relative flows of loan funds.

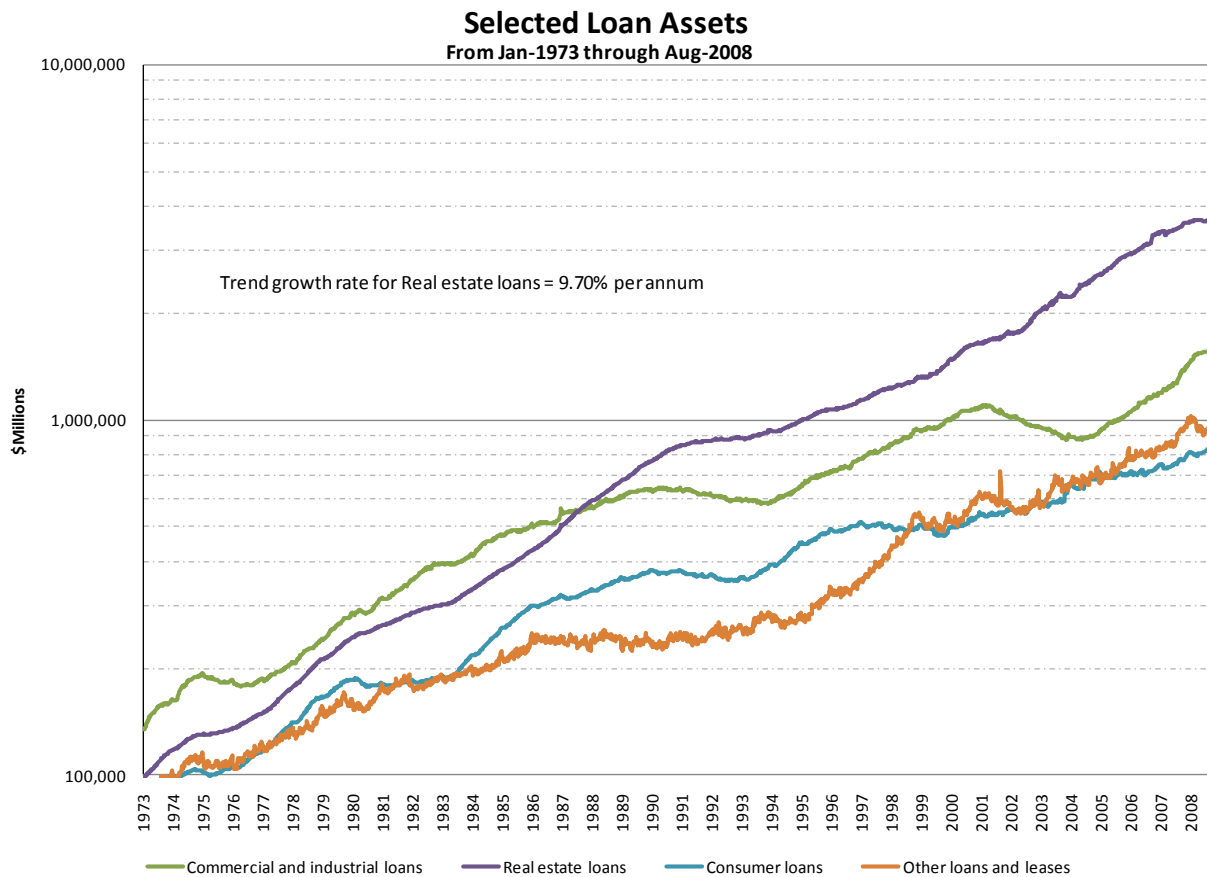


FIGURE 6 - SELECTED BANK LOAN ASSETS (DATA DOWNLOAD H.8, 2010)



**c) House Prices**

Supported by the steady rise in real estate loans, house prices climbed continually throughout the same period (1973 through mid 2008). I will discuss later the connection between real estate loan volume and house prices. Some authors have pointed out that prices rose far faster in some segments of the market than in others. They contend that these localized patterns precipitated the market decline. Although localized price distortions did in fact happen, that fact does not explain the reasons for a generalized crash.

You can see from Figure 7 that house prices (given as an index), after accelerating for nearly a decade (from 1996), began to decline between 2006 and 2007. Also, notice the correlation between the increase in house prices and the growth in the supply of money. They have both traced upward paths, although money has grown faster. I have included the growth rate of population in a box in the upper left hand corner. Some think this acts as a driver for house prices, but logic dictates that more people in a system does not act as a driver of real estate prices. With a fixed quantity of money, house prices would not necessarily rise. More people would have to divide up the same quantity of money.

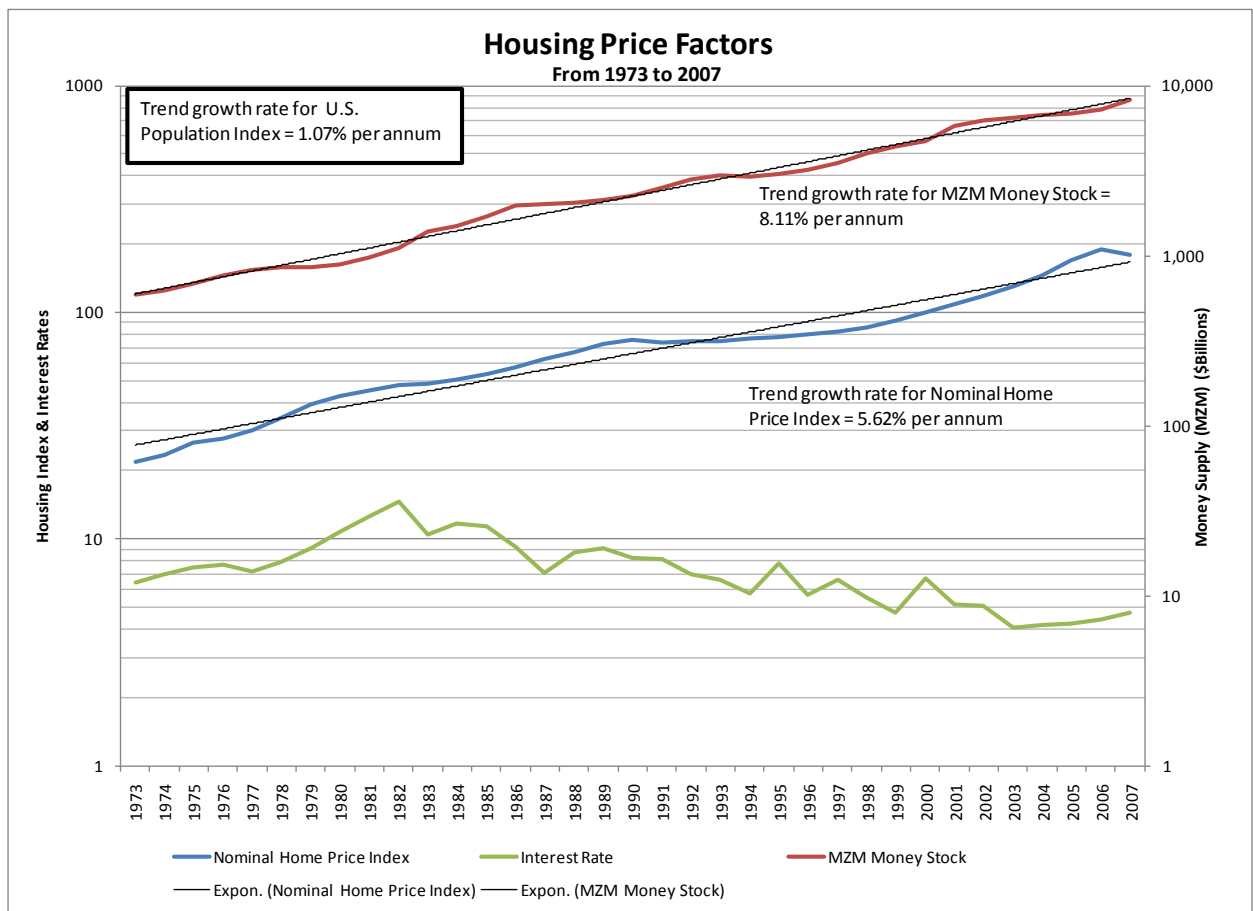


FIGURE 7. HOUSING PRICE FACTORS (1973 TO 2007) — (SHILLER, 2010)<sup>12</sup>

<sup>12</sup> Data for Figure 2.1 in Robert J. Shiller, Irrational Exuberance, 2nd. Edition, Princeton University Press, 2005, 2009, Broadway Books 2006, also Subprime Solution, 2008, as updated by Robert Shiller. (Presentation modified by this author.)

**d) Stock Market**

From 1973 through August 2008 the stock market also followed a general pattern of ever increasing prices. Although prices fell from above their trend levels in 2000, they returned to their historical trend until they began to drift lower at the end of 2007.

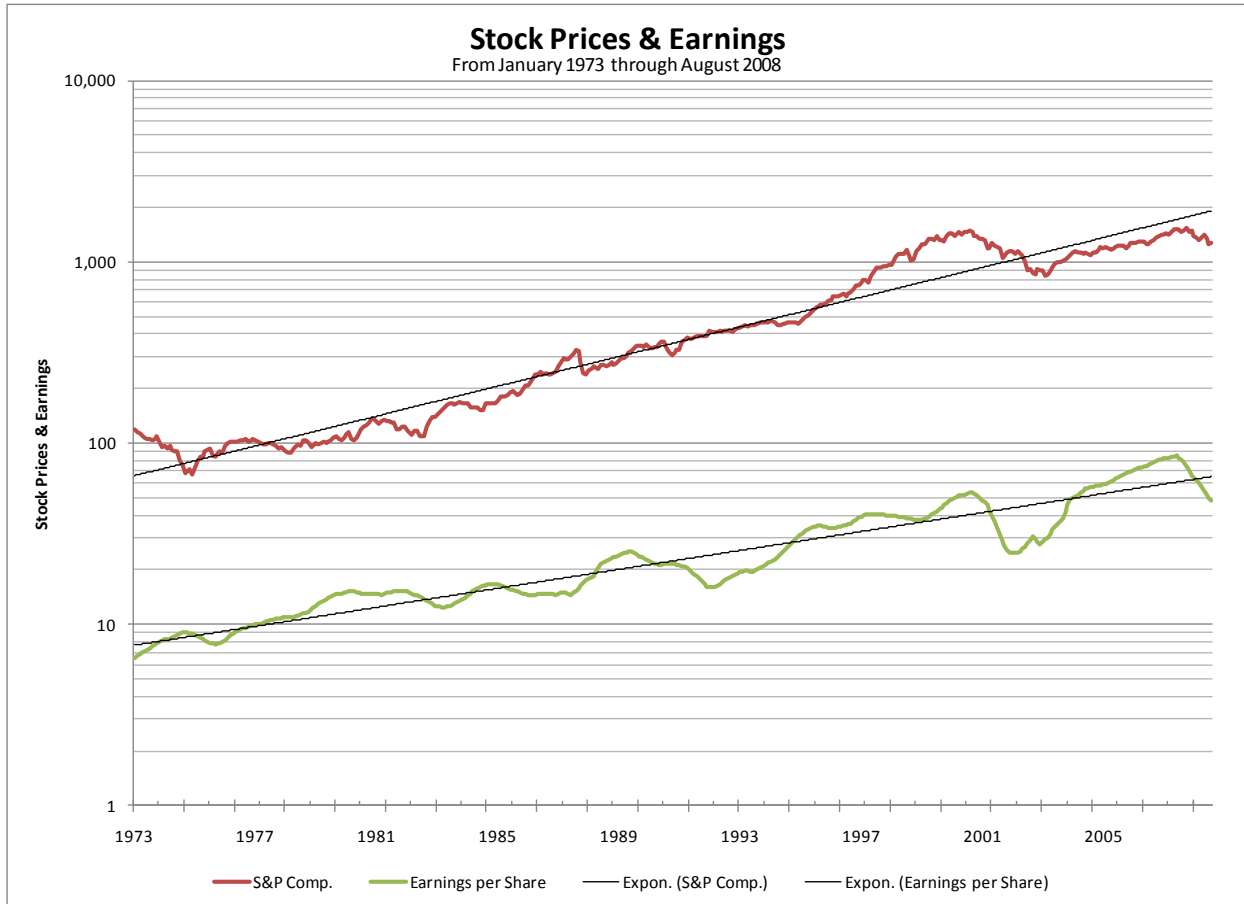


FIGURE 8. STOCK PRICES & EARNINGS (SHILLER, 2010)<sup>13</sup>

<sup>13</sup> Ibid.

**e) Bank Deposits**

In a system in which real estate loans presumably play such an important role, it only makes sense to look at some of the important patterns in the major source of funding for those loans: bank deposits.

The Figure 9 shows three sets of data related to bank deposits—total bank deposits, transaction accounts, and reserve requirements:

First, the total bank deposits grew steadily at about 6.3% per annum from 1973 through August 2008.

Second, transaction accounts, for that same period, grew overall at about 3.6% per annum. And notice that transaction deposits actually declined from the early 1990s through 2008. The difference between total deposits and transaction deposits equals non-transaction accounts (or time deposits). The divergence in the growth of transaction and non-transaction accounts indicates a shift in the makeup of total deposits toward a significantly larger percentage of non-transaction accounts.

Finally, I have placed markers for the significant changes in the reserve requirement ratios. The green squares show reserve requirement ratios for transaction accounts, and the purple diamonds show reserve requirement ratios for non-transaction accounts. (Because of the complexity of reserve requirements before the last few changes, I have shown only the highest rates at the point of changes in reserve requirement ratios. For a complete listing of reserve requirements see History of Bank Reserve Requirements on page 79.) Notice the steady decline in the ratios over this period.

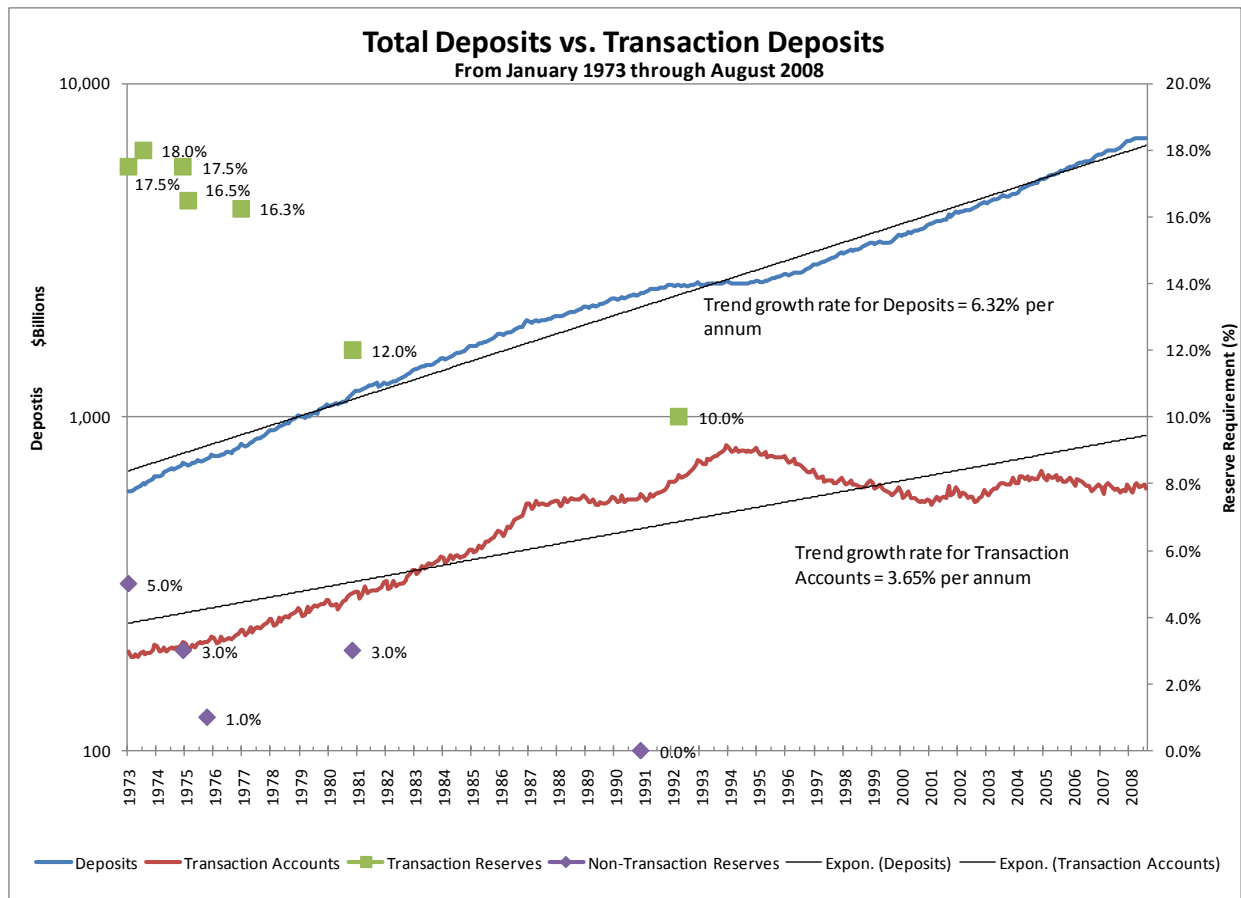


FIGURE 9. TOTAL BANK DEPOSITS VS. TRANSACTION DEPOSITS (DATA DOWNLOAD H.8, 2010) (STATISTICAL RELEASE TABLE 4, 2010) & (JOSHUA N. FEINMAN, 1993)

**f) Money Supply**

We want to find the roots of a rise and fall in significant money price levels throughout the economy. Since all these prices have only one common variable: money, we have no hope of understanding what happened without looking closely at the quantity of money in the system.

During this period the money supply (as measured by Money Zero Maturity (MZM)) continued the pattern of growth that it began at least 35 years before. Money grew for this whole period at approximately 7.5% per annum in an economy which registered nominal "growth" of about 6.7% per annum. (See the components of MZM and other Monetary Aggregates in the Appendix.)

In our banking system the quantity of bank reserves allegedly plays a crucial role in influencing the quantity of money. I have included in this chart the levels of actual and required bank reserves. Except for the spike in actual reserves after the September 11, 2001 attacks, actual and required reserves remain nearly indistinguishable for this period (from 1973 through August 2008). Notice that bank reserves grew hardly at all during a period in which the money supply grew steadily.

This chart raises two questions. What role did money growth play in creating the real estate/securities bubble? And, why did money grow far faster than bank reserves? What role does the Fed really play?

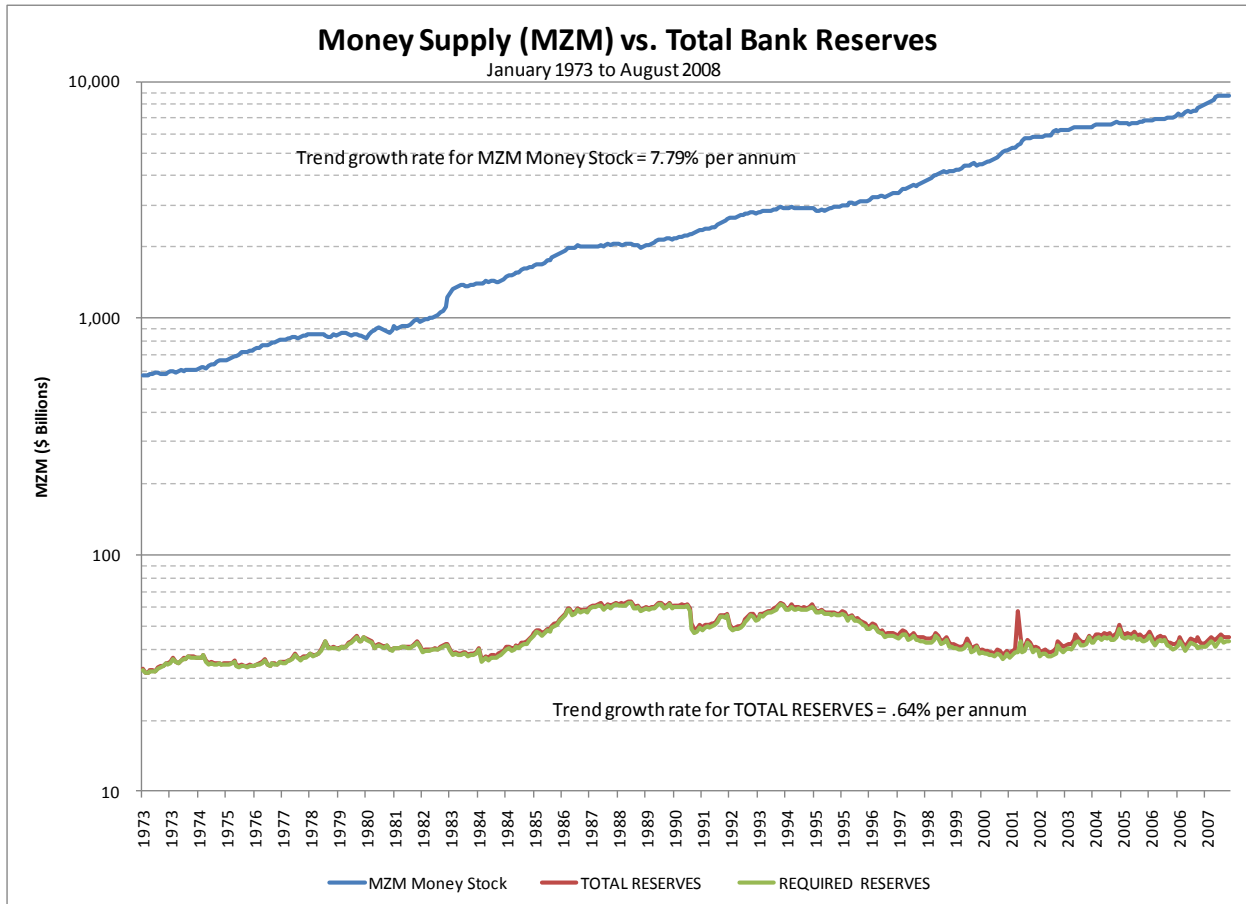


FIGURE 10. MONEY SUPPLY & BANK RESERVES (MONETARY AGGREGATES, 2010) AND (DATA DOWNLOAD H.3, 2010)

**g) Money Supply & Interest Rates**

Many commentators, when speaking of "loose" money, refer only to interest rates. For that reason I felt compelled to include a comparison between the pattern of interest rates and the pattern of the supply of money.

In Figure 11 I have juxtaposed the patterns of monetary growth and interest rates. In order to keep the chart readable, I have selected two closely watched interest rates, from the myriad of market rates: 30 year mortgage interest and effective Fed funds rate.

The money supply and interest rates seem to march to the beat of different drummers. The quantity of money has generally grown steadily during a period of rising and falling rates. We will need to look at structure to determine why only a weak correlation seems to exist in the short-term between the steady growth of money and the rise and fall of interest rates.

This chart should raise two important questions. First, do Fed funds rates lead or follow the market? Second, what influence does the Fed really have on this and other market interest rates?

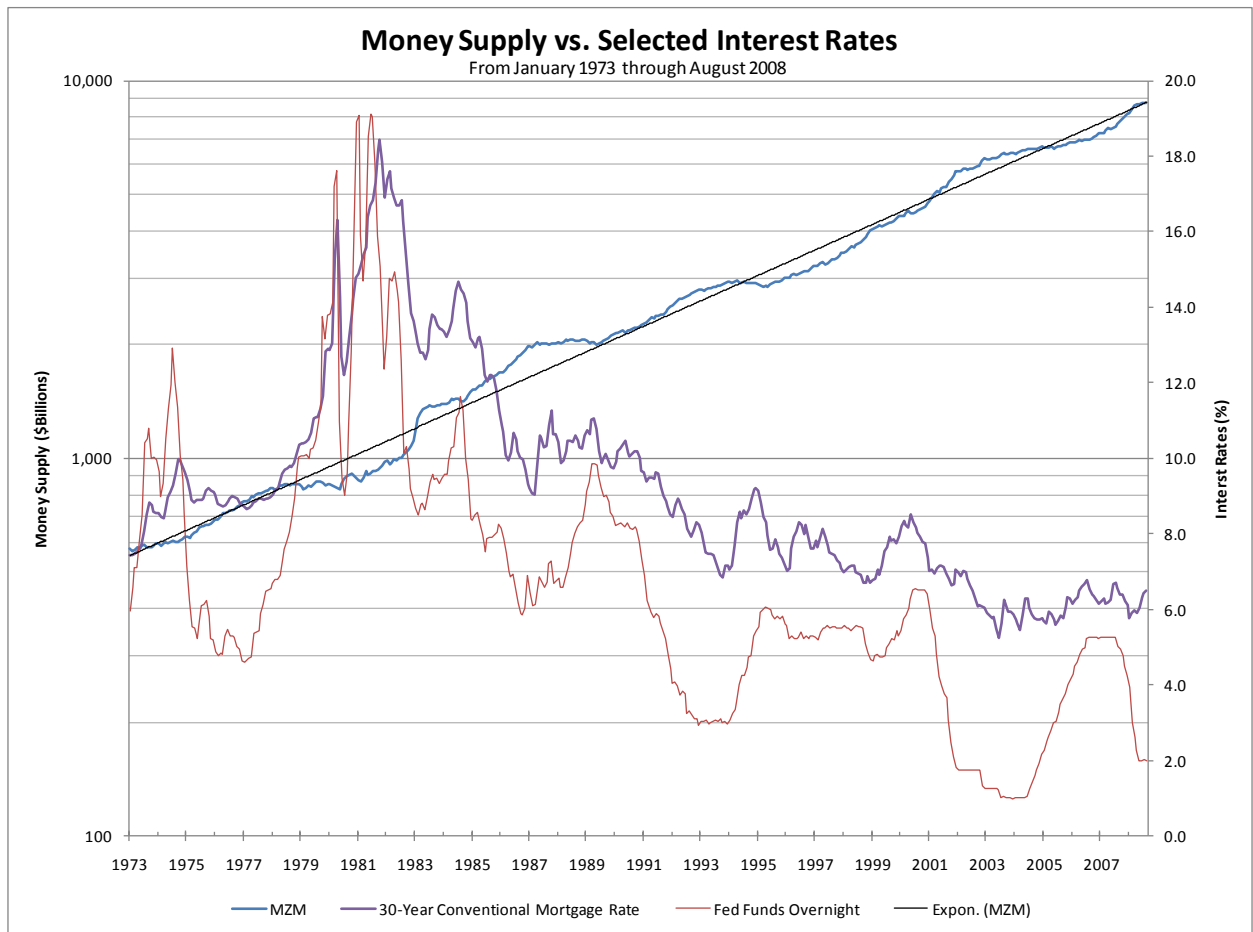


FIGURE 11. MONEY SUPPLY & SELECTED INTEREST RATES (MONETARY AGGREGATES, 2010) & (INTEREST RATES, 2010)

## 2. The Collapse: A Cascade of Failure

Like most crashes, few people saw this one coming. I have shown a few of the patterns that existed prior to the collapse. Rising GDP, rising house prices, rising stock prices, expanding bank loan volume, and other patterns seemed to indicate a rosy recent past, a rosy present, and a rosy future. The patterns that people saw at that time gave little indication of what would follow.

Now, let's look at how those patterns changed after August 2008. I will continue our look at the patterns of behavior surrounding the financial crisis by extending the time period of the same 7 charts that I shared with you above to roughly February 2010. I will limit my narrative to pointing out significant changes from the previous cut-off (August 2008).

### a) Nominal GDP

As we would expect, GDP in current dollars tipped over and declined since August 2008.

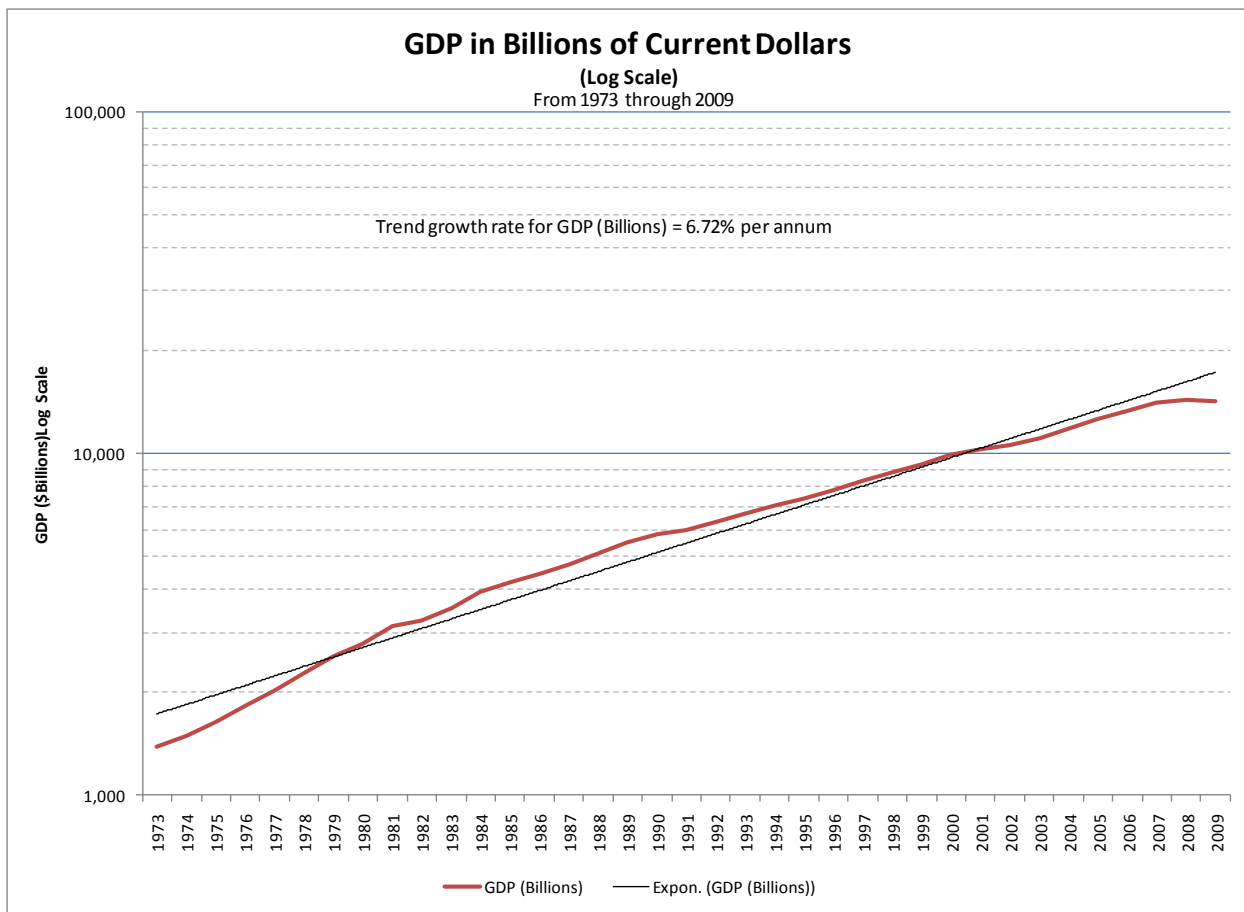


FIGURE 12. GDP IN CURRENT DOLLARS (1973 THRU 2009) (BUREAU OF ECONOMIC ANALYSIS: NATIONAL ECONOMIC ACCOUNTS, 2010)

**b) Real Estate Loans**

Again as you would expect, real estate loans have declined since the crisis. To maintain perspective, you should notice that other forms of bank loans have taken a much bigger hit. The volume of commercial, industrial, and other loans have decline significantly. In none of the periods on this chart have all loan categories decline so precipitously and in such coordination.

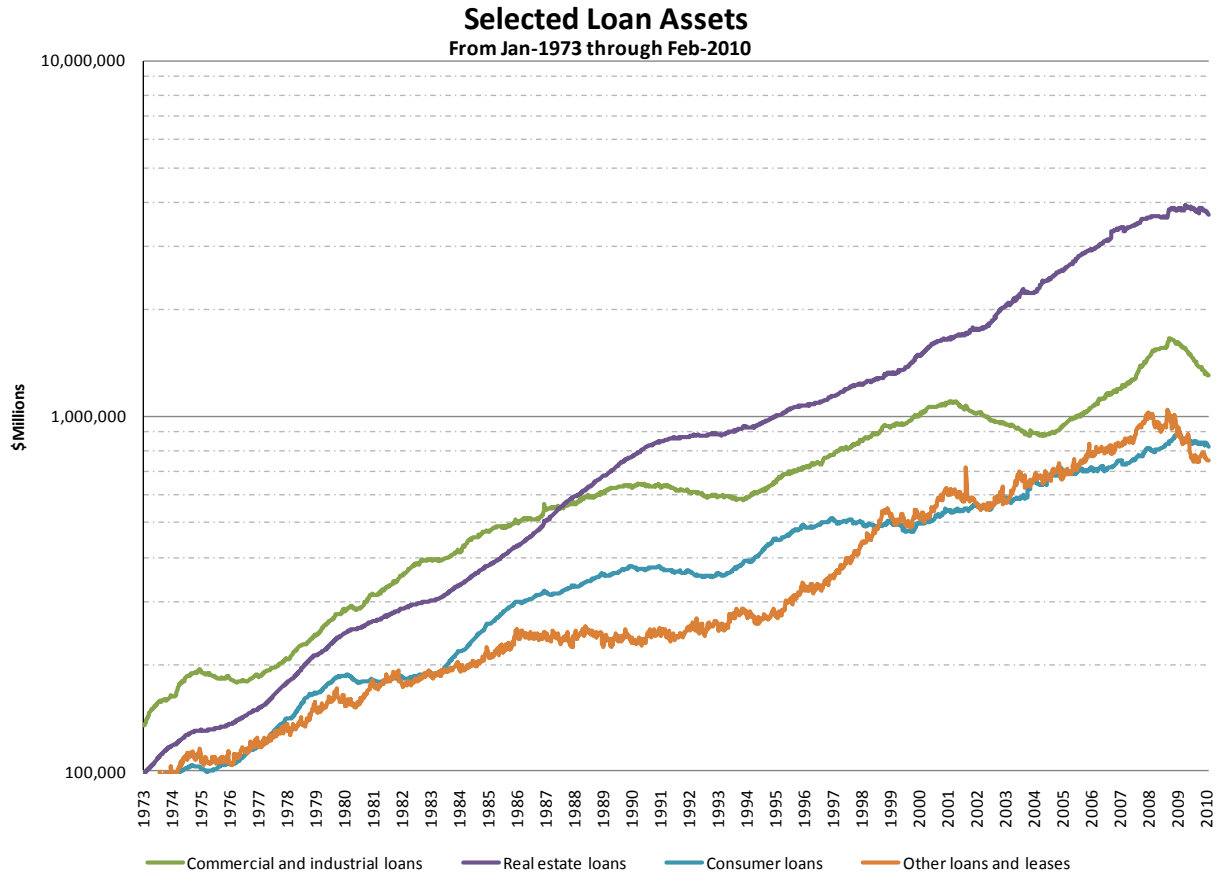


FIGURE 13. SELECTED BANK LOAN ASSETS (1973 THRU FEB. 2010) (DATA DOWNLOAD H.8, 2010)

**c) House Prices**

House prices have, over the last couple of years, suffered the biggest decline during the entire period shown on this chart. According to the source of this data, the only other significant decline in house prices occurred in the early 1930s.

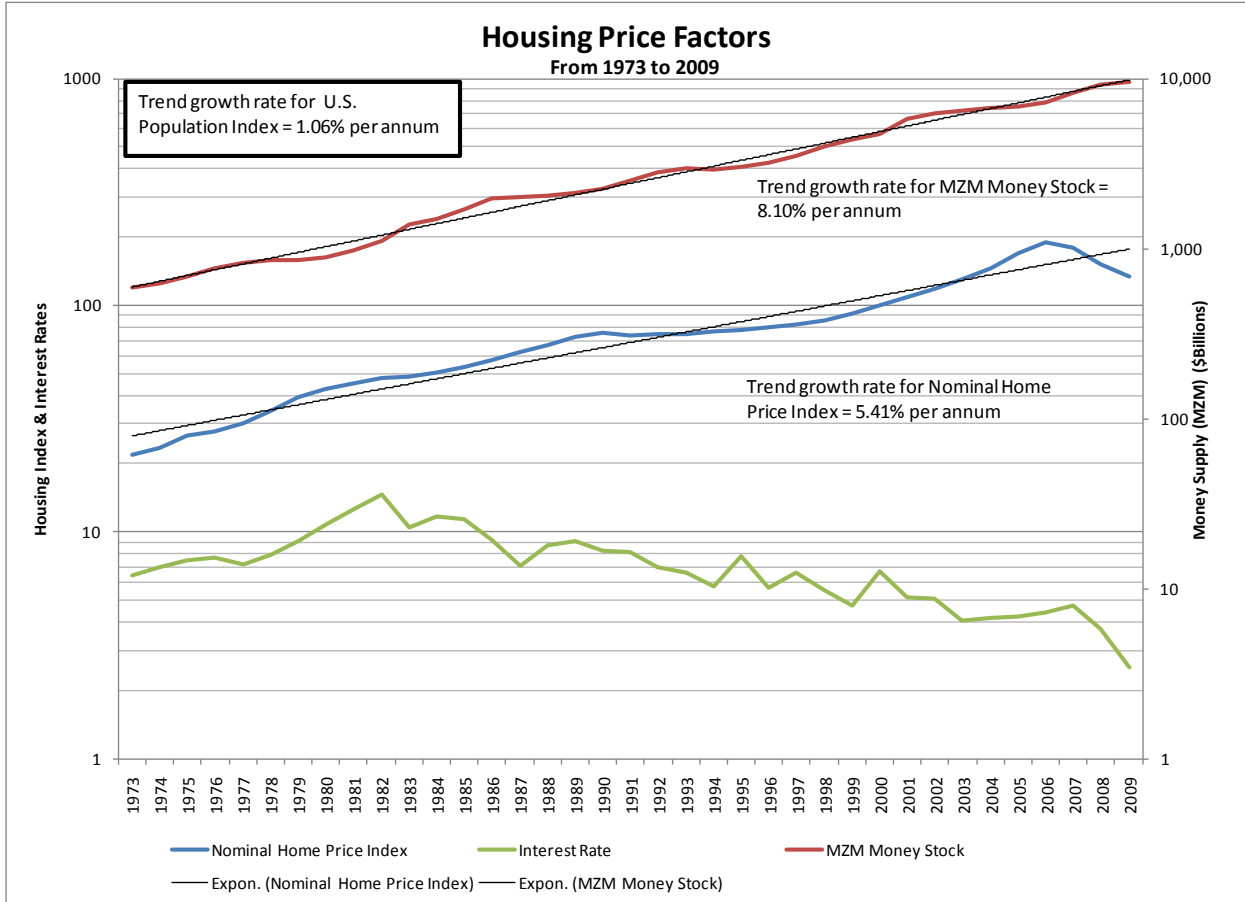


FIGURE 14. HOUSING PRICE FACTORS (1973 THRU 2009) (SHILLER, 2010)



**d) Stock Market**

Stock prices suffered their biggest percentage decline since the early 1970s. The sudden recovery in both prices and earnings in this generalized index raise some significant questions about which specific sectors of the market experienced the largest declines. The chart also raises questions about the accuracy of reported earnings (a topic beyond the scope of this paper.)

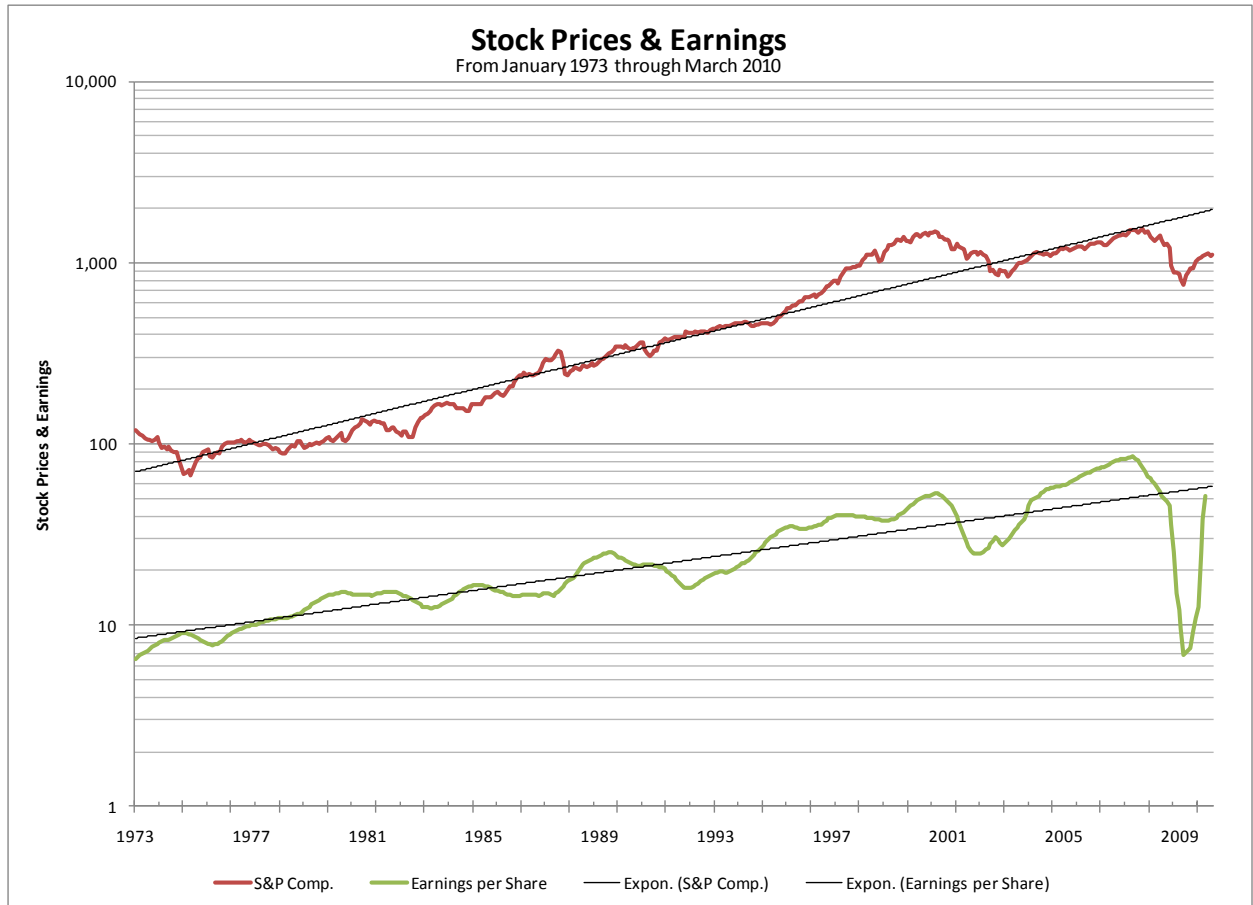


FIGURE 15. STOCK PRICES & EARNINGS (SHILLER, 2010)

e) Bank Deposits

Total bank deposits have continued to grow since the crash, but an important shift has occurred in the makeup of those deposits. The level of transaction accounts has surged dramatically upward. This means the non-transaction accounts have had an offsetting decline.

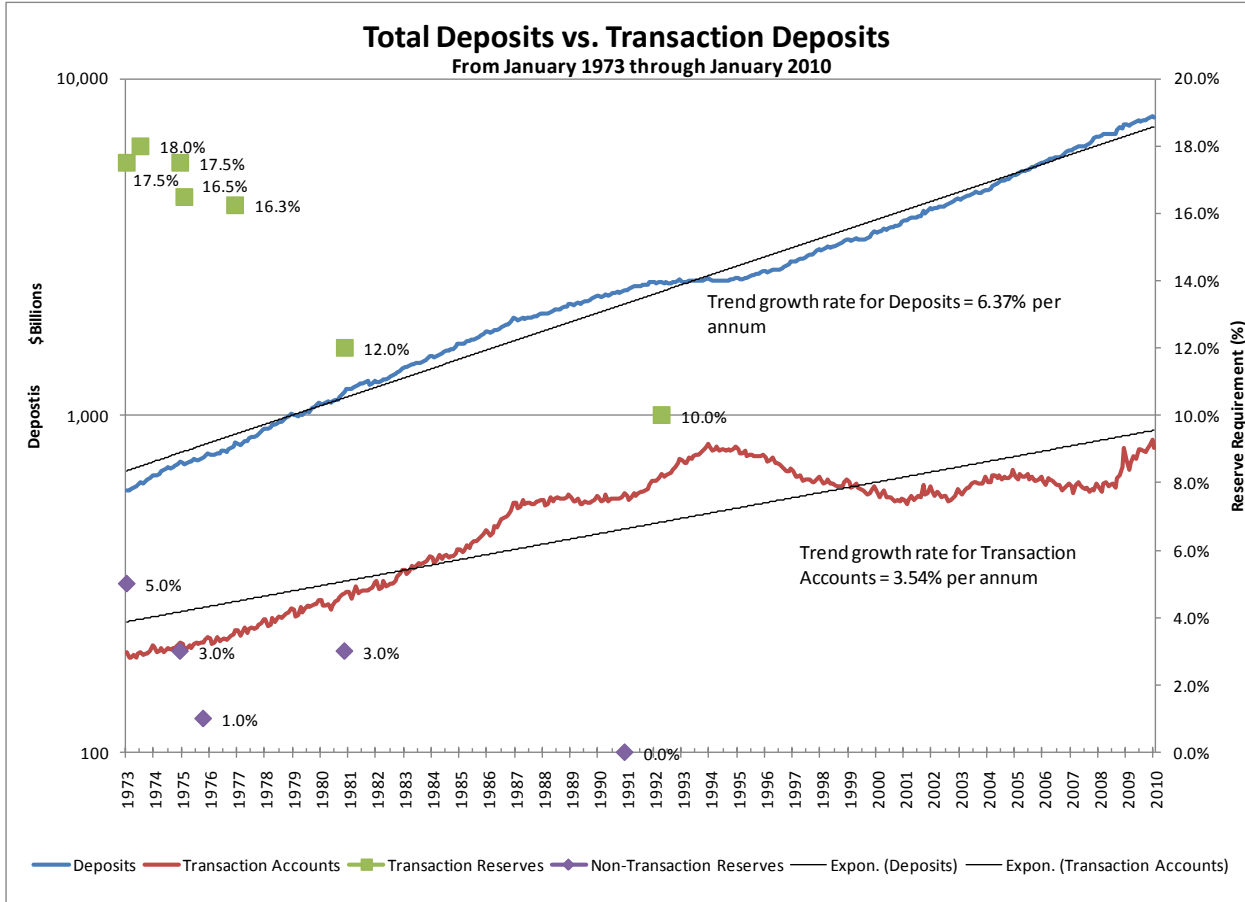


FIGURE 16. BANK DEPOSITS (JAN. 1973 THROUGH JAN. 2010) (DATA DOWNLOAD H.8, 2010) (STATISTICAL RELEASE TABLE 4, 2010) & (JOSHUA N. FEINMAN, 1993)

**f) Money Supply**

You have to look closely to see the slight flattening in the growth trend of the quantity of money. This has significance in relation to the huge spike in actual bank reserves. Conventional wisdom would expect that the extreme increase in reserves would cause the supply of money to jump as well. Why not?

If the Fed’s purchase of a whole new set of assets does not significantly increase the quantity of money, what does that indicate about its influence on the money supply and interest rates?

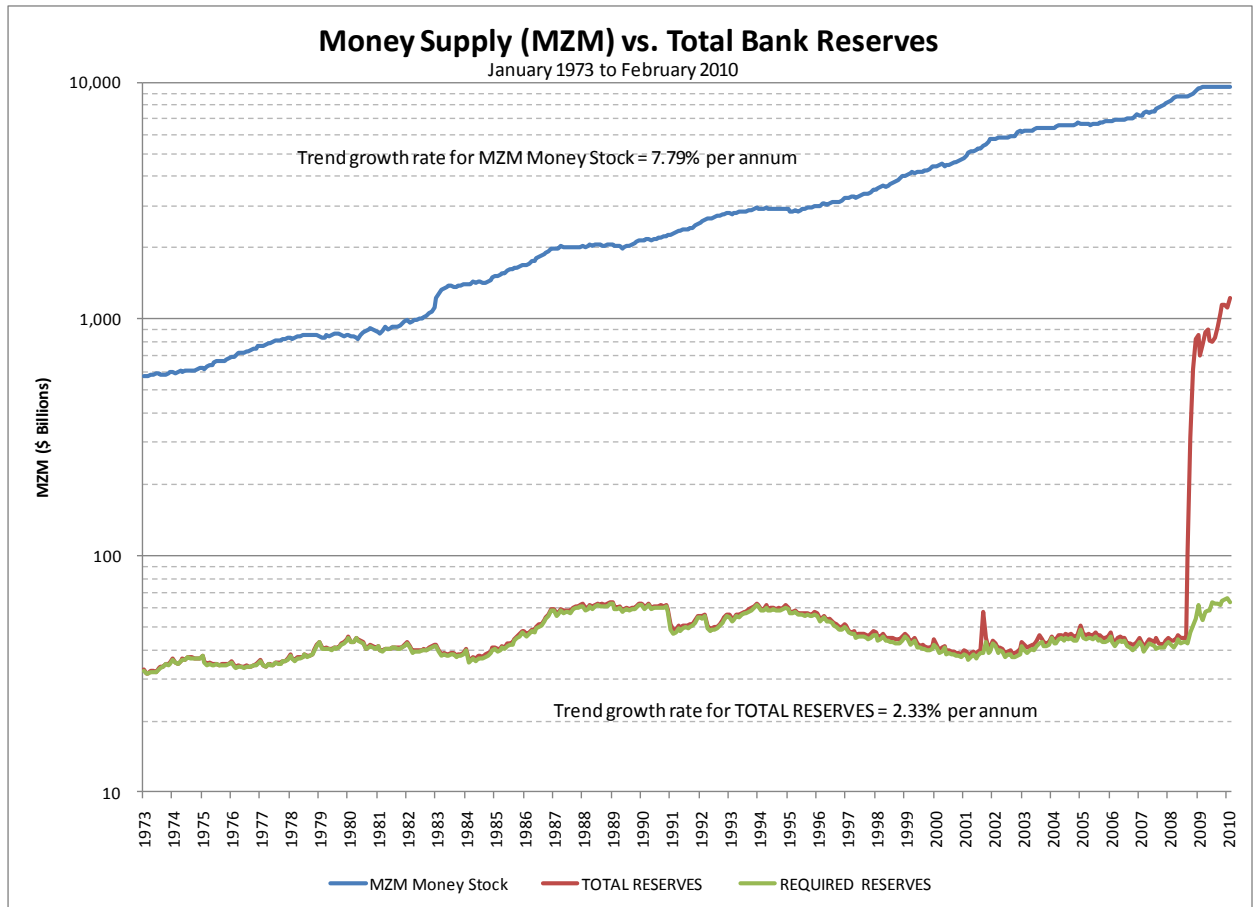


FIGURE 17. MONEY SUPPLY & BANK RESERVES (JAN 1975 THROUGH FEB 2010) (MONETARY AGGREGATES, 2010) AND (DATA DOWNLOAD H.3, 2010)

### g) Money Supply & Interest Rates

The quantity of money has flattened out somewhat while interest rates have declined rather significantly. Do both of these simply signal the unwillingness of people and businesses to borrow? Does it indicate the impotence of the Federal Reserve?

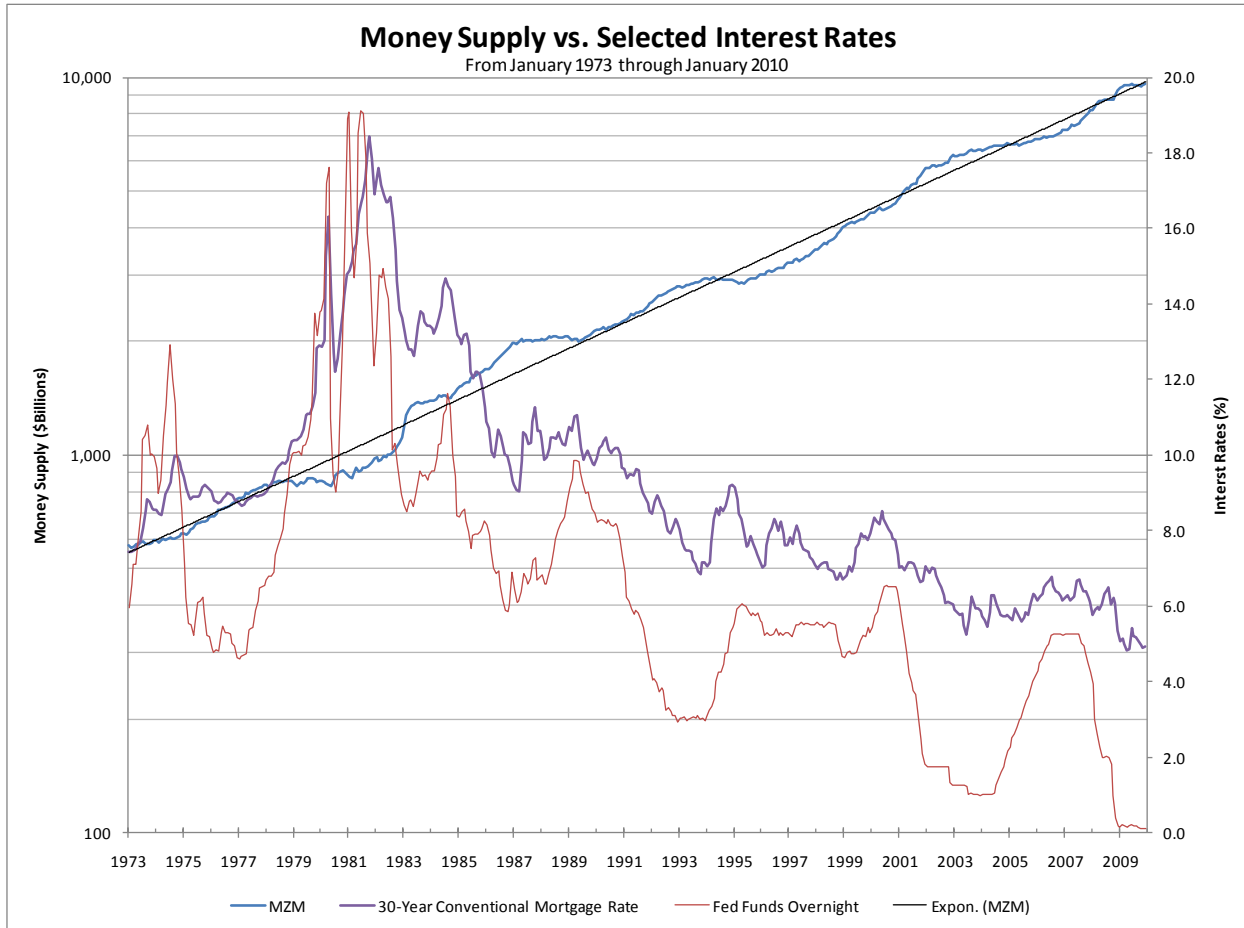


FIGURE 18. MONEY SUPPLY & SELECTED INTEREST RATES (JAN 1973 THROUGH JAN 2010) (MONETARY AGGREGATES, 2010) & (INTEREST RATES, 2010)

### 3. Summary of Patterns of Behavior in Our Unsustainable System

Before the financial crisis, the major patterns in economic and market data reflect three related patterns that point toward the roots of the crisis: 1) the prices of houses surged dramatically—rising at an unprecedented rate, 2) the dollar volume of real estate loans at banks also surged during this period, while commercial and industrial loans lagged, and 3) the quantity of money continued to grow steadily along the path established in the 1970s. But, we can only see these as indications of an impending crash in retrospect. As I mentioned above in "The Collapse: A Cascade of Failure" no one could see this one coming.

During and after the crisis the major patterns for economic data, for the most part, declined. Statistically and anecdotally the economy suffered a depression.

But, none of these patterns (or patterns I have not included) tell us why the real estate market entered an unsustainable boom, nor why a wide-spread market and economic crash occurred. To find the answer to that question we must dig one level deeper. We must look at the structure of the unsustainable economic system.

## C. Systemic Structure of Our Unsustainable System

The structure of the U.S. Economy contains the same reinforcing and balancing loops as a sustainable structure. But, in addition to these processes it must deal with some specific exogenous influences that make the system unsustainable. Those exogenous influences consist of the persistent government intervention, which interferes with the system's natural balancing mechanisms.

That intervention tends to increase the impact of politically selected reinforcing factors present in the economy. In such an unhealthy, or over stimulated system, selected segments of the system will grow to unsustainable levels. Distorted stimulation created the pattern of statistical growth evidenced by the first set of behavior patterns that I discussed above.

But, the imbalances created by artificial, distorted, stimulus only delay the effect of the balancing processes. They do not eliminate them. At some point the balancing/limiting factors exerted their influence. This shift in power, in a system so far out of balance, caused the reinforcing processes to reverse their influence causing the economic system to crash.

And this pattern of boom and bust has recurred over and over.

I will continue my general description of the economic system using causal loops. But, in the following description I will include the exogenous factors of government intervention. Then, below this general description, I will describe some of the more specific details of those interventions.

### 1. Violent Intervention and The Unsustainable Structure

I demonstrated in the section titled "Systemic Structure—A Sustainable Economic System" on page 5 that a sustainable, free, market contains both reinforcing and balancing processes. Under normal circumstances the reinforcing processes tend to make the economy grow and the balancing processes prevent that growth from becoming pathological. But politicians get elected for doing things that people think will make the economy stronger. As a result their violent interventions tend to support the reinforcing factors that create growth.

The balancing processes still exist in the economy and the more problematic the growth factors become the more strength they gain. Eventually the balancing processes slow, or even reverse, the growth process, which causes either a slowdown or a recession.

In the next insertion I use causal loops again to describe how the interference of government causes the problem of pathological growth. You can see for yourself how the balancing processes work against that intervention.

Following the insertion I will describe in more detail the relationship of reinforcing and balancing processes to the government's violent interventions.

# Violent Intervention and The Unsustainable Structure

The unsustainable system has a different structure than the sustainable system that I described before. It does, however, have many of the same components. I will, therefore, limit my description of this causal loop diagram to those factors that either do not exist in the sustainable system or that change in the structure of the unsustainable system.

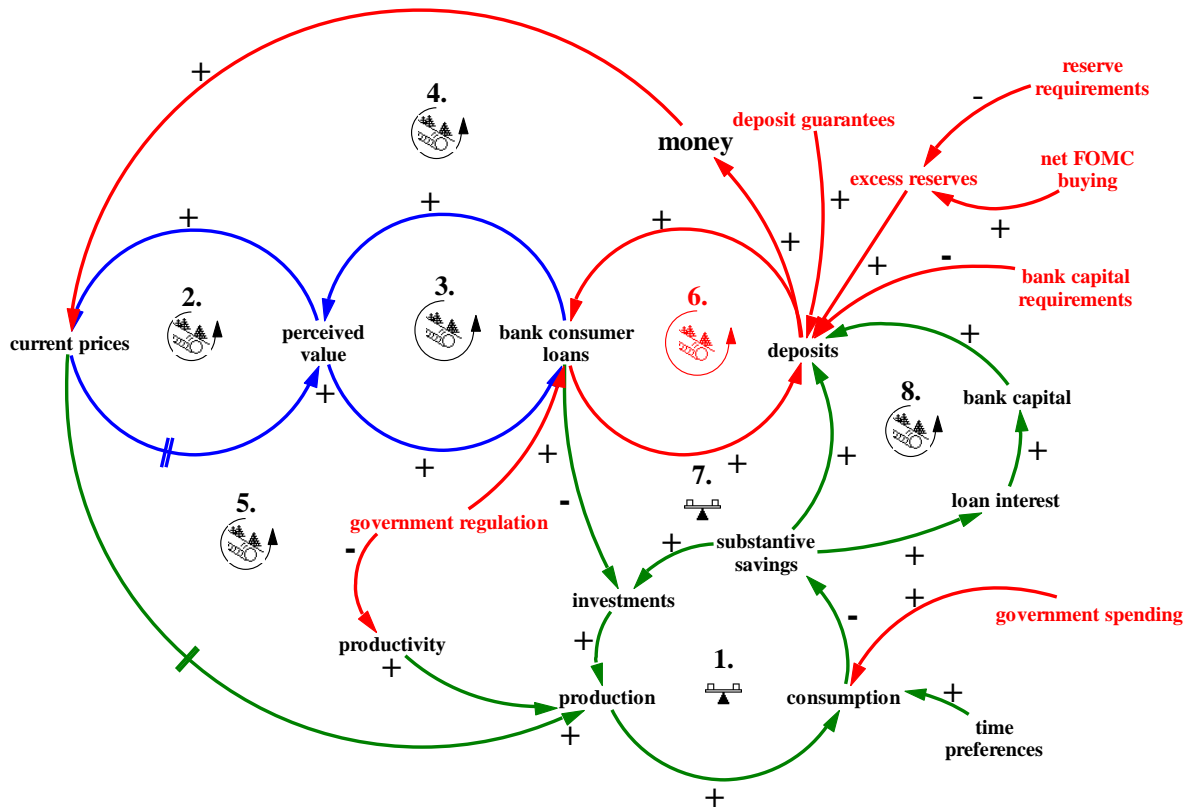


FIGURE 19. REINFORCING & BALANCING LOOPS WITH INTERVENTION

Before I continue I should point out that I have replaced the factors demand deposits and time deposits with a single factor: *deposits*. I will explain that change in sequence in the section on Monetary Inflation Factors. I have broken the description of these factors of intervention into three main categories—Government Regulation Factors, Government Spending Factors, and Monetary Inflation Factors.

## a) Government Regulation Factors

The single factor of *government regulation* has two separate influences on existing factors in these causal loops. First, *government regulation* tends to cause *bank consumer loans* to

increase—particularly loans for real estate. In the interest of helping consumers buy houses and things *government regulation* coaxes, or forces, banks to make specific types of consumer loans. Second, *government regulation* creates a general drag on economic *productivity*. Even with the best intentions, *government regulation* has negative effects because it gets applied too quickly or too broadly.

### b) Government Spending Factors

In general *government spending* consists of one of the most harmful influences on the economy. Since the government produces nothing and has no resources of its own, its spending amounts to forced *consumption* on the part of its citizens. No one can quantify the exact impact of the massive misallocation of resources caused by *government spending* on real estate and other consumer purchases, but normal market interactions spread the scope of influence of government “spending”. E.g. workers on a massive government project have additional income that they can spend on housing, but, at the same time, some private worker does not get the pay increase that he might have gotten, if the government had not confiscated his boss’ income.

### c) Monetary Inflation Factors

I have shown one of the major effects of government intervention by collapsing *demand deposits* and *time deposits*—shown separately in previous diagrams— into a single factor, *deposits*. Government intervention has destroyed a major distinction between *demand deposits* and *time deposits*. Money held in time accounts has become nearly as accessible as demand accounts. As a result, they now act as a part of the supply of money.

The lost distinction between demand and time deposits, coupled with the dynamics of the fractional reserve banking system, has made *deposits* a powerful positive influence on *bank consumer loans*. As *deposits* rise (fall), so will the capability of banks to make consumer (and other) loans. Bank *deposits*, which play the role of money, have an indirect positive influence on *current prices*. (I will discuss the lost distinction between time and demand deposits and the fractional reserve banking system in more detail below.)

In the fractional reserve banking system changes in the level of *excess reserves* have a positive influence on changes in the level of *deposits* in banks. As *excess reserves* rise (fall), the capacity of banks to carry *deposits* rises (falls). With that change in capacity the level of *deposits* in banks will tend to increase (decrease). The changes in two other factors influence changes in *excess reserves*—*net FOMC buying* and *reserve requirements*.

First, *net FOMC buying* (the net dollar amount of securities bought—a negative amount in the case of net sales—by the open market operations of the Fed) has a positive influence on *excess reserves*. When the Fed buys (sells) securities, *excess reserves* will increase (decrease).

Second, changes in *reserve requirements* have a negative influence on *excess reserves*. Lowering (raising) *reserve requirements* will increase (decrease) the level of *excess reserves*.

*Deposit guarantees* also have a positive influence on the level of *deposits*. Government guarantees—either expressed or implied—make customers more confident about accepting deposit liabilities from banks and banks more confident about issuing them.

Finally, *bank capital requirements* have a negative relationship with *deposits*. Higher *bank capital requirements* reduce the level of bank *deposits*, and vice versa.

The addition to these exogenous interventions has created a significant change in the loop that I have designated with the number 6.

#6. *deposits* → *bank consumer loans* – Reinforcing Loop

The collapse in the distinction between demand and time deposits combined with the effects of *deposit guarantees*, *excess reserves*, and low *bank capital requirements* have changed the naturally balancing loop—*time deposits* → *demand deposits* and *bank consumer loans*—into a problematic reinforcing loop. This has the effect of reducing to near zero the limits on the capability of banks to expand deposits, create new *money*, and contribute, indirectly, to the rise in current prices.

The existence of this reinforcing process represents a critical difference between a sustainable system and the unsustainable system that led to the financial crisis.

The diagram in Figure 19. Reinforcing & Balancing Loops with Intervention (above) and the text below, describe the dynamic relationship of the factors in the unsustainable U. S. Economic system. Below I will give more detail about some of the specific factors.



## 2. Reinforcing Processes and Intervention

The structure of a sustainable system has three key elements: 1) little or no government regulation, 2) little or no government spending, and 3) a fixed quantity of money. The structure of the U.S. Economy, prior to the crash, had none of these.

The structure of the U.S. Economy had: 1) high levels of government regulation, 2) high levels of entrenched government spending, and 3) mechanisms that methodically stimulate inflation (the growth in the quantity of money). These systemic structures in the economy generated the excesses that set the stage for the inevitable (right, inevitable) bust.

### a) High Government Regulation

Feedback from government interference tends to provoke unintended consequences. Minimum wage laws lead to higher unemployment. Mileage regulations for the auto industry have encouraged buyers to seek SUVs and trucks, and regulations encouraging home ownership support unsound real estate lending. Consistently, after the enactment of every regulation, smart people figure (legal) ways to avoid the direct consequences of the regulation.

Government regulation always distorts the transactions between private actors in the market. Regulation cannot make markets work better. Thus, lack of regulation did not cause the crash, and more regulation will not prevent something like it from happening in the future.

Those who argue that reduction of regulation caused the crash fail to understand the difference between "de-regulation" and no regulation. Typically, when government removes regulations, it does so unevenly—only in specific segments of the economy at one time. That strategy, analogous to releasing the brakes on one side of a car, will cause the system to spin out of control. Legislators then say, "Look. See what happens when you take the brakes off the market."

In general government regulation distorts of the normal self-regulating mechanisms of the market. It tries to substitute the judgment of a handful of bureaucrats for the careful research of hundreds of millions of consumers.

#### (1) Finance Regulation

Regulation of the various segments of the finance industry has caused investors, borrowers, and lenders to make errors in judgment for years. It causes investors to make false assumptions about the soundness of investments. It has caused borrowers to neglect learning about the loan contracts into which they enter. And, it has caused lenders to, on the one hand, not make loans they probably should make, and, on the other hand, make loans they probably should not make.

#### (2) Real Estate Regulation

The high level of U.S. government regulation distorts the choices actors make in the market in general, but it had a particularly devastating impact on the real estate market. A person could write an entire book about the deleterious effects of government regulation on the real estate market. But, the monstrous list of regulations and agencies created by the government to support housing falls way beyond the scope of this paper. In summary, government regulation worked to accelerate the volume of real estate loans by providing strong positive feedback to normal systemic reinforcing factors and, as a result, drive up house prices.

### **(3) Consumer Goods**

Regulation of consumer goods provides yet another example of how government interferes with effective market mechanisms. Consumer regulations reinforce the tendency of consumers to trust products without question. That unsubstantiated trust opens opportunities for scammers to take advantage of those consumers. Consumers who assume they have the protection of the government fall prey to a multitude of scams in many different markets. That assumption of government protection ends up costing consumers dearly.

No regulatory authority has more power to police markets than the informed consumer who refuses to buy shoddy or misrepresented products.

### **(4) Regulation of Monetary Growth**

I will cover the structure of the banking system and its role in reinforcing unsustainable increases in the quantity of money and money prices later. Government created the structure of the banking system. The inflation engine of the banking system, therefore, deserves mention here as a part of the structure of government regulation. Government must take responsibility for any flaws in that system.

### **b) Embedded Government Spending**

We cannot ignore the distortive influence of government spending in the structure of the national economic system. High levels of embedded government spending act as a reinforcing factor in any market bubble.

Government spending always distorts the allocation of economic resources. This I must repeat. Government spending always distorts the allocation of economic resources. The perpetual growth in government spending has distorted all markets for goods and financial products. Government spending plays a role in any economic crisis because of the political bias of transferring resources from more-productive people to less-productive people. Likewise, government spending (transferring resources from more-productive people to less-productive people) for economic "stimulus" will not correct prior distortions caused by money growth or prior spending; it will only exacerbate the distortions.

Shifting of resources caused by government spending that affected the real estate market added to the ultimate collapse. For example, any government employees who borrowed money to buy or refinance a house contributed doubly to the problem. First, the government employee's income represented a misallocation of economic resources—taxing productive people to pay the salary of an unproductive government bureaucrat. Second, that person then used that misallocated money to tap into the government money machine—the banking system—to leverage the purchase, or refinance, of that house—adding to the unnatural upward pressure on real estate prices.

### **c) Inflation (Money Growth) Mechanisms**

Normally the market will self-correct for small, short-term increases in the quantity of money—as one might see with a commodity money system. But the perpetual artificial inflation this country has experienced for the last century—or more—has had major deleterious effects on economic activity.

First, the increased quantity of money causes money prices to rise. Artificial price increases distort the information carried by prices. Rising prices, as we saw in the sustainable economy, should signal shortages, but inflation-induced price increases send false signals. In response to these false signals of shortage actors in the market expand production in areas that do not need expansion.

Second, since new money cannot enter the economy uniformly, distorted price information affects the market unevenly. Those who get the money first benefit at the expense of those who receive it later. Because of the uneven effect of distorted market information, market expansion occurs unevenly. Uneven expansion causes malinvestments (investments made in the wrong time or place), which create the "bubbles" that eventually, and inevitably, lead to crashes.

New money in the system acts like new rainfall on uneven terrain. It follows the path of least resistance. The structure of the U. S. economy, through the many feedback structures described above, has reduced resistance to money flowing into real estate. As a result the market has directed ever increasing amounts on new money into the real estate market.

Third, when money prices rise because of increased quantities of money, they send the same signal as real shortages would. Market participants act accordingly. They engage in behavior designed to correct the apparent shortages.

Economic actors don't make irrational decisions, as some contend. They make rational decisions based on bad information, which leads to bad outcomes. Buyers bid up house prices. Sellers hold out for more money. Lenders lend more on rising "values." And, builders build more houses. All this happens in an economy with expanding house supplies and declining purchasing capacity.

In hindsight these seem like "bad" decisions because the apparent shortages really did not exist.

More broadly, GDP, stated in money terms, seems to grow. Because we have grown to expect rising prices, we deceive ourselves into thinking things are improving, when in fact they are falling apart.

So, if the expansion of the quantity of money sends false signals throughout the economy, what part of the economic structure causes the growth in money?

### **(1) Inflationary Banking System: The Money Factories**

The problematic process of monetary expansion originates from one source: the structure of the U.S. banking system. By "U.S. banking system" I mean the entire system, not just the Federal Reserve System. The design of the banking system allows banks to perpetually feed money into the economy, so long as borrowers demand more money.

The complexity (i.e. having many interconnections) of the U.S. banking system, tends to mask its fundamentally simple structure. Stated another way: Although the banking system has many interactions, a person can easily understand each individual interaction. By understanding progressively more connections (or interactions) one can develop an understanding of the whole system. It seems, however, that many people see the system as extremely complicated and thus avoid learning how it works—while this system steals their wealth.

I will highlight some important points about three key elements in the structure of the banking system: money, banks, and the Federal Reserve System.

#### **(a) Money: Definition & Composition**

Money plays a critical, and underestimated, role in the national, nay, the world, economy. Although I recommend that you study and learn about the nature and use of money, I will comment on only two points related to the roots of this financial crisis: 1) a working definition of money and 2) the changing composition of money within that definition.

*(i) Definition of Money*

Although most people think they know what money is, few of them can define it precisely. I offer this working definition of money:

***Money consists of any economic good, or any claim on such a good, that serves as a general medium of indirect exchange and that acts as a final means of payment.***

The concept of medium of indirect exchange plays a critical role in meaning this definition. This means that money only has value as a medium used to exchange one economic good for another economic good indirectly. Money simply acts as a "go-between," carrying no other value.

A man who owns carrots and wants peas does not have to find a buyer who has peas. He only needs to find a buyer who will exchange money for his carrots. He can then seek another buyer who will exchange peas for money.

Money, particularly money as we know it, has no value without the ability to exchange it for other goods. To say a house is worth \$100,000 has no meaning on its face. We can only say three separate, but related, things with certainty about the value of a house.

First, if a buyer paid \$100,000 for a house, then he valued that house somewhat more than the goods he gave up—in fair exchange—to acquire the house.

Second, a seller valued the goods he expected to acquire somewhat more than the house he gave up—in fair exchange—to receive the \$100,000.

Or, third, an owner of a house (that did not sell) valued the house somewhat more than the goods he gave up—in fair exchange—to retain the house.

In this example, when 1) the buyer values the house more than the goods he believes he can acquire in exchange for \$100,000 and 2) the owner values the goods he believes he can acquire in exchange for \$100,000 more than the house a sale will occur at a price of near \$100,000 for one unit of that particular house. Otherwise, 3) the owner retains the house and the potential buyer retains his \$100,000.

The \$100,000 has value only because of what these actors think they can acquire in exchange for it.

This definition becomes particularly important for understanding the meaning of rising and falling house prices. Changes in dollar prices of houses signify changes in the perceived value of houses relative to other economic goods, not in terms of dollars.

*(ii) Composition of Money*

The changing composition of money has contributed to the changing structure of the U.S. banking system. One hundred years ago the market still used gold as a primary form of money. Today buyers and sellers accept digital entries on bank computers as money. This digital money, in the current banking system, simply consists of promises to pay given by banks to their customers<sup>14</sup>. Changes in the manner in which banks handle time deposits have also significantly influenced the composition of money.

<sup>14</sup> The promises to pay made by the Federal Reserve to banks (known as bank reserves) do not really fit the definition of money—even though reserves “back” bank money. The Fed pays nothing to consumers. Fed promises to pay **do not** amount to a “**general** medium of indirect exchange.”

Historically time deposits required prior notification for withdrawal of the money that banks held for depositors. As a result time deposits did not fit the definition of money nor play a role as money. Now banks allow depositors to withdraw from small savings accounts with no prior notice—making these deposits a form of money. In addition, various money market mutual funds have provided depositors immediate access to large time deposits—also making them a rightful component of the money supply.

These changes in the composition of money—from commodity to digits and from the exclusion to the inclusion of time deposits—have played a significant role, as I will explain in a moment, in banks' ability to expand the quantity of money.

### (b) Banks: The Machines of Inflation

Banks historically acted as financial intermediaries. They accepted deposits of commodity money that people acquired from the sale of goods. They would treat those deposits in one of two ways.

First, they would hold 100% of the commodity money to pay the depositor—or someone to whom the depositor wrote a check—on demand, i.e. immediately.

Second, they would pay the depositor interest for a specific period, during which the depositor would not have access to the commodity money. The bank would make income by lending—selling in exchange for a note—an equivalent amount of commodity money to borrowers for a comparable period of time.

Thus, the bank played an intermediary role between, on the one hand, demand account depositors and check holders, and, on the other hand, time account depositors and borrowers. In the first case the bank would act as an intermediary in transferring money from depositors to check holders. In the second case the bank would act as an intermediary in lending from depositors to borrowers.

The modern bank has devolved into an institution that simply buys and sells accounting assets for the difference between the digital money purchase price and the digital money sale price. They no longer rely on depositors to sacrifice, by delaying purchases, to save money and store it at the bank. Although we continue to refer to "bank deposits," banks no longer hold assets that represent the deposits of commodity money owned by their customers. Bank customers "deposit" nothing in banks other than the liabilities of other banks.

So, what assets do banks buy and sell and how do they pay for them?

#### (i) *What Assets to Acquire (and Sell)*

Hypothetically banks could make (accounting) profits by buying any economic good and reselling it at a mark-up. To gain the privileges afforded them by their charter (national or state), however, they agree to deal in only certain assets: 1) notes from customers, 2) securities (bill, notes, and bonds) of U.S. governments, and 3) a limited number of other specific securities, e.g. municipal bonds.

Banks conduct these transactions with three groups: 1) private customers, 2) other banks, and 3) Federal Reserve Banks. The transactions with these different groups produce different results. I will cover private customers and other banks first. I will deal with transactions with the Federal Reserve Banks in the section titled "The Federal Reserve System & Federal Reserve Banks" on page 49.

#### (ii) *Bank Transactions with Private Parties*

People get a little confused with the concept of bank "loans" and the distinction between bank assets referred to as loans and bank liabilities referred to as "deposits". Banks don't really make loans; they buy notes. (Banks have no physical commodity to loan.) The notes they buy consist of the promises of bank customers to pay to the bank specific amounts of money at specified future times. Note payments,

based on an amortization schedule, simply amount to the "borrower" buying the note back in increments.

When banks buy notes an important thing happens. Unlike banks of old, they do not give the seller tangible commodity money or the obligation to pay tangible commodity money. Instead, banks simply give their promise to pay "money" to the seller. Those promises from the banks create new money—**from nothing**.

When banks sell assets to private parties (or receive note payments from private parties), the buyers (or "borrowers") give banks the right to expunge the banks' promise to pay "money" to the "depositors" buying those assets (or retiring notes). (In popular language, the bank "takes money out of their account to pay the loan." This statement, however, does not accurately describe the transaction, for the "depositor" never had any commodity money in an account.) Expunging that promise simultaneously extinguishes an equivalent amount of money, reducing the quantity of money.

Thus, when banks buy assets they create money, and when they sell assets they destroy money—money in the form of promises from the bank.

### *(iii) Bank Transactions with Other Banks*

Banks transact business with other banks in much the same manner that they do with ordinary customers. They carry deposit (liability) accounts for other banks and they buy and sell assets with other banks.

This statement has one major exception. Banks can transact business with other banks by transferring bank reserves through the Federal Reserve. The Federal Funds market consists of banks buying and selling bank reserves amongst themselves.

### *(iv) Bank Deposit Reserves*

If banks can buy assets (notes) by paying for them with empty promises (which act as money), does that mean banks have an unlimited ability to create money? Without some restriction, banks could, hypothetically, create an unlimited quantity of money—as long as they found assets to buy.

A restriction does, however, exist. Hypothetically bank reserves operate as a limiting factor to the amount of money created by banks. The amount of restriction bank reserves create depends on the nature of bank reserves and the concept of fractional reserves.

### *(a) Reserves*

Although banks have always created their promises to pay **from** nothing, they did not always make promises **of** nothing. Historically depositors, the holders of those promises, could demand the amount of gold or silver signified by the bank's promise. Banks, therefore, needed to back their promises with real assets held in "reserve."

As the ties of money to commodities were severed (see composition of money above) the composition of reserves also changed. Today bank reserves consist only of promises to the banks from the Federal Reserve. With the exception of currency, private citizens can hold none of the promises from the Federal Reserve. And they cannot demand any tangible commodity in exchange for the Federal Reserve promises signified by currency.

So, banks hold in reserve these seemingly worthless promises from the Central Bank to "back" the deposit credit they provide their customers. If the customer cannot ultimately get their hands on those reserve assets, what purpose do they serve?

### (b) Fractional Reserves

Bank reserves act as a restriction or limit for the process of bank asset acquisition and money creation described above.

The origin of the practice has no historical significance, but banks decided at some time that, because all depositors did not want their money at the same time, they could keep reserves amounting to a fraction of the amount of deposit liabilities. With lower reserve ratios (I will discuss the role of the Federal Reserve in setting reserve ratios below: "The Federal Reserve System & Federal Reserve Banks" on page 49) banks can create ever increasing amounts of money—in the form of bank deposit liabilities. Creating more money based on lower reserve ratios increased the opportunity for bank interest income. Lower reserve ratios also increased the risk for banks, on the chance that depositors demand, at one time, more money than banks could cover from actual reserves.

Because reserves "back" the banks' promises to depositors, the amount of reserves held in proportion to deposits (bank promises) determines the amount of money (in the form of bank promises) that banks can create.

If a bank must (by some authority) hold 100% reserves for its demand deposits, it simply cannot buy assets based on demand deposits. It must hold money in reserve to meet all potential demands.

If a bank must (by some authority) hold 50% reserves for its time deposits, it can buy assets (notes) with the simple creation of new money (deposits or bank promises) only up to an amount equivalent to 50% of the reserves on those time deposits. Only when reserves exceed 50% the amount of time deposits can the bank buy more assets (make more loans). Because customers, by the nature of time deposits, cannot withdraw that money before the maturity date of the time deposit, those deposits do not act as money. If the customer wants to put money in a time account, he must reduce his demand account by a like amount. Thus, in this system, banks cannot expand the supply of money.

If, on another hand, a bank must (by the same authority) hold only 50% reserves for its demand deposits, it can acquire additional assets by making additional promises equivalent to 100% of the amount of its demand accounts reserves. Thus, with a 50% reserve ratio the bank can double the quantity of money (in the form of bank deposits) from that available with a 100% reserve ratio. (50% of reserves cover promises representing real deposits and 50% of reserves to cover promises created in exchange for notes from customers.) Yet, once it hits that limit it cannot, without a change in reserves, expand money further.

The lower the required reserve ratio the more money the bank can create by issuing credit in un-backed deposit accounts not backed by a money commodity. For example, with a reserve ratio of 10% for its demand deposits a bank can make promises (increase demand deposits) equivalent to 10 times the amount of reserves.

Reducing the reserve requirement on demand accounts encourages banks to buy more and more assets based on fewer and fewer dollars they should hold in "reserve" to pay their demand deposit obligations.

Authorizing banks to allow immediate withdrawal of time deposits makes those deposits part of the quantity of money, further increasing the monetary expansion capabilities of banks. Because the borrower can spend the promise from the bank at the same time the depositor can "withdraw" that promise. (Same as demand deposits.)

Thus, the amount of reserves and the reserve ratio in combination establish the limit for the amount of promises (deposits) a bank can make to its customers.

This leads to the next important element of the expansionary structure of the current bank structure: deposit guarantees.

*(v) Deposit Guarantees*

In the U.S. banking system today the promises of banks to depositors have the explicit guarantee of the FDIC and implicit guarantee of the Federal Government. These guarantees, explicit and implicit, give depositors the impression that they have no risk keeping their "money" in banks chartered by Federal and state governments. These guarantees cause depositors to prefer to have promises from banks than Federal Reserve notes, or gold, in their mattresses. (See my comments on subjective value in the first paragraph of section IV.A on page 4 and the fourth paragraph of section IV.B on page 4.)

Because they virtually eliminate the potential "bank run," government guarantees encourage continual deposit expansion through bank asset acquisition (loans). Banks have no reason to limit the expansion of deposit liabilities because the government has eliminated the risk of rapid, excessive withdrawals. Banks have every incentive to expand deposit liabilities within the limit of bank regulations.

Customers (depositors), because of the guarantees of government, have no reason to examine the soundness of the banks in which they keep their "money". Small depositors, now with accounts of \$250,000 or less, simply need to look for the FDIC sticker to feel confident they will not lose their money.

Larger time depositors, who technically do have some risk, also have little to worry about. Even when the FDIC closes a bank in which they have deposits the new owner generally takes on all the deposit liabilities. Larger time depositors also have ways of spreading deposits to keep their exposure low. They can, for example, break up large amounts of money into insurable amounts at several banks.

*(vi) Low Bank Capital*

Because the government stands behind the bulk of banks' liabilities (i.e. deposit liabilities), banks have little incentive to maintain large amounts of capital. Compared to other industries banks maintain very low levels of capital, and bankers have relatively little money at risk. Indeed, without capital levels mandated by regulators, banks would probably allow the ratio of capital to deposit liabilities to fall even more. This does not mean that you should consider the regulation of bank capital ratios as a good thing. These rules just paper over other flaws in the banking structure. Without government guarantees, bank customers would force banks to maintain larger levels of capital than even the regulators do.

The low mandated capital requirements have also become an important factor in the rate of loan expansion. (I will address that later.) Paradoxically these capital ratios, low by most industry standards, allow banks to expand money unwisely, yet they now provide the only limit to banks' ability to create more money.

So, what role does The Federal Reserve System and Federal Reserve Banks play in the structure that gives banks the power to create money?



### (c) The Federal Reserve System & Federal Reserve Banks

Federal Reserve Banks act as banks for banks—and banks only. Private persons and entities cannot engage in money transactions directly with a Federal Reserve Bank. The "reserves" that the Fed "holds" for its member banks never leave the Fed<sup>15</sup>. Currency does not represent an exception (See note<sup>16</sup>).

Bank reserves consist of promises—backed by nothing— from The Federal Reserve Banks to pay these customer banks some undefined good. The banks carry these promises as assets on their balance sheets. These bank reserves act as the restriction (or leash) on the banks' capability to buy assets and expand the quantity of money (bank deposit liabilities).

When the Federal Reserve increases reserves (by buying assets from banks), that increase in reserves loosens the restriction and gives banks the latitude to create more money. Conversely, when the Fed decreases reserves (by either selling assets to banks), that decrease in reserves tightens the restriction and reduces banks' latitude to create money. (I will describe these transactions shortly.)

The actual quantity of money created depends on banks using their capability to expand their deposit liabilities within the latitude given by the reserve requirements (I explain this further in "Required Reserves" on page 51.) The Fed does not create money; it simply influences the banks' freedom to create money.

The Fed provides some regulatory control over banks, but the important elements in the structure of the banking system consist of their monetary tools: 1) the discount window, 2) open market operations, and 3) required reserve ratios.

#### (i) Bank Transactions with The Federal Reserve

I described the result of exchanging (the buying and selling of) assets with private parties in the section "Bank Transactions with Private Parties" on page 45 and other banks in the section "Bank Transactions with Other Banks" on page 46. Exchanging (buying and selling) assets with Federal Reserve Banks has a different result.

Before explaining bank transactions with the Fed I first want to emphasize a point I made above:

***BANKS CANNOT TRANSFER BANK RESERVES (DEPOSITS AT THE FED)—OR THE RIGHT TO THEIR RESERVES—TO ANY PRIVATE PARTIES. ONLY MEMBER BANKS CAN TRANSACT BUSINESS USING BANK RESERVES.***

The fact that banks cannot trade reserves with non-bank entities significantly affects what happens when banks sell and buy assets with the Fed.

When banks sell assets to the Fed, the Fed pays for them by giving the banks the Fed's promise to pay "reserves" (or nothing but the Fed's promise) to the bank. That promise creates new "reserves"—from nothing. It does not, however, create any money—bank reserves do not fit the definition of money.

Conversely, when banks buy assets from the Fed, banks pay for those assets by allowing the Fed to reduce the Fed's liability—in the form of reserves—to the banks. This transaction reduces reserves, but

<sup>15</sup> I have used quotes in this sentence for a purpose. Today the Fed holds nothing as reserves, which consist only of empty promises from the Fed.

<sup>16</sup> Any cash held in the vaults of the Federal Reserve does not count in the reserves of any of its member banks. When a bank orders cash from the Fed, the Fed reduces their liability to that bank and ships the cash to the bank. While still held in the bank's vault, that cash counts as reserves. The bank determines when it will remove that cash from reserves and issue it to the public.

it has no effect on the quantity of money. Reducing reserves simply reduces the capability banks have to create money.

Transactions between banks and the Fed—either buying or selling assets—lower or raise the amount of reserves. They do not, however, cause the decrease or increase in bank deposit liabilities to the public— included in the quantity of money.

The description I have just given of transactions between banks and the Fed applies to both transactions at the "Discount Window" and the Fed's Open Market Operation.

### (ii) *Discount Window*

The archaic term "Discount Window" refers to the process by which banks sell assets to the Fed—on short term contracts—to temporarily increase the banks' reserves.

Historically the Fed's *discount window* has played a minor role in the level of bank reserves. During some periods of tight money the Fed has provided liquidity for banks that found themselves short of required reserves and unable to purchase reserves in the Fed funds market. The recently expanded role of the *discount window* antedates the recent crash.

### (iii) *Open Market Operations*

The Federal Reserve Bank of New York buys and sells certain assets on the open market, based on guidance given by the Federal Open Market Committee (FOMC). Through these transactions they increase or decrease their liabilities to banks (i.e. reserves). The Fed has used its open market operations more than its other tools to influence bank reserves, and thereby influence (not control) money supply and interest rates.

During periods of strong private loan demand, when the Fed buys assets—thereby increasing reserves, banks will promptly make more loans (buy more assets), increase their deposit liabilities, and thereby increase the money supply. The proximity of these events gives many people the impression that the Fed can actually increase the quantity of money unilaterally. It cannot. Recent activities by the Fed have provided evidence of the powerlessness of the Fed to force lending and monetary expansion. (More on Fed influence below in section V.C.2.c)(1)(c)(v) on page 52.

Fed open market transactions with non-banks might also give the impression that the Fed can affect the money supply unilaterally. When the Fed buys securities from one of its non-bank dealers the Fed increases the Fed's reserve account liability to the bank with which that dealer has an account. The dealer's bank then makes a credit to the dealer's bank account, actually creating new money. Although transactions with non-bank dealers have a seemingly more direct effect on the quantity of money the Fed does not do it unilaterally.

First, the transaction with the dealer requires the dealer's voluntary participation, and second, the increase of the bank credit (deposit) requires the participation of the bank, even though the bank has a contractual obligation to make that credit. This transaction with non-bank dealers does provide the bank with more reserves upon which the bank can base more money creation, but that also requires action on the part of the bank and its customers.

*(iv) Required Reserves*

Although talked about the least, the most powerful of the three basic tools used by the Fed to influence the quantity of excess reserves, and thereby influence the quantity of money, consists of setting the reserve requirement ratio. Unlike the discount window and open market operations, the Fed can change required reserve ratios by itself. The Fed cannot, however, dictate exactly how banks will respond to the changes in the reserve ratio. Changes in the reserve ratio, however, change the amount of excess reserves immediately. As I demonstrated above (Bank Deposit Reserves—page 46), lower reserve requirement ratios significantly increase the money-making capability of member banks.

Changes in required reserve ratios amount to a structural change for the banking system. Changes in required reserve ratios have made a significant contribution to the roots of the financial crisis. A brief history of reserve ratios provides an important background.

*(a) A Brief History of Bank Reserves*

The history of required bank reserves has had one distinct pattern—ever declining levels of required reserves. The following chart (Figure 20. Summary of Bank Reserve Requirements) pictorially represents that trend. You can see the details in "Monetary Aggregates" page 78.

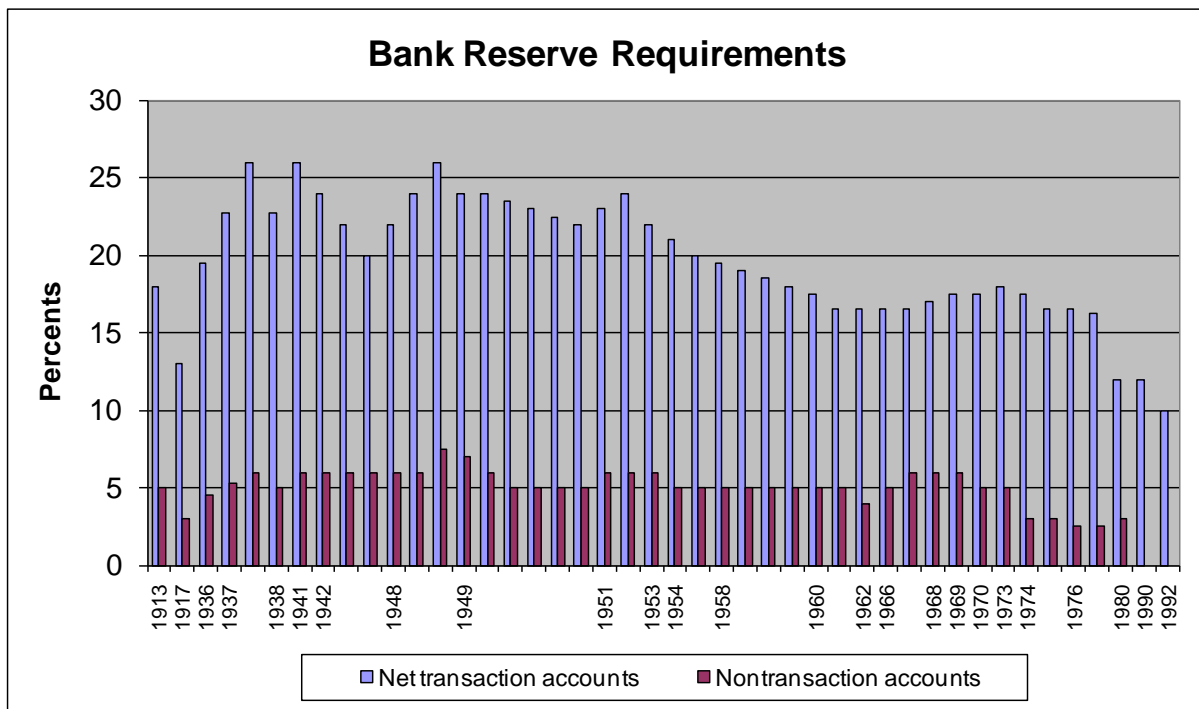


FIGURE 20. SUMMARY OF BANK RESERVE REQUIREMENTS<sup>17</sup>

The Fed initially set the highest ratio on demand deposits (now transaction accounts) at 18%. It set the initial rate for time deposits (now called non-transaction accounts) at 5%. Except for a dramatic rise in reserve requirements, ironically during the Great Depression, the Fed has ratcheted reserve

<sup>17</sup> Because of the complexity of the reserve requirements I have summarized the trend by showing only the highest rates during each period of time.

requirements steadily downward over the years. In April of 1992 the Fed lowered reserve requirements to their present levels: 10% for transaction accounts and 0% for non-transaction accounts (yes, that's zero %).

I have created the following chart (Table 2. Effect of Reserve Requirement Changes) to dramatize the impact of these changes in reserve requirements.

Transaction Account		
	1913	2007
Deposit	\$ 100.00	\$ 100.00
Reserve Requirement	18%	10%
Quantity of Money	\$ 555.56	\$ 1,000.00
Increase %		180%
Non-transaction Account		
	1913	2007
Deposit	\$ 100.00	\$ 100.00
Reserve Requirement	5%	0%
Quantity of Money	\$ 2,000.00	\$ 100,000,000,000,000.00
Increase %		50000000000000%

TABLE 2. EFFECT OF RESERVE REQUIREMENT CHANGES

From 1913 to 2007, with absolutely no change in the amount of reserves on deposit with the Fed, banks could theoretically nearly double the balances in transaction accounts and make a nearly infinite increase the balances in non-transaction accounts (although hypothetically infinite, I have shown a real number to keep it sane). Remember the government, in effect, guarantees these "deposits." So why shouldn't banks increase them as much as possible?

The steady decline in the required reserve ratio leads us to the topic of the reduced influence of the Fed on monetary aggregates.

### (v) *The Declining Fed Influence*

The Fed plays an undeniably important role in the banking system. It does not, however, have the absolute power that many people attribute to it. It does not have complete control over the quantity of either bank reserves or of money in circulation. It definitely does not control any money interest rates--either short or long term. It only influences these monetary factors through market action. As the largest player in the market, it does have tremendous influence, but that still does not amount to **control**. The Fed's lack of **control** and its reduced influence has become more important over the years.

Three factors have contributed to the reduced influence of the Fed: 1) reduction of the ratio of required reserves, 2) government deposit guarantees, and 3) changes in the composition of money—influenced in part by these reserve ratio reductions.

#### (a) Reduced Reserve Ratios

The Fed has acted to reduce its own influence—probably inadvertently—through the reduction of the ratio of required reserves. As you have seen from the brief history of the reserve ratios, since its beginning the Fed has steadily reduced those ratios. This steady reduction in reserve ratios reduces the influence of the Fed because changes in the quantity of reserves have a smaller influence on the amount of money that banks can make on their own.

Let me use a simple hypothetical comparison to demonstrate this point:

With a 100% reserve requirement, a \$1,000 change in a bank's reserves resulting from Fed action would change the potential deposit level of the bank by \$1,000—a high degree of influence.

With a 0% reserve requirement, a \$1,000 change in a bank's reserves resulting from Fed action would not change the potential deposit level of the bank at all—zero influence.

In fact, the reserve requirement for **demand accounts** has decline from nearly 20% in the early days of the Fed to 10% today. This change alone would allow banks to increase deposits/money by 100% with no change in the quantity of reserves. The Fed has also reduced the reserve requirement on **savings accounts** from 5% (highs of 7.5%) to 0%. This change would allow banks to, theoretically, increase time deposits/money by an infinite amount.

These changes in the required ratios—particularly for savings accounts—become significant when coupled with deposit guarantees and shifts in the composition of money.

### (b) Deposit guarantees

While reduced reserve requirements greatly increased the freedom of banks to create money, deposit guarantees remove nearly all inhibition for banks to use that freedom. With deposit guarantees, depositors don't care about the soundness of their bank or how high bank liabilities rise. Depositors do not exercise any market influence on banks to limit their lending and money creation activities. If customers will borrow, banks will lend; no one needs to save anything for them to lend.

### (c) Shift in Composition of Money

As the composition of money (See Money: Money: Definition & Composition—page 43 above) shifted toward greater inclusion of "non-transaction" accounts—accounts with 0% reserve requirements—the limit that reserves placed on monetary expansion has virtually disappeared. The Fed still makes a lot of noise about controlling money and interest rates, but they have lost nearly all their influence. Or given it away.

### (d) Evidence of Reduced Influence: Divergence of MZM vs. Reserves

The divergence of the money supply (MZM) and required (and actual) bank reserves shown in Figure 10. Money Supply & Bank Reserves and on page 28 provides evidence of the declining influence of the Fed on monetary growth. If the Fed really "controlled" the money supply, the money supply (and total bank deposits) would grow at the same rate as reserves. They do not.

### (e) A Word About Interest Rates

Because so many other people mention it in the context of the Fed's influence on monetary growth, I will briefly address the Fed's alleged control of money interest rates.

In spite of the number of people who say the Fed sets or controls money interest rates, make no mistake about it, the Fed does not control money interest rates. In the current structure, it cannot.

Money interest<sup>18</sup> consists of the difference between the quantity of money promised in the future accepted in exchange for a quantity of money in the present. Money interest, therefore, represents a dependent variable determined by the quantities of the future money and present money exchanged.

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<sup>18</sup> I use the term "money interest" because interest can consist of commodities other than money.

Thus, one or both of these variables—the quantity of future money or the quantity of present money—must change to cause a change in money interest rates.

In short, the market, not the Fed, sets money interest rates.

Money interest rates play a very important role in providing information to the market about the relative amount of current money available for exchange for promises of future money. Lower rates indicate more availability; higher rates indicate less availability.

The Fed does, however, have an *influence* on money interest rates based on their ability to *influence* the quantity of current dollars. I will discuss the level of Fed influence below (The Declining Fed Influence—page 52).

## (2) Real Estate Market: The Engine for Inflation

For decades real estate has acted as a powerful engine for inflation (monetary expansion). At least three primary factors have contributed to the role of real estate in the persistent expansion of the quantity of money. First, houses enjoy a shared perception by buyers and sellers—based on subjective judgments—of increasing value. Second, notes secured by real estate provide a seemingly perfect asset for banks. Third, the purchase and financing of real estate has for many years enjoyed substantial support of government.

### (a) Real Estate Prices & Value

Plentiful real estate loan money created a steady demand for housing, which helped, in a reinforcing feedback, to push house prices ever higher. Rapidly rising real estate prices did not result from irrational exuberance as many believe. Buyers and sellers exhibited rational behavior based on the signals they got from the current structure of the system. For example...

An individual home buyer, in order to assure his purchase, offers 1% more than the "market value," which might even amount to less than the asking price. Now, that does not sound too irrational. But prices influence "market value" at the margin. A slightly higher price for one house gets factored into the next appraisal—and people's perception of value. It may increase appraised value by only ½%, but with 100 transactions in that market over a year appraised values could increase 50%. Now, that's impressive.

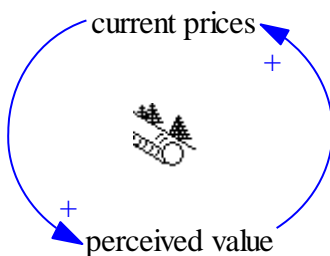


FIGURE 21. PRICE/VALUE FEEDBACK

Because people make economic decisions based on their perceived value, increases in money prices resulting from increasing quantities of money cause people to perceive shortages, greater marginal utility, and more value. The perception of relative shortages caused buyers to bid prices up incrementally, which again raised the perception of value. A reinforcing feedback loop like Figure 21. Price/Value Feedback tends to raise perceived values and prices in succession.

This rational bidding process, based on the structure of the real estate market (e.g. leverage, government support, lenders with money), resulted in substantial upward pressure in the money prices of houses.

Prices provide the most important information available in any market. The feedback of that information represents a critical element in the structure of the market. Although prices do not provide an objective measure of value, price trends do provide information about the relative values that market actors have placed on goods exchanged in the past. Thus, barring extreme changes in the preferences of the actors or the quantities of goods exchanged, past prices provide a pretty good indication of the potential ratio (or price) for future exchanges.

Rising prices for a particular good indicate that a relative shortage of that good exists in the market. Falling prices for a particular good indicate that a relative surplus of that good exists in the market. And, stable prices indicate that a relative balance exists between the supply and the demand for the good.

Rising and falling prices normally tend to self-correct. When prices rise, more supply comes to market, some buyers get excluded, and prices even out. When prices fall, supply contracts, demand increases, and again prices even out. In a market free of interventions these corrections occur gradually. But, when prices have risen because of intervention and artificial money growth, the correction becomes sudden and reinforced by declines in perceived value.

### (b) Making Money to Buy Real Estate

Reinforcing processes tend to drive real estate prices higher and higher—as long as buyers have the money available. Banks fill that need by "making" money for their customers to buy real estate.

So, does providing the money for real estate buyers provide the opportunity for banks to acquire the perfect asset?

#### (i) *Real Estate Loans: The Perfect Bank Asset*

In order to expand money banks must acquire assets that meet certain criteria. Traditionally they expanded their deposits to acquire short-term notes of commercial businesses and intermediate notes of consumers. In the early 1970s they began to expand deposits by acquiring the increasing debt of consumers who used credit cards. All of these transactions abetted their continuing expansion of deposits and money. But, in the late 1980s banks received a bonanza as the result of the failure of the Savings and Loans.

Before the 1980s real estate loans played a relatively small part of the commercial banking business. In the early part of the 20<sup>th</sup> century banks would only lend on real estate for short periods—typically 90 days. Although they wrote conventional real estate loans prior to the 1980s, banks did so mostly to accommodate favored commercial customers. The failure of hundreds of S&Ls from 1988 through 1993 left a hole in the market that banks could not overlook.

Real estate loans provided perfect assets for banks to expand deposits (i.e. money), for a number of reasons. (To see a chart of the expansion of real estate loans, relative to other loan categories, look at Figure 6 - Selected Bank Loan Assets)

#### (a) Tangible Collateral—Rising Collateral Value

For bankers, used to making collateralized loans, real estate loans came naturally. Collateral provided some protection for risk-averse bankers. If the borrower could not make the required payments, the bankers had a physical asset they could acquire and sell to cover any shortfall.

Houses provided seemingly excellent collateral because historically house prices had seldom declined, and if so, only slightly, for short periods. The reinforcing process created by the interaction of current prices and perceived value helped banks build their real estate loan portfolios and increase deposits.

For them, rising money prices translated into rising collateral values, justified by appraisals. Rising collateral values made it easier for banks to lend that modest 1% more of market value, which helped drive prices even higher. They could justify lending more on the same house when it resold because it would still have the same "loan to value" ratio—a mainstay of conservative lending.

### (b) High Leverage

The high leverage of real estate loans allowed banks to make very large loans to borrowers with relatively low repayment capacity. Borrowers, who certainly could never have met the payments on a loan at the turn of the 20<sup>th</sup> century, could easily make payments on the same loan amortized over 30 years, particularly with a 20% down payment. Banks (and their regulators) felt comfortable with these high leverage loans because of the advantage of tangible collateral.

### (c) Risk Assessment

With ever-increasing prices and perceived value, risk became difficult to assess. In spite of all the statistical analyses, unpredictable humans still make the final decisions. Investors and lenders can only accurately measure risk after the fact—based on results. This presents a dilemma for bankers who want to make a forward looking assessment of risk.

To mitigate risk, bankers traditionally relied on the classic 4 Cs of Credit: Character, Capacity, Capital, and Collateral. They wanted to know the *character* of the person borrowing the money. They wanted some evidence that the borrower earns enough to have the *capacity* to pay the loan according to terms. They wanted to see that the borrower had some resources, or *capital*, to fall back on if their earnings decline. And, as a last resort, they wanted *collateral* they can claim and sell, if they misjudged the other three Cs. Bankers consider borrowers meeting these four criteria as "prime" borrowers.

The 4 Cs mitigated part of the risk assessment question, until bankers ran into a dilemma. Banks' ability to create money far exceeded the quantity of prime borrowers. As real estate prices inched up almost without notice, bankers gradually began to compromise the first 3 Cs of credit one after another.

When making loans secured by a form of collateral that has not significantly declined in price for decades (see Figure 7. ), why not make loans to people they don't know, to people who have questionable earnings, or to people who have little or no money in reserve? With prime collateral, who needs prime borrowers?

### (ii) Real Estate Loan Growth

It came naturally for bankers to expand their commitment to acquiring the perfect bank asset—notes secured by real estate. Increases in perceived value, based on rising prices, increased banks' willingness to make more loans. With the structure of fractional reserve banking, satisfying the demand for loans created its own supply. The structure of the system contained a reinforcing feedback that made the expansion of real estate loans only natural.

Low interest rates played a part in the reinforcing cycle of higher real estate prices, more loans, more deposits and more money. Many people blame the Fed for the extended period of low interest rates, but the market sets real estate loan rates, not the Fed.

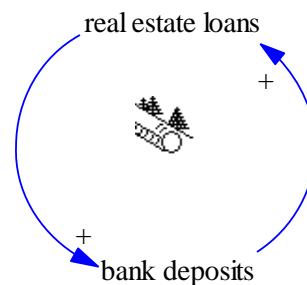


FIGURE 22. REAL ESTATE LOAN GROWTH



Rising demand for loans did create upward pressure on interest rates. But, within the loose framework of required reserves, banks could create all the money they needed to meet the steady demand. The ability of banks to create money from nothing kept the supply of money high, offsetting upward pressure on interest rates and keeping them low. The structure of the system created a cycle of loan demand creating its own supply of money. With the perpetual expansion of money the market held interest rates, short and long, down.

### (c) Government Support

Real estate lending provided another advantage for the government chartered banks: it had substantial support from the government to expand real estate lending. That support pushed banks to willingly accommodate the excessive demands from all sorts of borrowers.

Through numerous programs the government tried to make it easy for people to buy homes. To accomplish that end the government made getting real estate loans easy. Some people probably think a Constitutional Amendment gave them the right to a real estate loan.

In addition to explicit support for real estate loans, the government provided implicit encouragement through the preferred tax treatment of real estate loans. As the result of successive tax "reforms" interest on real estate loans remained the only deductible form of consumer interest. With that incentive, why wouldn't a rational person borrow on real estate to buy a car, a boat, a big-screen TV, take a vacation, etc?

On the one hand, government loan programs and regulations made it easier for less qualified borrowers to get loans. On the other hand, tax preferences made borrowing in real estate excessively attractive to more qualified borrowers. Between the two they perpetuated the cycle of increased real estate prices, increased real estate loans, increased money supply, and increased real estate prices.

The bubble expanded.

### (3) Other Markets: Inflation Supplement

Of course all the money created in the real estate loan market did not stay in real estate. Other markets rode the back of the continually expanding real estate market. Money moves around. Sellers, builders, employees of builders, and people who re-financed their houses, all had more money to spend on other stuff. And they did.

A lot of goods benefitted from money generated through real estate lending.

### (a) Consumer Goods

Automobile sales, for example, almost certainly benefitted from the phenomenon of money made available through real estate loans. If borrowers wanted money to improve their homes, why not use the extra "equity" created by rising money prices to borrow an extra \$20,000, \$30,000, \$40,000 to buy that big SUV they wanted. They could not deduct the interest on an auto loan, but they could deduct the interest on their real estate loan. These real estate "equity" loans created excessive demand for auto sales, which pushed the auto companies into unhealthy, unsustainable, expansion.

The sales of a number of other consumer goods benefitted from the money generated by growing real estate loans. Some received a direct boost. In addition to cars, real estate borrowers bought a lot of big ticket items with the money they "took out" of their homes. Other items got a sales boost indirectly. Because borrowers did not need to save to purchase the big ticket items (furniture, appliances, home entertainment systems), and banks did not have to wait for other depositors to save in order to make

loans, these borrowers also did not have to forego many of their other purchases. Everything from DVD movies, to expensive dinners, to vacation travel, and more, benefitted from the money created by banks funding real estate loans.

### (b) Producer Goods

With money pouring out of the real estate financing market into a myriad of consumer goods, the rising prices of those goods signaled relative shortages that did not really exist. Investors, acting based on perceived shortages and perceived increases in value, poured money into otherwise ill-advised investments—malinvestment. When entrepreneurs perceive a shortage they try to fill it. We cannot blame them for acting on false signals.

The artificial, unsustainable, demand created by money made available through real estate loans could not support the capital expansion made in response to that demand. The substantive savings would eventually dry up and so would the demand.

### (c) Stocks

The stock market became another rather obvious beneficiary of the increased flow of money for at least three reasons: 1) increased goods purchases, 2) more investment in producer goods, and 3) more money for stock purchases.

The strength in consumer goods purchases fueled by money from real estate helped to improve the financial performance of the publicly owned consumer goods companies. Improved accounting earnings made them appear more attractive, and investors bid their prices up.

Consumer goods companies seemed to be doing well. So producer goods companies made more of the plant and equipment that make the things consumers bought. Their accounting profits also increased, and investors bid their prices up as well.

As with all financial investments, the availability of money drives stock prices. With more money available for stock purchases, stock prices naturally got bid up. And why shouldn't they? Accounting earnings continue increasing.

Although many of these connections between stock prices and real estate loan volume are indirect some are direct. Many "re-fi" borrowers put that money directly into the stock market. With house "values" rising, allowing home owners to borrow money to purchase stocks, which realized rising "values" at the same time; how could the homeowner/borrower lose?

And this phenomenon did not begin just before this crisis. For example, the stock market "dot com" bubble of 2000 certainly rode the inflation wave of the real estate market.

## 3. Balancing Processes and Intervention

The three exogenous factors—government regulation, government "spending," and an inflationary banking system—abnormally increased the power of natural reinforcing processes in the system, which expanded the "bubble." At some point, however, the balance of power shifted from the reinforcing factors to the balancing/limiting factors. In a healthy, sustainable, system these shifts would act to modulate the behavior of the system and keep it within a normal range. In the unhealthy, unsustainable, system the natural balancing/limiting factors do not take effect until after the behavior of the system becomes problematic. After excessive expansion, the natural balancing/limiting factors stop the unhealthy boom. The trend then reversed and the reinforcing factors contributed to the healthy correction that we viewed as a financial crisis.

### a) Government Regulation

Many argue that a lack of government regulation contributed to the financial crisis. In other words, they feel that the increase and expansion of government regulation will limit unhealthy behavior. A clear understanding of reinforcing and limiting factors, however, refutes this claim. Reinforcing factors tend to push a system too far in one direction, either up or down. Limiting factors, on the other hand, tend to set limits or goals for the system. Government regulation tends to compound reinforcing factor (or mitigate the balancing factors) in both directions.

When the economic system hit the limits set by other factors, the violent intervention of government regulation stimulated unintended reinforcing factors in the decline. Regulations that contributed to the misallocation of resources that reinforced expansion also contributed to the misallocations of resources in the decline. They tended to increase private investment which had no economic benefit and decrease private investment needed to right the system.

Government certainly set no defined limits on its support of the expansion of real estate. For government, and the "ownerships society," more was always better.

Government regulation also runs into a common problem in attempting to limit undesirable behavior. Government simply does not have the capability to calculate appropriate levels of regulation. In an ever changing economy the appropriate amount of regulation one day might consist of an inappropriate amount of regulation the next day. Only the actors in a free market can make adjustments rapidly enough to keep up with changes in the market.

### b) Government Spending

Government spending shares one outcome with government regulation: it distorts the allocations of economic resources. The misallocated resources that reinforced the boom became the misallocated resources that reinforced the bust—owners must liquidate them.

Because government spending takes resources from more-productive uses and applies them to less-productive uses, increases in government spending tended to retard the general productivity of the economy while stimulating less productive segments of the economy. In a naturally sustainable economic system balancing factors will limit the unhealthy growth of even strong segments of the economy. Thus, when they reach a natural limit they do not collapse. They find a new sustainable level of production. Segments of the economy over-stimulated by government spending push their limits of growth to unsustainable levels. Then, when the force of the natural limits becomes too great, the unsustainability of the over-stimulated segments becomes apparent and they collapse.

Popular economics teaches that government spending creates a counter cyclical-influence—that it stimulates the economy during down-turns by increasing transfer payments while reducing tax revenues. In fact, government spending exacerbates economic cycles. First, when weaker segments of the economy perform well because the government shifts resource to them, the economy appears unrealistically strong. Second, when this artificially stimulated segment suffers a natural collapse, government adds to the problem by shifting resources from more productive uses, which could lead a recovery, to the same or other less-productive uses, which lead the decline in spite of government help.

### c) Inflation (Monetary Growth)

Since inflation (the growth of the quantity of money) had the greatest influence in creating the surge in real estate, and related, prices, it should come as no surprise that the limiting factors affecting monetary

growth will have the greatest influence in the collapse of those prices. A number of factors enter into this dynamics.

### (1) Banking

A couple of major factors set limits to the amount of money that the banking system can create at any time: 1) reserve ratios, and 2) bank capital limits.

#### (a) Required Bank Reserves Ratios

The feedback in the fractional reserve banking system acts like Say's Law<sup>19</sup> on steroids. Banks buy future money (notes), which they pay for with newly created current money. That new money becomes available for the purchase of even more notes. That process creates—hypothetically—a chain of expansion without end. Normally the reserve ratio would act as a limit on this expansionary process.

With the steady reduction of the required reserve ratios, however, the Fed has virtually nullified bank reserves as a limiting factor. The combination of lower reserve ratios on demand (to 10%) and time deposits (to 0%) and the use of time deposits as money have reduced the effective reserve ratio to nearly zero. At that level reserves create little limit on the quantity of money that banks can create.

While lower levels of fractional reserve requirements encourage the expansion of bank deposits, they can also increase the amount of a contraction. When the natural balancing/limiting factors turn the tide of expansion, small declines in the money-making power of banks become ever bigger declines in deposits and the quantity of money.

A comparison of different reserve requirements during expansion and contraction should help make this clear:

First, with a 100% reserve requirement the bank would not have the ability to increase deposit through its own actions.

Second, with a 90% reserve requirement, if the bank creates \$5,000 in additional net deposits to fund a loan of the same amount, it simultaneously adds the capacity to create an additional \$500 in additional deposits. With a 10% reserve requirement, that same transaction would add the capacity to create an additional \$4,500 in additional deposits. A relatively high reserve requirement would allow small increase in deposits in an expansion. A relatively low reserve requirement would allow a large increase in deposits in an expansion.

Third, with a 90% reserve requirement, if the bank's net deposits decline by \$5,000 (because loan payments exceed deposit creation by \$5,000), the capacity to create deposits will simultaneously decline by an additional \$500. With a 10% reserve requirement, that same transaction would reduce the capacity to create deposits by an additional \$4,500. A relatively high reserve requirement would cause a small decrease in deposits in a contraction. A relatively low reserve requirement would cause a large decrease in deposits in a contraction.

The lower required reserve ratios the less the influence of the Federal Reserve on the money supply and the greater the influence of market forces. This can create wide fluctuations in the quantity of money beyond the influence of the Fed. Until recently we have not experienced a market contraction in money supply, but recently, in spite of the valiant efforts of the Fed, the market has created, if not a shrinkage in the quantity of money, at least a significant slowdown.

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<sup>19</sup> The common, and over simplified, concept that "supply constitutes demand."

### (b) Bank Capital

In the current banking system the supply of notes (i.e. borrowers) and bank capital requirements provide the only significant limits to the feedback process that perpetually expands deposits and the money supply. Over the last several decades the supply of notes and the growth of bank capital have increased at a pace that has supported the continual growth in money of about 7.5% per annum. This has allowed the reinforcing processes to run.

Any interruption in this process will stop the expansion of loans, the expansion of the money supply, and the increase in real estate prices. The primary interruption consists of actual or impending reductions in bank capital. The major threat to bank capital comes from loan losses. Writing off a \$100,000 loan (with an interest rate of 5%) has the same effect as wiping out roughly 50 years worth of present value earnings on that loan amount. It also has another effect.

If the bank has to maintain a 10% capital to deposit ratio, that same loan loss will cause the bank to lose the capability of creating \$1,000,000 of loans and deposits. Thus, bank capital acts as a real limit to the expansion of money.

When the growth of bank capital stops, the expansion of loans and the money supply also stop. This does not just stop the increase in real estate prices; it suddenly exposes the over-supply in the market and real estate price collapse.

### (2) *Real Estate Loan Market*

The bonanza provided to banks by the real estate loan business also created the seeds of the banking system's own problems.

Consumer loans, including real estate loans, comprise a form of dis-saving. By borrowing to buy a house (or finance an existing house) a person, in effect, takes money out of savings to make the purchase. Because the borrower usually does not have the savings in his own account, he borrows the money—i.e. using someone else's savings.

Because savings provide the source of investment capital, consumer real estate loans reduce the amount of investment capital in the economic system. The reduction of investment capital eventually reduces economic production and, as a result, economic consumption.

A sustainable system adjusts automatically to prevent excessive depletion of savings and investment capital. In our current system, the banks' ability to lend without relying on prior savings causes the drain on substantive savings to become problematic. To show why this becomes a problem I will begin with a brief description of the balancing process in the sustainable system.

### (a) Non-Inflationary—Sustainable Consumer Borrowing

The non-inflationary market structure would not support unsustainable consumer borrowing. That structure has built-in limits. In a market without artificial monetary expansion, the consumer borrows, through the bank intermediary, the savings of other bank depositors. When borrowers have borrowed all the available savings of depositors, the bank must stop lending.

Both lenders and borrowers bump into the ceiling set by the actual amount of savings. As they approach that ceiling the tightening supply of lendable funds causes interest rates to rise. This has the effects of slowing borrowing and increasing saving, which in combination begin to replenish the investment capital supply before it runs too low.

Thus, although real estate loans compete with commercial financing, they compete based on the availability of total investment capital. The market decides, using interest rates as a gauge, whether to allocate investment capital to producer goods or consumer goods—e.g. housing.

Consumer loan repayments complement that process, and help to keep the supply of capital in balance. The repayment of consumer real estate loans replenishes some of the capital extracted from the system by the original loans. By unwinding the dis-saving of consumer loans, loan payments amount to a form of saving.

A healthy loan market requires qualified borrowers—those who have the sustained capacity to pay their loans according to terms. Lenders start lending to the most qualified borrowers. Taking a loss on a loan amounts to an extreme cost for a bank. That cost acts as a natural encouragement for banks to find borrowers most likely to return the bank's principal and make the interest payments.

In the sustainable system substantive savings diminish faster than the supply of qualified borrowers. That fact reduces the inclination of banks to lend to less qualified borrowers. Also, with consumer lending limited by the amount of real savings, the dis-saving effect of consumer lending also has limits. These limits prevent a significant reduction in investment capital that would negatively affect production and eventually the capacity of already qualified borrowers.

The inflationary—unsustainable—environment creates a very different effect.

### (b) Inflationary—Unsustainable Consumer Borrowing

The inflationary market structure eliminates the natural limit on borrowing based on depositors' savings. In a market structure with artificial monetary expansion the bank does not need the savings of depositors to make loans. The bank no longer acts as an intermediary; it simply creates money itself by making a credit entry (a bank liability) in the deposit account of the borrower. This means that bank lending has no built-in limit at the time that it makes the "loan." It can continue making loans (or buy notes) far in excess of existing savings. Borrowers continue to borrow because interest rates do not rise when, or as much as, they should.

Although the inflationary structure does not require substantive savings to make loans, consumer loans still have a dis-saving effect. The unfettered borrowing and spending of consumers diverts investment capital resources away from projects that would normally pay a higher return. Commercial enterprises cannot compete for money denominated investment capital that no longer exists in the system. This reduction in available investment capital puts a drag on the expansion of producer goods, slows job creation, and ultimately reduces consumer incomes. This last influence eventually has an extremely detrimental effect on economic activity as I will show below.

But, some substantive savings and investment capital does flow back into the system through the repayment of consumer real estate loans. Although banks can loan money that people did not save, borrowers must produce and save something substantive in order to acquire the money needed to make their loan payments. The rate of substantive savings accumulation required to service outstanding loans cannot, however, keep up with the rate of investment capital reduction caused by the growth rate in consumer real estate loans.

The combination of lending that exceeded the stock of savings and the inability of loan payments to replenish savings fast enough leads to the net depletion of investment capital. The depletion of investment capital leads to a reduction of individual income, which places a drag on the ability of consumers to pay their loans.

The uncontrolled growth of real estate loans had the paradoxical effect of reducing the capability of borrowers to repay those loans. Thus, real estate loans contributed significantly to the loan repayment problems that precipitated the crisis.

It seemed that banks, which could create money at will, had the perfect market in which to make seemingly unlimited loans. They had all the justification and encouragement needed to make an ever increasing amount of loans on real estate.

They overlooked, however, the finite capability of borrowers to repay those loans. Relying primarily on collateral values, they worked their way through prime borrowers and ever deeper into the "sub-prime" market. The decline of the supply of capital eventually reduced incomes, which also reduced the capacity of many existing borrowers. First, sub-prime borrowers encountered repayment problems. Then even some prime borrowers, fired because the loss of capital needed to support their jobs, started having difficulty meeting their obligations.

### (3) *Other Markets*

Other markets have reached limits similar to that of the real estate market. First, the more consumers bought, the more prices rose, and the more they borrowed to buy at rising prices. Much of the fuel for this buying frenzy came from the inflationary effects of real estate lending. Then, when the capital drain finally caught up with borrowers, their incomes and ability to borrow declined. In response they reduced their spending on a whole range of consumer goods. Industries that had tooled up to meet the artificial demand suddenly found themselves with malinvestments—too much capacity for too little demand.

The companies, and industries, hit by this drop-off in sales began to lose money and lay off workers. Those lay-offs added to the downward spiral initially triggered by the slowdown in lending. This loss of consumer income fed back into the real estate market causing further declines in real estate prices.

The past inflation had expanded the bubble. Reduced production and incomes pierced that bubble. When it popped, the corrective forces provided the impetus for a healthy correction, which we interpreted as a financial crisis.

## D. Summary of a Our Unsustainable System

Although the unsustainable system has many of the same structural elements as the sustainable, free market, system the different structural elements make it exhibit some distinctly different behaviors.

### 1. Events

The effects of those differences show up first in individual events. The primary difference appears in the system-wide nature of events.

Using a body of water as an analogy, a sustainable system would look like normal waves; the highs and lows of individual waves would cancel each other out, making the whole body of water rather smooth. The unsustainable system would exhibit periodical tsunami like behavior in which pressures in one part of the system would build to the point at which they would sweep across the entire system with destructive force.

### 2. Patterns of Behavior

When looking at the events in the unsustainable system over a period of time one would see this tsunami behavior recurring frequently. The magnitude and damage would vary from cycle to cycle, but from the long view one could see the distinctly unstable behavior.

Some contend that cycles represent normal and expected patterns in the unrestricted economic system. When we look at the structure of the current system we learn that market interventions—regulations, spending, and inflation—provide the greatest impetus for these disruptions.

### 3. Systemic Structure

Nearly all systems consist of reinforcing and balancing factors. Sustainable and unsustainable economic systems, however, have different characteristics in the timing and force with which these factors interact. Sustainable economic systems display a constant push and shove between the reinforcing and balancing factors.

Consider your own body/mind. Enthusiasm—a reinforcing factor—may cause you to extend physical exercise beyond your training plan. Eventually fatigue—a balancing process—causes you to slow down and quit. After rest you can start all over again.

Unsustainable economic systems have to contend with perpetual exogenous influences that disrupt the normal corrective balancing processes. These exogenous influences increase the power of reinforcing processes and extend them longer than healthy. Yet, eventually balancing factors overpower the reinforcing processes and the system collapses.

If we modify the example of your body by adding pain suppressing drugs to the mix, you may extend your exercise beyond your training plan, then beyond your physical capability. Balancing processes ultimately take over and you collapse or die. The pain suppressing drugs act just like money—sending false signals to the system so that it cannot tell it has over extended itself.

Interventions in our market system act as either unneeded reinforcement or impediments to normal balancing processes. The unstable structure will cause it, inevitably, to boom and collapse over and over again.

#### a) Violent Intervention and The Unsustainable Structure

Figure 19. Reinforcing & Balancing Loops with Intervention on page 38 helps us to see the systemic influence of violent market interventions.

- Government regulation tends to over stimulate bank consumer loans and retard increases in productivity.
- Government spending forces consumption without the benefit of economic calculation. The forced consumption negatively affects savings and investment, reducing production and ultimately consumption.
- The government sponsored banking system pumps money into the system. That artificially created money does nothing to improve living standards but does distort price signals in the market. Consumers and producers see shortages where none exist. In reacting rationally to those signals they set in motion the unhealthy booms that precede the busts.

The violent interventions of government generally act as reinforcing processes in advance of the real disease: the boom. The balancing processes—generally a natural part of the market system—act like an immune system to slow the system excesses. Many people, however, view this healthy reaction as the real disease.



### *(1) Reinforcing Processes and Intervention*

The three major categories of intervention—government regulation, government spending, and the expansionary monetary system—act as reinforcing factors in our economy to make it unsustainable. Of those three, the expansionary monetary system, along with its relationship to the real estate market, had the most influence in creating the unsustainable conditions that led to the financial crisis of 2008.

The steadily expanding quantity of money in the U.S. economy—caused by the structure of our banking system—flowed into certain segments of the economy more than others. The real estate market led the way in absorbing this additional money. The banking system and the real estate market in combination created a set of reinforcing factors that pushed house prices continually upward, in spite of expanding supply of houses and a shrinking supply of qualified borrowers.

But this trend could not continue forever. Balancing processes and limiting factors within the same system stopped the upward expansion and set the reinforcing processes in reverse motion.

### *(2) Balancing Processes and Intervention*

Prices for residential real estate climbed for decades until a primary balancing process—the natural limit to production—brought the expansion to an end and sent it into a tail spin. The growth of money tricks the system into creating the unsustainable expansion. The drain on substantive savings ultimately precipitated the crash.

Real estate loans—a major form of dis-saving—drained the store of substantive savings faster than the productive capacity of the system could restore it. Since the fractional reserve system severs the link between loans and substantive savings, banks continued to make real estate loans, expand the money supply, and drive up real estate prices. The drain on savings—a drain on investment capital accumulation—dragged down the ability of borrowers to make their loan payments.

Loan payment defaults and foreclosures added to the already excessive supply of houses and prices began to fall. At this tipping point, the reinforcing processes that drove up real estate prices reversed. The more prices fell, the more pressure for them to fall grew.

Marginal real estate borrowers led the decline. Perceived values declined as a result of falling prices in distressed sales. Falling values reduced the borrowing capacity of home owners seeking to refinance, which reduced consumption. Reduced consumption exposed the malinvestments made by many producer and consumer companies. The liquidation of those malinvestments caused more market declines.

All of the processes that drove the decline emerged from the same systemic structure that supported the preceding boom.

## VI. The Cure—A New Structure

### A. Introduction

The interventionist elements of the economic system—government regulation, government spending, and the inflationary banking system—produced the reinforcing processes that pushed real estate prices upward—creating the "bubble". This same systemic structure, however, contained balancing processes that ultimately brought the increase of prices to an end. When prices did not continue upward, small declines reversed the reinforcing processes, causing the dramatic declines and the crisis.

To deal with the financial crisis government has relapsed into another systemic structure referred to as "shifting the burden." In this structure government officials have resorted to quick fixes, which contain the same problematic elements that created the boom and bust. They have begun the process of increasing regulation. They have increased government spending—with bailout programs, "healthcare" reforms, and more. And the Federal Reserve has tried to stimulate monetary expansion with an absolutely explosive increase in bank reserves. But these fixes, although they may have some salutary effects in the short term, will set the stage for the next crisis.

Stopping the cycle of booms and busts will require more than reforming the structure of the current system. Only transformation of the system—i.e. the emergence of a whole new structure—will eliminate these problems. That transformation will necessitate unfamiliar actions on the part of legislators and regulators. They must eliminate the government functions of regulation, spending, and particularly monetary expansion.

### B. Eliminate Government Regulation

Eliminating—not just reducing—government regulations will eliminate the misallocation of resources those regulations cause. Market forces will more effectively, efficiently and adaptively allocate resources and regulate the behavior of market actors.

The argument that we need government regulation to stop the cheats and direct resources to entities "in need," simply does not hold water.

First, government has never provided a truly effective source of regulation. The very occurrence of this financial crisis in the midst of massive government regulation evidences its ineffectiveness. If the last set of regulations did not work, what makes the writers of new regulations so much smarter than previous legislators? These rules become outdated as soon as written.

Three hundred million consumers, by adjusting their desires and actions daily, will provide better market regulation than any gang of government bureaucrats. They will see that the resources get allocated to the best applications. They will see that cheaters just go out of business.

Second, regulations that forced lenders to make unsound loans provide ample evidence of the problem of regulation as a method of resource allocation.

How many times do we need to fail for politicians—and citizens—to see that the market operates more efficiently than congress?

## C. Eliminate Government Spending

Across the board government spending, which amounts to forced private consumption, creates a gross misallocation of resources. Government takes resources from more-productive projects in order to force spending resources on consumption items.

Government spending, or forced consumption, accelerated the reduction in substantive savings, which lowered the amount of available investment capital. Less genuine capital led to less production and less income. Reduced income impinges the ability of borrowers to make payments according to contract. The resulting loan defaults helped to trigger the crash.

Spending by the government ends up hurting the very people it purports to help.

## D. Transform the Banking System

Of all the structural contributors to the recent financial crisis the inflationary banking system leads the pack. Without the constant increase in the quantity of money, this crisis never would have happened. The banking system fed money into the economy through the real estate market. The resulting trend of increasing prices created false and misleading signals for that market. In response to flawed signals, buyers continued to buy and builders continued to build in spite of actual over-supply.

The poor judgment and misbehavior, on which many blame this crisis, would have remained insignificant without the excess money to finance bad judgment. People chasing dollars with unethical intent operate like river rats. Rising rivers bring out the river rats. The rising tide of money brought out the financial "rats."

To prevent this sort of thing happening again we must stop the inflation (expansion of money) caused by our current banking system. We must eliminate the system of fractional reserves in the banking system; we must eliminate all government guarantees of bank deposits; and we must return to a form of commodity money.

### 1. Eliminate The Fractional Banking Reserve System

The Federal Reserve System has contributed more to the gyrations in the financial and economic environment than any other interventionist structure created by government. Although its direct influence has declined over the last few decades, it still lies at the core of all financial crises suffered in this country for the last century. The perpetual increase in the quantity of money works its way into various segments of the economy distorting rational decision processes and, thereby, leading to the cycle of malinvestment and liquidation. In this last crisis, real estate, a long-time conduit for monetary expansion, reached the limit of unsupportable price increases and collapsed. Its decline rippled through the highly interconnected U.S. and global economies.

The passage of the Federal Reserve Act did two significant things that have become embedded in our economy and require removal: 1) the institutionalization of fractional reserve banking, and 2) the practice of monetary stabilization. The first step in removing these disruptive influences in our economy consists of eliminating the Federal Reserve System.

First, eliminating the Federal Reserve System will not necessarily terminate the practice of fractional reserve banking but it will end the institutionalization of the practice as a national policy. Without the Federal Reserve System banks and their customers will, through their transactions, decide whether to continue the practice of fractional reserve banking. In the following section describing the elimination of

government guarantees of deposits, I will explain why the market will put an end to the practice of fractional reserves.

Second, with the intent of stabilizing prices and employment, the Fed constantly attempts to manipulate the quantity of money in the banking system. In addition to not achieving its stated objectives, the Fed's attempted money manipulation sends erroneous signals throughout the financial system. Rational decisions, made on faulty information, destabilize the economy and lead to repeated financial crises including this last one. The act of attempting to stabilize prices and employment actually increases instability.

We cannot act fast enough to close the Federal Reserve System, terminate the justification and institutionalization of fractional reserve banking, and stop the money manipulation made in the name of stabilization. We will not find eliminating the embedded monetary inflation easy, but we must begin the process now.

But, eliminating the Federal Reserve System alone will not solve the problem.

## 2. Eliminate Government Guarantees

The second structural change needed in the transformation of banking consists of eliminating all government guarantees—expressed and implied—of bank deposits. As long as the government guarantees bank deposits, bankers have little real incentive to manage risk. When they have little responsibility for the safety of their major source of financing—customer deposits—their own risk becomes insignificant.

Eliminating government guarantees does not place depositors in undue risk. It simply means they can no longer abdicate their responsibility for monitoring the safety of their own money. They will not have the ability to shift their risk, by force, to other citizens. Without these guarantees, depositors will watch their banks more carefully, which will cause bankers to act more prudently.

Eliminating the Federal Reserve System and stopping all government guarantees together will not stop the practice of fractional bank reserves, but they will reduce the incentive for the practice to near zero.

First, depositors will educate themselves about their contract with banks covering demand deposits. For banks to lend money that they promise to have on hand for immediate withdrawal violates the deposit contract. Without the government guarantee depositors will seek banks that carry 100% reserves for demand deposits; and banks will have to accommodate them to keep their business.

Second, depositors with time deposits will more accurately assess the risk they accept when they lend their money to banks for the purpose of lending to borrowers. Banks will manage risk much better than they have in the past, for, if they don't, they will lose those deposits.

## 3. Return to Commodity Money

The last change in the structure of the money and banking system consists of returning the system to a form of commodity money—by stopping the issuance of fiat<sup>20</sup> money. Giving the choice of money back

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<sup>20</sup> *Fiat*: (Latin). Literally, let it be done. Order, command, decision, or statute of an authoritative power. *Fiat Money*: A coin or piece of paper of insignificant commodity value that a government has declared to be money and to which the government has given "legal tender" quality. Fiat money neither represents nor is a claim for commodity money. Fiat money is issued without any set intention to redeem it and consequently no reserves are set aside for that purpose. The value of fiat money rests on the acceptance of political law or fiat. Fiat money is money in both the broader and narrower senses.

to the market would complete the cure of the problems that created the financial crises in our economic system. Although the market could pick any commodity, gold would make the most logical choice. Markets have used gold for centuries and, because of its history, it would take people little time to become reacquainted with the use of gold as a form of money.

I would need a separate book to describe all the advantages of the use of commodity money. In a nutshell, a commodity money would eliminate the destructive actions of the monetary stabilizers in the market. The quantity of money might inflate slightly and occasionally because of normal production. That expansion would require the consumption of resources, thereby placing an economic price on new money—unlike our current situation. It would stop the incessant increases in the quantity of money due to bureaucratic whim, but not to economic forces.

## E. Summary of The Cure

The only real cure for the repeating pattern of booms and busts consists of completely eliminating the violent intervention of government in the complex, self-referencing, self-organizing, market processes. People know better how to determine their own needs and protect their own interests than any government ever can. The more government interferes in this process the more unstable and unsustainable markets become. We need to actually allow the natural freedom of markets to function, instead of advocating free markets and practicing intervention.

The cure consist of taking three simple—but not easy (for politicians)—steps. Citizens must force legislators to:

1. Eliminate Government Regulation
2. Eliminate Government Spending
3. Eliminate the Inflationary Banking System

Like more effective cures this may seem like a radical suggestion. It will certainly raise the opposition—maybe even contempt—from those who trade in political power. But, I simply want to tell the truth. I leave implementation to the reader.

## VII. Summary & Conclusion

Understanding the roots of the financial crisis of 2008 is simple, but it is not easy. The manner in which we normally try to understand the behavior of complex systems—such as the U.S. economy—diverts our attention from the real roots of the systemic problem. We have also, like the drug addict, come to confuse the symptoms of recovery—the financial meltdown—with the symptoms of disease—the euphoria of boom times.

To begin to understand where to look for the roots of this crisis we must first understand what influences the performance of a complex system—such as the U.S. economy. Second, we must understand the nature of a sustainable economic system. To see why things do not work, we must first see how they should work. Third, with that background, we will have the knowledge to understand why our system collapsed. Using that understanding we can formulate a cure.

### A. Understanding the Performance of Complex Systems

Complete understanding of complex systems requires that we examine them at three levels: events, patterns of behavior, and systemic structure. Onetime **events** may provide the first indication of a problem, but they provide little or no information about the cause. **Patterns of behavior** tell us whether we have experienced a onetime anomalous occurrence. If a pattern exists, it can give us a clue as to the composition of the root causes of all systemic behavior: systemic structure. **Systemic structure** holds the key to the behavior (or performance) of any system.

Economists and commentators have focused their current attempts to understand the "crisis" on events. They have failed to acknowledge that, although larger than most, this crisis amounts to an event that fits into a repeating pattern that recurs because of the structure of our economic system.

So, what would an ideal, sustainable system look like?

### B. A Sustainable Economic System

Economic systems have all the characteristics of living systems: they self-reference, they self-organize, they self-transcend. In a phrase, they learn and adjust. As a result, those economic systems that sustain will demonstrate the following characteristics in their events, patterns of behavior, and systemic structure.

First, the **events** in a sustainable system will occur locally and involve single entities. Businesses succeed and fail. Prices go up and down. But, they don't combine into single, system-wide dramatic events.

Second, these local events will combine to form **patterns of behavior** for businesses or industries. Individual businesses will have **patterns** of success that extend over short and long periods. They will have extended periods of decline or they will collapse suddenly. These ups and downs will offset each other in the overall economy.

Because the small and local nature of events in a large sustainable economy, few discernable patterns will appear. No need will exist to examine aggregate patterns of behavior<sup>21</sup>, but if one did examine

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<sup>21</sup> Aggregate patterns of behavior, indeed the whole concept of "macro-economics," have little validity because mathematical aggregates of non-homogeneous economic goods violate the laws of physics and sound math.

them, the generalized patterns would appear rather placid, with changes in one segment of the economy cancelling out those in another segment.

Third, the **systemic structure** of a sustainable economic system will have one noteworthy characteristic: free exchange without violent intervention. The players in the system always act voluntarily. They have the ability to adjust their behavior without the interference of the state. Coercive forces—government or other—do not impede the natural ability of the actors to produce, consume, and exchange goods to satisfy their individual and collective needs. They rely on the sanctity of contracts to establish the rules that govern interactions within the system. As a result the system adjusts to changes in population, resources, and technology.

In addition, sustainable economic systems operate on the intuitive understanding that economic value flows from the preferences of individual actors in the market. Interference with the ability of individuals to act based on their individual preferences disrupts the self-organizing nature of the entire system. But, acting individually, market actors demonstrate the wisdom of crowds.

Like all living systems, economic systems contain reinforcing and balancing processes. Reinforcing processes accelerate the behavior of the system in a single direction. Balancing processes tend to counteract the reinforcing processes, either stopping the process at a predetermined level or slowing the acceleration to a sustainable rate. Sustainable systems exhibit an ebb and flow between reinforcing and balancing processes, which keep the system from going to extremes.

If you need an example, look at nature. Trees don't grow too tall. Elephants don't grow too big. Mice know the right size too.

### C. Our Unsustainable System

At each of the three levels, unsustainable systems, have significantly different characteristics.

First, significant events tend to have a much wider impact, involving multiple businesses or multiple industries. Unlike the sustainable system, the unsustainable system frequently experiences large, system-wide *events*: booms and busts. Events tend to occur nationally or internationally, instead of just locally. This characteristic should lead us to ask questions about patterns of behavior and systemic structure.

Second, these events form *patterns of behavior* over time that display wide spread expansions and contractions in economic activity. From a distance in time, it appears as if everyone makes the same mistakes at the same time. Frequently these patterns contain very large fluctuations in specific market segments that transmit distortions to other parts of the market. This crisis and the boom that preceded it fit into long term patterns that we frequently refer to as business cycles. We can determine the inevitability of these cycles only by examining the structure of our economic system.

Third, the structures of unsustainable economic systems usually contain structural sources of violent intervention. The elements of intervention in our system take three basic forms: 1) regulation, 2) spending, and 3) an expansionary monetary system.

- **REGULATION**

Government regulation directly impedes free choice, preventing the actors in the market from making quick and effective adaptations to the changing market environment. *Regulation* distorts the results of their interactions.

- **SPENDING**

Government "spending" reallocates economic resources based on political power and preferences rather than the efficient calculations of the market. *Spending* redistributes resources from more-productive uses to less-productive uses, retarding the effectiveness, efficiency and adaptability of the entire system. Taxation, the twin sister of spending, simply directs whose resources the government will confiscate.

- **MONETARY INFLATION**

The perpetual artificial expansion of the supply of money represents the most important and insidious form of violent interventions used by the government. Monetary inflation has wide reaching influence and, by distorting the information carried by the price system, it causes market actors to act against their own best interest. Rising prices caused by monetary inflation sends signals of shortage to those segments of the economy into which money flows most readily. Acting rationally on those false signals entrepreneurs make what seem like sound investments.

They later learn that these apparently sound investments have become bad investments—malinvestments. The natural liquidation of malinvestments manifests as market collapses. These collapses—the healthy part of the cycle—clear out the disease of these malinvestments.

Finally, the unsustainable system contains the same reinforcing and balancing processes as do all living system. In the case of the unsustainable system, however, the triad of violent intervention—regulation, spending, inflation—upsets the natural balance of these processes.

The violent interventions of government tend to amplify the reinforcing processes, carrying them to extremes. These extremes build up excess tension in the system from the balancing processes. When the balancing processes finally overpower the reinforcing processes, the system makes a dramatic shift in direction. The distorted interaction of these processes lead to the booms and busts, like the event we just experienced.

## D. The Cure—A New Structure

How then do we cure the disease that causes financial crises?

First, we need to understand that financial crises represent a symptom of the disease. Although the pain comes in what we refer to as a crisis, they occur as a result of the system's natural tendency to compensate for the violent interventions in the system. The real disease occurs in the boom. To eliminate the busts requires eliminating the root causes of the booms.

We must transform—not just reform—the structure of our economic system.

The cycles of boom and bust have a staggeringly simple—but not easy—solution: eliminate the violent intervention of government. We don't, however, have the political insight or courage to take this action for we like the addictive high of constantly rising prices and the artificial booms that go with them.

Instead of espousing free markets, then implementing more interventions, we need to release the system from these artificial burdens. We must stop picking the pockets of our neighbors—regardless of the merits of our cause. Stopping the violent intervention will allow a healthy system to emerge. People will work together, in cooperation, to build a stronger economy and better lives.



## VIII. Appendix

### A. Inflation-Adjusted Patterns

In the body of this paper I have shown several dollar denominated patterns of behavior. Most economists like to show these same figures "adjusted for inflation" using the consumer price index (CPI). This method has two problems. First, the CPI does not actually measure inflation—the expansion of the quantity of money. Second, the dollar prices of the commodities included in the CPI always relate to each other. The CPI represents an invalid measure that assumes every variable changes independently when, in fact, changes occur interdependently. In addition, it assumes the aggregation of economic goods that cannot be aggregated.

Most macro-economic measures suffer from errors of aggregation. How can economists represent an economy consisting of complex, non-homogeneous goods with a single number? How can they aggregate the prices of houses in many different geographic locations and socio-economic settings?

In spite of the flaws in these numbers I thought I would risk wading into a quagmire by adjusting some of these numbers by one measure of inflation that at least uses a consistent unit of measure. What would the economists' charts look like when adjusted for a fixed quantity of money?

In the following charts I made inflation adjustments using an index based on the quantity of money, in terms of MZM, at the beginning of the period covered by the chart. I used MZM because, of the various money aggregates, it best reflects the "money" used in all economic transactions.

### 1. GDP

In the chart below I have compared nominal GDP with an inflation (quantity of money) adjusted GDP. Could it really be true that the actual productive capacity only rose gradually from 1959 to 1981 and has been on the decline ever since? You might find it curious that the rate of growth of nominal GDP and MZM nearly parallel each other.

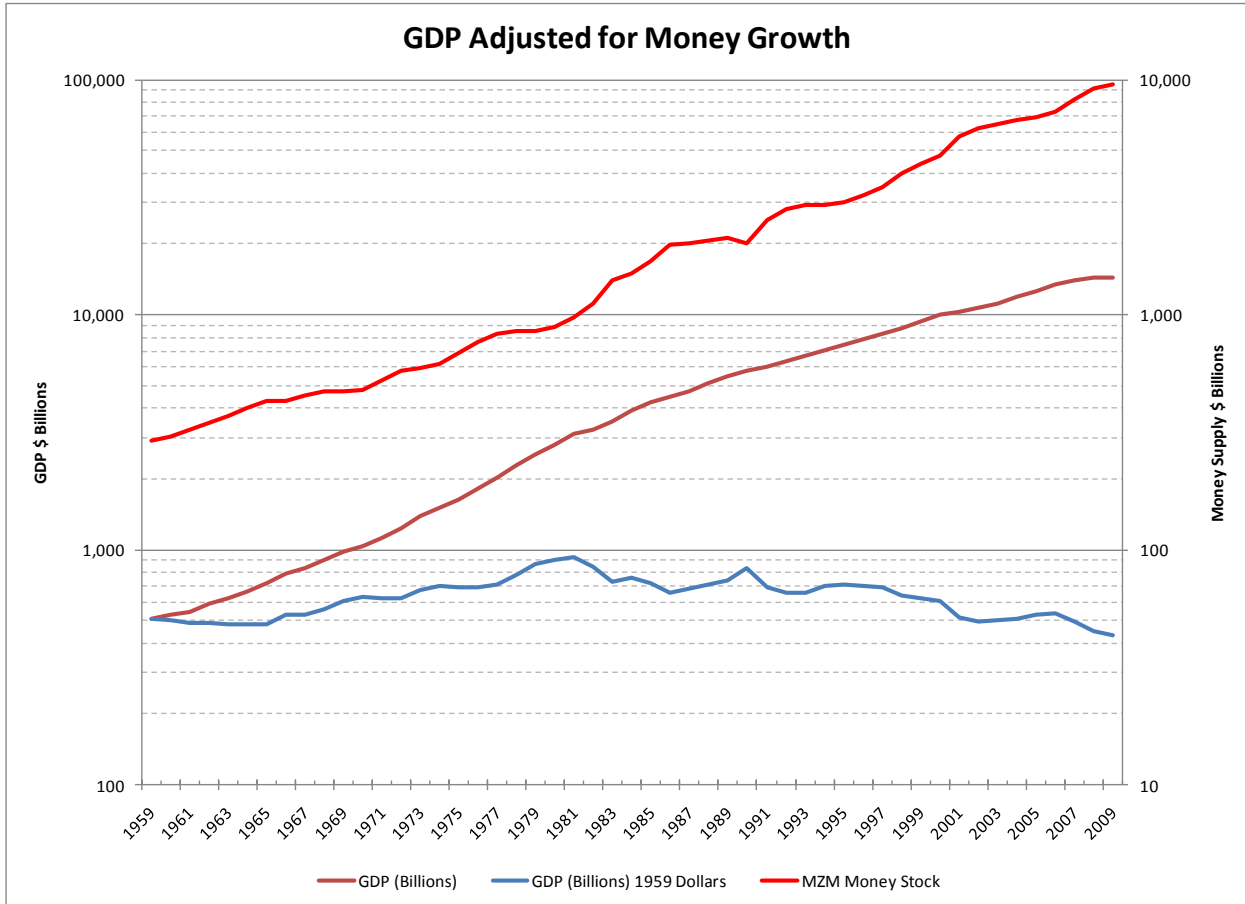


FIGURE 23. GDP - NOMINAL & ADJUSTED FOR INFLATION

## 2. Housing Prices Adjusted for Inflation

In this chart, showing housing prices, the nominal index (which uses 1890 as the index base) shows house prices rising consistently from 1973 until about 2007, when they crashed. The inflation adjusted price level tells another story (adjusted by an index of the quantity of MZM). Maybe "real" house prices have fallen for most of that period. It makes sense for a couple of reasons. First, the supply of housing has increased throughout that period, which should cause declining prices. Second, when you squeeze out the influence of the expanding supply of money on house prices, you would expect them to fall. The short run up in house prices in the early 2000s resulted from the buying frenzy caused by too much money. House prices could accelerate faster than the money growth rate because many other economic goods declined in dollar price.

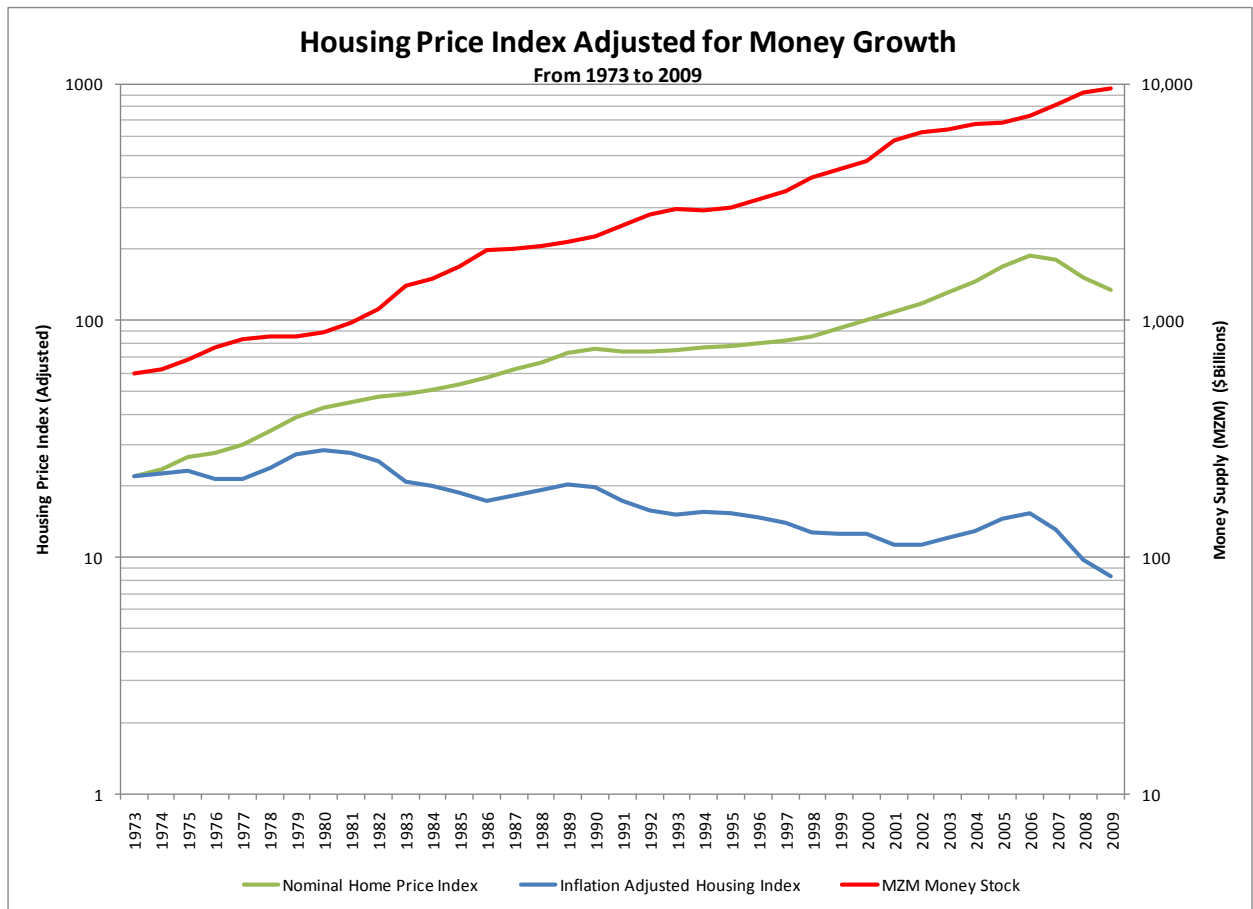


FIGURE 24. HOUSE PRICE INDEX ADJUSTED FOR INFLATION

### 3. Stock Market

What happens when we wring the influence of monetary expansion out of the stock market? Was the bull market of the 80s and 90s just an inflationary bubble in which stock prices (even real prices) rose in a reinforcing process caused by money growth? Have the real prices of stocks declined since 1959? Look back at the adjusted figures for GDP (see: Figure 23. GDP - Nominal & Adjusted for Inflation.)

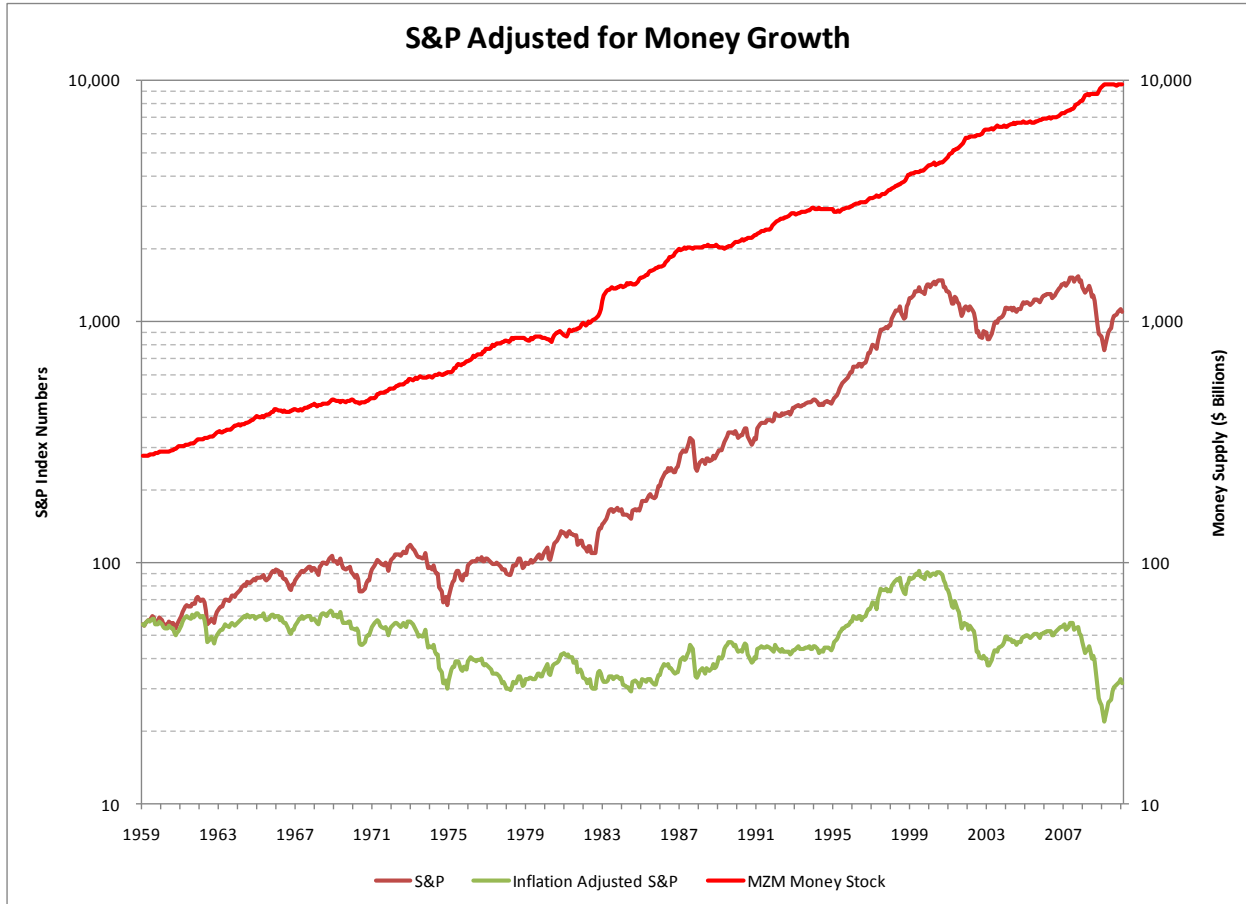


FIGURE 25. INFLATION ADJUSTED S&P

### 4. Real Estate Loans

Adjusting real estate loans and commercial and industrial loans for monetary growth may reveal some interesting insight into this crash. In constant dollars the volume of real estate loans did increase throughout this period, although not nearly as dramatically as in nominal terms. The decline in the real volume of commercial and industrial loans juxtaposed to the rise in real estate loans may provide some interesting insight into the recent crash. It seems even more apparent that real estate lending (a form of dis-saving) took "real dollars" from the productive part of the economy. That conclusion remains consistent with the contention that the savings pool just could not service the debt for unproductive assets.

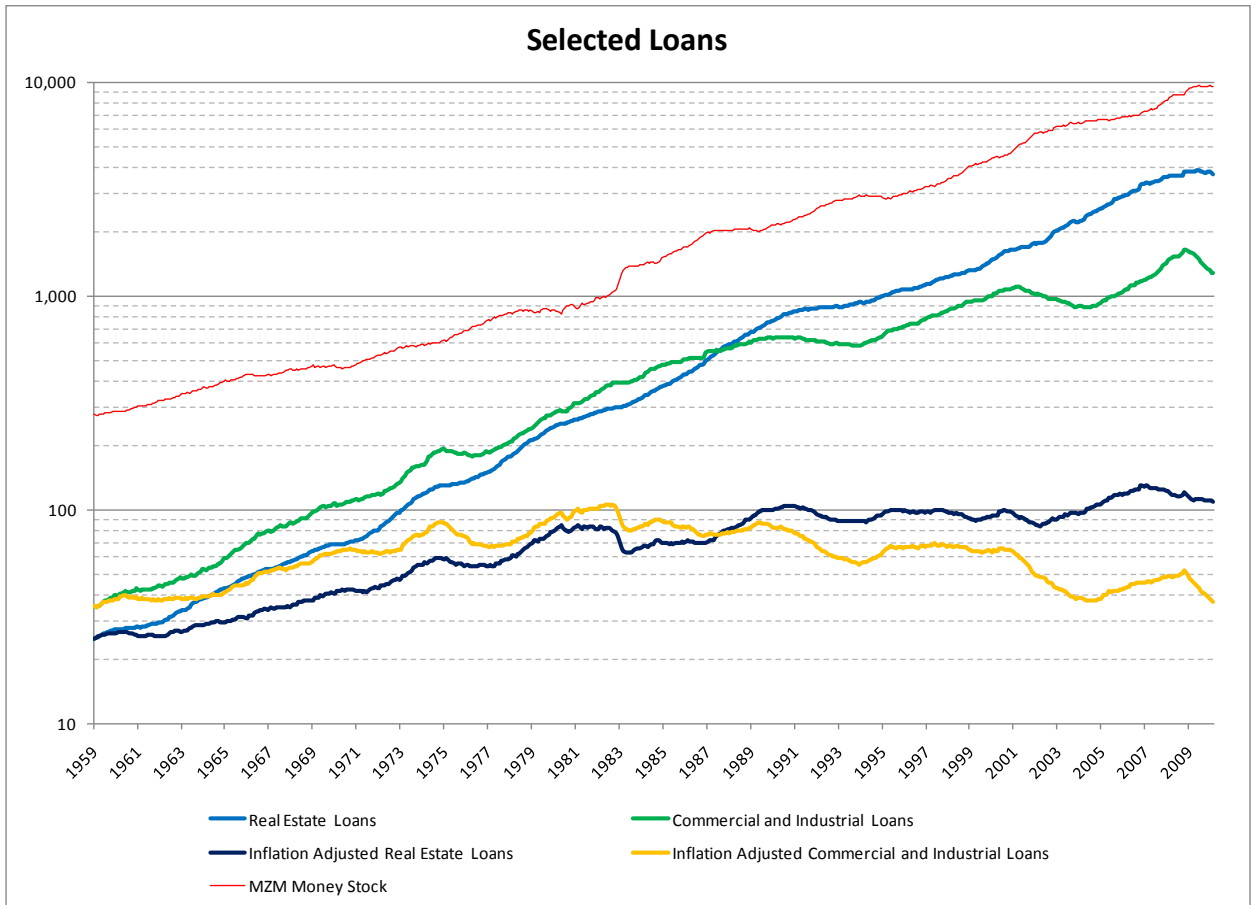


FIGURE 26. REAL ESTATE LOANS ADJUSTED FOR INFLATION

### 5. Money Supply

I have included the money supply in all of the charts in which I have adjusted for monetary growth in order show its influence. Of course, I cannot adjust the money supply itself (as some attempt to).

## B. Monetary Aggregates

Different economists use different aggregates of financial assets to judge the changes in the supply of money in the economy. I have provided below definitions of the three most popular aggregates. I have chosen to use MZM because it fits the definition of money that I gave in the body of this paper and it incorporates all the financial instruments that people use to conduct economic transactions and make economic decisions.

### 1. M1

**M1**, which includes funds that are readily accessible for spending, consists of: (1) currency outside the U.S. Treasury, Federal Reserve Banks, and the vaults of depository institutions; (2) traveler's checks of nonbank issuers; (3) demand deposits; and (4) other checkable deposits (OCDs), which consist primarily of negotiable order of withdrawal (NOW) accounts at depository institutions and credit union share draft accounts.

### 2. M2

**M2** includes a broader set of financial assets held principally by households. M2 consists of M1 plus: (1) savings deposits (which include money market deposit accounts, or MMDAs); (2) small-denomination time deposits (time deposits in amounts of less than \$100,000); and (3) balances in retail money market mutual funds (MMMFs).

### 3. MZM

**MZM**, which replaces the old measure known as M3, represents the broadest definition of money. MZM consists of M2 **less** small-denomination time deposits **plus** institutional money funds. Money Zero Maturity is calculated by the Federal Reserve Bank of St. Louis.

## C. History of Bank Reserve Requirements

### 1. 1913 to 1966

Effective date		Net demand deposits			Time deposits (all classes of banks)
		Central reserve city banks	Reserve city banks	Country banks	
1913	December 23	18	15	12	5
1917	June 21	13	10	7	3
1936	August 16	19.5	15	10.5	4.5
1937	March 1	22.75	17.5	12.25	5.25
1937	May 1	26	20	14	6
1938	April 16	22.75	17.5	12	5
1941	November 1	26	20	14	6
1942	August 20	24	20	14	6
1942	September 14	22	20	14	6
1942	October 3	20	20	14	6
1948	February 27	22	20	14	6
1948	June 11	24	20	14	6
1948	September 24, 16	26	22	16	7.5
1949	May 5, 1	24	21	15	7
1949	June 30, July 1	24	20	14	6
1949	August 1	24	20	13	6
1949	August 11, 16	23.5	19.5	12	5
1949	August 18	23	19	12	5
1949	August 25	22.5	18.5	12	5
1949	September 1	22	18	12	5
1951	January 11, 16	23	19	13	6
1951	January 25, February 1	24	20	14	6
1953	July 9, 1	22	19	13	6
1954	June 24, 16	21	19	13	5
1954	July 29, August 1	20	18	12	5
1958	February 27, March 1	19.5	17.5	11.5	5
1958	March 20, April 1	19	17	11	5
1958	April 17	18.5	17	11	5
1958	April 24	18	16.5	11	5
1960	September 1	17.5	16.5	11	5
1960	November 24	17.5	16.5	12	5
1960	December 1	16.5	16.5	12	5
1962	July 28	16.5	16.5	12	5
1962	October 25, November 1	16.5	16.5	12	4

TABLE 3. REQUIRED BANK RESERVES (1913 TO 1966)

2. 1966 to 1972

Effective date		Net demand deposits				Time deposits (all classes of banks)		
		Reserve city banks (deposit intervals in millions of dollars)		Country banks (deposit intervals in millions of dollars)		Savings	Other time (deposit intervals in Millions of Dollars)	
		0-5	more than 5	0-5	more than 5		0-5	more than 5
1966	July 14, 21	16.5	16.5	12	12	4	4	5
1966	September 8, 11	16.5	16.5	12	12	4	4	6
1967	March 2	16.5	16.5	12	12	3.5	3.5	6
1967	March 16	16.5	16.5	12	12	3	3	6
1968	Januay 11, 18	16.5	17	12	12.5	3	3	6
1969	April 17	17	17.5	12.5	13	3	3	6
1970	October 1	17	17.5	12.5	13	3	3	5

TABLE 4 REQUIRED BANK RESERVES (1966 TO 1972)

3. 1972 to 1980

Effective Date		Net Demand Deposits					Time and savings deposits							
		(deposit intervals in millions of dollars)					Savings	Time (deposit intervals in millions of dollars)						
		0-2	2-10	10-100	100-400	More than 400		0-5, by maturity			More than 5, by maturity			
								30-179 days	180 days to 4 years	4 years or more	30-179 days	180 days to 4 years	4 years or more	
1972	November 9	8	10	12	16.5	17.5	3	3	3	3	3	5	5	5
1972	November 16	8	10	12	13	17.5	3	3	3	3	3	5	5	5
1973	July 19	8	10.5	12.5	13.5	18	3	3	3	3	3	5	5	5
1974	December 12	8	10.5	12.5	13.5	17.5	3	3	3	3	3	6	3	3
1975	February 13	7.5	10	12	13	16.5	3	3	3	3	3	6	3	3
1975	October 30	7.5	10	12	13	16.5	3	3	3	1	1	6	3	1
1976	January 8	7.5	10	12	13	16.5	3	3	2.5	1	1	6	2.5	1
1976	December 30	7	9.5	11.75	12.75	16.25	3	3	2.5	1	1	6	2.5	1

TABLE 5 REQUIRED BANK RESERVES (1966 TO 1972)

4. 1980 to Present

Effective date		Net transaction accounts	Nontransaction accounts
1980	November 13	12	3
1990	December 26	12	0
1992	April 2	10	0

TABLE 6. REQUIRED BANK RESERVES (1980 TO PRESENT)



## D. A Brief History of U.S. Real Estate Loans

This brief history of the Real Estate Loans in the United States adapted from "[Case Study: U.S. Savings & Loan Crisis](#)" by Rob Jameson for Sungard Ambit ERisk. (Jameson, 2002)

**1932:** Federal Home Loan Bank Act establishes Federal Home Loan Bank Board (FHLBB)

**1933:** Home Owner's Act promotes home ownership via mortgage loans offered by savings & loans associations regulated by the FHLBB

**1934:** National Housing Act sets up Federal Savings and Loan Insurance Corporation (FSLIC) to insure deposits at S&L institutions

**1960s:** Congress applies Regulation Q to the S&L industry to put a ceiling on the interest rate that S&Ls can pay to depositors.

**1970s:** Congress deregulates interest rates opening up potential asset/liability and interest rate risks for S&Ls, but politicians fail to act on various studies and commissions recommending a mix of consolidated supervision and liberalized regulation of the sector.

**1979-1982:** Sharply raised interest rates lead to an asset/liability crisis at many S&Ls that is at its worst in 1980 to 1982.

**November 1980:** Following the March enactment of the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA), which allowed the Bank Board to ease the previous statutory 5% of net worth requirement to anywhere between 3% and 6%, FHLBB eases 'net worth' rules to only 4% of insured accounts. DIDMCA also raises the bar on federally insured deposits from \$40,000 to \$100,000 and allows some S&Ls to put money into property development and other risky activities.

**1981:** Changes in federal tax regulations under the Economic Recovery Tax Act of 1981 help spark the beginnings of the real-estate boom of the early to mid 1980s.

**September 1981:** FHLBB introduces various rules and accounting changes to make the financial condition of S&Ls look better, including allowing the deferral of losses from the sale of impaired assets over a ten-year period, and the issuance of capital 'certificates' that artificially boost apparent capitalization.

**January 1982:** Net worth rules eased again to only 3% of insured accounts.

**July 1982:** FHLBB allows S&Ls to amortize 'supervisory goodwill' over a period of up to 40 years, up from an original 10-year restriction. Garn-St Germain Depository Institutions Act of 1982 allows easing of capital rules, and greatly eases restrictions on the proportion of a property's value that S&Ls can loan to a property developer. Deposit interest rate ceilings (Regulation Q) phased out for S&Ls, enabling them to compete for wholesale funds by offering high rates of interest.

**Late 1982:** FHLBB starts to count equity capital as part of an S&L's reserves

**January 1983:** Restrictions lifted on state-chartered S&Ls in California with regard to investments in property and service companies, as state legislators compete with federal legislators to ease restrictions on S&Ls.

**1983:** Interest rates fall, temporarily making some - though not all - of the S&L industry solvent on an economic basis. But the opportunity for rational closure of institutions and reform of healthy institutions is missed.

**Late 1984 and after:** Regulators begin to tighten up regulations to try to prevent weaker institutions making rash loans and investments following a number of attention-grabbing S&L collapses.

**1984-89:** S&Ls pay above-market rates to attract deposits, particularly in hot spots such as the Texas S&L industry. It's clear that the industry is in deep trouble but its regulators lack resources and political backing to close insolvent institutions quickly enough.

**1986:** FSLIC, itself clearly insolvent by year-end 1986, resolves 54 thrifts with total assets of around \$16 billion. But far more thrifts are insolvent according to their book values, while many others hover on the brink of book insolvency. The economic reality is even worse, with perhaps half the industry now under the water.

**1986-1992:** During the later 1980s, the real-estate bubble bursts in regions around the U.S., partly prompted by the passing of the Tax Reform Act in 1986, which removes federal tax incentives to invest in commercial real estate.

**1987:** The passing of the Competitive Equality Banking Act, and the setting up of a Financing Corporation (FICO) to fund FSLIC resolution of failing thrifts by means of issuing bonds, channel some limited resources to the program of S&L closure, but the emphasis remains on keeping wounded S&Ls afloat.

**1988:** Regulators resolve 185 thrifts with total assets of \$96 billion, but it's not enough to stabilize the industry and many resolutions continue to be by means of regulator-agreed acquisition: sharing rather than ending the economic woe.

**February 1989:** George Bush, newly elected in November 1988, announces a program for rescuing the S&L industry using taxpayers' money.

**1989:** Congress passes the Financial Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA), which as part of a program of reform sets up the Resolution Trust Corporation to liquidate hundreds of insolvent institutions.

**1989-1990:** In terms of public expense, the S&L crisis is at its height. RTC resolves 318 thrifts with total assets of \$135 billion in 1989 and 213 thrifts with total assets of \$130 billion in 1990.

**1990-92:** RTC continues to resolve large numbers of thrifts, but the annual figure for 1992 falls to 59 institutions with \$44 billion assets.

**1993-95:** The number of thrifts requiring RTC intervention falls away sharply to only 13 over this three-year period as industry fundamentals begin to improve. The crisis is over, but legal wrangling over the restructuring process will continue into the next millennium.

## Bibliography

- Bureau of Economic Analysis: *National Economic Accounts*. (2010, May). Retrieved May 2010, from Bureau of Economic Analysis: <http://www.bea.gov/national/index.htm>
- Data Download H.3. (2010, May). *Aggregate Reserves of Depository Institution and the Monetary Base (H.3)*. Retrieved May 2010, from Board of Governors of the Federal Reserve System: <http://www.federalreserve.gov/datadownload/default.htm>
- Data Download H.8. (2010, May). *Assets and Liabilities of Commercial Banks in the United States (H.8)*. Retrieved May 2010, from Board of Governors of the Federal Reserve System: <http://www.federalreserve.gov/datadownload/Choose.aspx?rel=H.8>
- Interest Rates. (2010, May). *Economic Data - FRED®*. Retrieved May 2010, from Economic Research: The Federal Reserve Bank of St. Louis: <http://research.stlouisfed.org/fred2/categories/22>
- Jameson, R. (2002, August). *Case Study: U.S. Savings & Loan Crisis*. Retrieved May 2010, from Sungard - Ambit ERisk: <http://www.erisk.com/learning/casestudies/ussavingsloancrisis.asp>
- Joshua N. Feinman. (1993, June). *Reserve Requirements: History, Current Practice, and Potential Reform*. Retrieved May 2010, from Federal Reserve Bulletin: <http://www.federalreserve.gov/monetarypolicy/0693lead.pdf>
- Monetary Aggregates. (2010, May). *Economic Data - FRED®*. Retrieved May 2010, from Economic Research: The Federal Reserve Bank of St. Louis: <http://research.stlouisfed.org/fred2/categories/24>
- Shiller, R. (2010). *ONLINE DATA ROBERT SHILLER*. Retrieved May 2010, from Yale University - Robert Shiller: <http://www.econ.yale.edu/~shiller/data.htm>
- Statistical Release Table 4. (2010, May). *Federal Reserve: Aggregate Reserves of Depository Institutions Table 4*. Retrieved May 2010, from Federal Reserve Statistical Release: <http://www.federalreserve.gov/releases/h3/hist/>



"Government is essentially  
the negation of liberty."

Ludwig von Mises

