

Deleveraging Studies

As deleveragings are very different processes than recessions, and as we believe that we are now in a global deleveraging, we know that we must thoroughly understand the deleveraging process in order to successfully manage money. These deleveraging studies were done for this purpose.

Enclosed is our internal study of the deleveraging dynamic that has occurred across countries and time, examined through two of the most iconic examples – the US Deleveraging in the 1930s and the Weimar Republic in the 1920s. To do these studies we read numerous books and reports on both periods and examined the historical records. While this information was invaluable, it was not configured in a form that served our purpose of creating a virtual experience of going through them, so we reconfigured what we learned into these studies. We did these studies to understand the deleveraging dynamic in detail and so that we could simulate how we would have made our portfolio moves through them.

While we think the US Deleveraging in the 1930s is the most relevant comparison to the debt crisis of 2008 (because the deleveraging was global in nature), the dynamics of an inflationary deleveraging such as the one that took place in the Weimar Republic also provides for an interesting case study. There are some important differences between the nature of a deflationary deleveraging and an inflationary deleveraging, and both should be understood and considered when formulating a sound investment strategy.

They are preceded by a summary explanation of how we believe the economy and credit system work called "A Template for Understanding What's Going On". This template includes our explanation of the D-process that we believe is behind of these case studies and that we believe is now driving the global economy.

We hope you find these studies helpful. We do want to limit distribution of this research however, and respectfully ask that you keep it confidential.

As always, we appreciate any comments, questions or feedback you may have.

A Template for Understanding What's Going On	3
US Deleveraging 1930s <i>Timeline of Events</i>	23
Weimar Republic Deleveraging 1920s <i>Timeline of Events</i>	85

A Template for Understanding What's Going On

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The economy is like a machine. At the most fundamental level it is a relatively simple machine, yet it is not well understood. I wrote this paper to describe how I believe it works. My description of how the economy works is not the same as conventional economists' descriptions so you should decide for yourself whether or not what I'm saying makes sense.

How the Economic Machine Works

An economy is simply the sum of the transactions made and a transaction is a simple thing. A transaction consists of the buyer giving money (or credit) to a seller and the seller giving a good, a service or a financial asset to the buyer in exchange. A market consists of all the buyers and sellers making exchanges for the same things – e.g. the wheat market consists of different people making different transactions for different reasons over time. An economy consists of all of the transactions in all of its markets. So, while seemingly complex, an economy is really just a zillion simple things working together, which makes it look more complex than it really is. Let's start with the simple things and build up from there.

For any market, or for any economy, if you know the total amount of money (or credit) spent and the total quantity sold, you know everything you need to know to understand. For example, since the price of any good, service or financial asset equals the total amount spent by buyers (total \$) divided by the total quantity sold by sellers (total Q), in order to understand or forecast the price of anything you just need to forecast total \$ and total Q. While in any market there are lots of buyers and sellers, and these buyers and sellers have different motivations, the motivations of the most important buyers are usually pretty understandable and adding them up to understand the economy isn't all that tough if one builds from the transactions up.

Most basically:

- All changes in economic activity and all changes in financial markets' prices are due to changes in the amounts of 1) money or 2) credit that are spent on them (total \$), and the amounts of these items sold (total Q). Changes in the amount of buying (total \$) typically have a much bigger impact on changes in economic activity and prices than do changes in the total amount of selling (total Q). That is because there is nothing that's easier to change the supply of than money and credit (total \$).
- For simplicity, let's cluster the buyers in a few big categories. Buying can come from either 1) the private sector or 2) the government sector. The private sector consists of "households", and businesses that can be either domestic or foreign. The government sector most importantly consists of a) the Federal Government¹ which spends its money on goods and services and b) the central bank, which is the only entity that can create money and, by and large, mostly spends its money on financial assets.

¹ State and local governments are of course still significant.

The Capitalist System

As mentioned, the previously outlined economic players buy and sell both 1) goods and services and 2) financial assets, and they can pay for them with either 1) money or 2) credit. For example, when you go into a store to buy something, you can either pay with cash (in which case the transaction is settled) or with credit (in which case you still owe the money).

In a capitalist system, this exchange takes place through free choice – i.e., there are “free markets” in which buyers and sellers of goods, services and financial assets make their transactions in pursuit of their own interests. The production and purchases of financial assets (i.e., lending and investing) is called “capital formation”. It occurs because both the buyer and seller of these financial assets believe that the transaction is good for them. Those with money and credit provide it to recipients in exchange for the recipients’ “promises” to pay them more. So, for this process to work well, there must be large numbers of capable providers of capital (i.e., investors/lenders) who choose to give money and credit to large numbers of capable recipients of capital (borrowers and sellers of equity) in exchange for the recipients’ believable claims that they will return amounts of money and credit that are worth more than they were given. When this condition exists, the free market approach to capital formation performs well so private sector capital formation and spending pick up, the economy grows and investment assets typically have good returns. When these conditions don’t exist, this process performs poorly.

When capital contractions occur, economic contractions also occur. These contractions typically occur for two reasons, which are most commonly known as recessions and deleveragings. Recessions are typically well understood because they happen often and most of us have experienced them, whereas deleveragings are typically poorly understood because they happen infrequently and are not widely experienced.

Recessions are very different from deleveragings in the following ways (in brief):

- A recession is an economic contraction that is typically due to a contraction in private sector capital (i.e., debt and equity) arising from a tight central bank policy (usually to fight inflation), which ends when the central bank eases. In recessions, central banks can control money and credit creation by changing the cost of money until an adequate number of borrowers and lenders are interested in transacting so that the desired levels of credit growth and economic growth are achieved. Recessions end when central banks lower interest rates and increase the supply of money enough to stimulate demand for goods and service and credit growth because lower interest rates 1) reduce debt service costs; 2) lower monthly payments (de-facto, the costs) of items bought on credit, which stimulates the demand for them; and 3) raise the prices of income-producing assets like stocks, bonds and real estate through the present value effect of discounting their expected cash flows at the lower interest rates, producing a “wealth effect” on spending.
- A deleveraging is an economic contraction that is due to a contraction in real capital (i.e., credit and equity) that arises when there is a shortage of capable providers of capital and/or a shortage of capable recipients of capital (borrowers and sellers of equity) that cannot be rectified by the central bank changing the cost of money. In deleveragings, a) a large number of debtors have obligations to deliver more money than they have to meet their obligations, and b) monetary policy is ineffective in reducing debt service costs and stimulating credit growth. In deleveragings central banks cannot control money and credit creation by changing the cost of money. Typically, monetary policy is ineffective in stimulating credit growth either because interest rates can’t be lowered (because interest rates are near 0%) to the point of favorably influencing the economics of spending and capital formation (this produces deflationary deleveragings), or because money growth goes into the purchase of inflation hedge assets rather than into credit growth, which produces inflationary deleveragings. Deleveragings

typically end via a mix of 1) debt restructurings that reduce debt service obligations, 2) increases in the supply of money that make it easier for debtors to meet their debt service obligations, 3) redistributions of wealth, 4) businesses lowering their break-even levels through cost-cutting and 5) substantial increases in risk and liquidity premiums that restore the economics of capital formation (i.e., lending and equity investing).

In other words, recessions can be rectified by central banks changing interest rates to make it profitable for increased capital formation and economic activity to occur, while deleveragings can not be rectified by these actions, so more structural changes are required. That is why recessions are relatively brief (typically a few to several months) and deleveragings are long lasting (typically a decade or more). While in both recessions and deleveragings there are contractions in private sector credit and spending that lead the government to increase its creation and spending of money and credit, in deleveragings the interventions of the government are typically much larger, more extensive and long lasting. Differences in how governments typically behave in recessions and deleveragings are a good clue that signal which is happening. For example, in deleveragings, central banks typically “print” money that they use to buy large quantities of financial assets in order to compensate for the decline in private sector credit, while these actions are unheard of in recessions.² Also, central governments typically spend much, much more to make up for the fall in private sector spending.

But let’s not get ahead of ourselves. Since these two types of contractions are just parts of two different types of cycles that are explained more completely in this template, let’s look at the template.

The Template: The Three Big Forces

I believe that three main forces drive most economic activity: 1) trend line productivity growth, 2) the long-term debt cycle and 3) the business/market cycle. Since business/market cycles repeat frequently, they’re pretty well understood, but the other two forces are less well understood, so we will explain all three. I will then show how, by overlaying the archetypical “business” cycle on top of the archetypical long-term debt cycle and overlaying them both on top of the productivity trend line, one can derive a good template for tracking most economic/market movements. While these three forces apply to all countries’ economies, we will use the U.S. economy over the last hundred years or so as an example to convey the template.

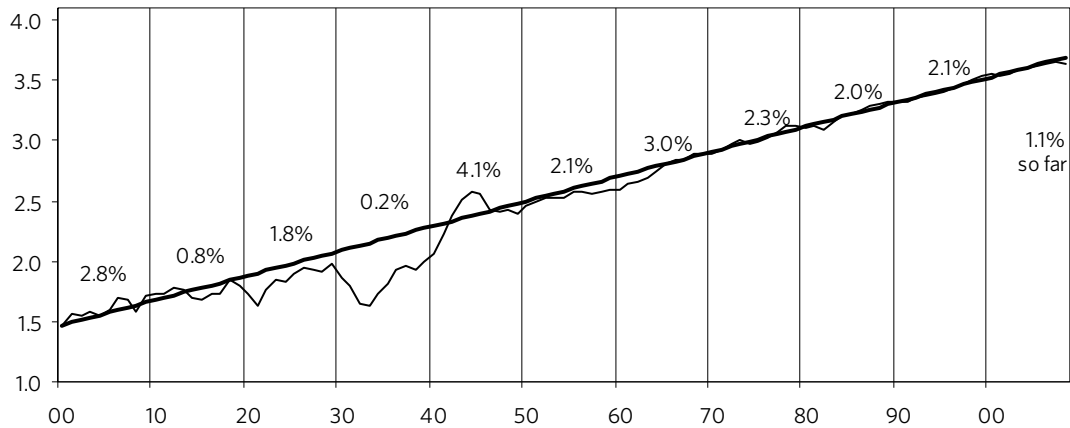
1) Productivity Growth

As shown below in chart 1, real per capita GDP has increased at an average rate of a shade less than 2% over the last 100 years and didn’t vary a lot from that. This is because, over time, knowledge increases, which in turn raises productivity and living standards. As shown in this chart, over the very long run, there is relatively little variation from the trend line. Even the Great Deleveraging in the 1930s looks rather small. As a result, we can be relatively confident that, with time, the economy will get back on track. However, up close, these variations from trend can be enormous. For example, typically in deleveragings the peak-to-trough declines in real economic activity are around 20%, the destruction of financial wealth is typically more than 50% and equity prices typically decline by around 80%. The losses in financial wealth for those who have it at the beginning of deleveragings are typically greater than these numbers suggest because there is also a tremendous shifting of who has wealth.

² These show up in changes in their balance sheets that don’t occur in recessions.

Chart 1

Real GDP Per Capita (2008 Dollars, ln)



Sources: Global Financial Data & BW Estimates

Swings around this trend are not primarily due to expansions and contractions in knowledge. For example, the Great Deleveraging didn't occur because people forgot how to efficiently produce, and it wasn't set off by war or drought. All the elements that make the economy buzz were there, yet it stagnated. So why didn't the idle factories simply hire the unemployed to utilize the abundant resources in order to produce prosperity? These cycles are not due to events beyond our control, e.g., natural disasters. They are due to human nature and the way the system works.

Most importantly, major swings around the trend are due to expansions and contractions in credit – i.e., credit cycles, most importantly 1) a long-term (typically 50 to 75 years) debt cycle (i.e., the “long wave cycle”) and 2) a shorter-term (typically 5 to 8 years) debt cycle (i.e., the “business/market cycle”).

About Cycles

We find that whenever we start talking about cycles, particularly the “long-wave” variety, we raise eyebrows and elicit reactions similar to those we’d expect if we were talking about astrology. For this reason, before we begin explaining these two debt cycles we’d like to say a few things about cycles in general.

A cycle is nothing more than a logical sequence of events leading to a repetitious pattern. In a capitalist economy, cycles of expansions in credit and contractions in credit drive economic cycles and they occur for perfectly logical reasons. Each sequence is not pre-destined to repeat in exactly the same way nor to take exactly the same amount of time, though the patterns are similar, for logical reasons. For example, if you understand the game of Monopoly®, you can pretty well understand credit and economic cycles. Early in the game of Monopoly®, people have a lot of cash and few hotels, and it pays to convert cash into hotels. Those who have more hotels make more money. Seeing this, people tend to convert as much cash as possible into property in order to profit from making other players give them cash. So as the game progresses, more hotels are acquired, which creates more need for cash (to pay the bills of landing on someone else’s property with lots of hotels on it) at the same time as many folks have run down their cash to buy hotels. When they are caught needing cash, they are forced to sell their hotels at discounted prices. So early in the game, “property is king” and later in the game, “cash is king.” Those who are best at playing the game understand how to hold the right mix of property and cash, as this right mix changes.

Now, let's imagine how this Monopoly® game would work if we changed the role of the bank so that it could make loans and take deposits. Players would then be able to borrow money to buy hotels and, rather than holding their cash idly, they would deposit it at the bank to earn interest, which would provide the bank with more money to lend. If Monopoly® were played this way, it would provide an almost perfect model for the way our economy operates. More money would be put into hotels sooner than if there were no lending, the amount owed would quickly grow to multiples of the amount of money in existence, and the cash shortage for the debtors who hold hotels would become greater. So, the cycles would become more pronounced. The bank and those who saved by depositing their money in it would also get into trouble when the inability to come up with needed cash caused withdrawals from the bank at the same time as debtors couldn't come up with cash to pay the bank. Basically, economic and credit cycles work this way.

We are now going to look at how credit cycles – both the long-term debt cycle and the business cycle – drive economic cycles.

How the System Works

Prosperity exists when the economy is operating at a high level of capacity: in other words, when demand is pressing up against a pre-existing level of capacity. At such times, business profits are good and unemployment is low. The longer these conditions persist, the more capacity will be increased, typically financed by credit growth. Declining demand creates a condition of low capacity utilization; as a result, business profits are bad and unemployment is high. The longer these conditions exist, the more cost-cutting (i.e., restructuring) will occur, typically including debt and equity write-downs. Therefore, prosperity equals high demand, and in our credit-based economy, strong demand equals strong real credit growth; conversely, deleveraging equals low demand, and hence lower and falling real credit growth. Contrary to now-popular thinking, recessions and deleveragings do not develop because of productivity (i.e., inability to produce efficiently); they develop from declines in demand.

Since changes in demand precede changes in capacity in determining the direction of the economy, one would think that prosperity would be easy to achieve simply through pursuing policies which would steadily increase demand. When the economy is plagued by low capacity utilization, depressed business profitability and high unemployment, why doesn't the government simply give it a good shot of whatever it takes to stimulate demand in order to produce a far more pleasant environment of high capacity utilization, fat profits and low unemployment? The answer has to do with what that shot consists of.

Money

Money is what you settle your payments with. Some people mistakenly believe that money is whatever will buy you goods and services, whether that's dollar bills or simply a promise to pay (e.g., whether it's a credit card or an account at the local grocery). When a department store gives you merchandise in return for your signature on a credit card form, is that signature money? No, because you did not settle the transaction. Rather, you promised to pay money. So you created credit, which is a promise to pay money.

The Federal Reserve has chosen to define "money" in terms of aggregates (i.e., currency plus various forms of credit – M1, M2, etc.), but this is misleading. Virtually all of what they call money is credit (i.e., promises to deliver money) rather than money itself. The total amount of debt in the U.S. is about \$50 trillion and the total amount of money (i.e., currency and reserves) in existence is about \$3 trillion. So, if we were to use these numbers as a guide, the amount of promises to deliver money (i.e., debt) is

roughly 15 times the amount of money there is to deliver.³ The main point is that most people buy things with credit and don't pay much attention to what they are promising to deliver and where they are going to get it from, so there is much less money than obligations to deliver it.

Credit

As mentioned, credit is the promise to deliver money, and credit spends just like money. While credit and money spend just as easily, when you pay with money the transaction is settled; but if you pay with credit, the payment has yet to be made.

There are two ways demand can increase: with credit or without it. Of course, it's far easier to stimulate demand with credit than without it. For example, in an economy in which there is no credit, if I want to buy a good or service I would have to exchange it for a comparably valued good or service of my own. Therefore, the only way I can increase what I own and the economy as a whole can grow is through increased production. As a result, in an economy without credit, the growth in demand is constrained by the growth in production. This tends to reduce the occurrence of boom-bust cycles, but it also reduces both the efficiency that leads to high prosperity and severe deleveraging, i.e., it tends to produce lower swings around the productivity growth trend line of about 2%.

By contrast, in an economy in which credit is readily available, I can acquire goods and services without giving up any of my own. A bank will lend the money on my pledge to repay, secured by my existing assets and future earnings. For these reasons credit and spending can grow faster than money and income. Since that sounds counterintuitive, let me give an example of how that can work.

If I ask you to paint my office with an agreement that I will give you the money in a few months, your painting my office will add to your income (because you were paid with credit), so it will add to GDP, and it will add to your net worth (because my promise to pay is considered as much of an asset as the cash that I still owe you). Our transaction will also add an asset (i.e., the capital improvement in my office) and a liability (the debt I still owe you) to my balance sheet. Now let's say that buoyed by this increased amount of business that I gave you and your improved financial condition that you want to expand. So you go to your banker who sees your increased income and net worth, so he is delighted to lend you some "money" (increasing his sales and his balance sheet) that you decide to buy a financial asset with (let's say stocks) until you want to spend it. As you can see, debt, spending and investment would have increased relative to money and income.

This process can be, and generally is, self-reinforcing because rising spending generates rising incomes and rising net worths, which raise borrowers' capacity to borrow, which allows more buying and spending, etc. Typically, monetary expansions are used to support credit expansions because more money in the system makes it easier for debtors to pay off their loans (with money of less value), and it makes the assets I acquired worth more because there is more money around to bid them. As a result, monetary expansions improve credit ratings and increase collateral values, making it that much easier to borrow and buy more.

In such an economy, demand is constrained only by the willingness of creditors and debtors to extend and receive credit. When credit is easy and cheap, borrowing and spending will occur; and when it is scarce and expensive, borrowing and spending will be less. In the "business cycle," the availability and cost of credit are driven by central bankers, while in the "long wave cycle" the availability and cost of credit are driven by factors that are largely beyond central banks' control. Both debt cycles cause swings around the previously shown long-term trend line growth because there are limits to excess debt growth, and all debts must either be paid off or defaulted on.

³ As a substantial amount of dollar-denominated debt exists outside the U.S., the total amount of claims on dollars is greater than this characterization indicates, so it is provided solely for illustrative purposes.

As previously mentioned, the most fundamental requirement for credit creation in a capitalist system is that both borrowers and lenders believe that the deal is good for them. Since one man's debts are another man's assets, lenders have to believe that they will get paid back an amount of money that is greater than inflation (i.e., more than they could get by storing their wealth in inflation hedge assets), net of taxes. And, because debtors have to pledge their assets (i.e., equity) as collateral in order to motivate the lenders, they have to be at least as confident in their abilities to pay their debts as they value the assets (i.e., equity) that they pledged as collateral.

Also, an important consideration of investors is liquidity – i.e., the ability to sell their investments for money and use that money to buy goods and services. For example, if I own a \$100,000 Treasury bond, I probably presume that I'll be able to exchange it for \$100,000 in cash and in turn exchange the cash for \$100,000 worth of goods and services. However, since the ratio of financial assets to money is so high, obviously if a large number of people tried to convert their financial assets into money and buy goods and services at the same time, the central bank would have to either produce a lot more money (risking a monetary inflation) and/or allow a lot of defaults (causing a deflationary deleveraging).

Monetary Systems

One of the greatest powers governments have is the creation of money and credit, which they exert by determining their countries' monetary systems and by controlling the levers that increase and decrease the supply of money and credit. The monetary systems chosen have varied over time and between countries. In the old days there was barter – i.e., the exchange of items of equal intrinsic value. That was the basis of money. When you paid with gold coins, the exchange was for items of equal intrinsic value. Then credit developed – i.e., promises to deliver “money” of intrinsic value. Then there were promises to deliver money that didn't have intrinsic value.

Those who lend expect that they will get back an amount of money that can be converted into goods or services of a somewhat greater purchasing power than the money they originally lent – i.e., they use credit to exchange goods and services today for comparably valuable goods and services in the future. Since credit began, creditors essentially asked those who controlled the monetary systems: “How do we know you won't just print a lot of money that won't buy me much when I go to exchange it for goods and services in the future?” At different times, this question was answered differently.

Basically, there are two types of monetary systems: 1) commodity-based systems – those systems consisting of some commodity (usually gold), currency (which can be converted into the commodity at a fixed price) and credit (a claim on the currency); and 2) fiat systems – those systems consisting of just currency and credit. In the first system, it's more difficult to create credit expansions. That is because the public will offset the government's attempts to increase currency and credit by giving both back to the government in return for the commodity they are exchangeable for. As the supply of money increases, its value falls; or looked at the other way, the value of the commodity it is convertible into rises. When it rises above the fixed price, it is profitable for those holding credit (i.e., claims on the currency) to sell their debt for currency in order to buy the tangible asset from the government at below the market price. The selling of the credit and the taking of currency out of circulation cause credit to tighten and the value of the money to rise; on the other hand, the general price level of goods and services will fall. Its effect will be lower inflation and lower economic activity.

Since the value of money has fallen over time relative to the value of just about everything else, we could tie the currency to just about anything in order to show how this monetary system would have worked. For example, since a one-pound loaf of white bread in 1946 cost ten cents, let's imagine we tied the dollar to bread. In other words, let's imagine a monetary system in which the government in 1946 committed to buy bread at 10 cents a pound and stuck to that until now. Today a pound loaf of white bread costs \$2.75. Of course, if they had used this monetary system, the price couldn't have risen to \$2.75 because we all would have bought our bread from the government at ten cents instead of from the

free market until the government ran out of bread. But, for our example, let's say that the price of bread is \$2.75. I'd certainly be willing to take all of my money, buy bread from the government at 10 cents and sell it in the market at \$2.75, and others would do the same. This process would reduce the amount of money in circulation, which would then reduce the prices of all goods and services, and it would increase the amount of bread in circulation (thus lowering its price more rapidly than other prices). In fact, if the supply and demand for bread were not greatly influenced by its convertibility to currency, this tie would have dramatically slowed the last 50 years' rapid growth in currency and credit.

Obviously, what the currency is convertible into has an enormous impact on this process. For example, if instead of tying the dollar to bread, we chose to tie it to eggs, since the price of a dozen eggs in 1947 was seventy cents and today it is about \$2.00, currency and credit growth would have been less restricted.

Ideally, if one has a commodity-based currency system, one wants to tie the currency to something that is not subject to great swings in supply or demand. For example, if the currency were tied to bread, bakeries would in effect have the power to produce money, leading to increased inflation. Gold and, to a much lesser extent, silver have historically proven more stable than most other currency backings, although they are by no means perfect.

In the second type of monetary system – i.e., in a fiat system in which the amount of money is not constrained by the ability to exchange it for a commodity – the growth of money and credit is very much subject to the influence of the central bank and the willingness of borrowers and lenders to create credit.

Governments typically prefer fiat systems because they offer more power to print money, expand credit and redistribute wealth by changing the value of money. Human nature being what it is, those in government (and those not) tend to value immediate gratification over longer-term benefits, so government policies tend to increase demand by allowing liberal credit creation, which leads to debt crises. Governments typically choose commodity-based systems only when they are forced to in reaction to the value of money having been severely depreciated due to the government's "printing" of a lot of it to relieve the excessive debt burdens that their unconstrained monetary systems allowed. They abandon commodity-based monetary systems when the constraints to money creation become too onerous in debt crises. So throughout history, governments have gone back and forth between commodity-based and fiat monetary systems in reaction to the painful consequences of each. However, they don't make these changes often, as monetary systems typically work well for many years, often decades, with central banks varying interest rates and money supplies to control credit growth well enough so that these inflection points are infrequently reached.

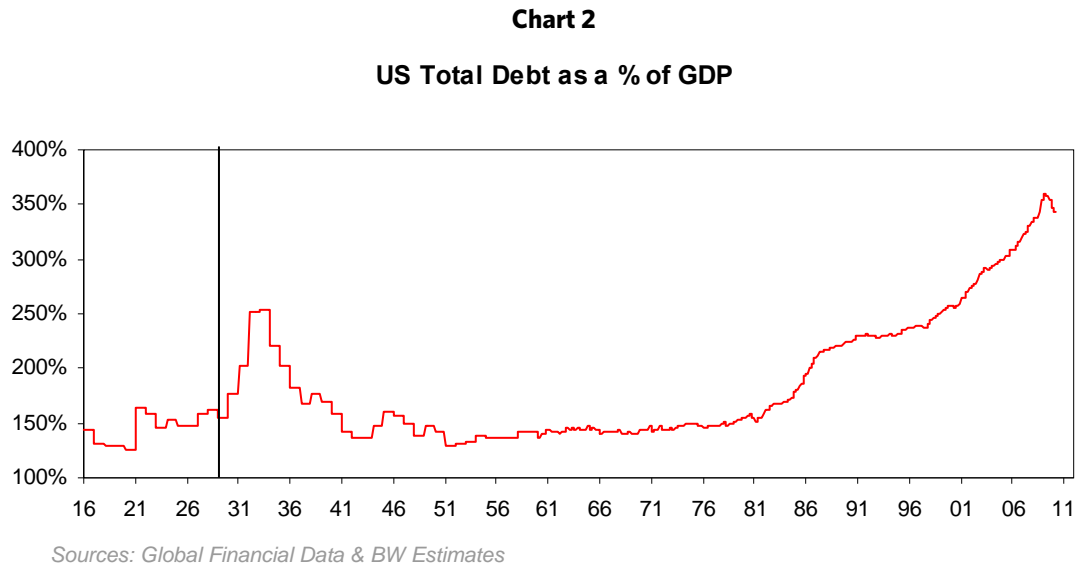
In the next two sections we first describe the long-term debt cycle and then the business/market cycle.

2) The Long Term (i.e., Long Wave) Cycle

As previously mentioned, when debts and spending rise faster than money and income, the process is self-reinforcing on the upside because rising spending generates rising incomes and rising net worths, which raise borrowers' capacity to borrow which allows more buying and spending, etc. However, since debts can't rise faster than money and income forever there are limits to debt growth. Think of debt growth that is faster than income growth as being like air in a scuba bottle – there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. In the case of debt, you can take it out before you put it in (i.e., if you don't have any debt, you can take it out), but you are expected to return what you took out. When you are taking it out, you can spend more than is sustainable, which will give you the appearance of being prosperous. At such times, you and those who are lending to you might mistake you as being creditworthy and not pay enough attention to what paying back will look like. When debts can no longer be raised relative to incomes and the time of paying back comes, the process

works in reverse. It is that dynamic that creates long-term debt cycles. These long-term debt cycles have existed for as long as there has been credit. Even the Old Testament described the need to wipe out debt once every 50 years, which was called the year of Jubilee.

The next chart shows U.S. debt/GDP going back to 1916 and conveys the long-term debt cycle.



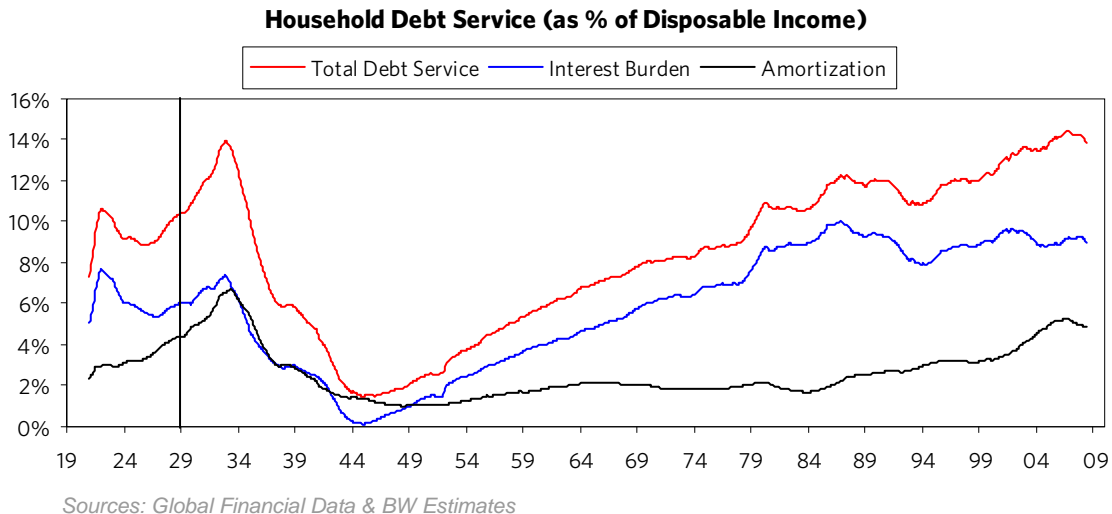
Upswings in the cycle occur, and are self-reinforcing, in a process by which money growth creates greater debt growth, which finances spending growth and asset purchases. Spending growth and higher asset prices allow even more debt growth. This is because lenders determine how much they can lend on the basis of the borrowers' 1) income/cash flows to service the debt and 2) net worth/collateral, as well their own capacities to lend, and these rise in a self-reinforcing manner.

Suppose you earn \$100,000, have a net worth of \$100,000 and have no debt. You have the capacity to borrow \$10,000/year, so you could spend \$110,000 per year for a number of years, even though you only earn \$100,000. For an economy as a whole, this increased spending leads to higher earnings, that supports stock valuations and other asset values, giving people higher incomes and more collateral to borrow more against, and so on. In the up-wave part of the cycle, promises to deliver money (i.e., debts and debt service payments) rise relative to both the a) the supply of money and b) the amount of money and credit debtors have coming in (via incomes, borrowings and sales of assets). This up-wave in the cycle typically goes on for decades, with variations in it primarily due to central banks tightening and easing credit (which makes business cycles). But it can't go on forever. Eventually the debt service payments become equal to or larger than the amount we can borrow and the spending must decline. When promises to deliver money (debt) can't rise any more relative to the money and credit coming in, the process works in reverse and we have deleveragings. Since borrowing is simply a way of pulling spending forward, the person spending \$110,000 per year and earning \$100,000 per year has to cut his spending to \$90,000 for as many years as he spent \$110,000, all else being equal.

While the last chart showed the amount of debt relative to GDP, the debt ratio, it is more precise to say that high debt service payments (i.e., principal and interest combined), rather than high debt levels, cause debt squeezes because cash flows rather than levels of debt create the squeezes that slow the economy. For example, if interest rates fall enough, debts can increase without debt service payments rising enough to cause a squeeze. This dynamic is best conveyed in the chart below. It shows interest payments, principal payments and total debt service payments of American households as a percentage of their disposable incomes going back to 1920. We are showing this debt service burden for the

household sector because the household sector is the most important part of the economy; however, the concept applies equally well to all sectors and all individuals. As shown, the debt service burden of households has increased to the highest level since the Great Deleveraging. What triggers reversals?

Chart 3



The long wave cycle top occurs when 1) debt and debt service levels are high relative to incomes and/or 2) monetary policy doesn't produce credit growth. All deleveragings start because there is a shortage of money relative to debtors' needs for it. This leads to large numbers of businesses, households and financial institutions defaulting on their debts and cutting costs, which leads to higher unemployment and other problems. While these debt problems can occur for many reasons, most classically they occur because investment assets are bought at high prices and with leverage⁴ - i.e., because debt levels are set on the basis of overly optimistic assumptions about future cash flows. As a result of this, actual cash flows fall short of what's required for debtors to service their debts. Ironically, quite often in the early stages the cash flows fall short because of tight monetary policies that are overdue attempts to curtail these bubble activities (buying overpriced assets with excessive leverage), so that the tight money triggers them (e.g., in 1928/29 in much of the world, in 1989/91 in Japan and in 2006/07 in much of the world). Also ironically, inflation in financial assets is more dangerous than inflation in goods and services because this financial asset inflation appears like a good thing and isn't prevented even though it is as dangerous as any other form of over-indebtedness. In fact, while debt financed financial booms that are accompanied by low inflation are typically precursors of busts, at the time they typically appear to be investment generated productivity booms (e.g. much of the world in the late 1920s, Japan in the late 1980s and much of the world in the mid 2000s).

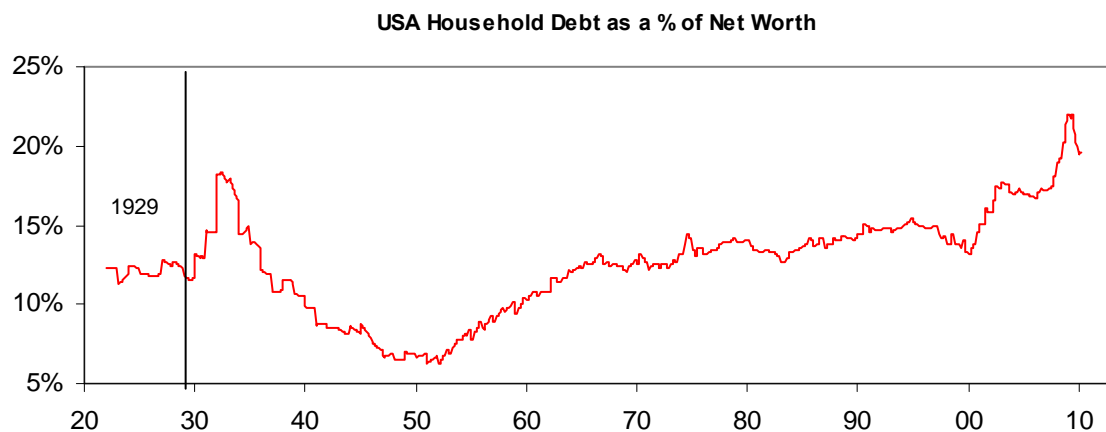
Typically, though not always, interest rates decline in reaction to the economic and market declines and central banks easing, but they can't decline enough because they hit 0%. As a result, the abilities of central banks to alleviate these debt burdens, to stimulate private credit growth and to cause asset prices to rise via lower interest rates are lost. These conditions cause buyers of financial assets to doubt that the value of the money they will get from owning this asset will be more than the value of the money they pay for it. Then monetary policy is ineffective in rectifying the imbalance.

⁴ This time around, residential and commercial real estate, private equity, lower grade credits and, to a lesser extent, listed equities were the assets that were bought at high prices and on lots of leverage. In both the U.S. Great Deleveraging and in the Japanese deleveraging, stocks and real estate were also the assets of choice that were bought at high prices and on leverage.

In deleveragings, rather than debts rising relative to money as they do in up-waves, the reverse is true. As the money coming in to debtors via incomes and borrowings is not enough to meet debtors' obligations, assets need to be sold and spending needs to be cut in order to raise cash. This leads asset values to fall, which reduces the value of collateral, and in turn reduces incomes. Because of both lower collateral values and lower incomes, borrowers' creditworthiness is reduced, so they justifiably get less credit, and so it continues in a self-reinforcing manner. Since the creditworthiness of borrowers is judged by both a) the values of their assets/collaterals (i.e., their net worths) in relation to their debts and b) the sizes of their incomes relative to the size of their debt service payments, and since both net worths and incomes fall faster than debts, borrowers become less creditworthy and lenders become more reluctant to lend.

You can see this dynamic in both chart 2 and chart 3 above. The vertical line on these charts is at 1929. As you can see in chart 2, the debt/GDP ratio shot up from about 160% to about 250% from 1929 to 1933. The vertical line in chart 3 shows the same picture - i.e., debt service levels rose relative to income levels because income levels fell. In the economic and credit downturn, debt burdens increase at the same time as debts are being written down, so the debt liquidation process is reinforced. The next chart shows the household sector's debt relative to its net worth. As shown, this leverage ratio shot up from already high levels, as it did during the Great Deleveraging, due to declines in net worths arising from falling housing and stock prices.

Chart 4



Sources: Global Financial Data & BW Estimates

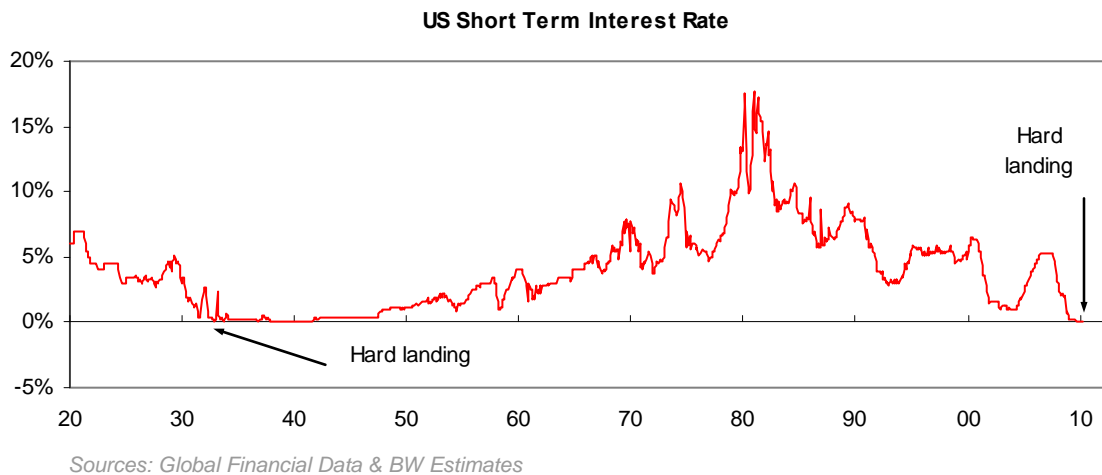
As mentioned earlier, in a credit-based economy, the ability to spend is an extension of the ability to borrow. For lending/borrowing to occur, lenders have to believe that a) they will get paid back an amount of money that is greater than inflation and b) they will be able to convert their debt into money. In deleveragings, lenders justifiably worry that these things will not happen.

Unlike in recessions, when cutting interest rates and creating more money can rectify this imbalance, in deleveragings monetary policy is ineffective in creating credit. In other words, in recessions (when monetary policy is effective) the imbalance between the amount of money and the need for it to service debt can be rectified because interest rates can be cut enough to 1) ease debt service burdens, 2) stimulate economic activity because monthly debt service payments are high relative to incomes and 3) produce a positive wealth effect; however, in deleveragings, this can't happen. In deflationary depressions/deleveragings, monetary policy is typically ineffective in creating credit because interest rates hit 0% and can't be lowered further, so other, less effective ways of increasing money are followed. Credit growth is difficult to stimulate because borrowers remain over-indebted, making sensible lending impossible. In inflationary deleveragings, monetary policy is ineffective in creating credit because

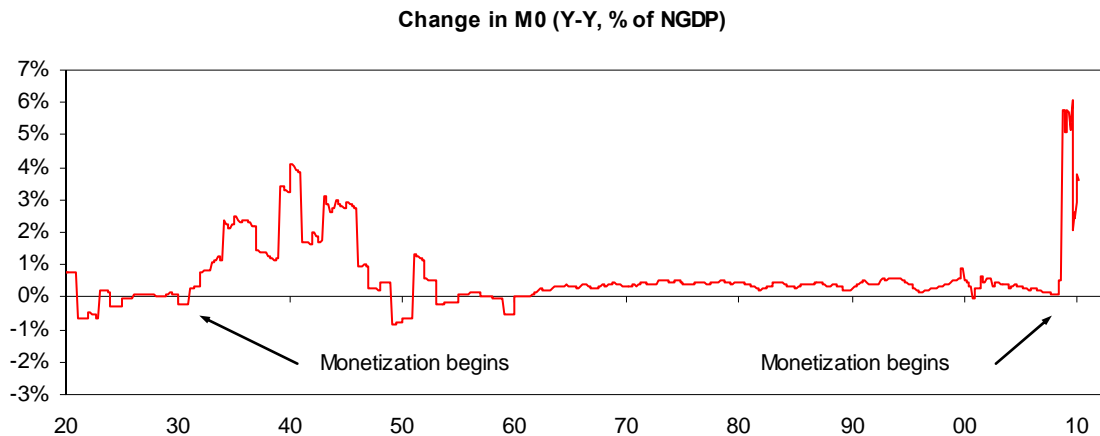
increased money growth goes into other currencies and inflation hedge assets because investors fear that their lending will be paid back with money of depreciated value.

In order to try to alleviate this fundamental imbalance, governments inevitably a) create initiatives to encourage credit creation, b) ease the rules that require debtors to come up with money to service their debts (i.e., create forbearance) and, most importantly, c) print and spend money to buy goods, services and financial assets. The printing of and buying financial assets by central banks shows up in central banks' balance sheets expanding and the increased spending by central governments shows up in budget deficits exploding.

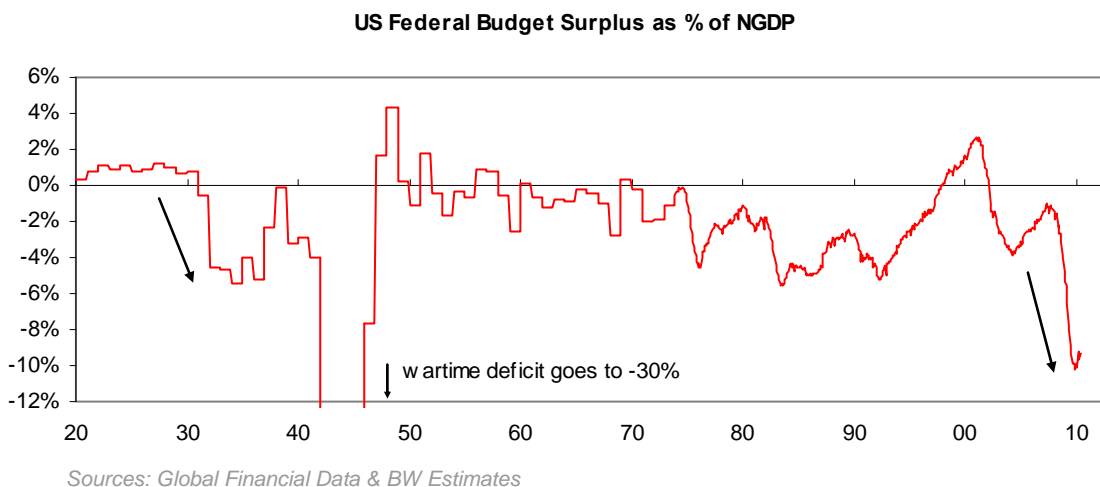
As shown below, in 1930/32 and in 2007/08 short term government interest rates hit 0%...



...the Fed's production and spending of money grew...



...and budget deficits exploded...



Typically, though not necessarily, these moves come in progressively larger dosages as initial dosages of these sorts fail to rectify the imbalance and reverse the deleveraging process; however, these dosages do typically cause temporary periods of relief that are manifest in bear market rallies in financial assets and increased economic activity. For example in the Great Deleveraging there were six big rallies in the stock market (of between 21% and 48%) in a bear market that totaled 89%, with all of these rallies triggered by these sorts of increasingly strong dosages of government actions which were intended to reduce the fundamental imbalance. That is because a return to an environment of normal capital formation and normal economic activity can occur only by eliminating this fundamental imbalance so that capable providers of capital (i.e., investors/lenders) willingly choose to give money to capable recipients of capital (borrowers and sellers of equity) in exchange for believable claims that they will get back an amount of money that is worth more than they gave.

Some people mistakenly think that the problem is just psychological: that scared investors move their money from riskier investments to safer ones (e.g., from stocks and high yield lending to government cash), and that problems can be rectified by coaxing them to move their money back into riskier investments. This is wrong for two reasons. First, contrary to popular thinking, the deleveraging dynamic is not primarily psychologically driven. It is primarily driven by the supply and demand of and

relationships between credit, money and goods and services. If everyone went to sleep and woke up with no memories of what had happened, we would all soon find ourselves in the same position. That is, because debtors still couldn't service their debts, because their obligations to deliver money would still be too large relative to the money they are taking in, the government would still be faced with the same choices that would still have the same consequences, etc. Related to this, if the central bank produces more money to alleviate the shortage, it will cheapen the value of money, thus not rectifying creditors' worries about being paid back an amount of money that is worth more than they gave. Second, it is not correct that the amount of money in existence remains the same and has simply moved from riskier assets to less risky ones. Most of what people think is money is really credit, and it does disappear. For example, when you buy something in a store on a credit card, you essentially do so by saying, "I promise to pay." Together you created a credit asset and a credit liability. So where did you take the money from? Nowhere. You created credit. It goes away in the same way. Suppose the store owner justifiably believes that you and others might not pay the credit card company and that the credit card company might not pay him if that happens. Then he correctly believes that the "asset" he has isn't really there. It didn't go somewhere else.

As implied by this, a big part of the deleveraging process is people discovering that much of what they thought was their wealth isn't really there. When investors try to convert their investments into money in order to raise needed cash, the liquidity of their investments is tested and, in cases in which the investments prove illiquid, panic-induced "runs" and sell-offs of their securities occur. Naturally those who experience runs, especially banks (though this is true of most entities that rely on short-term funding), have problems raising money and credit to meet their needs, so they often fail. At such times, governments are forced to decide which ones to save by providing them with money and whether to get this money through the central government (i.e., through the budget process) or through the central bank "printing" more money. Governments inevitably do both, though in varying degrees. What determines whether deleveragings are deflationary or inflationary is the extent to which central banks create money to negate the effects of contracting credit.

Governments with commodity-based monetary systems are more limited in their abilities to "print" and provide money, while those with fiat monetary systems are less constrained. However, in both cases, the central bank is eager to provide money and credit, so it always lowers the quality of the collateral it accepts and, in addition to providing money to some essential banks, it also typically provides money to some non-bank entities it considers essential.

The central bank's easing of monetary policy and the movement of investor money to safer investments, initially drives down short-term government interest rates, steepens the yield curve and widens credit and liquidity premiums. Those who do not receive money and/or credit that is needed to meet their debt service obligations and maintain their operations, which is typically a large segment of debtors, default and fail.

As credit collapses, workers lose jobs and many of them, having inadequate savings, need financial support. So in addition to needing money to provide financial support to the system, governments need money to help those in greatest financial need. Additionally, to the extent that they want to increase spending to make up for decreased private sector spending, they need more money. At the same time, their tax revenue falls because incomes fall. For these reasons, governments' budget deficits increase. Inevitably, the amount of money lent to governments at these times increases less than their needs (i.e., they have problems funding their deficits), despite the increased desire of lenders to buy government securities to seek safety at these times. As a result, central banks are again forced to choose between "printing" more money to buy their governments' debts or allowing their governments and their private sector to compete for the limited supply of money, thus allowing extremely tight money conditions.

Governments with commodity-based money systems are forced to have smaller budget deficits and tighter monetary policies than governments with fiat monetary systems, though they all eventually relent and print more money (i.e., those on commodity-based monetary systems either abandon these

systems or change the amount/pricing of the commodity that they will exchange for a unit of money so that they print more, and those on fiat systems will just print more). This “printing” of money takes the form of central bank purchases of government securities and non-government assets such as corporate securities, equities and other assets. In other words, the government “prints” money and uses it to negate some of the effects of contracting credit. This is reflected in money growing at an extremely fast rate at the same time as credit and real economic activity contract, so the money multiplier and the velocity of money typically initially contract. If the money creation is large enough, it devalues the currency, lowers real interest rates and drives investors from financial assets to inflation hedge assets. This typically happens when investors want to move money outside the currency, and short-term government debt is no longer considered a safe investment.

Because governments need more money, and since wealth and incomes are typically heavily concentrated in the hands of a small percentage of the population, governments raise taxes on the wealthy. Also, in deleveragings, those who earned their money in the booms, especially the capitalists who made a lot of money working in the financial sector helping to create the debt (and especially the short sellers who some believe profited at others’ expense), are resented. Tensions between the “haves” and the “have-nots” typically increase and, quite often, there is a move from the right to the left. In fact, there is a saying that essentially says “in booms everyone is a capitalist and in busts everyone is a socialist.” For these various reasons, taxes on the wealthy are typically significantly raised. These increased taxes typically take the form of greater income and consumption taxes because these forms of taxation are the most effective in raising revenues. While sometimes wealth and inheritance taxes are also increased,⁵ these typically raise very little money because much wealth is illiquid and, even for liquid assets, forcing the taxpayer to sell financial assets to make their tax payments undermines capital formation. Despite these greater taxes on the wealthy, increases in tax revenue are inadequate because incomes – both earned incomes and incomes from capital – are so depressed, and expenditures on consumption are reduced.

The wealthy experience a tremendous loss of “real” wealth in all forms – i.e., from their portfolios declining in value, from their earned incomes declining and from higher rates of taxation, in inflation-adjusted terms. As a result, they become extremely defensive. Quite often, they are motivated to move their money out of the country (which contributes to currency weakness), illegally dodge taxes and seek safety in liquid, non-credit-dependent investments.

Workers losing jobs and governments wanting to protect them become more protectionist and favor weaker currency policies. Protectionism slows economic activity, and currency weakness fosters capital flight. Debtor countries typically suffer most from capital flight.

When money leaves the country, central banks are once again put in the position of having to choose between “printing” more money, which lessens its value, and not printing money in order to maintain its value but allowing money to tighten. They inevitably choose to “print” more money. This is additionally bearish for the currency. As mentioned, currency declines are typically acceptable to governments because a weaker currency is stimulative for growth and helps to negate deflationary pressures. Additionally, when deflation is a problem, currency devaluations are desirable because they help to negate it.

Debtor, current account deficit countries are especially vulnerable to capital withdrawals and currency weakness as foreign investors also tend to flee due to both currency weakness and an environment inhospitable to good returns on capital. However, this is less true for countries that have a great amount of debt denominated in their own currencies (like the United States now and in the Great Deleveraging) as these debts create a demand for these currencies. Since debt is a promise to deliver money that one doesn’t have, this is essentially a short squeeze which ends when a) the shorts are fully squeezed (i.e.,

⁵ The extent to which wealth taxes can be applied varies by country. For example, they have been judged to be unconstitutional in the U.S. but have been allowed in other countries.

the debts are defaulted on) and/or b) enough money is created to alleviate the squeeze, and/or c) the debt service requirements are reduced in some other way (e.g., forbearance).

The risk at this stage of the process is that the currency weakness and the increased supply of money will lead to short-term credit (even government short-term credit) becoming undesirable, causing the buying of inflation hedge assets and capital flight rather than credit creation. For foreign investors, receiving an interest rate that is near 0% and having the foreign currency that their deposits are denominated in decline produces a negative return; so this set of circumstances makes holding credit, even government short-term credit, undesirable. Similarly, for domestic investors, this set of circumstances makes foreign currency deposits more desirable. If and when this happens, investors accelerate their selling of financial assets, especially debt assets, to get cash in order to use this cash to buy other currencies or inflation hedge assets such as gold. They also seek to borrow cash in that local currency. Once again, that puts the central bank in the position of having to choose between increasing the supply of money to accommodate this demand for it or allowing money and credit to tighten and real interest rates to rise. At such times, sometimes governments seek to curtail this movement by establishing foreign exchange controls and/or prohibiting gold ownership. Also, sometimes price and wage controls are put into place. Such moves typically create economic distortions rather than alleviate problems.

Though the deleveraging process seems horrible and certainly produces great hardships – in some cases, even wars – it is the free market's way of repairing itself. In other words, it gets the capital markets and the economy into a much healthier condition by rectifying the fundamental imbalance. Debts are reduced (through bankruptcies and other forms of debt restructuring), businesses' break-even levels are reduced through cost-cutting, the pricing of financial assets becomes cheap, and the supply of money to buy the assets and to service debts is increased by the central banks – so capital formation becomes viable again.

Deleveragings typically end via a mix of 1) debt restructurings that reduce debt service obligations, 2) increases in the supply of money that make it easier for debtors to meet their debt service obligations, 3) redistributions of wealth, 4) businesses lowering their break-even levels through cost-cutting and 5) substantial increases in risk and liquidity premiums that restore the economics of capital formation (i.e., lending and equity investing).

The decline in economic and credit creation activity is typically fast, lasting two to three years. However, the subsequent recovery in economic activity and capital formation tends to be slow, so it takes roughly a decade (hence the term “lost decade”) for real economic activity to reach its former peak level. Though it takes about a decade to return the economy to its former peak levels, it typically takes over 20 years for real stock prices to reach former highs, because equity risk premiums take a very long time to reach pre-deleveraging lows. During this time nominal interest rates must be kept below nominal growth rates to reduce the debt burdens. If interest rates are at 0% and there is deflation, central banks must “print” enough money to raise nominal growth.

As mentioned, these cycles are due to human nature and the way the system works. Throughout this process, most everyone behaves pretty much as you'd expect in pursuing their self-interest, thus reacting to and causing developments in logical ways, given how the economic machine works.

3) The Business Cycle

The business cycle is primarily controlled by central banks' policies that a) tighten when inflation is too high and/or rising uncomfortably because there isn't much slack in the economy (as reflected in the GDP gap, capacity utilization and the unemployment rate) and credit growth is strong; and b) ease when the reverse conditions exist. They can be described a bit differently by different people, but they are all

about the same. The way we describe them is in six phases – four in the expansion and two in the recession.

The expansion phase of the cycle:

The “early-cycle” (which typically lasts about five or six quarters), typically begins with the demand for interest rate sensitive items (e.g., housing and cars) and retail sales picking up because of low interest rates and lots of available credit. It is also supported by prior inventory liquidations stopping and inventory rebuilding starting. This increased demand and rising production pulls the average workweek and then employment up. Credit growth is typically fast, economic growth is strong (i.e., in excess of 4%), inflation is low, growth in consumption is strong, the rate of inventory accumulation is increasing, the U.S. stock market is typically the best investment (because there is fast growth and interest rates aren’t rising because inflation isn’t rising) and inflation hedge assets and commodities are the worst-performing assets.

This is typically followed by what I call the “mid-cycle” (which lasts an average of three or four quarters) when economic growth slows substantially (i.e., to around 2%), inflation remains low, growth in consumption slows, the rate of inventory accumulation declines, interest rates dip, the stock market rate of increase tapers off, and the rate of decline in inflation hedge assets slows.

This in turn is followed by the “late-cycle” (which typically begins about 2 ½ years into expansion, depending on how much slack existed in the economy at the last recession’s trough). At this point, economic growth picks up to a moderate pace (i.e., around 3.5-4%), capacity constraints emerge, but credit and demand growth are still strong. So, inflation begins to trend higher, growth in consumption rises, inventories typically pick up, interest rates rise, the stock market stages its last advance and inflation hedge assets become the best-performing investments.

This is typically followed by the tightening phase of the expansion. In this phase actual or anticipated acceleration of inflation prompts the Fed to turn restrictive, which shows up in reduced liquidity, interest rates rising and the yield curve flattening or inverting. This in turn causes money supply and credit growth to fall and the stock market to decline before the economy turns down.

The recession phase of the cycle follows and occurs in two parts.

In the early part of the recession, the economy contracts, slack returns (as measured by the GDP gap, capacity utilization and the unemployment rate), stocks, commodities and inflation hedge assets fall and inflation declines because the Fed remains tight.

In the late part of the recession, the central bank eases monetary policy as inflation concerns subside and recession concerns grow. So interest rates decline and the lower interest rates cause stock prices to rise (even though the economy hasn’t yet turned up) while commodity prices and inflation hedge assets continue to be weak. The lower interest rates and higher stock prices set the stage for the expansion part of the cycle to begin.

Although I have referred to average time lags between each of these stages of the cycle, as mentioned from the outset, it is the sequence of events, not the specific timeline, which is important to keep an eye on. For example, given the previously described linkages, inflation doesn’t normally heat up until the slack in the economy is largely eliminated, and the Fed doesn’t normally turn restrictive until inflation rises. An expansion that starts off after a deep recession (i.e., one that produces lots of slack) is bound to last longer than an expansion that begins with less excess capacity. Similarly, as the cycle progresses through its various stages as a function of the sequences just described, the rate at which it progresses will be a function of the forcefulness of the influences which drive its progression. For example, an expansion that is accompanied by an aggressively stimulative central bank is likely to be stronger and evolve more quickly than one that is accompanied by a less stimulative monetary policy. Also,

exogenous influences such as China's entry into the world economy, wars and natural disasters can alter the progressions of these cycles.

For sake of brevity, we won't go into great depth about business cycles here.

The Interaction of These Three Forces

While the economy is more complicated than this template suggests, laying the business cycle on top of the "long wave" cycle and then laying them both on top of the trend per capita GDP growth line gives a reasonably good roadmap for understanding the capitalist system and seeing both where we are now and where we are probably headed. For the sake of brevity, we won't digress into a complete explanation of this. But we will give an example.

Example: The table below shows each of the cyclical peaks and troughs in the fed funds rate, when they occurred, the magnitudes of changes up and the magnitudes of the changes down (in both basis point terms and percentage terms), since 1919. These are the interest rate changes that caused all of the recessions and expansions over the last 90 years. This table shows 15 cyclical increases and 15 cyclical decreases. Note that these swings were around one big uptrend and one big downtrend. Specifically, note that from the September 1932 low (at 0%) until the May 1981 high (at 19%), every cyclical low in interest rates was above the prior cyclical low and every cyclical high was above the prior cyclical high - i.e., all of the cyclical increases and decreases were around that 50-year uptrend. And note that from the May 1981 high in the fed funds rate (at 19%), until the March 2009 low in the fed funds rate (0%), every cyclical low in the fed funds rate was lower than the prior low and every cyclical high in interest rates was below the prior cyclical high - i.e., all of the cyclical increases and all of the cyclical decreases were around a 27-year down trend. Each cyclical decline in interest rates incrementally reduced debt service payments, lowered the de-facto purchase prices of items bought on credit to make them more affordable and boosted the value of assets a notch (having a positive wealth effect). So, debt continued to rise relative to income and money, though the trend in debt service payments was essentially flat, until interest rates hit 0% and this could not longer continue, at which time the government had to print and spend a lot of money to make up for the reduced private sector credit creation and spending.

Fed Funds Rates ¹						
Low	Date	Nominal Change	Period (in months)	% Change	High	Date
3.96%	Oct-19	1.92%	14	49%	5.88%	Dec-20
		-3.96%	43	-67%		
1.92%	Jul-24	2.88%	64	150%	4.80%	Nov-29
		-4.80%	34	-100%		
0.0%	Sep-32	2.09%	251	#N/A	2.1%	Aug-53
		-1.44%	10	-69%		
0.65%	Jun-54	2.94%	40	452%	3.59%	Oct-57
		-2.71%	8	-75%		
0.88%	Jun-58	3.69%	18	419%	4.57%	Dec-59
		-2.30%	19	-50%		
2.27%	Jul-61	3.32%	62	146%	5.59%	Sep-66
		-2.26%	9	-40%		
3.33%	Jun-67	4.75%	30	143%	8.08%	Dec-69
		-4.08%	26	-50%		
4.00%	Feb-72	7.00%	28	175%	11.00%	Jun-74
		-6.25%	30	-57%		
4.75%	Dec-76	11.75%	39	247%	16.50%	Mar-80
		-5.50%	5	-33%		
11.00%	Aug-80	8.00%	9	73%	19.00%	May-81
		-11.00%	18	-58%		
8.00%	Nov-82	3.44%	21	43%	11.44%	Aug-84
		-5.56%	26	-49%		
5.88%	Oct-86	3.87%	31	66%	9.75%	May-89
		-6.75%	40	-69%		
3.00%	Sep-92	3.50%	99	117%	6.50%	Dec-00
		-5.50%	30	-85%		
1.00%	Jun-03	4.25%	50	425%	5.25%	Aug-07
		-3.00%	13	-57%		
0 - 0.25%	Current					
(1) Prior to 1975, T-Bill used as proxy for Fed Funds target rate						
Avg Increases		4.53%	54			
Range of Increases		1.9% to 11.8%	9 to 251			
Avg Decreases		-4.65%	22			
Range of Decreases		-11.0% to -1.4%	5 to 43			

Sources: Global Financial Data & BW Estimates

Again, for sake of brevity, we won't go into greater depth about the three forces interactions here. As mentioned at the outset, I wrote this paper just to give you my simple-minded explanation of how I believe the economic machine works at a fundamental level so that you can assess it for yourself.

U.S. Deleveraging '30s Timeline



This document provides a timeline for the U.S. Great Deleveraging in the 1930's. It was written in a way to both make clear important cause and effect relationships and to convey an up-close feeling of what it was like to go through the experience as an investor. As a result, sometimes you will read about market action in detail that has no historical importance but provides perspective for investors trying to navigate such moves. For example, throughout this period there were giant market whip-saws and swings in sentiment that misled and hurt many. Also, the waves of destruction in asset values that occurred through changing market values and asset confiscations were enormous. So it is important that we, as managers of our clients' wealth, visualize how we would have navigated these changes. Only by going through this experience virtually, as well as going through the other deleveragings (the Weimar Republic in the 1920s, Latin America in the 1980s and Japan in the 1990s) and testing our strategies can we be confident that we can successfully navigate the next few years.

This timeline is meant to be read with frequent reference to the accompanying charts that show all markets and stats that we believe are important. Facts and notes for the timeline were taken from several books shown in the bibliography in the back.

Preface	pg. 25
Conditions in 1929 Leading up to the Crash.....	pg. 27
1930.....	pg. 30
<i>First Half: Optimism Returns</i>	
<i>Second Half: Trade Wars, Economic Weakness, Financial Losses, the Smoot-Hawley Tariff Act</i>	
1931.....	pg. 37
<i>1Q: Reasoned Optimism Gives Way to Gloom as Economy Continues to Deteriorate</i>	
<i>2Q: Problems Brew in Europe Leading to International Crisis</i>	
<i>3Q: German Debt Moratorium and the Run on Sterling</i>	
<i>4Q: International Crisis Hurts Domestic Markets</i>	
1932.....	pg. 50
<i>First Half: Government Intervention Unable to Halt Economic Decline</i>	
<i>Second Half: Liquidity Crisis Leads to Last Leg Down, Market Bottoms in June</i>	
<i>High Volatility as Roosevelt's Election Approaches, Global Picture Worsens</i>	
1933.....	pg. 59
<i>Uncertainty Dominates Before Roosevelt's Inauguration in March</i>	
<i>First Hundred Days: Optimism from Bank Holiday, Devaluation of Dollar,</i>	
<i>and Large Fiscal stimulus</i>	
1934-1938.....	pg. 71
<i>Competitive Currency Devaluations Across the Developed World</i>	
<i>Economic Recovery from 1934-1937</i>	
<i>Economic Slump in 1938</i>	
Appendix 1: Roosevelt's Inaugural Address	pg. 74
Appendix 2: Legislative Changes 1932-1937.....	pg. 77

Preface

Money serves two purposes – it is a medium of exchange and a storehold of wealth. So it serves two masters – 1) those who want to obtain it for “life’s necessities,” usually by working for it and 2) those who have the value of their stored wealth tied to its value. Throughout history these two groups have been called different things – e.g., the first group has been called workers, the proletariat, and “the have-nots” and the second group has been called capitalists, investors, and “the haves.” For simplicity, we will call the first group workers and the second group investors. They, along with the government (which sets the rules), are the major players in this drama for money.

Like many dramas, this one both arises and transpires in ways that have reoccurred through time, going back to before Roman times. One man’s financial assets are another man’s financial liabilities (i.e., promises to deliver money). When the claims of financial assets are too high relative to the money available to meet them, a deleveraging arises. In the last couple of centuries, this happened when the ability to increase financial assets, most importantly credit, has been impaired because monetary policy is dysfunctional, often because interest rates are at 0% and can’t be lowered further. As a result, the claims (i.e., financial wealth) need to fall relative to what they are claims on (i.e., money). This happens through extinguishing the claims (e.g., bankruptcies) and/or increasing the supply of money.

This *fundamental imbalance* between the size of the claims on money and the supply of money has occurred many times in history and has always been resolved in some mix of the two previously mentioned ways. This resolution process is painful for all of the players. In fact, the pain has sometimes been so bad that some civilizations turned against the capitalist system (i.e., the system based on this type of capital formation). For example, some historians say that the problems that arose from credit creation were why charging interest was a sin of usury in both the Catholic Church as well as in the Arab religions. Throughout the Middle Ages, no Christian could charge interest to another Christian, so the Jews played a large part in the development of trade because it was the Jews who lent money for business ventures and financed voyages. But the Jews were also moneylenders who debtors could not repay, and this often led to anti-Semitism. Supposedly, much of the killing of Jews was caused by them holding the mortgages on property and creditors wanting to extinguish the debts. Debtor-creditor relationships have typically turned very antagonistic in these fights for money and many other patterns of human behavior that are important to know about regularly surfaced during these dramatic times. Other relationships and the actions of various players were comparably noteworthy. So it is very important for us to read these historic dramas.

The Great Deleveraging is probably the greatest such drama in recorded history. It is certainly a classic that must be studied by anyone who cares about wealth preservation and the well-being of society. Additionally, it is the D-process that is most similar to the current dynamic because it was the last global deleveraging.

Conditions in 1929 Leading up to the Crash

As long as there has been money and it has been lent, the biggest issue has been the value of the money. Since being paid back with goods (e.g., wheat) doesn't work well for many reasons, debts are typically denominated in money, but lenders need some assurances that governments won't just print up a lot of it and devalue their claims. In the 1920's, these assurances were made by governments promising to exchange their money for gold at a fixed exchange rate. In other words, the world was on a gold standard back then. This played an important role in determining how events transpired in the 1920's, leading up to the crash, but we won't get into that now. The important thing to know is that the world was on a gold standard then.

1929 was a year of spectacular economic growth¹ which was great for both workers and investors. The unemployment rate was down to less than 1%, which was the lowest since 1920, and corporate profits were the highest that they had ever been. The stock market's strength seemed to benefit everyone. Credit was readily available which allowed a lot of borrowing to buy stocks, houses, investment assets and many other things at high prices. Prior years were similar, though less extreme.

Stockbrokers fueled the rapid expansion of their business by offering easy credit terms.² The call loan market, a relatively new and rapidly growing market, rose rapidly, quite like the securitized debt market grew in 2005-07. The diversion of funds to invest in the call loan market by corporations, foreigners, and individuals reflected a speculation in credit, motivated by attractive interest rates, that fueled the speculative mania in stocks of the period in much the same way the carry trade did in 2006-2007.³

Stocks sold at extremely high multiples financed by borrowing (i.e., margin). Many stocks were valued as much as 30 to 50 times earnings. Then money started to tighten. In May 1928, the Federal Reserve System began tightening credit, raising its discount rate to 4 ½%. It was raised again to 5% in July 1928 and to 6% in August 1929.⁴

Required margin deposits also rose before the crash. Most brokers became concerned about the extent of their margin loans at the high stock prices and in the face of higher interest rates in midsummer of 1929. So brokers began to raise the margin requirements on loans from 10%-25% to 50% by the Crash.⁵ Also, prior to the Crash, brokers tried to reduce their call loan exposure on margin accounts.

Banks were strong going into the Crash and not over-leveraged. The leading banks had great strength because they had deposits that were not more than seven times their capital and surplus. This was a conservative ratio, especially when only 60% of bank assets were typically in loans and up to one-third of those were call loans, which were short-term.⁶

In August, the Fed eased a bit⁷ because the economy slowed in reaction to the earlier tightening, so production peaked in most industries in the first half of the year, before the Crash.⁸

The peak in the market occurred on the first trading day in September, at 381 on the Dow Jones Industrial Index. Keep this price in mind as we will track the Dow's level through this timeline. Most

¹ Armstrong p. 239

² Wigmore p. 26

³ Wigmore p. 94

⁴ Wigmore p. 28

⁵ Wigmore p. 28

⁶ Wigmore p. 100

⁷ Wigmore p. 95

⁸ Wigmore p. 101

people were bullish at the time, but a few notable, knowledgeable and independent thinkers gave warnings. For example, Roger Babson had “become shrill” in predicting the coming collapse of prices because of “tight money,” so he recommended selling stocks in September and again in October.

In the first week of October there was a big drop in stock prices. The Dow Jones Industrial Index declined in two days from 344 to 325, or 6%. Margin calls were numerous.⁹ Some brokers were rumored to be in trouble because of the heavy slate of initial public offerings which continued unabated. But, in the second week of October, prices bounced back to 352, though they soon started to slip again.

It became widely known that big margin calls and sell orders existed on October 24th, so everyone who worked on the exchange was alerted to be prepared. Then the collapse and panic came. There was a tidal wave of panic, not a gradual loss of confidence. The streets of the financial district were in an uproar from shortly after the opening of the Exchange as investors heard of the disaster and, unable to gain information through normal channels, went to the Exchange to seek information firsthand.

An attempt to stabilize the market was made by a small group of the biggest bankers known as “the Bankers’ Pool,” who committed to buy \$125 million in shares at about 12:00 noon. At midday Richard Whitney, the president of the Exchange, went on to the floor to the post for U.S. Steel and bid \$205 for 25,000 shares (over \$5 million) and other members of the pool behaved similarly. This caused a big bounce in the stock market. The leading stocks had been down 15%-20%, but they bounced early as fast as they had gone down. Professionals, speculators, and coolheaded investors bought aggressively as they believed that we had seen a correction that was a great buying opportunity. The Dow Jones Industrial Index bounced back 26 points from a low for the day of 272 (down 33) to close at 299 (down 6).¹⁰ This classic pattern of big moves to support the market leading to big accompanying bounces would repeat numerous times throughout the bear market.

At the end of Black Thursday, a second organized effort to help the market was formed by a group of brokers. Some 35 leading brokers accounting for 70% of NYSE business assembled at the offices of Hornblower & Weeks and agreed that the worst was over and that they should act to reassure their customers. They took out a full page ad in the *New York Times* the next day, confidently telling the public that it was a great time to buy.¹¹ This would not be the last time that those who listened to the confident advice of their brokers and advisors would be misled. Prices started to slide again. Over the weekend, margin calls went out and foreign banks were reported to be switching out of brokers call loans and buying bankers acceptances, to seek safety. At the same time, prices were bid up for U.S. government and high grade railroad bonds, as investors sought safety.

On Monday night, margin calls were enormous, and heavy Dutch and German selling came in overnight for the Tuesday morning opening. On Tuesday morning, out-of-town banks and corporations pulled \$150 million of call loans and Wall Street was in a panic before the Exchange opened.¹² The Fed responded, as central banks typically do in such circumstances, by providing liquidity. The immediate problem to be dealt with by the Federal Reserve and the New York City banks was the collapse of the call loan market,¹³ as it withdrew the credit that investors had used to fund their positions. So, the Federal Reserve Bank of New York bought \$25 million in U.S. securities to inject funds into the banking system so the banks could increase their call loans.¹⁴

Once again, opportunistic buying came into the market and the market rallied in the last 15 minutes of Tuesday, October 29th, triggering optimism.¹⁵ Nonetheless, the combined decline in the Dow Jones

⁹ Wigmore p. 5

¹⁰ Wigmore p.6

¹¹ Wigmore p. 11

¹² Wigmore p. 13-15

¹³ Wigmore p. 96

¹⁴ Wigmore p. 96

¹⁵ Wigmore p. 18

Industrial Index for Monday and Tuesday was 20%. So, the contraction in wealth and the problems of leveraged holders of assets had begun.

On Wednesday morning, October 30th, the stock market opened strong. The NYSE announced after Wednesday's close that trading on Thursday, October 31st, would begin at noon and that the Exchange would close on Friday and Saturday to catch up on paperwork.

Then the Federal Reserve Bank of New York cut its discount rate from 6% to 5% in coordination with the Bank of England, which cut its bank rate from 6 ½% to 6%.¹⁶ Classically, the announcements stimulated strong buying when the exchange opened, but not enough to cause prices to go to new highs. So the rally didn't last, as leveraged longs were being squeezed.

Stocks continued to plunge the next week, starting with a stampede to sell when the NYSE opened on Monday, November 4th. On Tuesday the exchanges were closed for Armistice Day. On Wednesday, November 6th, the stock markets opened with heavy selling. Stocks continued to fall the next week.¹⁷

The Crash helped high grade and railroad bonds and hurt BAA and other lower quality bonds. The yields on BAA industrial and utility bonds dropped a little, in contrast to high grade bonds, so that the yield spreads between BAA and AA bonds became the widest in 1929.

Municipal bonds constituted one of the larger securities markets in 1929, second only to the U.S. government bond market. In 1929 the municipal bond market behaved much like the corporate bond market. Bond prices declined enough to raise yields by ¼% to ½%, a progression throughout the year in response to the investor surge into the stock market and tightening short-term credit conditions and then prices rose and yields declined during the Crash as investors leaving the stock market created a strong demand for high quality municipals. However, some regions where there was a financial bubble, such as Florida, were already in default. More Florida defaults were anticipated, including a default by Miami, whose bonds yielded 5.75%, 1% above any other major city's bonds.

On Wednesday, November 13th, John D. Rockefeller placed a bid for 1 million shares of Standard Oil (N.J.) at \$50, down \$33 from its 1929 high of \$83. Then, the administration felt that it had to do something so, after the close on November 13th, Treasury Secretary Mellon announced that the United States would reduce corporate and individual income taxes by 1% to stimulate confidence, and they prohibited short selling. In response to these moves and to stocks appearing cheap, the market bottomed on November 14th and rallied 25% through December.¹⁸

Most everyone thought the problems were over and many regretted not buying when prices were cheap. Speculators resumed their past activities. The Chairman of the Chase National Bank reinvested heavily in stocks. William Durant created a new pool in Radio Corp. of America stock. The Chairman of General Theatres Equipment, Inc., organized a new pool in his own company's 6% convertible debentures with Chase Securities, etc.¹⁹

Government Policies

Herbert Hoover had been president only seven months when the Crash occurred. The day after the Crash he issued his famous statement: "The fundamental business of the country, that is production and distribution of commodities, is on a sound and prosperous basis."

¹⁶ Wigmore p. 19

¹⁷ Wigmore p. 22

¹⁸ Wigmore p. 25

¹⁹ Wigmore p. 25

Contrary to what is popularly believed, the Hoover Administration was prompt and positive in its reaction to the Crash. For example, Hoover arranged for a committee of 400 businessmen to advise the President on business conditions. It was led by a "Committee of 72", which was made up of men who seemed like titans in the business and social world of the 1920s,²⁰ so it consisted of the best of the best. The Hoover Administration hoped that the Crash would destroy excessive speculation but not the economy,²¹ much the same way the Bush administration viewed the initial declines as a healthy correction of speculative excesses. The federal government also expanded its public works plans to \$250 million for 1930. This constituted the most active and direct role in the economy taken by the federal government in generations, and the policy appeared to work. Also, Hoover's policy supported the Federal Reserve in its policy of credit easing.²² President Hoover's attack on the impending Deleveraging, together with the easy money that the Fed provided, were generally expected to produce an economic upswing by mid-1930.

As mentioned, the Fed eased aggressively when the crash occurred. The day before Black Thursday the New York Federal Reserve reduced its buying rate for bankers acceptances from 5 1/8% to 5%. Then, during the Crash, the New York Federal Reserve reduced its discount rate from 6% to 5% on November 1st and to 4 1/2% on November 15th. On the same dates, it reduced its buying rate for bankers acceptances to 4 3/4% and 4 1/4%. Another reduction to 4% on November 21st prevailed until January 31st, 1930.²³

1H1930

Optimism Returns

In 1930 it was widely believed that the stock market action had had a 50% correction²⁴ that was over, largely because those sorts of moves are what people remembered.

A number of well-known analysts pointed to value and earnings as reasons why the market was fundamentally sound. Then, like now, people remembered past cyclical downturns, especially those in 1920, 1914 and 1907, and pointed out that 50% corrections occurred in these cases and that the worst was over back in 1920 within 130 days of the top. However, the reasons for the various panics prior to 1929 were different. In some cases, panics were caused by drastic declines in the gold reserves prompting a lack of confidence in government's ability to meet its debts with sound money, which sent capital fleeing from banks into safe securities and even into hoarding gold. In other cases, panic was created by natural disasters which seriously disrupted the cash flow between various sectors of the United States, sparking bank failures which gave rise to the birth of the Federal Reserve.²⁵ The optimism wasn't just confined to market participants. All the Federal Reserve districts predicted an upturn in the economy in the second half of 1930. The commercial banks also forecast an upturn. So, in 1H1930, optimism prevailed.

The banking system was considered strong at the time.²⁶ Loans and investments of all member banks expanded steadily through 1930. Their investments in U.S. government securities, municipals, railroad

²⁰ Wigmore p. 89-90

²¹ Wigmore p. 89-90

²² Wigmore p. 113

²³ Wigmore p. 96

²⁴ Armstrong p. 242

²⁵ Armstrong p. 337

²⁶ Wigmore p. 116

bonds, utility bonds, and foreign bonds all expanded throughout the year, and the new-issue market for common stocks recovered, too.²⁷

From the depths of the panic in late 1929, the market had begun to recover moving through the first quarter of 1930.²⁸ The stock market rose strongly in the first four months of 1930. For those who still had money, 1930 held the opportunity for a killing.²⁹ Stocks seemed cheap because they fell faster than the economy, so prices were low in relation to earnings. For example, AT&T was only off 0.1% in earnings, yet the stock price was 25% lower than at the 1929 high.³⁰ Outside Wall Street, industry looked strong. So in the first quarter of 1930 it was widely believed that stocks were clearly in a 50% correction and nothing more,³¹ so stocks rose as the Fed eased and the Hoover administration was responsive to the problems.³² On March 31, Congress passed a stimulus package called the Public Buildings Act and on April 4 approved an appropriation for state road building projects in order to help stimulate the economy.

Bonds remained steady during January and February despite the Fed's cut in the discount rate during February, but in March they rallied in response to a second cut to 3.5%. The Fed had cut the discount rate from 6% to 3.5% in just seven months in an attempt to halt the decline in the economy. Interest rates plummeted straight down during the first quarter of 1930.³³

As mentioned, the Fed bought a lot of T-Bills following the crash and until March 1930. Additionally, it is noteworthy that the Directors of the New York Fed and its professional staff wanted to buy a lot of U.S. government bonds to prevent the decline in Federal Reserve credit resulting from the decline in the Federal Reserve's bill holdings. However, the Federal Reserve Board in Washington opposed the New York bank's requests, fearing that it would scare foreign investors and weaken the dollar.³⁴

For all these reasons, optimism ran fairly high during the first quarter of 1930.³⁵ By April 10th, the Dow had rallied back up to 293.36. But poor earnings reports continued. In that sense, the stock market action, economic activity, Fed moves and the administration's moves were broadly similar to those in 2008 and early 2009. In other words, despite monetary and fiscal stimulation and a general sense that stocks had gotten cheap and the economy was in a normal contraction, economic weakness persisted and dragged stocks lower.

²⁷ Wigmore p. 119

²⁸ Armstrong p. 242

²⁹ Wigmore p.137

³⁰ Armstrong p. 254

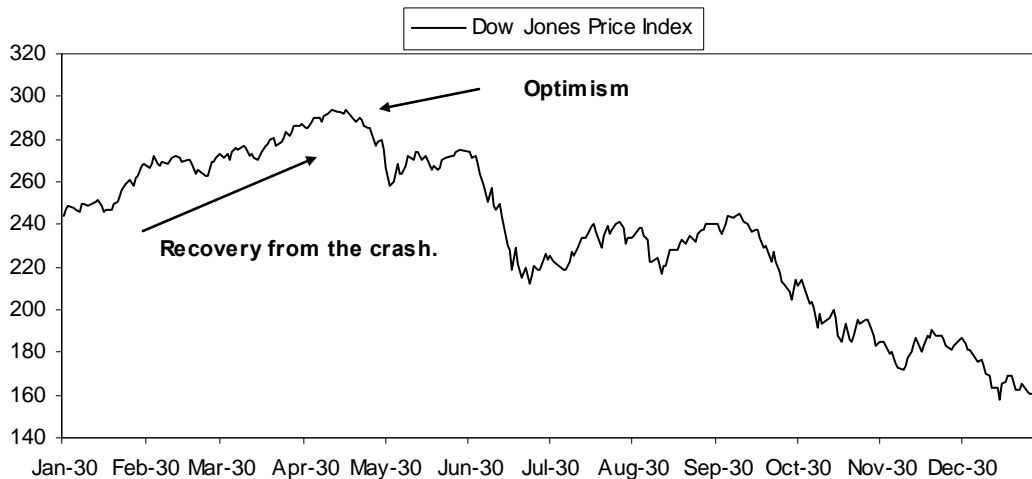
³¹ Armstrong p. 242

³² Wigmore p. 138

³³ Armstrong p. 242

³⁴ Wigmore p. 117

³⁵ Armstrong p. 242



Source: Global Financial Data

2H1930

Trade Wars, Economic Weakness, Financial Losses, and the Smoot-Hawley Tariff Act

The economic weakness was global as well as domestic. During this second quarter of 1930 world trade and production declined and unemployment increased.³⁶ Even with a big fiscal stimulus (about 1% of GDP), and the Fed easing, the world economy weakened. Naturally (i.e., typical of bad downturns) trade tensions and protectionist sentiment emerged. In the U.S., it was widely argued that industries would rebound as long as Europe was forced to stop its dumping policies. While workers and capitalists in industries that had to compete with imports generally liked tariffs, foreigners and those who traded or dealt in world markets didn't. As the week of June 16 began, the news of what would become known as the Smoot-Hawley Tariff Act weighed on the stock market³⁷ even though it raised by tariffs by only 20%. Though workers liked tariffs, investors did not. On Monday, June 16th, stocks gapped down. The Dow Jones industrials plummeted to 212.27, closing the week at 215.30.³⁸ The selling pressure continued the following week as the industrials fell to 207.74, off 14.9% from the close of June 14.

The Senate and the House passed the Smoot-Hawley Tariff bill on June 17, raising U.S. tariffs by 20% on average, making U.S. tariffs the highest in the world. Several other countries immediately did the same.³⁹

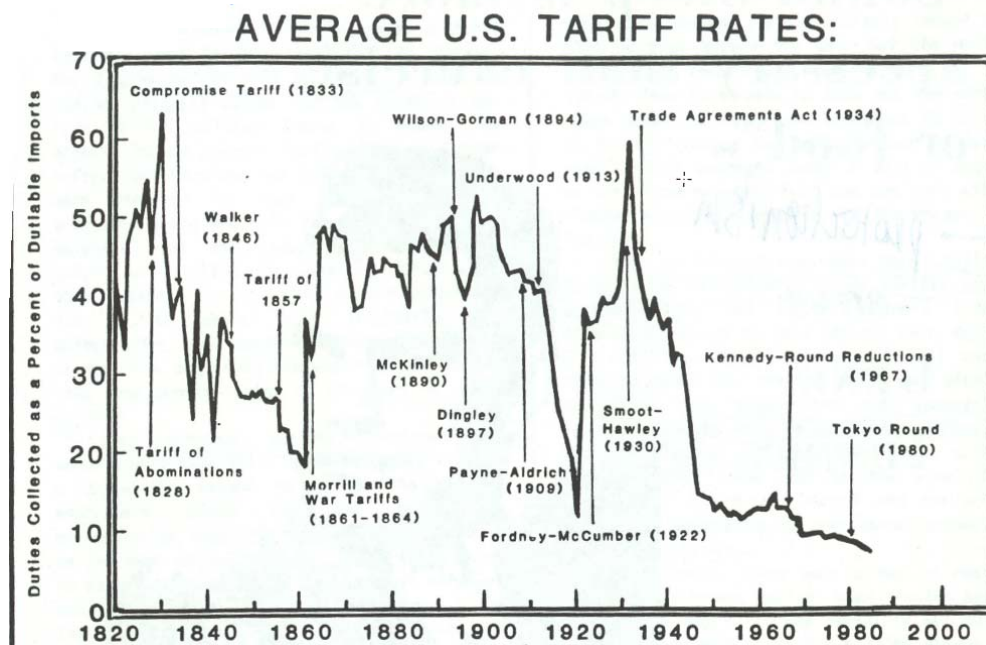
To convey how tariffs changed over time, most importantly how they increased in economic bad times, we show the following interesting chart that we stumbled across. Protectionism is an almost certain consequence of economic bad times.

³⁶ Armstrong p. 260

³⁷ Armstrong p. 258

³⁸ Armstrong p. 260

³⁹ Wigmore p. 115



Source: Armstrong, "The Greatest Bull Market in History"

It is a mistake to attribute the deleveraging to the Smoot-Hawley tariff⁴⁰, as U.S. exports as a percentage of GDP in terms of constant dollars were only 5.28% in 1929 and declined to 4.44% in 1931, so they were rather small and declined a bit more than proportionally with the total economy. The economic contraction which took place worldwide was primarily created by the asset bubble bursting and the debt crisis emerging.

Hoover planned a fiscal 1931 budget surplus, but the likelihood of a surplus diminished as 1930 progressed. In the fiscal year ending June 1931 there was a budget deficit of \$463 million because of a \$1 billion decline in federal receipts. Increasing budget deficits in periods of economic hardship are virtually inevitable.

The Real Economy Deteriorates

In the second half of 1930, the economy weakened.⁴¹ Then, as now, auto production dropped to about 50% of capacity and the commodities-based industries, such as the oil, mining, farm equipment, and pulp and paper industries, suffered declines.⁴² In less than two quarters steel production utilization dropped from 95% to 60% of capacity and commodities prices fell sharply. Housing and mortgage debt collapsed.⁴³ Classically, these industries decline as the demand for discretionary durables, oil and commodities used in production declines.

On September 9, 1930, President Hoover stopped all immigration with the exception of tourists, students and professional men and women, and the Labor Department was also instructed to rigidly enforce the laws against illegal aliens, so in 1930 thousands of deportations were made.⁴⁴ Moves to curtail immigration and to force immigrants to leave the country are also typical of deleveragings.

⁴⁰ Armstrong p. 266

⁴¹ Wigmore p. 130

⁴² Wigmore p. 193

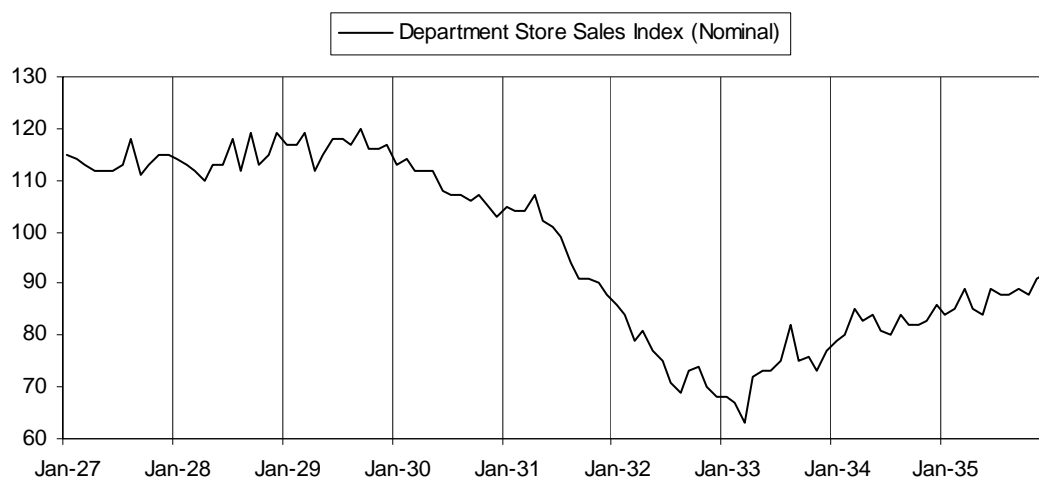
⁴³ Armstrong p. 282

⁴⁴ Armstrong p. 284

At the end of the year the index of prices for 47 farm products was down 29.3% from pre-Crash prices, and publicly traded industrial commodities averaged a price decline of approximately 25%. Hoover declared that speculators who sold commodities short were conspiring against the public welfare.⁴⁵ Demonizing those who made money betting on the decline is also typical of deleveragings.

In 1930, earnings declined. According to a survey by Moody taken of the first 744 companies to report on their 1930 earnings, there was a 23.2% average decline in corporate earnings in comparison to 1929's strong earnings. But this average figure is a bit misleading because of differences. Of the total, half were industrial corporations, which posted a decline in earnings of 35.9% for 1930,⁴⁶ while other industries such as utilities (including the telephone and telegraph companies) were unaffected. In fact, through most of 1930, many industries were not yet doing all that badly as consumer spending did not drop off that sharply at this point. So, the 1930s fall in earnings looked like a shallow recession.

The chart below shows department store sales. Notice how they slipped, but did not collapse, in 1930.



June was the worst month for the stock market in 1930. The Dow Jones Industrial Index dropped almost 23%,⁴⁷ commodities prices broke their lowest levels since 1914 and the Smoot-Hawley tariff was passed. Lowering money rates and reducing brokers loans had no effect.⁴⁸ Then, as now, the Treasury bond market was strong while credit spreads widened.⁴⁹

The stock market stabilized for the summer months, though the news was bad - e.g., Miami defaulted, Warner Bros. and Shell Union Oil halted their dividends, and the budget deficit outlook worsened.⁵⁰

However, the majority of market analysts began to turn bullish during August of 1930 and prices rallied to a peak of 247 on September 10th, though the economy continued to slide and liquidity fears⁵¹ were beginning to arise. Once again, market participants over-anticipated a recovery that didn't materialize, and the disappointing reality of the economy drove prices lower.

Railroads then were like autos now, in that they had problems rolling their maturing debts and faced large rollovers ahead (in 1931) and the government considered providing them with special loans

⁴⁵ Wigmore p. 133

⁴⁶ Armstrong p. 309

⁴⁷ Wigmore p. 141

⁴⁸ Armstrong p. 275

⁴⁹ Wigmore p. 198

⁵⁰ Wigmore p. 142

⁵¹ Armstrong p. 283

because they were considered to be an essential industry that was too important to allow to fail. For this reason, the story of the railroads during the Great Deleveraging is worth noting for those trying to anticipate the fate of the autos over the next few years.

Then, like in 2008, despite a severe decline in government interest rates, corporate bonds eventually collapsed⁵² as public confidence gave way and mortgage spreads to treasuries increased. Specifically, interest rates on first mortgages stayed at 5.5% to 6% while seconds yielded at least 7%, because despite the decline in government rates, banks were still maintaining high rates on mortgages⁵³ because of the increased credit risks and the banks fears of illiquidity. Municipal bonds and municipal governments did well in 1930 until credit fears developed in the last quarter.⁵⁴

In October of 1930, the stock market broke its November 1929 lows.⁵⁵

Bank Failures Begin

During the Crash and in 1930, there was a lot of talk about the strength of the banking system and the strength of the banks was expected to limit the duration of the contraction. Bank earnings generally declined only 25%-30% in 1930, and four of the top ten banks paid higher dividends in 1930. So, banks appeared strong through most of 1930.⁵⁶

However, some banks began to look vulnerable when the economy and stock market weakened late in 1930. The decline in the stock market in the second half of 1930 made some banks especially vulnerable because they owned stocks.⁵⁷ Also, some important banks had also engaged in unsound speculation and made unsound loans. Other banks were affected by the impact of declining commodities prices on their customers' credit and by the worsening economic conditions, particularly those banks that had large real estate loans. Runs eventually occurred in numerous cities during 1930. However, the majority of early bank failures were confined to banks in the Midwest and country banks that had a lot of money in real estate loans.⁵⁸

Many bankers had liquidity problems because they held many illiquid foreign bonds, real estate loans, railroad loans, and investment loans, so they sought safety and liquidity in the short-term market then, in much the same way as they did in 2008 and early 2009. During the first six months of 1930, 471 banks failed, though none of the big ones.

Then, like now, the velocity of money fell as credit contracted and people moved to holding cash. The hoarding of gold coins began to increase by late 1929 as the government stopped issuing new gold coinage.⁵⁹

Through all of 1930, 1,350 banks suspended operations, compared with 659 banks in 1929⁶⁰, but bank failures weren't a big worry.⁶¹ Also, Wall St. brokerage firms started failing.⁶² Financial companies which had employed high leverage in 1929 paid a heavy price for it in 1930⁶³. Goldman Sachs Trading wrote down its portfolio value \$165 million at the end of 1930 in order to bring it to market value. Then,

⁵² Armstrong p. 242

⁵³ Armstrong p. 282

⁵⁴ Wigmore p. 206

⁵⁵ Armstrong p. 283

⁵⁶ Wigmore p. 161

⁵⁷ Wigmore p. 121

⁵⁸ Wigmore p. 120

⁵⁹ Armstrong p. 276

⁶⁰ Wigmore p. 122

⁶¹ Armstrong p. 274

⁶² Armstrong p. 283

⁶³ Wigmore p. 193

as now, almost half the write-offs were on securities for which no adequate public market existed.⁶⁴ Also, investment funds at the Wall Street firms began to collapse as managers lost most of their clients' money. For example, Goldman Sachs' two leading funds both fell by about 90%.

It wasn't until December 1930 that bank failures became a big deal. Until then, the majority of bank failures had been in the Midwest. But in December, the Bankers Trust Co. in Philadelphia failed, which was followed by the failure of the Bank of United States.⁶⁵ Manufacturers Trust Company also experienced runs at some branches and needed help from the Clearing House Association. Bank stocks plunged. The reputations of U.S. banks suffered abroad, where the Bank of United States was thought to be more important than it actually was because of its name.⁶⁶

Back then, there was no active lender-of-last-resort role at the Federal Reserve to deal with smaller regional banks, so the Bank of United States got no lender-of-last-resort loans. The Federal Reserve did what its role proscribed when bank suspensions accelerated in November and December 1930, i.e., it increased its open market purchases aggressively, so that its holdings of T-bills doubled by December 31st.⁶⁷ Back then, the role of the Federal Reserve was to control money supply and not to determine who got money and who didn't.

Political shifts follow economic shifts. This time was no different. The Democrats swept Congress in the November mid-term elections. Still, at the end of 1930, a majority of those in finance and business predicted that there would be an economic recovery in 1931.⁶⁸

International Problems

The foreign debt problem had also become a big drag on the global economy, which hurt the U.S. economy. Then, as now, these debts were heavily denominated in U.S. dollars. Then, the Chairman of the Federal Reserve Board privately advised Hoover to cut war debts by 70% and reparations by 40% to improve international trade and financial conditions, but this was rejected because it was felt that the U.S. needed the money.⁶⁹ All the countries of Western Europe and the United Kingdom had dollar-denominated bond issues after the war and, in varying degrees, were facing problems coming up with dollars, which then, as this time around, strengthened the dollar.

In the boom years, emerging market debt had become popular as it seemed to offer higher interest rates with not much risk. Issues of South American governments had been especially popular. For example, Argentine bonds were rated Aa by Moody's, which also gave an A bond rating to Buenos Aires, Chile, Cuba, Peru, Rio Grande do Sul, and Uruguay. Bolivia, Brazil, Colombia, and Rio de Janeiro were rated Baa, which still implied investment quality. Rates on these bonds were 1%-2% over comparably rated domestic corporate issues in 1928-1929 when the carry trade was popular.⁷⁰ But in 1930, U.S. investors didn't want to roll over maturing foreign debt.⁷¹ Foreign governments with maturing issues had to resort to short-term borrowing. Then, as now, these countries didn't get loans from the U.S. government. Later in the deleveraging, many of these countries defaulted on their U.S. bond issues.

France and Great Britain were heavily in debt to the United States, but the greatest source of instability was Germany, which had built up massive international short-term debts that it could not service or roll.

⁶⁴ Wigmore p. 155-157

⁶⁵ Armstrong p. 285-6

⁶⁶ Wigmore p. 125

⁶⁷ Wigmore p. 126

⁶⁸ Wigmore p. 208

⁶⁹ Wigmore p. 116

⁷⁰ Wigmore p. 199

⁷¹ Wigmore p. 203

Germany had a huge reparations burden, it lacked foreign exchange reserves, the savings of individuals had been wiped out by hyperinflation in the early 1920s, and the rest of Europe feared a rebirth of German militarism so it tried to hold Germany back economically. Since hyperinflation and reparations payments eliminated domestic savings, both German industry and government were forced to borrow abroad.⁷² As it was short of cash, Germany's central bank, the Reichsbank, raised its rate from 4% to 5% in October in order to raise short-term funds.⁷³ By this time Hitler had emerged on the scene and created a problem for the governing Social Democrats, thus destabilizing their ability to govern, making investors more wary about lending to Germany.

Similarly, economic problems in South America caused political and social problems there. In September there was a revolt in Chile and a revolution in Argentina and in October a rebel coup in Brazil.⁷⁴ Naturally, this turbulence scared investors both foreign and domestic, and this scared capital away, worsening their problems!

During such times of great stress, political and social polarization emerges as various strongly held opposing views, especially of "the have-nots" (workers) and "the haves" (investors), and this makes it difficult for leaders to govern. Such periods are great test of whether a nation's system of checks and balances really works or paralyzes decision making.

1Q1931

Still, in January 1931, most people confidently expected an imminent recovery. For example, at their January 1931 annual meetings, virtually all bank chairmen predicted a business recovery during 1931. So did politicians, financiers, businessmen, and even Europeans, who had been the most skeptical of similar predictions in early 1930.⁷⁵ This is because the problems still seemed manageable, so there was a presumption that there would be a return to this norm.

February 1931 was a month of mixed economic data. The Dow Jones Industrial Average rallied sharply during February as confidence returned. For three weeks prior to Washington's Birthday, stocks rose and there were stories of big bears caught short and big M&A deals rumored. International Telephone & Telegraph gained 100% from its January low and there were rumors that it would again attempt to buy Radio Corp's communication business. These developments worried investors with cash and shorts that they'd miss out on the return to normalcy, so they bought, causing a buying panic. Optimism was pervasive and broadly expressed. The Dow Jones Industrials rallied 20% from the December low and selected stocks doubled⁷⁶, so there was no doubt that the economy was on the road to recovery.

On stocks, the head of Chase bank commented: "I do not know whether we shall see lower prices in the stock market or not...There are many securities, both stocks and bonds, which are now selling for less than they will be worth in normal times and at prices which should prove attractive to the investor." His conclusion and forecast were: "I think that we are approximately at the worst of the Deleveraging and that the next important move will be upward...I expect conditions at the end of 1931 to be a good deal better than they are at the end of 1930."⁷⁷ In January, even Paul Moritz Warburg, who had become somewhat of a respected soothsayer for identifying the "speculative orgy" just prior to the collapse and who was a well-known banker and a director of the Manhattan Co., said "from the banker's point of view, I do not hesitate to say that within a few years hence the level at which some of our securities sell today

⁷² Wigmore p. 202

⁷³ Wigmore p. 205

⁷⁴ Wigmore p. 205

⁷⁵ Wigmore p. 208

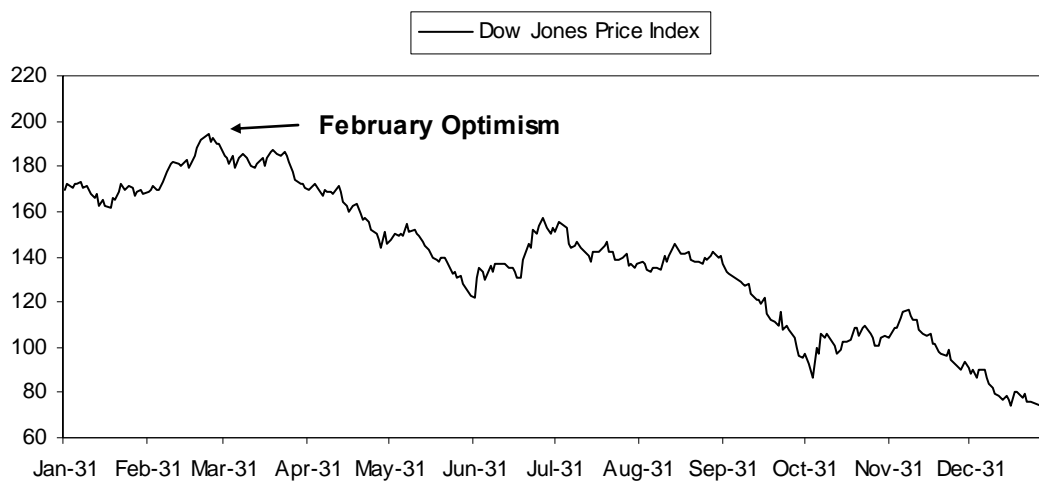
⁷⁶ Armstrong p. 316-7

⁷⁷ Armstrong p. 302

will look...incomprehensibly low...even though one might anticipate a year or two of reduced dividends.”⁷⁸

Similarly, the President of U.S. Steel, James Augustine Farrell, was quoted in *Time* magazine saying that stocks had reached “the low from which an uptrend was now in motion” and the chairman of both RCA and General Electric, Owen D. Young, stated before the American Bankers Association meeting that in his opinion improvement was at hand. Numerous leaders within industry echoed these opinions. Also, in February 1931 the Federal Reserve Board declared that the banking system was much stronger than 18 months earlier. At the same time, state and local governments were generally considered strong and creditworthy.

Investors shared this view, and the Dow Jones Industrials rallied into February, exceeding the January high as well as the highs that had been established during both November and December of 1930.⁷⁹ The chart below shows the rally and what subsequently happened. Once again, sentiment affected stock prices and the economy, and knowledgeable people confidently gave misleading advice that sucked people with cash into the market and shorts out of the market, hurting both. We point this out to show how misleading a consensus of experts and market movements can be.⁸⁰



Source: Global Financial Data

Along with the rally in stocks, railroad bonds rallied in February, exceeding the highs of December 1930 and January 1931. Corporate and municipal bond defaults started to pick up in 1931⁸¹. Real estate backed bonds were one of the worst investments, second only to foreign bonds.⁸² Interestingly, bond defaults caused more losses than stock market declines in the Deleveraging. In fact, supposedly losses on investments in foreign bonds were greater than losses on investments in stocks.⁸³ Stocks, at least, could be sold at a price quoted on the exchange. Bond issues backed by real estate simply went into default and were illiquid.

⁷⁸ Armstrong p. 303-304

⁷⁹ Armstrong p. 307

⁸⁰ Armstrong p. 303

⁸¹ Armstrong p. 307

⁸² Armstrong p. 300

⁸³ Armstrong p. 360

Wages and Consumer Finance

At this time, there were greatly divergent views about how to solve the Deleveraging. For example, some people thought that wages should be pushed up and others thought they should fall. For example, the president of the Chase National Bank, which was the largest bank in the U.S. at the time, Albert Wiggins, said "it is not true that high wages make prosperity. Instead, prosperity makes high wages. Many industries may reasonably ask labor to accept a reduction of wages designed to reduce costs and to increase both employment and the buying power of labor."⁸⁴ Others argued that by lowering wages it would reduce the cost of production, thereby reducing retail prices and stimulating purchases, which would speed recovery.

Naturally, price wars were taking place in many industries as businesses with high fixed capacity wanted to get any incremental contributions possible, even though these revenues were at a loss.⁸⁵

Despite interest rates declining, banks did not lend much to individuals because of their perceived credit and liquidity risks. Credit spreads blew out. The small individual seeking to borrow money was typically forced to pay over 40% a year! A common practice was that a wage earner's pay check was postdated. This gave rise to the often termed "salary-purchasers." These people offered \$50 for a \$55 paycheck, taking advantage of the person who needed the cash immediately. Pawnbrokers were reported to be lending money at the highest possible legal rate and then forcing the client to pay \$10 for \$1 worth of merchandise to get around the laws. The "usurers" would collect \$10 a month interest on a \$50 loan for years at times. Below is a report showing average lending rates from various types of lenders to small individuals.⁸⁶

Annual Interest Rate Charged

	Range of Interest %	
	<i>Low</i>	<i>High</i>
Life Insurance Co	6%	6%
Building and Loan Soc	6%	12%
Credit Union	6%	18%
Commercial Banks	9%	22%
Installment Finance Co	16%	25%
Industrial Banks	17%	34%
Remedial Loan Soc	12%	36%
Personal Finance Co	30%	42%
Pawnbrokers	12%	120%
Salary Buyers	120%	480%

Stocks slipped at the end of the first quarter as earnings disappointed (see table below). In March, the Dow Jones Industrials fell, closing March virtually on the low near the 171 level. The long bonds rallied, not by much, though they went to a new high for the year during March.⁸⁷

⁸⁴ Armstrong p. 302

⁸⁵ Armstrong p. 310

⁸⁶ Armstrong p. 319

⁸⁷ Armstrong p. 319

1Q 1931 Earnings
(thousands of dollars)

	1931	1930	%Chng
American Bank Note	1,019	1523	-33%
Borg Warner	325	1097	-70%
Caterpillar	1,031	3365	-69%
Chrysler	-979	180	-644%
Corn Products Ref	2,389	3152	-24%
Curtis Publishing	4,654	6533	-29%
General Electric	11,488	15042	-24%
General Foods	5,572	5990	-7%
General Motors	28,999	44968	-36%
Gillette	1,421	2164	-34%
Hudson Motor Car	226	2316	-90%
Hupp Motor Car	-680	66	-1130%
McGraw Hill Pub	372	534	-30%
Montgomery Ward	-1,783	-2318	30%
National Cash Regs	-373	912	-141%
Otis Steel	20	634	-97%
Packard Motor Car	113	2654	-96%
du Pont	12,656	17347	-27%
Studebaker	809	1347	-40%
Westinghouse Elec	-2,885	4546	-163%

2Q1931

The Global Dollar Shortage Caused a Global Debt Crisis and a Strong Dollar

Because lots of debts were denominated in dollars and the ability to earn dollars fell (because of reduced US imports), and because the ability to borrow dollars also fell as credit tightened, a global dollar shortage emerged. Of course, simultaneously there were lots of debts denominated in all currencies that couldn't be paid, though dollars were especially short.⁸⁸

Time magazine reported that the president of the Chase National bank said, "The most serious of the adverse factors affecting business is the inability to obtain dollars in amounts sufficient both to make interest and amortization payments on their debts to us and to buy our exports in adequate volume. Cancellation or reduction of the inter-allied debts has been increasingly discussed throughout the world. This question has an importance far beyond the dollar magnitude of the debts involved...I am firmly convinced it would be good business for our Government to initiate a reduction in these debts at this time."

The battle for world trade continued to lead to more trade barriers. With the trade war going on, foreign nations were unable to earn enough dollars to make payments on their outstanding loans.⁸⁹ The effects of the deleveraging were becoming severe in Canada which was a prominent trading partner. Canada imposed tariffs so stiff against U.S. Steel that U.S. owners were forced to sell off assets in Canada.⁹⁰

⁸⁸ Wigmore p. 236

⁸⁹ Armstrong p. 301

⁹⁰ Armstrong p. 319

Fears over the banking situation were as alive in Europe as they were within the United States.⁹¹ The Treaty of Versailles had isolated Germany and Austria, reducing their economic viability significantly. The practices of “printing” paper money which came about via deficit spending that was monetized created higher rates of inflation in Europe.⁹² Germany was saddled with reparation payments it could not make. So, Germany was forced to borrow dollars in order to meet its obligations, but without a trade surplus it remained a credit risk. Austria was in no better shape.⁹³ The combined debts of Germany, Austria, Hungary and other Eastern European nations on a short-term floating basis appeared to slightly exceed \$5 billion. This was a figure which was almost equal to the peak in money which had been lent on call within the stock market back in 1929. This figure did not include long-term bond issues, war debts or municipal issues which had been floated and held largely by private investors.⁹⁴ In other words, these debts were huge.

The small international investor was attracted to German bonds by the favorable carry, but Germany had big reparations payments so it indirectly sent this money back to the governments of the people it was getting the money from. Germany couldn't service its existing debt, most importantly its reparations, so it borrowed the money to do it. Many of the buyers of German bonds were foreign private citizens who were attracted by the higher interest rates (6% to 7%); the proceeds were paid to the foreign nations who demanded reparation payments. It was essentially a Ponzi scheme that transferred the earnings of the small investor into the hands of the German government through the medium of bonds, which transfers them back to the government that Germany owed it to. Germany wasn't really servicing its debts, but as long as this continued, nobody questioned it. This “Ponzi scheme” approach to servicing debt has, throughout time, commonly existed and, more than any other factor, caused credit problems.

On May 10, 1931, Germany and Austria signed a free trade agreement that was viewed as antagonistic by the French. The Bank of France, accompanied by many other French banks, presented short-term Austrian bills for redemption. This was the final straw which broke the back of the European economic system as repayments were impossible. Britain came to the aid of Austria, advancing 4.5 million pounds. The French responded by selling the pound through the liquidation of their sterling holdings, which caused a liquidity crisis, to get back at Britain.

The liquidity shortage caused bank runs in Austria. On May 13, 1931 riots broke out in front of Austria's Credit-Anstalt bank, which was Austria's largest bank.⁹⁵ On May 15, runs were reported throughout Hungary as well. On May 17, 1931 the Credit-Anstalt published its balance sheet and showed sharply reduced capital because of operating losses in almost 250 Austrian companies which it controlled.⁹⁶ This triggered a run on its foreign deposits which threatened to exhaust Austria's gold and foreign exchange reserves.⁹⁷

Similar problems plagued Germany. In June Germany's central bank, the Reichsbank, saw its reserves of gold and foreign exchange drop by one-third to the lowest level in five years. In an attempt to attract liquidity at the end of July, the Reichsbank raised its discount rate to 15% and its rate on collateralized loans to 20%. Bank runs continued in Germany so the German government took over the Dresdner Bank, the second largest in the nation. It did this by buying preferred shares, which was the popular way of governments buying interests in banks to help stabilize them. Sound familiar? Germany's reserves continued to decline throughout 1931.⁹⁸

⁹¹ Armstrong p. 341-46

⁹² Armstrong p. 339

⁹³ Armstrong p. 341-46

⁹⁴ Armstrong p. 352-3

⁹⁵ Armstrong p. 341-46

⁹⁶ Wigmore p. 294

⁹⁷ Wigmore p. 293

⁹⁸ Wigmore p. 297

Hoover described the situations as follows: "The nations of Europe have not found peace. Hates and fears dominate their relations. War injuries have permitted no abatement. The multitude of small democracies created by The Treaty of Versailles have developed excessive nationalism. They have created a maze of trade barriers between each other..." The battlefield was forming along the lines of 1) socialism and capitalism within countries and 2) countries against other countries.⁹⁹

Running from Europe, investors' money poured into the U.S., so U.S. interest rates fell. The Fed reduced the discount rate to 1.5% in hopes of making the dollar less attractive to investors. Britain had been losing gold to the United States as scared investors fled Britain and Europe in general.¹⁰⁰ The Central European states raised their interest rates in an attempt to attract foreign capital. This was then followed by foreign exchange controls so investors were not permitted to take money out of the country. This created a drastic side-effect – a halt in international trade.¹⁰¹ Although no one officially went off the gold standard in May of 1931, since the exportation of capital was prohibited, no gold payments were made. So this had the same result as abandoning the gold standard by the Central European states.

Global tensions worsened. In June of 1931, the European press began to attack the United States. They asserted that the economic policies of the U.S. were attracting the world's gold, creating the flight from European stock markets and foreign exchange markets. U.S. gold reserves had climbed by \$600 million despite the Fed's cut in the discount rate as the flight to safety was too powerful to negate. Despite the deleveraging in the U.S., the U.S. was viewed by world investors as still the safest place at that point, supported by the dollar shortage, debt squeeze in Europe, as well as political concerns there.¹⁰²

As the second quarter of '31 began, hoarding of gold continued to rise including in the US which contributed to reducing the velocity rate of money by 22% from the previous year. Gold became very attractive both in physical form as well as in gold stocks.¹⁰³

On June 7, the German Finance Minister publicly stated that the Austrian banking crisis would spread to Germany in about 60 days in his opinion, so the panic began immediately. Virtually every German bank suffered runs and foreign banks began to pull credit seeking the immediate redemption of German trade bills and bankers' acceptances.¹⁰⁴

On June 19th in an attempt to ease Germany's debt problems, President Hoover proposed a one-year moratorium on Germany's war debts, catching most political observers by surprise. The international reaction to the moratorium was favorable. In fact, commentators expected the moratorium was the first step toward restoring international finances, stimulating trade and ending the Deleveraging. Stocks and commodities rose for several days in what became known as the "moratorium rally".¹⁰⁵

At the time (i.e., in mid-1931), there still was not a sense of crisis to produce stronger actions by the administration, as it was generally assumed the economy would recover and that the moves that occurred were adequate. Financial markets held up reasonably well through June. Governor Harrison of the Federal Reserve Bank of New York thought that the commercial banking system was stronger than ever because of its increased liquidity. No major industries appeared to be in danger of bankruptcy, and the U.S. economy appeared to be moving sideways.¹⁰⁶

⁹⁹ Armstrong p. 381-2

¹⁰⁰ Armstrong p. 342-46

¹⁰¹ Armstrong p. 346

¹⁰² Armstrong p. 347

¹⁰³ Armstrong p. 331

¹⁰⁴ Armstrong p. 347

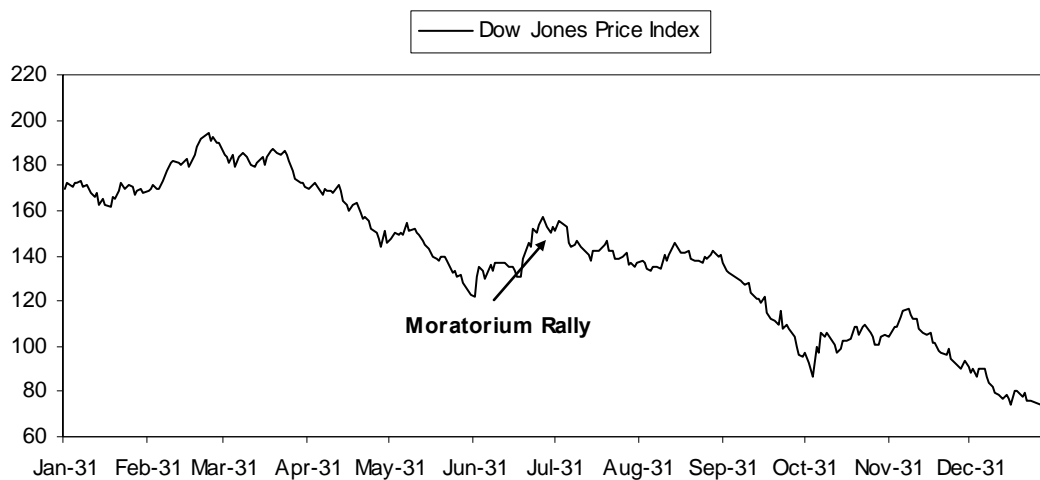
¹⁰⁵ Wigmore p. 295

¹⁰⁶ Wigmore p. 210

The stock market rose 13% in three weeks in the “moratorium rally” and was up 36% from June 1st at this point.¹⁰⁷ This was the biggest rally since the decline began and commodity prices soared as well, so confidence again returned.

Within a week of Hoover’s public announcement of his moratorium proposal, 15 governments had agreed with the plan “unconditionally!” The only important opponent was France who still held bitter resentment toward Germany. So, many people believed that the international debt problem was being managed.

The chart below puts this rally in perspective. It conveys how seeming very big rallies at the time, and the big increases in confidence that accompanied them, were rather small when one steps back to put them in perspective. There was, and still is, a strong tendency for people – workers, investors and policymakers – to exaggerate the importance of relatively small things because they look big up close.



Source: Global Financial Data

The international debt crisis continued during the moratorium rally. On July 11th, only five days after the moratorium was announced, the German government asked the United States to make further loans and to renegotiate reparations, because short-term investments were still being rapidly withdrawn from Germany. At the same time, the German stock exchanges were closed for Monday and Tuesday, and on Monday July 13th a nationwide bank holiday was declared in Germany. The German banking system was in chaos. Banks’ deposits shrank almost 30% in the year through June 30, 1931 and the unemployment rate soared. The government was threatened from both the left and the right as Communist riots broke out in many cities and Hitler threatened not to make German reparations payments.¹⁰⁸

National governments were unable to finance their cash requirements in Germany, South America, Sweden, Hungary, Romania, and the United Kingdom, and virtually every South American country, except Argentina, defaulted on its foreign debts. Their bond prices dropped to a range between \$5 and \$25. Eastern Europe did not default during the year, but the prices of East European external debt issues dropped below \$40 in anticipation of the problems ahead. Economic chaos caused political chaos as the battle for wealth between workers and capitalists intensified. Almost every country in South

¹⁰⁷ Wigmore p. 210

¹⁰⁸ Wigmore p. 296

America had a problem with revolution, revolt or war,¹⁰⁹ so investors, both from these countries and from elsewhere, moved their money elsewhere.

3Q1931

The Debt Moratorium and the Run on Sterling...

The euphoric “Moratorium Rally” did not last¹¹⁰ because the moratorium obviously didn’t fix the debt problems. On July 20, 1931, a conference was called in London to discuss the European banking crisis. Hoover’s proposal was to call a complete “standstill” among all banks everywhere, preventing anyone from calling upon German or Central European short-term obligations. This didn’t bring comfort to investors who had their wealth stored in them. A group of New York bankers complained to the White House and warned that they would not comply with the standstill, which led Hoover to later say, “If [bankers] did not accept within twenty-four hours (his standstill proposal), I would expose their banking conduct to the American people.” So the bankers reluctantly backed off.¹¹¹

English banks had lots of loans to Germany so when Germany couldn’t pay these banks were in trouble.¹¹² So naturally, investors wanted to take their money and run, so there was a run on England’s reserves. The U.K. banks then, like the U.K. banks now, were in trouble because they owned lots of debt that was in dollars and not being paid back and they were losing cash because depositors and creditors were justifiably scared about what would happen to their money. Then, as now, the Bank of England could only resort to printing money, because credit from elsewhere was not ample. Seeing these problems, on July 24, 1931, the French began sizable withdrawals of gold from London. When the French began to withdraw their gold deposits, other nations followed suit. The Bank of England attempted to stem the run by implementing the typical textbook action of raising interest rates. Of course this didn’t work.

Then, on August 1, 1931, the Bank of England asked the U.S. government for a loan from private U.S. banks. Hoover encouraged this action to be taken immediately. But the selling pressure against the pound through the withdrawals of gold by governments and the selling of the pound by private investors forced the Bank of England to request an even bigger loan on August 26. Both loans were made, but even this was far from enough to stem the tide.¹¹³ The bank rate was raised from 3 ½% to 4 ½% on July 29.¹¹⁴ Another big loan from US and French bankers was made on August 28. Note that, through history, the U.K. has always been a preferred country in getting U.S. loans.

But these loans didn’t stop investors’ run out of sterling. In fact, they essentially helped to fund them by providing the loans. During July the Bank of England lost nearly one-third of its gold reserves. The Bank of France supported sterling throughout the week of September 7-12 but Dutch banks began to call their funds heavily from London to meet their domestic cash needs, as they were being squeezed also.

On September 19 sterling dropped sharply and banks refused to book any speculative short sales of sterling. The London Stock Exchange was in panic.¹¹⁵ Finally, on Sunday, September 20, 1931, the Bank of England abandoned the gold standard and effectively defaulted on its foreign obligations. U.K. bonds plunged.¹¹⁶

¹⁰⁹ Wigmore p. 291

¹¹⁰ Armstrong p. 351

¹¹¹ Armstrong p. 354-5

¹¹² Wigmore p. 298

¹¹³ Armstrong p. 355-6

¹¹⁴ Wigmore p. 299

¹¹⁵ Wigmore p. 301

¹¹⁶ Armstrong p. 359

Sterling fell 31% over next 3 months. On Monday, the first day of trading after the suspension of gold payments, sterling dropped to a low of \$3.71 from the Friday's level of \$4.86. Then, sterling exchange rates fluctuated widely, from as high as \$4.20 to as low as \$3.50 during September. As with the earlier described stock market action, there were plenty of false rallies with bullish sounding developments which easily could have led people to overlook the big move. Sterling averaged \$3.89 in October, \$3.72 in November and \$3.37 in December.

The Scandinavian countries devalued by a percentage similar to that of the United Kingdom (31%) as did Portugal, New Zealand, Egypt, and India. Australia devalued by over 40%, Canada by only 17%. Every foreign bond hit a new low for the period in 1931, and every issue but those for Switzerland and France declined 20% or more from its 1931 high price, as investors ran from government bonds fearing that they would either be paid back with devalued paper money or be defaulted on. Bonds of Germany, Austria, and the rest of Eastern Europe, with the exception of Czechoslovakia, sold off drastically. Austria's bonds dropped to \$35, Germany's to \$22, Poland's to \$32, Berlin's to \$14 and Yugoslavia's to \$29.¹¹⁷

However, England's credit was not seriously hurt by the event, though the bond initially sold off. That is because the devaluation made it easy for the U.K. to pay off U.K. bonds with the pounds the Bank of England could produce. So on these bonds there was no default risk or a shortage of demand, so the only risk was inflation risk, but that wasn't a problem because the devaluation did little more than negate deflation. United Kingdom 5 ½% bonds due in 1937 dropped to \$92 immediately after the devaluation, having been \$104 a week prior, but \$90 was the low price for 1931 and the bonds were back over \$100 by year end. England had been so hampered by an overvalued currency that the devaluation acted like a tonic. Stocks in the next few months rose up 30%, and by the end of October the Bank of England repaid \$100 million of its foreign debts as money flowed back into London banks. This is a classic example of how devaluations in deflationary environments create debt relief and negate deflation rather than rekindle inflation.¹¹⁸ Of course, 30% less in sterling is still 30% so investors anticipating devaluations want to get into something stable like gold.

Problems Spread to the U.S.

The devaluation of sterling in 1931 sent shock waves through U.S. securities markets that pushed stock prices to new lows. Some other countries' stock markets simply stopped trading. For example, the Berlin Bourse closed from July 13 to September 3, opened with short selling banned, then closed again. In Amsterdam on September 21, after a sharp decline in prices, all transactions were cancelled and the Exchange closed.¹¹⁹ The New York Stock Exchange remained open, but as in dark November 1929, short selling was forbidden and investors worried, so risk premiums increased.

The Dow Jones Industrials dropped more sharply than ever before, except for its collapse into November 1929. The industrials fell below the 100 level and closed September on the low of the month.¹²⁰ The Dow declined a further 38% between September 1st and October 5th.¹²¹ As October began, the havoc continued, forcing the industrials down to 86, nearly half the price at the peak of the "moratorium rally" during June 1931. Undoubtedly a good deal of the fear was of confiscation risk as well as price risk.

¹¹⁷ Wigmore p. 302

¹¹⁸ Wigmore p. 303

¹¹⁹ Wigmore p. 291

¹²⁰ Armstrong p. 362

¹²¹ Wigmore p. 236

The sharp decline in stock prices during September of 1931 was also accompanied by a sharp decline in production within many industries. Auto production during September fell 25.6% from August levels.¹²² Commodities prices declined all year. Investors just wanted safety and that pulled cash and credit out of the hands of consumers and workers.

Banks needed to sell bonds to raise cash, which contributed to rising yields. Yields on long-term U.S. Treasury bonds rose from 3 ¼% to 4% in the fourth quarter of 1931. Also, there were concerns about U.S. Treasury's ability to roll bonds coming due over the next two years as a result of its World War I Liberty Bond financing maturing.¹²³ There was a \$2 billion budget deficit to finance, plus \$10 billion in U.S. maturities in 1932-1933. The U.S. was beginning to look like the U.K. before its devaluation.¹²⁴

After the sterling crisis there were no further refundings in 1931 because of the weakness of the market. The U.S. Treasury 4 ¼% bonds due in 1952 dropped from over \$114 in June to as low as \$102 in October, rose back to \$108 in November and fell down again to \$100 in December – all of which was too much volatility for successful underwriting.¹²⁵

Despite the fact that the Supreme Court had upheld the legality of shortselling back in 1905, the growing sentiment was clearly seeking a scapegoat, and stock market bears and Wall Street tycoons became the targets. They were widely blamed for causing the numerous bank failures and governmental defaults.¹²⁶ As law suits mounted and people fought over losses – sometimes in the courts and sometimes in the streets – the Dow Jones Industrials fell severely as capitalists got scared and sought safety.¹²⁷

4Q1931

International Crisis Shakes Domestic Markets

The decline in business conditions accelerated sharply after the international crisis as those who controlled businesses were the capitalists and capital preservation was their primary objective. Bank failures were at record levels in the last quarter of 1931, and many industries, particularly railroads, began to suffer severe losses. The Gross National Product dropped 7.7% in constant dollars. Unemployment approached 25% by the end of the year.¹²⁸ While National Income had declined by 31% in current dollars from the peak, the income of all businesses fell 65%. Corporate profits had declined from 10% of National Income to a loss equal to a negative 1 ½% of National Income.¹²⁹

At the time, hardly anyone believed that more and cheaper credit availability would have stimulated business, because even with interest rates of zero, the real cost of more borrowing was very high and the industries which needed credit weren't good credits.¹³⁰ It was unimaginable then, and comparably implausible to us now, that banks and other investors will lend to unsound borrowers in a deflation.

In September 1931, the dollar ceased to be a safe haven. Since other countries defaulted and devalued, their needs for dollars fell and the United States' budget and credit problems started to raise concerns¹³¹ that the U.S. would have to choose between default and devaluation. So, after the sterling crisis and the U.S. banking crisis worsened, gold reserves fell, the economy fell, and there was a run on banks.¹³² U.S.

¹²² Armstrong p. 236

¹²³ Wigmore p. 289

¹²⁴ Wigmore p. 226

¹²⁵ Wigmore p. 289

¹²⁶ Armstrong p. 366

¹²⁷ Armstrong p. 321

¹²⁸ Wigmore p. 209

¹²⁹ Wigmore p. 229-30

¹³⁰ Wigmore p. 227

¹³¹ Armstrong p. 373

¹³² Wigmore p. 214

gold reserves increased right up to the week ending Saturday, September 19, 1931—the day before the United Kingdom decided to suspend gold payments. The U.S. gold outflow began on the following Monday, when foreign banks, including the Bank of France, bought almost \$100 million in gold from the Federal Reserve. Within three weeks of the suspension of sterling, the United States lost approximately 10% of its reserves.¹³³ The Fed raised the discount rate substantially, hoping that higher interest rates would attract investors back.¹³⁴

To counter the gold outflow, the New York Federal Reserve Bank raised its discount rate from 1 ½% to 2 1/2% on October 8th, but foreign investors' concerns had reached the point of not being affected by changes in interest rates. Rumors abroad that the United States would go off the gold standard as the U.K. did prompted a record one-day gold outflow on October 14th. The New York Federal Reserve Bank discount rate was raised another 1% to 3 ½% the next day. The next week, France agreed not to withdraw any more gold from the United States, and both countries agreed to consult each other before advancing any new proposals for extending the war debts moratorium.¹³⁵

However, the supply-demand imbalance for dollars continued to worsen as the Federal government's deficit became too big to fund in September 1931, so the Federal Reserve bought U.S. long bonds.¹³⁶

In mid-October Canada prohibited the exportation of gold¹³⁷, causing investors who tried to protect themselves by hiding in gold to be trapped.

Besides foreigners withholding gold, there was domestic hoarding of gold and currency by U.S. individuals.¹³⁸ There was a sharp contraction in bank deposits generally during the last quarter of 1931 as foreigners pulled out and individuals shifted bank deposits into gold and cash hoarding.¹³⁹ Reflecting this, currency in circulation, including gold and silver, jumped by about 20% from June 1931 to December.¹⁴⁰

The Fed's tightening to keep capital produced a cash shortage that caused loans to be called. Bankers began to call in loans from many sectors, trying to increase their cash reserves. Many homes and farms were forced into foreclosure because their loans weren't renewed. Company bankruptcies were increased as creditors called in all the loans to debtors. The contraction in the money supply was not caused by the Federal Reserve intentionally, but because of the behavior seeking safety via the withdrawal of foreign capital, domestic hoarding, and the foreclosure on property which further depressed the values of tangible assets.¹⁴¹

The Federal Reserve was given authority to buy U.S. T-bonds in April 1932 so it bought them as deficits increased and foreign investors withdrew funds. Because of the balance of payments imbalance being financed through the Fed's liquidity creation, a currency crisis developed.¹⁴²

The chart below shows Fed purchases and holdings of government securities from January 1931 to December 1932. As shown, the balance sheet was significantly expanded by this process.

¹³³ Wigmore p. 215

¹³⁴ Armstrong p. 373

¹³⁵ Wigmore 216-17

¹³⁶ Wigmore 216-17

¹³⁷ Armstrong p. 374

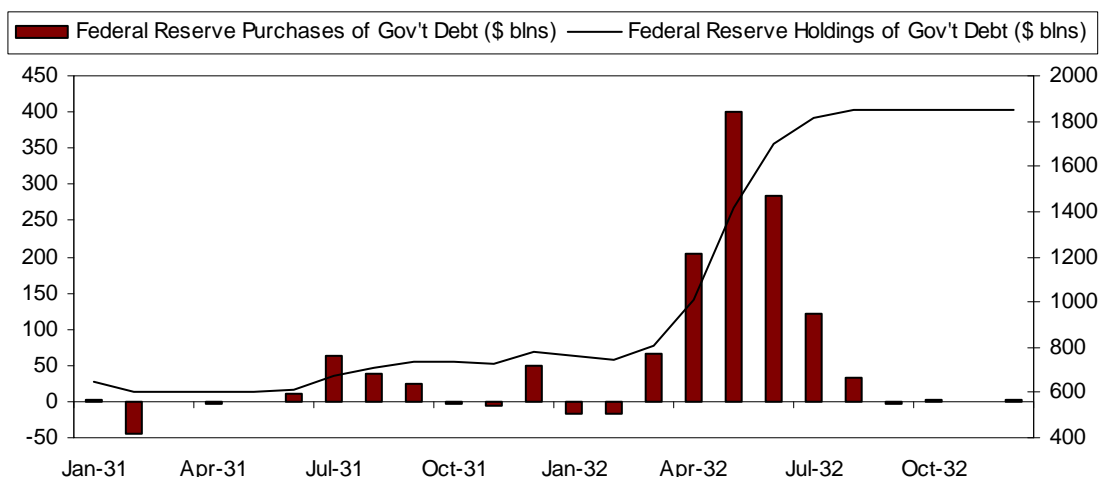
¹³⁸ Armstrong p. 374

¹³⁹ Wigmore p. 218

¹⁴⁰ Wigmore p. 219-220

¹⁴¹ Armstrong p. 375

¹⁴² Wigmore p. 216-17



Through the 1920s and up until 1933, the money supply was essentially linked to the supply of gold and, through the multiplier effect, the supply of money created the supply of credit and that credit growth funded economic growth. In the 1920s,¹⁴³ \$1 in gold led to \$13 in debt as money was lent and relented to create an amount of debt that was many times the supply of money. Of course, debt is the promise to deliver money, so when this ratio became high, the system became precariously balanced. When credit starts to fall, usually because there is not enough money to meet debt obligations, credit falls and the demand for money increases, so the ratio falls. When the supply of money is linked to the supply of gold, debt must contract more and economic activity must also fall more than if the supply of money can be increased. When investors lose confidence in a bank or the government and they hoard their assets (e.g., in cash and gold), as was the case during the Deleveraging, the hoarding reduces the availability of credit. Since the Fed could not create gold, its only option was to create paper money. It was then believed that central banks could not create much paper money while on a gold standard because such a move would revive Gresham's law of bad money driving out the good.¹⁴⁴ If investors wanted to cash in their US bonds, notes and bills at the same time, the government would be forced to choose between not increasing the money supply, which would lead to interest rates rising, or printing money. That is because not enough cash as measured through M1 exists to cover all the debt obligations. Of course, as long as investors feel comfortable with bonds as a "store of wealth," and don't need the cash, everything is fine. But when confidence in bonds is lost and/or cash is needed, investors run in the direction of cash and gold. There is simply not enough cash to go around, especially as gold is taken out of reserves, and a massive contraction takes place. When nations began to default on their bonds and the need of the federal governments to borrow more than investors would lend, confidence in bonds and government debt maintaining their value gave way, driving investors into gold and cash for safety. Because debt multiplies the value of these tangible assets, it creates a bubble which eventually comes to a head creating a stampede into cash. This has been true through history, all the way back to Roman times and before.¹⁴⁵

During August, runs for cash closed most of the banks in Toledo and Omaha and banks in L.A., New York and Brooklyn. Bank failures accelerated in July and August.¹⁴⁶ In the Deleveraging, the bank failures were primarily due to the declines in corporate bond, stock, real estate, and commodities values, as well as declines in business generally, which destroyed asset values and income. The weakness of the economy became apparent only in the summer months, as real estate foreclosures accelerated, wage and salary cuts were initiated in major industries, and domestic and international trade fell off sharply. Then, as now, real estate was one of the weakest areas of the economy. Real estate values had

¹⁴³ Armstrong p. 370

¹⁴⁴ Armstrong p. 370

¹⁴⁵ Armstrong p. 371

¹⁴⁶ Wigmore p. 218

collapsed earlier in some regions, particularly in Florida and South Carolina. This problem spread to New York where there were foreclosures on commercial properties and rental buildings by savings banks and life insurance companies which produced a rash of foreclosure auctions beginning in June 1931.¹⁴⁷ Then, as now, the collapse of real estate values generated increased uneasiness towards the banks. The bubble in real estate was reflected in real estate loans by national banks doubling from 5% of loans in 1928 to 10% in 1930.¹⁴⁸

Because illiquid assets could not be sold to raise liquidity, President Hoover wanted to allow the Federal Reserve to accept illiquid collateral to lend against.¹⁴⁹

On December 10, 1931, Chase securities announced write-downs of \$120 million to account for losses in securities still carried at pre-Crash values. Similar credit problems were pervasive. Banks' net profits were reduced from over \$556 million in 1929 to \$306 million in 1930 to virtually zero in 1931. Securities losses at banks were a record \$264 million in 1931 compared with \$109 million in 1930 and \$95 million in 1929. Loan losses were a record \$295 million compared with \$195 million in 1930 and \$140 million in 1929. Interest earned on loans, bills and commercial paper dropped from \$1.6 billion in 1929 to \$1.3 billion in 1930 and \$1.1 billion 1931. Then, as now, the banks were squeezed from every direction.¹⁵⁰

All sorts of moves were made to hide the real values of assets of banks. Such attempts to hide losses in deleveragings are typical. For example, laws were changed to preserve the fiction of profits, a moratorium was declared on removing railroad bonds from the legal investment list in New York State, so that banks did not have to realize losses on the sale of bonds taken off the "legal list", and federal authorities allowed banks to carry at par all U.S. bonds and other bonds within the four highest credit ratings (Baa to Aaa).¹⁵¹

Hoover's "Super Plan"

Then, as now, the administration started to exert pressure on the banks to lend. Hoover's "Super Plan" to do this created what was known as the National Credit Corporation. Hoover realized that vast sums of assets were frozen and that, combined with international investors' capital withdrawals, this spelled potential international disaster, so his idea was to create another form of central bank in a sense. The National Credit Corporation would be a private organization funded by \$500 million in deposit contributions from the banks themselves. In turn, these funds would be used to bail out banks with cash flow problems by lending them cash against good collateral held on their books. He believed that this was essential to bring a halt to the bank failures and the foreclosures which further increased fears among the people and led to domestic hoarding of gold.

Hoover's plan began to gel prior to the British default of September 21, 1931. At a confidential meeting during early September, Hoover called to the White House the entire Advisor Council of the Federal Reserve Board members, which consisted of 24 bankers and Treasury officials, and proposed that the banks pool together \$500 million for the creation of this new project. In addition, he proposed that this new pool be given borrowing powers of \$1 billion, thus allowing them to buy a substantial amount of illiquid assets to take them off banks' balance sheets.

Then the British default took place. Suddenly the gold reserves of the U.S. fell. Eleven days later, Hoover called a special meeting of the leading men from the banks, insurance and loan agencies along with several top government officials. Hoover wanted to avoid publicity on this meeting, so the meeting took

¹⁴⁷ Wigmore p. 228

¹⁴⁸ Wigmore p. 220

¹⁴⁹ Wigmore p. 224

¹⁵⁰ Wigmore p. 221

¹⁵¹ Wigmore p. 221

place on October 4, at the home of Andrew Mellon rather than at the White House.¹⁵² Hoover later wrote that many attending the meeting held at Mellon's house did not want to contribute funds to this central pool and urged that the government should put up the money. But Hoover was strongly against using taxpayer's money, so the meeting ended with the bankers agreeing to call a meeting of all major New York banks for the following day.

Hoover had also proposed that banks and insurance companies hold back on foreclosures and that a central system of discounting mortgages should be established. Again, the concept was a central bank which would accept mortgages in the same manner as the Fed accepts cash or liquid notes. Basically this is what the Fed is doing now. The savings and loan group agreed with Hoover's proposals which called for an immediate end to foreclosures upon responsible people. The insurance industry refused to go along with the proposed banking structure which would have 12 districts and accept mortgages as deposits.

Hoover then met with Congressional leaders at the White House on October 6. He found them unwilling to use tax payer money to fund any government structure to provide stability for the real estate situation.¹⁵³ Hoover then created the Home Loan Banks which stood in the middle of the savings and loans. He also created the National Credit Corporation, which further helped confidence in banks.

News of these new plans restored confidence both domestically and internationally. But at first, the Europeans misunderstood these proposals and assumed they would be funded by government, which they felt meant inflation and a decline in U.S. gold reserves. Therefore, initially, this news added some pressure to the dollar coming from Europe. Eventually, they understood the plan and fears that the United States would go into default on its commitment to deliver gold began to subside along with the gold withdrawals going into year end. The concept of this new form of centralized private banking to unlock frozen capital and to help prevent further banking failures was well received by the markets as well.¹⁵⁴ The low in the U.S. gold reserves had been reached during the final week in October and it rose steadily throughout November. Stocks also rallied. Everyone became bullish and even the famous investor Roger Babson, who called the stock market's top in 1929, ran a small ad with its headline "Is Bear Market Over?"¹⁵⁵

The Dow rose 35% from early October to early November. Most of the rebound was concentrated in the week of October 5th-10th, during which President Hoover announced his proposals for a National Credit Corporation and various other provisions to ease the banking crisis. But, like other failed rallies on bullish announcements, this rally failed when the proposals proved too small for the problem.¹⁵⁶ Stocks declined sharply, taking the Dow down to a new low of 74 in late December. That brought the leading stock averages down to only one-third of their 1931 highs and one-sixth of their 1929 highs. The only important nations which remained on the gold standard were the US and France

1H1932

In spite of the National Credit Corporation, bank failures were still hitting the papers almost daily. The Reconstruction Finance Corporation (RFC), which was the TARP program of the time, was proposed to Congress by President Hoover in December 1931 and signed into law on January 23, 1932,¹⁵⁷ with authority to spend \$1.5 billion. Largely as a result of all this support for banks and others, the Dow

¹⁵² Armstrong p. 375

¹⁵³ Armstrong p. 376

¹⁵⁴ Armstrong p. 376

¹⁵⁵ Armstrong p. 378

¹⁵⁶ Wigmore p. 237

¹⁵⁷ Wigmore p. 311

rallied from that December 1931 low of 73 to nearly 86 in early January which was about a 19% gain, but finished January back down at the 76 level.¹⁵⁸

The tensions between workers and capitalists intensified in 1932. In 1932 there were demonstrations in Washington and politicians turned their sights on the investment community as a whole. Some politicians accused the banks of intentionally trying to destroy the economy of the world in an effort to force the United States to cancel the outstanding war debts of Europe so that normal commercial debts could be settled with the banks. Some politicians supported the total abolition of the stock market while others urged that the shorts could be exposed and jailed as if their actions rose to the level of treason.¹⁵⁹ The proletariat and politicians turned on capitalists and investors.

The fiscal 1932 budget deficit grew because revenues were cut in half between fiscal 1929 and fiscal 1932, while federal budget expenditures grew by half. Believing that a budget deficit could lead the U.S. to default, the administration began to push for tax increases and expenditure cuts.¹⁶⁰ Everyone wanted a balanced budget back then. Business support for a balanced budget was almost universal. The American Bankers Association and the Investment Bankers Association predictably passed resolution at their conventions early in the year favoring higher taxes and lower expenditures to balance the budget. Political support for a balanced budget was broadly bipartisan.¹⁶¹

In January 1932, the Comptroller of the Currency abandoned mark to market accounting for banks. Bank examiners were instructed to use par value as the "intrinsic value" of bonds rated Baa or better held by national banks.¹⁶² The Comptroller of the Currency also issued a demand to all national banks that they report on what bonds they were holding. Even good bonds had been devastated so banks either faced huge paper losses on what they held, or suffered actual cash losses if they sold.¹⁶³

Optimism returned in mid-February when the RFC began to make loans to banks and railroads and when Congress passed an amendment to the Federal Reserve statute permitting the Federal Reserve banks to hold US government bonds, as well as gold, as cover for Federal Reserve obligations so the Federal Reserve System was freed to pursue an aggressive open market policy of purchasing government securities without being constrained by the loss of gold to foreigners expected to follow such an "inflationary" policy. So, the Dow Jones Industrial Index jumped by 19.5%.¹⁶⁴ The stock market immediately rallied back to the January high and managed to close above the 80 level.

On February 11, Hoover managed to obtain cooperation from all parties to usher through the Glass-Steagall bill, which broadened the scope of debt that was eligible for rediscounting at the Federal Reserve. Broadening the scope of collateral that can be discounted at the central bank is a classic step in the D-process. This was perceived as bullish as it was felt that this would help many banks to

unfreeze assets that were previously unacceptable as collateral at the Fed. The bill was signed by Hoover on February 27.¹⁶⁵

At the time, the Senate Finance Committee conducted hearings into international banking and war debts. It sought a complete list of all foreign bond issues which were currently in default. That information was obtained from the Institute of International Finance. The Senate made that list public in January 1932. The list totaled \$815 million worth of foreign bonds denominated in dollars with defaults covering 57 issues, with all being obligations of South American governments. The majority of the junk bonds were

¹⁵⁸ Armstrong p. 395

¹⁵⁹ Armstrong p. 388

¹⁶⁰ Wigmore p. 308

¹⁶¹ Wigmore p. 309

¹⁶² Wigmore p. 312

¹⁶³ Armstrong p. 392

¹⁶⁴ Wigmore p. 331

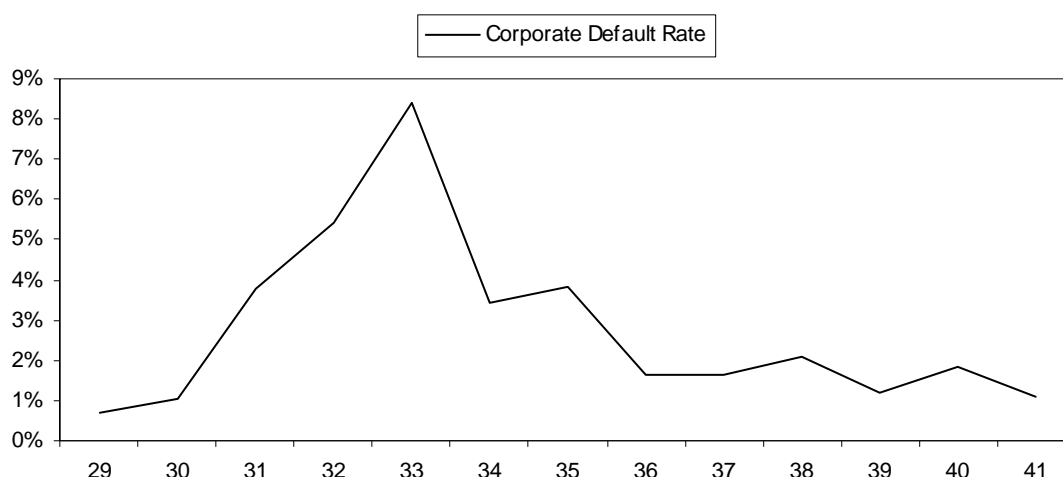
¹⁶⁵ Armstrong p. 395

held by small investors who had been lured into buying them by numerous advertising campaigns which touted bonds as the “safe” investment and offered high yields.¹⁶⁶

Investor fears intensified, so in Europe and the U.S., the hoarding of U.S. \$20 gold coins increased, with the premium rising to 50% - i.e., the price rose to as much as \$30.

Japanese bonds and the yen had collapsed. Japan had abandoned the gold standard a few months before, so the yen fell from the par level of 49.84 cents to 35 cents. As a result, Japanese bonds denominated in dollars collapsed from 100 to 61. The total U.S. investment in Japan was reported to be \$450 million, of which \$390 million was Japanese bonds. But Japan’s gold reserves had dropped to only \$190 million which represented half of the outstanding debt to the United States alone, so it wasn’t difficult to figure out that Japan would default on its obligations to pay its debts in gold.

Throughout history the French have always been among the first to hoard gold in a crisis and the French government was always the first to ask for gold during a monetary breakdown - e.g., in 1968 when DeGaulle asked for gold instead of dollars from the U.S., etc. The French people are the same, so they caused the French government problems by asking the French government for gold. To avoid demand from the French public, the French government stated that it would only make gold payments in \$8,000 lot minimums. As a result, gold coins were in very high demand. In the United States, many contracts began to be issued in terms which required payment in gold coin. While gold was rising in street value, other commodities continued to decline. That reflected decreasing confidence in holding debt, including government debt, during a deleveraging when the demand for commodities is weak.¹⁶⁷



In February, the business failures were the highest on record for any month.¹⁶⁸

In March, the stock market sold off again as expectations that the Fed’s move to reliquify were disappointed. The market decline began in March and extended for 11 weeks until the Dow had dropped from 88 on March 8th to 44 on May 31st, a decline of 50%. This stock market decline occurred while the Federal Reserve was following an unprecedented open market policy of expanding its holdings of U.S. government securities from \$740 million at the end of February 1932 to \$1.8 billion at the end of July.¹⁶⁹

¹⁶⁶ Armstrong p. 391-2

¹⁶⁷ Armstrong p. 396-9

¹⁶⁸ Armstrong p. 396-9

¹⁶⁹ Wigmore p. 331

The British pound, which had fallen from the par value of April 1931 before the devaluation, began to fall again, dropping to \$3.65 from its March high of \$3.77. The downtrend would eventually continue into November of 1932 when the pound dropped to \$3.15. Only the French and the Swiss currencies remained steady.¹⁷⁰

Trading volume on the NYSE during April had declined to 31.4 million shares. This was the first panic sell off where new lows were achieved on lower volume. The Dow Jones Industrials fell almost continuously straight down, closing May on the low for the month. Yet volume declined considerably. The lower volume reflected lower investor participation as they had essentially given up on it. Big sell-offs on low volume late in a bear market are a good sign of exhaustion. On a percentage basis, the market decline was about equal to the panic of 1907 and that of the panic of 1920.¹⁷¹

Hoover tried to but couldn't get credit going. Hoover and Treasury Secretary Mills regularly blamed the banks for restricting loans and condemned both the public and the banks for hoarding.¹⁷² Hoover tried to get the banks to lend, but couldn't. For example, Hoover organized committees of prominent citizens in all Federal Reserve districts to try to encourage the larger regional banks to make loans.¹⁷³ During May 1932, Hoover requested a doubling in the RFC authorization to \$3 billion, of which \$300 million was earmarked for aid to local governments.¹⁷⁴ But nothing was adequate.

Back then, the Fed didn't handle failed banks, so they were turned over to the RFC. The government didn't have the administrative resources to handle all of these problems.¹⁷⁵

Like TARP, the RFC lent to financial institutions. In fact, the relationship with the Bank of America then and the Bank of America now is basically the same. In 1932, the Reconstruction Finance Corporation prevented bank closings from being more numerous by lending \$1.3 billion by the end of August 1932 to 5,520 financial institutions, which included its first loan to the Bank of America for \$15 million, which it ultimately expanded to \$64.5 million, and the Federal Reserve continued to buy U.S. Treasury bonds. The Federal Reserve System's holdings of U.S. government securities expanded from \$870 million on March 31, 1932, to \$1784 million by June 30.¹⁷⁶

Then, like now, the RFC (the TARP equivalent) and the Fed made loans directly to borrowers who couldn't roll debt, while letting others default. They felt compelled to do this because the banks were unwilling to lend even to borrowers facing bond maturities. The intense desire for liquidity created such competition for short-term government securities that Treasury bill yields were negative in much of October, November and December.¹⁷⁷

The decline in short-term interest rates was also driven by aggressive Fed buying of T-bills. Between April and August 1932, the Federal Reserve instituted an unprecedented open-market purchase program in an effort to create bank liquidity. This helped. The 11 months following January had fewer suspensions than either 1930 or 1931. Federal Reserve borrowing was relatively low for banks in major cities during 1932, and these banks' investments were stable, which also gave the impression that the emergency in banking conditions had passed. The effect on money market rates was dramatic. 3-to-6-month Treasury securities yields dropped 180 basis points from 2.25% to 0.30% in eight weeks once the Federal Reserve began its purchases.¹⁷⁸

¹⁷⁰ Armstrong p. 404

¹⁷¹ Armstrong p. 404

¹⁷² Wigmore p. 313

¹⁷³ Wigmore p. 326

¹⁷⁴ Wigmore p. 312

¹⁷⁵ Wigmore p. 323

¹⁷⁶ Wigmore p. 318

¹⁷⁷ Wigmore p. 326

¹⁷⁸ Wigmore p. 318

Interestingly, the market reactions to government moves began to change. While previously government programs to increase lending and spending were viewed by the market optimistically, in mid-1932 they did not produce optimism.¹⁷⁹ It was then apparent that Hoover had established many programs to stimulate lending, spending and job creation, but they did not have the desired effect, yet they cost a lot of money. In fact, some government attempts to help banks hurt them. For example, the RFC lending to some banks saved them from bankruptcy, but the banks gave all their good assets to the RFC as collateral. A J.P. Morgan & Co. partner described this dynamic as follows: "For a fatal year and a half the RFC continued to lend money to the banks on adequate collateral security and gradually bankrupted them in the effort to save them." The RFC made large loans to banks on the collateral of real estate loans and securities that many considered to be of questionable value, but the RFC still had to make these loans based on some estimate of the fair market value of the collateral and with some margin of surplus collateral. These collateral values were well below the banks' book values in the securities. As a result, the borrowing banks found they had pledged all but their worst assets to the Federal Reserve and to the RFC at a discount from the par values and could only get back a portion of their deposits. Many banks would have had their net worth effectively wiped out if all their assets, securities, and loans had to be written down to the low values of mid-1932. This is essentially what happened when the RFC calculated how much it could lend a bank. This failure to make the banks healthy became apparent, so banks' deposits dropped further than could be borrowed from the RFC after it had sold its highly liquid securities, so the bank had no more good assets on which to borrow elsewhere.¹⁸⁰

Borrowing from the RFC also signified a bank was in need, which led to withdrawals. There was a vicious circle in progress for the banks which borrowed from the RFC. Directors, officers, other banks, and often major customers were aware of a borrowing bank's problems, and this information circulated in the business community and naturally caused large depositors to be cautious about the size of deposits they left with the bank, so they pulled them.¹⁸¹ So, if word got out that a bank was borrowing from the RFC its condition was immediately suspect and runs on its deposits began.¹⁸²

Because the banks wanted to hoard cash to keep safe and because they didn't want to lend to borrowers who weren't creditworthy, the banks did not want to roll over many maturing debts. Railroads were in trouble of their large revenue and income losses, so they were unable to pay the \$300-\$400 million in bond maturities that came due in 1932.¹⁸³ But the government wanted the banks to rollover these debts, so the government via the RFC and the ICC mandated that railroad bonds (heavily owned by the banking

system) maturing in 1932 should not be paid off in cash lent by the RFC, but rather should be settled by a combination of cash and refunding bonds which lenders had no choice but to accept.¹⁸⁴ Needless to say, this further undermined the confidence of investors in their abilities to get cash from their investments and in the legal system protecting their rights.

In March 1932 suspicion led the U.S. Senate to authorize an investigation into securities practices which ultimately led to the massive legal and structural changes in the securities industry embodied in the Securities Act of 1933, the Securities and Exchange Act of 1934, and the Glass-Steagall Act of 1933.¹⁸⁵ The government investigation of stock manipulation was like a witch hunt.¹⁸⁶ Understandably there was a lot of congressional digging that turned up abuses. However, this went beyond reasonable.

¹⁷⁹ Armstrong p.419

¹⁸⁰ Armstrong p. 420

¹⁸¹ Wigmore p. 325

¹⁸² Wigmore p. 312

¹⁸³ Wigmore p. 396

¹⁸⁴ Wigmore p. 318

¹⁸⁵ Wigmore p. 336

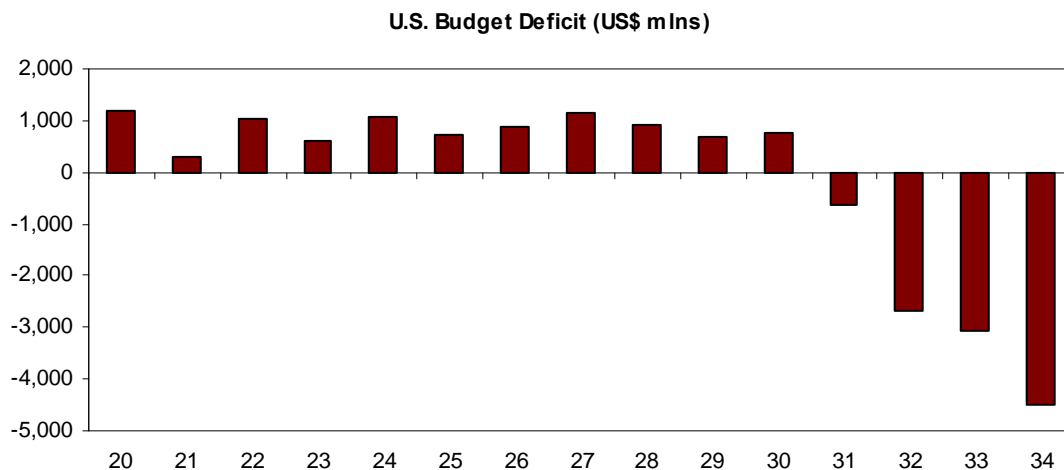
¹⁸⁶ Armstrong 412-3

Congress had problems making decisions as conflicting factions argued endlessly. For example, the fiscal 1933 budget was debated in Congress from March through June while Hoover gave little guidance on the budget cuts necessary, trying to place the onus for them on Congress in this election year. Foreign investor reaction to both the anti-investor mood and the indecision in government was negative and contributed to capital flight, which was clearly expressed in U.S. gold losses throughout the period.¹⁸⁷

The Federal Government had a big budget deficit and the pending tax bill seemed to be going nowhere. Meanwhile, spending increased as Hoover sought to create jobs for the unemployed. The billions of dollars being spent in recovery attempts without any plan for paying for them scared European investors, so gold outflows began to increase.¹⁸⁸

Back then it was a popular technique of the government to package spending as loans – i.e., to create “loans” to entities which spent which allowed the government to keep the loans on its books as assets. For example, if the government made a loan to a bank, it could treat that as an exchange of one asset for another rather than an expense. This technique made the budget deficit look smaller than if the same money was provided as assistance. So, the government promoted loan programs outside the budget, particularly for the RFC. Of course, the impact of these loan programs on government financing requirements was no different than if the programs were government spending,¹⁸⁹ so the supply demand imbalance for government credit remained.

At this time there was a move to redistribute wealth. Although governments would stop short of full blown communism, laws progressively were intended to redistribute wealth. For example, the graded income tax rate eventually rose to 90%¹⁹⁰ and the budget deficit ballooned (see below).¹⁹¹



In Europe, concerns about the deficit and the inhospitable environment in the United States sparked heavy withdrawals of gold by European investors. Within the first ten days in June, \$152 million in gold bullion had been withdrawn. On June 6, 1932, President Hoover signed into law the new Revenue Act, which increased income taxes and corporation taxes along with a variety of excise taxes. On June 14, 1932, France withdrew her last gold which was held on deposit at the NY Federal Reserve.¹⁹²

¹⁸⁷ Wigmore p. 314

¹⁸⁸ Armstrong p. 411

¹⁸⁹ Wigmore p. 313

¹⁹⁰ Armstrong p. 415

¹⁹¹ Armstrong p. 420

¹⁹² Armstrong p. 421

The Federal Reserve publicly reassured the public that it intended to continue buying U.S. governments in order to fund the deficit and hold interest rates down. Of course, this was incompatible with the stable exchange rate policy. So, despite these assurances, purchases of bonds finally came to a halt in August, after which the Federal Reserve holdings of U.S. securities remained very stable at \$1,850 million. That year net new U.S. borrowing in 1932 exceeded \$3 billion, the federal budget deficit exceeded \$2.5 billion, and the deficit was over one-half of federal expenditures.

On June 16 in Switzerland, a group of seven nations met and finally agreed at Lausanne to reduce the German reparations payments from \$64 billion to less than \$1 billion.

2H1932

The economy continued to plunge with deflation. Broad measures of the economy in 1932 had dropped to about 50% of their 1929 levels in current dollar terms, though if expressed in constant dollars the decline was approximately 28% from 1929. There were a record 31,822 bankruptcies, with liabilities of \$928 million. Though these were painful, they reduced debt service obligations, thus helping to fix the debt service imbalance. Industry as a whole had an after-tax loss of \$2.7 billion in 1932, compared with its peak profits of \$8.6 billion in 1929, forcing drastic cost-cutting, reducing their breakeven levels.¹⁹³ Through this painful process, those businesses that survived became leaner and meaner.

At the same time, workers became militant, which scared investors. Unemployment averaged 36.3% for non-farm workers during 1932. During July of 1932, 11,000 veterans marched on Washington, demanding immediate cash payment of the soldier's bonus instead of spreading it out over several years.

The atmosphere of unrest, if not revolution, unsettled investors, businessmen and politicians, especially as socialism and communism were becoming more popular.¹⁹⁴

Economic conditions were miserable. In New York, most of the major hotels were in default. Tax arrears in New York City reached 26%. Conditions were even worse than in the farm areas, where drought and low prices combined to bankrupt farmers. Problems in the banking system dominated short-term money markets in 1932.¹⁹⁵ This crisis virtually halted bank lending in the second half of 1932, as banks wanted to conserve cash and could not lend prudently.¹⁹⁶

The great New York City banks had become the liquidity reserve for the rest of the financial system. Corporations and institutions which feared that their deposits would be tied up in closed domestic banks transferred deposits to New York. Regional banks built up their liquid assets by increasing interbank deposits with New York, so when the outflow from New York banks occurred it essentially represented the end of capitalism as we know it. In July 1932, it seemed as though the capitalist system had shut down, government was paralyzed and anarchy was brewing.¹⁹⁷

On an otherwise un-eventful Friday - July 8, 1932 - the stock market bottomed.¹⁹⁸ Going into its final low, volume was very low. Most of the speculative positions had been wiped out by that time. Understandably, risk premiums were extremely high.¹⁹⁹

¹⁹³ Wigmore p. 315

¹⁹⁴ Wigmore p. 316

¹⁹⁵ Wigmore p. 316

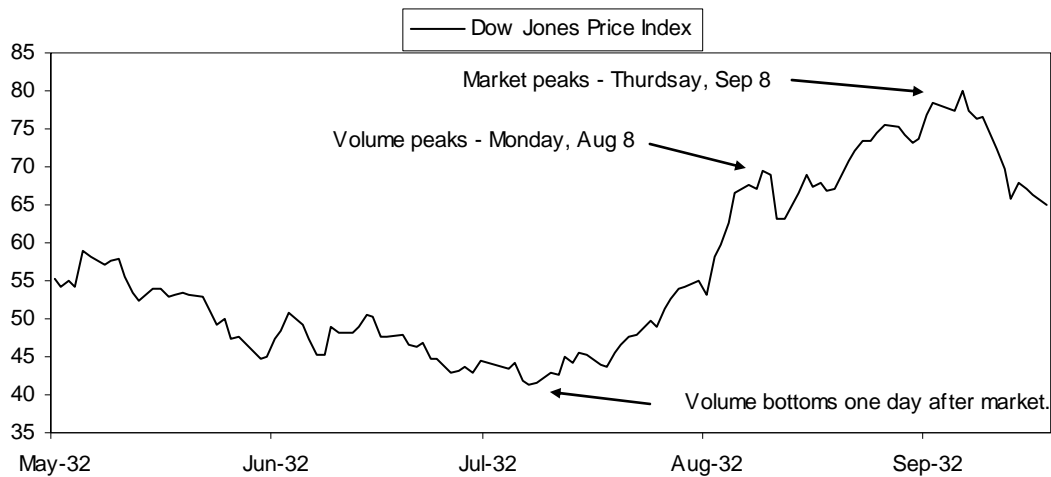
¹⁹⁶ Wigmore p. 326

¹⁹⁷ Wigmore p. 320

¹⁹⁸ Armstrong p. 427

¹⁹⁹ Armstrong p. 402

The lowest point for commodities prices was during the liquidity crisis in May and June, which was also the low point for stock and bond prices and for the economy. Interestingly, as the liquidity crisis worsened, stock and bond markets strengthened in the second half of 1932.²⁰⁰ The corporate bond market recovered in the third quarter as quickly as it had declined in the second quarter, in line with improvement in the stock market and modest recovery in the economy.²⁰¹ The Dow recovered in August and September to a peak of 80, which was almost double the low hit in July (see below).²⁰²



Source: Global Financial Data

During 1932, arguments over the war debts and reparations created a problem for confidence. As the December 1932 payment date approached, England and France petitioned the United States for a further extension of the moratorium on payments. The moratorium was not extended, so in December, France, Belgium, Hungary and Poland defaulted on their war debts. England paid its installment, as due, in gold.

The situation in Germany was much worse. The policies of government had forced on Germany a severe deflation, which by the fall of 1932 had cut the standard of living by nearly 50%. As a result, political and social conflicts intensified. Polarity increased, and Communistic and Hitlerist groups gained popularity.²⁰³ There were regular weekend street riots between Nazis and Communists in which deaths were frequent. In July, the Reich took over the government of Prussia and declared a state of emergency in Berlin, in September the military pushed the Republic to request the right to rearm, and the country's finances appeared to be collapsing. German gold reserves continued to decline.²⁰⁴ These circumstances led to Hitler's victory in 1932.

Japan also became militaristic and invaded Manchuria in 1931 and Shanghai in 1932. Domestic and international conflicts increased around the world.²⁰⁵

There were opportunities in 1932 to make significant profits from the price movements in middle grade bonds. For example, Australia's bonds rose over 150% from their lowest 1931 price of \$35; Finland's bonds doubled in price from a low of \$34 in 1931 to a high of \$68 in 1932; bonds of Argentina rose 92 1/2% from their 1931 low price; Japan's rose by 72%; and Czechoslovakia's rose by approximately 50%. Investors could have tripled their money in the bonds of Chile, Peru, Bolivia, Uruguay, Yugoslavia, and

²⁰⁰ Wigmore p. 327

²⁰¹ Wigmore p. 397

²⁰² Wigmore p. 333

²⁰³ Armstrong p. 441

²⁰⁴ Wigmore p. 415

²⁰⁵ Armstrong p. 414

Berlin between their low and high prices for 1931-32. Chile's bonds traded between \$15 and \$3 ½, Peru's between \$10 and \$3, Bolivia's between \$10 and \$3 ¼.²⁰⁶

Western Europe's bonds recovered from the 1931 currency crisis, and the yields on the best bonds declined to nearly as low as Aaa corporate bond yields. However, East European and South American bonds hit new low prices in 1932 as these parts of the world suffered such social and economic dislocations that even the most daring speculators were unwilling to bet on these bonds.²⁰⁷

The gold drain also stopped, and foreign funds began to return to the United States. Foreign optimism improved considerably, especially in England, Germany, France and Australia. A League of Nations survey on the world economy found cautious optimism in most countries.

Why did the stock market bottom in early July? There was not much big news to bring it about. On July 2, Franklin D. Roosevelt was nominated at the Democratic National Convention, but this was no great surprise. The Wall Street Journal attributed the rally to a cessation of gold outflows, rumors of foreign buying, a general rise in commodity prices, and the approval of a railroad merger. Time magazine pointed to the rally in commodities, which was the single biggest jump in across the board commodities since 1925, but the commodities eventually fell to new lows in November though the stock market held the July lows and never violated the 50 area again. Short covering was clearly a factor behind this bull move. Cornered bears, fat with three years of profits, fought madly to cover their short positions. Much of the buying flowed from Europe into the States, which also pushed the dollar higher. European buying of U.S. securities, which was reported from many sources in July, was largely driven by a hedge against a fear of further devaluations of European currencies.

In August 1932, the CCC decided to lend on the collateral of raw materials. The Commodity Credit Corporation was set up by New York City banks in August 1932 at the urging of the then Federal Reserve Board Chairman, Eugene Meyer, to lend on the collateral of raw materials.

There was also a strong corporate bond market rally, despite worsening economic conditions.

Roosevelt was elected amid widespread brokerage commentary that his success would halt the economic recovery and provoke a new crisis in securities markets. The Federal Reserve halted its open market purchases after August. Bank problems were obviously accelerating as well. New York City suddenly plunged into a major crisis. The news was bad. The old adage that when a market declines on bullish news, it must mean that it's a bear market and, conversely, when a market rallies on bearish news, it must be a bull market, proved true.

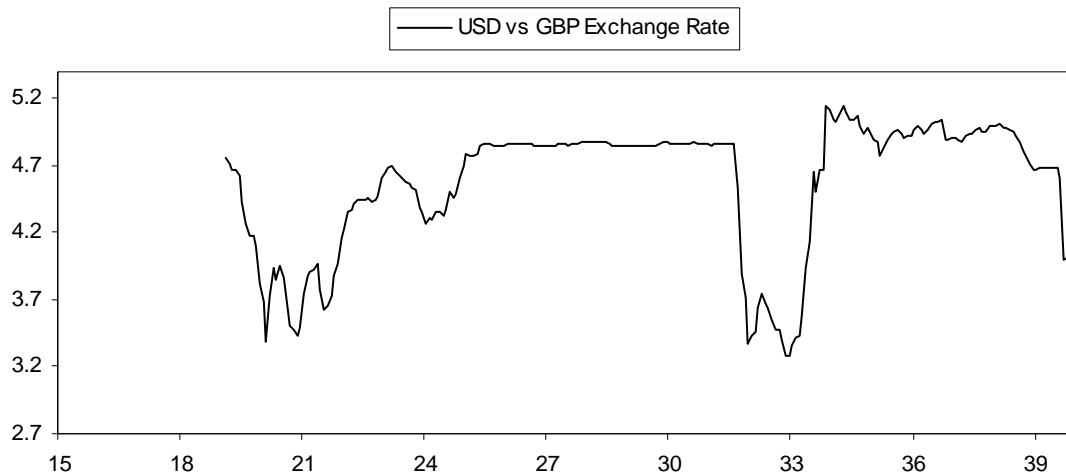
Roosevelt's campaign for the Presidency began in August with a strong anti-market tone, which added to the volatility of the market. Franklin Roosevelt opened his campaign with a nine-point speech focused solely on securities abuses and demanding federal control of stock and commodities exchanges. He criticized the Hoover Administration for the activities of 1929, for the activities of bank investment affiliates, for Federal Reserve policies, for foreign bond issues, and for stock market speculation.²⁰⁸ Roosevelt also indicated that he favored a devaluation of the dollar.

Europeans began to sell the dollar dramatically when Roosevelt won the election, because he represented soft money to them.

²⁰⁶ Armstrong p. 414

²⁰⁷ Wigmore p. 416

²⁰⁸ Wigmore p. 314



The stock market did not recover during the rest of the year because fear of Roosevelt's success was widespread up to the November 8th election, and the reality of it did not engender investor confidence.

But to the average working man this election was reason for optimism. The Republicans were marked as the party for the rich and the Democrats emerged as the defender of the poor and working class. So while capitalists were scared, workers were hopeful.

On the eve before the elections, pressure from many sectors demanded that Roosevelt clarify his position about devaluation. He did. He pledged that he would not abandon the gold standard and conveyed that concerns he would devalue were not warranted. He was not the first nor the last government official to knowingly mislead the public regarding their willingness to support their currencies.

Though very painful, the deleveraging was not devastating for everyone. Throughout the deleveraging, major companies except for railroads and investment companies didn't default. Numerous industries did not have losses, and several even maintained their profit levels. Cigarette companies, can manufacturers, food, drug, grocery and variety store companies, and utilities all kept their net income at levels up to half their 1929 levels.

In contrast, bonds of East European and South American governments fell to approximately 10% of par value. Many railroad bonds, too, had great losses, but among the major issues which lost their top credit ratings the decline was to approximately 40% of par. Only a small proportion of municipal bonds went into default.

1933

Upon Roosevelt's winning the election, rumors began to spread that a devaluation was in the works. The Democratic party had long been a symbol of "soft money," going back to the 1890s when they were known as the "Silver Democrats" with William Jennings Bryan's famous speech of "Thou shalt not crucify mankind upon a cross of gold." And Roosevelt's campaign rhetoric encouraged these rumors.²⁰⁹

²⁰⁹ Armstrong p. 446

A devaluation would help workers by raising wages, but it would hurt debtholders as the value of their securities was tied to the value of money. So, investors fled, and in January, there were big gold withdrawals. Foreign banks began to redeem their dollars for gold, further increasing the drain upon reserves, and the withdrawal of gold coin from the Treasury was approaching a crisis level as private investors also sought to convert their bonds into gold.²¹⁰

On the 18th of February, a Senator who had publicly accepted the post of Secretary of the Treasury under Roosevelt announced that he had refused the post because upon meeting with Mr. Roosevelt, the President-elect would not provide the Senator with an assurance that the gold standard would be maintained. The New York Times wrote "...at no time in the recent economic history of America has there been greater need than at present for a flat declaration of a monetary policy by the new American government. A declaration by Mr. Roosevelt declaring firm resolution to maintain a sound currency would have an extremely reassuring effect." He did not reply with these assurances, which raised concerns.²¹¹

Between November 1932 and March 1933, there was clearly an anticipation of possible reflationary policies of the President-elect which caused a flight from the dollar, which sparked numerous Europeans to dump their holdings, and which in turn forced the Dow Jones Industrials down from 62 to 50 moving into February 1933. Investor hoarding of gold and foreign investors leaving the U.S. hastened the banking liquidity crisis.

In reaction to this flight from the dollar and from the U.S., Hoover wanted capital export controls.²¹² Foreign exchange controls are quite normal in situations like this and very scary for investors. To justify

his ability to do this, Hoover attempted to use the War Powers, but the Democrats blocked this move²¹³, which is interesting as typically left of center governments are in favor of capital controls and right of center governments are against them. The panic out of the U.S. accelerated from a slow pace to a stampede. Specifically, the gold stock declined slowly at first, from \$4,279 million on January 18, 1933, to \$4,224 million on February 15, 1933. It dropped a further \$168 million by March 1st, another \$100 million by March 3rd, and reports circulated that over \$700 million would be presented for gold on March 4th, the day of Roosevelt's inauguration.²¹⁴

From the November low of \$3.15 when Roosevelt was elected, the pound jumped to \$3.43 by February just before this inauguration for an 11.25% gain. The smart money in the United States was buying foreign exchange while the masses were hoarding gold in ever increasing quantities. In the end, those who had bought the foreign exchange profited, while those who hoarded gold in the U.S. found themselves trapped, i.e. if they did not surrender their gold hoardings at the old value of \$20 prior to Roosevelt's devaluation in January 1934²¹⁵ they were subject to criminal prosecution. It wasn't easy being an investor or a capitalist in those days.

Business activity hit a low point in March 1933. In 1933, the Gross National Product reached its lowest point in the Deleveraging at \$55.6 billion, or 46% below 1929. In constant dollars this was 31 ½% below 1929.²¹⁶

When the banks closed in many states during February and March, many businesses closed completely. The resulting low level of business activity in February and March 1933 was shocking.²¹⁷

²¹⁰ Armstrong p. 448

²¹¹ Armstrong p. 449

²¹² Armstrong p. 449

²¹³ Armstrong p. 449

²¹⁴ Armstrong p. 447

²¹⁵ Armstrong p. 446

²¹⁶ Armstrong p. 429

²¹⁷ Armstrong p. 429

March 1933

Roosevelt Assumes Office and Declares a Banking Moratorium and Other Policies in His First 100 Days.

Roosevelt's Inauguration speech can be found in Appendix 1.

When Roosevelt assumed office on March 4, he declared a banking moratorium enacting the War Powers Act (which he had helped prevent Hoover from using), and he let the dollar slide.²¹⁸ The stock market and the banks remained closed.

The reflation worked! By then, rents and debt service obligations and equity levels had been substantially reduced, so it took less stimulation to raise cash flows above debt payments. From 1929 to 1933, the bankruptcies and other forms of restructuring had reduced the debt by about 21% and financial wealth by about 30%. The deleveraging had also substantially reduced businesses' operating costs and break even levels, so it took less revenue growth than before to make them profitable. Furthermore, it increased risk premiums of investment assets to very high levels. So, reflation via currency devaluation and increased liquidity raised commodity and export prices and lowered real yields (making cash unattractive). Additionally, the inability to buy gold or move money out of the country made stocks relatively attractive. In the September 25, 1933 edition of Time magazine, the moves of capitalists to protect their wealth in this environment were described as follows: "Methods of hedging against inflation within U.S. frontiers have become a favorite coffee and cognac topic. Purchase of industrial stocks is, of course, the most popular hedge, but commodities and land have been creeping up

fast since the NRA threatened profits with higher labor costs. Some shrewd businessmen with little capital at stake argue that the best thing is to go as deep into debt as the banks (or friends) will allow; eventually they will pay off with cheaper dollars." The market action was great. Also, there was significantly increased government spending that helped.

Stock, bond, and commodities prices rose dramatically throughout March following the Bank Holiday. Moody's daily index of staple commodities actually rose 6% from Friday, March 3rd, to Tuesday, March 7th. The stock market reopened on March 15th. It was initially near the 62 level, but fell back to 56 for the end of the month.²¹⁹ The U.S. Treasury offered two new bond issues on March 13th – \$400 million due August totaling \$1.8 billion. Interestingly, after the dollar devaluation, the gold outflow was reversed, and the United States gained over \$325 million in gold in the week ending March 15th. Bank borrowing at the Federal Reserve dropped \$180 million in the same week as banks got more cash. During the next two weeks, short-term rates dropped 1%-2% as cash returned, and Fed policy remained easy. Bankers' acceptance rates fell back to 2%, and call loan rates fell to 3%, as the Federal Reserve cut its buying rate for 90-day acceptances 3 times within five days.²²⁰

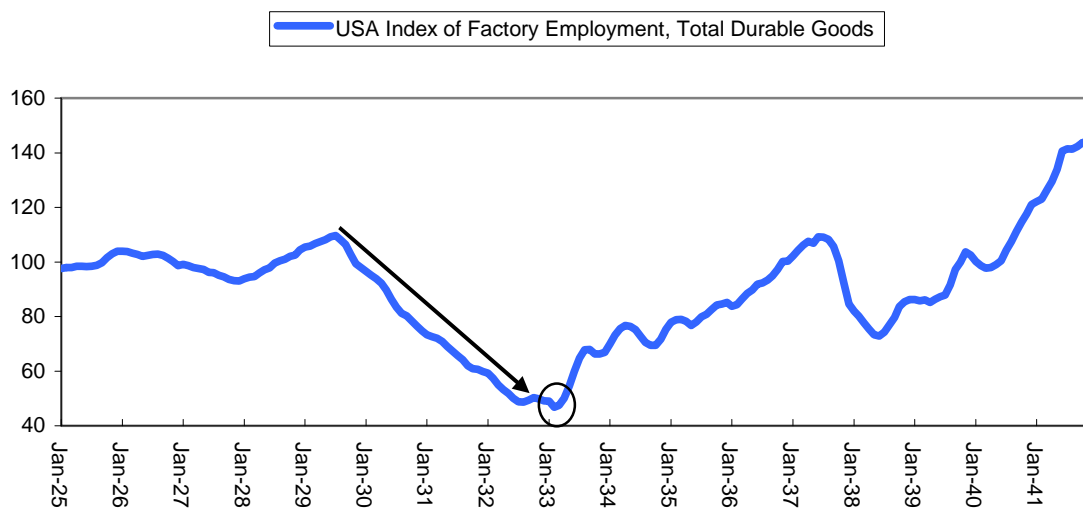
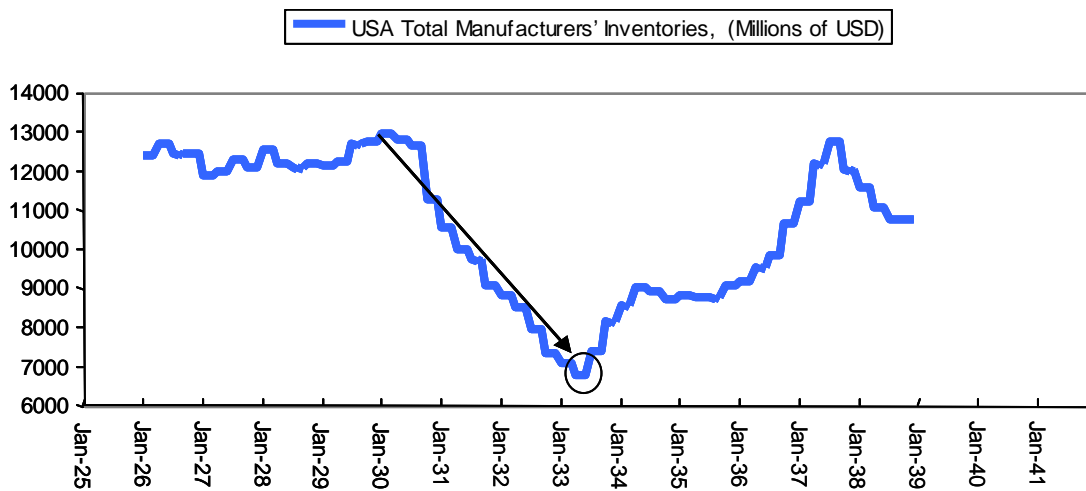
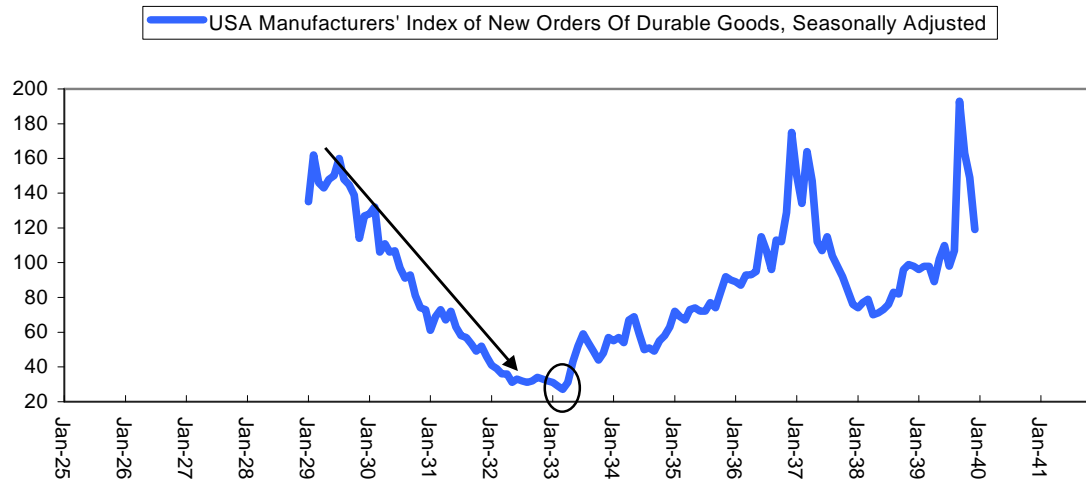
The first batch of charts below shows various measures of economic activity and prices. They all convey the 'V' bottom that occurred at the moment when the Fed substantially increased liquidity (which necessitated the dollar's devaluation against gold and other currencies).

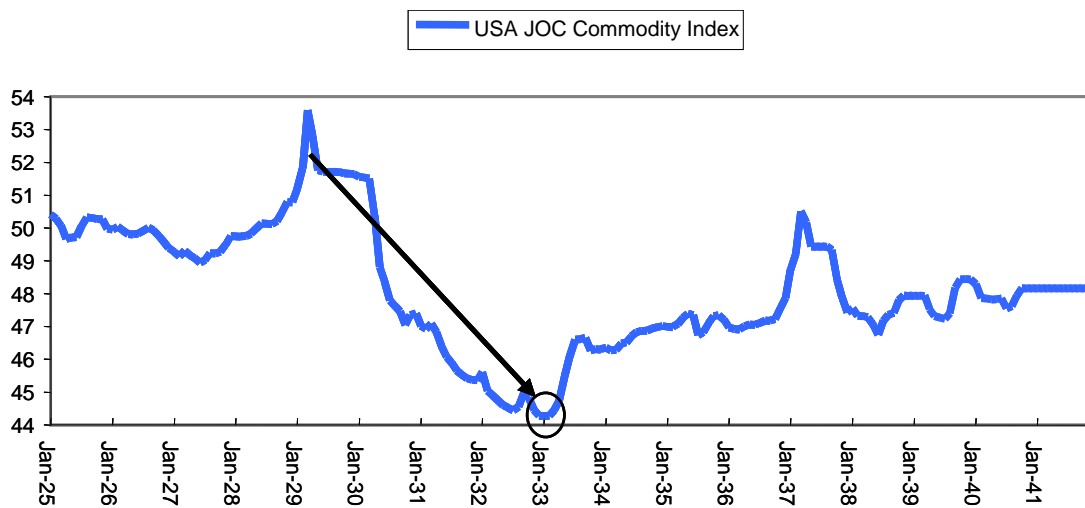
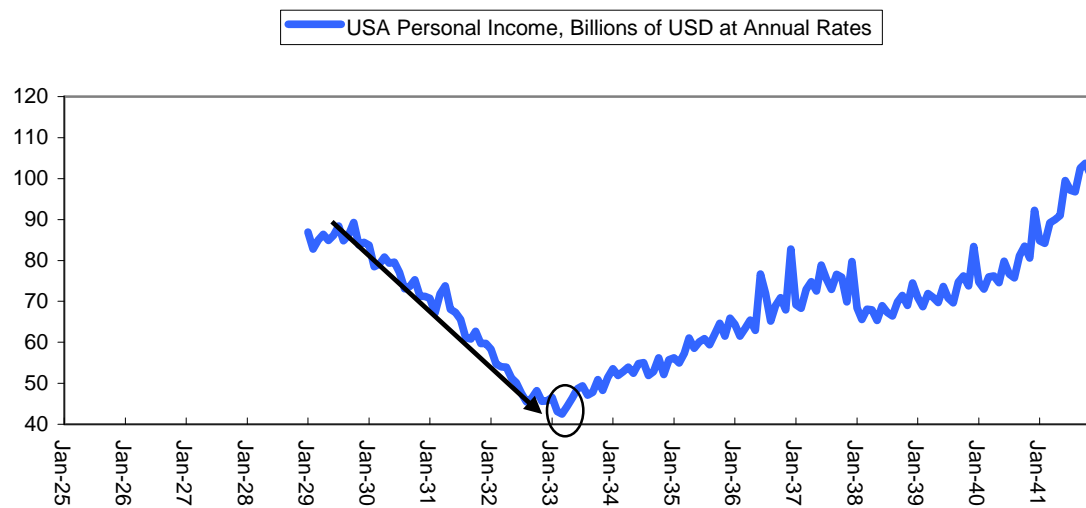
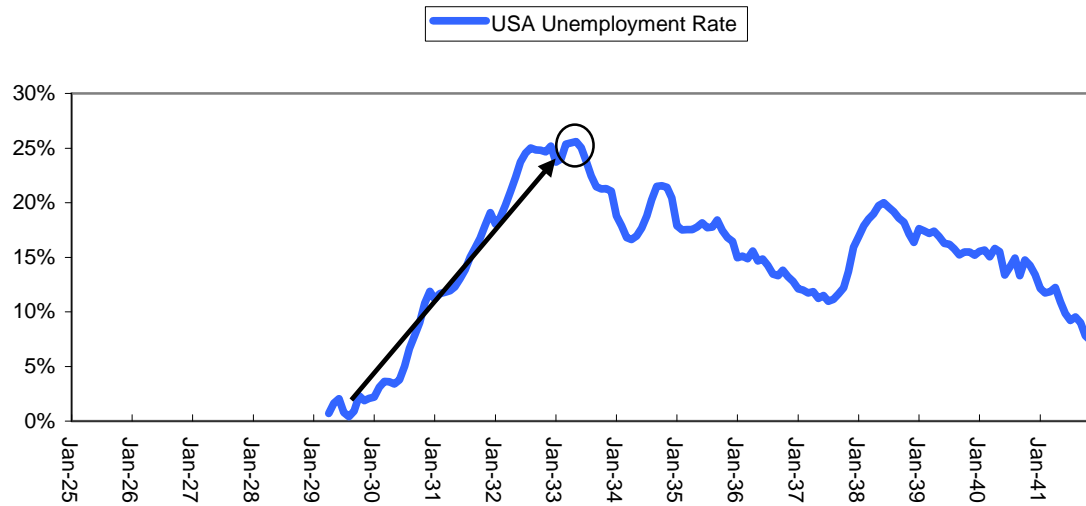
Note: Data in the charts on the following 7 pages is taken from Global Financial Data or the NBER Macroeconomy Database.

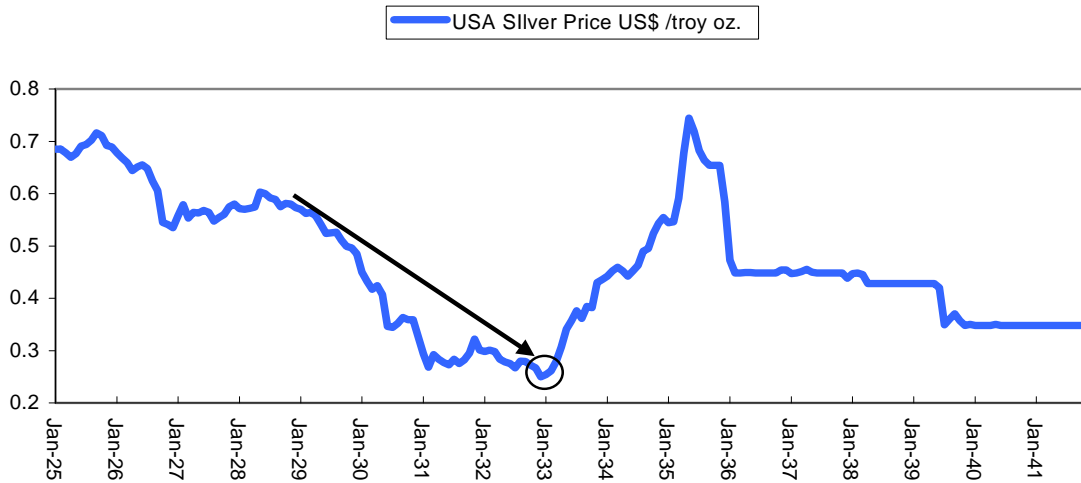
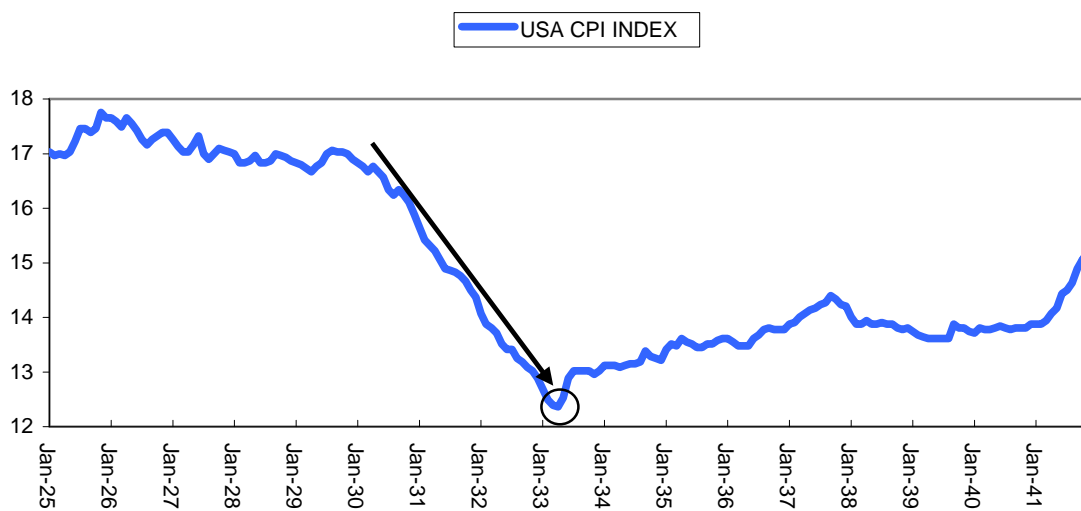
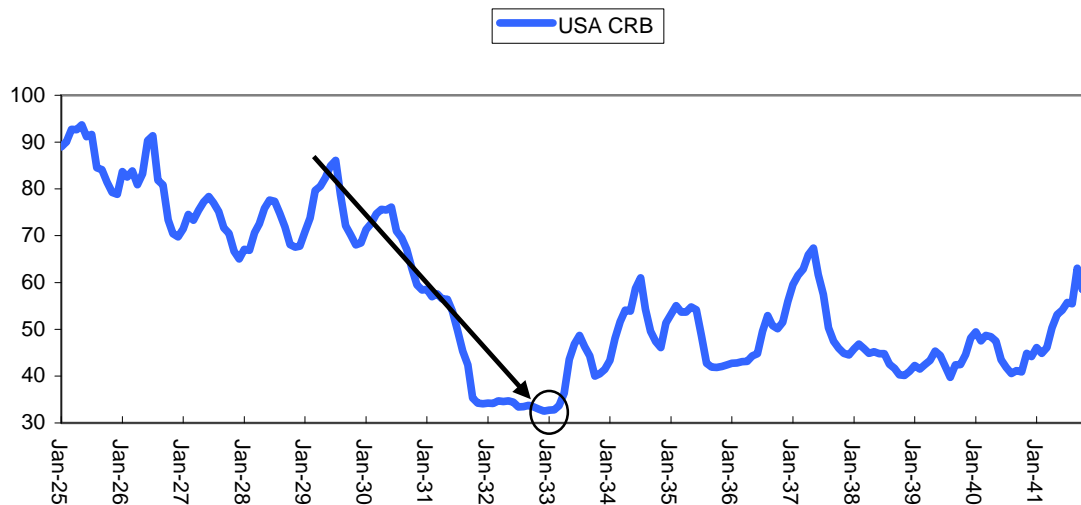
²¹⁸ Armstrong p. 451

²¹⁹ Armstrong p. 451

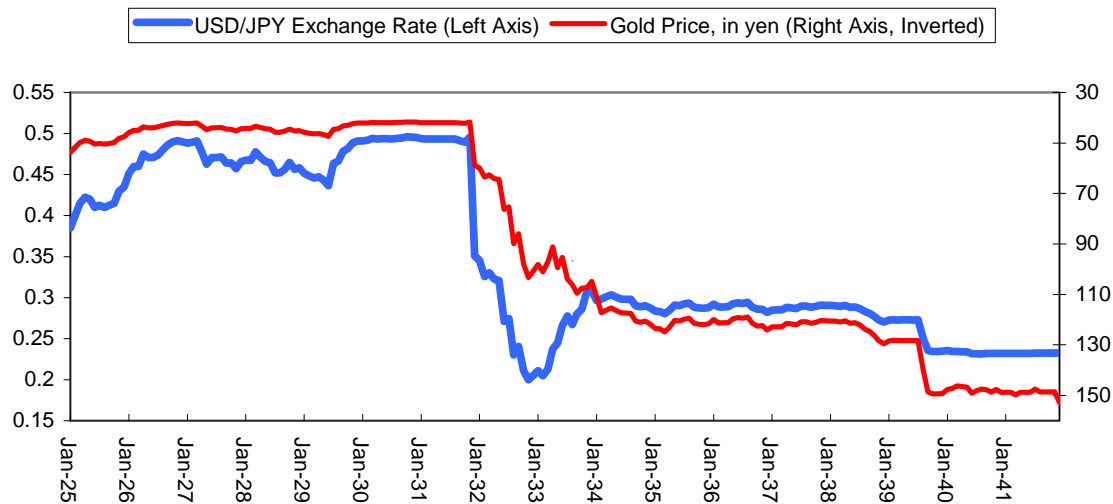
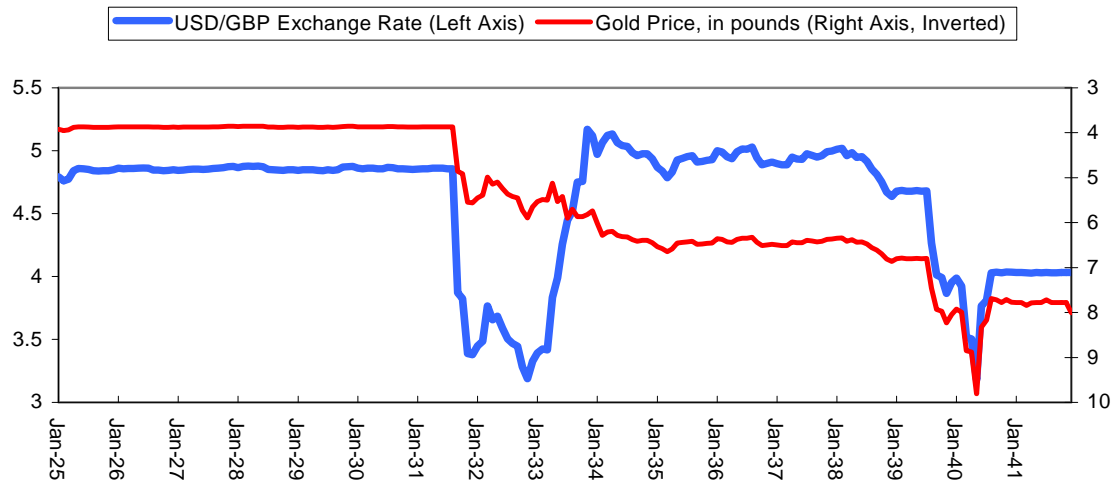
²²⁰ Wigmore p. 450



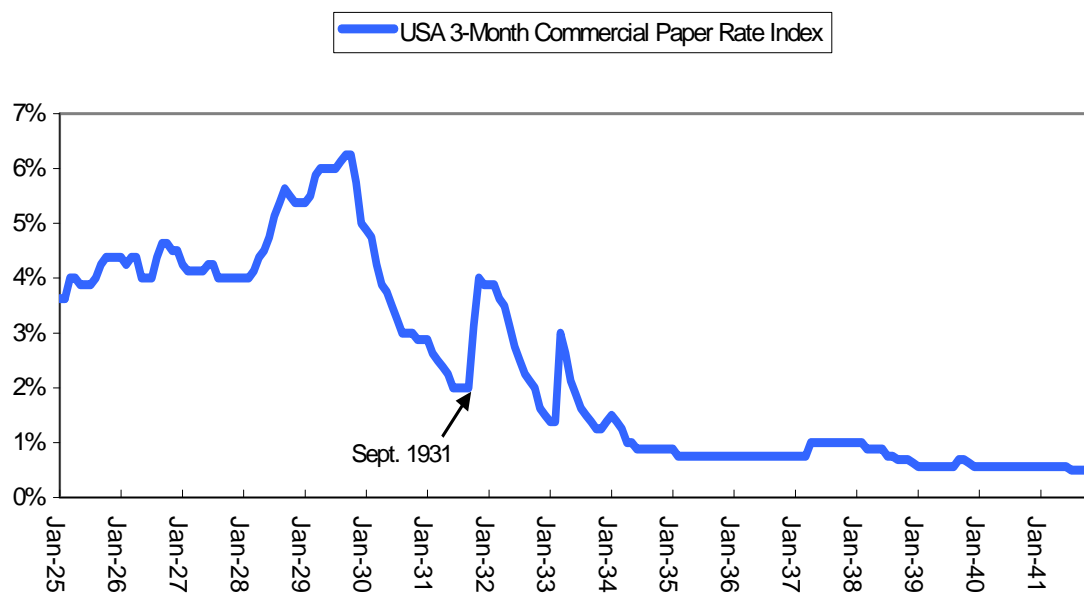
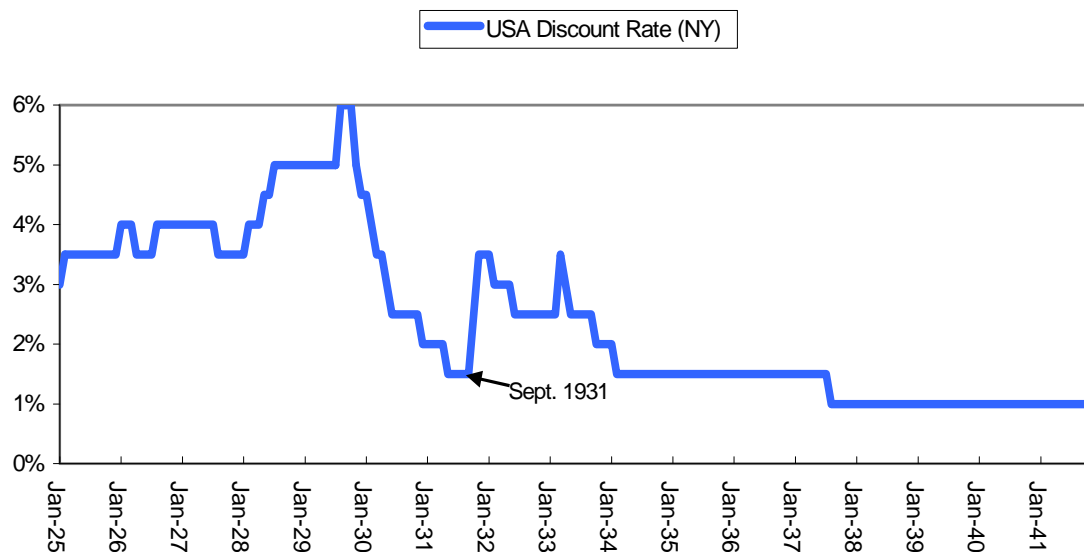




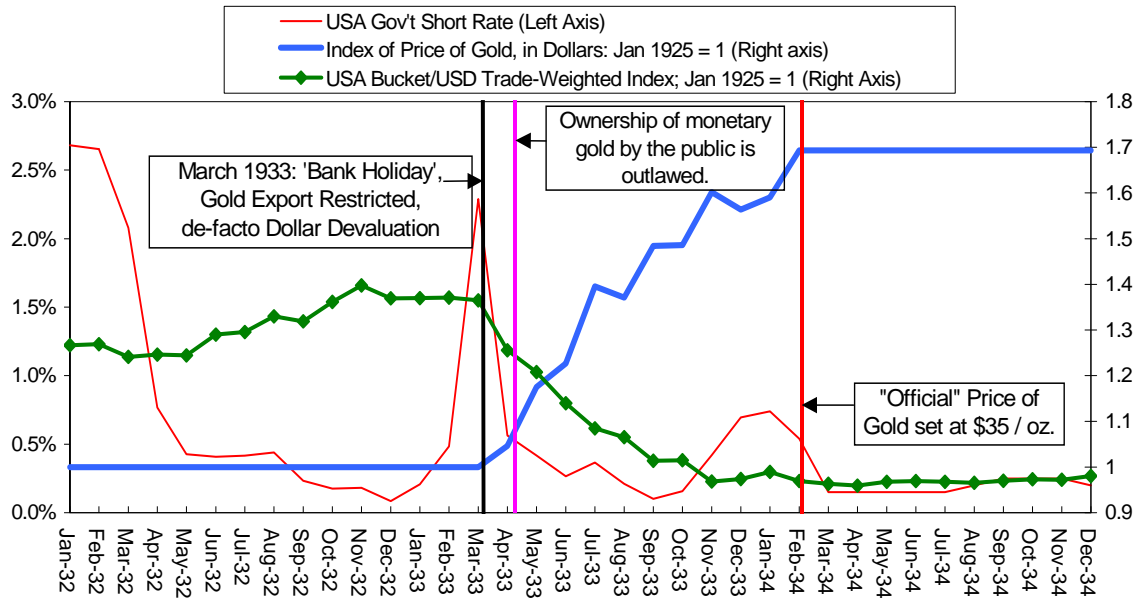
Before showing you the dollar's devaluation and the increase in liquidity that was behind this reversal, we want to point out a few other things. The next two charts show the British and Japanese devaluations (against both gold and the USD).



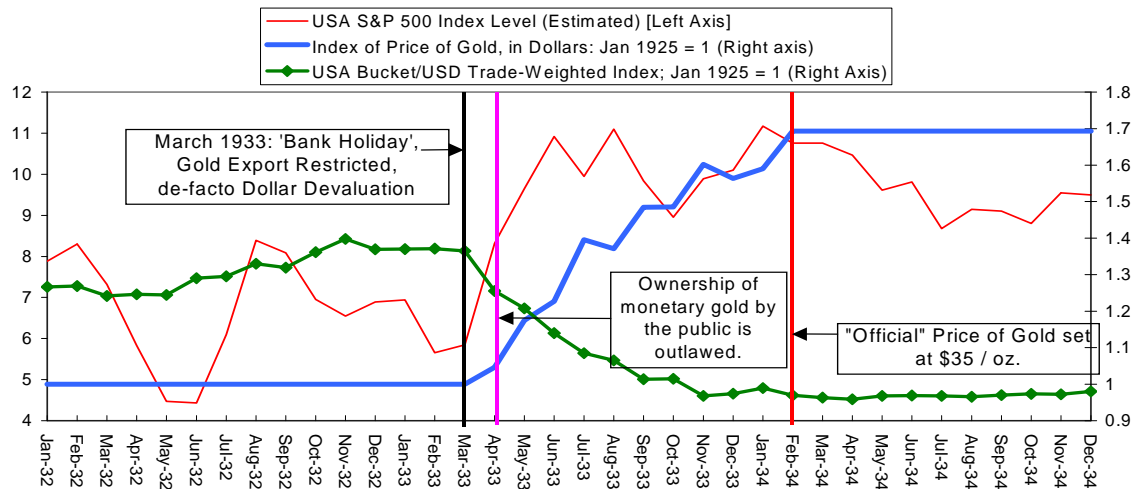
As mentioned before, largely as a result of the dollar becoming overvalued and the credit crisis in the U.S., capital started to shift out of the U.S. and the dollar, forcing the U.S. to choose between tightening and devaluing. The next couple of charts show the Fed's tightening and associated interest rate changes that occurred in 1928-29 and in 1931-33 (until the devaluation).



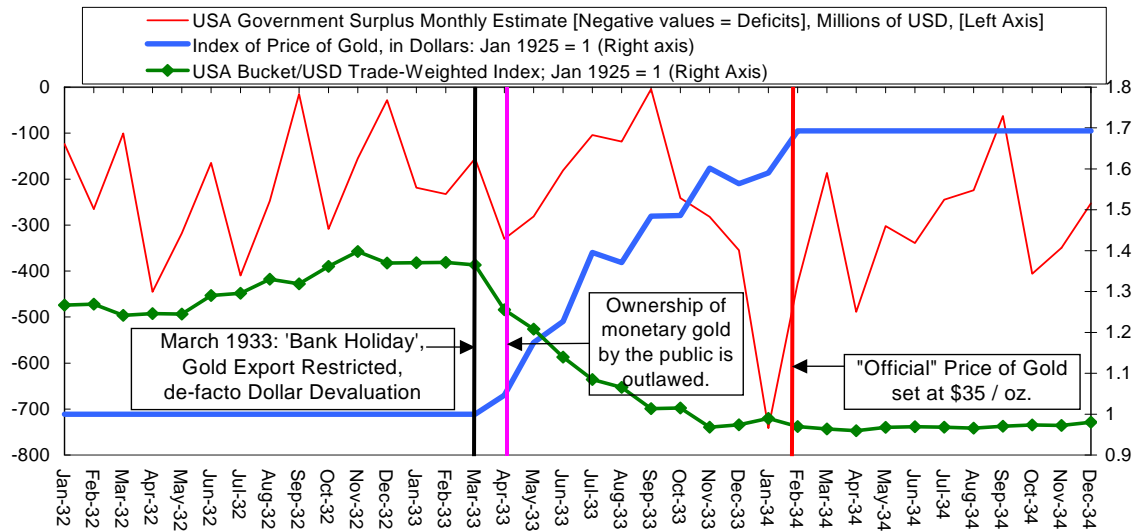
The next batch of charts focuses in on 1932-34 – i.e., to squint at this period, we zoomed in on it (showing monthly numbers). The first chart shows the dollar, gold, and the government short rate. Note in the first chart how the government short rate shot up going into the devaluation (because of the currency defense), as money was being withdrawn from banks and from the U.S., and then how a) the bank “holiday”, b) gold exports being disallowed, and c) the devaluation occurred together. When the banks opened their doors, everyone could get their money because it was provided freely. In other words, liquidity was increased to help alleviate the debt crisis. Interest rates continued to fall while stocks, the economy, commodity prices, and inflation all rose from 1933 to 1937, which was the same as during other post-liquidity squeeze periods (e.g. post ERM break-up and post 1980).



The next chart is the same as the previous one, except that it inserts a stock price index (S&P 500 estimate) instead of the interest rate.



The next chart is the same except that it shows the budget balance and drops stock prices. As shown, the fiscal stimulation didn't occur until after the liquidity increase and economic recovery were well underway.



Once in power, Roosevelt used the RFC's powers actively. The array of financial institutions which had been forced to rely on the RFC was staggering up until then, e.g., by December 31, 1932, loans had been authorized to 5,582 banks, 877 savings banks, 101 insurance companies, 85 mortgage loan companies, and 3 credit unions – a total of 6,648 institutions – for a total commitment by the RFC of over \$1.25 billion. An additional \$333 million had been committed to 62 railroads which were borrowing heavily from the banks. But this was small potatoes in relation to what was to come.²²¹

A Glass-Steagall II was passed, and it provided a federal government guarantee on all bank deposits up to \$2500, eliminated interest on demand deposits, set margin limits on loans to carry securities, set the limit that one bank could lend to one creditor at 10% of the bank's capital, and split commercial banking and investment banking functions into two industries.²²²

Also, The National Industrial Recovery Act was passed, which was based on many of the ideas of Bernard Baruch, who had become one of Roosevelt's financial advisors. The act authorized \$3.3 billion in public works. Also, the Home Owners Loan Act provided a federal guarantee to refinance mortgages on homes costing less than \$20,000. The Agricultural Adjustment Act provided for the withdrawal of farm land under production in return for federal cash payments, 4 ½% refinancing of farm mortgages, and a promise of farm product price supports at a minimum of production cost. The Act also provided numerous measures to promote credit expansion, including presidential authority to devalue the gold content of the dollar by up to 60%.²²³ A special Sunday night session of Congress was called to consider the Emergency Banking Act, which authorized the RFC to borrow without limit and to buy preferred stock in closed banks without collateral to help them reopen. The act allowed bank notes to be issued up to 90% of collateral and the Federal Reserve to make loans against any collateral. When banks were reopened, government influence over the financial markets was established, and rescue missions were put in place by the RFC. ²²⁴At the end of March, the RFC announced hurriedly prepared regulations governing RFC purchases of preferred stock in closed banks in order to help them reopen, and by the end of June 1933 made preferred stock purchases or loans.²²⁵

²²¹ Wigmore p. 423-4

²²² Wigmore p. 423-4

²²³ Wigmore p. 424

²²⁴ Wigmore p. 449-450

²²⁵ Wigmore p. 451

President Roosevelt announced the end of the gold standard on April 22nd. All those who failed to turn their gold into the Federal Reserve were subject to a maximum fine of \$10,000 plus ten years in jail.²²⁶ President Roosevelt issued an executive order, under power given him by Congress in the emergency banking act, ordering all holders of gold to turn it in to the government by May 1 or take the penalty. In May, when interest on U.S. gold bonds was due, which meant that interest to be paid in gold, not paper, Roosevelt broke the "covenant" as payment in paper dollars was mandated.²²⁷

In June the new Securities Act of 1933 came into being. It stated that if any "material" fact is misstated or if any "material" fact is omitted, each director is held personally liable for the loss incurred by a buyer of the security. The Securities Act also required registration of all new securities offerings with the Federal Trade Commission (FTC), with the exception of local government issues, bank deposits, and commercial paper. The securities industry complained about the Securities Act, principally because it established criminal and civil liability for all participants in an issue for all facets of it for up to two years after the discovery of any untrue statement or omission in the prospectus, or up to ten years after the date of issue.²²⁸

Going off the gold standard caused stocks and commodities to soar. During early June, the meaning of the news about gold, the dollar, and foreign exchange controls finally hit home. The President was not going to cut the gold content of the dollar as expected, but he was going to eliminate the gold clause from public and private contracts.²²⁹ So with gold completely out of the picture as a store of wealth at any price in the U.S., the choice was to move money abroad or into something tangible in an environment of the falling value of money.²³⁰ Investors wanted something tangible so they bought

stocks which shot prices to the best levels in two years. Similarly, commodities rallied to their highest level since the inflation boom began. This type of market action is consistent with currency devaluation because, when the value of money declines, most things measured in it rise, and devaluations raise incomes because of price increases and improved export sales.

Stock multiples exploded as risk premiums fell. For example, stock prices for companies with meaningful earnings averaged 22.7 times 1933 earnings per share, compared with 10 times 1933 earnings in February, before Roosevelt's inauguration. Stocks at their highest prices went back to 85% of their 1929 low prices.²³¹

Economic conditions improved dramatically in just a few months, and securities and commodities prices quickly doubled. Business activity rose to 89.5 in July versus a low point of 58.5 in March 1933 and a peak of 116.7 in July 1929. This change was partly due to the end of the banking crisis, partly due to the devaluation of the dollar, which helped to raise prices, and partly due to the confidence Roosevelt inspired.²³²

In July, stock prices had a big correction. The Dow Jones Industrials had fallen 19.96 points in just three days! This raised concerns that the good times were over and the economy was going to plunge again. But this time the opposite was true. Prices traded in a range for several months before moving higher.

²²⁶ Wigmore p. 451

²²⁷ Armstrong p. 454-6

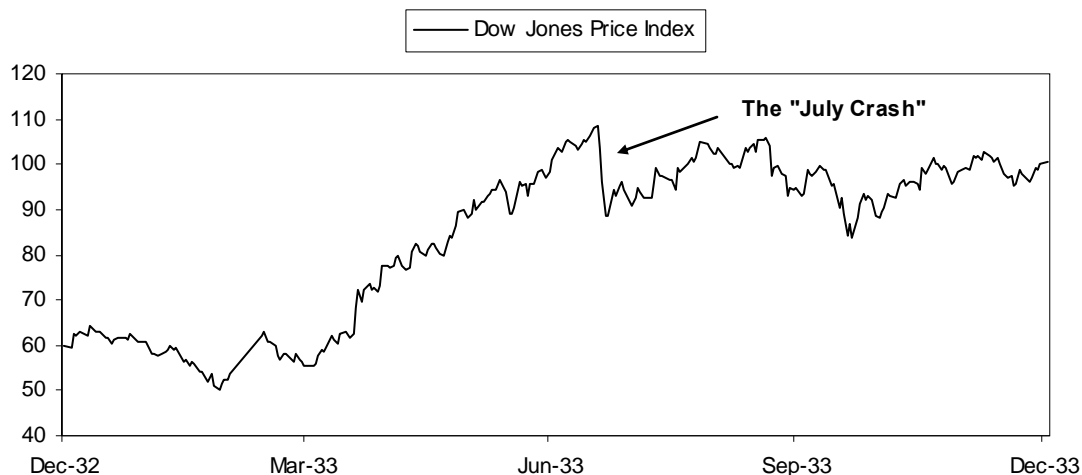
²²⁸ Wigmore p. 425

²²⁹ Armstrong p. 425

²³⁰ Wigmore p. 450

²³¹ Wigmore p. 456

²³² Wigmore p. 431



Source: Global Financial Data

If gold was a good asset to hold but illegal, were gold stocks a good proxy and therefore a good investment? Initially, they were, but later they were not. The fixed gold price and inflation were bad for gold mining companies as their costs rose – e.g., “He would not let them sell their gold to anyone except the U.S. government and the Government would pay only \$20.67. Gold miners were out of luck – their costs mounted but the price of their product remained the same.” However, because Roosevelt wanted to have this mined gold in foreign exchange, Roosevelt decided to allow the gold mines to deliver their product to the Federal Reserve and the Fed to sell the gold to foreign buyers at the world price. We are not sure exactly how this deal worked so we are looking into it.²³³

The devaluation had converted unacceptable deflation into acceptable inflation.²³⁴ There was no statement of an inflation target (which nowadays we would expect), but the results were the same. Inflation went from -10% in 1932, to -5% in 1933 and +3% in 1934, mostly because the dollar fell by 39% against gold and 36% against the pound in 1933 (December to December).

Fearing more attacks on their wealth, U.S. citizens exported their dollars by the hundreds of millions to get them some place that they felt was safer. “‘One of our problems,’ droned Viscount Cecil of Chelwood, chairman of Britain’s delegation, ‘is the flood of unwanted money that is pouring into our banks. These funds, deposited in the main by U.S. investors, are subject to withdrawal at 24-hour notice and are of little or no value, though it has not yet been discovered how to get rid of them.’”²³⁵ Interestingly, Washington encouraged the flight of the dollar to weaken it. Unlike exports of gold, which were strictly banned for private citizens, the flight from the dollar was quietly encouraged by Washington.²³⁶

It turned out that Roosevelt could not declare gold to be illegal to own outright, since that would have been a violation of the Constitution, so he took another approach which the courts ruled permissible. It was ordered that all U.S. citizens file a report to declare how much gold they held. Failure to file the report carried a \$10,000 fine or ten years in jail.²³⁷

²³³ Armstrong p. 461

²³⁴ Armstrong p. 461

²³⁵ Armstrong p. 464

²³⁶ Armstrong p. 468

²³⁷ Armstrong p. 462

Treasury bonds were also strong. For example, the lowest 1933 prices for the three heavily traded U.S. Treasury issues in the Statistical Appendix were \$2 and \$6 above their lowest 1932 prices.²³⁸ Below is a table of monthly T-bond, T-bill, Baa bond and commercial paper yields from January 1933 to December 1934.

	Corp Baa	Commercial Paper	T-bill	Long Bond
Jan 1933	8.68	1.38	0.21	3.22
Feb 1933	8.79	1.38	0.49	3.31
Mar 1933	8.63	3.25	2.29	3.42
Apr 1933	7.39	2.25	0.57	3.42
May 1933	6.83	2.13	0.42	3.30
Jun 1933	6.60	1.63	0.27	3.21
Jul 1933	6.86	1.50	0.37	3.20
Aug 1933	7.57	1.50	0.21	3.21
Sep 1933	7.47	1.25	0.10	3.19
Oct 1933	8.21	1.25	0.16	3.22
Nov 1933	7.63	1.25	0.42	3.46
Dec 1933	6.62	1.50	0.70	3.53
Jan 1934	6.24	1.38	0.74	3.48
Feb 1934	6.24	1.38	0.54	3.28
Mar 1934	5.92	1.13	0.15	3.15
Apr 1934	6.12	1.00	0.15	3.09
May 1934	6.04	1.00	0.15	3.02
Jun 1934	6.37	0.88	0.15	2.97
Jul 1934	6.47	0.88	0.15	2.94
Aug 1934	6.48	0.88	0.20	3.05
Sep 1934	6.35	0.88	0.25	3.23
Oct 1934	6.30	0.88	0.25	3.05
Nov 1934	6.22	0.88	0.25	3.05
Dec 1934	5.85	0.88	0.20	2.99

Source: Global Financial Data

1934-1938

International Devaluations Follow the Dollar Devaluation

Between 1934 and 1936 there was a battle of official devaluations to gain price and trade advantages.²³⁹ Eventually, the French franc's overvaluation led to domestic pressures to devalue, which caused the French to act in September 1936. As part of that devaluation, the Tripartite Agreement was reached among the United States, Britain and France, which essentially stated that each nation would refrain from competitive exchange depreciation. By then, it became obvious that all countries could just as easily devalue their currencies in response to other devaluations, and a war of competitive devaluation caused turbulence only to get everyone right back where they began.²⁴⁰ At the end of the day, the result was that all currencies devalued a lot against gold and not much against each other.

²³⁸ Wigmore p. 499

²³⁹ Armstrong p. 474

²⁴⁰ Armstrong p. 475

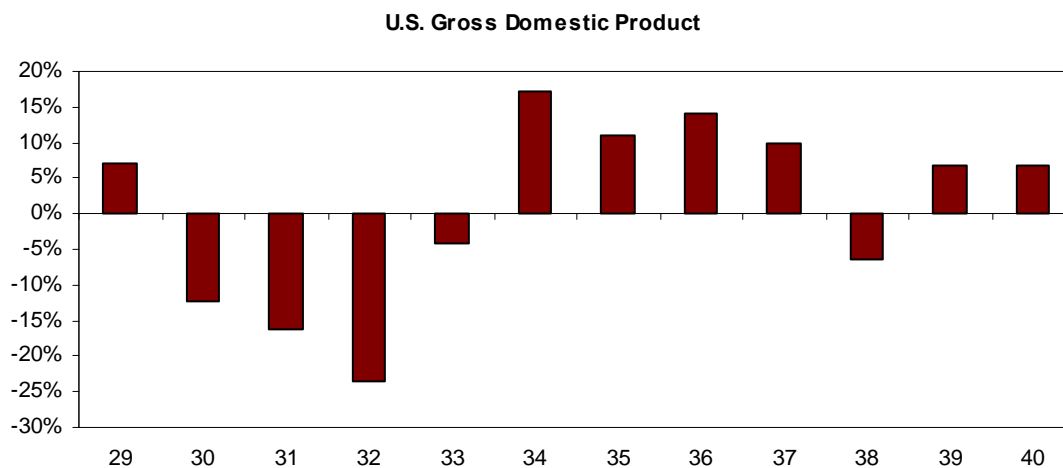
It was the contraction from the 1937 high which gave rise to a new term which was “recession.”²⁴¹ It is worth a look at some of the key stats from 1933-1941.

Key Statistics (1933-1941)

	1933	1934	1935	1936	1937	1938	1939	1940	1941
Money Supply M1 (\$bn)	19.2	21.1	25.2	29.6	30.6	29.2	32.6	38.8	45.3
National Debt (\$bn)	22.5	27.1	28.7	33.8	36.4	37.2	40.4	43.0	49.0
GDP (\$bn)	225	261	283	330	369	333	359	398	489
Gov't Outlays (\$bn)	4.6	6.6	6.5	8.4	7.7	6.8	8.8	9.1	13.3
Defense Spending (\$bn)	1.4	1.1	1.9	2.7	2.2	1.7	1.9	2.2	7.2
CPI	12.9	13.2	13.6	13.7	14.2	13.9	13.7	13.9	14.5
Gov't Bond Yield	3.2	3.0	2.7	2.7	2.8	2.5	2.2	2.3	2.0
Corp BAA Bond Yield	6.6	6.4	5.7	4.8	5.0	5.4	4.8	4.8	4.3
Unemployment Rate	24%	19%	18%	15%	12%	17%	18%	16%	12%
Dow Jones Ind. Index	59	100	105	144	179	120	153	151	131
Commodity Index (JOC)	17.7	19.8	20.5	20.4	22.2	21.0	21.4	21.8	21.6
Gold Px in USD	20.7	34.5	35.0	35.0	35.0	35.0	35.0	34.8	34.5

Source: Global Financial Data

In 1933-37, bond yields fell and credit spreads shrank. The spread between Moody's AAA corporate bond yield and that of U.S. Treasury issues began to narrow significantly. Corporate yields declined by 27.3% while Treasury yields declined only 17.2%. Stock prices rose, money supply grew and capitalism returned essentially to normal, though at a greatly reduced rate from the 1929 peak. Let's look at this increase in capital formation. Money supply, as measured by M1, rose some 55% between 1933 and 1937, and total credit expanded by 8%. However, this increase in total debt was due to a 36% increase in government debt and virtually no change in private sector debt. Nominal GDP rose by 48% and the GDP deflator rose by 8% (1.5% per year). Of the \$36 billion increase in nominal GDP that occurred from the end of 1932 to the end of 1937, \$5 billion was from government spending, \$18 billion was from private domestic spending and \$ 5 billion was from exports.²⁴² The wholesale price index rose 30.8%, or 5.5% per year.



In 1937, signs of the economy stalling emerged. The stock market had rallied back to the November 1929 low. Commodities, at their peak in 1937, barely managed to rally then declined to new lows. When the severe recession into 1938 began, government expenditures continued to rise in the United

²⁴¹ Armstrong p. 475

²⁴² Armstrong p. 478

States. Total government purchases rose 8.7%, while total GDP declined 5%. Unemployment rose 32.8% between 1937 and 1938, to a rate of 17%. Interest rates began to decline from their 1937 high.²⁴³

By 1937, real GDP had finally reached its 1929 levels. It was not until 1954 that the Dow finally reached its 1929 levels. In 1939 the U.K. went to war with Germany, which begins another story.

²⁴³ Armstrong p. 478

Appendix One

Roosevelt's First Inaugural Address

President Hoover, Mr. Chief Justice, my friends: This is a day of national consecration, and I am certain that my fellow Americans expect that on my induction into the Presidency I will address them with a candor and a decision which the present situation of our nation impels.

This is pre-eminently the time to speak the truth, the whole truth, frankly and boldly. Nor need we shrink from honestly facing conditions in our country today. This great nation will endure as it has endured, will revive and will prosper.

So first of all let me assert my firm belief that the only thing we have to fear...is fear itself... nameless, unreasoning, unjustified terror which paralyzes needed efforts to convert retreat into advance.

In every dark hour of our national life a leadership of frankness and vigor has met with that understanding and support of the people themselves which is essential to victory. I am convinced that you will again give that support to leadership in these critical days. In such a spirit on my part and on yours we face our common difficulties. They concern, thank God, only material things. Values have shrunk to fantastic levels: taxes have risen, our ability to pay has fallen, government of all kinds is faced by serious curtailment of income, the means of exchange are frozen in the currents of trade, the withered leaves of industrial enterprise lie on every side, farmers find no markets for their produce, the savings of many years in thousands of families are gone.

More important, a host of unemployed citizens face the grim problem of existence, and an equally great number toil with little return. Only a foolish optimist can deny the dark realities of the moment.

Yet our distress comes from no failure of substance. We are stricken by no plague of locusts. Compared with the perils which our forefathers conquered because they believed and were not afraid, we have still much to be thankful for. Nature still offers her bounty and human efforts have multiplied it. Plenty is at our doorstep, but a generous use of it languishes in the very sight of the supply.

Primarily, this is because the rulers of the exchange of mankind's goods have failed through their own stubbornness and their own incompetence, have admitted their failures and abdicated. Practices of the unscrupulous money changers stand indicted in the court of public opinion, rejected by the hearts and minds of men.

True, they have tried, but their efforts have been cast in the pattern of an outworn tradition. Faced by failure of credit, they have proposed only the lending of more money.

Stripped of the lure of profit by which to induce our people to follow their false leadership, they have resorted to exhortations, pleading tearfully for restored conditions. They know only the rules of a generation of self-seekers.

They have no vision, and when there is no vision the people perish.

The money changers have fled their high seats in the temple of our civilization. We may now restore that temple to the ancient truths.

The measure of the restoration lies in the extent to which we apply social values more noble than mere monetary profit.

Happiness lies not in the mere possession of money, it lies in the joy of achievement, in the thrill of creative effort.

The joy and moral stimulation of work no longer must be forgotten in the mad chase of evanescent profits. These dark days will be worth all they cost us if they teach us that our true destiny is not to be ministered unto but to minister to ourselves and to our fellow-men.

Recognition of the falsity of material wealth as the standard of success goes hand in hand with the abandonment of the false belief that public office and high political position are to be values only by the standards of pride of place and personal profit, and there must be an end to a conduct in banking and in business which too often has given to a sacred trust the likeness of callous and selfish wrongdoing.

Small wonder that confidence languishes, for it thrives only on honesty, on honor, on the sacredness of obligations, on faithful protection, on unselfish performance. Without them it cannot live.

Restoration calls, however, not for changes in ethics alone. This nation asks for action, and action now.

Our greatest primary task is to put people to work. This is no unsolvable problem if we face it wisely and courageously.

It can be accompanied in part by direct recruiting by the government itself, treating the task as we would treat the emergency of a war, but at the same time, through this employment, accomplishing greatly needed projects to stimulate and reorganize the use of our national resources.

Hand in hand with this, we must frankly recognize the over-balance of population in our industrial centers and, by engaging on a national scale in a redistribution, endeavor to provide a better use of the land for those best fitted for the land.

The task can be helped by definite efforts to raise the values of agricultural products and with this the power to purchase the output of our cities.

It can be helped by preventing realistically the tragedy of the growing loss, through foreclosure, of our small homes and our farms.

It can be helped by insistence that the Federal, State, and local governments act forthwith on the demand that their cost be drastically reduced.

It can be helped by the unifying of relief activities which today are often scattered, uneconomical and unequal. It can be helped by national planning for and supervision of all forms of transportation and of communications and other utilities which have a definitely public character.

There are many ways in which it can be helped, but it can never be helped merely by talking about it. We must act, and act quickly.

Finally, in our progress toward a resumption of work we require two safeguards against a return of the evils of the old order: there must be a strict supervision of all banking and credits and investments; there must be an end to speculation with other people's money, and there must be provision for an adequate but sound currency.

These are the lines of attack. I shall presently urge upon a new Congress in special session detailed measures for their fulfillment, and I shall seek the immediate assistance of the several States.

Through this program of action we address ourselves to putting our own national house in order and making income balance outgo.

Our international trade relations, though vastly important, are, to point in time and necessity, secondary to the establishment of a sound national economy.

I favor as a practical policy the putting of first things first. I shall spare no effort to restore world trade by international economic readjustment, but the emergency at home cannot wait on that accomplishment.

The basic thought that guides these specific means of national recovery is not narrowly nationalistic.

It is the insistence, as a first consideration, upon the interdependence of the various elements in and parts of the United States...a recognition of the old and permanently important manifestation of the American spirit of the pioneer.

It is the way to recovery. It is the immediate way. It is the strongest assurance that the recovery will endure.

In the field of world policy I would dedicate this nation to the policy of the good neighbor...the neighbor who resolutely respects himself and, because he does so, respects the rights of others...the neighbor who respects his obligations and respects the sanctity of his agreements in and with a world of neighbors.

If I read the temper of our people correctly, we now realize, as we have never realized before, our interdependence on each other: that we cannot merely take, but we must give as well, that if we are to go forward we must move as a trained and loyal army willing to sacrifice for the good of a common discipline, because, without such discipline, no progress is made, no leadership becomes effective.

We are, I know, ready and willing to submit our lives and property to such discipline because it makes possibly a leadership which aims at a larger good.

This I propose to offer, pledging that the larger purposes will bind upon us all as a sacred obligation with a unity of duty hitherto evoked only in time of armed strife.

With this pledge taken, I assume unhesitatingly the leadership of this great army of our people, dedicated to a disciplined attack upon our common problems.

Action in this image and to this end is feasible under the form of government which we have inherited from our ancestors.

Our Constitution is so simple and practical that it is possible always to meet extraordinary needs by changes in emphasis and arrangement without loss of essential form.

That is why our constitutional system has proved itself the most superbly enduring political mechanism the modern world has produced. It has met every stress of vast expansion of territory, of foreign wars, of bitter internal strife, of world relations.

It is to be hoped that the normal balance of executive and legislative authority may be wholly adequate to meet the unprecedented task before us. But it may be that an unprecedented demand and need for undelayed action may call for temporary departure from that normal balance of public procedure.

I am prepared under my constitutional duty to recommend the measures that a stricken nation in the midst of a stricken world may require.

But in the event that the Congress shall fail to take one of these courses, and in the event that the national emergency is still critical, I shall not evade the clear course of duty that will then confront me.

I shall ask the Congress for the one remaining instrument to meet the crisis... broad executive power to wage a war against the emergency as great as the power that would be given to me if we were in fact invaded by a foreign foe.

For the trust reposed in me I will return the courage and the devotion that befit the time. I can do no less.

We face the arduous days that lie before us in the warm courage of national unity, with the clear consciousness of seeking old and precious moral values, with the clean satisfaction that comes from the stern performance of duty by old and young alike.

We aim at the assurance of a rounded and permanent national life.

We do not distrust the future of essential democracy. The people of the United States have not failed. In their need they have registered a mandate that they want direct, vigorous action.

They have asked for discipline and direction under leadership. They have made me the present instrument of their wishes. In the spirit of the gift I will take it.

In this dedication of a nation we humbly ask the blessing of God. May He protect each and every one of us! May He guide me in the days to come!

Appendix Two

Legislative Changes 1930-1937

1930 - 1932

- The Smoot-Hawley Tariff Act²⁴⁴, 1930
 - This act raised tariffs on over 20,000 goods.
- The Reconstruction Finance Act, 1932; created the *Reconstruction Finance Corporation*

²⁴⁴ Legislation and Executive Orders are Underlined; Organizations/Initiatives are ***Bold, Italic***

- *Reconstruction Finance Corporation (RFC)*, 1932 -53; Established under Hoover during the Great Deleveraging to give financial aid to both private firms and public organizations; the corporation was authorized to lend to banks, building and loan associations, agricultural credit corporations, mortgage companies, insurance companies, states and their political subdivisions, and other public agencies. In 22 years the RFC loaned more than \$12,000,000,000 - total funding dispersed from 1932 through 1941 was \$9.465 billion. The RFC was empowered to organize subsidiary companies; the RFC Mortgage Company was established in 1935. The Disaster Loan Corporation was organized in 1937 to aid persons affected by floods and other catastrophes. During World War II, through the Defense Plant Corporation, a subsidiary, the RFC was also authorized to make loans to enterprises essential to the war effort. The loans were nearly all repaid. RFC was abolished as an independent agency by act of Congress (1953) and was transferred to the Dept. of the Treasury to wind up its affairs, effective June, 1954; in 1953 the agency's functions were transferred to the Small Business Administration and other agencies.
- Federal Reserve Act, 1913; (during the Deleveraging, the Act was amended a number of times)
 - Section 13(3) of the Federal Reserve Act²⁴⁵ This authority was added to the Federal Reserve Act in 1932 (July) and was intended to give the Federal Reserve the flexibility to respond to emergency conditions.
 - Glass-Steagall Act, 1932; temporarily permitted the Fed to use U.S. government securities to back its note issues (this authority was made permanent in 1933); the Federal Reserve Act (as amended in 1917) had required the Reserve Banks to maintain gold reserves equal to 40% of their note issues with the remaining 60% in form of either gold or "eligible paper" (e.g., commercial loans). The Act expanded the definition of "eligible paper" to include government securities.
 - Section 10B of the Federal Reserve Act (as amended in 1932) made formal the ability of the Fed to accept virtually any kind of collateral as part of its discount window lending.
 - Thomas Amendment to Agricultural Adjustment Act of 1933 permitted the Fed to adjust commercial bank reserve requirements; gave the President the authority to require open market purchases by the Fed, and to fix the weights of gold and silver dollars.
 - Section 7 of the Securities Act of '34 gives the Fed the authority to set margin requirements on securities.
 - Gold Reserve Act, 1934; authorized the transfer of monetary gold stock to the Treasury.
 - Silver Purchase Act, 1934; authorized limited Fed lending to industrial and commercial firms.
 - The Banking Act, 1935; expanded the Fed's authority to adjust reserve requirements; enhanced authority of the Board of Governors vis-à-vis the Federal Reserve Banks.
 - Reorganized the system of governance to create the FOMC and merged the offices of the chairman and governor to avoid conflicts.

1st 100 Days (March - May 1933)

- The Emergency Banking Act, 1933; This measure called for a four-day mandatory shutdown of U.S. banks for inspections before they could be reopened. It provided for the reopening of banks after federal inspectors had declared them to be financially sound and it ratified the suspension

²⁴⁵ Section 13(3) of the Federal Reserve Act authorizes the Federal Reserve Board to make secured loans to individuals, partnerships, or corporations in "unusual and exigent circumstances" and when the borrower is "unable to secure adequate credit accommodations from other banking institutions."

of the gold standard instituted through executive order. The law also gave the Secretary of the Treasury the authority through an amendment to the Trading with the Enemy Act to confiscate the gold of private citizens, excluding dentists' and jewelers' gold and "rare and unusual" coins. These citizens received an equivalent amount of paper currency.

- The Economy Act for Purchasing Goods or Services, 1933; cut federal costs through cuts of veterans' pensions and reductions in government department budgets. Also permitted the federal government to purchase goods or services from other federal government agencies or major organizational units within the same agency.
- Beer-Wine Revenue Act, 1933; legalized and taxed wine and beer.
- Emergency Conservation Work Act (ECWA), 1933
 - ***Civilian Conservation Corps (CCC)***, 1933 - 1942; first created by Executive Order and later codified in ECWA was a public works project, operated under the control of the army, which was designed to promote environmental conservation while employing the young unemployed. Recruits planted trees, built wildlife shelters, stocked rivers and lakes with fish, and cleared beaches and campgrounds. Some 2.5 million young men were ultimately put to work on environmental projects.
- Federal Emergency Relief Act (FERA), 1933 -1935
 - Established the ***Federal Emergency Relief Administration (FERA)*** to distribute \$500 million to states and localities for relief or for wages on public works; FERA would eventually pay out approx. \$3 billion; FERA was the first of the New Deal's major relief operations. It provided assistance for the unemployed, supporting nearly five million households each month by funding work projects for more millions of mostly unskilled workers. It also provided vaccinations and literacy classes for millions who could not afford them; it was replaced by ***Works Progress Administration (WPA)*** in 1935.
 - ***Federal Surplus Relief Corporation***, later changed to the ***Federal Surplus Commodities Corporation***, 1933; one of the programs instituted under FERA; it helped farmers by buying up price-depressing surplus commodities from the open market; and it served as the agency through which these surplus commodities were made available to the state and local relief administrations for distribution to those in need of relief. It was continued as an agency under the Secretary of Agriculture and consolidated in 1940 with the Division of Marketing and Marketing Agreements into the Surplus Marketing Administration, and finally merged into the ***Agricultural Marketing Administration*** by Executive Order 9069 of February 23, 1942.
- Agricultural Adjustment Act (AAA), 1933; designed to help American farmers by stabilizing prices and limiting overproduction, the AAA initiated the first direct subsidies to farmers who did not plant crops; precursor to current Farm Bill. Through the AAA, farmers were paid to reduce their crops, either by plowing them under or by not cultivating a certain amount of acreage. The targeted commodities were wheat, cotton, corn, tobacco, rice, milk, and hogs (young livestock were slaughtered); the cost of the program was assumed by a tax on middlemen and food processors, such as grain elevator operators and meatpacking companies. By 1934, the production of several staple crops had decreased and farm prices, as well as farm income, rose accordingly; in 1935, the United States Supreme Court declared the tax paying for the program unconstitutional as an unnecessary invasion of private property rights. The AAA payments, however, were quickly reinstituted without the "processing tax" under the Soil Conservation and Domestic Allotment Act, 1935.
 - The Second AAA (1938) provided for the storage of surplus crops in government warehouses and made loans to farmers in years of overproduction to compensate for lower market prices.

- Tennessee Valley Authority Act (TVA), 1933; created the *Tennessee Valley Authority*, considered one of the more ambitious reform programs. It was created for the purpose of developing the Tennessee River watershed, revitalizing the seven-state region – one particularly hard hit by the Great Deleveraging – by building 16 dams to control flooding, generate hydraulic power, and increase agricultural production. TVA provided jobs, low-cost housing, reforestation, and many other conservation-related services to the region; TVA brought electricity, flood control, and recreational facilities to seven comparatively impoverished states. Today, the TVA is still the largest public provider of electricity in the United States.

2nd 100 Days (June 1933)

- Joint Resolution to abandon the gold standard, 1933; abandoned the gold standard.
- National Employment System Act (June 6); created the U.S. Employment Service.
- Home Owners Refinancing Act, 1933; established the *Home Owner's Loan Corporation (HOLC)* to assist in the refinancing of homes. Between 1933 and 1935, one million people received long term loans through the agency.
- The Banking Act (better known as 2nd Glass-Steagall Act), 1933; it set forth stringent regulations for banks; it required the separation of investment and commercial banking functions – only 10% of a commercial bank's income could come from securities; empowered the Fed to regulate interest rates on demand and savings deposits (Regulation Q); provided bank depositors with insurance of up to \$5,000 through the newly formed *Federal Deposit Insurance Corporation (FDIC)*.
- The Farm Credit Act, 1933; provided refinancing of farm mortgages – refinanced about 20% of all farm mortgages in 18 months.
- *Farm Credit Agency (FCA)*, a Government-sponsored enterprise (GSE) overseeing the Farm Credit System – a network of borrower-owned lending institutions – and tasked with providing American agriculture with a dependable source of credit. Originally established in 1916 in response to farmer requests for liberal credit facilities and low interest rates, the FCA initially provided a system for mortgage credit through 12 regional farm land banks with most of the original capital supplied by the government. In 1932, the government invested \$125 million in the bonds of the farm land banks to bolster them and thus again became the majority stockholder. All then existing federal agricultural-credit organizations were unified into one agency, the FCA. Congress authorized that agency to extend the system of farm-mortgage credit. Funds were made available for loans on easy terms for first or second mortgages to debtors whose collateral was so low in value or so encumbered by debt as to make refinancing by the land banks unfeasible. In 1933, the FCA was also authorized to establish 12 production credit corporations and banks for cooperatives. The result was a centralized source of farm credit. A part of the Dept. of Agriculture after 1939, the FCA again became an independent agency in 1953 supervising the Farm Credit System for American agriculture.
- Emergency Railroad Transportation Act, 1933; increased federal regulation of railroads.
- National Industrial Recovery Act (NIRA), 1933;
 - Established the *National Recovery Administration (NRA)* to stimulate production through curtailed competition and having American industries set up a series of codes designed to regulate prices, industrial output, and general trade practices. The federal

government, in turn, would agree to enforce these codes. In return for their cooperation, federal officials promised to suspend anti-trust legislation. Portions of the NIRA were ruled unconstitutional by the Supreme Court in 1935 because it violated the separation of powers clause; however, the **Works Progress Administration (WPA)**, which was the second part of the NIRA, was allowed to stand. The majority of NIRA's collective bargaining stipulations survived in two subsequent bills: Section 7A of the NIRA recognized the rights of labor to organize and to have collective bargaining, and the labor provisions of the fair-competition codes established the 40-hour week, set a minimum weekly wage, and prohibited child labor under the age of 16; NIRA also earmarked \$3.3 billion for public works through the **Public Works Administration (PWA)**.

- **Public Works Administration (PWA)**, 1933 - 1941; the PWA created public works as economic stimulus and continued until the U.S. ramped up wartime production for World War II; received a \$3.3 billion appropriation; built large public works projects; used private contractors (did not directly hire unemployed); PWA's efforts mostly focused on permanent projects, including the first federal housing program, support for public power through reclamation projects in the West, and a range of public improvements from bridges to lighthouses.
- **Commodity Credit Corporation**, 1933; created by Executive Order 6340, was a government-owned and operated entity designed to provide loans, make purchases and perform other actions to ensure farmers were paid higher prices and ultimately the continual distribution of agricultural commodities.
- Securities Acts of 1933 ("Truth in Securities Act") & 1934; the '33 Act required that any offer or sale of securities using the means and instrumentalities of interstate commerce be registered pursuant to the 1933 Act; codified standards for sale and purchase of stock and required risk of investments to be accurately disclosed;
 - The '34 Act created the **Securities and Exchange Commission (SEC)** in 1934, as an independent agency; the SEC was created primarily to restore the stability of the stock market after the crash of October 1929 and to prevent corporate abuses relating to the offering and sale of securities.
- **Puerto Rico Reconstruction Administration**, 1933; was established by Executive Order 7057 with the purpose of providing relief and reconstruction for Puerto Rico.
- **Civil Works Administration (CWA)**, 1933-34; created under the auspices of the Federal Emergency Relief Act, the CWA was to create temporary jobs for millions of unemployed; its focus on high paying jobs in the construction arena resulted in a much greater expense to the federal government than originally anticipated; it provided construction jobs for more than four million people who were paid \$15 per week to work on schools, roads, and sewers; the CWA ended in 1934 in large part due to opposition to its cost.

1934 - 1940

- Communications Act, 1934;
 - Established the **Federal Communications Commission (FCC)** as the successor to the Federal Radio Commission; its function was to merge the administrative responsibilities for regulating broadcasting and wire communications into one centralized agency; today, this independent, quasi-judicial agency is charged with the regulation of all nonfederal governmental use of radio and television broadcasting and

all interstate telecommunications (wire, satellite, and cable), as well as all international communications that originate or terminate in the United States.

- Indian Reorganization Act, 1934; returned lands of American Indians to self-government and provided a “sound economic foundation” to their communities
- The Gold Reserve Act, 1934; abrogated the gold clause in government and private contracts and changed the value of the dollar in gold from \$20.67 to \$35 per ounce; authorized the transfer of monetary gold stock to the U.S. Treasury.
- The Silver Purchase Act, 1934; provided for the nationalization of domestic stocks of silver and for the purchase of silver by the Treasury until the price should reach \$1.2929 per ounce or the value of the amount held should equal one-third of the value of the government's gold holdings.
- National Housing Act (NHA), 1934;
 - It established the ***Federal Housing Administration (FHA)***, an agency targeted at combating the housing crisis of the Great Deleveraging; this program focused on stimulating the growth of the building industry through provisioning of federal mortgage insurance for low-income borrowers; helped advance the concept of long-term amortized mortgages.
- Reciprocal Trade Agreement Act, 1934; permitted a series of tariff reduction agreements with key trading partners, such as Canada, the U.K., and others.
- ***Resettlement Administration***, 1935; was a relief organization created by Executive Order 7027 that provided assistance to poor farmers and sharecroppers. The RA was a precursor to the ***Farm Security Administration***.
- ***Farm Security Administration (FSA)***, 1937; created under the authority provided by the aforementioned Federal Emergency Relief Act, the FSA was a relief organization directed at improving the lot of the poor farmers and sharecroppers. The FSA established temporary housing for Dust Bowl refugees from Oklahoma and Arkansas who had migrated to California in hopes of finding employment; in total, the FSA loaned more than a billion dollars to farmers and set up many camps for destitute migrant workers.
- Revenue Act, or “Wealth Tax Act,” 1935; the Act raised tax rates on incomes above \$50,000. The Act did little to increase federal tax revenue, and it did not significantly redistribute income.
- Social Security Act, 1935; established the ***Social Security Administration (SSA)***. The SSA was designed to combat the widespread poverty among senior citizens; it administers a national pension fund for retired persons, an unemployment insurance system, and a public assistance program for dependent mothers, children, and the physically disabled. Paid for by employee and employer payroll contributions; required years of contributions, so first payouts were in 1942.
- Emergency Relief Appropriations Act (ERF), 1935; appropriated nearly \$5 billion to create some 3.5 million jobs.
 - ***Works Progress Administration, 1935 – 1939 & (renamed) Works Project Administration (WPA)***, 1939-1943 was funded by the ERF – created by Executive Order; it was the largest New Deal agency established to provide work for the unemployed. Between 1935 and 1941, the WPA employed an average of two million people a year mostly working on construction work, also sewing projects for women and arts projects for unemployed artists, musicians and writers. WPA went on to spent

some \$11 billion on reforestation, flood control, rural electrification, water works, sewage plants, school buildings, slum clearance, student scholarships, and other projects, e.g., the Bonneville Dam on the Columbia in 1937. In total, the WPA came to employ more than eight million people; WPA workers built 650,000 miles of roads; constructed, repaired or improved 124,000 bridges, 125,000 public buildings, and 700 miles of airport runways; under the arts program, many artists, photographers, writers, and actors became government employees, working on a myriad of public projects ranging from painting murals to writing national park guidebooks.

- Federal Art Project, 1935
 - Federal Music Project, 1935
 - Federal Theatre Project, 1935
 - Federal Writers' Project, 1935
 - National Youth Administration, 1935
- National Labor Relations Act (NLRA) / (also known as) Wagner Act, 1935; allowed workers to join unions and outlawed union-busting tactics by management. Employees were guaranteed the right to negotiate with employers through unions of their choosing. It established the ***National Labor Relations Board (NLRB)*** as a forum for dispute resolution.
 - ***Rural Electrification Administration (REA)***, 1935;
 - Rural Electrification Act, 1936; codified the existing agency (REA) created by an executive order. The purpose behind the agency and the Act was to supply electricity to rural communities. Before the New Deal, only 10% of areas outside cities had electricity; the Agency granted low-cost loans to farm cooperatives to bring electric power into their communities. By 1940, only 40% of American farms were electrified.
 - ***National Youth Administration***, 1935; established by the Federal Emergency Relief Act (FERA), 1933; provided part-time employment/work-study jobs to more than two million college and high school students.
 - Judicial Reorganization Bill (known as Court-packing Bill), 1937; the bill sought to empower the President with the appointment of a new Supreme Court judge for every judge 70 years or older; failed to pass Congress.
 - The Housing Act, 1937; established the ***United States Housing Authority***. It authorized the lending of money to states and local communities for low-cost housing.
 - Civil Aeronautics Act, 1938; transferred federal civil aviation responsibilities from the Commerce Department to the CAA
 - ***Civilian Aeronautics Authority (CAA)*** (now ***Federal Aviation Administration***)
 - Fair Labor Standards Act/The Wages and Hours Act, 1938; this labor law was the last major piece of New Deal legislation intended to reform the economy. This law established the minimum wage (at the time 25 cents/hr.); it also set the standard for the 40-hour work week – originally set at 44 hrs/wk. – and banned the use of child labor (under age of 16 and restricted those under 18 to non-hazardous work).
 - Reorganization Act of 1939/ ***Federal Security Agency***, 1939 - 1953; the Act authorized the President to devise a plan to reorganize the executive branch of government; this cabinet level agency had the responsibility for several government entities. Until it was abolished in 1953, it administered the Social Security Board, the U.S. Public Health Service, Food and Drug Administration, the Civilian Conservation Corps, the Office of Education, the National Youth Administration and a number of other agencies.

Weimar Republic Timeline



This document provides a timeline of Germany's Weimar Republic during the years from 1914 through 1924. Both German industrial production and the German stock market peaked around the start of World War I in 1914. It wasn't until 1927 that the economy reached its 1914 level and not until around 1960 that real stock market prices returned to their 1914 peak.¹ Within this long period of inflationary deleveraging is one of the most acute periods of inflationary deleveraging ever, which occurred in 1922-1923. This is a period of special interest and focus to us because of the perspective it provides. As with other cases, we want to convey market movements as well as notable historical developments, especially the very large market whipsaws that accompanied the near total destruction of financial wealth during this time.

The timeline is divided into four periods. These periods were selected to represent distinct phases in the depreciation of the mark. When possible, events are arranged chronologically within each of the phases.

Overviewpg. 87

World War I Period: 1914 - Nov 1918pg. 90

Post-War Period: Nov 1918 - Dec 1921pg. 93

1918
1919-1920
1921

Hyperinflation: Jan 1922 - Nov 1923pg. 105

First Half of 1922: The Transition to Hyperinflation
Second half of 1922
1923: The Occupation of the Ruhr & Final Stages of the Inflation

Stabilization: From Late 1923 Onwardpg. 122

This timeline uses information from the following sources:

Books		Data	
Author	Title	Provider	
Anton Kaaes, Martin Jay, Edward Dimendberg	The Weimar Republic Sourcebook	National Bureau of Economic Research (NBER)	
Carl-Ludwig Holtfrerich	The German Inflation: 1914-1923	Reichsbank Statements	
Charles P. Kindleberger	A Financial History of Western Europe	Sveriges Riksbank (Central Bank of Sweden)	
Constantino Bresciani-Turroni	The Economics of Inflation: A Study of Currency Depreciation in Post War Germany	Global Financial Data	
Detlev J.K. Peukert	The Weimar Republic		
Deutsche Bundesbank	Deutsches Geld-und Bankwesen in Zahlen 1876-1975		
Frank D. Graham	Exchange, Prices, and Production in Hyper-Inflation, 1920-1923		
Nail Ferguson	Paper & Iron: Hamburg business and German politics in the Era of Inflation, 1897-1927		
Peter L. Bernstein	The Power of Gold: The History of an Obsession		
Theo Balderston	Economics and Politics in the Weimar Republic		
Charles P. Kindleberger	Manias, Panics, and Crashes: A History of Financial Crises		
Barry Eichengreen	Golden Fetters: The Gold Standard and the Great Depression 1919-1939		

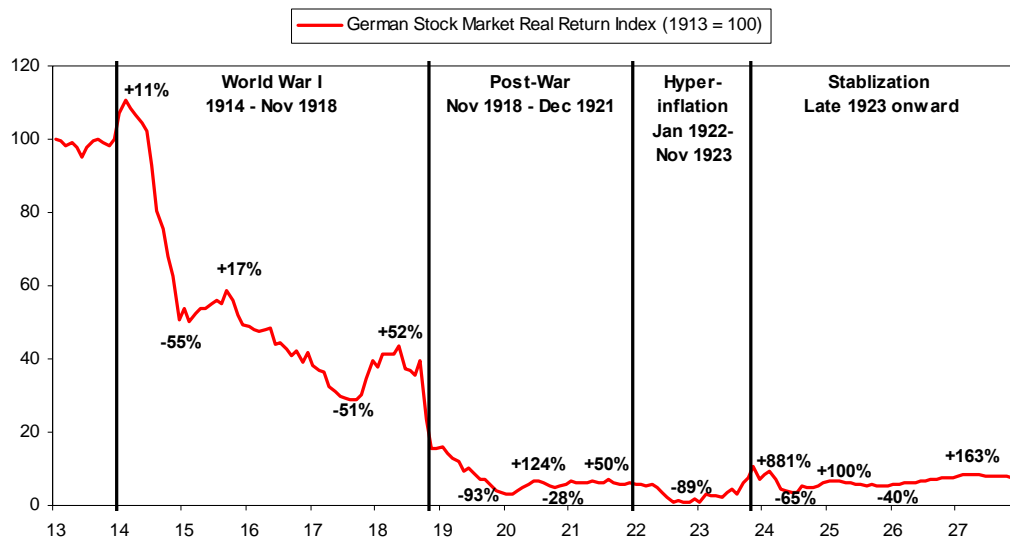
¹ Estimates of the real returns of stocks are imprecise because of distortions arising from extraordinarily high and unreliable inflation data.

Overview

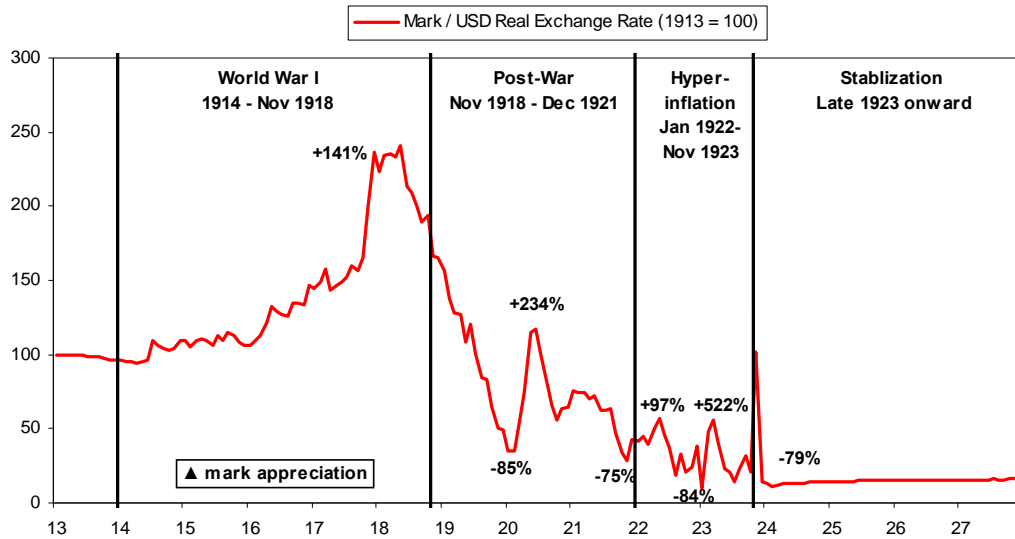
Depressions arise when (a) debt service obligations become unsustainably large in relation to the cash flows to service them, (b) investors seek to convert a large amount of financial assets into cash, and (c) monetary policy is ineffective. Because monetary policy is ineffective in creating credit, credit creation turns into credit contraction until this fundamental imbalance between the need for cash and the amount of cash available is rectified. Until the fundamental imbalance is rectified, a cash shortage causes debt and liquidity problems. This cash shortage, and these liquidity problems, cause financial assets to be sold for cash (i.e., M0), which worsens the cash shortage and puts the central bank in the position of having to choose between (a) keeping the amount of money the same and allowing the shortage of cash to become more acute, thus driving up interest rates and causing the credit crisis to worsen, and (b) printing more money, thus depreciating its value. The Weimar Republic case study, like the 1980s Latin America case study, is interesting in examining the dynamic behind the process of alleviating the fundamental imbalance primarily through the creation of cash (i.e., M0)

As with the other cases of deleveraging, in this case, there were many swings in markets and economic conditions so, from the perspective of someone trying to navigate through this period, it is important to understand these swings and see the cause-effect relationships behind them.

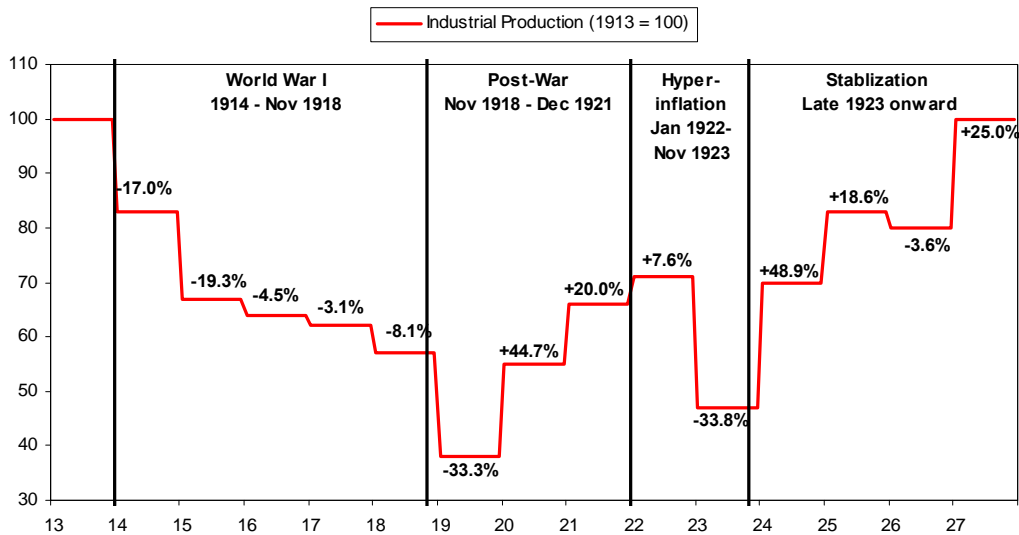
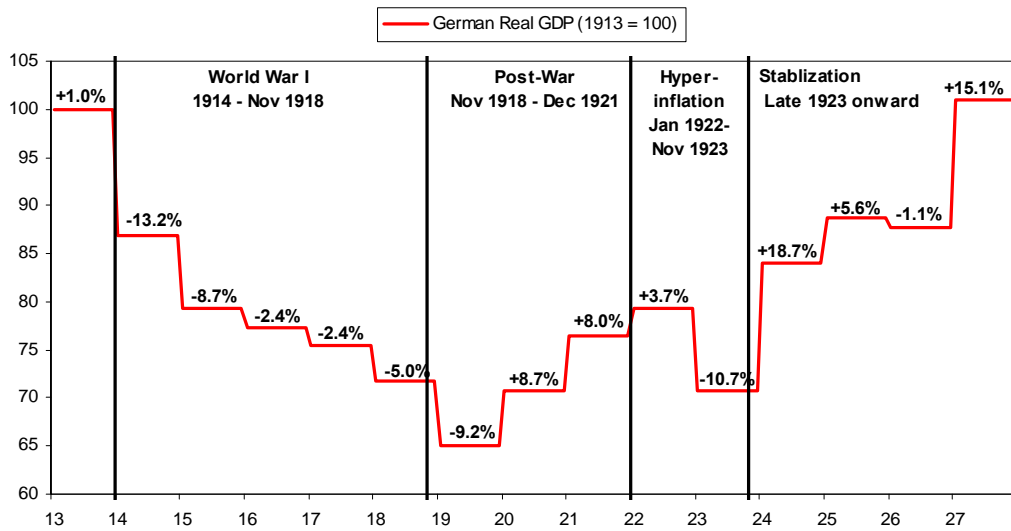
To help to convey the big picture before we get into the chronology, we want to show a few charts of the total timeframe. The ones that follow show the real stock market, the real exchange rate, real economic activity, and the inflation rate from 1913-1927, with the vertical lines designating the beginnings of each of the four phases referred to in the table of contents. The percentages noted in each chart are meant to convey the very big swings along the way. It is very important for us to understand what caused these swings and to visualize how our game plan would have navigated these. The chronology that follows will explain these movements.

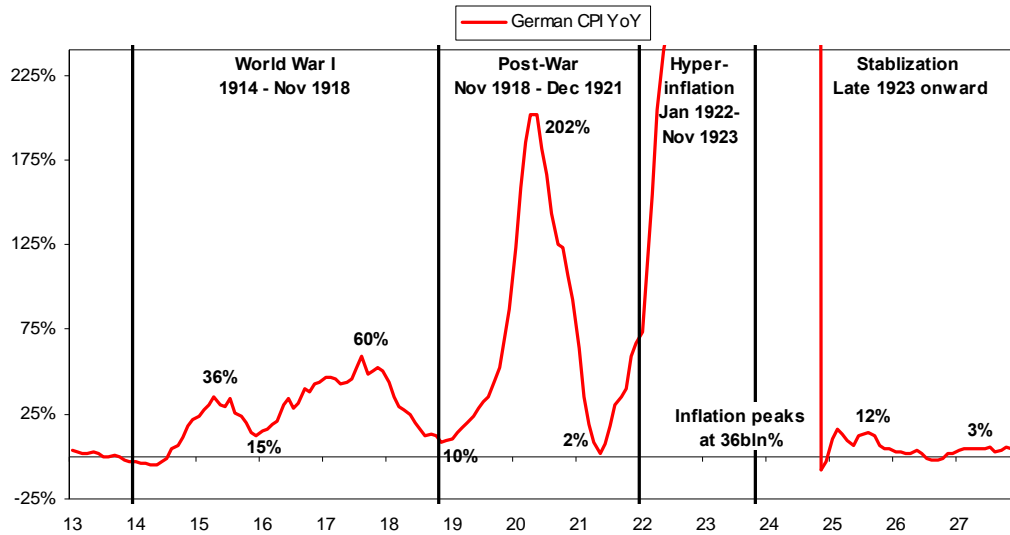


Source: Global Financial Data, BW Estimates



Source: Global Financial Data, BW Estimates





In order to gain a big picture perspective, it is also important to view Germany's deleveraging within the context of the world economy at the time. To convey this, the table below shows industrial production (a proxy for economic activity) for Germany, France, the UK, and the US. Note that (a) Germany's economic activity plunged more severely than other economies after the war, (b) the German economy grew, while the UK and France contracted in 1921, and (c) the German economy plunged while the UK and France grew in 1923. You will also note the recovery that followed the post-war deleveraging and that occurred in 1920-22, and that it was followed by the very classic inflationary deleveraging that occurred in 1922-1923. The reasons will also be made clear in the chronology.

Indices of Industrial Production

	Germany	United States	Great Britain	France
1913	100	100	100	100
1914	83	92	93	64
1915	67	103	94	37
1916	64	122	87	45
1917	62	123	84	57
1918	57	121	79	52
1919	38	119	89	57
1920	55	126	91	62
1921	66	97	62	55
1922	71	129	77	78
1923	47	153	83	88
1924	70	141	89	109
1925	83	158	87	108
1926	80	161	77	126
1927	100	157	99	110
1928	102	163	95	127
1929	103	174	104	140
1930	91	138	98	140
1931	73	137	88	124

World War I Period

1914 – November 1918

World War I began in 1914 and ended in November 1918. It set the stage for the period that we will be examining because it resulted in Germany having very large domestic and foreign debts. During the war years, Germany spent a lot of money on the war, much of which was financed by borrowing from its people; it then lost the war and acquired a huge foreign debt in the form of war reparations. While Germany's deleveraging was largely a consequence of the debts arising from the war, deleveragings are debt crises, regardless of their causes, so the fact that Germany's arose from the war is essentially irrelevant to our examination of the inflationary deleveraging dynamic.²

As with most countries at the time, Germany was on the gold standard at the beginning of the war – i.e., to borrow money, it guaranteed the value of the money by promising to convert money into gold. When it was unable to meet those commitments it defaulted – i.e., it broke its promise to allow holders of currency to convert it to gold.³

For Germany default came on August 4, 1914 when the Reichsbank (Germany's central bank) "suspended" the conversion of money for gold. As with all other countries' suspensions of gold convertibility, this default occurred because investors executed their right to turn their money into gold in large numbers, which caused the government's gold reserves to fall a lot, so that it became obvious that the central bank would not have enough gold to fulfill its commitment. Whenever (a) the amount of money in circulation is much greater than the amount of gold held in reserves to back the money at the designated price of conversion, and (b) investors are converting money into gold because they are worried about the value of their money, the central bank is in the untenable position of having to either reduce the supply of money in circulation (i.e., tighten credit) or to end convertibility and print more money. Central banks almost always choose suspending convertibility and printing more money. Such was the case in mid-August 1914 in Germany. At that time, the Reichsbank chose to break its promise to deliver gold so that it could freely print money. On the same date, another law passed that authorized the Reichsbank to discount short-term bills issued by the Treasury and to use them, together with commercial bills, as collateral for its notes. So also, on August 4 the central bank decided to free itself from all constraints that limited its ability to print money and simultaneously initiate money printing activities. According to the weekly statements of the Reichsbank, in the two weeks from July 24 to August 7, the quantity of the Reichsbank notes in circulation increased by more than two billion marks⁴, an increase of approximately 30%. Knowing that this move would lead to inflation, on the same date (August 4), a "Law Concerning Maximum Prices," which imposed price controls and a freeze in rents,⁵ was also passed by the Reichstag. Nonetheless, as a result of this decision to eliminate constraints on money production, currency and credit inflation began in Germany directly after the outbreak of the war.

Before 1914 gold coins represented about 40% of the monetary base, but they were withdrawn from circulation by the Reichsbank after the outbreak of war. The Reichsbank's gold reserves amounted to 1,253 million marks on July 31, 1914. Because the central bank took the private gold into its possession (i.e., because the government essentially confiscated the gold from private investors), at the end of 1918, the Reichsbank had 2,262 million marks in gold –i.e., its gold reserves had nearly doubled.⁶

These moves—i.e., eliminating the link between currency and gold, printing a lot of money to buy government debt, and establishing price controls—are classic ingredients of reflation. In all cases, they are accompanied by currency devaluations and gold revaluations. They are frequently accompanied by

² Bresciani-Turroni p. 23

³ Bresciani-Turroni p. 23

⁴ Bresciani-Turroni p. 23

⁵ Holtfrerich p. 79

⁶ Bresciani-Turroni p. 28

the government outlawing gold and the government taking it into its possession. Often these moves are accompanied by foreign exchange controls. The last time this mix of policies was deployed in the U.S. was in 1971. These things happened in Germany in 1914.

The printing of money was primarily to fund the government's deficits and alleviate other debt burdens. The table below shows, in millions marks, the total income, expenditure and budget deficit of the German Reich during the years 1914-1918. As conveyed, in these war years, the amounts of money spent and the deficits increased a lot.

German Reich Income and Expenditure

Millions of marks				%GDP		
<i>Financial Years</i>	<i>Government Expenditure</i>	<i>Ordinary and Extraordinary Income</i>	<i>Deficit</i>	<i>Government Expenditure</i>	<i>Ordinary and Extraordinary Income</i>	<i>Deficit</i>
1914	9,651	8,149	-1,502	17%	14%	-3%
1915	26,689	23,207	-3,482	47%	41%	-6%
1916	28,780	22,815	-5,965	36%	29%	-7%
1917	53,261	35,215	-18,046	45%	30%	-15%
1918	45,514	31,590	-13,924	37%	26%	-11%
Total	163,894	120,976	-42,918	38%	28%	-10%

The difference between the total expenditure and the total income was covered by issuing Treasury bills that were bought by the Reichsbank, which directly increased the currency in circulation⁷, fueling inflation. Naturally, investors worried about the depreciating value of their money ran to gold, essentially the only non-credit based money, so gold was outlawed.

The debt that the German government issued to finance the war was primarily floating debt because investors had become wary about lending the government money in exchange for longer maturity debt,⁸ fearing that they would be paid back with depreciated money. These fears were learned, arising from investors who had held long-term bonds being burned. The issuing of floating debt required the government to print more money faster in order to pay off these short-term debts in depreciated rather than hard money, which drove depositors into even shorter term money, and so on, until in the autumn of 1916 investors became wary about lending, even short term, so the sums yielded by the loans were always less than the amounts of the floating debt.

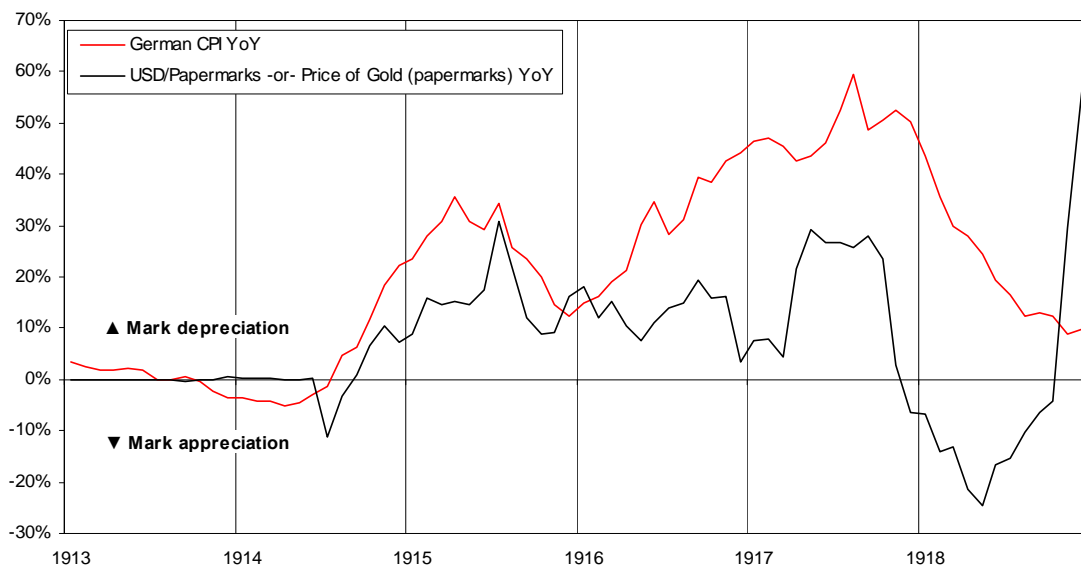
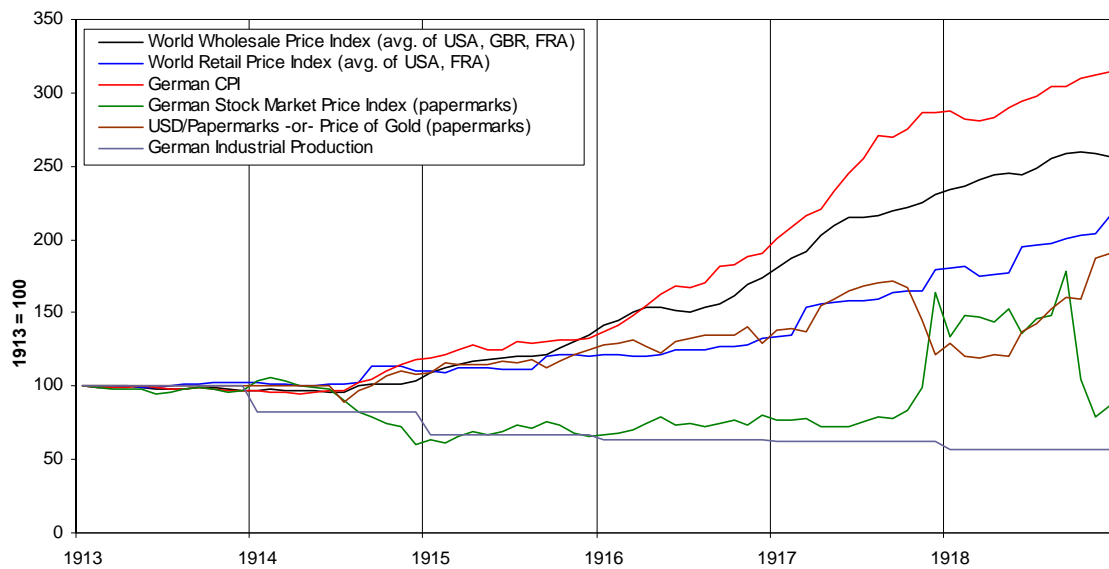
After the outbreak of the war, the publication of war statistics stopped. They were only renewed in 1920.⁹ As a result, data for this period is sparse.

As shown below, (a) this was a period of rising prices globally, (b) the rates of inflation in Germany outpaced those in other countries and rose at steadily increasing rates through 1918, and (c) the stock market fell by 38% in nominal terms and 46% in real terms in 1914.

⁷ Bresciani-Turroni p. 48

⁸ Bresciani-Turroni p. 48

⁹ BT 227



Post-War Period

November 1918 - December 1921

1918

Germany lost the war, so naturally stocks plunged and there was capital flight from Germany's paper. As a result, the mark plunged from November 1918 to July 1919¹⁰ and the debt soared. From the end of October 1918 to the end of March 1919, the floating debt of the Reich rose by 15.6 billion paper marks¹¹, an increase of 32%. In contrast with the war years, the mark's depreciation occurred via the dollar exchange rate as the dollar became the world's most important currency. As a result of this depreciation, prices of imported goods rose more rapidly than prices of domestic goods. From November 1918 until July 1919, M0 grew at an annualized rate of 102%, the price of gold in paper marks increased by 210%, the inflation rate averaged an annualized 48%, and industrial production fell at an annualized rate of 43%.

The signing the Treaty of Versailles on June 28, 1919 triggered a new plunge in the exchange rate as it then became obvious the debts imposed on Germany by the Treaty would have a devastating effect on Germany's balance of payments¹² for years to come. At this point, Germany was saddled with a very large domestic debt and a large foreign debt.

While from October 1918 through early 1919, share prices fell a lot, in the second half of 1919 they rose a lot in paper mark terms due to the very rapid depreciation of the mark. This was the beginning of the very classic dynamic of rapid depreciations in the value of money causing illusions of price gains of stocks and tangible assets. In the case of Germany's stock market, at the time, the rise was much less than the currency's depreciation and less than the rise in the price of gold (which reflects the value of money), stocks were a disastrous investment. The indexed value of stocks in gold terms fell from 69.3 in October 1918 to 8.5 in February 1920. Similarly, in inflation adjusted terms, stocks were a horrible investment, i.e., in February 1920, real share prices had fallen to only about 12 percent of their 1913 value.¹³ Similarly, from a foreign investor's perspective, investing in Germany's stock market was a losing proposition. So, during this time gold was the preferred asset to hold, shares were a disaster even though they rose, bonds were wiped out, and rent controls made real estate very bad. In other words, the market action was clearly consistent with that of an inflationary deleveraging.

The end of World War I brought economic problems to almost everyone. As is typical of deleveragings, economic problems brought clashes between capitalists, "the haves," and the proletariat, "the have-nots," and these clashes caused big political shifts. These clashes were not confined to Germany—they were global. For example, the Russian Revolution occurred in November 1918, where the proletariat took wealth and power from the capitalists.¹⁴

¹⁰ Bresciani-Turroni p. 28

¹¹ Bresciani-Turroni p. 53

¹² Bresciani-Turroni p. 54

¹³ Bresciani-Turroni p. 256-7

¹⁴ Bresciani-Turroni p. 302-320

1919 – 1920

In 1919, the German government (i.e., the Reich) found it impossible to raise the money it needed without continuing to issue new floating debt at an accelerating rate. The revenues of the Reich had only a modest increase so this revenue increase didn't do much to reduce their overwhelming reliance on deficit financing, which was then forced to be almost exclusively through short-term borrowing.¹⁵ At times when governments need more money than they can borrow from foreign investors, (i.e., when the economy is depressed and budget deficits are large), they are faced with the choice of directly taxing the rich (who are the only ones who can afford to "contribute") or indirectly taxing them by printing money which devalues the claims of debt holders. They typically do both. Germany did both.

Big taxes of various forms were enacted. Specifically:

(1) In 1919 and 1920 numerous new laws were put into place to create numerous and complex taxes. In fact, Matthias Erzberger, the finance minister at the time, proclaimed that in the future Germany the rich should be no more.¹⁶

(2) In December 1919 the government passed the "War Levy on Capital Gains" and the "Extraordinary War Levy for Fiscal Year 1919," creating wealth taxes that were strongly progressive, rising from 10% of the value of assets at five thousand marks to 65% at above seven million marks. According to original estimates, the tax was expected to take up to one third of German national wealth, which would then be used to redeem the state's war debts. However, since the tax was for the most part payable in cash and those who were taxed couldn't convert their wealth into cash fast enough, the Reich had no choice but to permit payment by installment. In fact in some cases it could be spread over up to 28 ½ years, or in the case of landed property up to forty-seven years.¹⁷ The government treated these tax debts as mortgages.

(3) The Secretary of the State proposed that the taxes due should take the form of mortgages denominated in gold in favor of the State and should be imposed on all properties, though interest payments could be made in paper money that was price indexed (e.g., for farmers they were indexed to grain prices). However, when it came to paying its debts, the government did so in paper money that could depreciate. Clearly, the government was allowing itself, but not the taxpayers, to depreciate its debts through money creation. As an additional wealth tax, the government proposed that a certain percentage of the equity of public and private companies should be given to the State.¹⁸

(4) The "Reich Emergency Contribution" taxed the wealthier classes as part of the great Erzberger tax reforms. It was also payable in installments, which was contrary to the original conception, so it became a recurrent charge on wealth in addition to wealth holders' existing liabilities under the "Defense Contribution" of 1919 and the extraordinary "War Levy" of 1917.¹⁹ Because of inflation and the method of valuing real property and industrial plants, those who owned securities or mortgages (i.e., financial assets) were worse off than landowners and industrialists (i.e., owners of tangible assets).

At the time, economists recognized that the claims of those who held financial assets were too large to be paid back in the promised manner (i.e., with the value of money being maintained) without resulting in great hardship. So, rather than wanting to fight inflation, policy makers explicitly advocated accelerated inflation as a means of taxation. The plan was for the Reich to redeem its long-term debt prematurely at par value by obtaining the cash from the central bank, or to convert its long-dated bonds into treasury bills. This would eliminate the threat of the government going bankrupt. Also, it was widely recognized that depreciating the currency would have stimulative effects on the economy and

¹⁵ Holtfreich p. 129

¹⁶ Bresciani-Turroni p. 55

¹⁷ Holtfreich p. 134

¹⁸ Bresciani-Turroni p. 57

¹⁹ Holtfreich p. 128-9

make Germany more competitive in world markets. As one official put it, it was better "to exploit to the full the opportunities afforded by money creation, than to cripple the forces of production and the spirit of enterprise by a confiscatory tax policy."²⁰

It was widely recognized that, though breaking the commitment to pay debts in money of stable value is evil, it is the lesser of two evils. For example, a German economist at the time, Dr. Bendixen, who favored printing money to devalue debtors' claims said, "I have never denied that what I propose is an evil, but it is the only means of preventing a still worse evil...We may deprecate the fraudulent excesses of speculation and of entrepreneurial activity that the inflation would bring—and not without reason: but are we on this account to prefer the corpse-strewn battlefield into which the repudiation of the War Loans would turn our economy?" Bendixen believed it would be impossible, or at least extremely injurious to the economy, to repay the War Loans out of taxation. He also regarded inflation as preferable to the type of tax system that—under existing political conditions—was threatening wealth holders and high income groups in the manner proposed. Similarly, Keynes said, "The inflation is unjust and deflation is inexpedient. Of the two perhaps deflation is the worse, because it is worse in an impoverished world to provoke unemployment than to disappoint the rentier."²¹ By "rentier" he meant the person who rented out his capital.

Germany's total debt—i.e., its external debt on top of its internal debt—was so huge that it must have been obvious to anyone with a sharp pencil that any attempt to service it, let alone to pay it off, would have caused a deflationary deleveraging of unimaginable severity, so it was not going to happen. No government could have survived such a policy. When there isn't much chance that the government can service or pay back its debt via taxation there is always an implicit risk that it will print currency and depreciate the currency's value.²² This is not just an observation of Germany at the time—it is a timeless and universal truth.

In contrast with the easy money policies that existed in Germany at the time, tight money policies were being followed in other countries because, at the end of 1919 and beginning of 1920, Britain and the USA were in booms that had to be brought under control. For example, interest rates on three-month money, which were less than 6% in the first nine months of 1919, averaged about 8% in 1920 in the U.S.

Naturally, high tax rates on the wealthy coming at the same time as their net worths were being eroded in their investments and due to the bad economy, caused them to desperately try to preserve their rapidly shrinking wealth at all costs. This led to extremely high rates of tax evasion and the flight of capital abroad.²³ This is typical in deleveragings. It also typically leads to governments establishing controls on both tax evasion and citizens of the country taking money abroad. As we will see shortly, that is what happened in Germany.

At the time, the Allies (i.e., the countries that won the war) were understandably worried that Germany would pay them back with worthless paper money, so on December 13, 1919, they reached an agreement with Germany that forbid the Reichsbank from disposing of its gold reserve.²⁴ As we will see later, this gold stock was to play an important role in determining how events transpired in subsequent years.

The charts below show the exchange rate changes during this period and a longer-term chart to put these moves in context. As shown, this was a period of great weakness in the mark, which is obviously consistent with the fundamentals of the time.

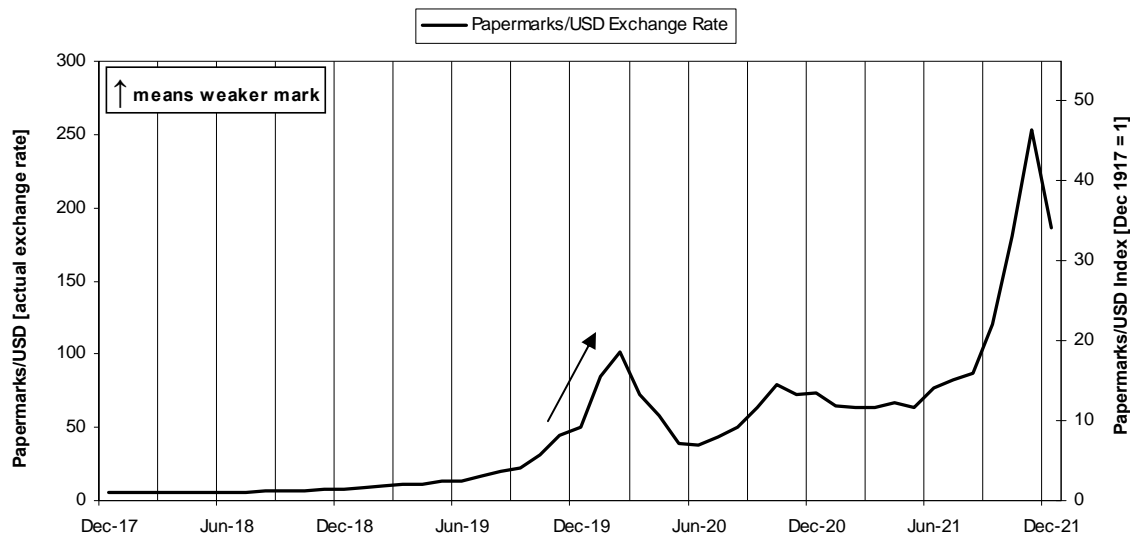
²⁰ Holtfrerich p. 132-3

²¹ Holtfrerich p. 132-3

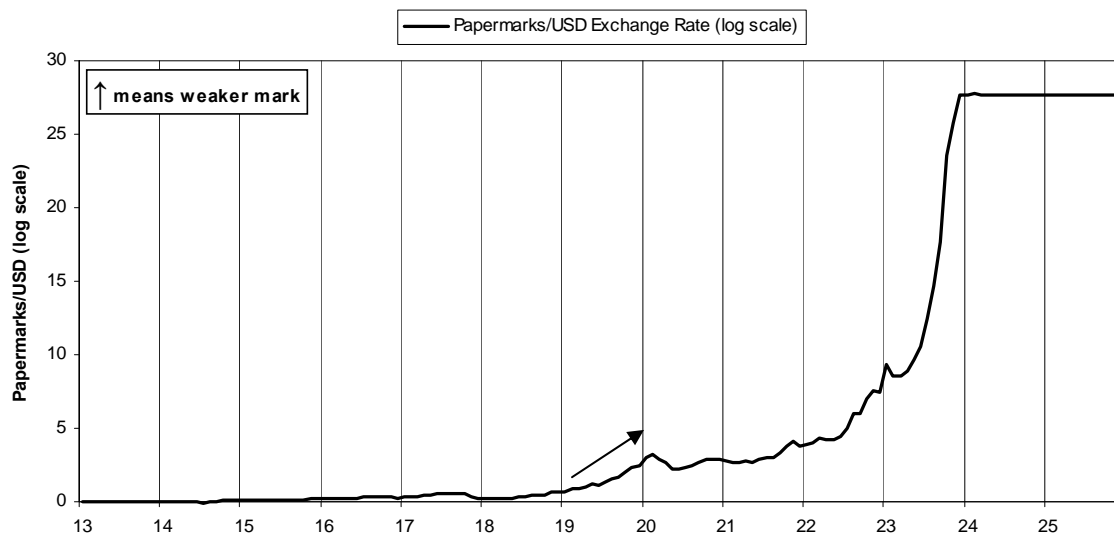
²² Holtfrerich p. 129

²³ Holtfrerich p. 208

²⁴ Bresciani-Turroni p. 52



Source: Global Financial Data, BW Estimates



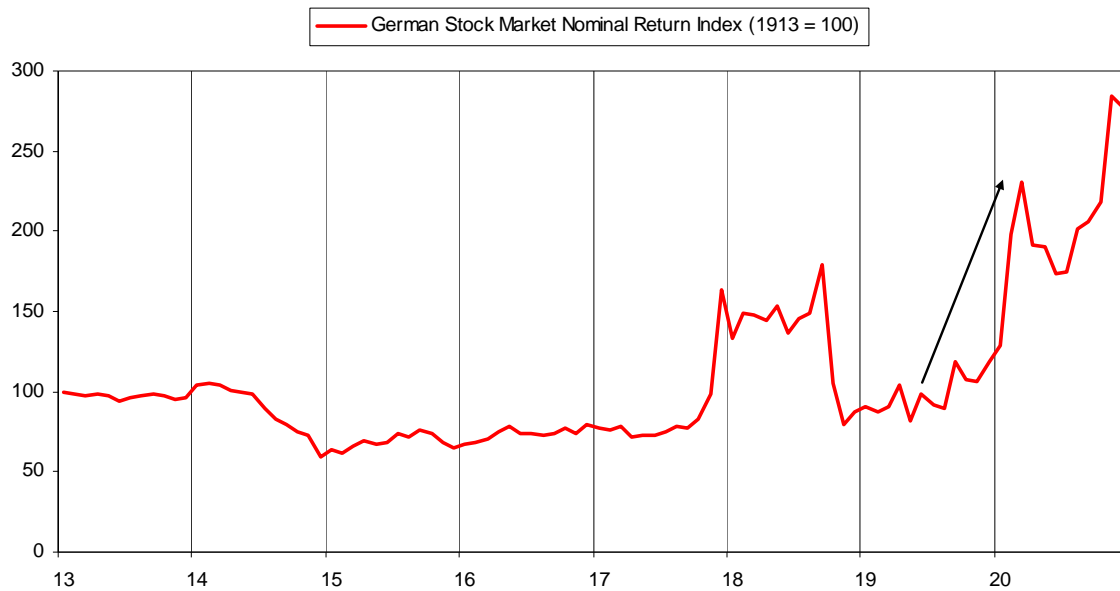
Source: Global Financial Data, BW Estimates

Currency depreciation is, in cases other than hyperinflation, normally stimulative to short-term economic activity and bullish for inflation hedge assets and stocks. So, these declines in the mark stimulated the German economy in late 1919 and early 1920. They gave an especially strong stimulus to exports, which is normal²⁵. Also, the low real interest rates stimulated domestic demand. So, the German economy picked up, and the number of unemployed fell rapidly. Because of the mark's decline, the divergence between German prices and world prices was large and German wages remained low. This caused German businesses to do well, so confidence in the stock market improved and prices rose. Because of the very rapid currency depreciation and price declines of Government securities, mortgages, and debentures—in fact, all securities with a fixed yield—declined in value. So, in 1919, this decline in the value of debt instruments also drove investors to buy shares and other assets like gold for their “intrinsic” value.²⁶ The public now saw that the paper mark and debt could no longer fulfill the function of the “store of value.”

²⁵ Bresciani-Turroni p. 256-7

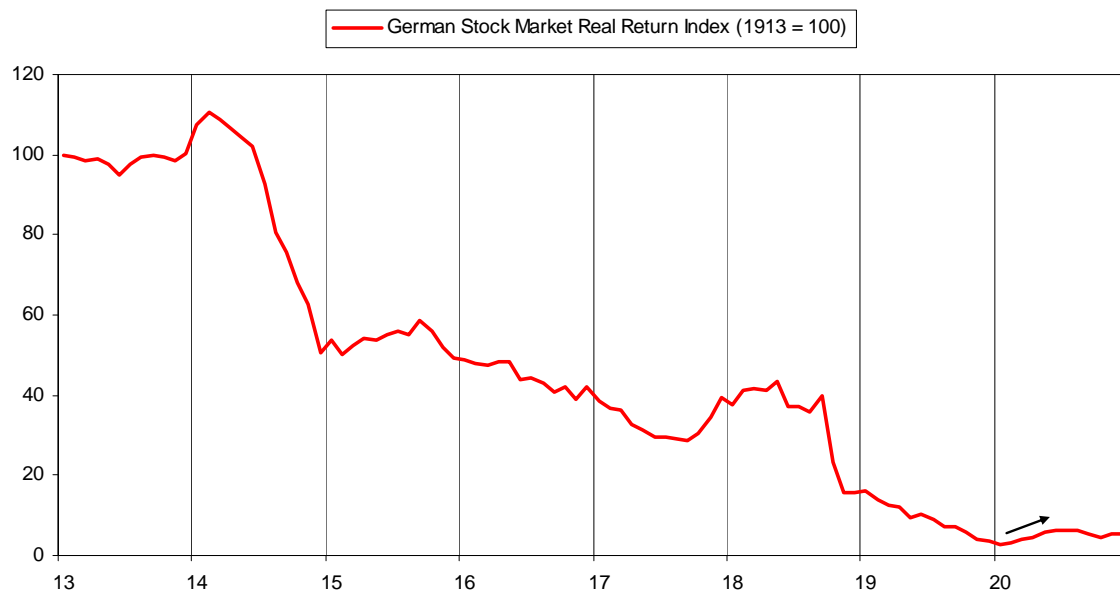
²⁶ Bresciani-Turroni p. 256-7

The period between the start of 1919 and spring 1920 was one when stock prices rose continuously (nearly doubling) because of buying for their intrinsic value, unemployment fell, and the currency entered a period of “relative stabilization.” The chart below shows stock prices during this period.



Source: Global Financial Data, BW Estimates

The next chart shows stock prices expressed in US dollars for the same period.



Source: Global Financial Data, BW Estimates

1921

As noted earlier, central banks in other countries pursued tight money policies in 1920. These tight money conditions in other countries in 1920 led to a bad world contraction in 1921. Though this was called a deleveraging, which was then the name for all economic contractions, it was primarily driven by monetary policies, so this contraction had some of the markings of what we refer to as a recession,

though certainly it was a very bad recession. Between 1920 and 1921, industrial production fell by 20% in the US, by 18.6% in the UK, and by 11% in France, largely as a result of this monetary tightening. In the US, unemployment reached 12%. At the bottom of the contraction, which occurred around mid-1921, 22% of the total population was out of work.²⁷ So it was certainly a very severe global contraction.

However, economic conditions in Germany in 1920 and 1921 continued to be very different from those in the other leading industrial countries—most importantly, Germany did not suffer a severe contraction because of its reflationary policies—mostly because German monetary policies were easy (largely because of its easy money policies and the absence of a tie with gold), while those in other countries were tight.²⁸

As a result of these relative economic conditions and the differences in monetary policy that accompanied them, the German exchange rate became more stable between April 1920 and May 1921. That was because conditions in other countries were so bad that they drove investors to Germany. However this currency stability and weakness in other economies naturally created difficulties for German export-dependent industries. But domestic demand remained strong. As a result, German industrial production increased by 20.4% between 1920 and 1921, on the heels of the 46% increase that occurred between 1919 and 1920. So 1919-1921 was a period of strong growth for Germany. Average unemployment during 1921 declined to only 2.8% of trade union members, which was below the 1920 average of 3.8%.²⁹ Still in 1921-22, German industrial production remained much lower than in 1913, so this period of growth was within the period of greater economic contraction for Germany.

In that year, the money supply remained almost stable—e.g., the gold mark was worth 14.2 paper marks in April 1920 and 14.9 in March 1921, as the world's deflationary contraction and Germany's favorable relative growth supported the mark. In spite of that, the budget deficit was huge—roughly 15% of GDP—which equated to 60% of the total expenses (in the financial year of 1920-21) and that large deficit was financed by the issue of Treasury bills. So, in the period from February 1920 to May 1921, the supply of floating debt was increased a lot; however, the inflationary effects were mitigated by the global deflationary period.³⁰

In 2Q1920 the German economy began to weaken along with the global economy. The German currency had been stable until May 1921, but then it began to soften. Then, along with the economy weakening, the Allies restructured Germany's external debt via the "London Ultimatum". The "agreement" was called the "ultimatum" because the allies threatened to occupy the Ruhr Basin within six days if Germany didn't agree to the plan. It specified the final payments plan which set war reparations at 132 billion gold marks, with 50 billion in gold marks bonds up front and 2 billion gold marks in the first year, plus 1 billion gold marks over the next few months, and some other taxes.³¹ In other words, it solidified a huge debt burden for Germany. Naturally that implied that domestic debts and the currency would have to be depreciated because the government faced the choice of either (a) printing and taxing, or (b) having money and credit tighten and the weak economy contract, and it was obvious which they would choose.

While the German government was being pressured by these circumstances to print more money, Allied governments wanted German currency stabilization because mark weakness made Germany more competitive. British industry wanted "the competitive advantage on world markets which the fall in the mark was giving to German industry to be curtailed" by a currency stabilization. At the time, unemployment in Britain reached 23.4%. But, as always, fundamentals won out over the Allies' wishes, and German "currency dumping" began in May 1921.

²⁷ Holtfrerich p. 209

²⁸ Holtfrerich p. 211

²⁹ Holtfrerich p. 211

³⁰ Bresciani-Turroni p. 56

³¹ Holtfrerich p. 301

The new tax sources, made available to the Reich between 1919 and 1921 under the “Erzberger Reforms”, had increased the revenues of the Reich during fiscal year 1921. There were enough tax revenues to cover ordinary expenditures but not reparations. By the beginning of 1922, tax revenues had increased not only in nominal terms, but even in gold mark values, while expenditures were strictly controlled. In the first quarter of the new fiscal year (April-June 1922), Germany was able to finance not only its entire ordinary and extraordinary expenditure out of taxation, but even to apply a considerable sum from the same source to meeting reparations charges.

So let’s review. Economic weakness and the Ultimatum of London of May 1921 provoked the collapse of the mark.³² It was originally proposed that reparations would equal an annuity of eight billion gold marks which would have taken 23.2% of German national income in 1919, 21.3% in 1920, 19.8% in 1921 and 19.0% in 1922. But these burdens were reduced to three billion gold marks by the London Ultimatum due to a more realistic assessment of Germany’s capacity to pay. Still, three billion gold marks represented an enormous burden of 7.4% of German national income in 1921, 7.1% in 1922 and 8.0% in 1923, especially on top of German’s other debts.³³

Between 1919 and 1922 Germany paid at least the eight billion, which is the amount credited to Germany by the Reparations Commission, though it is widely estimated that the payments were considerably more. The independent and unconnected estimates by Keynes and by Moulton and McGuire—twenty-six billion—are probably nearer the truth. In current gold marks aggregate German national income in the four years 1919-22 was 287.7 billion. Actual payments then ranged between 3.1% and 21.8% of this but were most likely (following the Keynes or Moulton/McGuire estimates) about 10%.³⁴ A historian recently calculated that a level of taxation equal to thirty-five percent of national income would have been required to defray postwar expenditures on reparations, social welfare, and the general running costs of the government.³⁵ The estimate of the gold mark value of the Reich’s current payments on reparations account was 4.9 billions in 1919, falling to 2.1 billions in 1920. But with the London Ultimatum of May 1921, the gold mark value of payments began to rise again: 2.8 billions in that year and 3.4 billions in 1922.³⁶ In other words, it was too much.

We can get a sense of the magnitude of the government’s funding needs by looking at the next table. Reparations are included in the budget deficit numbers. As shown, it was huge. To fund this gap, the Reichsbank had to print the money to make purchases of this debt.

German Reich Income and Expenditure						% of Net National Product				
	Millions of Gold Marks									
	Revenue	Expenditure	Reparations	Budget Deficit	Trade Balance	Revenue	Expenditure	Reparations	Budget Deficit	Trade Balance
1919	2,496	8,643	-	-6,054	-4,131	7.3%	25.3%	-	-17.7%	-12.1%
1920	3,171	7,098	1,236	-6,092	3	8.4%	18.8%	3.3%	-16.2%	0.0%
1921	6,237	10,395	3,369	-4,939	-693	15.4%	25.7%	8.3%	-12.2%	-1.7%
1922	4,032	6,240	2,226	-3,953	-2,230	9.6%	14.8%	5.3%	-9.4%	-5.3%
1923	1,785	6,543	801	-8,431	-5	4.7%	17.3%	2.1%	-22.2%	0.0%
1924	4,869	4,894	281	-25	-2,444	10.9%	11.0%	0.6%	-0.1%	-5.5%
1925	4,958	5,321	1,080	-363	793	7.4%	7.9%	1.6%	-0.5%	1.2%
1926	5,633	6,561	1,310	-928	-2,960	8.6%	10.0%	2.0%	-1.4%	-4.5%
1927	6,697	7,154	1,779	-427	-1,311	8.3%	8.9%	2.2%	-0.5%	-1.6%
1928	6,992	8,375	2,178	-1,383	-44	8.3%	10.0%	2.6%	-1.6%	-0.1%
1929	7,215	8,042	1,965	-827	1,558	9.1%	10.1%	2.5%	-1.0%	2.0%
1930	7,098	8,163	1,879	-1,065	2,778	9.9%	11.4%	2.6%	-1.5%	3.9%
1931	6,059	6,548	651	-489	1,052	10.5%	11.4%	1.1%	-0.9%	1.8%
1932	5,448	5,819	183	-371	-2,394	10.7%	11.5%	0.4%	-0.7%	-4.7%

³² Bresciani-Turroni p. 96

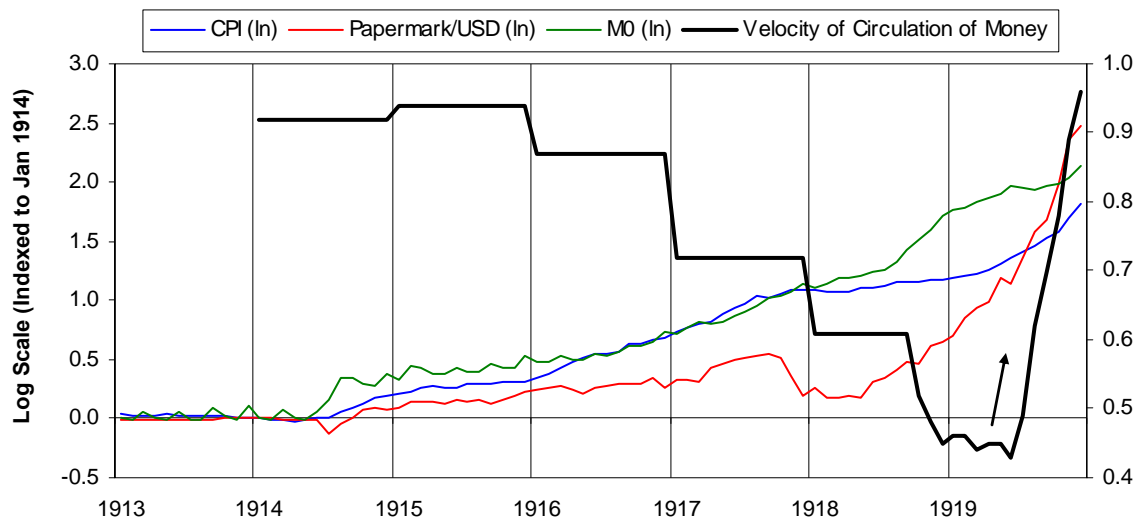
³³ Holtfrerich p. 149

³⁴ Holtfrerich p. 149

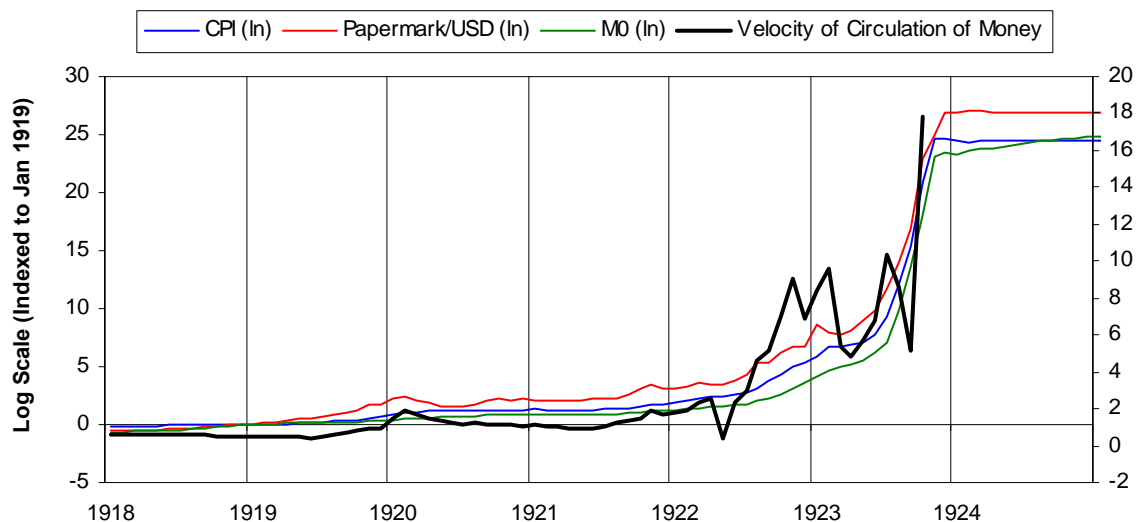
³⁵ Holtfrerich p. 137

³⁶ Holtfrerich p. 150

The chart below shows the exchange rate, M0, the CPI, and the velocity of money during the 1920-24 period. Notice that the decline in the currency value and the increase in the velocity of money led the increase in inflation, which led M0 growth as the central bank chose to accommodate these demands. This is typical in all monetary inflations, so you will also observe them to be true in the Brazilian, Argentine, Russian, and Thai cases. In other words, money supply growth did not cause these other things to happen; rather investors' movements of capital out of debt and out of currency caused these changes, which the Reichsbank accommodated by printing money (i.e., M0). The sudden rise in the velocity of money after July 1921 was due to the outbreak of a new crisis of doubt in the value of holding cash.³⁷



Source: Global Financial Data, BW Estimates



Source: Global Financial Data, BW Estimates

In August 1921 it was clear that getting adequate income and wealth taxes from the rich was difficult (largely because incomes were down and wealth was illiquid), and those who opposed the "taxation of

³⁷ Bresciani-Turroni p. 172

material wealth" in the Reichstag were strong enough to be able to block many of the wealth tax attempts. The government then abandoned the idea of a mortgage tax in favor of heavy taxes on consumption goods because they were more effective. It is important to realize that wealth taxes are usually ineffective because much wealth is illiquid, and because collections on the "mortgage" don't generate much cash.

After the autumn of 1921, the depreciation of the German mark became even more rapid and economic activity strengthened further. It was clear that a falling mark and rising inflation produced prosperity. According to the official statistics, the number of unemployed, which was high at the beginning of 1919, fell continually until the summer of 1922, when unemployment practically disappeared. However, any time there was an improvement of the mark there then was an increase of unemployment (see March-July 1920; November 1920-February 1921; December 1921-January 1922), and every depreciation of the mark was followed by an improvement in conditions of the labor market (January-February 1920; July-November 1920; April-November 1921; and then during the first half of 1922.) So it was clear that monetary stimulation and the weak exchange rate stimulated the economy. When the mark depreciated, foreign and domestic demands for goods increased. Foreign purchasers wanted to profit by the greater purchasing power of their own money in the Germany market, and the prospect of continuous increases in prices stimulated the demand to buy goods as a means of getting out of a depreciating currency. When the mark improved, foreign demand declined and in Germany there occurred what in the summer of 1920 was called "the buyers' strike."

The German press called the industrial and commercial situation between October 1921 and the summer of 1922 one of "general liquidation" because the shops were empty due to foreigners buying a lot because the mark was cheap, and Germans buying a lot because they worried about inflation. At the beginning of November 1921, the flight from the mark became a panic which rapidly spread through all classes of society.

In November, the depreciation of the mark provoked a big increase in orders, especially for inflation hedge and export items. The metallurgical industries were working at full capacity, so that they had to introduce overtime, and they refused to accept new orders. As cars are long-lived, the automobile industry had a period of peak prosperity. The textile trade had bookings for several months ahead, and the cotton firms refused to take new orders. It was clear that accelerating inflation and rising trade competitiveness from the depreciating value of the mark, rather than more sustainable drivers of growth, provided this demand.³⁸

Then, from November 26 to December 1, 1921, the mark strengthened by about a third—i.e., the dollar rate fell sharply from 293 to 190 paper marks.³⁹ This big whipsaw appears to have been due to a short squeeze as the speculation against the mark in many ways (typically from borrowing it and Germans keeping money outside the country) became overdone. As always, the mark's strength hurt the economy. In fact, press reports from that time declared that the improvement of the mark had been a catastrophe for German industry.⁴⁰ Trade orders rapidly diminished. Eventually, the shorts were squeezed and the impacts on trade and capital flows began to work against the mark.

So in February 1922 the mark began to fall, and on March 7 it was all the way back to 262 paper marks to the dollar. And the economy picked up again. A new wave of commercial and industrial activity followed in the form of panic buying. "It is no longer simply a zeal for acquiring, or even a rage: it is a madness," according to one observer of the time. Merchants bought for fear that if they waited the stocks would be exhausted. As a result, 1922 was a boom year, though in 1922 (which was the year of greatest economic expansion after the war) the level of economic activity still was no more than

³⁸ Bresciani-Turroni p. 188-197

³⁹ Bresciani-Turroni p. 188-197

⁴⁰ Bresciani-Turroni p. 188-197

70-80% of production in 1913, so despite this strength, the economy was still in the contraction that began in 1918.⁴¹

While one might think that the boom of 1922 was good for workers, it wasn't. That is because there was a big contrast between the continual increase of German production and wages, which did not keep up with inflation. Also, there was a deficiency in agricultural production due to the lack of certain chemical fertilizers and a shortage of labor. At the time there was a widely reported "fall in the intensity of labor" in 1919-1923,⁴² which hurt productivity. However, what was good for the average man was that during the inflation, rents fell on an inflation adjusted basis to almost zero. This was obviously bad for those who owned rental properties.

The inflation and negative real interest rates encouraged borrowing to invest as well as to spend. Real investment was at least as high as before the war.⁴³ The inflation stimulated a demand for "producers" goods because they were viewed as having relatively long income producing lives with these incomes tied to prices in the future (i.e., they were considered good inflation hedges). This market action is typical in high inflation environments. Similarly, it was widely recognized that short-term bank credits could be used to make long-term investments because, thanks to the increase of prices, the debtor could repay with depreciated money. It was thought that even if for the time being the new equipment was not utilized, it had an "intrinsic value". Similarly, at that time, the savings of entrepreneurs who readily adapted their behavior to make money went into tangible assets such as iron and stones. Also, to avoid the effects of the monetary depreciation, those in German agriculture continued to buy machines. The "flight from the mark to the machine", as it was called at the time, was one of the most convenient means of defense against the depreciation of the currency. Of course, those forms of investment were excessive and eventually did badly. For example, towards the end of the inflation, farmers realized that a great part of their capital was sunk in machines that were far more numerous than they needed.⁴⁴

Those whose wealth was in fixed value monetary assets (e.g., bonds) and who did not learn to protect it by shifting into real assets or by contracting equivalent debts suffered devastating losses.

During the inflation, all companies, with rare exceptions, continually increased their capital⁴⁵ by borrowing because one of the rules of good management during these inflationary times was to take on as much debt as possible because debts could be repaid with depreciated currency. At that time, smart investors were buyers of shares, firms, securities, and merchandise—i.e., they were buyers of tangible rather than financial wealth.⁴⁶ So, there was a big shift by capitalists toward producing "goods for production" rather than "goods for consumption", and toward getting "short money" via borrowing. Of course, those who provided these goods demanded very high prices for them, so there was a more rapid increase in prices of producers' good than in those of consumers' goods.

Another reason for the high investment rates was to minimize taxes. By investing profits back in capital goods businesses could create expenses to lower their reported profits to escape onerous taxes.

At times of rapid depreciation of the mark, such as in the autumn of 1921, the stock market rose sharply.⁴⁷ Speculation in stocks was popular as a currency/inflation hedge, and became rampant at the time. A newspaper at the time wrote, "Today there is no one—from lift-boy, typist, and small landlord to

⁴¹ Bresciani-Turroni p. 188-197

⁴² Bresciani-Turroni p. 188-197

⁴³ Holtfrerich p. 205

⁴⁴ Bresciani-Turroni p. 188-197

⁴⁵ Bresciani-Turroni p. 255

⁴⁶ Bresciani-Turroni p. 294

⁴⁷ Bresciani-Turroni p. 256-7

the wealth lady in high society—who does not speculate in industrial securities and who does not study the list of official quotations as if it were a most precious letter.”⁴⁸

Because stocks were driven by the value of money/currency at the time (in 1920-1921), prices of industrial shares stopped being a good barometer of economic activity. In fact, the opposite was true—events which were unfavorable to Germany caused a fresh depreciation of the mark which caused a rise in the prices of industrial securities.⁴⁹

From mid-1920 through the end of 1921 share prices responded to the fluctuations in the value of the currency⁵⁰ and nearly tripled in inflation adjusted terms. In the autumn of 1921, the mark collapsed and a fresh spurt in exports occurred.⁵¹

Then, in the first months of 1922, there was a relative stabilization of the mark. At the time, German exports were less than German imports. That is because exports consisted mainly of primary products, so when the exchange rate fell, the beneficial effects of increased exports were offset by the negative effects of rising import prices. So mark weakness hurt sectors such as food, drink and tobacco whose outputs were sold at home but whose raw material inputs were purchased abroad. Many people at the time believed that the real stimulus that arose from the mark's decline was from the inflation that came substantially as a result of the fall in real interest rates⁵² that led to inflation hedge buying.

Germany ran a large trade deficit between 1919 and 1922, though quantifying it is not possible for that period because of the difficulty of ascertaining correct gold-mark valuations of the trade flows. Still, we know that the deficit was big. Estimates vary from 4.5 to 11 billion gold marks which equaled 12% to 28% of GDP. On top of that deficit Germany had to come up with 2.6 billion gold marks worth of cash reparations payments, which equaled 6.7% of GDP. While a small surplus might have been earned on invisible account during those years (chiefly from tourism) it was very small, so the sum of the trade deficit plus reparations represents the order of magnitude of the current account deficit which appears to be somewhere between 11% and 17% of GDP!!⁵³ Though we don't know what it was exactly, we know that it was huge.

How did this get funded? It was funded by foreign countries, mostly via individual investors who were lured by higher German interest rates. They accumulated substantial paper-mark claims on Germany throughout the 1914-1922 period. So Germany became a debtor to other countries' investors with the debt largely denominated in its own currency. The table below shows estimated Weimar Germany balance of payments numbers.

⁴⁸ Bresciani-Turroni p. 260

⁴⁹ Bresciani-Turroni p. 260

⁵⁰ Bresciani-Turroni p. 260

⁵¹ Bresciani-Turroni p. 229

⁵² Holtfrerich p. 203

⁵³ Holtfrerich p. 283

Weimar Germany Balance of Payments

	Millions of Gold Marks					% of Net National Product				
	Trade Balance	Reparations	Net Gold Balance	Service Balance	Net Capital Movement	Trade Balance	Reparations	Net Gold Balance	Service Balance	Net Capital Movement
1919	-4,131	-435	300	160	4,106	-12.1%	-1.3%	0.9%	0.5%	12.0%
1920	3	-1,236	300	160	773	0.0%	-3.3%	0.8%	0.4%	2.1%
1921	-693	-3,369	300	160	3,601	-1.7%	-8.3%	0.7%	0.4%	8.9%
1922	-2,230	-2,226	300	160	3,996	-5.3%	-5.3%	0.7%	0.4%	9.5%
1923	-5	-801	300	160	346	0.0%	-2.1%	0.8%	0.4%	0.9%
1919-1923	-7,056	-8,067	1,500	800	12,822	-3.7%	-4.2%	0.8%	0.4%	6.7%
1924	-2,444	-281	-1,255	274	2,919	-5.5%	-0.6%	-2.8%	0.6%	6.6%
1925	793	-1,057	-90	462	3,135	1.2%	-1.6%	-0.1%	0.7%	4.7%
1926	-2,960	-1,191	-568	532	607	-4.5%	-1.8%	-0.9%	0.8%	0.9%
1927	-1,311	-1,584	452	645	3,792	-1.6%	-2.0%	0.6%	0.8%	4.7%
1928	-44	-1,990	-931	672	4,123	-0.1%	-2.4%	-1.1%	0.8%	4.9%
1929	1,558	-2,337	165	712	2,304	2.0%	-2.9%	0.2%	0.9%	2.9%
1930	2,778	-1,706	120	538	490	3.9%	-2.4%	0.2%	0.7%	0.7%
1931	1,052	-988	1,653	450	-2,693	1.8%	-1.7%	2.9%	0.8%	-4.7%
1932	-2,394	-160	256	265	-513	-4.7%	-0.3%	0.5%	0.5%	-1.0%
1924-1932	-2,972	-11,294	-198	4,550	14,164	-0.5%	-1.9%	0.0%	0.8%	2.4%

It's estimated that foreigners transferred capital to Germany to the amount of 15.7 billion gold marks over the period 1914-22 as a whole. J.M. Keynes and K. Singer estimated the unrequited resource transfer into Germany between 1919 and 1922 at between eight and ten billion gold marks. So Germany essentially borrowed money from private foreigners and in turn used the money it borrowed to pay foreign government reparations—so it was essentially a Ponzi scheme.⁵⁴ While it looked like Germany was both making its reparation payments and providing investors with high returns, these payments came from borrowing money from foreigners. This is very much like the carry trade dynamic that was very popular in 2004-2007.

Foreigners also bought industrial or bank shares, houses, and, and in a lesser degree, land because prices were so low⁵⁵ and the economy gave the appearance of being prosperous because it was relatively strong due to its large borrowings. So these capital flows helped to fill the gap.

As long as foreigners were willing to invest funds in marks, they also helped to keep the German currency from being weaker than it would have otherwise been. This was the case from February 1920 to May 1921, the period when the mark was fairly stable on the foreign exchanges despite a nearly fifty percent growth of the high-powered money stock. Between 1919 and 1923 Germany transferred 2.6 billion gold marks in cash to the Allies. However, this ended up being only one third of what foreigners lost through the depreciation of their German bank balances.⁵⁶ Foreign investors in Germany, especially in German debt, ended up losing huge amounts of money. For example, foreign (non-German) losses on debt due to depreciation were estimated at between seven and eight billion gold marks.⁵⁷

In 1921 the average inflation rate was 140%, the real growth rate was 8.6%, M0 growth was 51% the mark fell by 163% and the real stock market rose by approximately 13% in US dollar terms and 75% relative to domestic prices.

⁵⁴ Holtfrerich p. 285

⁵⁵ Bresciani-Turroni p. 240

⁵⁶ Holtfrerich p. 295-6

⁵⁷ Holtfrerich p. 286

Hyperinflation

January 1922- November 1923

First Half of 1922: the Transition to Hyperinflation

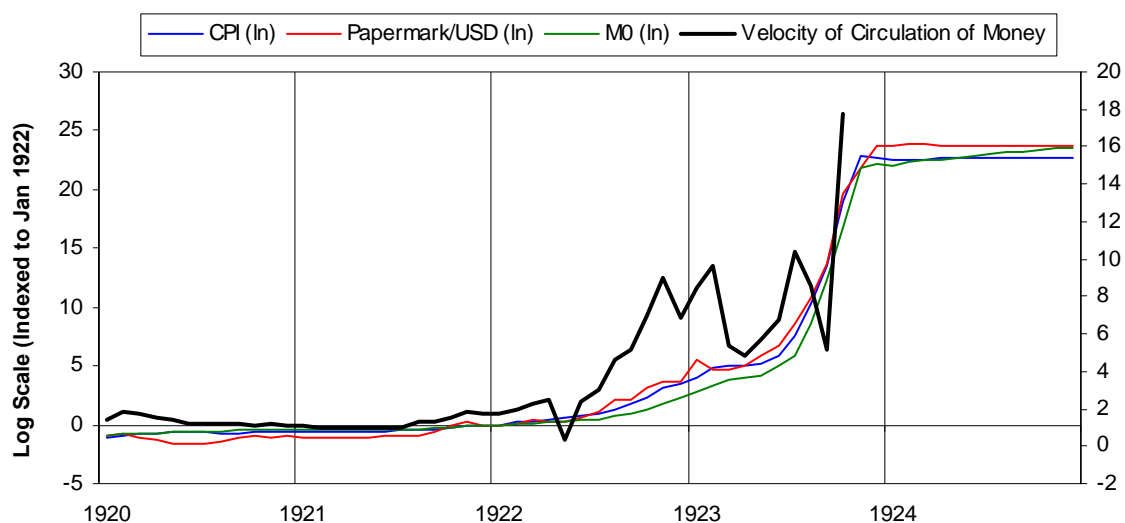
The stock market crashes; foreigners pull out of investments; mark depreciation accelerates; liquidity crisis; Reichsbank prints money and makes loans directly to the private sector...

In 1922, as the rate of price increases accelerated towards hyperinflation, there was a labor scarcity that drove the unemployment rate below one percent.

As inflation became hyperinflation, the currency weakness started to hurt the economy rather than to help it and stocks no longer seemed like a viable hedge against inflation. Also, in January the allies imposed fiscal restraints on Germany. Instead of there being a high correlation between the exchange rate of the dollar and the price of shares, there was an increasing divergence between share prices and the exchange rate.

Foreigners pulled out in 1922, which caused a liquidity crisis, which led to the central bank to print the money to ease the crisis, which led to an increase in inflation. This is a classic dynamic of debtor countries when they experience foreign capital withdrawals and economic weakness at the same time. In other words, when money leaves a country, (typically when foreign and domestic investors fear that they will lose money in debt instruments due to a credit crisis being accommodated by the central bank aggressively providing liquidity typically to fund growing budget deficits), the central bank is forced to choose between tighter money and printing money. As the economy is weak and credit is already tight, there really is no choice.⁵⁸

As shown in the chart that follows, late in 1H22, the velocity of money accelerated, the mark depreciated, inflation rose and M0 growth increased to accommodate this increased demand for cash.



Source: Global Financial Data, BW Estimates

⁵⁸ Holtfrench p. 289

In the spring of 1922, when foreigners' willingness to hold mark bank balances declined, this caused an acute liquidity crisis. Because such crises generally lead to bank and business collapses, in July 1922, the Reichsbank began to increase the supply of central bank money by stepping up its discounting of private bills. So the shift from inflation into hyper-inflation during 1922 was due to the decreased willingness of foreign and domestic investors to lend in marks, and the response of the central bank to replace this lost capital with printed currency. At this point German investors were subjected to foreign exchange controls and legislation against capital flight.⁵⁹

In January 1922, a deal was cut in which the Allies granted a reparations moratorium in exchange for a halt to Germany's printing of money and stabilizing its exchange rate. Consistent with this deal, increasing taxes and cutting expenditures were demanded as the means of balancing the Reich's budget. Also, the allies required that the Reichsbank be made autonomous, in the hope of stiffening its resistance to the Reich's demands for credit. The German side accepted these conditions.

After the ominous "Black Thursday" (December 1, 1921), shell shocked investors realized that not even the purchase of shares was a safe means of investing their savings, so stocks fell. By October 1922, the stock market index was at its lowest level since 1914.

The enormous drop in share prices that started in December 1921 caused stocks to become extremely cheap by late 1922. One example that is given is that all the share capital of Daimler was worth a value of 327 cars though it had "considerable plant and equipment, an extensive area of land, its reserves and its liquid capital, and its commercial organization developed in Germany and abroad."

In this 1921/1922 bear market, shareholders lost 75% on their investments. The table below shows equity shares against goods prices, conveying shareholders' real losses, even though nominal prices rose. As shown, the currency (i.e., mark) declined and wholesale prices increased by similar amounts, the total cost of living index rose by a bit less, shares rose by considerably less and M0 rose by even less. This reflects the fact that the increase in M0 was not the cause of the inflation and the currency depreciation, but rather was due to money supply being increased to accommodate the higher inflation and currency depreciation. In other words, a self-reinforcing inflationary cycle developed in which the increased needs for money were accommodated by the central bank printing more, which led to currency weakness, higher inflation and less capital going into credit, which created more demand for money, which the central bank accommodated.

	1922				
	Exchange Rate of the Dollar	Prices of Shares	Wholesale Prices	Cost of Living	M0
Jan-22	100	100	100	100	100
Feb-22	108	113	112	120	104
Mar-22	148	133	148	142	108
Apr-22	152	138	173	168	121
May-22	129	117	176	186	131
Jun-22	165	111	192	203	145
Jul-22	257	121	274	264	163
Aug-22	591	156	524	380	203
Sep-22	764	170	783	652	268
Oct-22	1658	277	1544	1081	389
Nov-22	3744	548	3140	2185	619
Dec-22	3956	1209	4024	3360	1,040

⁵⁹ Holtfrench p. 289

In the period of relative stabilization of the exchange, which occurred in the first months of 1922, the recovery of the national finances made some progress as the German Government adopted some financial measures to reduce expenditures. But confidence in the mark, which the event of September 1921 had profoundly shaken, could not be re-established.

After June 1922, a new wave of pessimism swept over Germany. German speculation renewed its attacks against the mark, which once again suffered a sharp fall. The number of people who positioned themselves to benefit from a continuous depreciation of the mark increased continually in Germany. Not only the great industries and the large merchant firms, but also numerous classes of investors, hoarded foreign bills or currency, which they bought with borrowed marks. Investors also wanted to escape the mark and the government's confiscatory taxes so anyone who had wealth invested it in foreign currencies, bills, securities, etc., which were easily concealed. The "flight of capital," which in Germany became a "mass phenomenon" that restrictions did not succeed in stopping, continually removed a huge amount of taxable wealth from Germany. Producers protected themselves by forcing their customers to pay in foreign money, or to pay amounts in paper marks which were computed at the rate of the day on which the producer could convert them into foreign money. The retail trader at that time tried to protect himself by fixing a basic price in gold marks or dollars which he converted into paper marks at the daily rate.

The disequilibrium between the demand and supply of foreign bills was the result of the following factors:

(a) Having little faith in the political and economic future of Germany and desiring to avoid taxes, German industrialists left abroad a part of the profits from exports; that is, the difference between the cost of production and the price which they received by selling abroad.

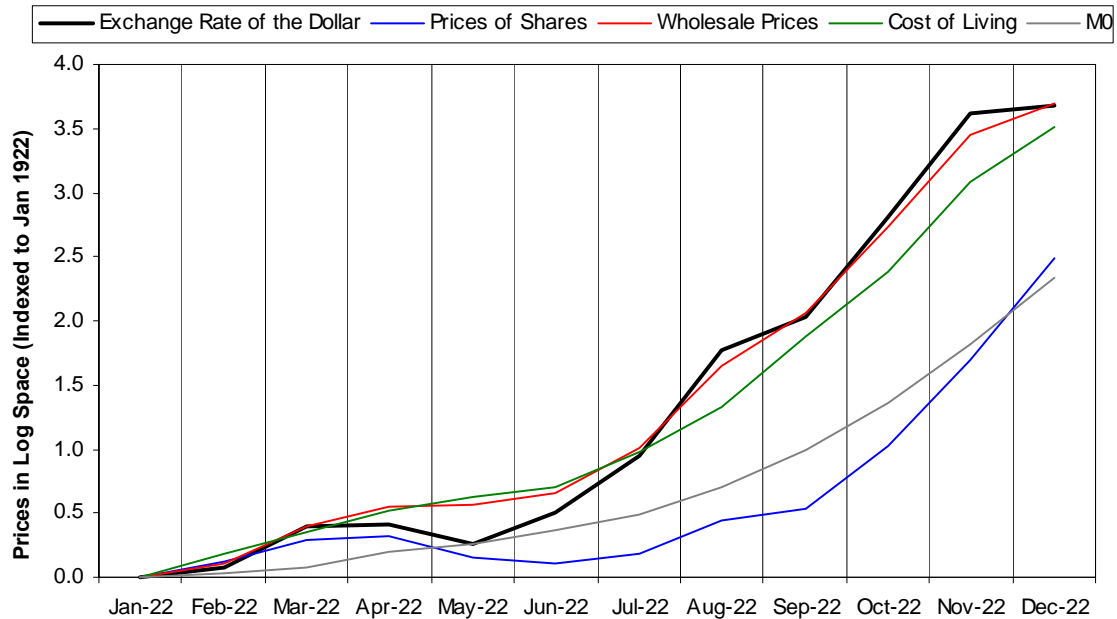
(b) A lot of the foreign money which was obtained by German sales to foreigners of securities, houses, land, etc., was either left abroad (the "flight of capital") or hoarded at home, so that it did not come on to the exchange market.

(c) The numerous laws that prohibited the buying of foreign exchange helped to lessen the supply of it because the possessor of foreign exchange would not give it up at any price, fearing that he would be unable to re-purchase it later when the need arose.

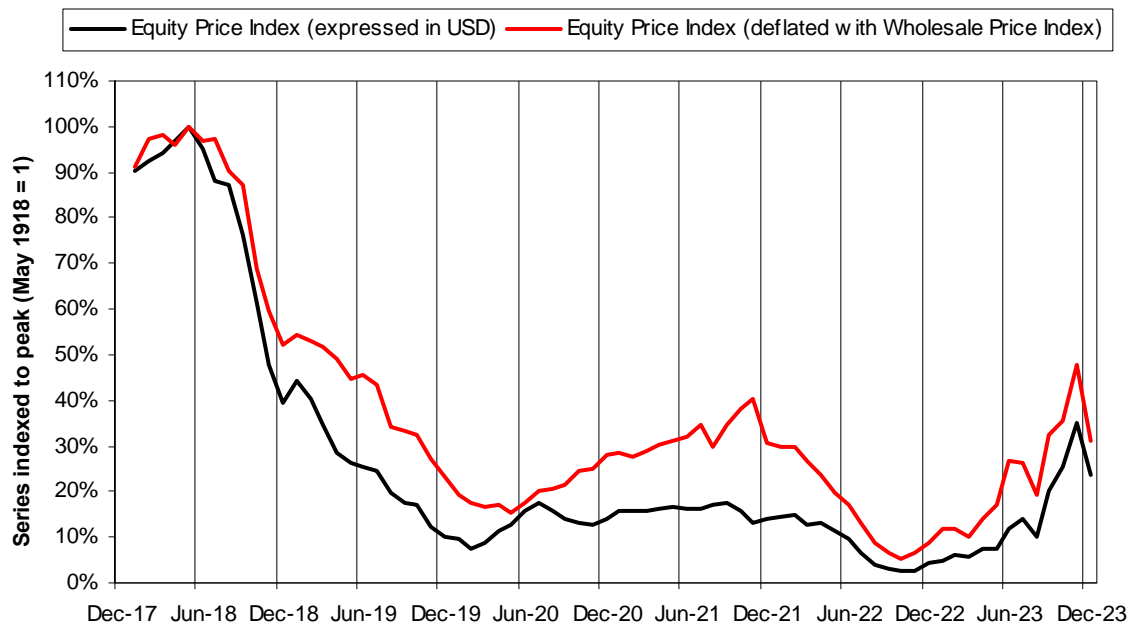
(d) A brisk demand for foreign exchange on the part of the German possessors of paper marks. More and more, as the mark depreciated the phenomenon was understood by the public and the mark ceased to be wanted as a "store of value."

(e) As depreciation progressed, the mark became unfit as a medium of exchange. For example, the practice of calculating prices in foreign money became widespread in the second half of 1922 because it was more practical.

The chart below shows how the exchange rate's depreciation outpaced wholesale price increases, which outpaced the cost of living increases, which outpaced both M0 growth and stock price increases, from May 1922 through December 1922. As explained, that was because capital flows out of marks were accommodated by money growth in a self-reinforcing inflationary spiral—and not because money growth pushed prices higher.



The price movements of stocks are shown below. As shown by either measure, the real stock price fell by 80% to 90% from the end of the war in 1918 until mid-1920. Then inflation adjusted prices doubled to quadrupled (depending on which measure you use). Then inflation adjusted prices plunged to new lows in late 1922. Then in 1923, they rose by a factor of four or five. Imagine these whipsaws and what it must have been like to navigate through them.



It was clear that Germany's reparations debt needed to be restructured so a conference to explore how to do this occurred in Cannes in January 1922. The allies demanded that Germany stabilize its public finances by bringing its revenues and expenditures toward balance as the precondition for a reparations

moratorium.⁶⁰ Finally on March 9, 1922, a compromise was concluded between the parties and authorization was given to the Government to impose a forced loan of a billion gold marks. This was executed in July 1922, when the wealthy classes were forced to make a “loan” to the government. However, they secured the right to make this loan payable in paper marks because there was no other viable means of making payment. This scared investors who were afraid of having their wealth confiscated, and because this fiscal tightening would certainly hurt economic growth. This development hurt the stock market and briefly stabilized the mark between March and May 1922.⁶¹ For example, on the Berlin foreign exchange market the dollar exchange rate averaged 284.19 marks in March, 291.00 in April, 290.11 in May and, on June 9, 289.25. But it also caused businesses to suffer from illiquidity. The demands for bank credit increased as an attempt to raise liquidity by businesses. However, since at the same time the flow of funds to the banks fell, their own liquidity declined. At the same time the structure of their deposit liabilities shifted rapidly towards shorter term because depositors didn’t want to grant longer term credit because they also were worried about their liquidity. So this increased bank liquidity risks. Banks in Germany were desperate for liquidity. In June, the Reparations Commission postponed consideration of loans to Germany until after a revision of reparations claims. That was the proverbial “straw that broke the camel’s back”—i.e., it dashed hopes of an early stabilization of the mark which destroyed foreigners’ willingness to accept payment in marks or to buy mark-denominated securities.⁶²

Once foreigners were no longer prepared to buy German securities or real estate, and/or once the depreciation of the mark had so reduced the real value of these balances that they no longer mattered, this source of refinancing dried up. Then the choice was between extreme illiquidity and printing money at an accelerating rate, and the path was again obvious – i.e., to print. Then, since no one wanted to hold on to the currency in this rapidly depreciating inflationary environment, the velocity of money accelerated.⁶³ A rapidly accelerating velocity with rapid growth in the money supply is a classic sign of an inflationary deleveraging. This point was reached in spring 1922. At this point the mark and domestic prices entered the hyperinflationary phase.

The economy’s demand for credit intensified as price and cost increases accelerated and the central bank satisfied them by printing money as credit growth collapsed. In June and July 1922, the supply of bank credit reached a standstill as saving through this medium dried up. In fact, savings banks actually experienced a decline in the nominal value of their savings deposits during July as investors did not see savings deposits as a viable option. The Reichsbank tried to encourage commercial bills as a way of supplying business with the liquidity which it did by discounting such bills and by a propaganda campaign in the press.

With credit from banks no longer available to businesses, the Reichsbank was faced with the classic choice all central banks in this situation face—to either allow illiquidity to cause businesses to collapse or to allow businesses to have direct access to the central bank’s credit facilities. The latter alternative was not necessarily more inflationary than the former because the central bank giving money to businesses directly wasn’t much different from the central bank giving it to the banks to give to the businesses. And, there was no doubt that the liquidity had to be provided. In fact, since evidence of illiquidity intensified the domestic and foreign flight from the currency as investors wanted to run from default risks, it was argued that providing the liquidity to businesses directly (because the banks were ill-equipped to provide it) would help to stabilize the situation. At the time, the higher inflation rate raised government expenditures faster than tax revenues. As long as the rising domestic price level kept raising the paper mark value of government domestic expenditures, and as long as the falling exchange rate kept raising the paper mark value of reparations obligations, and as long as the Reichsbank

⁶⁰ Holtfrerich p. 77-78

⁶¹ Holtfrerich p. 77-78

⁶² Holtfrerich p. 77-78

⁶³ Holtfrerich p. 77-78

continued to finance the Reich budget deficit without restraint, there was no liquidity crisis to have a counterinflationary effect, so the spiral accelerated.⁶⁴

There was some talk about the allies relieving Germany of some of the reparations burden. But on June 10, 1922 the mark rate broke when the Reparations Commission chaired by J.P. Morgan made public its refusal to recommend long-term foreign lending to Germany until her reparation liabilities had been adjusted to her capacity to pay.⁶⁵ Then depreciation turned into hyperinflation.

It was impossible to squeeze each year from the German people two billion gold marks, plus a sum equivalent to 26% of the value of exports⁶⁶, so something had to be done. The British representative on the Reparations Commission proposed something similar to the Brady Restructuring of debt in 1991—i.e., that the German government should make its payment in the form of treasury certificates with a five year term and the Allied governments should place these on the market, adding their own guarantee to them. In this way Germany would defer its 1923 and 1924 reparation payments for five years.⁶⁷ In July 1922 reparation payments in foreign exchange were suspended. In spite of this, the depreciation of the German exchange continued.⁶⁸

⁶⁴ Holtfrerich p. 77-78

⁶⁵ Holtfrerich p. 304-6

⁶⁶ Bresciani-Turroni p. 80-82

⁶⁷ Holtfrerich p. 304-6

⁶⁸ Bresciani-Turroni p. 95-98

Second Half of 1922

Liquidity crisis, Reichsbank policy, and monetary factors in the transition to hyperinflation...

The spiral accelerated in 2H1922. The sudden rise in prices caused an intense demand for cash. At the same time the government's need of money increased rapidly. Private banks, faced with withdrawals, found it practically impossible to meet the demand for money, so it had to ration the cashing of checks presented to them. On some days, they had to suspend payments or open their offices for a few hours only. Naturally this caused panic, especially among the industrial and commercial classes who were no longer in a position to fulfill their contracts because of their cash shortages. Private checks were refused because it became known that the banks would be unable to cash them. Business stopped. The panic spread to the working classes when they learned that their employers did not have the cash with which to pay their wages.⁶⁹

As credit was non-existent, money had to be produced to replace it and, as rapid money growth caused inflation, people didn't want to hold on to cash, so the velocity accelerated as cash was exchanged like a hot potato. As one economist on the time described it, "It was clear then that to stop the printing press would mean that in a very short time the entire public, and above all the Reich, could no longer pay merchants, employees, or workers. In a few weeks, besides the printing of notes, factories, mines, railways and post office, national and local government, in short, all national and economic life would be stopped."⁷⁰

The government increased salaries in proportion to the depreciation of the mark, and employers in turn granted continual increases in wages, to avoid disputes, on the condition that they could raise the prices of their products. As is normal in such cases of prices and wage indexing, a vicious circle was established: the exchange depreciated; internal prices rose; note-issues were increased; the increase of the quantity of paper money lowered once more the value of the mark in terms of gold; prices rose once more; and so on.⁷¹

Meanwhile, banks continued to have a shortage of cash to meet withdrawals.⁷²

However, as alternative forms of money emerged, and the velocity of money accelerated, the real supply of money fell. Towards the end of 1922 this real value of currency in circulation had become less than the value of the gold reserve of the Reichsbank. Similarly, in certain other countries, where the legal currency in circulation fell to very low levels, the gold cover of the notes (the gold being valued according to the foreign exchange), was much greater than in countries where the currency depreciation had not gone to such lengths.

During 1922, the management of the Reichsbank tenaciously refused to allow the gold reserve to be used for monetary reform.⁷³ Throughout this period the Reichsbank continued to finance government deficits by accepting Reich treasury bills. In fact, as the demand for Treasury bills shrank, the percentage held outside the Reichsbank fell, signaling the final failures of all credit instruments as a storehold of wealth, hence the hyperinflation.⁷⁴

The chart below shows how the role of private banks fell from 1920 to 1923 as banks were faced with liquidity problems and the Reichsbank replaced it by lending directly. Until the summer of 1922 the Reichsbank exercised, almost exclusively, the function of a State bank, discounting Treasury bills

⁶⁹ Bresciani-Turroni p. 80-82

⁷⁰ Bresciani-Turroni p. 80-82

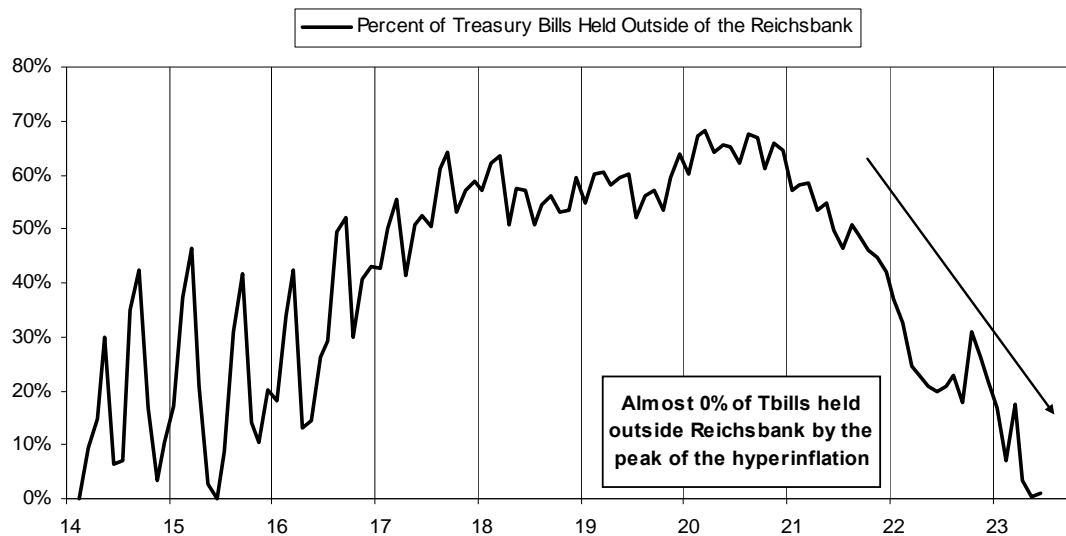
⁷¹ Bresciani-Turroni p. 80-82

⁷² Bresciani-Turroni p. 80-82

⁷³ Bresciani-Turroni p. 46

⁷⁴ Holtfrerich p. 68

presented to it. The increasing needs of trade were satisfied by private banks which could discount directly at the Reichsbank the Treasury bills in which they had largely invested the money of depositors during and after the war.⁷⁵

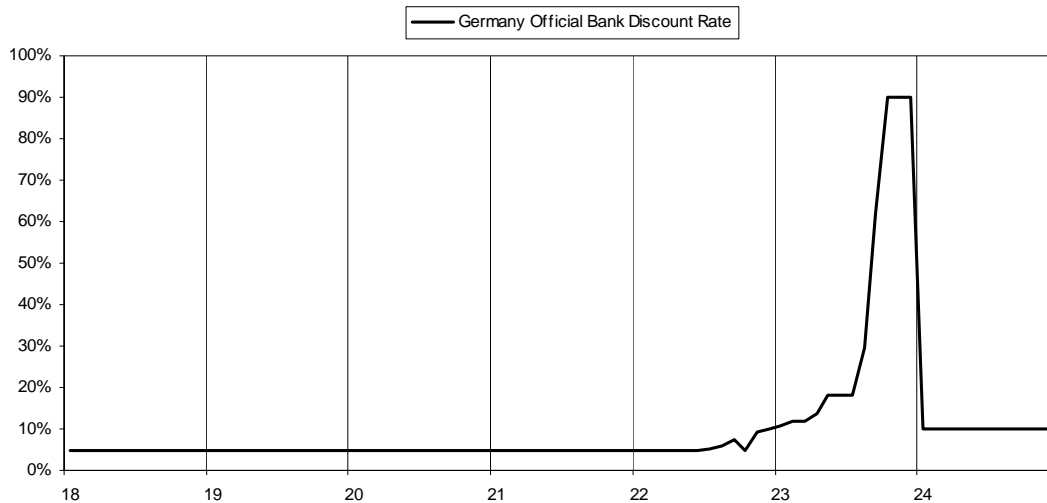


As mentioned, in July of 1922 the Reichsbank began to supply liquidity to businesses—i.e., the Reichsbank allowed big businesses to borrow via commercial bills, which the Reichsbank discounted at a much lower rate than the rate of the depreciation of the mark and even lower than the rates charged by private banks, so essentially a subsidized rate. As a result, these companies could borrow on terms that were essentially the same as the Reich. They even had direct access to the Reichsbank. These moves were quite similar to recent moves by the Fed and motivated by similar reasons.

The official discount rate in Germany remained fixed at 5% from 1915 until July 1922, so as inflation rose, real interest rates fell to very negative levels. The discount rate was raised to 6% at the end of July, to 7% at the end of August, to 8% on September 21, to 10% on November 13, to 12% on January 18, 1923, and to 18% in the last week of April 1923. However, these rates of interest were still all much less than the rate of depreciation in the value of money so they didn't dissuade the borrowing and other shorting of marks. So inflation hedge assets and other currencies continued to rise. For example, a gold mark was worth 160 paper marks at the end of July 1922, 411 paper marks at the end of August, 1,822 at the end of November, and 7,100 at the end of April 1923.⁷⁶ However, as conveyed in the following chart, these increases in interest rates were the beginning of a major increase in rates that occurred in 1923.

⁷⁵ Bresciani-Turroni p. 76

⁷⁶ Bresciani-Turroni p. 76



While the liquidity of the banking system was high during the inflation since money itself was generally so plentiful, in 1922 this changed when a crisis of liquidity at the banks accompanied hyperinflation. See the table that follows. Note how deposits as a percent of the monetary base fell sharply and continuously at banks except for the Joint Stock banks in Berlin.

Deposits as % of the Monetary Base

	Joint Stock Credit Banks (Berlin)	Joint Stock Credit Banks (Provincial)	Mortgage Banks	Savings Banks	Co-op. Credit Societies	Postal giro Accounts	Total	Total where we have complete data
	1	2	3	4	5	6	7	1+4+6
1913	71%	62%	12%	273%	66%	3%	487%	347%
1914	52%	43%	9%	202%	46%	3%	355%	257%
1915	58%	41%	9%	171%	45%	3%	326%	231%
1916	59%	38%	6%	135%	39%	3%	279%	197%
1917	61%	32%	5%	103%	31%	3%	236%	167%
1918	45%	24%	5%	73%	24%	3%	173%	121%
1919	62%	24%	4%	58%	19%	5%	171%	125%
1920	63%	22%	4%	45%	-	8%	-	116%
1921	78%	-	-	34%	-	5%	-	116%
1922	96%	-	-	10%	-	10%	-	116%

As inflation worsened, bank depositors understandably wanted to be able to get their funds on short notice so they shortened their lending to banks. This is reflected in the following tables⁷⁷ which show how over 90% of bank deposits were for seven days or less in 1922-1923 and how over 80% of deposits moved to short-term checking accounts rather than longer-term savings. During inflationary deleveragings, average maturities of debt always fall, so this is typical.

⁷⁷ Holtfrerich p. 58

Deposits at Berlin "Great Banks" by Required Notice of Withdrawal
% of Total Deposits

	Up to 7 days (current account)	7 days - 3 months	above 3 months
1913	56.8%	29.8%	13.3%
...	-	-	-
1918	60.6%	26.1%	13.1%
1919	78.1%	14.0%	7.8%
1920	76.7%	15.1%	8.2%
1921	77.1%	15.0%	7.9%
1922	93.0%	4.9%	2.1%
1923	92.6%	3.3%	4.0%
1924	57.5%	40.0%	2.5%
1925	51.5%	44.5%	3.9%

Current Account deposits as a Percentage of Total Deposits at Prussian Savings Banks	
1913	0.5%
1914	1.0%
1915	1.7%
1916	2.5%
1917	4.1%
1918	4.7%
1919	5.8%
1920	10.1%
1921	14.9%
1922	83.0%
1923	83.7%
1924	5.1%
1925	0.3%

Note: Prussian savings banks held two-thirds of total German savings banks deposits.

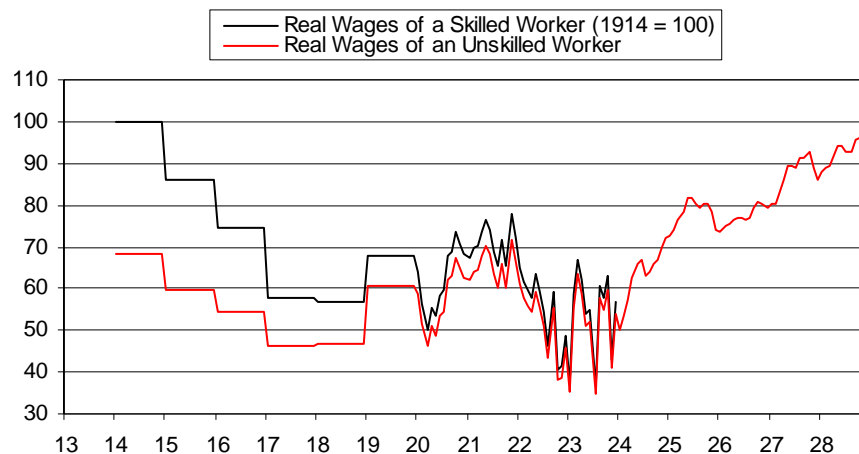
Also, because it had become impractical to transact in marks, foreign currency (especially dollars) replaced the mark as the means of settlement of large transactions, though small transactions continued to be in marks. The economic situation in October 1922, was described by the newspaper *Frankfurter Zeitung*: "German economic life is now dominated by a struggle over the survival of the mark: is it to remain the German currency, or is it doomed to extinction? During the past few months foreign currencies have replaced it as units of account in domestic transactions to a wholly unforeseen extent. The habit of reckoning in dollars, especially, has established itself, not only in firms' internal accounting practice, but above all as the method of price quotation in trade, industry and agriculture."⁷⁸ This discussion of the prospects for the mark concludes by emphasizing the degree to which foreign currencies also served as "stores of value", used to protect the real value of money balances.

On October 12, 1922, strictly enforced limits were put on FX purchases making transactions impractical, essentially eliminating foreign currencies as an alternative. Investors who were investing their available resources in foreign exchange to escape inflation once again had to turn to the share market. The shift from foreign money to stocks arising from the decree of October 12 was obvious in that it caused a

⁷⁸ Holtfrerich p. 74

heavy fall in the supply of foreign exchange⁷⁹ and a rise in stock prices suddenly in the second half of October. This dynamic was similar to the frenzied bull speculation in the autumn of 1921.

One of the most important drivers of hyperinflation in the second half of 1922 was wage indexation because it produced a wage-cost spiral. In the second half of 1922, the resistance of the workers to reductions in their real wages increased. The working classes sought to re-establish the earlier level of real wages and to keep them stable, so wages were often indexed to inflation. As a result, the profits which entrepreneurs⁸⁰ derived from real wages falling evaporated. As the chart below shows, the real wage declines that occurred in 1921 to late 1922, ended in late 1922 at levels that were down 50% to 75% from pre-war levels, and shot up in 1923.



While the inflation had a devastating effect on the wealth of debt and equity holders and it slashed real wages to workers, it generally helped agile entrepreneurs and the owners of material means of production and strengthened the positions of industrial capitalists.⁸¹ But it was terrible for productivity. For example, the entrepreneur, instead of concentrating his attention on improving the product and reducing his costs often became a speculator in goods and foreign exchanges.

1923

The Occupation of the Ruhr

To make matters worse, on January 11, 1923 France and Belgium occupied Germany's Ruhr valley to capture the German coal, iron and steel production in the Ruhr area. This was supposedly done to gain the money that Germany owed in reparations. France had the iron ore and Germany had coal to make steel, so there had been a history of tensions related to their trade that exacerbated the problem. This aggressive act was a classic case of a debtor/creditor/trading relationship turning antagonistic. This occupation caused the stock market and the currency to plunge. But the currency plunge and the hyperinflation became so severe that they drove nominal stock prices up. The stock index number of shares increased from 8,981 in December 1922 to 22,400 in January 1923, and to 45,200 in February.⁸² It's a good example of how a bearish development can be so negative for a country's currency that it can cause nominal stock prices to rise.

⁷⁹ Bresciani-Turroni p. 270-1

⁸⁰ Bresciani-Turroni p. 366-7

⁸¹ Bresciani-Turroni p. 286

⁸² Bresciani-Turroni p. 270

A pause in the mark's decline occurred when the Reichsbank began its policy of supporting the mark by imposing an artificial exchange rate that linked the mark to the dollar.⁸³ It did this by issuing its first dollar-denominated treasury certificates. The dollars raised were to be employed by the Reichsbank in an attempt to stabilize the exchange rate. The Reichsbank pledged abroad a good part of the one billion gold marks' worth of gold reserves with which it had started 1923 in order to obtain the requisite foreign exchange for the support action. This "stabilization action" succeeded between February and April. But that policy finished unsuccessfully, as all fixed exchange rates that are pegged inconsistent with the fundamentals inevitably do. That is because the Reich's floating debt rose from 2.1 to 6.6 trillion marks between the end of January and March and the acquiring of further foreign credits reduced Germany's gold reserves to under 500 million gold marks (by the end of 1923). German also had silver stocks—which were not explicitly shown in the Bank's Statements—largely lost in the same period. So in the second half of April 1923, the mark fell again.

It was estimated that this early 1923 failed currency defense cost more than three hundred million gold marks. This defense was abandoned and the dollar rate soared.

There was also a very big redistribution of wealth, from high income earners to low income earners. The next table shows how the distribution of wealth shifted from 1913 to 1923. It conveys that it was not the middle income earners and moderate wealth holders who were affected the most severely by the postwar redistributive processes; it was exclusively the upper income groups. Their losses had less to do with taxes (which did have an adverse affect because they were based on the individual's ability to pay) than with the effect of inflation on the value of the capital assets the wealthy held to store their wealth. The table and charts below show this redistribution of wealth.

Wealth Category in Gold Marks	Dec-1913		Dec-1923	
	No. of Taxpayers (%)	Net Wealth (%)	No. of Taxpayers (%)	Net Wealth (%)
above 10000 to 20000	34.2%	7.4%	47.5%	14.9%
above 20000 to 30000	20.4%	7.4%	19.4%	10.5%
above 30000 to 50000	19.5%	11.0%	15.7%	13.3%
above 50000 to 100000	14.7%	14.9%	10.6%	16.1%
above 100000 to 500000	9.8%	27.9%	6.1%	25.6%
above 500000 to 1000000	0.9%	9.5%	0.5%	7.4%
above 1000000 to 3000000	0.5%	11.1%	0.2%	7.3%
above 3000000 to 10000000	0.1%	6.5%	0.0%	3.5%
above 10000000	0.0%	4.4%	0.0%	1.5%
Total	100%	100%	100%	100%

Of course, all holders of financial wealth suffered, in varying degrees. The table that follows shows estimates of how much by wealth category.

⁸³ Bresciani-Turroni p. 271

Wealth Category in Gold Marks	% Reduction from 1913-1923	
	No. of Taxpayers (%)	Net Wealth (%)
above 10000 to 20000	-18.9%	-21.7%
above 20000 to 30000	-44.4%	-44.9%
above 30000 to 50000	-53.0%	-53.2%
above 50000 to 100000	-57.8%	-58.0%
above 100000 to 500000	-63.6%	-64.4%
above 500000 to 1000000	-69.4%	-69.7%
above 1000000 to 3000000	-73.8%	-74.6%
above 3000000 to 10000000	-78.5%	-79.2%
above 10000000	-85.3%	-86.4%
Total	-41.6%	-61.2%

The first table above indicates that at December 31, 1923, taxable wealth was more equally distributed than it had been ten years earlier. It also shows that the two lowest wealth classes virtually doubled their share of aggregate wealth, the middle categories increased their share of the total, and the classes above these fell. The second table also indicates that over this ten year period the aggregate value of wealth declined by 61.2%, which was much greater than the 25-30% fall in real national income between 1913 and 1923. That is because (a) the income from capital and (b) the value of capital became a smaller proportion of national income.

The period of most acute and widespread poverty was 1923. Not coincidentally, it was also the year of the highest crime rate. Plunderings and riots became common. To cope with the social unrest which the collapse of the mark had caused, the Reich declared a state of siege on September 27, 1923.⁸⁴

By mid-1923, people were eager for some cash-like vehicle to hold their liquidity in. New forms of credit were invented and desperation made some of them work. In the summer of 1923, when the scarcity of money was most acute, the Berlin banks decided to issue a kind of check which was to be acceptable at their branches and which was also willingly accepted by the public, who were desirous of having any means of payment whatever. Private firms, industrial companies, combines, and public authorities issued all kinds of provisional money. This was very similar to what happened in other inflationary deleveragings like when the banks became dysfunctional such as in Argentina.

In August 1923, the value of foreign currencies employed in transactions within Germany was almost ten times as great as the value of the paper-mark circulation.⁸⁵ So the currency was essentially defunct and all debt denominated in it was extinguished—i.e., marks no longer served a meaningful purpose of either a medium of exchange and as a store of wealth.

In an attempt to satisfy the desperate demand for value-maintaining means of payment, the Reich brought out a five hundred million gold mark loan in August 1923. It was issued in notes of small denomination so that they could be used as means of payment. To support the value of these, the Reich also issued exchange-rate linked treasury certificates—i.e., certificates whose value was effectively denominated in dollars pegged to the dollar exchange rate. The Reich also permitted provinces, municipalities, chambers of commerce and large business firms to issue emergency money denominated in gold marks. Also, some companies borrowed by issuing “loans at a stable value” which were tied to what they produced—e.g., rye farmers issue rye-backed debt.

⁸⁴ Holtfreich p. 312

⁸⁵ Holtfreich p. 304

Because it was impossible to do accounting for, and convey the meaning of, money because its value changed so fast, the accounting system was changed and the practice of valuing things in gold became generally adopted.

Naturally, there was the almost complete disappearance of bankruptcies in the advanced phases of the inflationary monetary depreciation because debts were easily paid off with paper money.

During the hyperinflation the prices of equity shares generally were determined by investors on the basis of the “intrinsic value” of the companies rather than as multiples on earnings. In the last phase of the inflation (i.e. in 1923), there was a tendency to overvalue shares. Then, after the stabilization of the mark, the prices of shares declined rapidly. The average quotation for December 1923 was 26.9 (1913 = 100).

Final Stages of Inflation...

In the summer of 1923, when the mark was losing value rapidly everybody tried to get rid of marks as soon as they received them. They also tried to short them by borrowing them and converting them into foreign exchange and hard assets. The increase in the velocity of the money in circulation was the expression of the fact that the population lived from day to day without keeping any cash reserves. For example, in Germany it was rare for a retailer or workman to have cash balances that were greater than necessary for two or three days' needs.⁸⁶ The risk of transactions affected by payment in paper marks became so great in the summer of 1923 that many producers and merchants preferred not to sell at all rather than to accept money for goods. Some just made their prices so high that people refused to buy the merchandise. In fact, prices in October and November of 1923 were so high that a stoppage of sales was the norm. Business and great shops were deserted. As a result, the personnel who worked in these stores were let go or given less work hours. The drop in sales resulted in a fall in working capital, so production ceased and unemployment increased.

The depreciation of the currency in the early stages stimulated production, but in the late phase it acted as a serious obstacle to production because of the chaos it caused. When the currency depreciation and inflation caused economic collapse instead of economic support, stabilization of the currency became essential.

Ironically, because of both the acceleration in the velocity of money and because it became dysfunctional as a medium of exchange, in August 1923 the value of the paper money in circulation declined to scarcely 80 million gold marks.⁸⁷ By this time, the total circulation of “value-maintaining paper money” had grown in excess of the value of paper marks and of various non-value-maintaining moneys in circulation during the final phase of the inflation.

In the summer of 1923, the price of the dollar jumped in the course of a few days to 1, 2, and then 5 million paper marks⁸⁸. In the days preceding the monetary reform the official quotations of the dollar at Berlin were as follows:

Various official quotes in Berlin for the papermark / USD:	
Nov 13 1923	840 bln
Nov 14 1923	1,260 bln
Nov 15 1923	2,520 bln
Nov 20 1923	4,200 bln

⁸⁶ Bresciani-Turroni p.166

⁸⁷ Bresciani-Turroni p. 174

⁸⁸ Bresciani-Turroni p. 272

In the black foreign market the dollar reached much higher rates. The rates were more than double these levels.

<i>In the open foreign market, the following quotes were seen:</i>	
Nov 13 1923	3,900 bln
Nov 15 1923	5,800 bln
Nov 17 1923	6,700 bln
Nov 20 1923	11,700 bln

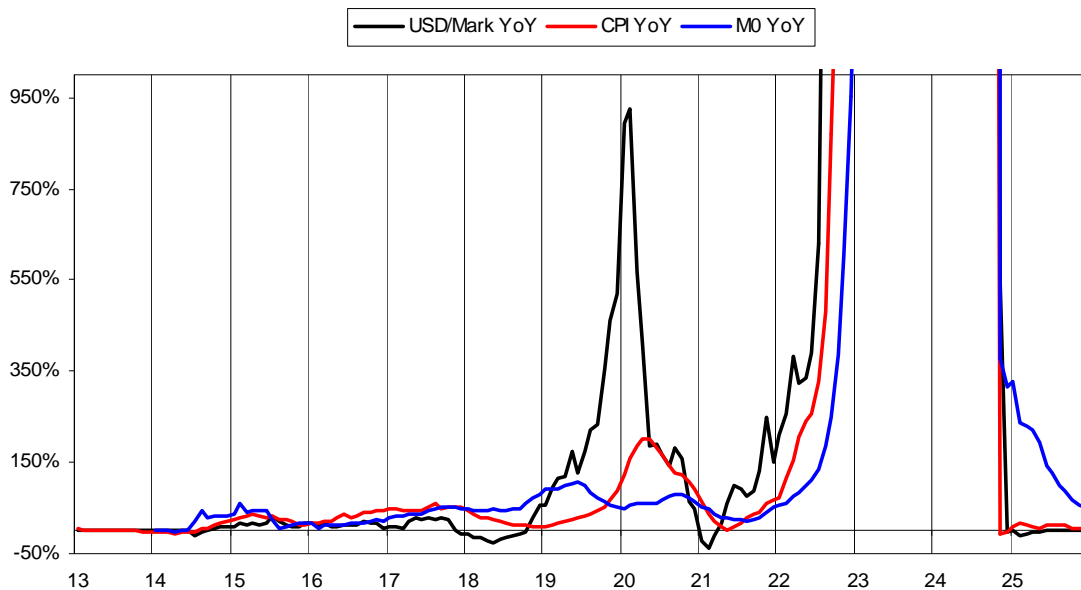
The table that follows shows indices for internal prices, imported prices, currency in circulation, floating rate debt outstanding, and the mark/dollar exchange rate. We put it in the table form because it is difficult to read in chart form. As shown, the exchange rate changed the most and changes in it typically led to changes in other things.

Price Indices

(Oct 1918 = 100)

	Internal Prices	Prices of Imported Goods	Circulation	Floating Debt	Dollar Rate
Oct-18	100	100	100	100	100
Nov-18	100	100	110	106	114
Dec-18	99	131	124	115	126
Jan-19	108	135	129	122	124
Feb-19	112	135	132	128	138
Mar-19	114	135	139	132	157
Apr-19	120	142	144	139	191
May-19	125	144	150	146	195
Jun-19	130	151	160	152	213
Jul-19	143	166	157	158	229
Aug-19	177	201	153	162	285
Sep-19	195	289	158	167	365
Oct-19	211	384	163	173	407
Nov-19	236	543	170	177	581
Dec-19	365	705	188	179	710
Jan-20	402	1,276	191	183	981
Feb-20	506	1,899	204	185	1,503
Mar-20	522	1,876	223	190	1,272
Apr-20	499	1,608	234	197	905
May-20	541	1,207	241	211	705
Jun-20	517	989	256	235	594
Jul-20	527	887	261	255	598
Aug-20	557	953	271	268	725
Sep-20	566	1,040	284	287	879
Oct-20	541	1,088	290	292	1,034
Nov-20	560	1,103	290	305	1,171
Dec-20	553	945	306	317	1,106
Jan-21	570	852	295	322	985
Feb-21	552	776	300	336	930
Mar-21	536	754	301	345	947
Apr-21	536	729	304	358	964
May-21	530	712	306	366	944
Jun-21	552	745	318	384	1,051
Jul-21	572	804	324	396	1,162
Aug-21	800	905	333	421	1,277
Sep-21	817	1,278	355	436	1,590
Oct-21	935	1,676	373	452	2,276
Nov-21	1,241	2,647	409	470	3,987
Dec-21	1,326	2,371	460	512	2,909
Jan-22	1,415	2,372	466	531	2,908
Feb-22	1,574	2,711	483	545	3,152
Mar-22	2,103	3,488	503	564	4,309
Apr-22	2,503	3,834	564	583	4,412
May-22	2,521	4,028	608	600	4,399
Jun-22	2,733	4,431	677	612	4,814
Jul-22	3,890	6,476	761	639	7,478
Aug-22	6,886	15,155	943	690	17,200
Sep-22	10,737	20,142	1,248	932	22,211
Oct-22	20,736	42,227	1,811	1,252	48,236
Nov-22	39,604	100,062	2,884	1,737	108,886
Dec-22	53,337	113,727	4,847	3,098	115,093
Jan-23	99,321	221,496	7,487	4,318	272,515
Feb-23	205,411	411,193	13,246	7,441	423,355
Mar-23	187,166	318,644	20,748	13,687	321,349
Apr-23	197,903	349,018	24,728	17,506	370,856
May-23	294,462	635,798	32,131	21,307	722,792
Jun-23	707,813	1,456,952	65,106	45,660	1,667,768

Note that in the 1921-23 hyperinflation upswing, the mark's decline led the increase in inflation, and the increase in inflation led the increase in M0 growth.



Source: Global Financial Data, BW Estimates

The evidence shows that the cause of this hyperinflation was described at the time. The following are good descriptions of this dynamic:

Helfferrich (economist)

"The depreciation of the German mark in terms of foreign currencies was caused by the excessive burdens thrust on to Germany and by the policy of violence adopted by France; the increase of the prices of all imported goods was caused by the depreciation of the exchanges; then followed the general increase of internal prices and of wages, the increased need for means of circulation on the part of the public and of the State, greater demands on the Reichsbank by private business and the State and the increase of the paper mark issues. Contrary to the widely held conception, *not inflation but the depreciation of the mark was the beginning of this chain of cause and effect*; inflation is not the cause of the increase of prices and of the depreciation of the mark; but the depreciation of the mark is the cause of the increase of prices and of the paper mark issues. The decomposition of the German monetary system has been the primary and decisive cause of the financial collapse."⁸⁹

'Authoritative Writer' from German Press

"Since the summer of 1921 the foreign exchange rate has lost all connection with the internal inflation. The increase of the floating debt, which represents the creation by the State of new purchasing-power, follows at some distance the depreciation of the mark...Furthermore, the level of internal prices is not determined by the paper inflation or credit inflation, but exclusively by the depreciation of the mark in terms of foreign currencies...To tell the truth, the astonishing thing is not the great quantity but the small quantity of money which circulates in Germany, a quantity extraordinarily small from a relative point of view; even more surprising is it that the floating debt has not increased much more rapidly."⁹⁰

⁸⁹ Bresciani-Turroni p. 42-5

⁹⁰ Bresciani-Turroni p. 42-5

Government Report

"The fundamental cause of the dislocation of the German monetary system is the disequilibrium of the balance of payments. The disturbance of the national finances and the inflation are in their turn the consequences of the depreciation of the currency. The depreciation of the currency upset the Budget balance, and determined with an *inevitable necessity* a divergence between income and expenditure, which provoked the upheaval."

Our examinations of other cases of hyperinflationary periods show that these causes are typical—i.e., that countries with large debts, especially large foreign debts, high dependencies on foreign capital, credit problems and large and growing budget deficits, are much more prone to experience capital flight and currency depreciation, faster monetary base growth, and high inflation rates than countries with balance of payments surpluses.⁹¹

Stabilization: From Late 1923 Onward...

Now that we've seen how this inflationary deleveraging came about, let's see how it was extinguished. By late 1923 virtually all debts were extinguished by inflation, and there was a great deal of betting on inflation and being short the mark.

Starting in August 1923 there was a feverish attempt to devise a new currency or stabilize the old one. The plans for stabilizing the currency fell into three groups.

(1) Plans to use taxation policy, a ban on credit, and restrictions on foreign-currency holdings. Along these lines, in August 1923 the government introduced an "index-linked" tax assessment, it issued "value-maintaining loans", it sought to acquire foreign-currency holdings, and it urged banks and the Reichsbank to offer their clients gold-mark accounts, i.e., accounts in which the borrower promises to calculate the value based on the price of gold.

(2) Plans to return to a gold currency.

(3) Plans to secure the currency by mortgaging of land or commodities.⁹²

On August 14, 1923, the government passed a law that created a Gold Loan of 500 million gold marks. This law contained only this promise: "In order to guarantee the payment of interest and the redemption of the loan of 500 million gold marks, the Government of the Reich is authorized, if the ordinary receipts do not provide sufficient cover, to raise supplements to the tax on capital..." The word "wert-bestandig" which meant "stable-value" was written on the new paper money. And the public accepted and hoarded these notes. In other word, the gold loans seemed to be believed and thus created a vehicle for financial savings. The German monetary law of August 30, 1924, fixed the conversion rate of the new Reichsmark (whose weight in fine gold was equal to that of the old mark) at *one trillion* paper marks.⁹³

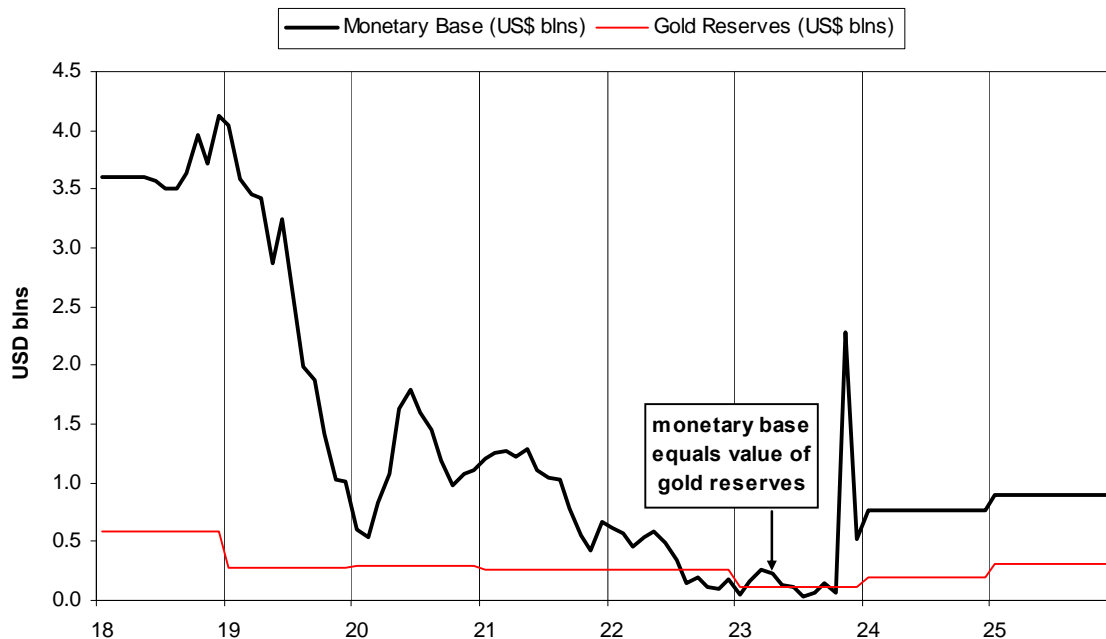
Creating a new currency with very hard backing, and phasing out the old currency, is the most classic path that countries that are suffering from inflationary deleveragings follow in order to end them. On October 15, a decree was issued which instituted a new money, the rentenmark, to begin from November 15, 1923. The key was to issue very little of it and to have it be backed by gold. At this time

⁹¹ Bresciani-Turroni p. 42-5

⁹² Holtfreich p. 314

⁹³ Bresciani-Turroni p. 344-5

the money supply was so reduced by the abandonment of marks—e.g., the total amount of floating debt was only 200 million gold marks—that creating a real backing was possible. Towards the end of October 1923 the total sum of paper marks issued in Germany equaled scarcely 150 million gold marks, so they were essentially out of circulation. Going to new currencies with hard currency on gold backings is a classic step in inflationary deleveragings to bring about stability. The chart below shows the monetary base in dollars fell to equal Germany's gold reserves in 1923.



The government chose to make the gold value of the new currency identical to that of the prewar mark. Also the government imposed a credit limit of 1.2 billion marks on the new bank's dealings with the private sector—not least in order not to make the Reichsbank wholly redundant—and it reduced the ceiling on credit to the Reich to 1.2 billion marks as well. The “Currency Bank” became the “Rentenbank” and the “rye mark” became the “rentenmark”.⁹⁴ The “rentenmark experiment”—i.e., this move to a new, gold-backed currency—met with astounding success. Since the new currency was identical to the former national gold currency, and the government did almost everything in its power to ensure that its value remained stable, it maintained its value. The new currency was almost completely stable from the outset.

The old currency lost its value and disappeared. The dollar was worth 160,000 paper marks on July 3, 1923, on the Berlin Bourse, 13 million on September 4, and 420 billion on November 20. From then onwards the exchange rate of the dollar remained stable; so also did the ratio of the value between the new rentenmark and the dollar (1 dollar = 4.2 rentenmarks). During 1924 the German and Austrian exchanges were the most stable in Europe.⁹⁵

It was not the decree of the October 15, 1923, but the monetary law of August 30, 1924 (which became effective on October 11, 1924) which sanctioned the legal reduction of the value of the paper mark.⁹⁶

“The miracle of the rentenmark” became a common expression because the improvement occurred so rapidly that people could not easily find an explanation for it.⁹⁷

⁹⁴ Holtfrerich p.316

⁹⁵ Bresciani-Turroni p. 334-5

⁹⁶ Bresciani-Turroni p. 334-5

Some economists attribute the success of the German monetary reform to discontinuing the issuance of paper marks, strict limitations of the quantity of the new money, and the calling-in of paper marks in proportion to the issues of new money. Also, on November 16 the discounting of Treasury bills by the Reichsbank was stopped. However, the issuing of paper money for commercial purposes continued after November 16. At that date the quantity of paper marks in circulation amount to 93 million trillion. By November 30 it had already passed 400 million trillion, it reached 496 million trillion on December 31, 690 million trillion on March 31, 1924, 927 million trillion on May 31 and 1,211 million trillion on July 31. At the same time the issues of new rentenmarks increased, and their circulation amounted to 501 million on November 30, 1923, 1,049 million on December 31, 1,760 million on March 31, 1924, and 1,803 million on July 31.⁹⁸

So the introduction of the new currency rentenmark occurred with old marks still in circulation so it was accompanied "by the most colossal monetary inflation ever recorded in the history of the world" in old-mark terms, while the rentenmark was stable. This currency stability might have been due to other countries experiencing similar rapid increases in their money supplies.⁹⁹

Of course, with the abandonment of the old currency, accounting laws had to be changed. On December 28, 1923, a decree compelled industrial companies to compile new balance sheets, valuing their assets and liabilities in "gold marks". With 500 rentenmarks one could obtain at any moment a bond with the nominal value of 500 gold marks, which was guaranteed by a legal mortgage on German property and which yielded a rate of interest at 5 percent in gold (actually payable in paper at the exchange rate of the gold mark.)¹⁰⁰

Of course, the stability of the value of the rentenmark could not have been due to the possibility of converting the currency into mortgage securities because, at the time, the market value of the mortgage bonds was lower than the nominal value and the market rate of interest was much higher than 5 percent. During 1924 the prices of "stable-value loans" yielded an effective interest of as much as 15-20%. And of course, issuing more rentenmarks would add to the Government's burden on interest on mortgage bonds, for which the public would exchange increasing quantities of rentenmarks.¹⁰¹ However, as shown in the chart on page 26, interest rates were raised dramatically which changed the economics of borrowing and lending in marks. The lack of confidence in the paper mark gradually lessened and, as a result, consumers, producers, and merchants ceased to be preoccupied with the necessity of reducing their holdings of paper marks to a minimum. As a result, after the stabilization of the mark exchange in November 1923, the velocity of paper mark circulation declined. In other words, the money supply could rise and velocity could drop because of increased confidence in marks for saving.

At the same time the Reichsbank energetically set about eliminating the illegal emergency monies from circulation. The government also fixed wages.¹⁰²

As the mark gained credibility as a medium of exchange, foreign currencies were turned in for it. This showed up in the balance sheets of the Reichsbank, which showed a continuous and noticeable rise in the item "other assets," in which, as experts know, was that foreign exchange. According to the balance sheets of the Reichsbank, "other assets" amounted to 18.8 million gold marks on November 15, 1923, 285.8 million on January 7, 1924, 702.3 million on June 30, and 1,183 million on October 31, 1924.¹⁰³ It also appears that those who were short it in various forms got squeezed, adding to the upward pressure on it.

⁹⁷ Bresciani-Turroni p. 336-7

⁹⁸ Bresciani-Turroni p. 336-7

⁹⁹ Bresciani-Turroni p. 338

¹⁰⁰ Bresciani-Turroni p. 340-1

¹⁰¹ Bresciani-Turroni p. 340-1

¹⁰² Bresciani-Turroni p. 348-9

¹⁰³ Bresciani-Turroni p. 348-9

Nonetheless, the stability of the German exchange rate gave way in February and March 1924 as the credit policy of the Reichsbank was not strict enough, and symptoms of a new “inflation” appeared in the first quarter of 1924.¹⁰⁴ However, on April 7, 1924, the Reichsbank, now convinced that it was heading for a fresh inflation, which would cause a new depreciation of the paper mark and the rentenmark, decided to restrict credit severely, which worked. The shortage of marks caused a supply of hoarded foreign exchange to come to the market for sale for marks. At the same time the demand for foreign exchange on the Berlin Bourse declined considerably.¹⁰⁵

The decree of February 14, 1924, “revalued” some debts i.e., required debtors to give creditors more than their face value. For example, debentures and mortgages were revalued at about 15 percent of their original gold value. Mortgage bonds, savings bank deposits, and obligations arising from life assurance contracts were revalued at a rate corresponding to the revaluation of mortgages and other claims held by the Land Credits Institute, assurance companies, and savings banks.

The decree of February 14, 1924, was a good concept but it ran into some problems in application. Creditors had lost virtually all value to inflation and were angry about how their trust was abused, and the government wanted to renew the rewards for lending, which was the intention of this plan. Creditors induced the German Government to announce a new plan which became law on July 16, 1925. The chief provisions of the new law were as follows: (a) The normal rate of revaluation of mortgages was raised to 25% of the original gold value, (b) the law applied to extinct mortgages, if the creditor had accepted the reimbursement with a reservation, (c) for mortgages taken up after June 15, 1922, the law had retroactive effect even if the reimbursement had been accepted without reservation, (d) the payment of sums due on the basis of this law could be demanded after January 1, 1932: in the meantime debtors paid interest at 1.2% after January 1, 1925, 2.5% after July 1, 1925, 3% after January 1, 1926, and 5% after January 1, 1928, (e) the debtor could obtain a reduction in the rate of revaluation to 15% in cases of straitened economic conditions, (f) those who had bought industrial debentures before July 1, 1920, received (besides 15% of the gold value of the security) a small share in the dividends of the company, (g) for securities taken up after January 1, 1918, there was used, as a coefficient for the transformation from paper value to gold value, an average between the dollar exchange rate and the index number of wholesale prices. Just as debt reductions have the effect of easing credit, weakening the currency and increasing inflation (or lessening deflation), debt revaluations tighten credit, support currencies and lower inflation.¹⁰⁶

Under the Loan Redemption Act that came into force on the same day, July 16, 1925, as the Revaluation Act, certain holders of public bonds gained a revaluation, as they had not under the Third Emergency Tax Decree.¹⁰⁷

Throughout 1924, the supply and demand for foreign exchange were largely dependent on the credit policy of the Reichsbank. The connection between the abundance of credit and the depreciation of the exchange rate in the first quarter of 1924, which was followed by the tightening of credit and strengthening of the mark in the succeeding months, was obvious and confirmed the ideas of the Quantity Theory.

On October 15, 1923, the German government took the step of completely suspending loans for “Passive Resistance”. These excessively generous subsidies, which were granted by the German government, were the principal cause of the enormous deficit in 1923, so eliminating them reduced the budget deficit. Also in the autumn of 1923, the German government tried to free the budget temporarily from the burden of reparations by putting the burden on to private industry. On November 23, 1923, the “Micum”

¹⁰⁴ Bresciani-Turroni p. 351

¹⁰⁵ Bresciani-Turroni p. 352

¹⁰⁶ Bresciani-Turroni p. 322-4

¹⁰⁷ Holtfrerich p. 327

(Mission Interalliée de Contrôle des Usines et des Mines) and the leading heavy industries concluded an agreement about the supply of coal on reparations account.¹⁰⁸ This fiscal tightening also supported the currency and helped to reduce inflation.

Control over the foreign exchange market was gradually relaxed—e.g., the “Foreign Exchange Commissioner” ceased to function. However, certain restrictions (based on the decrees of October 31 and of November 8, 1924) remained. They (a) specified the process for making foreign payments (which had to be done through an authorized bank), (b) prohibited forward contracts in foreign exchange (c) prohibited the buying or selling of foreign exchange at a higher rate than the official rate in Berlin, and (d) required banks to furnish the authorities with information on foreign exchange business concluded in their own names or for a third party.

Whenever the Rentenbank gave direct loans, it imposed the so-called “constant value clause” which required the borrower to repay them in gold marks.

According to a new law that was passed August 30, 1924, and effective on October 11, 1924, a new German currency called the “reichsmark” was created. Its value was set at 1 reichsmark = 1 trillion paper marks, and 1 reichsmark = 1 rentenmark. The old paper mark was then completely withdrawn from circulation and ceased to be legal tender on June 5, 1925. The transition to a stable German currency was complete.

The gold content of the reichsmark was the same as that which was fixed for the old mark set on March 14, 1875 (1,392 marks = 500 grams of fine gold). The system established after November 1923 continued, so the old notes circulated internally but remained unconvertible. Through this process, the German monetary system was essentially on a dollar exchange standard.

¹⁰⁹

The Reich budget was quickly balanced to everyone’s amazement. This occurred via: (a) the strict cutting down of expenses, and (b) the introduction of new taxes and the revaluation of existing taxes and tariffs. The expenses of civil administration were reduced by dismissing a great number of employees. The laws passed on October 15 and November 23 that were previously mentioned had a big effect. But other moves also helped. In Germany, after the war, the heaviest item in the Reich expenditure was the service of public loans. Of the 17.5 billion marks estimated expenditure for the financial year 1919, interest on loans of the Reich represented a good 10 billion. But the monetary depreciation caused the pre-war debt and debts contracted during and after the war to disappear almost completely. To deal with this, the consolidated debt of the Reich (58.5 billion gold marks) was entirely annulled, and the floating debt in paper marks, which amounted to 197 trillion paper marks on November 15, 1923 was paid by the transfer to the Reichsbank of 197 million rentenmarks lent by the Rentenbank with the Reich not paying any interest on this.¹¹⁰

Once the exchange rate was stabilized, the yield of taxes increased rapidly primarily because of increased tax revenue arising from the economy’s improvement. Tax revenues rose from 14.5 million gold marks in October 1923 to 63.2 millions in November, 312.3 millions in December 1923, and to 503.5 millions in January 1924. Thanks to this marked increase in receipts and controls on spending, the budget was balanced in January 1924, for the first time since the outbreak of the war.¹¹¹

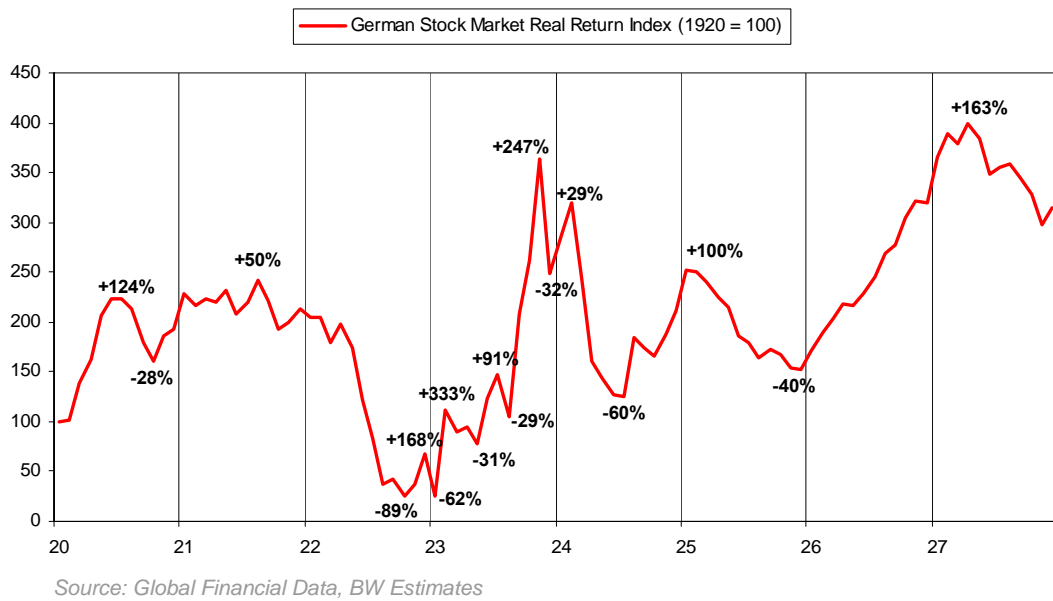
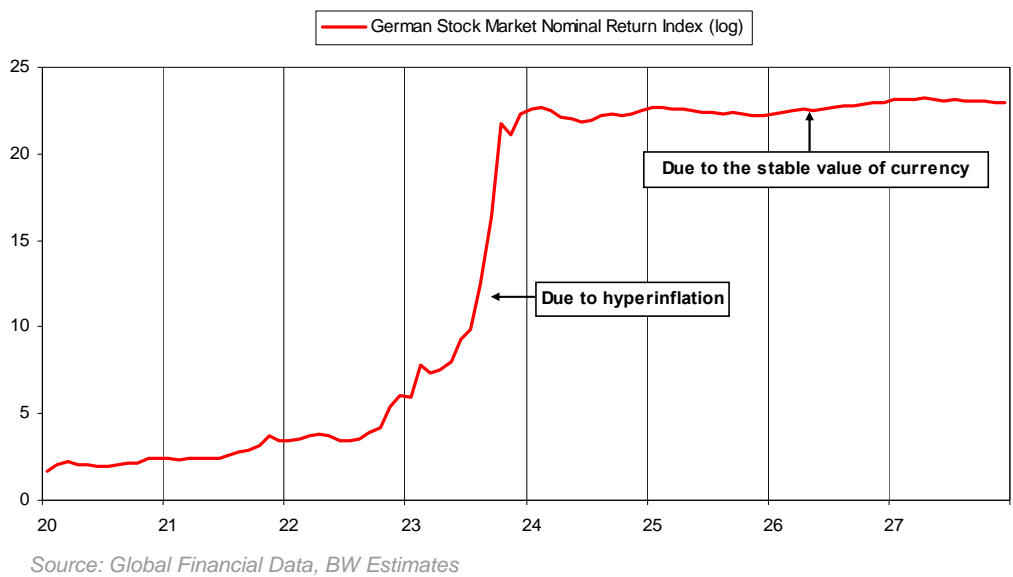
The charts below show (1) the real and nominal stock market, (2) the Y/Y CPI, (3) M0, the velocity of money and total credit, and (4) the exchange rate; and (5) industrial production from 1920 through 1927.

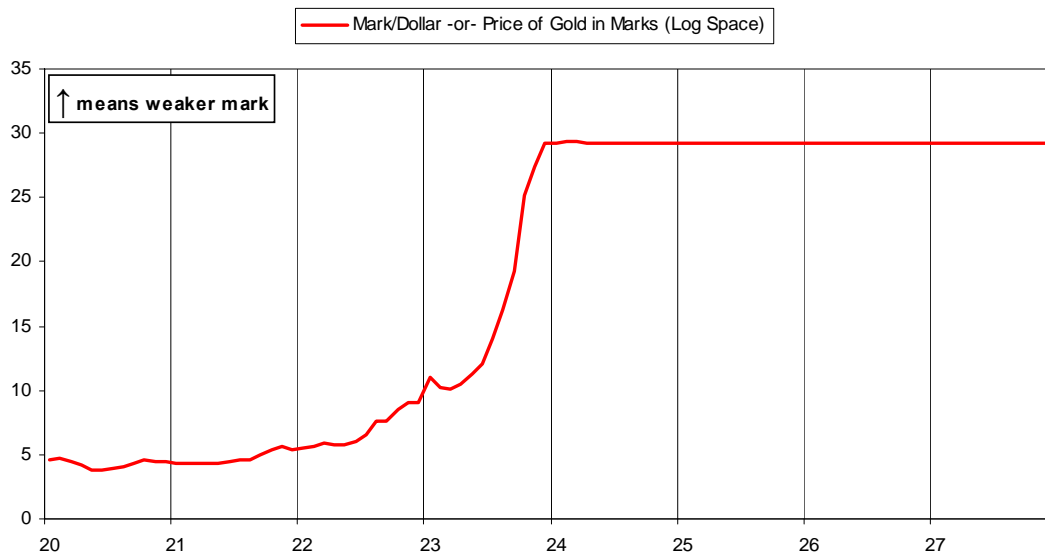
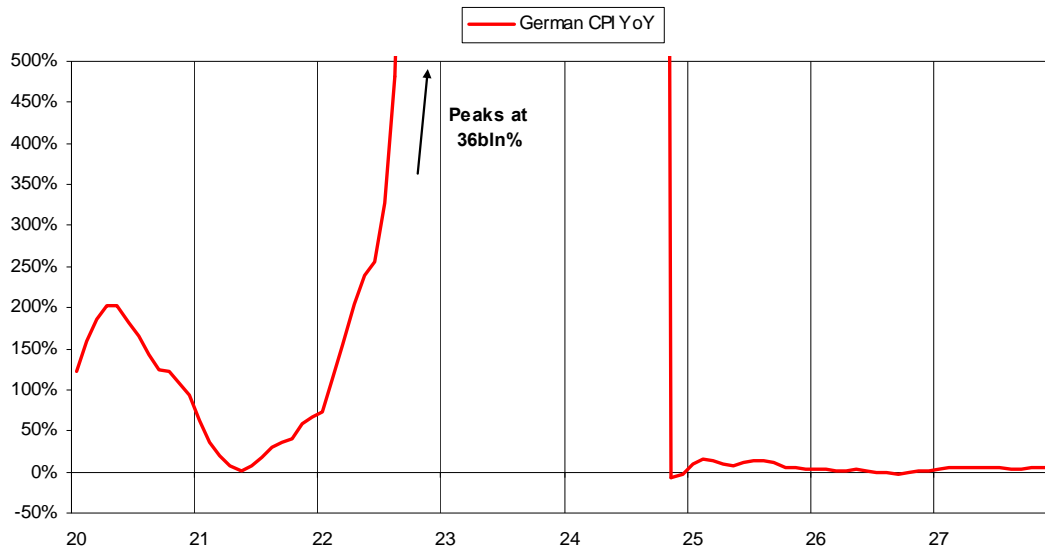
¹⁰⁸ Bresciani-Turroni p. 355-7

¹⁰⁹ Bresciani-Turroni p. 353-4

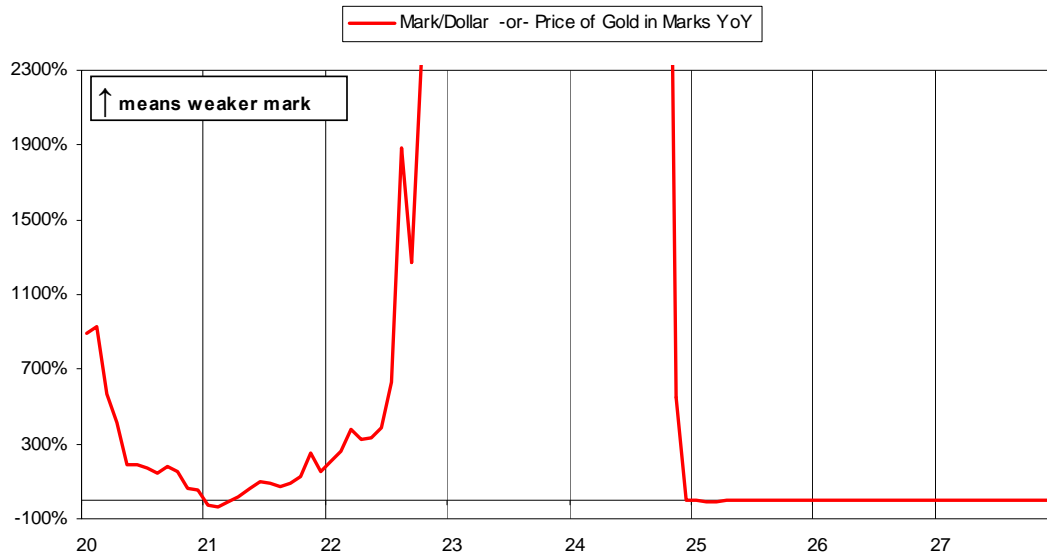
¹¹⁰ Bresciani-Turroni p. 355-7

¹¹¹ Bresciani-Turroni p. 355-7

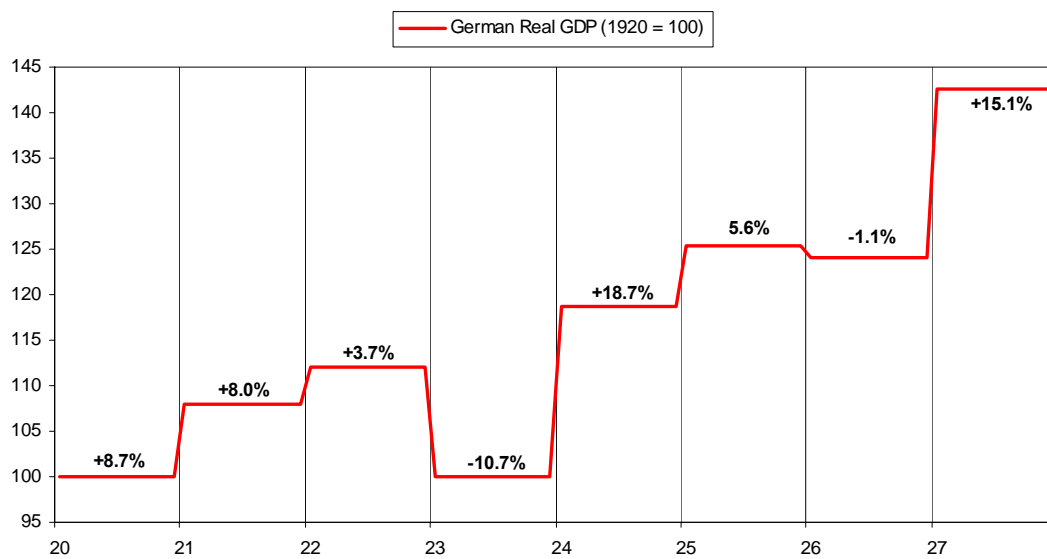


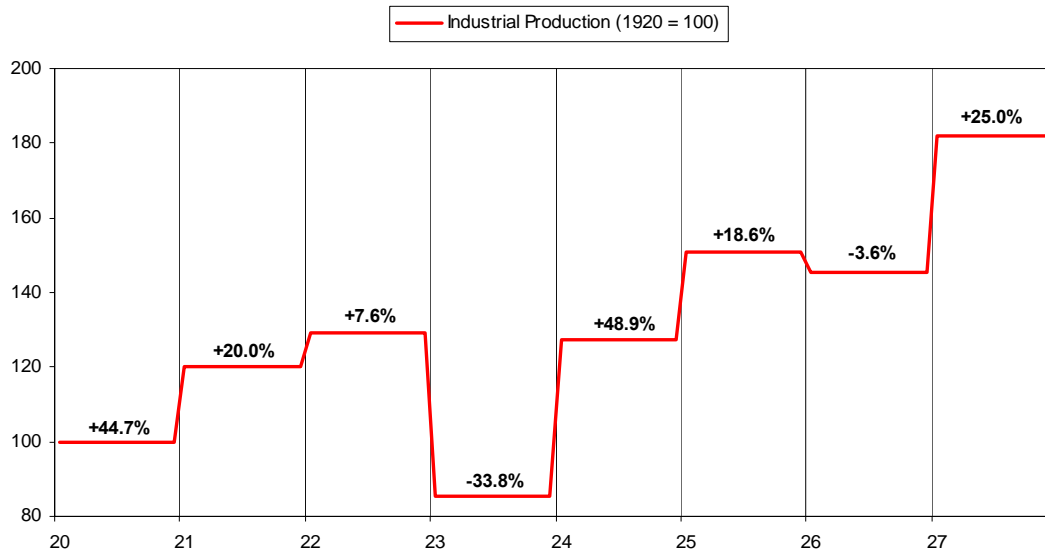


Source: Global Financial Data, BW Estimates



Source: Global Financial Data, BW Estimates





One of the common characteristics of countries that stabilized their currencies and controlled their inflations after an extended period of rampant inflation has been a lack of working capital and a high rate of interest.¹¹² That set of circumstances existed in Germany through most of 1924.

Until August 23, 1926, the Reichsbank kept the exchange rate of the dollar steady in German marks. In the financial year 1924-25, there was a considerable surplus of receipts over expenses.

During the years between 1925 and the financial crisis of 1931 the fluctuating amounts of foreign loans were the main driver in determining the value of the mark in terms of other currencies. For long periods, the persistent supply of foreign exchange arising from long or short-term loans had the effect of maintaining an exchange rate favorable to Germany. Also, the Reichsbank was able to replenish its gold reserves rapidly.

Through numerous banks that were created by the Reich itself, funds which had accumulated in the Reich or State Treasuries were lent to German business generally as short-term loans, though the Reich and States often granted special long-term loans to industry and agriculture. The government also invested money in the purchase of firms and industrial shares.

Also, tightening credit to make it profitable to be long the currency and painful to be short it is a classic means of stabilizing the currency and lowering inflation. This happened in Germany at the time. While interest rates rose slower than inflation early in the upswing in inflation, interest rates rose faster than inflation at the end. In December 1923, complete confidence in German money was not yet re-established and the premium for the risk of depreciation remained high. According to the statements of a well-known banker, the interest rate on overnight paper mark loans in December 1923 was typically not lower than 3-5% per month. On the other hand, for rentenmark loans (which had a clause that guaranteed the lender against the risk of the depreciation of the rentenmark itself), interest was 1-1.5% per month. This interest rate shows that the guarantee was given some credence (which is why the interest rate was lower than the paper mark rate), but not discounted as being certain (which is why the rate was still high). During 1924, the highest rates of interest occurred in April and May. Interest rates rose to very high levels that produced a high premium relative to the expected future depreciation of the currency.¹¹³

¹¹² Bresciani-Turroni p. 359-61

¹¹³ Bresciani-Turroni p. 359-61

This tightening was reflected in the divergence between the official discount rate and the market rate. In normal times the market rate was lower than the rate fixed by the Reichsbank, but in 1924 the situation was reversed¹¹⁴ because money was so tight. After the stabilization of the mark and the monetary reform of November 1923, the shortage of capital became really serious causing those who had bet on the mark's depreciation to be squeezed. For example, those who borrowed marks to buy inflation hedge assets were squeezed as borrowing costs and the mark rose at the same time as the prices of inflation hedge assets fell.¹¹⁵

While in late 1923 inflation was practically the only form of taxation and it weighed almost exclusively on capitalists, workers, and private and Government salaried employees, after stabilization that all changed. Those penalized by the inflation benefited and high direct taxes became effective.

As the profits from inflation disappeared, the tremendous waste of inflation hedge activities became apparent and those who engaged in them lost a lot. Numerous entrepreneurs who had bought firms with debt lost everything when the currency was stabilized.¹¹⁶ Due to the insufficiency of working capital and the fall in inflation hedging activities, industries reduced their demands for instruments of production to free up working capital. For example, during the period of inflation, there was the accumulation of stocks of unsold coal and iron, but after it subsided, these were dumped at losses. "The prosperity of the industries consuming coal, which had been dependent on the inflation, caused rapid development of all the mines,"¹¹⁷ but with the stabilization now in place, the mining industry found itself heavily burdened with very small or negative returns, and those that produced coal of poor quality found that it was no longer saleable. Between the end of 1923 and October 1925, 63 mines in the Ruhr area were closed.¹¹⁸ One report at the time described the situation as follows: "We have some very extensive factories which are nothing but *rubbish*. It is not sufficient, if we wish to restore our business, to close these establishments, in the hope of reopening them later. Even factories not working cost money...Therefore our slogan must be: Demolition!" It was estimated that three quarters of the existing plant in shipyards was useless. More than a hundred thousand bank employees were discharged during 1924 and 1925.¹¹⁹

On the other hand, goods for direct consumption were very scarce at the beginning of 1924. While the industries producing instruments of production and raw materials were in a crisis, broadly speaking, industries that produced goods for direct consumption, or the raw materials especially used by these industries did well. During 1925, the deleveraging of share prices was especially marked for the mining and iron and steel industries, and for some branches of the engineering trade such as that of making railway goods. It was felt less by industries that produced direct consumption goods, such as textiles and beer. Stocks fell, especially in industries that did relatively well in inflation.¹²⁰

One of the immediate and most typical consequences of the monetary stabilization was the sudden rise in the purchasing power of the working class. While rent controls and inflation had made the working class' expenditures on rent practically disappear by 1923, after the stabilization rents were raised rapidly. As rents rose, it became economic to build houses to rent out, and for those who had rented to own instead. While during the period of inflation the building trade was practically limited to the building of mansions for the newly rich who were profiting from the monetary depreciation, in 1924 there was a revival of the building of houses for the working and middle classes.¹²¹

The chart below shows how housing construction accelerated started in 1924.

¹¹⁴ Bresciani-Turroni p. 359-61

¹¹⁵ Bresciani-Turroni p. 366-7

¹¹⁶ Bresciani-Turroni p. 366-7

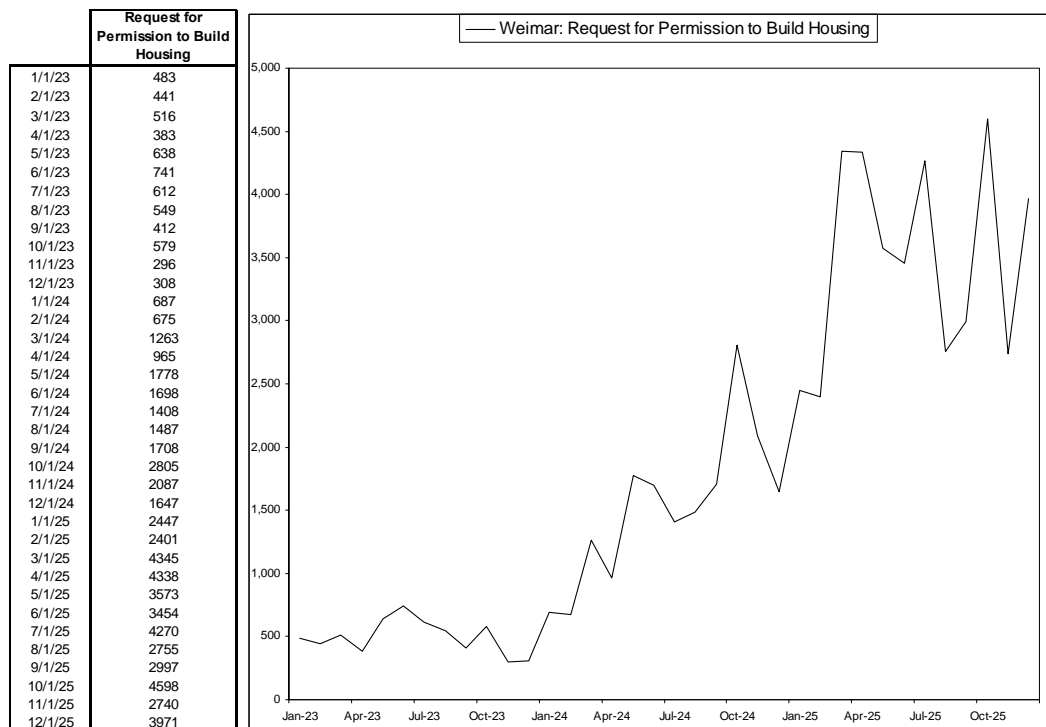
¹¹⁷ Bresciani-Turroni p. 366-7

¹¹⁸ Bresciani-Turroni p. 369-70

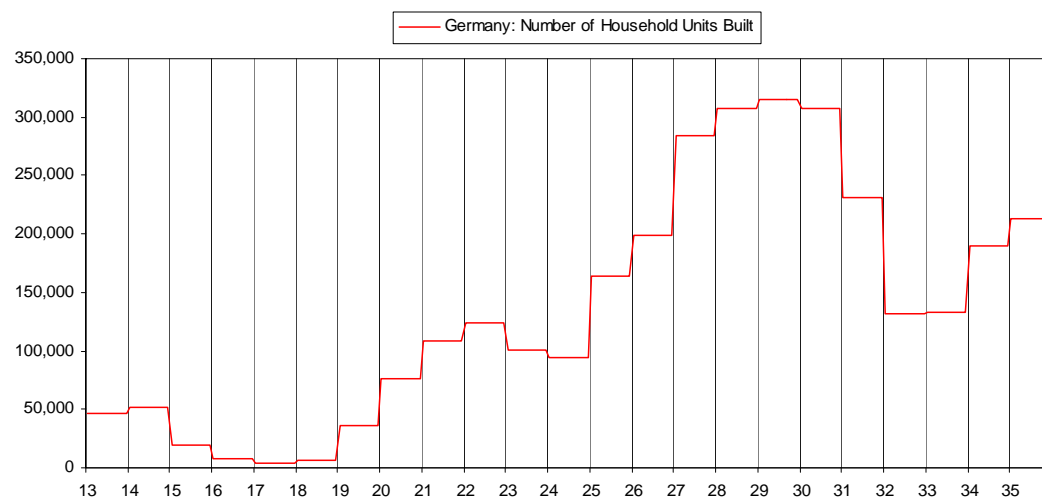
¹¹⁹ Bresciani-Turroni p. 390-1

¹²⁰ Bresciani-Turroni p. 370

¹²¹ Bresciani-Turroni p. 381



As shown below, this boom in housing continued until the bubble burst in 1929 and the 1930's deleveraging began.



Labor productivity also increased rapidly after stabilization. For example, it was reported that in June 1926 in the Ruhr coal area, 389,037 employees produced more coal, and of better quality, than was produced by 581,054 in 1923.¹²²

There was a big increase in wages in the first months of 1924 as wage restrictions were lifted and there was a reaction against the excessively low wages which had been fixed at the beginning of the monetary

¹²² Bresciani-Turroni p. 392

stabilization. During 1924 the big increase in the average income of workers was the combined effect of the rise in wage-rates and the fall in unemployment. But from 1925 to 1928 the general movement of workers' incomes was principally influenced by the rise in wage-rates rather than increased employment. For example, while in June 1925 the monthly unemployment rate was 4.6% of the members of trade unions and the index of workers incomes was 110.8, in June 1928 the percentage of unemployed was 7.5%¹²³ and the index of workers' incomes rose to 124.

As domestic money and credit was tight and there was a need for it, the German industrialists drew on their reserves of foreign exchange, which they had deposited in foreign banks during the depreciation of the mark. Besides helping to stabilize the mark and contain inflation, it supported business activity.

Both the government and the Director of the Reichsbank agreed that the stabilization of the value of the currency was a necessity which should have precedence over any other matter.¹²⁴

As a result of this stable currency policy, German foreign trade in 1924 and 1925 was characterized by an enormous increase in imports of food and unprocessed goods, while there was no growth in manufactured goods imports (see below). In 1924 and 1925, exports remained stationary.¹²⁵

Imports of Unprocessed Goods, Beverages, and Livestock

	Millions of Gold Marks	% of Total Imports
1913	3,095	29%
1923	1,228	20%
1H1924	1,078	24%
2H1924	1,691	36%
1925	1,949	31%

Imports of Fully Manufactured Goods

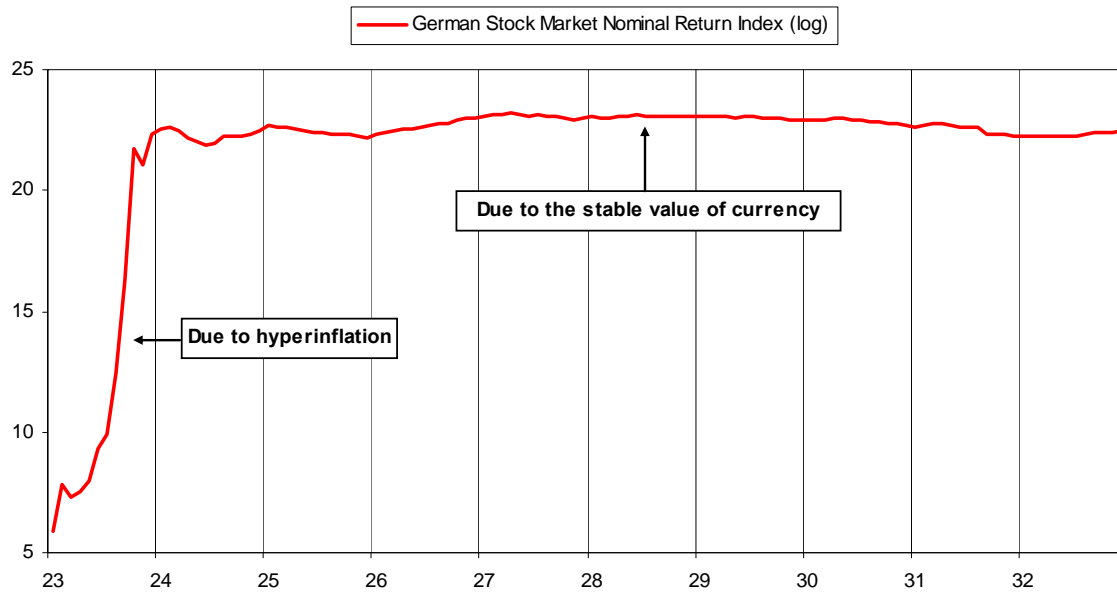
	Millions of Gold Marks	% of Total Imports
1913	1,413	13%
1923	822	13%
1H1924	924	21%
2H1924	857	18%
1925	1,069	17%

Though we will not continue this chronology beyond 1925, we have included the following charts to convey the picture of what happened in Germany into the Great Depression in 1932. As our chronology of the Great Depression includes a description of Germany until 1938, those who are interested in how this operatic drama continued through then can pick up the story there. The charts below show (1) the nominal and real stock prices, (2) the mark/dollar exchange rate and the price of gold in marks, (3) the inflation rate and changes in M0, and (4) the growth rate of industrial production from 1923 through 1932.

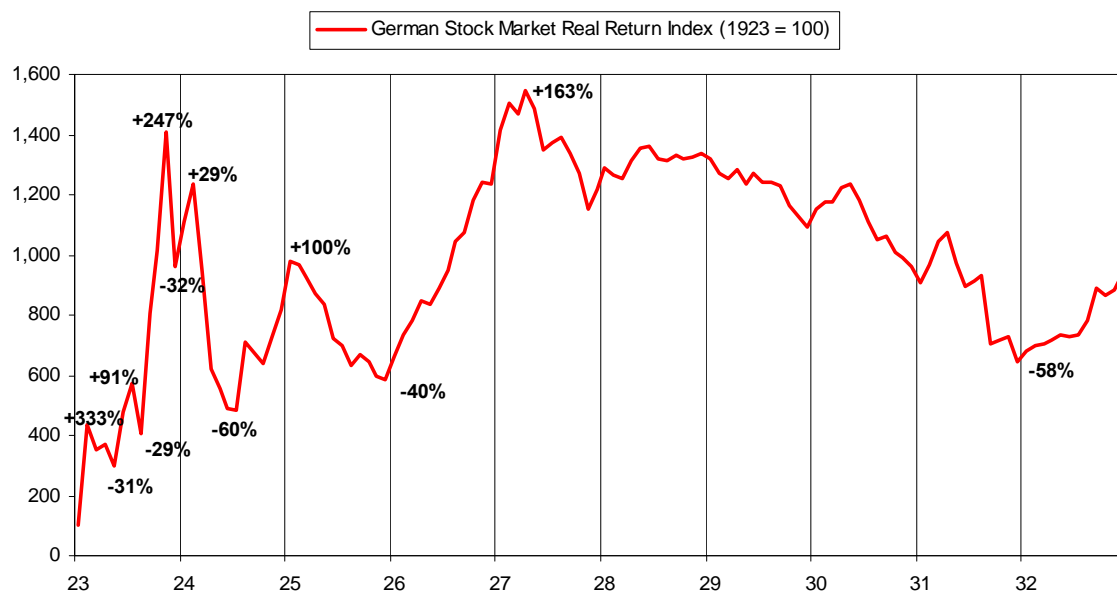
¹²³ Bresciani-Turroni p. 396

¹²⁴ Bresciani-Turroni p.384-5

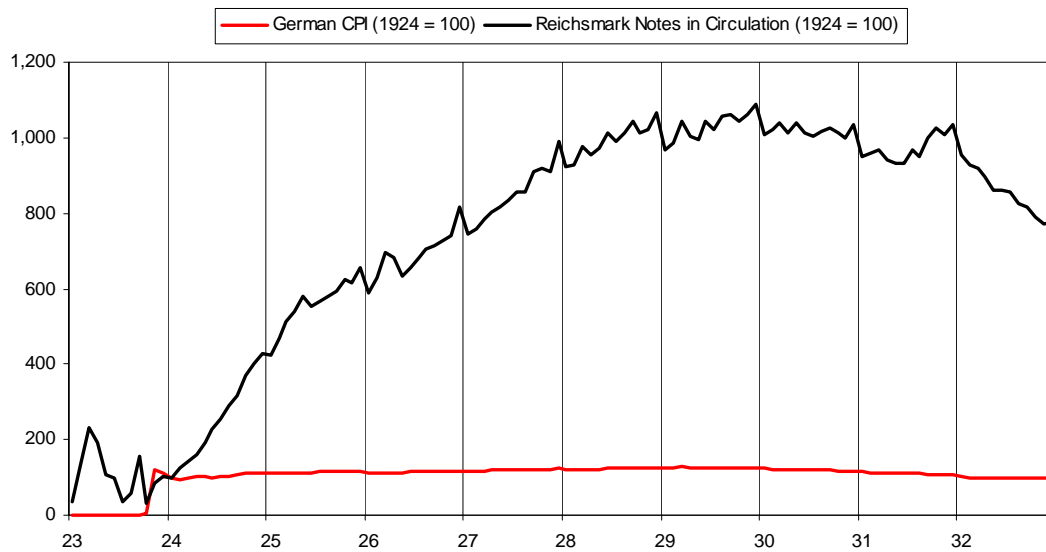
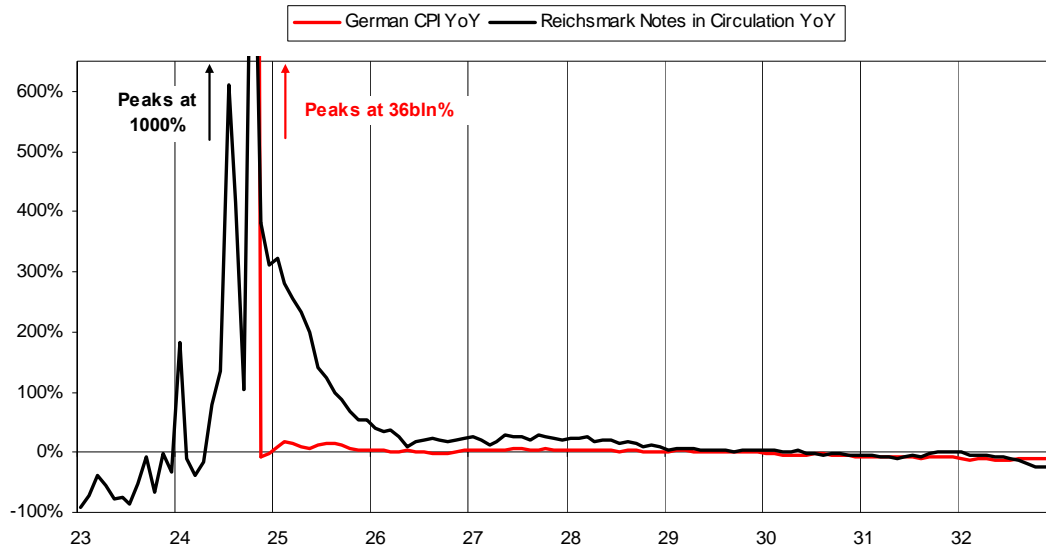
¹²⁵ Bresciani-Turroni p. 386



Source: Global Financial Data , BW Estimates

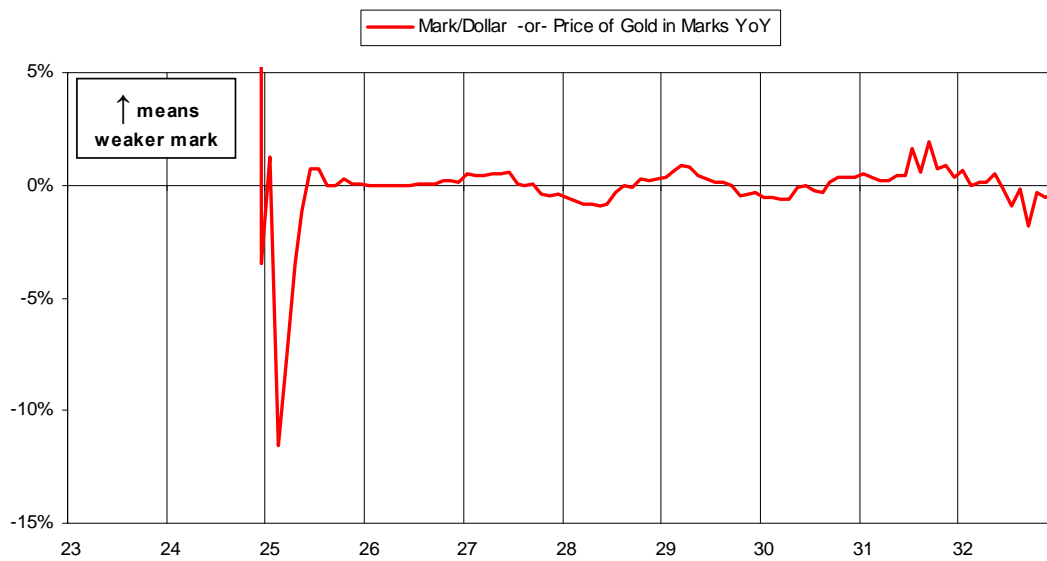


Source: Global Financial Data , BW Estimates

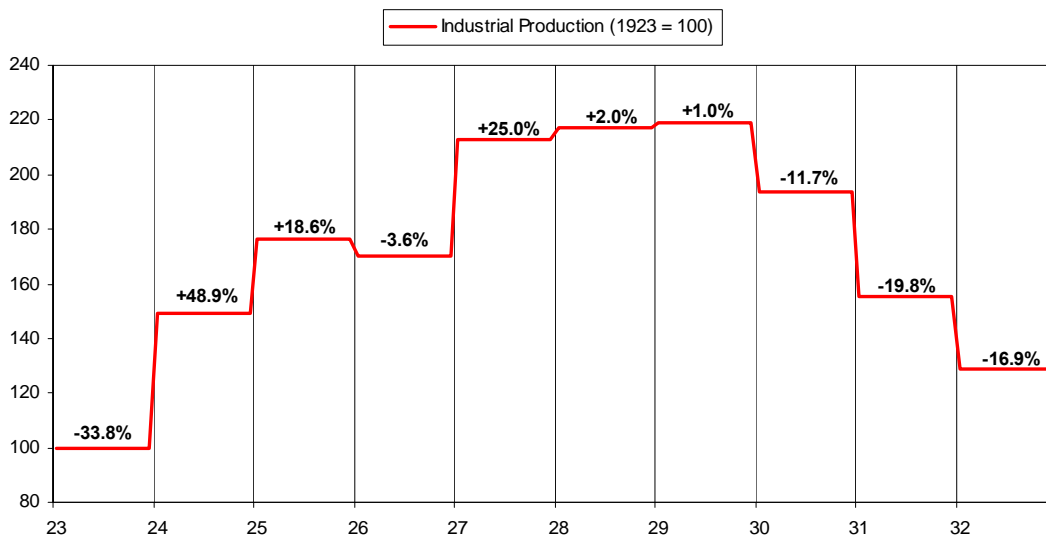
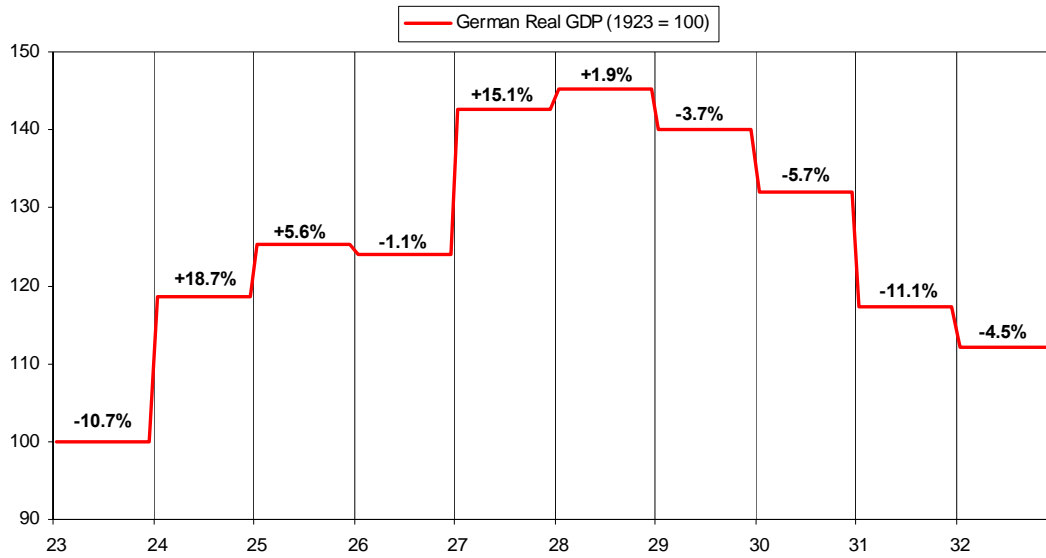




Source: Global Financial Data, BW Estimates



Source: Global Financial Data, BW Estimates



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World Bank	
United Nations	
Banco Central de la Republica Argentina	
Banco Central do Brasil	
Central Bank of Thailand	
The Central Bank of the Russian Federation	
Bank of Japan	

Disclosures:

Please read the following notes and disclosures as they provide important information and context for the research and performance presented herein. Additional information is available upon request except where the proprietary nature of the information precludes its dissemination.

Where referenced, the All Weather Portfolio and Safe Portfolio are simulated based on the All Weather Strategy, as managed by Bridgewater Associates, and have been constructed based on Bridgewater Associates' understanding of global financial markets and are shown in local currency terms except as noted. Results are shown gross of fees and will be reduced by the investment management fee and any other expenses incurred in the management of an account. Information regarding specific indices and simulation methods used is available upon request (except where the proprietary nature of information precludes its dissemination). You cannot invest directly in an index. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN.

All Weather II Strategy Performance (Net of Fees)		All Weather Strategy Performance (Net of Fees)	
	All Weather Total Return in USD		All Weather Total Return in USD
Last 1 Year	18.4%	Last 1 Year	17.7%
Last 3 Years	6.3%	Last 3 Years	0.9%
Last 5 Years	6.3%	Last 5 Years	3.0%
Last 10 Years	8.3%	Last 10 Years	6.7%

Annualized Returns (Jun-96 through Dec-10)

Annualized Returns (Jun-96 through Dec-10)

Net Since Inception Jun-96 through Dec-10		Net Since Inception Jun-96 through Dec-10	
Annualized Return	9.7%	Annualized Return	8.5%
Standard Deviation	11.9%	Standard Deviation	11.1%
Sharpe Ratio	0.53	Sharpe Ratio	0.47

Bridgewater All Weather Strategy Gross Performance Disclosure:

For the period June 1996 (the inception of the strategy) through August 2001 the performance is based on the total return of the Bridgewater All Weather Strategy as implemented for Bridgewater's principals and their affiliates and was not fully hedged to the US Dollar. The All Weather strategy is structured to be fully hedged, and the performance reflected after August 2001 includes these hedging transactions. For the period of August 2001 through present the performance shown is the actual total returns of the longest running fully funded All Weather account. For the entire history excess returns are calculated by subtracting the cash return of the US repo rate from the total returns described above. Of note, the All Weather Strategy's target leverage, volatility and return, as well as the asset mix varied from June 1996 to July 2005. From August 2005 through the present the strategy has targeted 10% volatility, albeit adjusting target leverage, volatility, return and the asset mix during extreme recessionary or depressionary economic environments. Bridgewater manages additional All Weather portfolios not included in this performance history.

The performance provided is gross of management fees and includes the reinvestment of all interest, gains, and losses. Returns will be reduced by the investment advisory fees and any other expenses that may be incurred in the management of the account. Investment advisory fees are described in Bridgewater's ADV Part 2A. No representation is being made that any account will or is likely to achieve returns similar to those shown. Trading in futures is risky and can result in losses as well as profits. PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. Performance as of the current month is estimated and subject to change.

Bridgewater All Weather Strategy Net Performance Disclosure:

For the period June 1996 (the inception of the strategy) through August 2001 the performance is based on the total return of the Bridgewater All Weather Strategy as implemented for Bridgewater's principals and their affiliates and was not fully hedged to the US Dollar. The All Weather strategy is structured to be fully hedged, and the performance reflected after August 2001 includes these hedging transactions. For the period of August 2001 through present the performance shown is the actual total returns of the longest running fully funded All Weather account. For the entire history excess returns are calculated by subtracting the cash return of the US repo rate from the total returns described above. Of note, the All Weather Strategy's target leverage, volatility and return, as well as the asset mix varied from June 1996 to July 2005. From August 2005 through the present the strategy has targeted 10% volatility, albeit adjusting target leverage, volatility, return and the asset mix during extreme recessionary or depressionary economic environments. Bridgewater manages additional All Weather portfolios not included in this performance history.

The performance provided is net of fees and includes the reinvestment of all interest, gains, and losses. The net of fees returns have been calculated using our standard fee schedule for a minimum size account, which are the highest fees we have or would currently charge an account. Investment advisory fees are described in Bridgewater's ADV Part 2A. No representation is being made that any account will or is likely to achieve returns similar to those shown. Trading in futures is risky and can result in losses as well as profits.

PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. Performance as of the current month is estimated and subject to change.

Bridgewater All Weather II Strategy Gross Performance Disclosure:

For the period June 1996 (the inception of the strategy) through August 2001 the performance is based on the total return of the Bridgewater All Weather strategy as implemented for Bridgewater's principals and their affiliates and was not fully hedged to the US Dollar. The All Weather strategy is structured to be fully hedged, and the performance reflected after August 2001 includes these hedging transactions. For the period of August 2001 through September 2008 the performance shown is the actual total returns of the longest running fully funded All Weather account. Of note, the All Weather strategy's target leverage, volatility and return, as well as the asset mix varied from June 1996 to July 2005. From August 2005 through present the strategy has targeted 10% volatility. From October 2008 through September 2009 returns are simulated based on the All Weather target allocations constrained from shifts based on Bridgewater's depression gauge (i.e. not shifting the allocations based on the recognition of a potential extreme recessionary or depressionary economic environment for the purposes of capital preservation). From October 2009 through present the performance shown is the actual returns of the fully funded All Weather II Account (which is similarly constrained from shifts based on Bridgewater's depression gauge). For the entire history excess returns are calculated by subtracting the cash return of the US repo rate from the total returns described above. Bridgewater manages additional All Weather portfolios not included in this performance history.

The performance provided is gross of management fees and includes the reinvestment of all interest, gains, and losses except during periods where simulated performance is utilized. Returns will be reduced by the investment advisory fees and any other expenses that may be incurred in the management of the account. Investment advisory fees are described in Bridgewater's ADV Part 2A. No representation is being made that any account will or is likely to achieve returns similar to those shown. Trading in futures is risky and can result in losses as well as profits. PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. Performance as of the current month is estimated and subject to change.

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The performance provided is net of fees and includes the reinvestment of all interest, gains, and losses except during periods where simulated performance is utilized. The net of fees returns have been calculated using our standard fee schedule for a minimum size account, which are the highest fees we have or would currently charge an account. Investment advisory fees are described in Bridgewater's ADV Part 2A. No representation is being made that any account will or is likely to achieve returns similar to those shown. Trading in futures is risky and can result in losses as well as profits. PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. Performance as of the current month is estimated and subject to change.

All Weather Asset Mix Disclosure:

Where shown, simulated returns for All Weather are created by using the All Weather asset mix. The All Weather asset mix performance is simulated based on All Weather asset mix weights applied historically to representative market series or constructed market series. The returns used for constructed market series may be limited by the ability to find appropriate inputs and, as is such, are actual market returns where available and Bridgewater Associates' estimates otherwise. The All Weather asset mix weights are determined based on proprietary calculations and over time the inclusion or exclusion of an asset class is accounted for only as of the most recent update date. No claim is being made of the All Weather asset mix's ability to perform in absolute terms or relative to any market return in the future, during market events not represented or during market events occurring in the future. Market conditions and events vary considerably, are unpredictable and can have unforeseen impacts resulting in materially adverse performance results.

Simulated Performance Disclosure:

WHERE SHOWN, HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN.

Terminology:

Value added (or excess return) is calculated by subtracting the official returns of each account's specified benchmark from the total return experienced by the account over a given period.

Volatility of value added (or tracking error) refers to the standard deviation of monthly value added over a given time period. Standard deviation of monthly value added is one possible measurement of portfolio risk.

Past value added and past volatility are not necessarily indicative of future value added and future volatility. There can be no assurance that the future value added and future volatility actually reflected in accounts will be at historical levels or levels either specified in the investment objectives or suggested by our forecasts.

Target volatility (or target tracking error) is an indication of the long-term expected volatility of value added.

Sharpe ratio is calculated by dividing the excess return above cash over a given period by the volatility of the excess return during the same period.

Information Ratio is calculated by dividing the excess return above a given benchmark over a given period by the volatility of the excess return during the same period.

Alpha: The risk taken by active managers above and beyond their passive, benchmark-replicating positions.

Beta: The risk in a portfolio that arises from passively holding asset classes.

Portfolio VaR: A measure of the amount of a total portfolio's risk, taking into consideration correlations within and across asset classes.

Var Share: A measure of the portion of a total portfolio's risk allocated to a particular return stream when all of its return streams are assumed to be fully correlated to each other.

CoVar Share: A measure of the portion of a total portfolio's risk allocated to a particular return stream when the cross correlations of all of the return streams are taken into account.

Drawdowns: Where shown, drawdowns are from previous peak.

Expected Performance Disclosure:

The performance is for informational and educational purposes only and should not be relied upon as a prediction of future market performance or Bridgewater management performance. Reasonable people may disagree with the assumptions used and expectations developed there from and there is no guarantee the expectations shown can be achieved. Expected or forward looking performance is based on Bridgewater analysis of market data, quantitative research of the underlying forces that influence asset classes and our active management policies. Expected performance is considered hypothetical and is subject inherent limitations such as the impact of concurrent economic or geo-political elements not addressed in the analysis and market factors, such as lack of liquidity. Bridgewater Associates, its Strategies and/or employees may have long or short positions in and/or buy or sell securities or derivatives referred to or implied in this research. There is no guarantee that such a scenario, and the impact on any given account or Strategies, would not be considered detrimental in nature when similar mandates are compared in isolation. Additionally, where Strategies are traded similarly performance may materially diverge based on, among other factors, the approved instruments, markets, and target risk for each Strategy or market. In the event of any discrepancy between the information and expectations presented herein and the actual language in the Offering Memorandum ("OM"), the OM shall prevail.

Volatility Disclosure:

Expected or target volatility is one objective of Bridgewater's active management style. Statements regarding expectations or targets should not be considered a guarantee that such results will be achieved. Expected or target volatility is only one measure of risk. Discussions of risk management processes or theories contained herein should not be construed as a statement that Bridgewater has the ability to control risk or that the investments discussed are low risk.

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