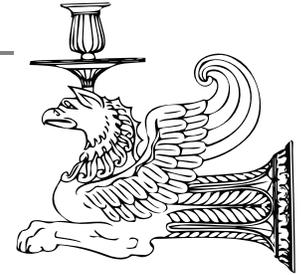

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STRATEGIC ECONOMIC DECISIONS

Leaders in the Economics of Uncertainty



PROFILE

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**Ever More Money: Where Has It All Gone?
- Asset Price Inflation versus Goods and Services Disinflation -**



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MAY 2021 PROFILE

Ever More Money: Where Has It All Gone?

- Asset Price *Inflation* versus Goods and Services *Disinflation* -

In recent essays, we have attempted to explain the true nature of the causes of inflation, where “inflation” has referred to changes in the prices of goods and services – not of assets. This last essay extends our analysis to include *asset price inflation*. Whereas conventional CPI inflation has slowed for reasons we have predicted for over 15 years, the price of many assets has exploded. Why the contrast? Can this negative correlation be explained? Yes it is. But before doing so, we need to make one final set of observations concerning the lack of inflation on Main Street.

Part 1 of this **PROFILE** extends what we have already written about CPI inflation by explaining yet another paradox: How can the *money supply* (measured as M2) have grown much faster than GDP in recent years, while consumer price increases kept decelerating? While we have already shown why the 500% increase in the US Monetary Base (MB) due to QE did not cause inflation on Main Street, we have *not* explained why an even greater explosion in M2 also failed to drive up inflation. The latter is more difficult to explain than the former.

Part 2 of this **PROFILE** then addresses the nature and causes of asset price inflation over past decades. As part of this, we discuss: “Where did all the new money shown in M2 come from?” To claim that it was all “printed” is to say everything and nothing. We also address the issue of where the new money went.

Note: Throughout this essay, we are assuming that the reader is familiar with the only correct and fundamental explanation of CPI inflation: it rises when the demand *curve* for goods and services shifts out faster than the supply *curve* does. This is axiomatically true.

Part 1: The Correlation between Money Growth and CPI Inflation

Addressing this topic requires that we squash widespread confusion about the “quantity theory of money” as originally set forth by the economist Irving Fisher nearly a century ago. Following Fisher’s theory and his well-known “velocity” equation, many observers believe that, when the growth of depository assets (M2) accelerates, so will the rate of inflation for goods and services. And this *can* be true. The logic as to *why* it can be true is seductively appealing: with ever more dollars in the hands of consumers chasing the same number of goods, then the prices of goods will be bid up.

To back this intuition up, there are many real-world case studies where wildly excessive money creation resulted in hyper-inflation. Just think of Germany in 1922 or of what has happened in much of the developed world in recent decades. And in the US and many other developed nations, straightforward regression analyses make clear that M2 growth and CPI inflation are positively correlated, even if the long run correlation coefficient is not 1.0, but 0.45. This reality partially supports various quantity theories of money and inflation, theories going beyond that of Fisher. Of course, if the Fisher identity were true, then the correlation would have to have been 1.0

But in truth, most quantity theories of money are very problematic. They oversimplify economic reality. They do not allow for the role of asset markets. They do not properly account for the role of increased debt in the term “money.” More generally, they are ambiguous about what money actually is. There are no clear roles for monetary and fiscal policy. There is an additional and more abstract reason for their inadequacy, as is discussed in a footnote.¹ What is important for investors to know is that making forecasts based on quantity theories of money is dangerous. For they are usually wrong. As will be seen in the data below, the growth rate of M2 has exploded in recent decades. Yet its 2010 – 2020 correlation with the growth rate of inflation has been sharply *negative*. Thus the creation of ever more money *need* not cause inflation, even if in certain cases it can.

For example, suppose that in an era of “free money” such as we have experienced, all of the new dollars created (seen in rapid M2 growth) are spent buying assets rather than buying goods and services on Main Street. Then there will be a big outward shift in the asset demand curve causing asset prices to rise. But there will be no equivalent outward shift in the demand curve for goods and services due to money growth. Thus the CPI will not rise, and there is no inflation on Main Street. [This example partially summarizes what has happened to asset versus goods inflation over 40 years.]

To understand why the linkages between the growth of money and CPI inflation can be as counter-intuitive as they have been, it is helpful to recall the confusion that arose concerning inflation during the 2008-2014 period when the Fed inaugurated QE to fight the Great Recession. In this context, it was the MB that exploded, not M2.

Analogy to the Correlation of Inflation and the MB: The MB of an economy is the *sum* of two variables: the amount of currency outstanding (dollar bills), and the amount of free (non-lent-out) bank reserves. QE amounted to the Fed’s vacuuming up some \$4 trillion of problem housing loans held by the banks, and paying banks for these assets by depositing new free reserves into the banks’ reserve accounts at the NY Fed. The result was that the \$50 billion of bank reserves

¹ For example, the famous Fisher equation $MV = PQ$ is not in fact a meaningful mathematical equation that can be solved to make a forecast. Rather, it is what mathematicians call an *identity* that must always hold true in the context of the assumed model. The most such a model can do is to answer such questions as: “If M goes up by 4%, and there are no changes in the values of Q and V, then what will happen to the price level P? Answer: Solve the identity.

existing back in 2007 grew in a matter of 7 years to some \$4.5 trillion of reserves. Add this to the \$950 billion of currency on hand which did not change much, and the total MB soared from about \$1 trillion to some \$5 trillion.

The market was quite certain that this expansion of the MB amounted to “money printing” that would lead to inflation, according to the quantity theory of inflation. Spooked by the prospect of inflation, the gold market took off – but then fell back as year after year went by with no signs of inflation. As we have explained many times in the past, inflation *would* indeed have taken off should the banks have done what they *usually* do when holding new reserves: lend them out to people and businesses who plan to spend the proceeds of their new loans on Main Street. The expenditure of these new funds will *cause* an outward shift in the demand curve for goods and services. This shift in turn will *cause* higher inflation – probably with a lag. [Our story here assumes nothing changes on the supply-side.]

But most everyone’s expectations along these lines proved *incorrect*. There was neither economic recovery on Main Street due to new spending, nor higher inflation. For as in Japan in the 1990s after their collapse of 1990-1991, no one on Main Street wanted to borrow a penny. They had just lost 35% of their net worth, and rather than borrow more (made possible say by new reserve-based bank loans), they *paid down* existing debt. Exactly the same held true in the case of the US in the Great Recession. In both cases, there was no outward shift in the demand curve for goods and services.

Thus the 500% increase in bank reserves had no impact on spending, on aggregate demand, or on inflation. The trillions of new Fed-created bank reserves of the Great Recession were inert as regards Main Street. But this was not the case as regards Wall Street as we shall soon see.

Impact of M2 Growth on CPI inflation: Something very similar happened in the case of the sharp growth of M2 (as distinct from the MB) both in the Great Recession and in the Covid Depression. Specifically, the large growth of M2 was *negatively* correlated with CPI inflation, with a coefficient of - 0.40, as the data below show. Very few investors realize this, and when told that this has been the case, they will typically reply:

“OK, while your arguments and the data have convinced me that a very rapid growth of bank reserves and of the MB need not cause an increase in inflation, how can this be true in the case of real money such as M2? After all, M2 represents the money we have in all of our bank accounts at depository institutions. If the government starts writing all of us a \$1400 check every year, we will spend most all of this on Main Street (assume a fixed savings rate). Surely the expenditure of these new funds deposited into each of our bank accounts will push out the demand curve for goods and services on Main Street – and this is inflationary, correct? If so, then how can there have been the negative correlation between CPI and M2 that you cite for the past few years?”

We will answer this question once we review the data underlying the assertions we have made thus far.

The Data

Figure 1 shows the growth of the monetary base MB, the money stock M2, and CPI inflation. We plot the differential growth rates of the three series on an index in which each has the same starting index value in 1960. Figure 2 restates this information in the simple form of the average growth rates of the three series during three different periods. What is notable here is how much the differential between the two money supply measures and inflation *diverge* as time goes on. In the final period 2010 – 2020, the money supply measures are growing at an average of 8% whereas inflation is a mere 1.7%.

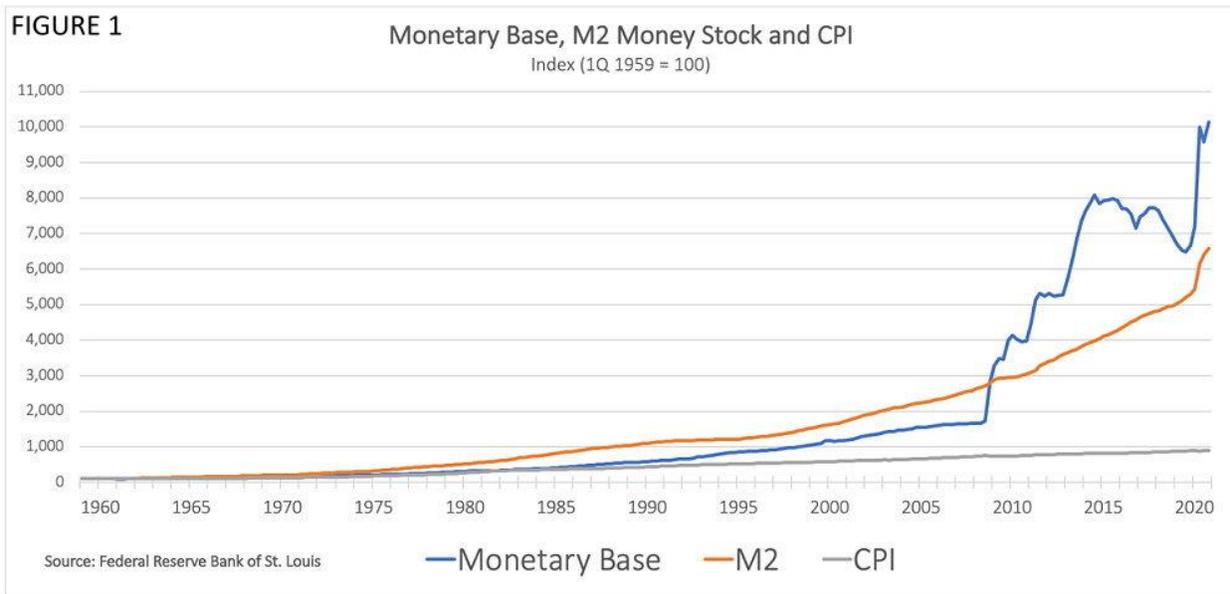


FIGURE 2

Average Annual Percent Change			
	<u>1960-1980</u>	<u>1981-2020</u>	<u>2010-2020</u>
Monetary Base	6.1%	9.2%	9.9%
M2 Money Stock	8.5%	6.3%	8.1%
CPI	5.5%	2.7%	1.7%

Sources: Federal Reserve Bank of St. Louis; SED

Figure 3 then shows how the *annual* growth of the M2 money supply was generally greater than the growth of inflation. Finally, Figure 4 shows how much more volatile the MB series has been since 1990 than the other two series, M2 and CPI. In recent years, the remarkable volatility of MB was due to the periodic injections, subtractions, and then reinjections of reserves due to swings in QE policy. Bank reserves now account for the bulk of the MB. They are now some six times larger than the other MB component, currency outstanding. Back in 2007 and before, matters were reversed: the MB consisted mainly of currency, not bank reserves. For improved readability, we have truncated the huge swings in the MB, swings that reflect the periodic addition and subtraction of bank reserves to and from the MB due to swings in the magnitudes of QE.

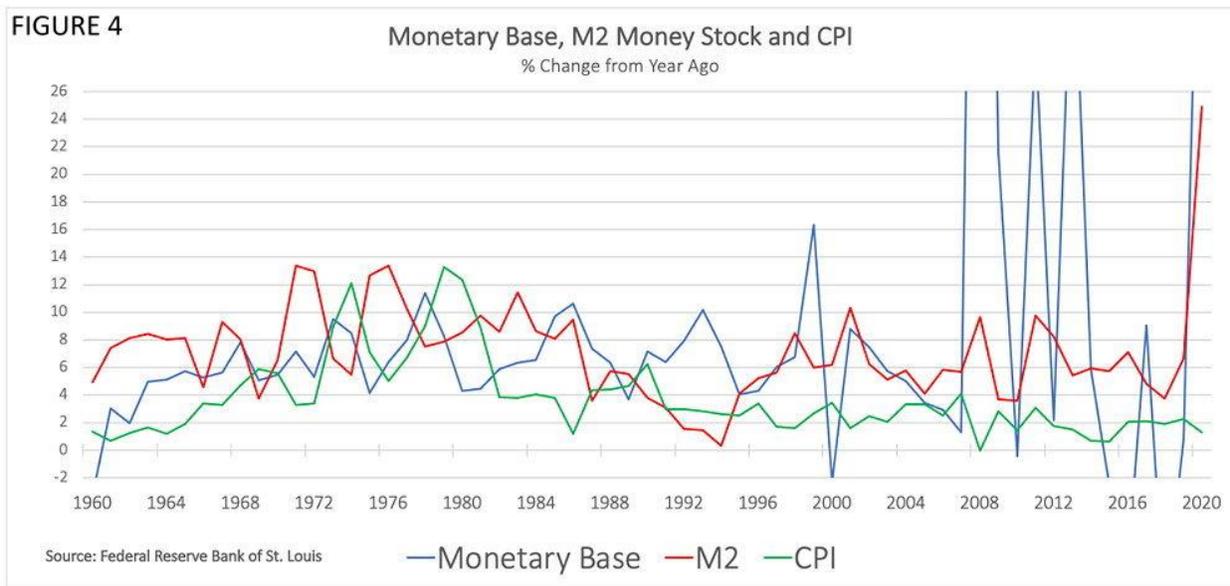
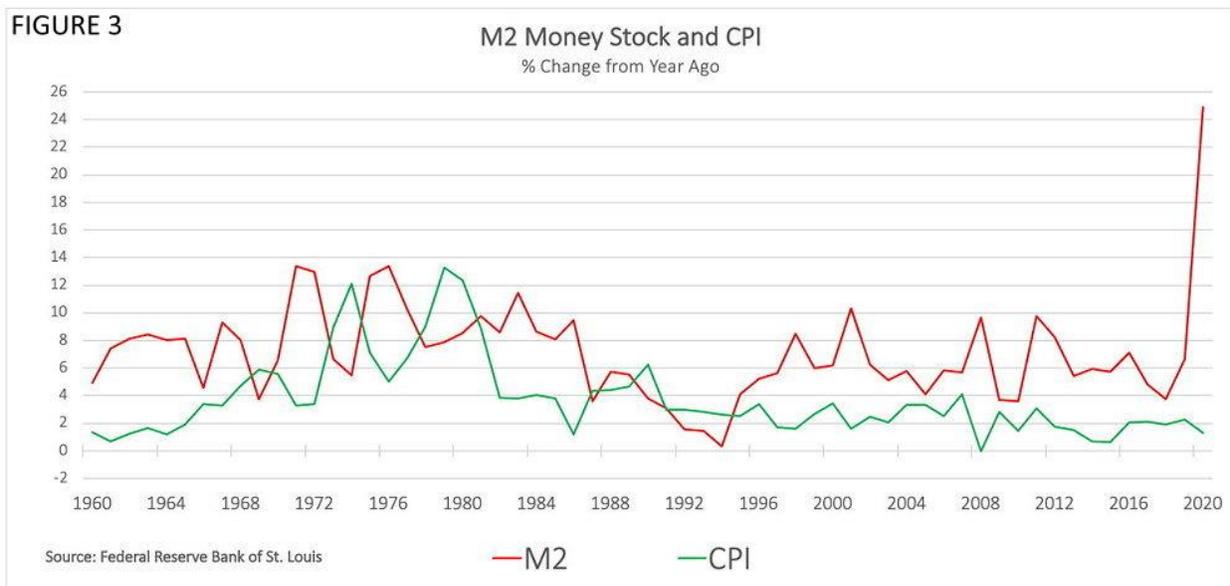


FIGURE 5

Correlation of Annual Percent Change 1960-2020			
	<u>Monetary Base</u>	<u>M2 Money Stock</u>	<u>CPI*</u>
Monetary Base	1.00	0.34	-0.06
M2 Money Stock		1.00	0.45
CPI			1.00

* 2-year lag on CPI. For example, compares annual % change of monetary base in 1960 to CPI change in 1962.
Sources: Federal Reserve Bank of St. Louis; SED

Correlation of Annual Percent Change 1960-1980			
	<u>Monetary Base</u>	<u>M2 Money Stock</u>	<u>CPI*</u>
Monetary Base	1.00	0.14	0.64
M2 Money Stock		1.00	0.57
CPI			1.00

* 2-year lag on CPI. For example, compares annual % change of monetary base in 1960 to CPI change in 1962.
Sources: Federal Reserve Bank of St. Louis; SED

Correlation of Annual Percent Change 1981-2020			
	<u>Monetary Base</u>	<u>M2 Money Stock</u>	<u>CPI*</u>
Monetary Base	1.00	0.43	-0.16
M2 Money Stock		1.00	0.00
CPI			1.00

* 2-year lag on CPI. For example, compares annual % change of monetary base in 1981 to CPI change in 1983.
Sources: Federal Reserve Bank of St. Louis; SED

Correlation of Annual Percent Change 2010-2020			
	<u>Monetary Base</u>	<u>M2 Money Stock</u>	<u>CPI*</u>
Monetary Base	1.00	0.72	-0.16
M2 Money Stock		1.00	-0.40
CPI			1.00

* 2-year lag on CPI. For example, compares annual % change of monetary base in 2010 to CPI change in 2012.
Sources: Federal Reserve Bank of St. Louis; SED

Figure 5 reveals the correlation coefficients between the data we have analyzed over three periods. For our purposes in this **PROFILE**, what is most important are the correlations between M2 money growth and CPI inflation. Two things stand out. First, during the last three periods shown in the lower three boxes, the correlation dropped from 0.57 to 0.0 and then to -0.40 in the last 10 years. This was the period during which the growth rate of both M2 and the MB was disturbingly high, and many investors and economists expected inflation to rise. Instead, it steadily declined.

Second, it is the *instability* of the correlation between M2 and inflation over time that is notable in Figure 5. To drop from 0.57 to 0 and then to -0.40 is remarkable. This reality completely undermines quantity theories of money. Looking forward, who can say what the correlation between money growth and inflation will be 2022 – 2050?

Why Growth in M2 Did Not Generate CPI Inflation

We can now answer the big question: How could the explosive growth of M2 seen above have been negatively correlated with the CPI in recent years? [The correlation coefficient was -0.40 between 2010 - 2020.] The answer is that very little of the new money created ended up in the hands of households and businesses intent on spending the money on Main Street. Thus the aggregate demand curve for goods and services did *not* rapidly shift out, just as the creation of new bank reserves did not translate into new loans and increased demand on Main Street.

There are four different reasons why the rapid growth of M2 did not stimulate consumer demand. They all center on the fact that only a small portion of the new M2 money increased demand for goods and services on Main Street. Most of the money went elsewhere.

1. The “Offset” Explanation: When citizens start receiving \$1400 checks from the government, deposited into their bank accounts, and when they spend it as most of us do, then the demand curve on Main Street *does* shift out. But, when this outward shift merely *offsets* the backward shift in demand that occurred as millions of people were fired and lost their earned income, then there has been no *net* outward shift in demand or hence in inflation, other things being equal.

2. The Portfolio Re-Allocation Explanation: We can think of M2 as representing all “liquid” assets in the economy. Consider what would happen to M2 should those citizens whose total net worth is now \$113 *trillion* wish to reallocate their wealth into different asset classes in the following manner.

More specifically, suppose there is a dramatic worldwide flight to quality due to catastrophes such as the Great Recession and the Covid Epidemic. As a result, people will shift from illiquid

assets into those liquid depository assets comprising M2. This kind of reallocation is known as a “stock-of-wealth” reallocation. Their M2 holdings could also rise if funds which would normally have been spent annually on traditional Main Street investments (new greenhouses) are instead retained as liquid funds, stored away until good times return and the economic climate improves. These latter reallocations are known as “flow-of-wealth” reallocations.

All in all, reallocations of these kinds have run to trillions of dollars in recent years and have dramatically increased M2 deposits. This money was people’s wealth and was never intended to be spent on Main Street. My wealth is my wealth. Whether I choose to keep it liquid or illiquid is irrelevant to the fact that I do not spend my wealth on Main Street. It is my income that I spend. Thus, the reallocations of wealth from illiquid assets to liquid M2 deposits has no implications for the location of the demand curve on Main Street – and hence for CPI inflation.

It is difficult to estimate the exact dollar amount by which M2 grew in recent years due to such reallocations. But the very large increase in deposits due to periodic crises (Great Recession, Covid) makes it clear that reallocations were important. Worldwide, investors are keeping record amounts of funds in depository institutions, often at 0% or even negative interest rates. Some European banks are now unwilling to accept more deposits.

3. Corporate Expenditure Changes: Businesses have been investing less and less in bricks-and-mortar for the simple reason that, in an internet-driven and GIG economy, these traditional forms of investments are less needed. This change is clear from the decline in traditional forms of corporate investment. But this does not mean that businesses have not been *spending* in a more general sense of that term. For they have been spending record amounts of money on *asset purchases*. The point here is that spending on asset purchases does *not* shift outwards the demand curve for goods and services on Main Street.

Their lavish spending on assets (especially on buyouts, mergers, and acquisitions) is part of a larger and disturbing story whereby the US economy is undergoing a shift from being a competitive economy with rigorous anti-trust provisions, into an ever more consolidated economy. More industries than ever before are now spearheaded by monopolists or oligopolists who possess ever greater market and pricing power. This is the main reason for the explosion of corporate profits by 7% of National Income since 1980. Almost all of this increase was due to soaring “monopoly rents.” This increase in profits has reduced the share of National Income going to labor by an equivalent 7% during the past 30 years. [The two shares must add to 1.]

All of this is bad for economic performance and for living standards. The model of true capitalism stemming from Adam Smith has fallen by the wayside. Within this classical model, no agent has any bargaining power or “pricing power” at all. None, as was proven by the mathematician Robert Aumann in 1975. Excess returns for all firms except innovators are zero.

Fueling this boom in expenditure on assets have been **(i)** an era of extremely cheap money, and **(ii)** an explosion in the utilization of new kinds of derivative-backed leverage. Corporate leverage

has reached its all-time high. This has provided lots more money with which to increase the number of Wall Street “deals” that we read about.

4. Fluctuating Savings Rates: A final way in which an accelerating growth of M2 can be negatively correlated with inflation occurs when households and businesses choose to increase their savings rates from income and profits. Depositing the extra money saved from doing so naturally increases M2, at the same time as it shifts backward the demand curve for goods and services since people will spend less of their income on Main Street.

In today’s environment, this last story reveals itself in the extraordinary increase in the US personal savings rate during the Covid Epidemic from some 4% to 15%. Indeed, this number recently reached 22%. M2 went up particularly fast as seen in the graph since a good portion of increased savings went into liquid deposits. In the next several years, the reverse will occur when excess “pent-up” savings will be spent, depressing M2 growth while shifting outward the demand curve for goods on Main Street.

Summary: The main point of all this has been to show that a huge increase in the money stock *need* not shift the demand curve for goods and services outwards at all, even if, in certain circumstances, it *can* do so. As regards the latter point, consider what would have happened to M2 growth had there been a massive reallocation of funds *out of* depository institutions and into illiquid asset markets. We could easily have witnessed a much reduced rate of growth of M2.

Part 2: Asset Price Inflation

We have thus far explained how, despite a very large increase in M2 deposits, relatively little of the new money found its way to Main Street. Rather it went to Wall Street and pushed asset prices to record highs. There are two final questions that must be addressed here in Part 2. First, what was so attractive about asset markets that individuals and businesses have poured their funds into stocks, bonds, and corporate mergers and acquisitions for the past few decades? Second, exactly where did all the new money come from that ended up in people’s M2 deposits? It was this money that permitted investors to bid up asset prices to record highs. It is not enough simply to claim that the money was “printed.”

The Rise in Optimism Based on Fundamentals: There was one principal reason why asset markets became increasingly attractive to people.

Around 1981, there was a generational shift from pessimism about future returns characterizing the 1970s to extreme optimism in the decades to follow. Driven by this optimism, the demand for assets would soar. What is remarkable is that this optimism and consequent growth of wealth was not based upon speculation. Another way of saying this is that the wealth growth we have witnessed was not a speculative bubble. Rather, it was based on fundamentals.

Consider the stock markets. Stockholder optimism was forged by two developments: (i) A stunning collapse in interest rates and thus in the discount rate; and (ii) A record-breaking increase in earnings per share. Both lasted for at least three decades. What more could any investor hope for? In the decade prior to 1981, interest rates and inflation had soared, giving rise to a terrible bear market, and the pessimism we just cited.

Since 1981, interest rates and thus the discount rate fell from some 16% to 1.5%, by far the largest decline in a century. And while there were ups and downs in this trend, it was pretty continuous. In past years, we have explained at length why this happened. The most important cause of ever lower rates – both short and long rates – was the behavior of inflation. US CPI inflation fell from 14.5% in 1981 to 1.5% in the past few years. A good part of this disinflation was due to the continuous outward shift in the nation's supply curve due to ongoing cost-cutting made possible by the Digital Revolution. [Recall that a decrease in the cost of manufacturing widgets implies an outward shift in the supply curve of widgets. And this outward shift is deflationary.]

There were other sources of disinflation as well such as the loss of bargaining power of labor which depressed wage growth. While the latter is usually attributed to the advent of competitive Chinese labor, it also reflects the rising share of national income going to profits at the expense of labor. [The two shares must add to unity.]

The immediate impact on asset values and thus money creation from a collapsing discount rate is that the P/E ratio of the market rises. In 1981, the theoretically correct P/E ratio was 7, and this matched reality. With today's 1.5% discount rate, the correct P/E ratio is about 26, while the actual ratio lies between 19 and 27 depending upon which P/E measure is used. This is one way of saying that the stock market as a whole is *not* enjoying a valuation bubble, even if many high flying stocks are. All in all, the collapse in the discount rate alone generated a huge increase in wealth for shareholders as the P/E went from 7 to about 24.

But this is only half the story. The second development was that of much higher-than-expected earnings growth. During the past four decades, US industries (*unlike* those of Europe) became increasingly less competitive and more concentrated. As competition shrunk, firms gained the market power needed to raise prices in such a way as to generate vast "excess returns." The overall share of National Income accounted for by returns to capital rose from a normal 35% to 43%. This underlies the higher-than-expected rise in corporate earnings. As evidence of this unexpected profit growth, it has been estimated that some 76% of earnings announcements over the past two decades have been "surprises on the upside."

Above and beyond all this, earnings *per share* grew much faster than earnings due to the largest *share buy-back* in history.

What is remarkable about the overall growth of equity market wealth is that it was based upon the fundamentals of interest rates and earnings, and not on a speculative bubble. The P/E ratio never got out of hand *given* the collapses in the discount rate.

When it comes to other asset markets such as those of bonds and real estate, the main story was the collapse in interest rates. Issues of earnings were not as pertinent. Yet the fall in interest rates alone sufficed to trigger the greatest bond market rally in modern times.

So all in all, the shift from pessimism to optimism was “rational” in that it was based upon fundamentals. We now address the second question, namely where did all the money come from that made it possible for investors over several decades to drive asset prices upward for so long?

Where All the New M2 Money Came From: This is a complicated issue, and we shall merely sketch the answer. Four developments occurred.

1. The Transformation of Lending: The federal government pumped vast amounts of liquidity into the financial markets via huge fiscal deficits, and as a separate matter, via QE. What happened to this money, and how was it “multiplied” into today’s huge monetary stock? The fact that QE did not stimulate *Main Street* (since people did not wish to borrow) is irrelevant here. For the new bank reserves *were* in fact lent out to *Wall Street* to finance a record number of buyouts, mergers, and acquisitions. The new money was also lent to - or ended up as deposits in - other banks.

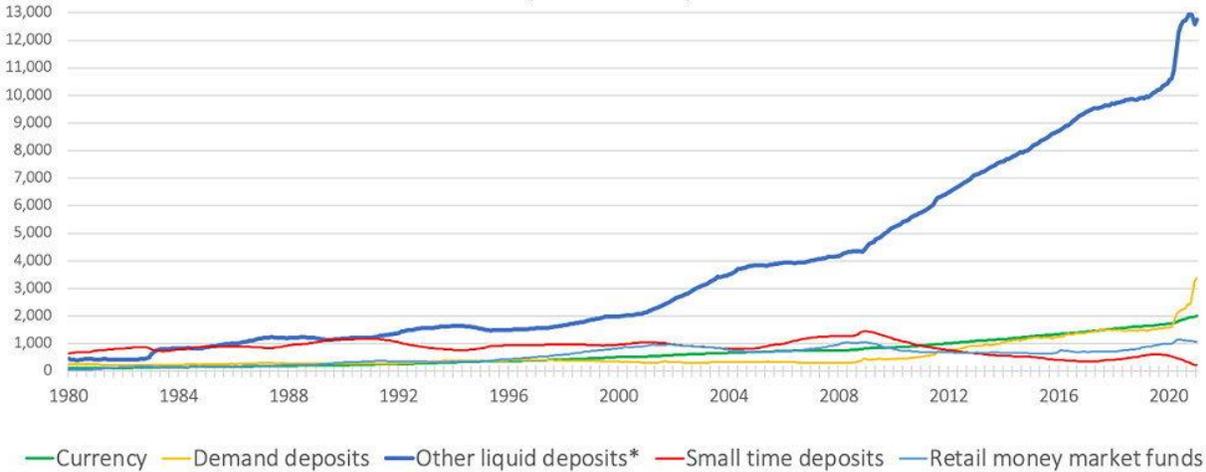
Now these other banks increasingly consisted of so-called “shadow banks” and non-banks. As more and more money was sourced to these new institutions, the groundwork was laid for an even greater generation of M2 money. *For the ballooning deposits in most of these institutions were not subject to bank reserve requirements.* They could thus extend far more loans per dollar of capital than conventional banks could. And they did. Consequently, their balance sheets are much more leveraged than are those of classically regulated banks belonging to the Federal Reserve System. Some data will clarify all this.

Figure 6 exhibits the growth of the different components of the M2 series. We see that virtually all of the growth in M2 deposits was accounted for by the component called “other liquid deposits” – this is the blue line that increases so rapidly. Growth of all the other components was dormant. It is in this “other” category that all the new money created by corporate deals ended up. And the banks and “nonbanks” that gained these deposits were far more deregulated and willing to take risks than traditional banks were.

Figure 7 then shows all this in another way: The share of total corporate borrowing financed by traditional bank loans fell sharply, as the lending that made possible all the new deals on Wall Street increasingly came from shadow banks and non-banks.

FIGURE 6

Components of M2 (billions of dollars)

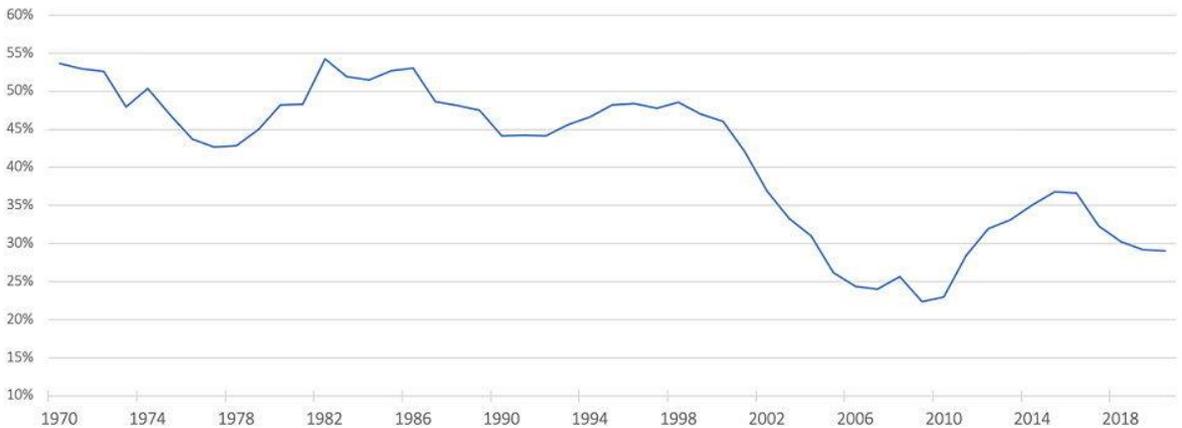


Sources: Federal Reserve Bank of St. Louis; SED

*Other liquid deposits consists of other checkable deposits and savings deposits.

FIGURE 7

Nonfinancial Corporate Business - Depository Institution Loans as % of Total Loans



Sources: Federal Reserve Flow of Funds; SED

2. Much Higher Leverage: The increase due to this transformation of lending was magnified by the inventions of entirely new forms of leverage. This permitted corporate debt and leverage to rise to their highest levels in recent history. One, but only one way in which leverage increased was the shift in borrowing from classically regulated banks to shadow banks and non-banks who could take greater risks. Our own view is that the excess corporate leverage we now live with is a dangerous “externality” that the Fed and Congress should have proscribed.

3. Higher Corporate Profits: Even more liquidity was generated by the remarkable rise in corporate profits in past decades, with 43% of National Income going to returns to capital, up from a traditional 35% in the past.

4. Record Low Interest Rates: On the one hand, the advent of “free money” whet the appetite of investors and businesses to borrow, borrow, and borrow, thus ultimately increasing M2. On the other hand, very low rates encouraged many individuals and even businesses to shift their funds from risk assets like bonds into bank deposits – the only truly risk-free asset. Why would you risk holding a 1.5% Treasury bond if a rise in rates would give you a capital loss? Better to keep the money in the bank. The result of this reality was to cause M2 to grow even faster.

5. Falling Capital Gains taxes: While capital gains tax rates rose and fell throughout this entire period, they fell overall. And this was the period when capital gains soared because of the combination of a bull market and increased leverage. These developments further increased after-tax profits and thus liquidity.

6. The Surge in Optimism: Last but not least, it is worth remembering that, in a long bull market, when prices keep going up, both buyers and sellers get richer and have more money to deposit. At any given point in time, a seller sells out to a buyer at a higher price than she originally paid; and the buyer will then sell at an ever higher price to another optimistic buyer in the future. And so on. In short, both buyers and sellers make each other ever richer. Until the music stops.

This completes our effort to explain (i) why investors for several decades became rationally optimistic, and (ii) why the money stock M2 rose as sharply as it did.

Postscript to our Seven Essays on Inflation

There are two main reasons why we have written a number of essays on inflation during the past two years. First, having forecasted deflation for over a decade, and having been right for the right reasons, *our views have been changed* by the advent of the Covid Epidemic, and by the response of government to it. We now believe that inflation will replace disinflation. Not only will CPI inflation pick up during this and the next year of recovery, as the consensus also agrees, but longer-run inflation will tick up as well. We thus disagree with Fed Chairman Powell that the inflation increases already being witnessed will merely be “temporary.” This is not to say that we

forecast a dangerous inflationary spiral in the longer run. Rather we simply expect inflation to rise from around 1.5% prior to 2020 to around 3.5% or even higher over the longer run.

Given the importance of inflation in driving both short- and long-term interest rates, and thus asset prices, we believe that SED's clients deserve a thorough and rigorous explanation of *why* we have changed our views. Our reasoning stems from the true logic of what drives inflation on Main Street: Shifts in the *location* of the supply and demand functions (curves) for goods and services. The price level only can increase (inflation) to the extent that the demand curve for output shifts out faster than the supply curve does. Inflation can also rise should the supply curve shift backward more than the demand curve does, which occasionally happens in recessions.

This reality in no way implies that traditional "indicators" of future inflation are unimportant. For example, should the funds available from a rapid growth in M2 reach the hands of consumers who spend the new money on Main Street, rather than save and invest the money, then the demand curve for goods and services will shift out and prove inflationary.

When applied to the issue of inflation in the longer run, our logic predicts an increase in inflation for the following reason: The demand curves on Main Street will be driven outward by what Keynesians call "excess demand." More specifically, we are concerned about the *combination* of (i) increased consumer spending due to a rebound in confidence and in employment, (ii) ongoing spending by the Fed bailing out ever more over-leveraged companies, and (iii) massive ongoing fiscal stimulus by the new administration - stimulus of the kind Keynes feared most. This is textbook "excess demand."

Keynes believed that the deficits resulting from government assistance in a recession should be pared way back once recovery arrives, and the sun comes out. But in the US, the Biden administration has made clear that it is not troubled by continuing to spend massively and incur trillion dollar deficits for years to come due to the alleged "needs" of the nation.

This trifecta of outward shifts in the aggregate demand curve will almost certainly constitute excess demand and will rekindle Main Street inflation in the years ahead. We are not discounting the ongoing role of technological progress in shifting out the supply curve, which is deflationary. There is no reason to expect such progress to slow down. It is simply that, in the years ahead, the demand curve will shift outward much faster than in the past *relative* to the supply curve.

The second main reason why we have written our essays on inflation is that inflation is far the most confusing topic in all of macroeconomics, partly because it is so very hard to understand. The main reason it is difficult to understand is that people find it very difficult to explain and predict a *number* (the inflation rate) from an assessment of how supply and demand *functions* (curves) will shift. The late and great Paul Samuelson of MIT stressed this main point over and over.

I am personally quite proud of these essays on inflation, and I know of no parallel effort elsewhere to explain inflation from first principles. Doing so is what my firm's research has been all about from the start.

H. Woody Brock

May 3, 2021

"Twin Quarries"

Gloucester, Massachusetts