

Monetary Trends in the United States and the United Kingdom

Author(s): Milton Friedman

Source: *The American Economist*, Vol. 61, No. 1 (March 2016), pp. 30-43

Published by: Sage Publications, Inc.

Stable URL: <https://www.jstor.org/stable/10.2307/26725759>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



Sage Publications, Inc. is collaborating with JSTOR to digitize, preserve and extend access to *The American Economist*

JSTOR

Monetary Trends in the United States and the United Kingdom

Milton Friedman¹

The American Economist
2016, Vol. 61(1) 30–43
© 2016, Omicron Delta Epsilon.
All rights reserved.
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/0569434515627111
aex.sagepub.com



Editor's Introduction

Originally published in Volume 16, Number 1, Spring 1972, pages 4-17. At the 1971 annual conference of the American Economic Association, Milton Friedman (1912-2006) delivered this paper as the fourth John R. Commons Lecture. It is a summary of research he was conducting with Anna Schwartz intended as a follow-up to their seminal work published nearly a decade earlier, *A Monetary History of the United States, 1867-1960*. Over his lengthy career, Professor Friedman became his generation's leading proponent of the Chicago School of economic thought and the founder of modern monetarism. In 1976 he received the Nobel Prize in Economic Sciences, "for his achievements in the fields of consumption analysis, monetary history and theory and for his demonstration of the complexity of stabilization policy." Professor Friedman was one of those rare economists whose work was as widely known by the general public as it was respected by his academic peers. In this paper, Friedman identifies, examines, and compares a variety of trends in the monetary bases of the United States and the United Kingdom using nearly a century of data. His observations on the impact of technology, such as "automatic computers" on the velocity of money and the early movements toward a "checkless society" are prescient given that they were written more than forty years before today's age of digital commerce. The paper concludes with a transcription of Professor Friedman's responses to questions from the lecture's audience.

JEL Classifications: E4, E5, N1

Keywords

money supply, velocity, national income, historical trends

I want today to present some preliminary results from a study that Anna Schwartz and I are engaged in under the auspices of the National Bureau of Economic Research on monetary trends in the United States and in the United Kingdom over the past century.¹

This study of monetary trends deals with the relation between money and other economic magnitudes over periods longer than the short business cycle that has been made familiar to all economists by the work of Wesley Mitchell and Arthur Burns and others at the National Bureau of Economic Research.

In order to get observations free from the effects of the short business cycle, we have used as our basic data average values over half a cycle - what the National Bureau in its terminology calls

¹University of Chicago, IL, USA (Affiliation at the time of original publication).

Corresponding Author:

Milton Friedman, University of Chicago, IL, USA.

reference phase averages or bases. The usual business cycle in the National Bureau chronology goes from a trough to a peak to a trough. For a more or less uniform cycle or a series of such cycles, an average for the period from the peak to the trough, or from the trough to the peak eliminates or largely reduces the cyclical component. A qualification is necessary because consistent leads or lags may leave some cyclical element in the phase averages.

These phase bases are our elementary observations. Some of the phases are two years long, some three or four or five years. They are for different lengths of time, but each observation is for half a cycle.

Chart 1 presents some of our basic series. The time scale runs from 1880 to 1969. We have data for the United States starting ten years earlier, but our British data started in 1880 and so we have kept these nine decades or ninety years as our basic period of study. Each point recorded on the chart is the average level for a half-cycle. The top series is the average level of nominal income in the United States in successive half-cycles; the one below that, the average quantity of money. The other two series give the phase averages of nominal income and quantity of money for the United Kingdom. The scale is logarithmic, and for both the U.S. and the U.K., nominal income corresponds to net national product and money, to what is generally referred to as M2, namely, currency outside banks plus all deposits of the public at commercial banks.

Over these nine decades covered by the chart, the quantity of money in the United States went up 176-fold. The national income of the United States went up 64-fold. That difference produces the secular trend in velocity that you have heard about and that shows up in the chart as a growing difference between these two lines.

For Britain, these numbers are even more interesting. Over those nine decades money went up 25-fold and national income went up 26-fold, so the ratio of the end value to the beginning value is almost identical for the two series.

Putting it in other terms, which are in some ways more easily grasped, in the United States in 1880, people held in the form of money an amount equal to a little less than 11 weeks of income. That is to say, if you added up how much their income was for a period of 11 weeks, that was roughly equivalent to the amount of money that they held. In 1969, at the end of the period, they held about 30 weeks' income. So, in those 90 years, the amount of money in the United States went up threefold, measured in terms of weeks of income.

That is a fascinating number for a reason which came out in one of the papers presented at these meetings, (the 1971 American Economic Association meetings), on the future checkless society. Donald Hester, in his paper, pointed out how the new developments in clearing through credit cards, or through automatic computers, with credit and debit at the same time, are moving us toward a checkless society. Therefore, he confidently predicted, the velocity of circulation of money would rise. That is, the amount of money held would decline sharply from the nearly 30 weeks of income held in the last phase on Chart 1.

The fascinating thing about that is that Irving Fisher, back around 1910 when he was discussing the future developments in money, said exactly the same thing. He said that, after all, we are going to have great improvements in transportation and in communication and these are going to make it possible to carry on transactions with a smaller and smaller amount of money relative to the volume of transactions. He therefore confidently predicted that over the next 50 years the velocity of circulation of money would go up sharply.

Now he was wrong. That doesn't mean that Hester is wrong, but at least it casts some doubt on his confident prediction. My interpretation is that both Fisher and Hester are making the mistake of overemphasizing the role of the transactions motive in the holding of cash balances, that the assets motive is much more important than the transactions motive.

There is another element that both of them, I think, neglected to some extent. Improvements in the efficiency of the transaction process have opposite effect on the quantity of money people

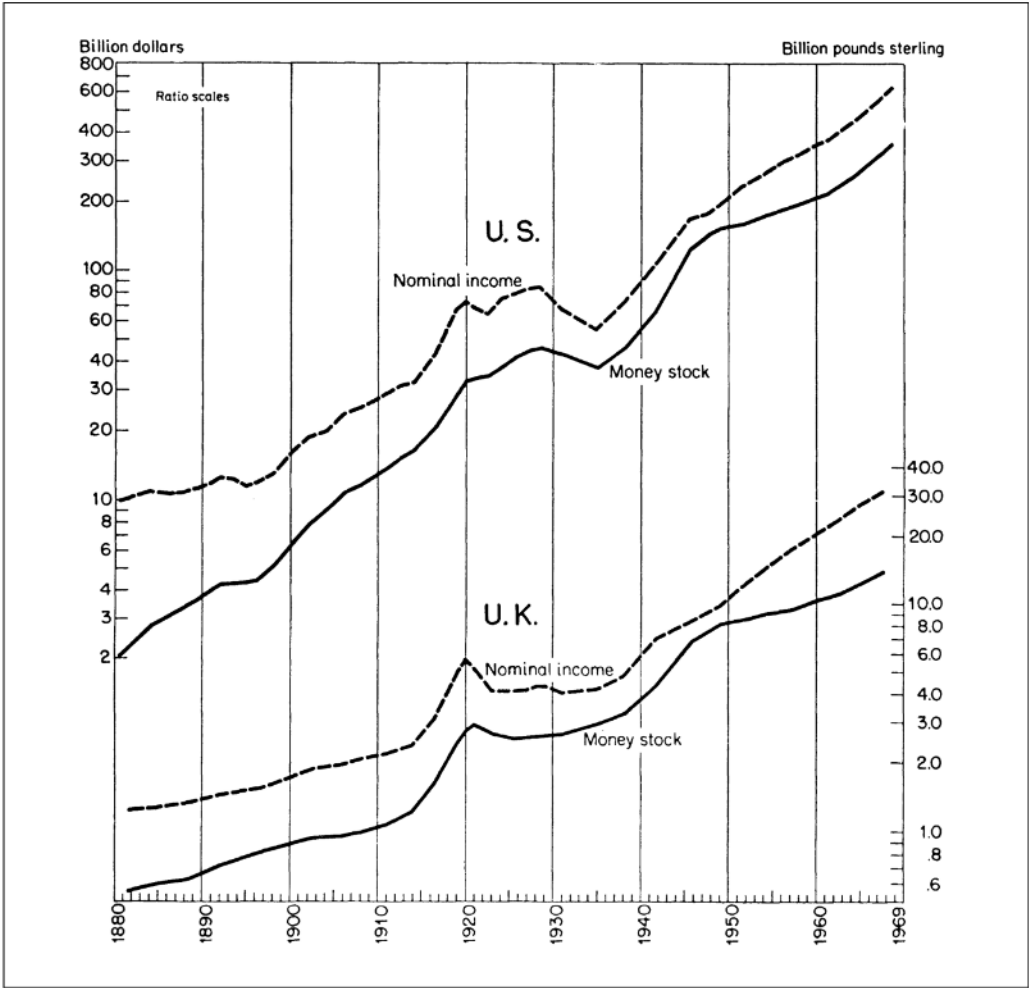


Chart 1. Level of Nominal Income and Money Stock in U.S. and U. K.

want to hold. In the first place, it makes it cheaper to hold the money. You get more services out of your money and therefore you want to hold more money.

On the other hand, it enables \$1.00 of cash balances in your stock to render more services and that works in the opposite direction. So, from that kind of science-fiction approach, I don't think you can be very confident about any predictions for the future of velocity. At any rate, I only record that over the past century such predictions have not been confirmed in either the United States or the United Kingdom and in both countries you have had very rapid improvements in technology.

For the United Kingdom, the amount of money held in 1880 was 23 week's income, and the amount of money held in 1968 was 23 weeks of income. You have to go beyond the decimal point in order to differentiate 1880 from 1968.

One question is what explains the drastic shift in money holdings in the United States from about 11 weeks to 30 weeks. One can see in Chart 1, and even more clearly in a later chart, that most of the narrowing of the gap between these two upper lines occurred from 1880 to 1906. At one time in my earlier studies of the demand for money, I was inclined to attribute the decline in

income velocity almost entirely to an income elasticity of demand for real balances greater than unity, but I now believe, on the basis of this comparison between the United States and the United Kingdom, that I did not give sufficient attention to the changing financial institutions and structures in the United States which proceeded particularly rapidly in those 30 or 40 years before 1906. I now think that the part of the narrowing which occurred before 1906 was produced by this improvement in financial sophistication. I shall return to that in connection with a later chart.

As always, when you have charts like this which give levels of income and money, there is an upward secular trend which makes it a little hard to see what the shorter-term movements are. The standard procedure in economics to allow for trend is either to use deviations from trends or first differences of some kind. What we have done is to get rates of change. The way we have done it technically is as follows: We have taken three successive cycle phases, have fitted a straight line least squares trend to the logarithms of the phase averages, and used the slope of that trend as the rate of change at the middle phase. In this way, we have used overlapping triplets of phases.

Chart 2 shows the rate of change of the same series. At the top you have for the United States the solid line, which is the rate of change of the money stock, and the dashed line is the rate of change of nominal income. The bottom is the same thing for the United Kingdom.

Those charts make dramatic and clear a point that I believe we have all by now come to recognize. I think it is impossible for anybody to look at those charts and say that the two series shown on each half are independent series. Of ten when we have statistical correlations of two such series, we are inclined to attribute their common movement to some common statistical element. For example, consumption and investment are both estimated at the same time as part of income; maybe the correlation between them is a statistical artifact. In the present instance, it is almost impossible to regard the correlation between the rates of change of money and income as a statistical artifact. The figures on national income come from a totally different set of statistical data than the figures on the quantity of money. The figures on the quantity of money come from the records of commercial banks on their deposits, from the records of the central bank on its liabilities outstanding, on currency issued and so on. These figures all come from balance sheets whereas the figures on income come from income statements, so you have two completely independent series.

Moreover, we all know that first difference series, or rate of change series, tend to be much more erratic than level series.

These are rate of change series, yet, as you can see, there is hardly a movement in the one series that is not reflected immediately and completely in the other. The biggest discrepancies are for World War II and the postwar period.

In World War II the money stock grew more rapidly than income, in both the United States and the United Kingdom. That is to say during the war velocity fell sharply. One of the fascinating things about this picture is that that is precisely the opposite of what happened in World War I in both countries. In World War I, velocity rose. One of the virtues of international comparisons, of comparing countries like the United States and the United Kingdom, is that if you look at only one country like the United States, you might say, "Is this reversal of behavior due to something peculiar to the United States?" Then you look at the United Kingdom and you find that identically the same thing is true in the United Kingdom. I don't profess to have a complete answer to the puzzle of why velocity moved in opposite directions in the two wars. But I believe it has a great deal to do with two phenomena.

One is the far more pervasive price control and rationing in World War II than in World War I. The other is that World War I was a high interest rate war and World War II was a low interest rate war. Both the United States and the United Kingdom followed financing programs during the wars so that in World War I interest rates went up and in World War II they went down sharply.

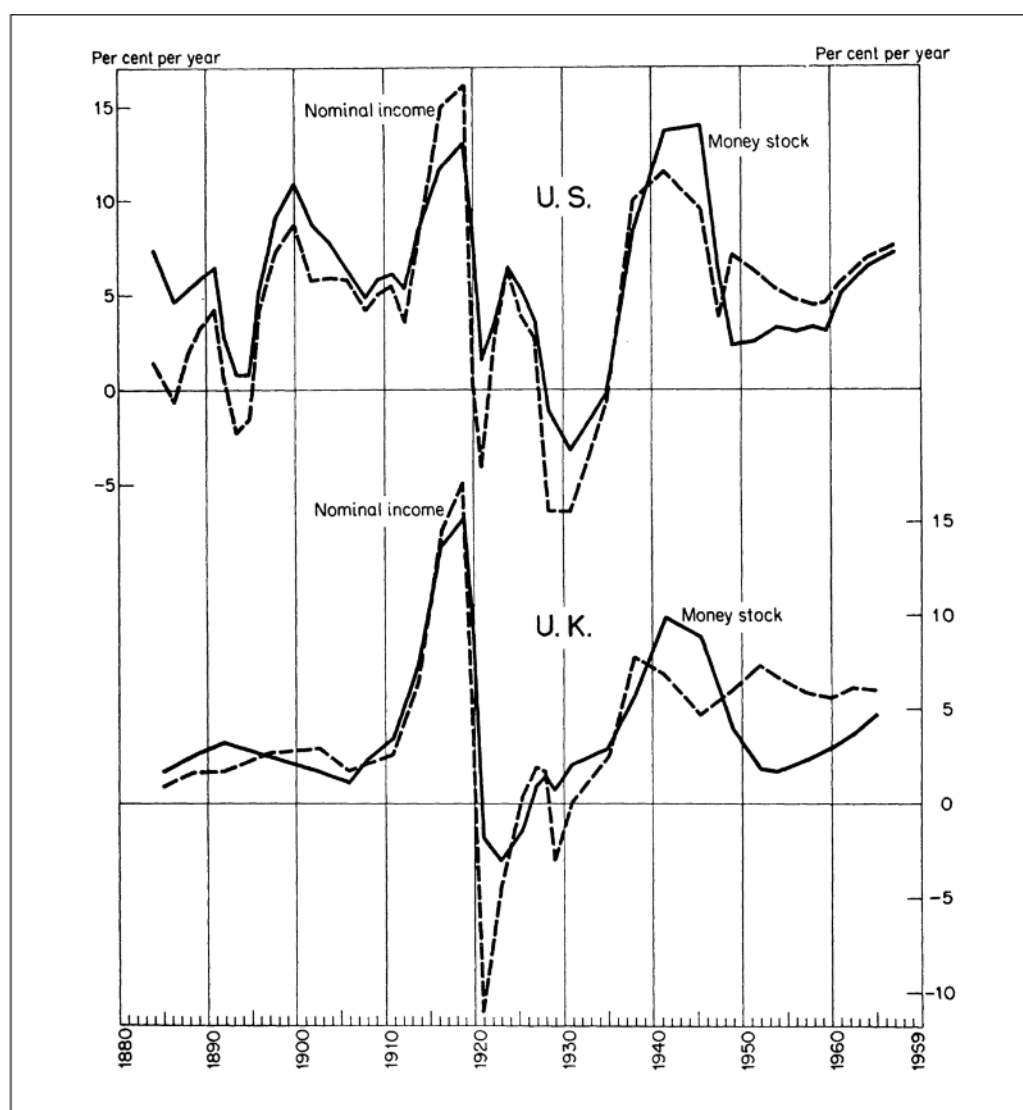


Chart 2. Rate of Change in Nominal Income and Money Stock.

At any rate, during World War II there was an overshooting of the money stock and, after the war, the reverse, a return to the pre-war relationship.

In the United States, it takes until the early 1960's before the pre-war relationship is restored. In the United Kingdom, it is still not restored by the late 1960's. There are a couple more observations since that graph was drawn and they show the two lines coming back closer, so I would say it took 20 years, from 1950 to 1970 roughly, for the United Kingdom to work out of its system the wartime decline in velocity, whereas it took the United States about 10 to 15 years.

So far as this evidence is concerned, it tells you nothing whatsoever about whether the rates of change of money and income move together because income influences money, or because money influences income. These series are silent on that question. That question is, of course, of the greatest importance and we have investigated it in great detail. You will find it no surprise that

I believe that the evidence supports the view that the relationship runs in large measure from money to income.

That doesn't mean there isn't a relationship the other way as well, but most of the influence runs from money to income. One way of seeing that that is the case is to note that if the relationship ran in the main, from income to money, you would expect for most of this period an inverse relation and not a positive relation. For the period from 1880 to 1914, both the United States and the United Kingdom were on the gold standard. If the initiating force were changes in income, then a rise in income would tend to produce an outflow of gold, which would tend to produce a reduction in the quantity of money.

Further, if the relationship were primarily from income to money, you would expect the relationship to depend on the kind of a monetary system through which it works. If the income flows are producing the monetary change, the effect a particular income change would have on money would depend on whether you were operating on a gold standard or non-gold standard, on the kind of central bank, the kind of commercial banking system, and so on.

Here we have a period of 90 years in which the American banking system changed drastically, in which a central bank was instituted in 1914. The United Kingdom was on a gold standard for much of the period but has not been since 1933. There were great changes in the banking system in the two countries. Yet you have exactly the same relationship between the monetary changes and the income changes in the early period and in the late period in the United States and the United Kingdom. That fits in much more neatly with the view that the relationship runs primarily from money to income.

The next question that it is natural to ask about this chart is how the changes in nominal income break down into changes in prices and output. Chart 3 bears on that. That chart shows the rate of change for the United States and the United Kingdom in the money stock per unit of output on the one hand and in prices on the other. We use money stock per unit of output because if output were to rise by 10 per cent, for example, and quantity of money by 10 per cent, the two would offset one another. Once again, I believe it is impossible to look at that chart and say that prices are an institutional datum independent of what happens to the quantity of money. Again, the same big discrepancy shows up as before. There is an overshooting of money during World War II and then after the war, a coming back together again, in both the United States and the United Kingdom.

I can well believe that part of that wartime discrepancy for prices is a statistical artifact, because whether price control keeps prices down or not, it keeps index number down. That is going to happen now. For the next couple of years, we are no longer going to have any decent figures for the United States on what happens to prices. One of the great challenges to economists, and those among you who are budding economists, is how to get valid measure of the true movements of prices during a period of price control.

Many years ago, I had an idea that I thought was going to work. My idea was, we have figures which enable us to calculate the average denomination of currency. We have the number of \$1.00 bills, \$5.00 bills and so on, and you can calculate what is the average denomination of currency. Similarly, we have figures from which we can calculate what is the average size of a check written. We have figures on debits to bank deposits. We have figures on the number of items debited. You divide one by the other and compute the average size of check.

It seemed to me that the average denomination of currency and the average size of check would be beautiful proxy variables for the price level, because if prices double, you would think everybody would carry a \$10.00 bill instead of a \$5.00 bill, a \$2.00 bill instead of a \$1.00 bill, and that checks would average twice as large.

A student of mine, John Klein, did some work on this and published an article over 10 years ago in the *Journal of Political Economy* on this. Our idea was that we would calibrate the relation for a period when there was no price control. Unfortunately, it didn't work. It is fine when you

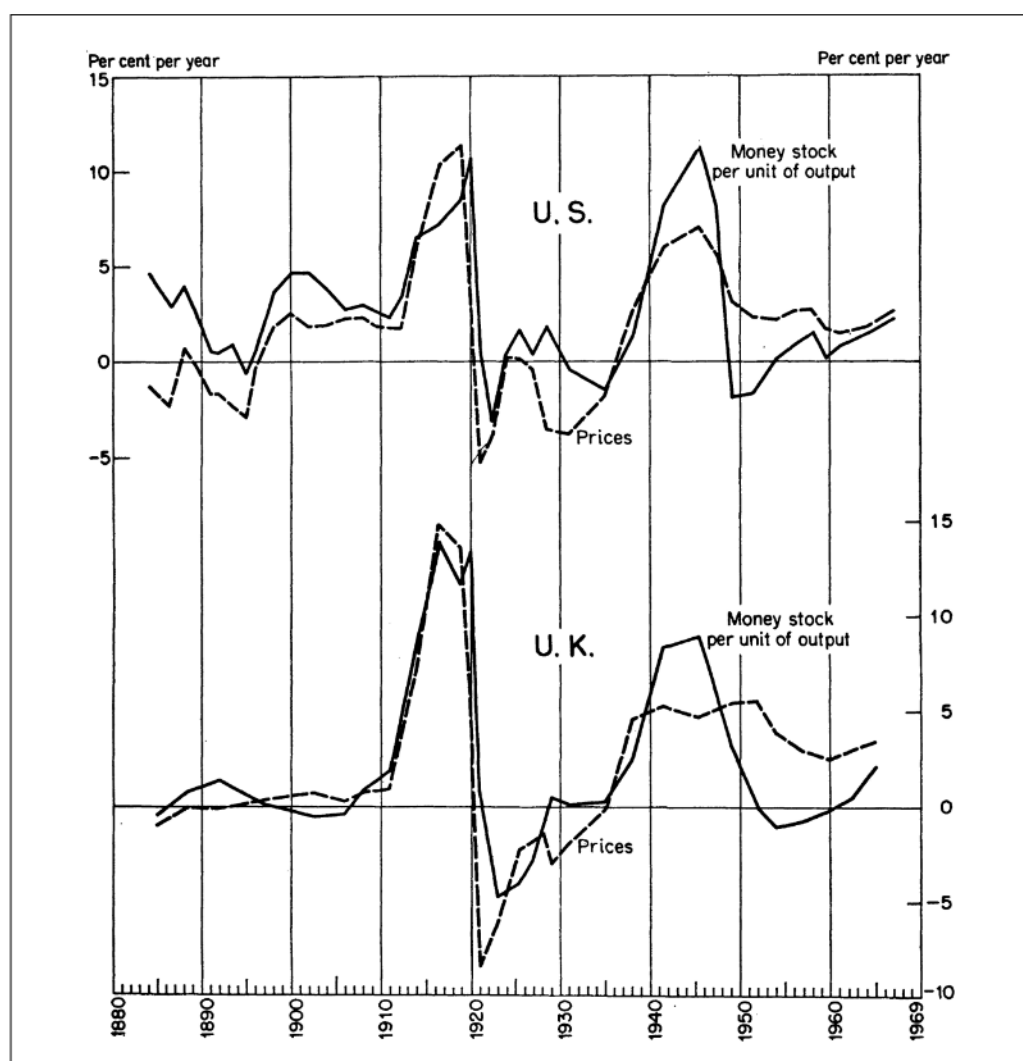


Chart 3. Rate of Change in Prices and in Money Stock Per Unit of Output.

have great big price increases, when you have doublings and triplings, but when you are having five or ten percent per year price changes, the other factors that affect the average denomination of currency or the size of a check swamp this effect.

I have also fooled around for World War II with other indirect methods of getting accurate price indexes. It is perfectly clear that the U.S. price indexes during that period don't go high enough and that there was an error in the figures. It is perfectly clear that that is true in Britain as well, so it may be that some of the wartime and postwar discrepancy in Chart 3 is a statistical fluke, but I must confess to utter failure in finding a more satisfactory way of measuring price change for such periods.

This problem has more than one dimension. In a recent study, George Stigler and James Kindahl compared the BLS price index numbers for subcategories with indexes computed from transaction prices. They got the actual bills paid and divided so many dollars paid for so many

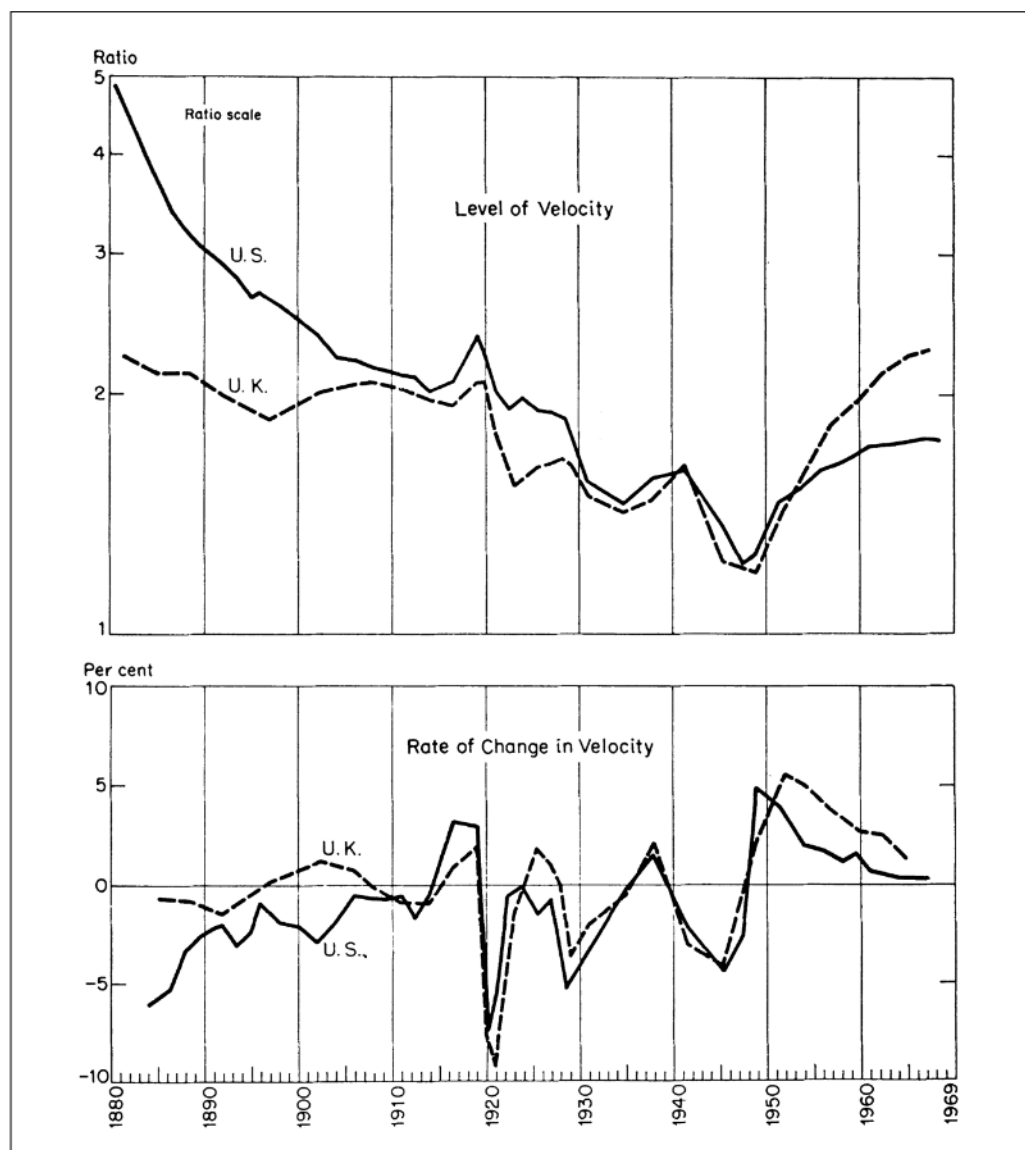


Chart 4. Velocity in U. S. and U. K.

tons of steels by the number of tons of steel to get an actual transaction price. There is a considerable and consistent discrepancy between the two sources of price data, so we mustn't take the price indexes published by the BLS as precisely correct, not because the BLS is deliberately disparting them, not that at all, but because they necessarily use an inaccurate method of measuring prices.

At any rate, I think you will agree that, aside from this wartime discrepancy, there is a very close relation between the rates of change in quantity of money and in prices per unit of output.

The final chart, Chart 4, is in some ways the most fascinating of all and raises the most interesting intellectual questions. This has to do with velocity. The top half plots the level of velocity. The number 2 on the vertical scale means that annual income was twice as large as the money

stock. That is, people on the average had six months' income in the form of money. Those are the number of turnovers per year.

The bottom half plots the rate of change in velocity, percent per year change in velocity.

For a moment look at the period between about 1905 and 1955, in the top half. The series for the United States and the United Kingdom are essentially identical for something like a 50-year period. Even if you were a very close student of the movements of velocity and I gave you those two series on separate unlabelled pieces of paper and said, "Which is which" you would have a hard time deciding which was for the U.S. and which for the U.K. You would have an even harder time if I gave you the series in the bottom half.

I don't believe anybody will persuade you that the closeness of the series is accidental, and it certainly is not produced by common statistical elements. In each country, the figures on money and income are independent, and there is almost no statistical connection between the figures for Britain and the United States. Any statistical connection is minor. I have treated as British money all money recorded as deposits in British banks, but in the early part of the period, some of that sterling many have been owned by U.S. residents. In the later part of the period, some of the dollars in the U.S. may have been owned by British residents. Our money figures are very defective in that respect, and we have found no practicable way to correct our money figures for dollars held by non-residents of the United States or for foreign currencies held by residents of the United States, but this overlap is surely trivial.

In the income figures, insofar as there is trade between the two of us, there is a connection since our exports come into the British figures as imports and conversely. But surely, it would be very hard to find four broad statistical aggregate series which are as independent as those four series are, and yet over a 50-year period you have almost identical movements in the two countries. One thing that this correlation suggests is that these data must be pretty accurate. If there were large random errors, so precise a correspondence would be highly improbable.

Let me discuss the early period before 1905 and the late period after 1955, where they diverge. In the early period, up to 1905, U.S. velocity is coming sharply down to the British level. It was this chart that persuaded us that we had attributed too much influence to the income effect in the early period and not enough influence to what we now call the improvement in financial sophistication in the United States—a very rapid increase in the number of banks and spreading urbanization so that people were closer to a bank and it cost less to keep deposits. I should point out that in that first period in the United States, there was a very rapid increase in deposits relative to currency, while there was no correspondingly rapid increase in the United Kingdom.

We are now inclined to regard the convergence in the early period as primarily a response to increased financial sophistication. The divergence of the past few years is a reflection of the phenomenon that I have already pointed out of the different time that it has taken in the two countries to get back to the prewar relation, as you can see in the bottom graph. In addition, I believe it reflects the greater rate of inflation in the United Kingdom than the United States. Inflation makes it expensive to hold cash and therefore, as we know from any studies from many countries, velocity tends to decline.

What are the implications of the similarity in the intervening period? The most obvious implication is that the two countries are not independent, that there was and is a unified economic world; that the United States and the United Kingdom were two parts of the same economic total in a very important fundamental sense.

Let me give you another closer example. One of our students, and also some Canadian economists, have investigated the relation between Canadian income and the Canadian money supply and between Canadian income and the United States money supply. For most of the period Canadian income is more closely related to the United States money supply than it is to Canadian money supply. That is not really surprising. If I said to you, "You are going to have to predict the income in Illinois, and you may have as a means for predicting the movement of income in

Illinois, either the quantity of money in Illinois or the quantity of money in the United States. Which would you take?"

I would prefer to have the quantity of money in the United States. There are going to be all sorts of random and erratic factors that will distort the money supply in Illinois alone and its relation to income. A broader total will be much more stable. Illinois has to move the way the rest of the United States moves. Even Illinois cannot move independently of the rest of the United States, though Chicago does well at times - at least in the intellectual world. So, I would prefer to have the total money supply of the United States. In the same way, if you want to predict what is going to happen in Canada, you will do better to take U.S. money supply plus Canadian money supply than either part separately.

Obviously, the same thing must be true for the United States and the United Kingdom, if the U.S. and the U.K. are fundamentally one economic unit. Another student of ours, Patricia Munch, made some calculations last year that we are extending and carrying farther that are very interesting. She took the rate of change of U.S. income and correlated it first with the rate of change of U.S. money and then added as an additional variable the rate of change of U.K. money. That improved the estimate for the U.S.

Similarly, if you correlate the U.K. rate of change of income with the U.K. money supply, that is the most important single variable, but adding the U.S. money supply improves the prediction for the United Kingdom. There apparently is a unified world in the field of money. We really have to broaden our vision beyond a single country to understand what is going on.

A second important implication is that a theory of what determines velocity had better not put much weight on phenomena that are peculiar to a single country.

Let me illustrate that in a concrete way. One of the puzzles that has bothered people is the rapid rise in velocity in the postwar period in the United States. As we have seen, most of that was really a reaction to the wartime fall, and there isn't much of a rise once that reaction is allowed for. But many people speculated that the reason for the rapid rise in velocity was the growth of savings and loan associations and of mutual savings banks, which provided a substitute for cash and therefore produced a rise in velocity. But if that were the explanation for the United States, what explains the still larger rise in velocity in the U.K.? There has apparently been no such dramatic institutional change in the U.K. as there was in the U.S. Similarly, this consideration immediately rules out many possible hypotheses about the major factors affecting velocity. Whatever they are, they are forces that are common to the United States and the United Kingdom.

A third implication of the common behavior of velocity is that it looks very much as if the conditions of demand for money are the same for both countries and have been the same for over 90 years. So far as we can see from all the charts, it looks as if there has been no change in any of the relations for a 90-year period. It looks as if the demand for money, in the sense of a functional relation between the quantity of money demanded and the variables that affect it, has been extraordinarily stable over nearly a century and has been the same in the two countries, Britain and the United States.

We have made more detailed studies of the demand functions in the two countries. In such studies, there is, of course, a problem of units. The British data are in pounds sterling and the U.S. data are in dollars. As long as you keep the figures in dollars and pounds sterling, there is necessarily going to be a difference in height of the two demand functions. It turns out that the slope coefficients do not differ significantly for the two countries. The elasticities with respect to real income seem to be about the same, as nearly as we can determine. These studies are still in progress, so what I am saying now is based on preliminary findings and may have to be revised later. However, at the moment, it looks as if the effects of income, of the rate of change of prices, and of interest rates are roughly the same in the two countries.

Given the same slope coefficients, we can ask the question, "What rate of exchange would make the demand curve identical? Let me explain what that means. Right now a pound is worth

\$2.60 on the market, but that does not mean that every single price in Britain can be converted into a price in the United States at an exchange rate of \$2.60 to one. There are a million exchange rates. If you compare the price of a loaf of bread in London in pounds with the price of a loaf of bread in New York in dollars, that will give one exchange rate. Maybe it will take a \$5.00 to one pound exchange rate to make the price of the bread the same in the two countries. If you compare domestic service, it may take a \$20.00 to one pound rate to make the price of domestic service in Britain equal to that in the United States. For automobiles, it may take an exchange rate of \$1.50. The average exchange rate of \$2.60 is the average of millions of exchange rates for individual commodities.

The question we are asking here is: Consider the costs associated with holding money or the returns from holding money, which primarily mean consider what is saved by holding cash, which is things like shoe leather but most important of all, time since the major purpose for holding cash is to save time. Then what exchange rate will make the services of money have the same value in the United Kingdom and in the United States? We have made this calculation in 1929 prices, when the official exchange rate was \$4.86. It turned out that it took an exchange rate of \$7.50 to make the demand for money identical in the two countries.

This is as far as I want to go with these results. What we are working on now and what I hope we can get somewhere with is to try to explain from these data what the common elements are that produce these changes in velocity. We also want to do some further exploration on things like adding together the U.S. and the U.K. income in money and seeing whether you really do get better relationships by treating them as a common monetary area than as separate monetary areas.

In the main, what I have done is simply to provide you with a report of work in progress. Thank you.

Discussion

THE CHAIRMAN : Thank you very much for that enlightening lecture. Professor Friedman will entertain a few questions from the floor. If you will so address yourselves, we have ten minutes or so for questions.

FROM THE FLOOR : Would that decline in velocity over that century be partly influenced by the fact that you used M2 rather than M1?

DR. FRIEDMAN : For the U.S., I cannot say what would happen over the century, because we have no reliable figures on M1 before 1914. From 1914 to date, it certainly would be influenced. From 1914 to date, the velocity of M1 has risen relative to the velocity of M2. That reflects mostly the fact that since 1934 there has been a prohibition on the payment of interest on demand deposits but not on payments of interest on time deposits.

I cannot answer with even that much confidence about the United Kingdom, because for the United Kingdom we do not have very good figures on M1. Most of our figures are on M2.

To return to the U.S., I may say, that for the period for which we do have M1 figures, while the decline in velocity would be affected, the rate of change charts I showed would not be significantly affected. I must say that I believe there are few issues that are less important in substance, than this great argument about M1 versus M2. It is a red herring of the most red herrings. I know no single important issue of an empirical kind or of a policy kind that really depends on whether you choose to use M1 or you choose to use M2.

FROM THE FLOOR : What are the mechanics, the mechanism, through which changes in the quantity of money in one country affect the level of income in another country?

Dr. FRIEDMAN : If the two countries are closely related, that is like considering Illinois and Indiana. If the quantity of money increases in Indiana, if people in Indiana have excess cash balances, they will tend to spend part on Indiana goods and part on Illinois goods. If the people of the U.S. have excess cash balances, they will spend part of it on Canadian goods. If there is a

unified monetary area, the effects of changes in the quantity of money in any part will tend to spill over into the other. Moreover, the relationship is closer than that, because even if you don't have a completely unified trade system, you have a unified financial structure. If there are excess cash balances in New York, that will affect the rate of interest in New York, and that will affect the rate of interest in Canada, the excess cash balances get spread out throughout the world or throughout the area, so that it is very hard to speak about an increase in the quantity of money in one part of it.

An important problem in monetary theory, and a source of much misunderstanding is something I tend to call the first-round effect. John Stuart Mill in 1844 wrote somewhere that an increase in the quantity of money which came through excess government spending for goods and services would tend to raise prices because it would immediately increase spending, but he said if the government were to increase the quantity of money by the same amount, by buying bonds, it would have no such effect because it would not affect spending.

An increase in the quantity of money is going to go through many rounds of spending. It gets into some hands right off. Maybe it gets into those hands because the government buys bonds. Maybe it gets into those hands because those people dig gold out of the ground. Maybe it gets into those hands because the government finances a deficit by increasing the quantity of money.

Wherever it is that first round, it will then get into somebody else's hands, and they will in turn spend it, and it will continue to circulate. In many ways, one of the most illuminating ways to interpret the difference between the Keynesian and the quantity theory hypotheses about short-run change is that the Keynesian hypothesis asserts that the first-round effect is extremely important compared to all later effects, while the quantity theory approach asserts that the first-round effect washes out very quickly.

That is very much related to your question. Just where exactly the quantity of money increased determines the first-round effect. Whether it will dominate the picture depends on how rapidly that effect disappears.

The evidence I have been giving here has been for periods of half-cycles, as long as two, three years. Surely in that period of time, we would not expect the first-round effect to be of great importance. Income velocity of circulation is two, three, four times a year. Transaction velocity is three times that, so the first round maybe lasts a month, two months or three months. Certainly for these observations that would cancel out therefore it doesn't matter where in the monetary area the quantity of money increases. It spreads throughout the whole of the financial market, and then it affects spending through all the streams through which it flows.

Personally, I believe, and I think that there is a great deal of evidence to support that belief, that the first-round effect is rather unimportant, even for short-term observations and even from the point of view of six months or nine months. It makes very little difference whether the quantity of money is increased by financing a government deficit or by buying bonds. I think John Stuart Mill was wrong, and I think his modern followers who say the same thing are wrong. Of course, as a theoretical matter it must matter into whose hands the new money first comes. That is certainly going to affect the details of the transmission process, but I think it washes out very quickly so that for periods longer than six or eight months it is really utterly unimportant.

FROM THE FLOOR : Is there any sort of test that you can get out of comparing the impact of English imports on the American data or American imports on English data as contrasted with the gross impact of quantity of money? It would seem evident the first two multiple first-round effects are, of course, capital movements and imports.

Dr. FRIEDMAN : No doubt. I haven't looked at it. I have no answer. I really just don't know.

FROM THE FLOOR : Because of the dominance of the American economy throughout the world, could you not also logically extend your analysis to the other Western countries that are allied politically with the United States ?

DR. FRIEDMAN : It would be very desirable to do so. I agree with you completely.

Let me go back. When I started to look into these data, I think my initial impression was that the U.K. was obviously a larger economy than the U.S. in 1880. I soon discovered that I was wrong. Already by 1880 the U.S. was much larger in terms of total income than the U.K. The U.K. was dominant in the international financial market, but in terms of size, the U.S. was already the dominant economy.

In any event, if the U.S. and the United Kingdom are so closely related, it stands to reason that much the same thing must also be true for France, for Germany, maybe for the Scandinavian countries. Unfortunately, I have not done any work on that. I would love to see some work done on it along the same lines.

FROM THE FLOOR : I am concerned with the thought that your research seems to show you cannot disaggregate financial markets and this sort of plays Cain with any policy efforts or prescriptions for monetary policies.

DR. FRIEDMAN : I would not say you cannot disaggregate, but after you have disaggregated, there are cross influences. Of course, we have always been aware that you cannot have an independent monetary policy in an open economy which is linked to the rest of the world by a fixed exchange rate. That was the burden of what I continue to regard as perhaps Keynes' greatest book, his tract on *Monetary Reform*, which most of you people have never heard of or never read. It was published in 1923 and I recommend it to you very highly.

The burden of his book was the conflict between promoting internal stability and external stability of exchange rates. In principle, you could isolate the strictly monetary effects by a system of floating exchanges. You would still not isolate the real effects. It would still be true that if the U.S. has a real boom, that would tend to improve the conditions for Britain's export industry and worsen the conditions for ours and you would still have an interaction.

I think you don't want to jump from the statement that there are important linkages between the different markets to the statement that they cannot be analyzed separately. There are also important differences. It is true for the United States for this whole period that the movements of the U.S. money supply alone are closely connected with the movements of U.S. nominal income. If you know what is happening in Britain, you can do still better.

FROM THE FLOOR : Your relationships don't seem to be nearly as close in the postwar period as in earlier periods. I wonder if you have given some consideration to how much of that difference might be due to institutional structural changes.

DR. FRIEDMAN : On the charts, you observe one difference, namely, that in the wartime there was overshooting. Aside from that it is not true that the realtions in the postwar period are less close than they are in the prewar period. In our studies for the United States alone, the lesson we have drawn is that you cannot regard the whole postwar period as a unit. If you go back before about 1955, you are mixing two different periods. However, for the period from about '53 or '54 on, the relationship is just as close in the U.S. for the postwar period as it is in the earlier period.

I don't believe you can as yet say there has been any change of structure. So far as the relations between money and income are concerned, it so happens the relationships for the past five years are closer than for any other period I know. In fact, that has worried me a great deal, because it has produced a tendency to overstate the importance of the movements in money. I think we have had an accidental period when you have had a very, very close relation, but I think one wants to be careful in generalizing that more broadly.

In answer to your question, from my studies there is no evidence that institutional changes have produced a looser relation for the postwar period than for the prewar periods between changes in the quantity of money and changes in income, once you allow for the wartime effect and the postwar working off of the wartime effects.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Note

1. This is intended to be a successor volume to the two volumes that we have already brought out. When we first started on this project, we intended to have one book. This one book divided first into two, *A Monetary History of the United States*, published in 1963, and another book on monetary trends and cycles. The second book then divided itself up into three parts, one of which came out in 1970, namely *Monetary Statistics of the United States*. The third volume is intended to be *Monetary Trends in the United States and the United Kingdom*, and we plan a fourth volume on monetary cycles in a number of countries.