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RECORD

BEHAVIOR OF FINANCIAL WORLD MARKETS -- A BRITISH ACTUARY'S PERSPECTIVE

Speaker: GORDON PEPPER*

MR. GARY CORBETT: Our speaker is Gordon Pepper, Director and Senior Advisor of Midland Montague, the investment banking and security's arm of the Midland Bank Group, which is one of the four largest U.K. retail banks. Midland Montague includes the stock brokering business of Greenwald Montague. Mr. Pepper was previously Chairman of Greenwald Montague & Company, and prior to that, Joint Senior Partner of W. Greenwald & Company.

In 1960, he was the joint founder of the Guild Edge or Government Bond Business of W. Greenwald & Company, and revolutionized statistical techniques in the gilt edged market. For many years he was regarded as the leading commentator on the U.K. Gilt edged market. In 1972, he introduced W. Greenwald & Company's monetary bulletin which became one of the most widely read monetary economic publications produced in the United Kingdom. He is a fellow of the Institute of Actuaries, a fellow of The Society of Investment Analysts, and an honorary visiting professor in the Department of Business Studies at the City University. At the university, he is now director of the Center for Research in the Financial Markets, which is in the process of being formed. His topic is "Behavior of Financial World Markets -- A British Actuary's Perspective."

MR. GORDON PEPPER: President of the Society of Actuaries and members, as a fellow of the Institute of Actuaries in London, I bring with me greetings from English actuaries, and also personal messages of good will from our current president and from our president elect who takes over at the end of June.

It's a great honor for me to be asked to give this address. It's lovely to be in your country once again. I was here three weeks ago, but I've always been a tremendous fan of America and it's lovely to be back.

I've been on this side of the Atlantic many times, but never before have I addressed an actuarial audience. But I quite often start with a story about what happened when I first spoke in New York. Now the story has, in fact, two purposes. Firstly, it gives you a chance to get used to the sound of my voice, to my peculiar accent. But secondly, it's a reminder that I will be talking English, but you will be hearing American. And English and American are in fact not identical languages. Now I was on the opening platform of both days

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of a two day bond conference. On the first day I ran into trouble because in the U.K., we call the government bond a gilted stock, a stock note. And we call a common stock an ordinary share. So what you refer to as bonds and stocks, we refer to as stocks and shares. Now the difficulty arose because in that morning session, whenever I meant bonds, I said stocks. And as someone told me afterwards, I wasn't exactly leading to Anglo/U.S. understanding.

Well on the second day, audience participation was in fashion. I thought the best thing to do was to get the audience on my side. I explained the problem to them, and I explained that I had a partner in the audience, Mike Higgins. And that I had a bet with Mike Higgins that I wouldn't say stock instead of bonds more than 10 times. In fact, after 10 times, he was going to earn a dollar for every time I said stock rather than bonds and I was going to earn a dollar when I said bonds appropriately. As I explained this to the audience, I asked them to hiss and let me know when I was up to 8 times. I hope that the actuarial audience was strongly in favor of me making quite a lot of money out of Mike Higgins. But that audience! After my prepared remarks, I sat down and congratulated myself. I didn't think I had said stock instead of bonds once. But during the discussion, I realized that I hadn't been concentrating. The last question of all was, "Gordon Pepper, do you realize that you owe Mike Higgins $67?" So be you warned. English and American are not the same language.

Now I think first, a little bit of history about the U.K. actuarial profession and how we came to become far more involved in investments than I understand you are over here. I think it started off with various actuaries being appointed general managers and chief executives of life offices pre-War, before the 1939-1945 war. In particular, one life office was in difficulties and a pair of actuaries were appointed as chief executives. They realized straight away that the asset side of the balance sheet was just as important as the liability side. When they were grooming possible young actuaries to be their successors, they thought it was common sense to put those potential successors through the investment department as well as through the actuarial side.

Now some of those young actuaries, very bright and able high flyers, took to investments like ducks to water, and they stayed in the investment department as investment managers. So in the U.K. by the late 1950s, you had quite a few life offices; in fact the majority of life offices probably -- not the general insurance companies but life offices -- had actuaries as investment managers or actuaries in the investment department.

Now the next step in the 1960s was for stock brokers to recruit actuaries to talk to the actuaries in the investment departments of the life offices. And I was one of a wave of about 20 of us that arrived in the stock exchange in the very early 1960s. In the mid 1960s, the Institute of Actuaries was the only professional body in the U.K. examining investments formally. There were two or three other bodies examining on economics as part of their courses, but we were the only ones who had been examining investments. That in fact was before the U.K. Society of Investment Analysts was founded.

So we have a long history of actuaries in the investment world in the U.K., and I think certainly until a few years ago anyway, actuaries dominated the research in the bond market.

Let me summarize the ground I want to cover. I want to be talking about the way in which financial systems, domestic financial systems, are not in

equilibrium. I want to describe some of the underlying financial flows in the system. I then want to describe how those underlying financial flows drive markets responsible for markets either rising or falling. And then the behavior of those markets. Then determine sentiment. Notice I'm going to be talking about financial flow, driving markets, and then the casualty running from the behavior of markets to sentiments, rather than the conventional way around of expectations driving markets. I will then to talk about what happens when the financial flows and expectations are in the same direction.

Now, all of that is a fairly meaty subject. I think I have been very lucky, and possibly you too, because there's a superb practical example to illustrate the analysis that I'll be talking about. That superb practical example was the fall in markets last October. As I said, I was over on this side of the Atlantic recently in a quasi-official delegation in Washington. I was fairly horrified at the analysis I heard of the stock market crash in October. In any other country it would have been inconceivable that you could talk about the stock market crash without at least observing it was a global phenomenon. It wasn't purely confined to the U.S. But more important than that, the extraordinary fall in markets in 1987 may not have been the fall of the stock market. It may in fact have been the 10% fall in a ten-year government bond in Germany between May and October. A fall of that size in a government bond market is equally extraordinary.

Then of course the instability was not purely in the stock and bond market. It was also in the foreign exchange markets -- the enormous central bank intervention and disequilibrium in those markets. So the story is not one of just the stock market falling. Its stock markets, bond markets and foreign exchange markets; hence the title of this address: Financial Markets. Not just with the U.K. actuary's perspective, but from a global perspective.

Most of my analysis and illustrations I'm afraid will be U.K. statistics. They are obviously the ones that I know best and am most comfortable with. But later on, please bear with me because I will be showing some U.S. graphs too, and you'll see that the pattern is pretty similar in the U.S. as in the U.K.

Now the U.K. story I think starts with a committee into the workings of our financial and monetary system. This would be the Radcliff Committee, which reported in 1959. The main thing of value to come out of that committee was the decision to collect and publish comprehensive financial statistics. And these started with a good coverage in about 1962-1963. But it wasn't until you had a five-year run of those statistics that it was worth really analyzing the value for markets and the explanation of behavioral markets with the use of those statistics. So that takes us to 1968.

Now it's interesting that we were only a few years, five or six years, behind the U.S. then. In fact, I was on this side of the Atlantic quite often then and was introduced or was introduced up until about 1980 as London's version of Henry Brothers. Henry's career and my career in the countries and the use of those statistics, in many ways, were very similar.

So the starting point is research that I did with another actuary, Robert Thomas, in the U.K in 1968. In particular, our research began when we started analyzing the flows of funds of the banking sector and the way they were connected with the business cycle.

Now the sole purpose of Graph 1, you needn't worry about the detail of it, is to illustrate the connection between the behavior of bank deposit, rate of growth of bank deposits and the business cycle. The dashed line is the rate of change of bank deposit. In real terms, after adjusting for inflation. The solid line is, in fact, unfilled job vacancies in the U.K. Now leave aside the reasons, but that is the single statistic in the U.K. that illustrates the business cycle most clearly. If one were doing that graph, one probably would use the coincidental indicators. The sole purpose of that graph is just to show obviously that there is a connection between the rates of change of bank deposits in real terms, and the business cycle.

Now Graph 2 is for bank lending. The dashed line is the rate of change of bank loans in real terms. The solid line is the business cycle again. And the sole objective of showing the solid line again is to just show there is clearly a relationship between the rate of change of bank loans and the business cycle.

Now in Graph 3, you can think of banks in terms of two businesses. The first business is collecting deposits. The second business is making loans. You can think of flows of funds as being the rate at which deposits are coming in less the rate at which loans are going out. So banks which have a surplus flow of funds have deposits coming in faster than loans are going out. When they have a negative flow of funds, the loans are going out faster than deposits are coming in. Again, there's an obvious connection between bank flows of funds and the business cycle.

In Graph 4, we show the bank's flows of funds and banking sector's holdings of public sector's debts, i.e., treasury bills and government bonds. Now what Graph 4 illustrates is the way the U.K. banks work. When they have a surplus flow of funds, they build up their holdings of government paper. When they have a shortage, they allow those holdings to run down.

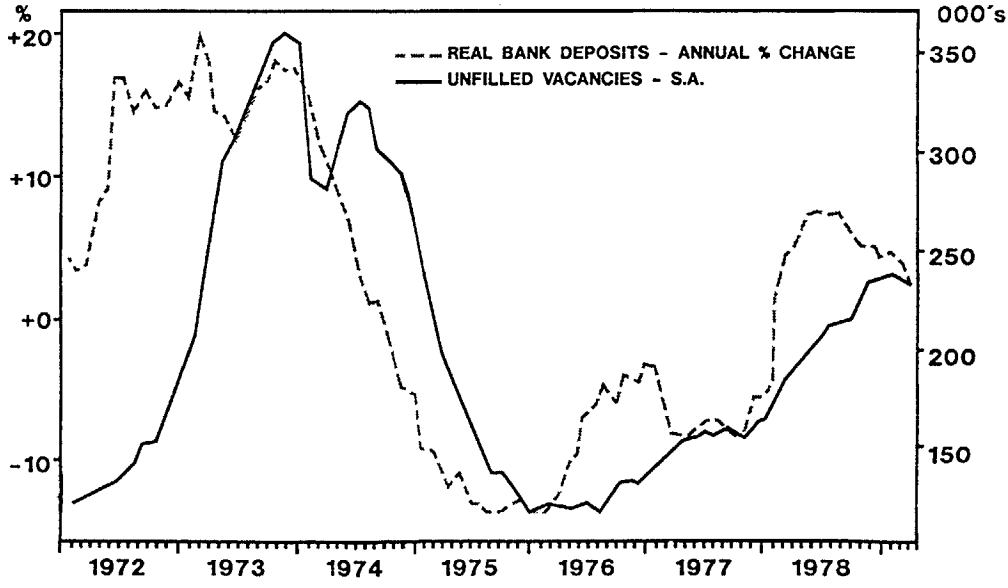
Graph 5 shows the bank's flow of funds as well as the holdings of government bonds. Again, you see a connection there between the flows of funds and the holdings of bonds. If banks have surplus money, they tend to invest in the bond markets. If banks have a deficiency of loans going out faster than deposits are coming in, they allow their holdings of government bonds to run down.

What we did then was to examine the behavior of the government bond market, about the ten-year government bond market, and compare it with the flows of funds of the banking sector. If I had been an academic economist, I'd have run a correlation, and I would have found that there's no connection whatsoever. Of course, there are many, many other things than bank flow of funds entering our government bond markets. But what we did was just merely look at the behavior of the government bond market when banks had a substantial surplus and when they had a deficit. We found that when the banking sector's flow of funds was either surplus, substantial surplus or deficit, they had always been the dominant force in the government bond market. The market has always done what you'd expect.

That then introduces a very important theme as far as I'm concerned, of an underlying flow of funds in economy. This time, it's one in the banking sector. A very important group of institution investors, invests in the market, not because they expect the market to go up, but because they have surplus money they've got to get rid of somewhere, and the residual form of investment is the

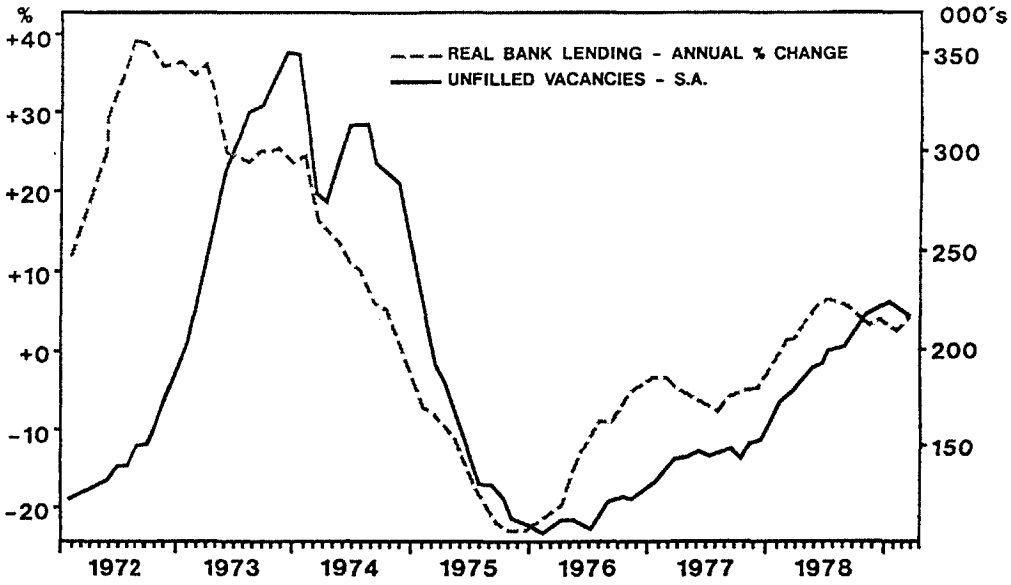
GRAPH 1

REAL UK BANK DEPOSITS & UNFILLED VACANCIES



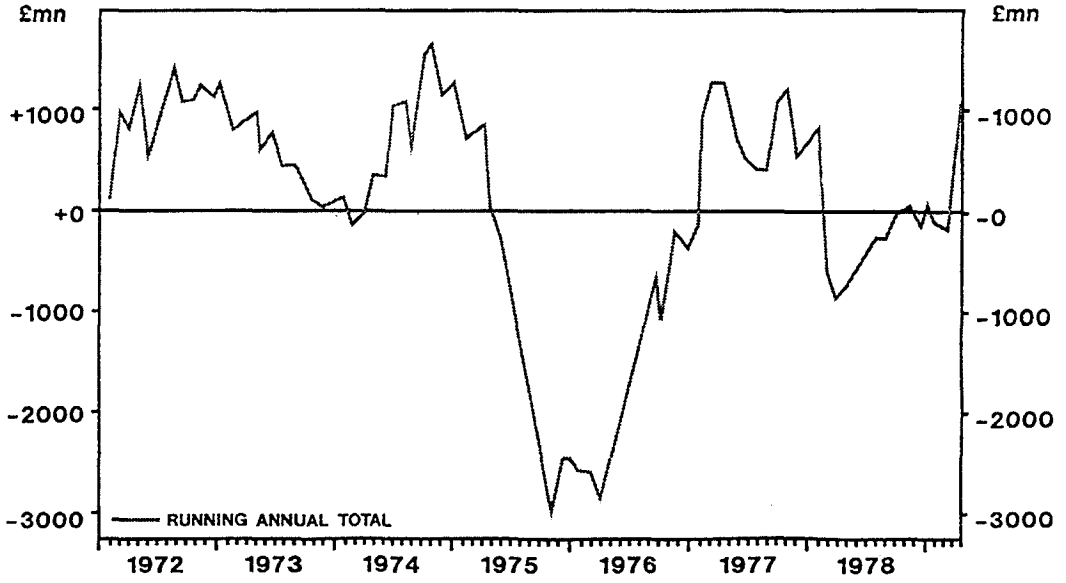
GRAPH 2

REAL UK BANK LENDING & UNFILLED VACANCIES



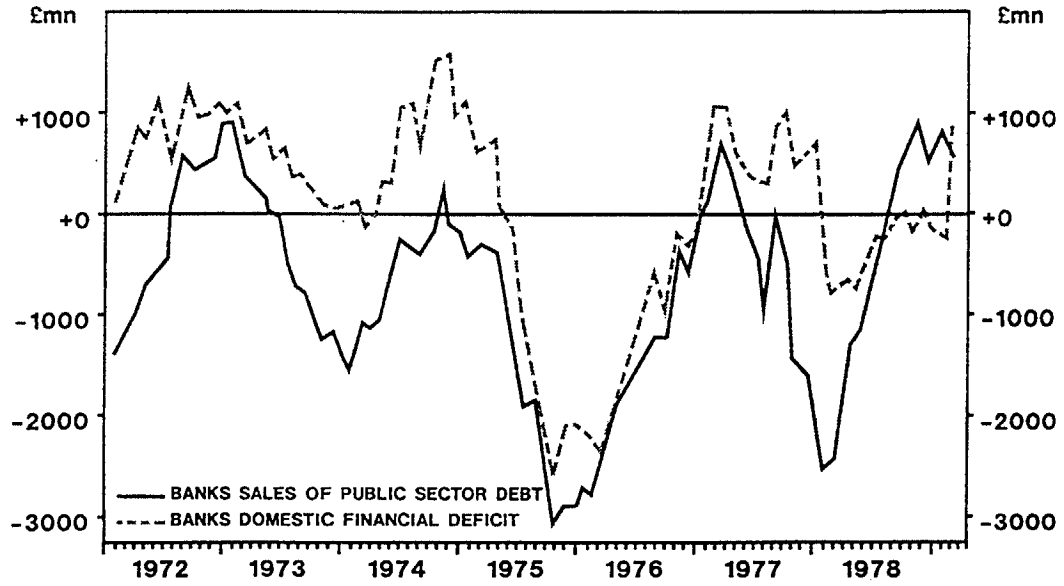
GRAPH 3

UK BANKING SECTOR'S DOMESTIC FINANCIAL DEFICIT



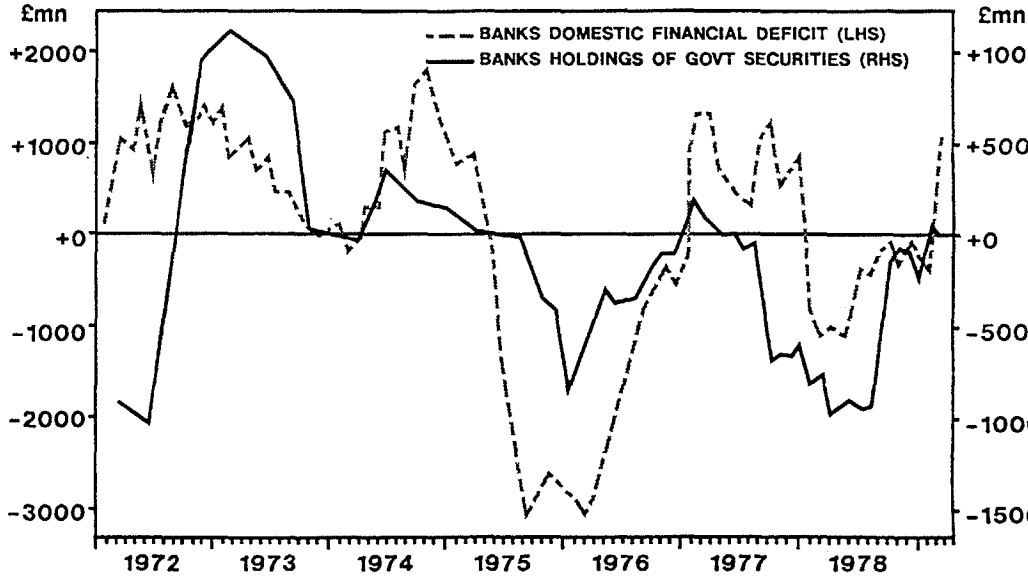
GRAPH 4

UK BANKING SECTOR'S SALES OF PUBLIC SECTOR DEBT



GRAPH 5

UK BANKING SECTOR'S HOLDINGS OF GOVERNMENT SECURITIES



government market. I would say that making money in the gilt edged market over this period was quite ridiculously easy because what one had to do was monitor the flows of funds to the banking sector and obviously according to the phase of the business cycle, we knew what to expect. When we saw the banks moving into substantial surplus of deposits, we would then talk to the investment manager of the banks. We could even wait until the first order to buy or sell from that claim bank arrived, or those claim banks arrived. Then making money in the gilt edged market over that period was a guaranteed certainty.

Those of you who are observant would have noticed that I said that this historical work was actually done in 1968. That's when we observed and identified that relationship. Graph 5 was run for ten years for making money. Now a bit of analysis that has produced a forecasting method that actually works in practice, and worked in practice for ten years, is far more reliable and carries far more credibility than someone that's just used a computer to go back in time and to find the statistical relationship that fits. But I want to stress that I'm not presenting a formal professional paper. I'm trying to get over broad ideas. That relationship in fact broke down shortly after that when foreign exchange controls came off in the U.K. and banks could use the foreign exchange market as a residual source of their flow of funds. So I must warn that a little knowledge is a dangerous thing. Actually it's essential that people have an understanding of the financial system and the way it's evolving because one thing is certain, these techniques do not stay static. You've got to evolve the techniques as the system itself evolves. So that's a word of caution. Later on, I hope to goodness that I remember to repeat that word of caution.

The theme that the bank's flow of funds is responsible for a rise in the gilt edged market, or later on for a fall in the gilt edged market if there's a deficiency, brings me to explaining the way our flow of funds drives the market. Then the way the behavior of the market determines sentiment. In London, I'll almost guarantee to you that if our gilt edged market is going up, if our equity market is going up and sterling is going up, London will be optimistic. I tease my friends in the *Financial Times* in London that when markets are going up, you'll see all the good news in the front page of the *Financial Times* and you'll see the bad news tucked away on the inside pages. You'll see the headlines bullish. When markets are going down, you'll see the bad news on the front page, the good news on the inside pages, and you'll see headlines bearish.

There's no question in my mind that the behavior of markets very often causes sentiment. If you're a stock broker, you feel you have to be able to explain the recent behavior of the market, otherwise why should your clients attach any credibility to your forecasts and predictions of what the market is likely to do in the future. If you can't explain the past and if you don't know the reason why it's just fallen. Why on earth should they pay any attention to you at all? So you have to invent explanations. Once you've repeated those explanations a half dozen times or more to your institutional clients, you end up believing in them yourself. I very often quip that the stock broker profession -- remember, I'm attacking myself -- has an unlimited ability to invent clever explanations for things we fail to predict.

The point of course is more often than not, the explanations are rubbish. On the same theme, you all have observed a market which appears to react to good news and ignores bad news. Think of Wall Street a couple of years ago. And then at other times, you would observe a market that only reacts to bad news

and ignores good. I would claim that when you see a market with a persistent tendency to do that, explanation is an underlying flow of funds. If a market reacts to good news and not bad, you'll have a favorable underlying flow of funds and people with a more persistent tendency to be more buyers than sellers. If a market is reacting to bad news, ignoring good, the persistent tendency is to be more sellers than buyers.

Now although I have argued that the causality runs from flow of funds to the behavioral market to sentiment, of course genuine expectations are vitally important. I'm only going to spend a brief time on genuine expectations because they're so widely known of course. If people are getting optimistic about the economy and the equity market, if they're getting optimistic about a rise in corporate profits, in company earnings and dividends, and if, at the same time, you have a favorable flow of funds, then you've got the two things together, flows of funds and expectations, and then you'll have a large rise in markets.

Let me just at this stage go a little bit more micro. For example, demand inflation means too much spending. But if people are spending too much, by definition, they must be saving too little. If they're saving too little, it means there will be an underlying tendency for the supply of savings in domestic economy at large to be less than the demand for finance, i.e., when you have demand inflation, the underlying micro flows of funds in the economy will be adverse for financial markets.

Now inflation of course means expectations in your bond market would also be adverse. So your bond market will never stand up to genuine demand inflation. If you think of the other side of the economic cycle and think of a recession, people lose confidence in a recession. Losing confidence means that people spend less, i.e., they save more. In a recession, your underlying flows of funds are favorable for markets. The supply of savings would tend to exceed the demand for finance.

Some of you may have wondered why in fact we have a cyclical behavior of stock market and bond market over business cycle. Why don't the expectation transactions smooth out the fluctuation in capital markets? I would claim that over the business cycle itself, you have these fundamental financial flows, which is a very very important reason why we have the cyclical rises and falls in both the bond and the stock markets connected with the business cycle.

Although I have argued that flows of funds and expectations together are very very important, let me just elaborate for a moment on the role of triggers. When a market moves, you nearly always have an underlying flow of funds reason. But that underlying reason does not control the timing of the moment. It is why a market is moving. You need a trigger, you need a news announcement. The popular explanation for the behavior of the market will nearly always be the trigger. Let's say bad balance of trade figures, bad trade figures or something or other. And people will genuinely believe that the market has reacted and done what it has done because of that news announcement. But if you go back over time, you will nearly always be able to find very similar bad trade figures equally unexpected which had been published when the market has not reacted to those figures. So I would claim that popular explanation, unexpected economic news or whatever it is, is the valid explanation for the timing of a market movement, but if you go back in time, you very often, not always, but you very often will be able to find an occasion when you have a similar news announcement but it didn't trigger the same movement in the market.

As far as fundamental factors are concerned, let's take something like the U.K.'s discovery of North Sea oil. You may like to ask yourself the question about why did the world or why did the stock market or why did the foreign exchange markets suddenly latch on to North Sea oil when they did. Why didn't they start anticipating the benefits of North Sea oil six months early, one year early, two years early, or for that matter, six months later? When you've got a long run fundamental force like that, you very often find that it's a reversal of the flows of funds. When the flow of funds is going in the same direction as that fundamental factor which controls the rough timing of when the market latches onto that factor, you get a major price movement when anticipating that factor. I think that is enough for the broad theory.

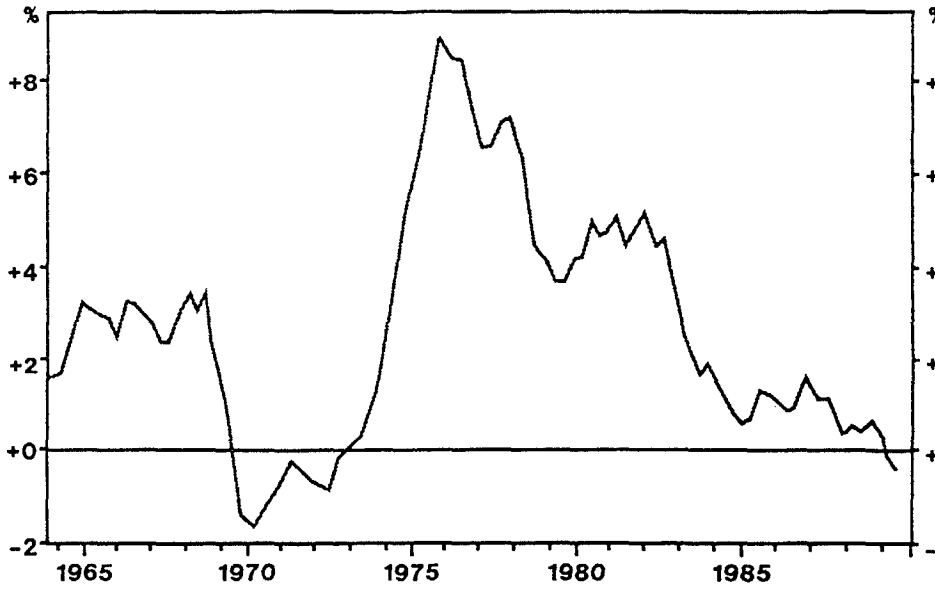
One of the reasons why many people have difficulty grasping flows of fund driving markets is that for every actual buyer in the market, there must be an actual seller. When a market is going down, the precisely correct statement is to say that there are more people wanting to sell at the opening price than wanting to buy at the opening price. The popular description, there are more sellers than buyers, is obviously wrong. You can want to sell something, but you don't actually manage to sell it until a buyer comes along. There's no transaction that's actually executed until the seller and buyer are matched up. So buyers and sellers are, by definition, identically equal. The official statistics are of actual prices in sales, and therefore in the official statistics, buyers and sellers by definition are identically equal and you cannot prove that buyers were greater than sellers or vice versa. It's very very difficult to prove if you're looking at the system as a whole, that there's any underlying flows of funds at all.

Graph 6 is more of a macro graph in the U.K. It shows the movement of financial deficit. The reason for adding industrial and commercial companies together with the public sector is that during a boom, the government gets more revenue in and therefore you have a business cycle effect. The budget deficits tend to fall in the boom and tend to rise in a recession. Industrial and commercial companies, non-financial business corporations, tend to do the opposite. In a boom, industrial investment is high and they need a lot of financing etc., and tend to move into deficits. By adding the two sectors together, you tend to cancel out the effect of the business cycle itself.

This Graph 6 shows the combined two deficits for U.K. in 1965 at about 3% in surplus. That's right up to about a 9% deficit in 1975 coming down to below zero for 1987. When you've got swings in the demand for finance of that order, I find it very difficult in the U.K. to understand why people don't comprehend financial forces driving markets. To have a supply of savings exactly offsetting those swings would be quite remarkable. So having introduced the concept of the banking sectors' flows of fund driving in market, that is a more macro concept of the demand for finance from both the public and business sectors leading to a financial disequilibrium. And as well as the banking sector, in the 1960s, we certainly had an example of the life offices. I remind you that in the 1960s, we had a lot of non-profit business before we had the growth of re-profit business or unit linked business. And also in the U.K., the liabilities of U.K. life officers are longer in term than your officers over here. We don't have guaranteed surrender values, and we have a reverse in the bonus system. Also, too, we had a very long dated government bond market without the callable features. So in the U.K., (1) a life officer had longer-term liability than you had, and (2) we had the longer-term non-callable bond available, and

GRAPH 6

UK PUBLIC SECTOR & INDUSTRIAL & COMMERCIAL COMPANIES DEFICIT AS % OF GDP



therefore we were able to match long-term assets with long-term liabilities more accurately than at the time you could over here.

My point is that in a recession when interest rates are falling and bond yields are falling, and we are approaching a cyclical turning point in the bond market, if I called the investment manager of a life office and suggested that he should sell a lot of his long dated bonds and move liquid, he would be very unlikely do so because he would be doing exactly the opposite of what the actuary wanted him to do. With the falling interest rates and the falling bond yields, and remember the dominance of nonprofit business at the time, the actuary was getting worried that he might have to revise his premium rates and his annuity rates. If the investment manager had mismatched at the same time as the actuary was getting most worried because of fallen interest rates, then the investment manager is doing precisely the opposite of what the actuary wanted.

We are still in those sort of times; you have a positive yield curve with short-term interest rates way below long-term yields. And so the investment manager selling the bond portfolio and going liquid meant that he had a loss of income. For the investment manager to sit around with a lot of income, doing the opposite of what the actuary and the basic business itself wanted, it meant that he had to be very very sure of himself indeed. If he got his timing wrong, if he was out of his timing let's say for as long as six months, he'd be in danger of losing his job.

So as well as an example of the banking sector's flow of funds driving markets, in the 1960s you had a clear example of the actuarial influence on life officers' flows of funds, and life officers doing roughly some of the things.

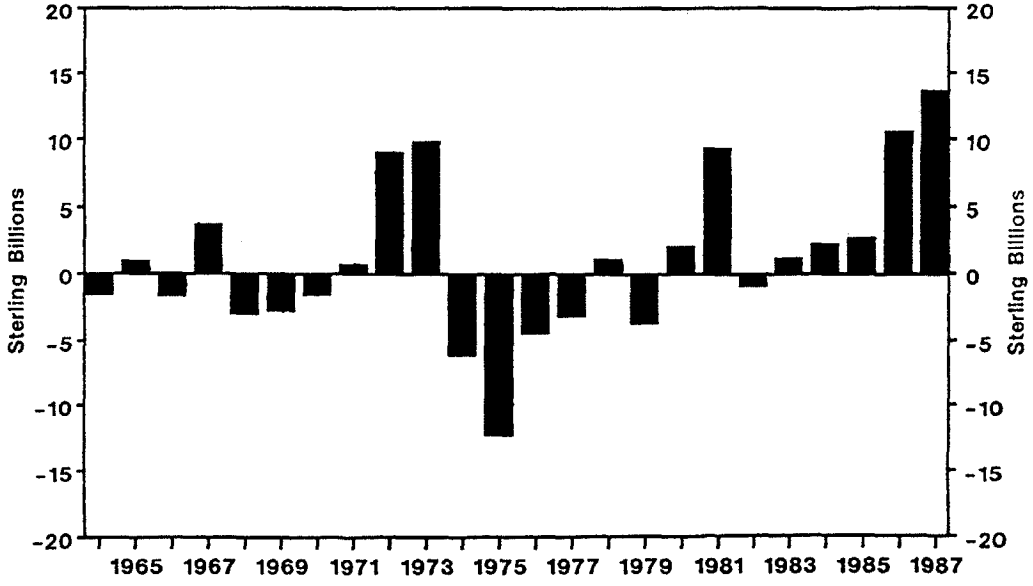
Let's move on to an example of the budget deficit in industrial commercial deficit. Here I'm going more macro. Graph 7 is a U.K. graph, you'll see the American ones later on. There are term deposits with our banks as well as side deposits with our banks. Is the rate of growth of those deposits in excess of that needed to keep them in line with national income or GDP? GDP and GMP are the same things. Let's say National Income that year went up by 15%. We'd taken stock of liquidity at the start of the year. We'd seen the exact rise in money terms during the year. We worked out how much the money struggled to rise to keep it exactly in line with the growth of the economy. Then that bar chart shows the surplus. So there is an injection of liquidity into the economy, and liquidity being withdrawn from the economy, being sucked out. This is at 1980 prices.

Now in pounds terms, let me give you an example. Note the 10 billion injection in calendar 1986. That's about a 14 billion injection of liquidity and I repeat over and above that needed to keep liquidity in line with economy. We in the U.K. would get excited about a change in our budget deficit by about 2 billion. Very often you want to do about times ten plus to translate U.K. terms into U.S. terms. So about a 20 billion change in your budget deficit would be significant about a 2 billion change in the U.K. budget deficit, we start getting excited.

I'm talking in two years about a 24 billion injection of liquidity. About ten times the size of a fluctuation in budget deficit if you get markets excited. I'm talking about an enormous financial flow. And I repeat, over and above that needed to keep liquidity in line with the growth of the economy. This was a period in the U.K. that was an explosion of liquidity which was associated with

GRAPH 7

ANNUAL GROWTH OF UK M 3
IN EXCESS OF GDP AT 1980 PRICES



Edward Heath as our Prime Minister and Tony Barber as our Charge of the Exchequer. That explosion in liquidity resulted in an enormous rise in U.K. price inflation. That money was spent on goods and services, so the prices which went up were the prices of those goods and services.

Then during the 1974/1975 recession, we had a sucking out of liquidity. Forget about this one; it was a peculiar distortion in the U.K. We had a restriction on the banking sector, some of the things we called "the corset" which was removed. But just look at the injection of liquidity here. And it's of the same order, slightly greater, than the injection of liquidity that caused all the trouble in the early 1970s.

Graph 8 shows exactly the same presentation. Again the U.K., but this time it's the growth of bank lending. Nothing much happening here. This I repeat is bank loans growing faster, it's excess over the rate of growth of economy. And you'll see the explosion of bank lending here. Then you'll see the squeeze in the 1974 recession, and again you'll see the explosion of bank lending here.

Now, as I said earlier, in the early 1970s, the additional injection of liquidity in loans was spent very very largely on goods and services. So the prices which rose for the price of goods and services are general inflation. Now for reasons that I haven't got time to go into, this liquidity and the growth of loans was spent mainly on existing assets. And one of the main reasons for that is the height of real interest rates. In the early 1970s, real interest rates were negative. There was no discouragement for people to spend that money and take out loans and spend it on goods and services. In this period here as in the U.S., we had record high real interest rates. That discourages people from spending the liquidity on the loans on goods and services. But as far as asset markets are concerned, you have the same high yield on the asset as on the loan, and therefore the effect cancels out and you've got nothing like the same discouragement from using the money or taking out a loan to acquire an asset as you have in goods and services. So the effect this time was a rise in asset prices. I prefer now to call the general inflation, the rise in prices of goods and services, as product price inflation. The result of that injection of liquidity in lending was asset price inflation.

Graph 9 shows the behavior of the level of bank loans in real terms and the behavior of our common stock index, of our equity index, that's the Financial Times actuary index; also in real terms. I leave it to you to judge whether there's a connection.

Graph 10 shows the annual rate of change of bank lending in real terms. It's a far more sensitive graph obviously. Note the annual rate of change of equity index in real terms. And again, I'll leave it to you to judge whether there's a connection.

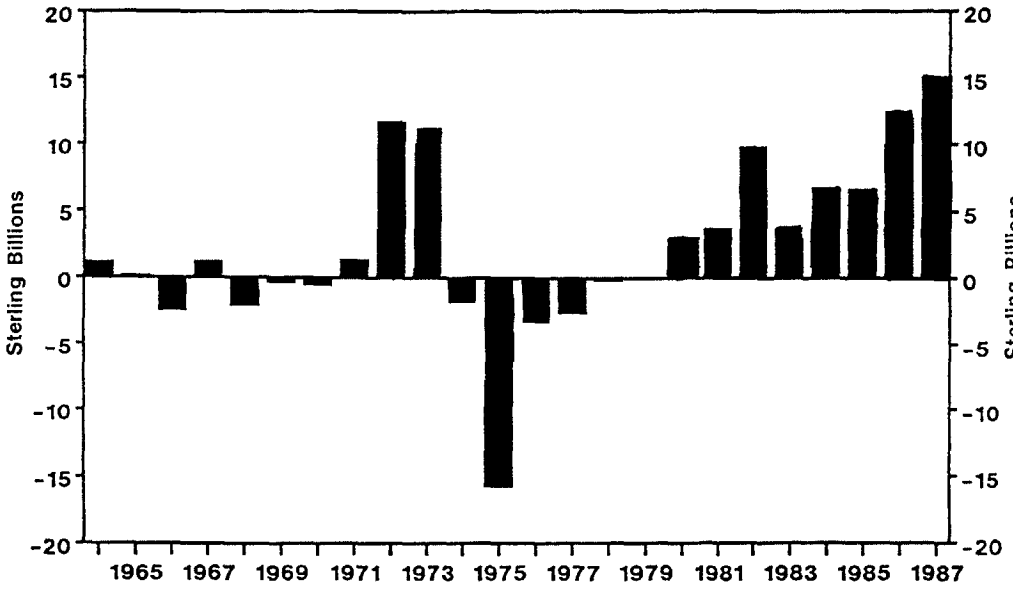
Now at long last, I start to move on to American statistics. Graph 11 shows you a similar presentation of data for America. Once again, bank lending is in excess of GNP. Loans are going up faster than needed to keep pace with GNP. Look at that incredible explosion of lending.

Graph 12 is U.S. also. Liquidity M2 is going faster, than the growth of GNP.

Now let's start getting a bit more interesting. In Graph 13, the solid line is the annual rate of change of the Dow Jones index. It lags six months so the eye

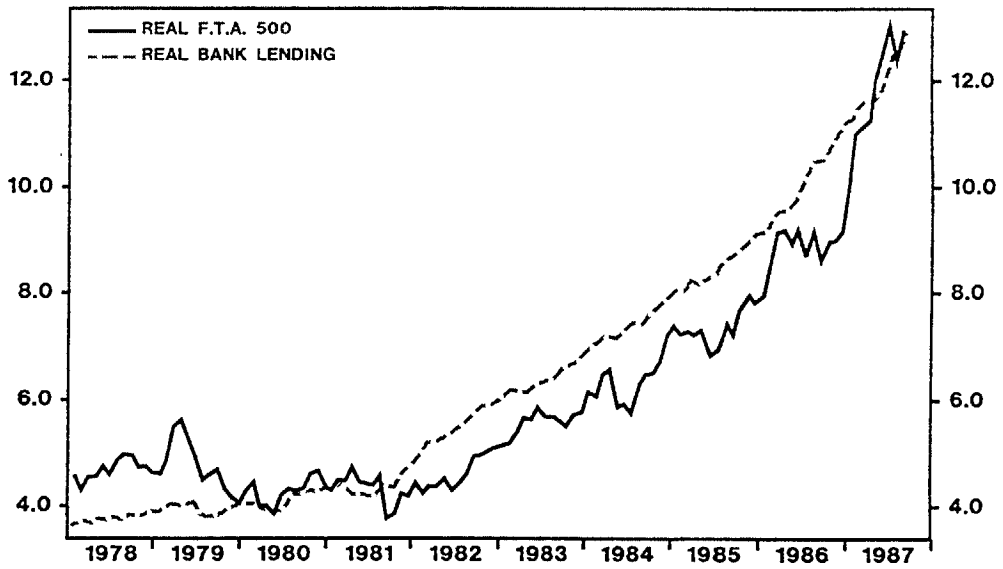
GRAPH 8

ANNUAL GROWTH OF UK BANK LENDING
IN EXCESS OF GDP AT 1980 PRICES



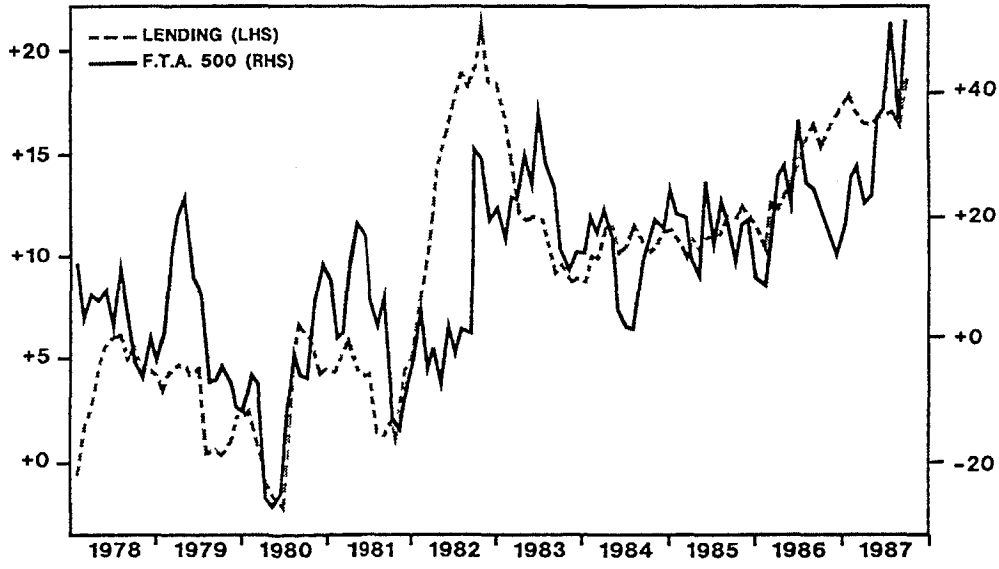
GRAPH 9

UK REAL F.T.A. 500 & REAL BANK LENDING



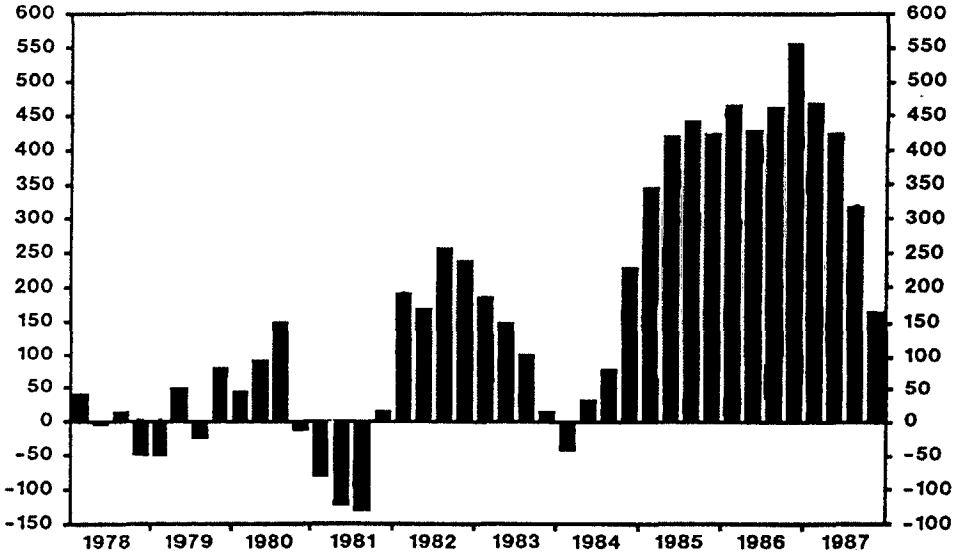
GRAPH 10

UK REAL F.T.A. 500 & REAL BANK LENDING Y/Y %



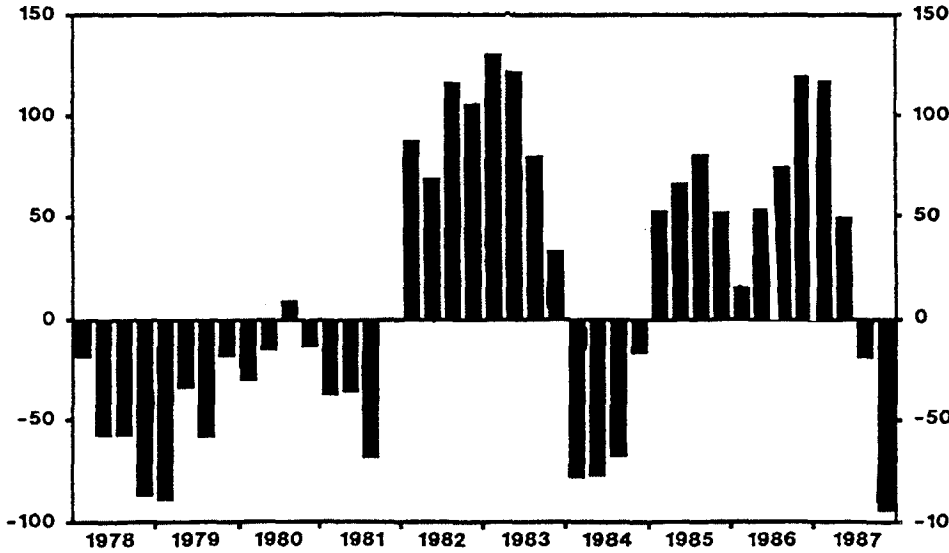
GRAPH 11

ANNUAL GROWTH OF US BANK LENDING IN EXCESS OF GNP - $bn



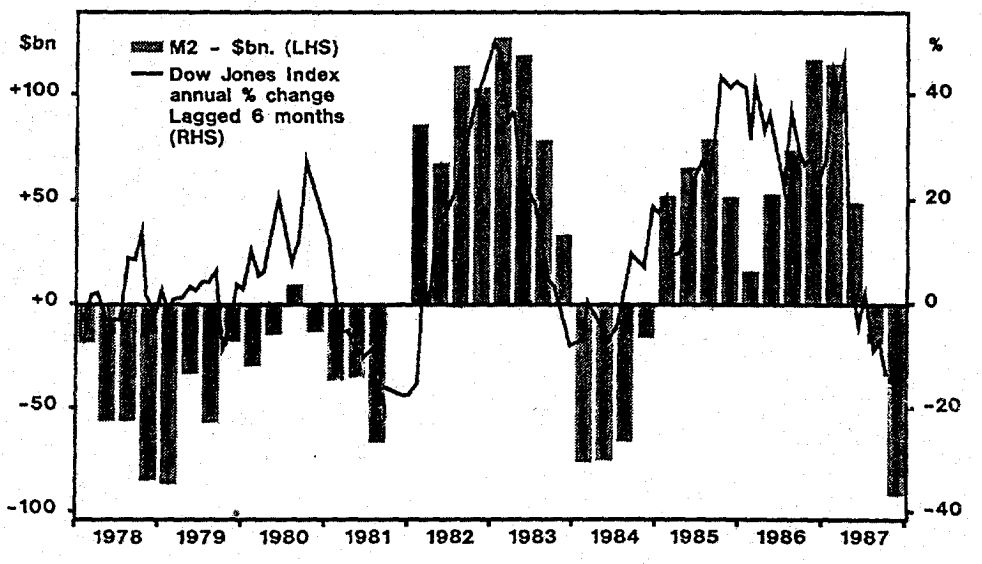
GRAPH 12

ANNUAL GROWTH OF US M2 IN EXCESS OF GNP - $bn



GRAPH 13

ANNUAL GROWTH OF US M2 IN EXCESS OF GNP + DOW JONES INDEX



picks up the connection. I could have started off with all your monetary aggregates. I could have started off with a monetary base. I could then put M1A up; that's the non-interest bearing deposits. I could then put up M1, M2, M3. I could put the lot up. I could have shown the relationship. The graph wouldn't have been exactly the same. There are variations, but you can average them and you can get a feel of not only the main fluctuation but also the second-order fluctuations. Now I chose M2 because it picks out those secondary fluctuations better than the other monetary aggregates. I've chosen the aggregate that illustrates the theme best.

I can't resist showing Graph 14. That is with the lag removed. Just observe the way the growth of M2 has preceded the movement in the stock market, fall in M2, preceded the fall, etc., etc.

In 1987, the extraordinary thing was not the stock market crash in October. It was the rise in market prior to October. What we had more or less throughout the world was a normal business cycle bull market. After the 1980-1981 recession, we had economies picking up. We had expectations of economic recovery. Profit margins were squeezed in recession and we had expectations of a rapid recovery and profit margins. We of course had expectations of an increase in company earnings and an increase in company dividends. So the expectational factors were bullish.

As I explained earlier, in a recession people spend less and save more, and your flow of funds forces in the same direction, they're bullish too. So in a perfectly normal bull market, as an economy pulls out of recession, you've got the expectational forces and your flow of funds forces in the same direction.

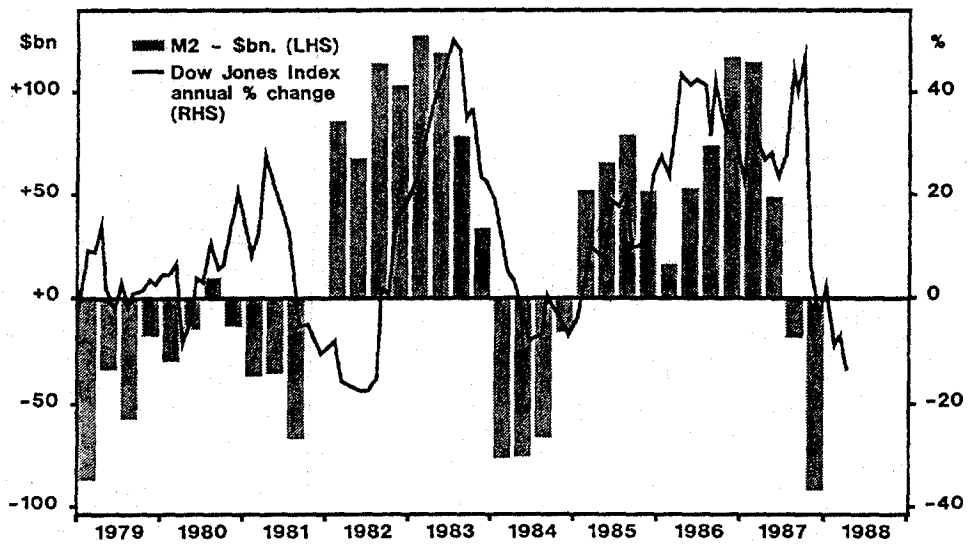
Now what happened in 1984, etc., was that the central banks, the Federal Reserve over here, the Bank of England in the U.K., allowed that enormous injection of surplus liquidity in credits. You can think of it like pouring gasoline on a bonfire. You've got a perfectly normal business cycle bull market, and then the central banks allow that injection of liquidity and credit of that order, and a quite incredible order, and it has exactly the same effect. The bonfire is already burning. That's a perfectly normal business cycle bull market. And you pour that amount of credit and liquidity into it, and you just get a total blaze.

You can go back into central banking history. You can go back before invented fiscal policy and before the growth of governments. You can go back to the origins of central banks. One of the prime reasons why central banks were founded was to stop that sort of thing from happening. Stop speculative bubbles. You can go back into history of 19th century banking prices and financial crises, etc., and the rationale for a central bank was to stop that sort of thing from happening. I'm afraid I have no hesitation whatsoever at pointing the finger of the underlying origin of the stock market crash in October at central banks. They failed in one of their basic original objectives and tasks. They simply should not have allowed that explosion of money and credit, which created a financial bubble.

I'm obviously aware that there are many explanations being invented for the stock market crash in October. I mention it to add credibility to an analysis that I had published in September in one of our bulletins describing the mechanism of the formation of the financial bubbles and asserting unequivocally that financial bubbles existed. That was in September, before the event. Now one

GRAPH 14

ANNUAL GROWTH OF US M2 IN EXCESS OF GNP + DOW JONES INDEX



could be quite unequivocal in asserting that there's a very dangerous financial bubble out there, and the stock markets are grossly overvalued. That is a totally and utterly different subject though, from discussing about what is going to make that financial bubble burst, and any observations at all about the likely timing of the burst.

The bursting of the bubble by definition, probably is the result of something, an unexpected accident which you cannot predict. But you could say one thing, and that is that a financial bubble, inflated to that extent, needed a non-stop supply of fuel -- money and credit -- to keep the thing inflated.

Graph 15 is a different presentation, a clear presentation of the rate of growth of M2 in the states. Again in real terms. And it shows the collapse in monetary growths. Now the collapse in monetary growths meant that the fuel that was keeping the bubble inflated prior to October had been withdrawn. I now change analogy. Instead of talking about a financial bubble, I talk about a hot air balloon, and I talk hot air balloon in which someone has turned the burner off. Now that's incredible; that's one of the sharpest changes in monetary growth in U.S. history. If you withdraw the supply of fuel that's keeping that bubble inflated, and to that extent, no wonder October occurred.

So when one could observe a graph like that, what one could say was that this chronically dangerous situation of a financial bubble had entered an acutely dangerous stage.

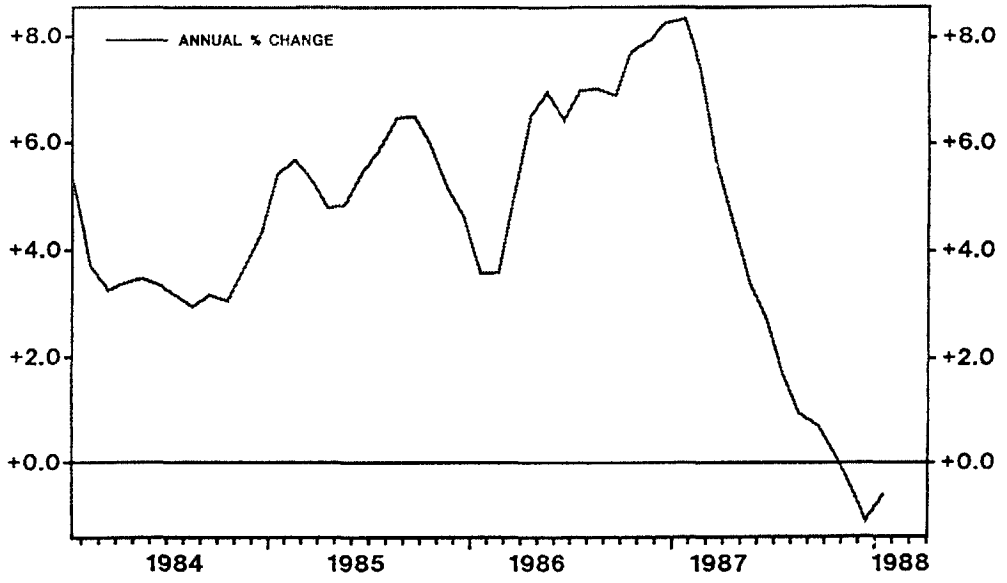
This then brings me on to the last thing I want to talk about, and that is the Louvre record and all essential bank intervention. Now the Louvre record was in February last year. In calendar 1987, the amount of essential bank intervention in the foreign exchange markets was quite extraordinary. In Washington a month ago, lots of U.S. economists put the size of the central bank intervention at about $60 billion because that's out of the Federal Reserve Bulletin of official holdings of U.S. Treasury Bonds and deposits with the Fed, etc. I was giving a presentation such as this in the middle of October in front of an official European delegation in the office, and the central bank, not of one of the major countries, but an important European country, and the delegate what the figures were. And in October, I gave a figure of $120 billion for central bank intervention, and he corrected me saying it was too low. I think now one probably talks about $150 billion as the amount of central bank intervention throughout the calendar 1987.

When a central bank intervenes in the foreign exchange markets, what in fact it does is to allow that flow of money from abroad to get into its domestic financial system. So it allows that flow of money to add to domestic liquidity. The first thing that that central bank intervention did was to provide liquidity outside the U.S. for the final speculative rise in the non-U.S. common stock markets.

I described before how bank credits have been one of the main driving forces behind the rise in liquidity. But outside the U.S., we then have this massive foreign exchange intervention pumping liquidity in again, and common stock markets outside the U.S. were rising for about six months. They're were very very buoyant indeed, after yours had turned fairly soggy. So that's the first thing, and then there was a crazy rise in the world stock markets outside the U.S.

GRAPH 15

GROWTH RATE OF REAL US M2 %



As I said, the intervention directly led to buoyant monetary growth. Particularly in Germany, for the German bond market and the Germans are very very sensitive to excessive monetary growth. The last time there was a major run on the dollar was in 1976-1977 I think. Then there's massive intervention by the Bank and the Swiss National Bank. They had to intervene because their export industries couldn't cope with the height of their currencies, and both those countries lost control of their money supply. And two years later (there's a time lag of at least two years normally between a broad monetary growth and price inflation), Swiss and German inflation got up to 7-1/2%. And that was totally horrifying by their standards.

When they lost control of their money stocks because of all the central bank intervention, the German bond market started getting worried. It wasn't too worried until there was factual evidence that price inflation was rising. This is where the rising commodity prices was very important. Now that too was connected with the central bank intervention. There are three ways of inflating a country, boosting demand. One is fiscal policy, budget deficit, etc. Another is to lower interest rates. The third way that very few people realize is foreign exchange intervention, allowing foreign money to pump liquidity into your economy. And that foreign exchange intervention, as well as being responsible for the last upward kick in stock markets, is directly responsible in my judgement, for the buoyancy of the Japanese economy and the buoyancy of the U.K. economy. You look at domestic demand and things in Germany, although there's a lag there, that's picking up too. So that foreign exchange intervention contributed to acceleration of economies outside the U.S. Some of the excess liquidity being invested in metals contributed to the rise in commodity prices.

And the combination of worries about excessive monetary growth plus commodity prices made the German bond market -- I think the right word is panic. Now there were other forces. Foreign investors had pushed German bond prices up to a level at which domestic investors weren't happy. And the last quarter of the movement, the Germans imposed a withholding tax of foreign investors. But the basic underlying reasons for the fall in the German bond market were the monetary rise combined with the factual evidence from commodity prices that inflation was picking up. Between May and October, you had a 10% fall in a ten-year German government bond, and you had the same sort of falls in Japan too.

The next thing that happened was that the demoralization of the German bond market then fed through to the German money markets. Basically the bond market was saying that the policy is too inflationary. So what happened was that the message coming to the German bank and the German authorities -- we're now into early October -- from both their money markets and their bond markets, was stop intervening in the foreign exchange market; it's too inflationary; this is an example of a financial market trying to impose discipline on its national authorities: "Stop intervening, it's too inflationary, we won't allow you to go on."

Now the story then becomes that the German authorities started paying more attention to these very clear messages from the domestic markets than the pleas from the U.S. politicians, and that was the origin of the row between the U.S. and German politicians that finally triggered the stock market crash.

Then the stock markets having crashed, you then have the Fed and the other central banks announcing they'll supply whatever liquidity the system wants,

and flooding the domestic system with liquidity. That, as you all know, then destabilized the dollar in the foreign exchange markets.

So the story is of financial instability, enormous financial flows, financial disequilibrium, started in the foreign exchange market (the intervention of the foreign exchange market), spreading in the bond market, spreading in the money markets, spreading into stock markets and then spreading back into the foreign exchange markets. It's a story of intervention just going from one market to another to another to another. I'm afraid I quip that I think in economic history, we had never ever seen before an intervention in one market of any like the size of $150 billion. Never has so much money been spent so unwisely. I'm pretty sure in five or ten years time, that will be the verdict of economic historians.

So I explained how the underlying credit in banking forces was responsible for the build-up of the financial bubbles. I then explained how the fall in monetary growth in the states had let a chronically dangerous situation become acutely dangerous. I then went on to describe the triggers. Now let me just show one final graph (Graph 16) because you probably want to know what's happening now. This is M2 again. The solid line here is the year on year trains. Those are annual data. That's the fall I showed you earlier. The dashed line is annualized rate of change on a six-month basis using season-adjusted data. The dotted line is season-adjusted data again, the three months' rate of change. Let me stress that rates of change or the money supply which reverse within six months have no significance whatsoever. The purpose of showing you the dashed line and the dotted line is to try and predict where the solid line is going. So there's the fall that sucked money out of the states. That kickback is the latest picture.

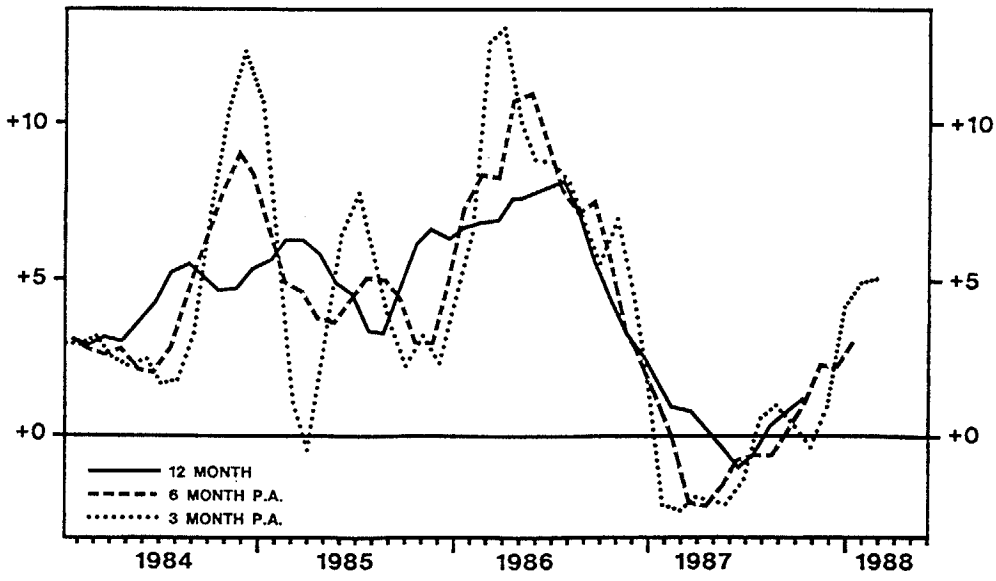
I'd also suggest to you that this is highly controversial, exactly the same way as all that central bank intervention allowed money to flood into Germany, Japan and the U.K. It's a basic reason for sucking liquidity out of the states. Highly complicated subject. Central banks can try and offset the effect of their intervention. The technical word is sterilization. In the U.S., there ought to be automatic 100% sterilization. Nevertheless, the fact of the matter is that when you have a look at the patterns, when central banks are intervening, you tend to have a very buoyant monetary growth in the countries with the strong currencies, and you tend to have a fall in monetary growth, a sucking out of liquidity, in the countries with the weak currencies. So that fall there, I'm pretty sure in my mind, is intimately connected with the intervention and that kick up is the absence of the intervention with intervention being far less since about the middle of January.

Let me just summarize what I tried to say. I tried to get over the concept of financial disequilibrium. I've tried to get over the idea of an underlying flow of funds. Can I stress again, I'm just trying to get over general concepts. This is not a professional paper. You can more or less guarantee that that relationship in the M2 graph I've shown you will break down as soon as it's illustrated. It's absolutely vital to understand what's going on in the financial system. As the financial system evolves, which aggregate you want to use, etc, etc., evolves with it. So it's absolutely vital that it's not a mechanistic approach. All I've been trying to do is get over concepts.

So having introduced the idea of the flow of funds, that drives markets. That's responsible for the market going up or down. Then the market going up or

GRAPH 16

GROWTH RATES OF REAL US M2 %



down then determines sentiment in that marketplace. I certainly accept that flows of funds are by no means the only force, the only thing that matters in markets. Of course, everyone knows that expectations are vitally important too. It is when the underlying flows of funds and the expectations are in the same direction that you have your big market movements.

Finally, what I tried to do is illustrate or just assert that the fall in the market in October, the extraordinary thing wasn't the fall. It was the prior rise. It was a global phenomenon. It resulted in globalization of securities markets. We're now all interconnected in a way that we weren't before. It wasn't just a stock market phenomenon. The behavior of bond markets in calendar 1987 was equally extraordinary. It wasn't just a bond market and stock market phenomenon; it was also a foreign exchange market. There is a theme of financial disequilibrium, huge flows of funds, one market after another. Many people, especially industrialists, cannot understand the events in 1987; they simply cannot understand how financial markets, the stock market, can behave in their view in such a stupid way.

Going back to the U.K., the U.K. economy at the moment is looking good. There are some signs of overheating, but only second order. Anyone looking at the U.K. economy, expectation of economic growth, expectation of profits, earnings and dividends, simply cannot explain or understand why our market fell in October. When I'm talking to industrialists, I say to them, "Look, reality as far as you're concerned, yes, is a real world. But reality as far as markets are concerned are buyers and sellers." There are two reasons that people can buy and sell. One is changing expectations of that reality, expectations of corporate profits, earnings and dividends, etc. The other reason why they can buy or sell is the underlying financial forces; they may buy simply because they've got surplus money and have to invest somewhere. They may sell securities because they need to raise the cash.

Now what I hope is that the sort of analysis that I have put forward does enable people to understand better than they did before, some of the quite extraordinary events we saw in world financial markets in 1987.

MR. BRUCE S. PYENSON: I have a couple of questions about the recent past, meaning the recent 20 years or so. I'm wondering if you could comment on the relationship between the very high historical real rates of interest, their sustainability, especially in the context of third world debt situation. As a background, it seems like everyone these days is expecting the high interest rates to continue. It's not clear to me that there is a real basis in the economy for that.

MR. PEPPER: One thing that I'd like to ask you as a Society; is whether anyone has stood up in front of you and really described what's happening to balance sheets in the United States. Now balance sheet analysis is unfashionable as far as economists are concerned, or was unfashionable, and is an ideal subject for actuaries. Because the sort of flows of fund I've been talking about, year by year by year, affect balance sheets. Every ten year trend, then you run into balance sheet analysis. I'm sure you're all aware of the deterioration of U.S. balance sheets of the non-financial corporate sector and the household sector, knowing the banking sector and your savings and loans and the thrift, etc., and what's been happening there.

Now the height of real interest rates is intimately connected with it. If you look at a long run 50/60, I'd rather go back to a 60-year graph, of the height of real interest rate, both non bond yields and money rates, and you compare it to the debt to GNP ratio, you will see that there is obvious connection between those two graphs. As actuaries, we understand the power of compound interest. My home is also in Jersey in the Channel Islands, and we used to have an old usury law, we had interest limitations of 3-1/2%. You had usury laws over here. It's where your regulation for 4-1/2% limitation of bond yields originally came from. Now those usury laws were formed when we didn't have any inflation -- last century. When it is a matter of bitter experience, people realized that if they paid too high a rate of interest, there was acute personal hardship.

In my judgement, those usury laws shouldn't have been suspended; they should have been changed from nominal into real terms. And as long as real interest rates throughout the world stay at their current height, we are bound to run into debt problems. There's no way whatsoever your debt problems will be solved until the origin of their problems -- the excessively high real interest rate -- is removed. So real interest rates have in due course got to come down or else the world will go bust, as it were. It will pop out here and there.

So I think the height of real interest rates is of fundamental importance. I think it means that old loans, old credit rise compounds. And the effect of high real interest rates on old loans is more powerful than the discouragement that people just take out new loans. It's a highly complicated subject. It's a vital subject. And I think it's one of extreme importance to actuaries.

MR. CORBETT: I know that all of us have been aware for many many years that British actuaries have played a much greater role in the investment area than we do in North America. And after listening to Gordon, I really understand why that's true. It's basically a considerably greater knowledge of economics and financial markets. It's evident that we have a long way to go to close that gap, but I think we're making a good start with formation of our investment section, meetings such as these, speakers such as Gordon who add to our appreciation and knowledge of economics and financial markets.