

Grano Series – The Future of the Global Economy

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The ascent of money and current financial crisis

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The following is an edited transcript of Professor Ferguson's talk at the Grano Lecture. Niall Ferguson teaches at Harvard University. He is also a best-selling author and one of the world's leading economic historians.

Part of what I want to say this evening, to try to make you feel a little bit better, is that when you take the long view, the very long view, financial history is a story of ascent more than it is a story of descent. But it's a bumpy ascent.

When I was filming the television series that accompanies the book, the series that will be aired on PBS in January, I found myself in Bolivia and I was looking at the horizon, up there in the Andes. We were on our way to Potosi, where the great silver mine that made the fortune of the Spanish Empire is located. I looked at the horizon and I saw these jagged silhouettes of the mountains stretching up and up, jagged but somehow ascending. I thought to myself, why does that look familiar? What does that make me think of? And I turned to the director of photography, a rather cynical South African, and I said, my God, it's the S&P 500!

This was actually an epiphany. It suddenly struck me that that's the way to understand financial history -- as an ascent, but an Andean one, in which it's not a smooth upward curve but rather a mountainous horizon. You go up and sometimes you go down. You go up and every now and then, there's a precipitous cliff. But in financial history you never go all the way back to base camp. You never go all the way back to the plains. Even the Great Depression didn't transform the world economy back into the

world economy of the 19th century, and we must bear that in mind in these trying times.

Two and a half years ago, I decided to write this book because -- and I'm not afraid to boast about it -- I anticipated a major financial crisis. And I thought that people would be so baffled by this crisis that they would benefit from a book that provided historical context. *The Ascent of Money* is a one-stop shop book. It's everything you ever wanted to know about financial history but were afraid to ask. I am going to explain to you in a moment how it's constructed and how its long-run historical analysis can help you understand the current crisis. It can help you decide if it's a depression or a recession or something else entirely.

First, let me tell you about the moment that inspired me most to write the book. It's funny that Patrick should mention Sean Connery, because Sean Connery comes into the story. Exactly two years ago, almost to the day, I found myself in a rather nice place called Lyford Cay. Some of you may know it. It's in the Bahamas. It's the kind of place where investment bankers -- you remember what they were, don't you? -- go when they want to have conferences. In other words, it's where they go when they want to play golf with Sean Connery, because that is where Sean Connery plays his golf. And to provide a fig leaf, to make it seem that this is, in fact, something other than a junket, they invite somebody to give a keynote address and two years ago, that somebody was me.

I don't play golf, despite the fact that I come from the country where it was invented. So while they were playing golf, I was pondering what to say. I decided that I would argue something I had been thinking for some time, which was that the financial system was on the verge of being struck by a liquidity crisis. Liquidity could drop out the system the way water would drop out of a bath if you removed the bottom of the bath. And I drew some parallels in the talk that I gave, with the events of 1914, when the entire global financial system ground to a dramatic halt, in anticipation of the geopolitical crisis that became the First World War.

Stock markets literally had to close their doors and government bailouts were necessary to prevent the implosion of the entire banking system. Incidentally, 1914 is the crisis they don't often talk about, because there are no price data for stock markets between the end of July 1914 and the beginning of January 1915. If we did have price data, we would see that this was, in many ways, the biggest financial crisis of them all. This could happen, I said, to us, now. That first age of globalization ended with a bang. So could ours. It could end with a dramatic liquidity crisis.

Well, I can't say that my speech went down very well with the golfers. In fact, there were rather pained looks as I drew to my peroration. Afterwards, one of the principal hedge fund clients said to the organizer of the conference, Steve, next year don't invite some pessimistic Brit academic. Let's just screen the movie Mary Poppins, instead. Now, I am quite a thick-skinned person. I'm from Glasgow. But this did upset me. I was so upset that I went for a run, which is something I do when I'm feeling upset. But as I was running, it suddenly hit me -- Mary Poppins! Mary Poppins, of course!

Now, I'm sure there are some Julie Andrews fans here that see where I'm going, but for those who don't remember the movie precisely, let me explain. There is a scene when Mary takes little Michael, one of her charges, to visit his father at work. Michael's father is Mr. Banks, who works at a bank. And the bank tries to persuade Michael to deposit his pocket money, tuppence hay-penny, at the bank. But he doesn't want to. Being a small boy, he wants to keep the money and use it to feed the pigeons. Give me my money back, says Michael. Two clients at the bank overhear him, and one says to the other, did you hear that? They won't give that boy his money back. I think I want my money back. And the other says, I agree, I want my money back, too! Soon, a throng of people is gathered in the bank, all crying, give me my money back! The bank suspends payments, it folds and poor Mr. Banks is out of a job.

So I wrote back to my friend at the investment bank -- Dear Steve, I think it's an extremely good idea. Next year do not invite me to Lyford Cay. You really should get your clients to watch Mary Poppins.

It was too late. By November 2007, it had happened. The first bank run in London since 1866 occurred. A bank that you may remember was called Northern Rock, shortly to be renamed Northern Sand, was visited by precisely the kind of liquidity crisis I had been talking about. And this was only one symptom of a generalized breakdown in the international credit system.

What had happened? What had caused this? The whole point of the Ascent of Money is to try to make sense of the international financial system as it is today, by explaining where it came from -- because ladies and gentlemen, I don't really understand anything until I know where it came from. You can draw a flow chart, you can give me a whole bunch of equations, but I won't get it until you tell me its story. And the Ascent of Money tells the story. It tells it in six parts.

It begins with money. What is money? When did it originate? It originated roughly 4,000 years ago, in ancient Mesopotamia in what we now call Iraq. In its original form, if I may borrow a prop, money consisted of objects roughly this size, made of clay. And on these clay tablets were inscribed words and numerals usually saying something along these lines - - promise to pay the bearer on a specific date, a certain amount of wheat or of silver or of sheep. I can't tell you how exciting it was to pick one of these things up in the British Museum. The curators were very nervous, but I said, look, it is television. I have to pick it up. They asked if I would wear white gloves. I said, no way.

I held this thing, one of the most ancient financial instruments of them all. I thought to myself, this is money! Pay the bearer! You'll find that on banknotes today. Pay the bearer. What does it represent? What it represents is a crystallization of the relationship between a creditor and a debtor, between a lender and a borrower. It makes it tangible and it makes it possible for money to change hands over time, for a transaction to be conducted over time and through space and crucially, with an intermediary. The bearer does not need to be the creditor. Pay the bearer. That's the original money. Not coins. They came much later. And in fact, they're invented rather curiously so that states, governments, rulers, can exploit money by monopolizing it. But the original money is simply a token of money owed, or rather of a sum owed by one person to another.

And it only works because of trust. It's just a piece of clay with some runes inscribed on it, some hieroglyphics. Money depends on trust. That's a perennial truth. It doesn't need to be made of gold or silver. It can be made of clay. It can even be invisible. Most money today is invisible. When you talk about the money supply today, you're not talking about banknotes, much less coins. You're talking about the invisible money in your bank accounts. The only thing that tells you that that money is accessible to you is a little piece, not of clay, but of plastic. That's money.

But I believe, I simply trust, that when I put this piece of plastic in a hole in the wall, I will be able to access the money in my bank account. It's not really there, though, that money. Banks lend most of it out. It's only notionally there. If we all wanted our money back, as in *Mary Poppins*, every bank would fail. Fractional reserve banking means that only some of our money is really there, most of it has been lent out. We trust. Or rather, we trusted. I can still remember cycling to a branch of Washington Mutual in New York, earlier this year, to remove all my money from that bank because I had looked at its balance sheet and I had decided it could not possibly sustain itself as a business. I lost trust. And the more people who thought this way lost trust, and the loss of trust in

banks is the key to this financial crisis. It represents a fundamental loss of faith in money itself.

It's not just the depositors losing faith that's the problem. It's the banks losing faith in one another, and the reason that they've lost faith in one another is that they look more closely at the balance sheets than us naïve depositors generally do. So the first component of any financial system is money. And the key to understanding money is to realize that it can be invisible or made of clay or anything you like. The critical thing is trust, and when that goes, the financial system goes down. In our case, trust is gone primarily because of the excessive leverage of bank balance sheets.

We've lived through an age of leverage, ladies and gentlemen, an age in which the returns of bank stock or bank equity, rather like the consumption that we were able to enjoy as households were deuced by leverage. Leverage is the key to much of the story that I'm going to tell. The critical thing to understand is the way that excessive leverage of bank balance sheets allowed the assets and liabilities to become thirty times the capital, forty times the capital. Today there's a bank, I won't name it, which has leverage in excess of 100 to 1. That is to say, its balance sheet is more than 100 times the size of its capital.

Those numbers are the fundamental reason for what we call the credit crunch. As long as banks are in this fragile state with, as it seems to me, their losses not fully acknowledged, there will not be new credit creation. And the money supply, no matter what the central banks do, will be, essentially, static.

I said that the book had 6 chapters. And some of you will be planning to nod off by the time I get to chapter 3, or possibly 4. But there's good news, because I accelerate in order to keep your attention.

The second chapter is about the bond market. You can do only so much with banks and money. Governments, beginning in medieval Italy, realized that raising money, particularly for expensive activities like warfare, called for more than merely bank loans. The invention of the bond market is one of the great sea changes in financial history. It began in Venice, in the 12th century.

The Venetians were the first people to realize that it was actually better to borrow money from your citizens than to tax them, when you wanted to raise extraordinary revenue. Public debt is an invention of that era that was swiftly adopted by the other Italian city-states. The concept is

very simple. You say, give us 100 of any specific currency unit and we will pay you for the foreseeable future -- for ten years, perhaps in perpetuity - - let us say, 5 percent on that money. You'll make us a loan, and we'll institutionalize that loan. We'll actually have a little piece of paper saying that we'll pay you this money over an agreed period of time. That's a bond. The trick is that this bond can then be bought and sold. Its price can go above or below that initial nominal figure of 100, and as it fluctuates, so too do long-term interest rates. That 5 percent of 100 changes into a magical thing called a yield, if the price of the bond falls below 100 or rises above it. There, I've explained bond deals, something I love doing because 99% of undergraduates don't understand what a bond deal is.

Why is this important? It's important because the power of the state in the early modern period and the modern period has been inextricably linked to the bond market. The ability to borrow at reasonably low yields was the key to British power in the 18th century. Britain had a bond market, France did not. That is the explanation for the fact that I am standing here speaking English to you and you understand me. It's as simple as that. Only with the bond market was Britain able to out-build France at sea, out-fight France on land. It's the institution you need to understand more, in my view, than those all important representative institutions that we spend so much time studying. The bond market was as important as parliament in Britain's success as a polity. We underestimate it at our peril. And that is true today, too.

In 1993, James Carville famously said a great thing about the bond market. I'm sure you all remember James Carville. He still pops up on television with that shaven head, looking slightly alien-like, talking with that Southern drawl. I love his political commentaries. Well, in '93, he'd been Bill Clinton's campaign advisor and he observed of the early days of the Clinton administration that if there was such a thing as reincarnation, he didn't want to come back as the Pope or the president or even Babe Ruth. Rather, he wanted to come back as the bond market because that way you could really intimidate everybody. What a wonderful quotation. I had the opportunity to thank him for saying this when I bumped into him in Chicago one day. I couldn't resist it. I said, thank you for saying that. I've used it so many times. It's the best quote of the entire 1990s. He looked slightly bashful. It's still true. We've just forgotten.

In the United States, it's confidently assumed that a deficit of 1.5 trillion dollars -- call it 2 trillion dollars -- can be financed without difficulty through the bond market. That's how it will be financed. There isn't a great deal of reflection as to who will buy these bonds when they are produced by the U.S. Treasury. Ladies and gentlemen, we will find that that

becomes one of the most interesting questions of the early months of the Obama presidency. Who finances this deficit? In a moment, I'll explain the answer to that question. If I simply say the word "China," now, you will begin to see where I'm going.

The book is chronological. The financial system evolved chronologically. After banks came the bond market and after the bond market came the stock market, that thing which you've all talked about at least once today. It's a remarkably recent invention. Did you know that the Dutch invented it? They invented it in the early 1600s when they also created that crucial modern institution the corporation, the company. The first joint stock company, the first company whose ownership was subdivided into shares or stocks was the Dutch East India Company, a company set up to monopolize the spice trade between the East Indies and Europe.

The extraordinary thing is that almost from its very inception this company co-existed with a secondary market for its capital, for its stock, the Beurs. The Amsterdam stock exchange was where you could buy and sell the shares, because the company made it clear that once you'd invested in it, you couldn't get the money back. The company wouldn't redeem the shares. It would pay dividends if it was profitable -- a very big if in the first phase of its existence. If you wanted out you'd have to go and find a buyer in the secondary market -- the birth of the stock market. The fascinating thing is that for another 100 years there was no such thing as a stock market bubble. There was never a stock market bubble in Amsterdam. A tulip bubble, yes, but not a bubble in stock.

The first stock market bubble came later, in 1719, and I'm ashamed to say that it was the fault of a Scotsman -- a man by the name of John Law. Law's contribution to financial history was to blow up the French financial system in the most spectacular, perhaps, of all stock market bubbles. I'm tempted to tell you the entire story. It's a wonderful story. He was a convicted murderer who escaped the gallows, fled to Amsterdam, made money from gambling, realized that you could gamble even more successfully on the stock exchange and then became an economic theorist and prophet of the age of paper money. This story has it all. But I'll abbreviate, in order that we have time for discussion.

The one important thing you need to know about stock market bubbles is that you can't have one without a compliant central bank -- a central bank that makes credit too easy. In John Law's case it was very easy indeed, because he controlled the central bank. Not only did he control the main note-issuing bank, he also controlled the Mississippi

trading company in whose shares the bubble inflated. He controlled the tax system and he controlled the coin mints. In fact, Law controlled the entire French economy by 1719. There weren't such things as conflicts of interest in absolutist France. The assumption was that for one man to control the entire economy was an extremely good idea. It was an extremely bad idea. We've seen in our own time what happens when a central bank offers too easy credit at a time of economic confidence.

The Federal Reserve is, in many ways, a remarkable institution. But the doctrine that took hold in the 1990s, that it should only concern itself with core inflation, consumer price inflation, and should pay no attention to asset price inflation, was a dreadful and fallacious doctrine. It caused much havoc, first in the stock market bubble of the 1990s, and then in the real estate bubble of the 2000s. So in chapter 3, I explain that there are no bubbles without a compliant central bank, or perhaps I should say, a negligent central bank. This too, is a part of our story today.

Now, it's a heroic man, perhaps a foolhardy man, who writes an entire chapter of a book that he hopes people will give one another for Christmas, about insurance. Did you feel yourself nodding off when I said that word? Don't nod off. Insurance is as important a part of the financial system as anything, and insurance is fascinating. Insurance is the legitimate casino. An insurance company is very like a casino. You put your money in the slot that's called paying the premiums, year after year after year, in the hope of at least one big payout. And yet insurance is as respectable as casinos are not. What is it about insurance that changes the nature of finance? The answer is that with the birth of modern insurance in the 1740s, with the birth of the idea of a fund into which you pay regular premiums, a fund that's invested, the returns on which are then used to make the payouts, with that an entirely new kind of risk management comes into existence for ordinary people. They can manage the risk of the premature death of a spouse in a way that simply hadn't been possible before. It's another financial revolution and it takes our story a step forward.

I want to make two very simple points about insurance that have a bearing on our financial predicament today. You can insure against risk. We can very easily insure against the premature demise of people in this room – some of you probably already have that kind of insurance -- because we can calculate reasonably accurately how long we'll live. Nobody in this room, I'm sorry to say, will live to be 500. Life expectancy is distributed along a bell curve, very normally. There are very, very few of us who live much beyond one standard deviation from the mean. It's the same with human height. If I got you all to line up and measured you, not

many of you would be less than three feet tall and none of you would be more than ten feet tall. There aren't extreme outcomes in these areas. So where things are normally distributed along a bell curve, it's very easy to have insurance, because there's a calculable risk involved.

But not everything is like that. Financial markets aren't like that. The outcomes of your investments, I'm afraid to say, are not like that. There are fat tails in the distribution of stock market returns. There are a surprising number of years in history when the U.S. stock market has declined by 20 percent, or more. I think there were 7, the last time I counted. It could be 8 by the end of this year. Imagine a curve more like that, with a lot of action out there in the tails of the distribution. That's the uncertainty that is much, much harder to insure against. So you wouldn't necessarily want to sell an insurance policy against, for example, a 20 percent decline in the stock market. You wouldn't necessarily want to sell an insurance policy that would pay someone back if an investment bank defaulted on its bonds -- let's say for example, Lehman Brothers. The reason is it would be extremely hard to attach a meaningful probability to that occurrence.

And yet, ladies and gentlemen, precisely those types of policies were sold in vast numbers in the major financial centers of the world. They weren't called insurance, of course. They were called derivatives or credit default swaps. They are mysterious to most people, the thing that you would least want to have to explain to your nine-year-old son. Dad, what's a credit default swap? Well, now you know. It's just an insurance policy that you probably should never have sold, an insurance policy against an uncertain event rather than a risky event.

Roughly speaking, the notional outstanding value of derivatives in the world today is in the region of 600 to 700 trillion dollars. According to the bank for international settlements, a very substantial chunk of that consists of credit default swaps, insurance policies that will have to pay out far more than those who wrote them imagined, as company after company in this burgeoning recession goes bust and defaults.

I'm coming to the climax of the story, ladies and gentlemen -- chapter 5. Chapter 5 is about the one thing everybody in this room is an expert on. I'm sure of this, because we're all experts when it comes to real estate. I've never met anyone who wasn't. At the dinner parties I very rarely attend, because I'm actually very anti-social, there is always at least one expert on the property market who wants to tell me that you can't go wrong betting on good old bricks and mortar -- safe as houses. I've heard it a hundred times. Safe as houses, that's where I want my money.

In chapter 5, I ask why we ever thought it was a good idea to have everybody make a huge, one-way, completely un-hedged bet on a highly illiquid asset. What gave us this idea? When was it that we decided that a majority of householders should own their own homes, even if in order to do so they became highly leveraged in the process? Well, I traced this back to the 1930s. It was only really then that the notion of the property-owning democracy comes into existence.

It began in the English-speaking world, in the United States, particularly. As part of the New Deal, the idea of home ownership became an integral part of the American dream. Remember Frank Capra's *It's a Wonderful Life*, with Jimmy Stewart running a Savings and Loan, trying to give people the chance to own their own homes, to get them out of the slums owned by the rack-renting landlord who's the villain in the film? This is the key. Ever since then, decade after decade, we have been innovating, creating new incentives, new inducements to get more and more of the English-speaking world to own their own homes -- in other words, to take out mortgages.

The culmination was, of course, the subprime mortgage saga. It was not so much a financial story, but more in my view a political one, driven by the goal of turning citizens into property owners. This is a goal that I've always seen as being fundamentally based on an ideological insight, an insight that Margaret Thatcher and Ronald Reagan both shared -- the conviction that once people own their own homes they move politically to the right. They're kind of inoculated against socialism. They become capitalists in the most basic sense of the word.

In many ways I'm sympathetic to this political project. I can see its appeal. It probably is true that people look after their property better, and act socially in a different way, when they own it, as opposed to when they merely rent it. But is it financially a good idea that 68 or 69 or 70 percent of households should own their own homes if you can only get them to do that by offering them mortgages that for two years look remarkably attractive, but after two years are transformed into some monstrous adjustable-rate mortgage, with the rate pegged to LIBOR, the London Interbank Offered Rate? That's what many of these mortgages did, which meant that when LIBOR exploded in the credit crunch, so did these mortgages.

Some people have asked me why it was that I thought there would be a major liquidity crisis in the first half of 2007, or thereabouts. And the answer was clear. You only had to look at a chart of the resets of subprime

mortgages to see when the defaults would happen. They began then. And the reason that this was sufficient to set off not merely a crisis in the mortgage market, but a crisis in the world economy, was that on top of these underlying assets, on top of these mortgages, an inverted pyramid of securities had been constructed.

This takes us back to the bond market, in many ways. Securitization is a key part of this story. It represents the financial alchemy that allows you to take a thousand subprime mortgages from Memphis, Tennessee, bundle them together, slice and dice them into tranches and say that the top tranche will have a triple-A rating. And let's call them, because "bonds" sounds prosaic, "collateralized debt obligation," or CDOs. Doesn't that sound good? The financial alchemy that turned subprime mortgages into triple-A Rated tranches of CDOs is at the heart of this story. It's a financial innovation too far.

When you add all of these institutions that I've described to you together -- bank money, the bond market, the stock market, insurance and derivatives -- and then factor in the mortgage market, I think the crisis begins to make some sense. But there's one final step you have to take to understand how we got to where we are. You have to globalize it. These are predominantly Western innovations. Most of the great innovations in financial history began in the Western world. But then we exported them to the rest of the world. And this had profound consequences.

Let me briefly sketch a final point. It's about the two ages of globalization. The first age of globalization was the period from around 1870 to 1914. In this era, the export of Western finance took the following form -- West European, and particularly British savings, were exported to the rest of the world. Capital export was the basis of the British imperial order. Now, let us fast forward to the second age of globalization -- the American age. During that age, something quite different happened. During that age, the institutions were exported, but the capital itself was imported.

What you need to understand about the age of leverage that I talked about earlier, is that it was based on a widening of the American current account deficit, which now accounts for one percent each year of global output. That deficit could only be financed out of the savings of the rest of the world, particularly out of Asian savings. The great mystery at the heart of this age of globalization is why the Chinese, who are relatively poor, would lend money to the Americans, who are relatively rich -- I think roughly 20 times as rich in terms of per capita income. This is the key. I

call it Chimerica, for short. Imagine an economy, one economy, China plus America joined at the hip, fused together.

This is the key to understanding the global economy. We are talking about only 13 percent of the world's land surface, but roughly a third of global output and 60 percent of global growth, in the period from 2001 until 2007. Chimerica was the key. Why did it happen? Why were the Chinese willing to accumulate more than a trillion dollars of dollar denominated bonds, including a vast quantity of the debt of Fannie Mae and Freddie Mac? Was it out of altruism? No. They did it in order to maintain a weak currency relative to the dollar, in order to ensure that their exports remained unbeatably competitive in the American market. They got the export market, the Americans got the capital. It was a little like a marriage. You know how in some marriages one partner does all the saving, and the other partner does all the spending? Perhaps you know of a marriage like that. I certainly do. Well that was the Chimerican deal. They did the saving, the Americans did the spending. A marriage made in heaven.

Ladies and gentlemen, to me the most important question to be asked today about the financial crisis is whether Chimerica is heading for the divorce courts or whether the deal will continue. Will the Chinese continue to finance the American deficit? Let's hope so, because this deficit isn't going to go away anytime soon. Remember I mentioned earlier the 1.5 trillion dollar deficit? It remains to be seen, ladies and gentlemen, what part of that deficit the Chinese will be willing to finance. We don't know. They seem to assume, in Washington, that it will be quite a large part. But I'm not so sure.

So what are we living through? Are we living through just the beginning of a big recession? Or could this be Great Depression 2.0.? Well, I want to offer a concluding thought on this subject. So far, I think we've lived through the Great Repression. I call it the Great Repression because we're repressing a depression, at the moment. We're kind of in denial about it. And we're also literally repressing it, with trillions of dollars of liquidity pumped into the system by the Federal Reserve and now the U.S. Treasury. Did you know that the Federal Reserve is now a hedge fund? It is not widely recognized, but its balance sheet, which is now in excess of 2 trillion dollars, means that it is leveraged 50 to 1. And most of the assets are now what we used to refer to in polite circles as toxic waste.

We're repressing a financial crisis by injecting liquidity from the central bank into the system. Again, that's why I call it the Great Repression. That means we've avoided what happened between 1929 and

1933, when thousands and thousands of banks in North America went bust, and a monetary contraction happened of the order of 30%. It was so dramatic that the U.S. economy went into shock with resulting unemployment at 25%. The good news, ladies and gentlemen, is that we are avoiding that right now. The Great Depression is working. Ben Bernanke had learned enough financial history to know what to do.

But the Great Depression wasn't just a banking crisis. The Great Depression was also a global economic crisis characterized by the breakdown of international exchange. Protectionist barriers were only part of the story. Capital flows across borders altogether ceased. And that was really the critical second phase that made the Depression so long and so deep. What we don't know yet is whether we're smart enough to avoid that second phase, the breakdown of globalization. I fear we may not be smart enough to avoid it.

My worry, ladies and gentlemen, is that I do not see sufficient international coordination. I see economists reaching for their John Maynard Keynes, blowing the dust off the general theory, saying, what do we do? Oh yes, we run enormous deficits! That's easy. We can do that. We've been doing it, anyway. This is essentially what Nobel laureate Paul Krugman called for in a recent New York Times column. He seems to have forgotten that this is not the early 1930s. This is a global economy, highly integrated, in which each stimulus package, each bailout that each country introduces, has international implications. The economies aren't closed. In the same respect, as each central bank races down towards 0% rates, that too has international implications.

Watch out, ladies and gentlemen, for the coming volatility in the international bond market and the foreign exchange markets. It seems an inevitable consequence of these poorly coordinated, in fact wholly uncoordinated, national policies of monetary easing and fiscal expansion.

Well, I don't want to end on a gloomy note. We've had quite enough doom and gloom this week. I want to end as I began, by reminding you that the story of the Ascent of Money is a positive story, though it's a bumpy ride. Periodically, we do fall off cliffs. But we never go all the way back, ladies and gentlemen, to ancient Mesopotamia. We never go all the way back to the previous century. Yes, we have before us a painful period. Maybe the best case is that we turn Japanese and have a lost decade of flat growth. That's a better outcome than a Great Depression.

The end of the age of leverage means a profound change in the way that we live, but the more profound change that I detect is the change

that will happen in the way that we think. If anything can be learned from this crisis, if one thing can be learned, it is that financial history should be a mandatory part of business education in all the business schools and indeed all the economics departments of the Western world. And with that, I will conclude. Thank you very much.