Epsilon Theory

A Brief History of the Past 10,000 Years of Monetary Policy and Why Last Week Was a Big Deal

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THAT'S WALL STREET ON THE LEFT AND UK PENSION FUNDS ON THE RIGHT.

To explain, I need to give you a quick review of the last 10,000 years of market history.

Don't worry, it'll just take a sec.

In the beginning, someone with a business wanted money from someone with money.

There are two and only two voluntary (i.e., without the threat of physical violence) ways of doing this. In exchange for the money, the person with a business can promise the person with money a share of the future economic activity of the business, or they can promise to repay the money in the future along with more money. In general, we call the former promise "equity" and the latter promise "debt", and people with money have been collecting these promises from people with

businesses since money was invented. These collections of promises are called “investment portfolios”.

About a nanosecond after money and equity and debt were invented, the business of facilitating these transactions was invented. Today we call this business “Wall Street”, but of course it goes back thousands of years, way before there were things called streets. The business of Wall Street consists of two and only two things: thinking up news ways to create a transferable share of some future economic activity, and thinking up new ways to borrow money today for a promise to repay that money and more in the future. We call the former activity “securitization”. For example, equity promises are securitized into “stocks” and debt promises are securitized into “bonds”, which makes the sale and resale of these promises sooooo much easier. We call the latter activity “leverage”, which is just a ten-dollar word for borrowed money.

Every bit of financial innovation over the past ten thousand years or so – all of it! – has been in service to one or both of those two activities: securitization and leverage.

About a nanosecond after Wall Street was invented, the people with a local monopoly on the legitimate use of violence (“governments”) noticed that the price of leverage – the amount of more money that had to be repaid to the people with money as part of the securitized debt (i.e., bonds) in their investment portfolios – ruled the economic lives of the people over which they had a local monopoly on the legitimate use of violence. So governments decided that they needed to control (or at least try to control) the price of leverage, which today goes by the name of “interest rates”.

In the modern context, this effort to control interest rates is accomplished by a bureaucracy within the government executive (a “central bank”). In addition to shaping the price of leverage through interest rates, these central banks are also charged with providing emergency cash (“liquidity”) to buy securitized things when all the people with money are so freaked out that they are no longer voluntarily willing to buy those securitized things.

Central banks shape interest rates in three ways.

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1) The first and most traditional way is to change the interest rate they pay regular banks for the money those regular banks keep with the central bank (called “reserves”).

This money is “borrowed” by the central bank on a very short-term basis (typically day to day), and sets the price of borrowed money upon which all other borrowings and instances of leverage are based. In the US, this most basic price of leverage is called the Fed Funds rate, and when Jay Powell says that the Fed has hiked interest rates by 0.75% he is talking about this. The Fed Funds rate today is 3.25%.

So that's the interest rate paid by the safest borrower in the world for the shortest amount of time. If you're not as safe a borrower, then you have to pay a higher price for your leverage. If you're borrowing money for a longer period of time, then you also have to pay a higher rate of interest.

Sometimes a government can borrow money long-term at a cheaper rate than short-term, like today the 10-year US Treasury has a lower interest rate than the 2-year. This is called an "inverted yield curve" and is a signal that the buyers and sellers of government bonds think that the longer-term strength of that economy will be weaker than the shorter-term strength of that economy, and thus won't support as high a rate of interest. But this only happens with governments, not people, and it's rare even for governments.

2) The second way that central banks shape interest rates is by directly buying and selling bonds.

This buying and selling mostly takes place in government bonds, but can take place with corporate bonds or mortgage bonds, too. Central banks do this because the price of a bond goes up or down inversely with interest rates. Think of it this way … you buy a 10-year Treasury with an interest rate of 3% per year from the US government for $100, which means that they promise to pay you back your $100 in ten years, and along the way they will pay you $3 per year in more money ($30 total over ten years). You can turn around and sell this promise by the US government for $100 to someone else if you like. But let's say that next week someone else gives the US government $100 for 10 years and the US promises to pay that back with a 4% interest rate. That person will also get their $100 back in ten years, but will receive $4 per year in interest ($40 total). You will now get less than $100 for your 10-year Treasury with a 3% interest rate if you try to sell it to someone else, because $100 can now get you the same 10-year promise from the US government, but with a 4% interest rate. **The market price of your portfolio of promises to repay you more money in the future goes down if interest rates go up, and the market price goes up if interest rates go down.** Hold that thought!

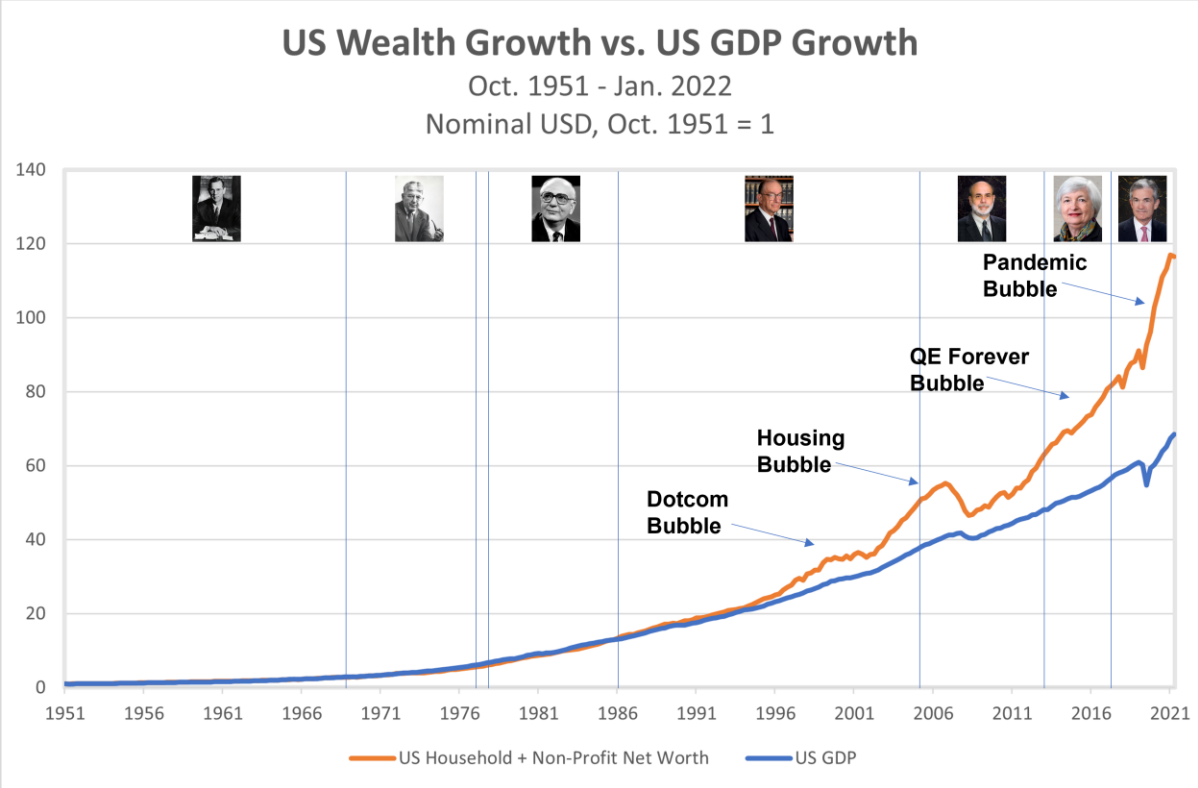
So if central banks want to make interest rates go down (the usual goal), they buy vast quantities of bond, which drives the price of the bonds up (more buying on same supply = higher prices) and the price of leverage, aka interest rates, down. This is called "quantitative easing" or QE. Today the Fed and other central banks are selling off some of the vast quantities of bonds they have bought over the past 15 years, in order to push the price of the bonds down and interest rates up, and thus (they hope) put a lid on inflation. This is called "quantitative tightening" or QT, and the market hates this.

3) The third way that central banks shape interest rates is with their words.

This used to be called "jawboning" but is now called "forward guidance". It's an effort to change investor expectations of future central bank actions without actually raising or lowering short-term interest rates (option 1) or buying or selling vast quantities of bonds (option 2).

Using words is a very cost-effective way of shaping interest rates if markets believe you will do what you say you will do! This is called "credibility" and everyone is always trying to figure out if central banks have lost or gained credibility.

For the past 30 years, central banks have kept interest rates artificially low, first through option 1 and more recently (since the Great Financial Crisis in 2008-09) through options 2 and 3. And because of the inverse relationship between interest rates and the price of the bonds themselves, everyone's investment portfolios were kept artificially high and the people with money got richer at a faster rate than the people with businesses grew their businesses. Wheee!



Hollow Men, Hollow Markets, Hollow World

Central banks were able to do this (keep the price of leverage, aka interest rates, artificially low) without creating massive inflation because international capital flows to build factories and make stuff in countries with cheap workers ("globalization") kept wage inflation and goods inflation low, and governments didn't go completely crazy with giving away money for people to spend. Until the pandemic, that is, when globalization ended and governments went completely crazy giving away money for people to spend, and we all knew that we all knew this was the case, and so inflation erupted all over the world. So now central banks can't keep the price of leverage artificially low, even though the amount of leverage sloshing around in the world is historically, insanely high.

Okay, one more thing to cover before getting to how the UK has exposed the catalyst that blows up the financial world, and that's the relationship between interest rates and currencies.

In the short and medium term, the exchange rate between two currencies (at least among the big, developed economies) is largely a function of relative interest rates between the two countries and expectations of future relative interest rates between the two countries. There is a direct relationship between interest rates and currency value, so that higher interest rates drive a stronger currency. This makes sense, right? All other things being equal, if country A pays more money on what they borrow in their currency than country B pays in their currency, people with money will sell country B's currency to buy country A's currency and get the higher interest rate.

Over the last six+ months, the Fed has been really hawkish in words and deeds (options 1, 2 and 3), which has led to a really strong dollar versus every other country in the world. For all the countries suffering a weaker currency, the good news is that exports to the United States are now cheaper from the US perspective, so you can export more (yay!). The bad news, though, is that everything you import that is priced in dollars (i.e., American goods and services and Middle Eastern oil) is a lot more expensive from your perspective (boo!). A weaker currency imports inflation, which is a lot more damaging to big, developed countries today than stronger exports are helpful.

And now to the UK debacle. First, some terminology that you might run across. UK government bonds, what we would call Treasuries in the US, are called "gilts". The UK currency, which is the pound and is abbreviated GBP, is also called "sterling". The exchange rate between the USD and the GBP is sometimes called "cable". Members of the Conservative Party in the UK are often called "Tories". The head of the government financial bureaucracy, what we would call the Treasury Secretary in the US and most countries would call a finance minister, is called the "Chancellor of the Exchequer". There's a long and boring story behind all of these words, of course, but I just want you to know what they mean when you read them.

The Bank of England (the central bank of the UK) was actually earlier to start hiking interest rates than the Fed, but they've slowed down more recently and – like every other country – the pound had gotten a lot weaker versus the dollar. For example, after the Fed recently hiked by 0.75%, the BoE only hiked by 0.50%. They've been cautious to raise rates as quickly as the Fed because – as much as they'd like a stronger currency to tamp down imported inflation – they also don't want to completely crush the domestic economy with a recession created by higher interest rates. But the Bank of England is not the catalyst of the problem here!

The first catalyst for the problem here is the newly installed Conservative Party leadership (Liz Truss replaced Boris Johnson as Prime Minister and brought in a new Chancellor, Kwasi Kwarteng) and their newly announced tax cuts for corporations and the rich, combined with their ongoing support for directly subsidizing household energy costs. These plans mean a lot less money coming in from taxes and a lot more money going out in payments, which just pours gasoline ("petrol", I suppose for another funky Brit word) on the already raging inflation fire.

Kwasi Kwarteng and Liz Truss looking for their credibility

As soon as the Truss/Kwarteng plan was released, expectations skyrocketed that the Bank of England would be forced to raise interest rates far more than planned in order to contain this new source of inflation. And since when interest rates go up, the value of UK bonds go down, many people with money started selling those UK bonds. Selling those UK bonds drove the price of the bonds lower still, which created still more upward pressure on interest rates. Which created still more pressure to sell. You see the problem? Well … it gets worse.

This brings us to the second and actually far more important catalyst for the problem here, which is what UK pension funds – who control about $1.6 trillion in assets – have been doing with their money.

It's not actually their money, of course. Pension funds get money today from workers and pay back that money to workers when they retire, some decades in the future. Pension funds are the epitome of long-term investors. Or they should be, anyway. There's no way that a short-term spike in interest rates should create a crisis across $1.6 trillion in UK pension assets! So what if interest rates spike up and their bond portfolio takes a temporary hit? A pension fund should be able to ride out the short-term ups and downs of markets ("volatility") and capture the long-term benefit of owning a portfolio of stocks and bonds, right? A pension fund should never be forced to sell their bonds into the teeth of a short-term volatility storm, right? Right?

Well … apparently that's not right. And to explain why, we have to go back to this statement – the market price of your portfolio of promises to repay you more money in the future goes down if interest rates go up, and the market price goes up if interest rates go down – but we have to look at it from the perspective of the pensioners, not the pension. Or rather, we have to look at it from the

perspective of the promises that the pension has made to the pensioners, a promise to repay the pensioners in the future with more money than the pensioners are giving the pension today. This collection of promises to repay pensioners in the future (called a pension "liability") works by exactly the same math as any other promise to repay money in the future: **when interest rates go up that pension liability goes down, and when interest rates go down that pension liability goes up.**

Okay, but I still don't see the problem, Ben. If interest rates went up sharply, then that means that pension liabilities went down sharply. Why isn't that a good thing?

The problem is that interest rates have been going down for 30 years, and really going down for the past 15 years. Which means that, from this accounting perspective, pension fund liabilities have been going up for 30 years, and really going up for the past 15 years.

The problem is that every quarter, pension fund managers must go to their board of directors and tell them the ratio of assets to liabilities. If there are fewer assets than liabilities, that's called being "underfunded", and your board of directors hates that. But if you can show your board that you are less underfunded today than you were last year, you get a nice pat on the shoulder and maybe a bonus or a raise. On the other hand, if you are consistently more underfunded today than you were last year … the board will fire you. Not the first year where you're more underfunded, and maybe not the second year either. But more than that? Yeah, they will fire you. They will tell you how much they love you and what a great job you've done in soooo many respects, but they will fire you. Being more or less underfunded over time is how pension fund boards track wins and losses. It's like being the football coach at a big university. You can have one losing season and maybe you can have two. But more than that and you're gone.

So you can understand that seeing your liabilities go up quarter after quarter, year after year as interest rates go down quarter after quarter, year after year is a real drag (literally and figuratively) for pension fund managers. Luckily, Wall Street – in the form of UK pension consultants – was ready with a solution!

Remember how I said that Wall Street has two and only two jobs, to invent new ways to securitize something or new ways to apply leverage to something? Well, in this case it's the invention of a new way to apply leverage to the problem of liabilities going up when interest rates go down, and it goes by the name of "Liability-Driven Investment" or LDI.

Quite literally, LDI is a hedge fund strategy. It is a strategy to *hedge* your liabilities by investing in a way that should make money and offset whatever is making your liabilities go up, which is interest rates going down. Specifically in the case of UK pension funds, it is an investment program that uses leverage – borrowed money – to bet on interest rates continuing to go down. The idea is that every dollar you make from this bet will offset a dollar increase in your liabilities, and that every dollar you lose from this bet will be offset by a dollar decrease in your liabilities. It is a pure bet (called an "interest rate swap"), where every day there is a winner and a loser. It doesn't cost you much cash money to set up, maybe 10% of the total amount that you're betting on (your 10% earnest money is

called “initial margin” and the total amount that you’re betting on is called the ”notional” of the swap), and you can use the other 90% of the amount you’re betting on – money that you would otherwise have used to buy 100% of the asset – to make other investments. That other 90% is leverage.

Now here’s the kicker. The pension consultant team can prove to you that this is reward without risk. They can prove this because they can show you the past thirty years of betting performance with this interest rate swap, how you always end up ahead by investing in something else with that leverage, how the risk of something going wrong is vanishingly small because the volatility of that interest rate swap has been really low over that entire span of time. Sure, there was a little spike in 2013 with the so-called “taper tantrum”, but nothing you couldn’t handle. They will speak to you about “VAR” and “99% confidence levels”, and you will believe them because the math is correct and who are you to argue with math?

And then the math broke.

And then interest rates went sky-high as the Fed hiked a lot and the Bank of England didn’t, racing higher in a way that hadn’t been seen in the past 30 years.

And then the next morning, the bank on the other side of the bet emailed you to say that you owe them a lot of money because UK interest rates are going sky-high. And you only have until that afternoon to pay in full. In cash. This is a “margin call”. But you don’t have a lot of cash sitting around, so you have to sell some other assets – almost certainly government bonds – to get enough cash together to pay off your bet with the bank. You get a terrible price on the bonds you sell, because their value has gone down as interest rates have gone up. The terrible price gets more and more terrible as the day goes on, as everyone smells the blood in the water. But you survive. You take a gruesome loss on the bonds you had to sell, but you survive.

And then interest rates went sky-higher as Truss and Kwarteng unveiled their goofy plan, racing up in a way that hadn’t been seen … ever.

And then the next morning, the bank on the other side of the bet emails you to say that you owe them a LOT more money because UK interest rates are going even sky-higher. And you only have until that afternoon to pay in full. In cash. But now you have zero cash, so you have to sell a LOT of government bonds to cover that margin call. But yesterday’s terrible price of those bonds is … wait … this can’t be right. This price is impossible. There are no buyers for these bonds. None. No bid. You’re not going to be able to make the margin call to the bank on the other side of the bet. Which means that you are … ruined. All of the pension assets are now forfeit, because that’s what happens when you can’t make a margin call. The bank will sell your assets at whatever fire sale price they can get. Because that’s what banks DO.

Congratulations, you turned a long-term investor into a freakin' hedge fund, and a miserably managed one at that. You killed your pension fund. But hey, your liabilities that will be due in …[[checks notes]] … twenty freakin' years went down! LOL.

So the chairman of your board makes a call to a buddy at the Bank of England. They've known each other since they were in school together. And this isn't the first call that his buddy has gotten that morning. This is happening to every pension fund in the country. This is a Lehman moment.

So the Bank of England does exactly what they have to do, what they were created to do (other than shape the price of leverage). They become the buyer of last resort. They pledge infinite money – tens of billions of pounds if required – to buy those UK government bonds that no one else wants to buy and the pension funds have to sell. They bail the pension funds out. And the banks to whom they owed the bet! Because that's what central banks DO.

BTW, this last point doesn't get nearly enough attention. When a government bails out a gambling debt that a big asset owner suffers against a big bank – like when AIG lost tens of billions of dollars in a big bet in 2008 with Goldman Sachs, and the US government paid off that debt – they're not just bailing out the asset manager, they're *also* bailing out the bank.

Anyhoo, since that happened last week, the pound has stabilized. Gilts have stabilized. Everything has stabilized. Whew! Lehman moment averted. Lesson learned. Glad that's over!

Except that it's not.

It will take years to unwind these LDI programs, if they ever are, in fact, unwound. The consultants are hard at work, I'm sure, reassuring everyone that this can't possibly happen again. More fundamentally, every UK pension fund has taken a series of body blows here. Every UK pension fund has a couple of broken ribs and I'd be surprised if there's not internal organ damage for some. It always takes a couple of months for the final casualties of these moments to reveal themselves, much less if there's another shock.

And what about the US? Could the same thing happen here? Why didn't it happen here, minus the Truss/Kwarteng insanity? Luckily, the US pension fund world is not quite as reliant on the pure bet method of LDI as the UK pension fund world. There are securities available to US pension funds, like Treasury "strips" where you're just buying the interest rate promise and not the entire bond, that US pension funds can purchase without leverage in order to accomplish LDI goals without using interest rate swaps.

But the real problem isn't that UK pension funds used interest rate swaps rather than some other, slightly less dangerous Wall Street securitization/leverage concoction.

The real problem is that every pension fund in the world has implemented some sort of Wall Street securitization/leverage concoction, intentionally designed to make the managers look good in their quarterly reviews, intentionally designed to use short-term leverage against long-term

obligations, intentionally designed to use the math of the past thirty years to obfuscate the risks of a regime change not found in the past thirty years.

Wall Street has infected some pension funds a lot with their words of riskless return through the magic of securitization and leverage. Wall Street has infected some pension funds a little with their words of riskless return through the magic of securitization and leverage. But Wall Street has infected ALL pension funds.

Because that's what Wall Street DOES.

I have no idea where the next Truss/Kwarteng insanity will come from.

All I know is that leverage is being repriced, globally.

All I know is that this global repricing of leverage is a wrecking ball around the world, through both interest rates and currencies.

All I know is that what we saw happen in the UK last week is the first shock, not the last, and all the massive pension funds and asset owners who have turned themselves into shadow hedge funds, full of swaps and leverage through the sweet whispers of Wall Street Wormtongue, will be our undoing.

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