Banking is Theft

Rick Bradford, Last Update: 1/11/13

Only the small secrets need to be protected. The big ones are kept secret by public incredulity - Marshall McLuhan

1. The Questions

Several questions have puzzled me for a long time,

[1] Why did the 2007/8 crash happen?

[2] Where did all the money go?

[3] Why were the banks prior to 2007 so keen to lend money to people who could not pay it back?

[4] Why do economists insist that we must have continuous growth?

[5] By what mechanisms are the banks stealing from us?

[6] Is investment banking of any social benefit?

[7] Does the financial sector provide a valid contribution to a healthy and sustainable economy?

I think I have achieved a small (very small) degree of understanding of these issues now, with which I will regale you in this essay. I believe that the correct perspective on the nature of money is crucial to answering all these questions. That there has always been something rotten in the state of the economy is betrayed by economists' obsession with growth. Only two types of people believe that continuous exponential growth can be anything other than disastrous: idiots and economists[1].

Like most people, I did not realised until after the 2008 crash that the banks were stealing from us. It became obvious after 2008 that we were being shafted. However, in most people's minds this is because of the bail-outs. The banks gamble; if they win they win, if they loose we pay. This is now common knowledge. What is not so widely appreciated is that the banks are robbing us all the time, not just when there is a crash. Grasping this requires a clear understanding of what money is and how money relates (or fails to relate) to real value.

Popular accounts blame the 2007/8 crash on the excessive risk-taking of the banks. This is true, but not quite in the way which is normally presented. The impression is generally given that the irresponsible risks in question were rash investments by the investment banks. Certainly this played a part. However, my view is that the nature of the risk which lies at the heart of the debacle is the excessive fragility of the banks' balance sheets. This was caused by the inflation of the money supply which is intrinsic to our monetary system. The role played by derivative financial instruments such as credit default swaps was to turn fragility into failure. But the real problem was the fragility.

An analogy might be with a new virulent strain of influenza. Amongst a healthy population the disease would spread and many would get ill, but few people would die. However, if the disease struck a population whose immune systems had already been weakened by malnutrition, the death rate might be huge. In this case you could fairly identify malnutrition as the true root cause of the majority of deaths, the disease

[1] This is a quote (or a misquote, probably) from someone, I've forgotten whom.

itself being merely the adventitious mechanism which converted this fragility of the population into disaster. Whilst the investment bankers (the 'flu') were instrumental in the crash, the root cause, I claim, lies in the parlous position of the banks' balance sheets (the 'malnutrition'). The latter results from the very nature of the monetary and banking system. The importance of this observation lies in the implication that no amount of regulation or control of investment banks will prevent the fragility itself from being perpetuated or recurring. The fragility relates to the commercial (high street) banks, and the whole monetary system, not just the investment banks.

Am I sure that the view presented here is correct? No. Economics is too slippery a fish to be confident that you've grasped it firmly. But this view does have the merit that most, if not all, the above questions can be addressed in a unified manner. Occam's Razor votes in its favour.

2. What Is Money?

My definition is,

Money is any token, such as coin, paper or electronic record, which is universally accepted in exchange for goods or services. The essential attribute of money is that it enjoys the confidence of all as regards being exchangeable for goods or services of real value, and that there is a shared understanding of the approximate quantity of real value that may be purchased with a given unit of the money in question.

This mouthful can be condensed to the pithy,

Money is Confidence

The etymology of the word "credit" via "credo" (to believe) reinforces this message.

3. Is Money a Conserved Quantity?

No.

The misconception that money is conserved is the source of the public's misunderstanding of the true nature of our economy.

This misconception is understandable because, in all our personal dealings, money appears to be conserved. When I buy something, money moves from my hands to the seller's hands. Overall, money is conserved.

Since almost all of us expend most of our effort for most of our lives in order to acquire money, we certainly would not want to wantonly destroy money. Burning banks notes is not something you commonly see.

Similarly, we (the public) don't just create our own money directly, e.g., by printing it ourselves. To do so is fraud and you will go to prison for it. You can only get money by making or doing something of real value in order to earn it. That is, you can obtain money from another person in exchange for something you have made or for a service performed. But that person is just passing on money that he has obtained in like manner. Carrying out some real economic activity (e.g., making a car, or fixing somebody's leaking roof) does not make money spontaneously appear from nowhere. You perform a service for someone, or offer to sell them something, in the expectation that they are already in possession of money to give you in exchange.

So where does money come from in the first place?

And why am I saying that money is not conserved, when it seems to be?

The answer to both questions is: the banks.

Money is created by banks.
Money is conserved in everyday transactions. But because banks (and only banks) can create money from nothing, overall money is not conserved.

Let's take a brief look at the various different types of bank, after which we'll return to the key question of the creation of money.

4. What Sorts of Banks Are There?

In my simplistic view of things there are three types of bank,

- Commercial banks
- Investment banks
- Central banks

Commercial banks are the familiar high street banks with which we all have dealings. They provide services, such as accepting deposits, facilities for customers' regular payments, basic investment products applicable to individual members of the public, and giving business loans and loans to individuals, e.g., for purchasing houses, cars, etc.

Investment banks do all those arcane deals in stocks & shares, the currency markets, the commodity markets, and a myriad of incomprehensible derivatives 'markets' (which are really just overt gambling).

Central banks are something else entirely. In the UK the central bank is The Bank of England. (Yes, despite the name, it is the central bank of the whole UK, not just England). In the USA the central bank is the Federal Reserve. The Federal Reserve is a private company, not a government organisation. The status of The Bank of England is unclear to me[2]. The function for which central banks are most famous is as the lender of last resort (though this must be understood in the closed context of a single country; in more extreme, though increasingly common, circumstances, the lender of truly last resort will lie abroad). However, the central banks are tied into the whole monetary system. Only the Bank of England is permitted to print sterling bank notes as legal tender in England & Wales[3]. The public cannot open an account with a central bank, only other banks do so. Crudely, the central bank is to commercial banks as the commercial banks are to us plebs.

Since the 2008 crash we know that the investment banks are villains. But commercial banks and the central banks are OK, aren't they? Nope, they're all bastards, as we shall

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[2] The Bank of England started life as an independent, privately owned bank. It continued to be so until it was nationalised in 1946. In 1998 it became an independent public organisation, wholly owned by the Treasury Solicitor on behalf of the government. However, in 1977, the Bank set up a wholly owned subsidiary called Bank of England Nominees Limited (BOEN), a private limited company. BOEN is a vehicle for governments and heads of state to invest in UK companies, providing they undertake "not to influence the affairs of the company". Hmm.

[3] Contrary to popular belief, Scottish bank notes are not legal tender in England & Wales, though that does not make it illegal to use them as a means of exchange if traders are willing to accept them. Oddly, there are ***no*** bank notes at all which are strictly legal tender in Scotland. The Isle of Man, the channel islands, Gibraltar and the Falkland Islands all print their own bank notes which are legal tender in their own domains alone. Northern Ireland bank notes are not even legal tender in Northern Ireland, though, as noted above, this does not make it illegal to use them subject to both parties being content.

see. In fact it is the commercial and central banks which create and control our money, the source of all our problems, and so are the primary culprits.

5. What is Central Money and How is it Created?

I am now going to simplify in order to clarify, in the best tradition of a physicist. The complete history of money in all its manifold forms is very complicated and differs from country to country. However, these complexities are inessential as regards the important features. Indeed, the complications serve only to obscure the truth and are best removed to leave a much clearer, simplified picture. So, I shall talk about just two forms of money: central bank money and commercial bank money (or, for short, central money and commercial money). These names reflect which banks create the money in question.

Central money is money created or adopted by the central bank regardless of its form. It might be manifest as precious metals, commodity certificates, banknotes, coins, electronic money loaned to commercial banks, or anything else the central bank chooses as its form of money. In the beginning, central money is what ordinary folk would have regarded as real money. Part of my simplification consists of considering all coins and bank notes to form part of this central money. These days, coins and bank notes are only one part of central money, much of which is electronic.

Historically, before central banks existed, it was the state, or the monarch, which produced the money. At such times all money was central money and consisted of gold, silver or copper coins. Paper money was introduced as a convenience to avoid carrying around heavy coins. The familiar "I promise to pay the bearer..." was literally a guarantee that banks would exchange said paper for the stated amount of precious metal. This is the gold standard: the linking of paper money to something of perceived real value. More specifically, gold is in limited supply - and this is largely the source of its perceived 'real' value. So the gold standard had the effect of preventing governments from arbitrarily printing money (or, it would have if governments had actually stuck to the agreement).

The gold standard underwent many evolutionary changes, these changes being conspicuously related to wars (but that's another story). The last form which the gold standard took, after 1944, was the pinning of currencies to the dollar, which in turn was linked to gold. This final form of the gold standard came crashing to an end as a result of the Vietnam war. President Nixon was printing money to finance the Vietnam war, in disregard of the supposed link with the amount of gold in Fort Knox. This had the effect of devaluing everybody else's money too, not just the dollar. The French got pissed off and sent a gunboat to New York harbour, asking for their gold in honour of the commitment to "pay the bearer...". It was not forthcoming and that was the end of the gold standard.

Central money is not now linked to anything in the UK, and most other countries. Central bank money is now "fiat money", that is, it can be created simply by fiat. The government says, "let there be more money", and there is. This can be done by printing paper money or by adding a number with many zeros to the appropriate computer file. What effect this has on the economy we will see shortly.

6. What is Commercial Money and How is it Created?

Now we get to the heart of the matter. If asked, the vast majority of the public would think one of the following two things,

- When you put your money in a high street bank, the bank sticks the money in a big vault to keep it safe and you can ask them to get it back out of the vault at any time;
- When you put your money in a high street bank they loan your money out to someone else, but you can still withdraw your money from the bank's reserves.

Neither of these is true.

Consider the magic that is banking. Fred opens a deposit account and deposits £1000 of his savings. Then Jim, who is starting his own business, borrows £1000 off the bank at some agreed rate of interest. The magic is simply this: Fred is happy that his money is safe in the bank. He can prove this to you should you doubt it by going along to the bank and withdrawing the whole £1000. There it is, without doubt. On the other hand, Jim is equally convinced he has the £1000, for the excellent reason that it's in his pocket! So, the magic of banking is that Fred's initial £1000 has become £2000.

And it doesn't stop there. Jim spends the £1000 in order to acquire the hardware he needs for his business. What do the recipients do with the money Jim has paid them in exchange for their goods? They deposit it in their bank. Alternatively, they spend it and the subsequent recipient deposits it in *their* bank - it makes no difference. Excepting that someone keeps the money as cash in their wallet, it will end up back in a bank. (And even then, that cash will get spent...you get the picture). So Jim's borrowed £1000 is back in a bank (or in several banks, but that makes no difference). What does that bank do? It lends the money to Janet to buy a car. So now the original £1000 has become £3000. As so on, as far as we might like.

You will object that Fred's original £1000 has not really multiplied at all. Rather the same £1000 is just circulating around. And, of course, that Fred can withdraw £1000 even though his initial deposit has moved on to Jim, then Janet, is only because the bank has reserves out of which to pay him. That's quite right, of course. What I've described above cannot be right because neither the public nor the commercial banks have the ability to increase the supply of central money, so they simply cannot increase £1000 to £2000 to £3000, etc. However, the commercial banks have a simple wheeze which gets around that problem and makes the above scenario (almost) correct. They invent their own money.

Fred's deposited £1000 is not touched. When Jim asks for a loan the bank simply creates an account and types the number 1000 into it. That's it. It's that simple. The commercial banks simply invent money by tapping a few computer keys. This is "commercial bank money". It is created when, and only when, a loan is made. The manifestation of this commercial money is the balance showing in Jim's account at Barclays (or wherever). So Fred's original £1000 really has become £2000, of which the extra £1000 is commercial money. Remember that money is confidence and everyone is confident in Barclays (or, rather, everyone is confident in the money supplied from Barclays). When Jim comes to purchase the hardware for his new business, everyone he deals with is happy to draw off his Barclays account, because Barclays is a noble and honourable institution, isn't it? No one is fretting about

Barclays having just conjured the money out of thin air. The money goes into their own accounts as usual, and they have no trouble spending it in their turn. Why should they worry? They don't. This is the way the economy works. The commercial banks are doing nothing wrong in creating this commercial money from nothing. It's perfectly legal. It's what banks do. But remember this moment. This is the moment the evil is done, legal or not.

When Jim spends his money and it ends up back in a bank, the subsequent loan to Janet is achieved by the creation of another £1000 of commercial money. So now there is £3000 where there was originally only £1000, of which £2000 is commercial money. And so on. But surely there must be a limit to this?

Those who are familiar with Fractional Reserve Banking will see that I have simplified things a little. As usual with banking matters, rules have changed over the years. Prior to 1981, in the UK, banks were not allowed to create arbitrary amounts of commercial money. The point is that the more commercial money is created, the smaller is the proportion of central money to total money that the public fondly believe to exist. If everyone wanted all their money in cash at once, it would not be possible. But banks were required to hold reserves of central money of at least a certain fraction, f, of total money. This can be achieved if we restrict the loan to Jim to $(1-f)$ times Fred's deposit of £1000. In turn the loan to Janet is limited to $(1-f)$ times this, etc. Hence, in the limit of a very large number of loans, the total loan (which equals the total commercial money created) will be $\left(\frac{1}{f}-1\right)$ times the original £1000. The total money, including the initial central money, is thus a factor $1/f$ times the original sum. Hence the effect of commercial banks is to increase the amount of money in the economy by the factor $1/f$. This assumes that banks will lend to the maximum extent they are allowed. This they will naturally tend to do (except in a recession) , since charging interest on loans is how the banks derive their income.

However, since 1981, UK commercial banks have not been restricted to a specified minimum reserve requirement (f). In theory this means that banks could retain zero reserves, effectively allowing an infinite amount of commercial money creation. However, other factors come into play to prevent an unlimited orgy of lending. I cannot pretend to understand them. One such restriction is the capital requirement ratio. Another restriction is provided by the international Basel Accords on the security of banking activities. Rather than get into these messy matters, an effective f can always be defined as the reciprocal of the resulting total money to central money. In the UK the history of f values is,

	1968	**1978**	**1988**	**1998**	**2010**
f	20.5%	15.9%	5.0%	3.1%	2.7%
F = 1-f	79.5%	84.1%	95.0%	96.9%	97.3%

where F is the proportion of the total money which is commercial money. Hence, we now have an economy in which 97.3% of the money is commercial bank money, created by debt.

7. Commercial Money is Debt

Commercial bank money is created out of nothing in order to bring about a bank loan. The way in which I find it helpful to envisage this is as follows. When a bank makes a loan to a customer, the bank and the customer exchange IOUs , both for the amount of the loan. The bank hangs on to the customer's IOU. The bank's IOU, though, is used by the customer as money - because a bank's IOU is as good as money, it ***is*** money, it is commercial money. So, the total commercial money and the total indebtedness of society to the commercial banks are one and the same thing. The pithy expression of this simple observation is,

Commercial money is debt

But we have seen that 97.3% of the money in the UK is commercial money, and so,

97.3% of money is debt (UK data)

The converse of creating commercial money out of nothing to facilitate a loan is the annihilation of commercial money if a loan is repaid. Just as the banks are allowed to create commercial money out of nothing, they are obliged to annihilate it when a loan is repaid. The bank holds Jim's IOU for £1000. When Jim repays the £1000, his IOU is cancelled out against the repaid £1000, both of which disappear. This is the difference between banking and counterfeiting. Bankers do not benefit directly by creating money from nothing. They benefit from the interest which results from the loan. The way this may work in practice, for example, is that Jim's account is allowed to go into overdraft, up to -£1000, and hence repaying sets this back to zero and the invented commercial money has been annihilated.

But what if Jim's business goes bust and either there are no assets left or it was a limited company? In either case the bank does not get its money back. The bank is obliged to cancel Jim's IOU using the bank's own money (thus annihilating some of the bank's money). Another way of looking at this is that the bank's IOUs are already out there in circulation and the bank is obliged to honour them despite getting nothing now from Jim. So, if Jim defaults on his debt, the commercial money which was created with his loan again gets annihilated.

Now loans, or rather the *ex nihilo* money that they create, are a jolly good thing. The economy needs this commercial money to enable people to get their business ventures moving. So this creation of money by the banks simply by virtue of typing some numbers into a computer has a huge, and beneficial, effect in the real world of have-you-got-enough-to-eat-and-a-warm-house-and-a-nice-car. It's amazing really. But reverse the process and you have an unfortunate scenario. If many people suddenly default on their debts, a large quantity of commercial money disappears. So when we look at what happened in the crash, don't ask "where did all the money go". Remember that money is not conserved and defaulting on loans, or repaying loans, removes money from the system, just as making loans creates it. And just as lots of commercial debt money can drive a buoyant economy, so the contraction of the money supply due to loan defaults (a credit crunch) can apply the breaks to an economy.

However, let's assume that Jim's business did thrive and he does manage to repay his loan. By the time his account is showing zero, Fred has paid the bank *more* than £1000 due to interest payments.

8. Interest and the Escalating Money Supply

Commercial banks obtain their income by charging interest on loans. The key feature that leads to the answers to the questions posed in §1 is the escalation in the total money supply which results from the need to service interest. Suppose that Jim has repaid his £1000 loan to Barclays. As noted above, this means that the £1000 commercial money that was created at the moment the loan was made has now been cancelled out. So, there would be no escalation in the quantity of money were it not for the interest payments. Supposing the loan is repaid in one year and the fractional annual rate of interest is I, then Jim has given the bank, in addition to repaying the £1000 borrowed, an extra $I \times$£1000. This interest payment does not get cancelled out. Of course not, it's what the bank pockets as its income. But wait a moment. Where does this additional $I \times$£1000 come from?

Well, Jim has 'made' money in conducting his new business. But that's just an expression. Jim has earned the money, but not literally *made* it. New money does not spontaneously arise from economic activity, and Jim is not permitted to print his own bank notes. Jim has merely acquired the money from his customers. They in turn may have got it from *their* customers, or from selling something - or possibly from an existing bank deposit or cash. This presents us with a conundrum. Suppose there is a total amount C of commercial money in the economy. All of this money, by definition, has arisen through debt. All of it, therefore, is subject to interest payments. To make this conceptually simple, suppose the entire amount C of debt was taken out for a period of one year, all at the same time at the same interest rate, I. Suppose that everyone is a good sound chap and repays on time. At the end of the year the whole inventory of commercial money, the whole of the borrowed £C, has been cancelled back to zero - but the banks have acquired $I \times$£C. Whence cometh the money to make this interest payment?

It may be tempting to think that the $I \times$£C has come from the 'real' money in the system, i.e., the central money. But this will not do. We know where the $I \times$£C *goes*. It goes to pay the salaries and bonuses of the banks' staff, to pay for the banks' running costs and their palatial offices, and to pay dividends to shareholders. It ends up like other money in the economy, 97.3% commercial money. So, yes, 2.7% is central money, including cash, but in an economy in which the overwhelming majority of money is commercial money, the same must be true of the bank's $I \times$£C income. So, to a good approximation, an amount $I \times$£C of new commercial money must have been made to service the banks' requirement for interest. But commercial money is debt. So, the servicing of the banks' requirement for interest inevitably leads to an amount $I \times$£C of new debt despite all the initial debts having been paid off. Hence we have discovered that,

The requirement to service banks' interest payments inevitably leads to increasing debt by someone (even if no one defaults on existing loans)

In my ridiculously simplified model, you may envisage another round of loans being made at the start of the next year. If the economy was ticking along steadily, this would mean another total amount £C of loans for the next year. But to this must be added the extra loans corresponding to the banks' interest income of $I \times$£C. So the total amount of commercial money has necessarily increased to $(1+I) \times$£C, despite our assumption that the economy is, in real production terms, in steady state. The fact that loans extend over longer periods than one year, and that loans are taken out at

different times and at different interest rates, and that debt capital may be increasing or decreasing, makes no difference to this conclusion. To drive this message home consider the following quantities,

B the amount of central money (constant in this model)

C_1 the amount of commercial money at the start of a year

C_2 the amount of commercial money at the end of the year

I the average fractional interest on loans

λ the fraction of debt capital repaid in the year

$\widetilde{\lambda}$ the extent of new loans taken in the year as a fraction of current debt

Leaving aside niceties of compound interest, these definitions imply (recalling that debt and commercial money are the same thing),

$$C_2 = \left(1 + I - \lambda + \widetilde{\lambda}\right)C_1 \qquad (1)$$

Now suppose the real economy (i.e., everyone apart from banks) is in balance. What does this mean? I take it to mean one of two things,

- either, that new debt is being taken up at the same rate as existing debt is being paid off, $\widetilde{\lambda} = \lambda$;
- or, that new debt is being taken up at a rate which balances against the excess profit generated by existing businesses as measured by the sum of the rate of debt reduction plus interest payments, i.e., $\widetilde{\lambda} = \lambda + I$.

The first option gives $C_2 = (1 + I)C_1$ and the second option gives $C_2 = (1 + 2I)C_1$. Hence, if the real economy is in balance, as defined above, then the total debt inevitably increases. The total money supply, $B + C$, also therefore inevitably increases. So we have discovered the following,

If the real economy has steady productivity, the money supply will inevitably increase as a consequence of interest payments to the banks

From (1) we see that the money supply can remain static, or shrink, only if $\widetilde{\lambda} \le \lambda - I$. This is impossible if $\lambda < I$. Even if $\lambda > I$ the money supply can remain static only if $\widetilde{\lambda} < \lambda$. But this is the signature of an economy which is grinding to a halt. Each year less and less money is being borrowed, indicating reducing business activity. So we conclude that,

If the money supply is steady, the economy must be in recession

Ideally one might have liked to have a sustainable, steady-state economy in which both the money supply and the real economic activity are steady. The above observations show that this is not possible with our current monetary system. If the real economy is steady, the money supply is in run-away, but if the money supply is held fixed, the economy nose-dives. In other words,

A steady state, sustainable economy is not possible in our current monetary system

9. The Plain-Vanilla Mechanism by which the Banks Steal from Us

There is more than one mechanism by which the banks steal from us. The first one is discussed in this section. It is the mechanism which applies in 'normal' times, i.e., other than during a crash or a recession.

The link between the total money supply and inflation is obvious. If the money supply doubles over night, each pound would be worth what 50p was worth yesterday. Inflation is like a change of unit: one new pound = 0.5 old pounds. Hence, banks' interest charges will result in inflation (unless there's a recession and not much loaning is going on). But the new money created by interest goes to the banks. So, every pound becomes two pounds, one of which goes to the banks and one of which remains in the public hands. So, in real terms, the public's pound has become 50p and the banks have acquired 50p from nothing. It really isn't complicated - well, the fundamental principle isn't, anyway.

In truth, it isn't that simple. We, the public, are not completely exposed to inflation. If you are employed and in a strong union, you may hope that your wages are inflated annually by an amount which does not fall behind RPI or CPI too much. Or you may have possessions, e.g., a house, with real value which inflates as fast, or sometimes faster, than the general inflation rate. Whence cometh the money to pay for your wage increase? There is no mechanism for taking the commercial bank's interest income off them to pay for it. Instead it is funded by an increase in central bank money. This can be done by fiat and so is no problem. The fractional reserve multiplier, $1/f$, then gears this up (currently by x36 in the UK) to provide the economy with the additional funds required to balance wage increases, etc. Suppose the public's wealth inflationary rate is $\tilde{I}$ and the banks' interest rate is I. You may be tempted to think that if $\tilde{I} = I$ then the public do not get robbed. But this cannot be true because the banks are still getting a tidy interest payment, so real value is still being shared between the public and the banks. Assuming a zero-sum game, i.e., that there is a fixed real pie to be divided between the public and the banks, this is how the division looks with and without an allowance for public index-linking,

	Fraction of the pie the public gets	**Fraction of the pie the banks get***
Public have no index-linking ($\tilde{I} = 0$)	$\frac{1}{1+I}$	$\frac{I}{1+I}$
Public have index-linking ($\tilde{I} \neq 0$)	$\frac{1+\tilde{I}}{1+I+\tilde{I}}$	$\frac{I}{1+I+\tilde{I}}$

**This should not be interpreted as causing an increase in the value of the bank, i.e., the bank's equity. It may contribute to that to a degree through the building of new plush offices or the purchase of other capital equipment. But mostly this represents money which is dispersed to people, in the form of salaries, bonuses and share dividends.*

The point is that, even when $\tilde{I} = I$, in fact even if $\tilde{I} > I$, part of the pie is still transferred to the banks. You can't beat the man.

In conclusion, the plain-vanilla mechanism of theft is this,

If the total real wealth is fixed, the public wealth reduces annually by a fraction $\frac{1+\widetilde{I}}{1+I+\widetilde{I}}$, the balance of $\frac{I}{1+I+\widetilde{I}}$ going to the banks

10. Why do economists insist that we must have growth?

By 'growth' we mean that the gross domestic product (GDP), the sum total of all economic activity, is increasing year on year. Note that for the purposes of estimating growth, the GDP must be adjusted for inflation (i.e., the change in the value of money). The index used for this purpose is the "GDP inflator" and is not the same as the more familiar RPI or CPI, but we need not go into such details. The important point is that positive growth means a real-terms increase in GDP, and zero growth means that real-terms total economic activity is constant.

My puzzlement has always been why zero real-terms growth should not be acceptable. If things are OK today, then surely things should be OK tomorrow if real-terms growth were zero, i.e., if nothing is changing in real terms. (If GDP were not adjusted for inflation it would be no surprise that a static GDP were regarded as a bad thing - because it would mean a steadily reducing amount of real economic activity. But that is not the case because GDP ***is*** a real-terms measure). So why do economists insist that we need real-terms growth? The answer follows from the conclusion of §9: if growth were zero (so the total real-terms wealth were fixed), then each year the real wealth of the public would reduce by the factor $\frac{1+\widetilde{I}}{1+I+\widetilde{I}}$. So growth at a rate of $\frac{I}{1+\widetilde{I}}$ is required to leave the wealth of the public unchanged.

In other words, GDP measures the combined wealth of public-plus-banks. Zero GDP growth corresponds to the public getting poorer and the banks getting richer due to the banks' interest effect. So economists realise that positive GDP growth is necessary to avoid the public getting poorer, which would ultimately be unacceptable. You can see this in operation in the recent (ongoing?) recession. Growth has been around zero, but most people have been getting significantly poorer (experiencing great difficulty getting jobs, services being cut and costs increasing far faster than wage inflation).

This is the origin of the insistence on a ridiculous, and ultimately unsustainable, exponential growth. It results from an economy which has no steady state. It takes all the running we can do to stay where we are.

The money supply is inflating due to bank's interest and the public is obliged to accept more and more debt because debt is synonymous with the money supply. Even with steadily increasing real economic output, the public will not get richer in real terms but instead the giant vampire squid that is the banking system gets fatter and fatter and will ultimately explode.

11. Banks' Balance Sheets

In the topsy-turvy world of banking what you might think are assets are liabilities and vice-versa. Deposits that customers have made to accounts in a bank are not the banks assets. They are the bank's liabilities. The reason is that these are sums of monies which the bank is liable to have to repay. So it does make sense. Similarly, the loans a bank makes are its assets. This is because the bank can call in the loans to acquire

cash (as well as reaping regular interest payments). The full story of a bank's balance sheet is vastly more complicated, obviously. But that is sufficient for our purposes: in the left-hand column (assets) are the loans, in the right-hand column (liabilities) are the customer's deposits. The "equity", or the current estimate of the value of the bank, is the difference between the assets and the liabilities. If a bank's equity becomes negative, i.e., its liabilities exceed its assets, it is insolvent and must stop trading. If this happens the bank is unable to honour its commitment to repay all its customers the full amount in their accounts.

For most companies, insolvency results in the receivers taking control of the company. They will sort out which creditors get what. The same process may be followed for a bank failure. However, in practice an insolvent bank is sometimes allowed to become a zombie bank (or a 'bad' bank). The reason for this parallels what householders tend to do if they find they have negative equity (i.e., their mortgage exceeds the current market value of their house). They tend to sit tight and hope the market picks up and puts them back in positive equity. The alternative is either bankruptcy or having to find extra cash to pay for the privilege of loosing your home. So the authorities will sometimes allow a dead bank to fester in the hope they can avoid a loss - meanwhile the creditors have to wait to get anything back at all. The creditors of a zombie bank will include other banks. So if the authorities allow a bank to remain undead it throws greater pressure on the rest of the banking sector, i.e., they need the cash which is being withheld from them.

Whilst equity tells you how much a bank is worth, it tells you nothing about the riskiness of its operations. For example, suppose a bank has an equity of £1B. If this resulted from assets of (say) £3B and liabilities of £2B, such a bank is clearly in a very different position from one in which the assets were £100B and the liabilities £99B, despite both having the same £1B equity. The second bank is clearly in a very risky position because a mere 1% drop in its assets, or a 1% increase in its liabilities, will render it insolvent. For the first bank there would need to be a 50% increase in liabilities to cause insolvency. The parameter which quantifies risk is leverage. Leverage is the ratio of liabilities to equity. The first bank has a very low leverage of just 2, whereas the second bank has a frighteningly large leverage of 99. Shortly before RBS crashed it had a leverage of 20, so that a 5% movement in assets or liabilities was enough to kill it.

- Equity is the difference between a bank's assets and its liabilities.
- Equity measures a bank's value. If equity goes negative the bank is bust and must stop trading.
- Leverage is the ratio of a bank's liabilities to its equity.
- Leverage is the key indicator of the overall riskiness of a bank's position.
- A large leverage means the bank is vulnerable.
- E.g., a leverage of 20 means that a 1-in-20 = 5% decrease in its assets, or a 5% increase in its liabilities, will render it insolvent.

12. The effect of the escalating money supply on leverage

We have already seen that the banks' interest payments lead to an escalating money supply and a movement of real value from the public to the 'banks', for which read the

banks' staff and shareholders. This is the plain-vanilla steal. But it's worse. The escalation in the money supply also increases the banks' leverage, rendering them more vulnerable.

Suppose at some datum time a bank's assets, liabilities and equity are A, L and $E = A - L$ respectively. Now suppose that interest payments over some time period increase the assets to $A + \Delta A$. The extra dosh which must be dispersed around is ΔA. Where does this money go? It goes back into the banks, of course. This might be because that's where the recipients put it, or it might be because they spend it and the subsequent recipients put it in their banks. But eventually, possibly at several removes, it ends up back in the banks. Not necessarily the bank in question, of course. But on average the bank in question will indeed end up with an extra ΔA being taken in deposits, through the agency of people either 'saving' or spending their money. The phrase 'on average' here means that if the bank in question is no weaker or stronger in performance than the average bank, then its loans and deposits will tend to both increase by ΔA. And recall that deposits are the bank's liabilities. So, on average, we can say that L becomes $L + \Delta A$ and the equity remains the same. But this means that the bank's leverage has increased from $\frac{L}{E}$ to $\frac{L + \Delta A}{E}$. And the increase in the assets, ΔA, which is just this bank's share of the increase in the money supply, will continue to increase over time without obvious bound. Consequently the leverage, $\frac{L + \Delta A}{E}$, will also increase continuously if no special measures are taken to stop this happening.

If a bank's equity is fixed, a continuously increasing money supply leads to banks having a continuously increasing leverage, and hence being at a continuously increasing risk of insolvency.

This is the mechanism whereby our monetary system impacts directly on the risk of banking collapse . This mechanism operates independently of the investment banking operations - though they exacerbate the issue further as we shall see in the next section.

The above argument hinges upon the income of the bank being taken out of the bank to enrich its staff and investors. This is essentially the reason why the bank is left vulnerable. If *all* the bank's income were retained within the bank as a company then the bank's equity could escalate as fast as the money supply, i.e., A, L and E would all increase in proportion. The bank's leverage would then be constant and it need not become vulnerable. However, I cannot see how this could happen. The leeching of some part of the bank's income out of the bank seems inevitable. The banks are run to enrich their senior staff, traders and shareholders.

13. Why did banks lend money to people who could not pay it back?

It is widely known that the 2007/8 crash started in the USA and was related to so-called sub-prime mortgages. These are mortgages granted to people of uncertain income who, in times past, would not have been able to get a mortgage due to being a poor credit risk. Why would a sensible person lend money to someone who could be anticipated to have difficultly in repaying it? Part of the answer to this lies in the relative ease that banks have in making a loan compared to you or me. We would have to find the capital to lend. Banks simply conjure the money from thin air. And provided the poor suckers who took these mortgages paid up for a certain time, the

banks could pocket these payments - and if the mortgagee eventually defaulted the banks could repossess the house and would not loose out whilst the housing market was still buoyant. However, that is not a sufficient explanation.

Banks are subject to limits on how much they can lend. The Basel Accords require a certain minimum amount of capital be retained by a bank. The riskier the loan, the greater the capital that must be retained. To put this another way, banks could only make a smaller volume of loans to riskier clients. Banks are required to hold capital equal to 8% of their risk-weighted assets[4]. The risk-weight of an asset (and recall that loans are assets on a bank's balance sheet) depends upon the nature of the asset. Thus cash or gold would have a risk-weight of zero and hence not count at all to the bank's Risk-Weighted Assets (RWA). Mortgage-backed securities (MBS) with an AAA credit rating might have a risk-weighting of 0.2, whilst less secure derivatives or corporate loans might have a risk-weighting of 0.5 or 1. So, for example, if a bank only made loans with a risk-weight of 0.2, then it would need to retain capital of only 0.2 x 8% = 1.6% of the total of such loans. If all loans had a 0.5 risk-weight, then 4% of the total loaned would need to be retained as capital. Consequently, a bank will want to make the least risky loans, not only because that is obviously desirable in itself, but because it is allowed to make a greater volume of loans if the risk category is lower. And more loans means more income.

But there is a more pernicious effect of this Basel Accord. It is in the interests of banks, in order to maximise potential income, to under-estimate the risk of a given loan or security since this will allow a greater volume of money to be loaned. This is where Credit Default Swaps come in.

A Credit Default Swap (CDS) is basically an insurance policy against a loan going bad. How can you make a risky loan less risky and hence more desirable? You insure yourself with a third party against the borrower defaulting on payments. Of course, the whole truth is vastly more complicated, but that's the essence of it. I don't know what the true numbers are, but it might work like this. Lending into the sub-prime mortgage market might involve a risk-weighting of (say) 0.5 or 1. As we have seen above, this restricts how much the bank can loan due to the Basel rules. But by taking out a CDS, the risk-weighting can be reduced, say to only 0.2. It's well worth the bank paying the premium for the 'insurance policy' because of what it gains in terms of volume of investment. And this looks pretty reasonable, because the CDS really does decrease the risk to the bank. Sure, the probability of some guy not being able to pay his mortgage is not magically affected, but the risk is spread - with the 'insurer' now taking part of the risk.

Banks were happy to lend into the sub-prime market because it was a virgin market to be tapped and because they thought they had neutralised the risk via credit default swaps. The reduced risk-weighting due to applying CDSs to such loans also meant that large volumes of such loans became possible and attractive.

This increase in the volume of loans by the banks meant an increase in their leverage, which, of course, means an increase in risk. The irony is that the belief that risk had been addressed is what led to risk being intensified.

[4] This is actually Basel I. The updated Basel II had been drafted some years before the crash but not generally adopted. Basel III was drafted only after the crash. The complete statement of the Basel Accords is very complicated.

14. Why did the 2007/8 crash happen?

In §12 and §13 we have seen that there were two different mechanisms leading to increasing leverage of the banks, one due to monetary escalation and one due to the increased volume of loans made possible by the application of credit default swaps to make dodgy loans seem less dodgy.

But it doesn't stop there. To make their leverage *seem* smaller, and hence more acceptable to regulators and investors, the banks wanted to reduce their assets and liabilities whilst, of course, keeping their equity (their real value) unchanged - and whilst, of course, continuing to enjoy the income that came with their massively over-bloated loan portfolios. They found a way of doing this by opening slave companies ('Special Purpose Vehicles') in offshore tax havens and transferring chunks of assets and corresponding liabilities to them. The CDSs facilitated this arrangement via another hideously complicated financial monster called a 'synthetic collateralized debt obligation' (SCDO). The details are complicated but the thinking and the effect were simple: by vanishing assets and liabilities in equal amounts off their books, by hiding them in slave companies, the banks made themselves appear to have an acceptable leverage when the truth was very much to the contrary.

The mechanisms of §12 and §13 rendered the economy tinder-dry and ready for a conflagration. The synthetic collateralized debt obligations turned off the fire alarm. Because of the SCDOs, the true, desperately fragile, state of the banks went unnoticed because it had been hidden. So if you wondered how a few sub-prime mortgagees in the USA could bring down the world financial system, now you know. It really did not require huge numbers of loan defaults all of a sudden. The banking system had become so fragile that it took only the slightest perturbation to bring it down.

15. Should we just have let the banks go bust?

No.

We really did come very close to the brink. When Lehman Brothers was allowed to go bust, it very nearly brought down the whole system. So near was it that no one wanted to risk it again. What would it have meant? I don't know in detail, but I guess this: you would suddenly find that the 'money' you had in the bank had just gone. To begin with you would think that the bank was just not letting you get at it. Then slowly you'd realise that you would never get it back. Because "the pound" didn't mean anything any more. Nor did the dollar or the euro. You can forget about the state guarantees (what is it, £50,000 per bank?). They couldn't pay everyone in a total collapse - and besides, what with? You would have your house, if you owned one outright, and your clothes and your car, if you owned that outright. Creditors might chase you for outstanding payments but could not do so with any conviction since there was no longer any means of payment. You would own what you could hang on to. Possession would no longer be nine tenths of the law, it would be 100% of the law. The rule of law would break down. The poorest people who had no money anyway might initially seem unaffected, but even they would have been reliant upon the state for dole which would no longer be forthcoming. Would shops continue to accept the money you still had in your wallet? Perhaps. More likely looting would occur almost immediately. Gangs would grab almost everything. I suspect a myriad of alternative currencies would spring up spontaneously under the pressing need for continued exchange. Some would turn out to be scams. But you'd never get your money back. Such a total crash would be a great leveller. Would people starve before some sort of

order was restored? I think so. Would mass societal breakdown occur, leading possibly to civil war or the country being taken over by gangsters? Quite possibly. We don't want to go there. But we might yet go there because nothing significant has changed.

16. How did Gordon Brown Save the World?

Easy - he just instructed the Bank of England to invent more central bank money and let the commercial banks have it - sometimes in exchange for shares. Remember, there is no difficulty at all about doing this - its just fiat money. This had to be done in concert with other key world leaders similarly instructing their own central banks, hence all the jet-setting Gordon Brown did in 2008.

The biggest 'insurer' on the receiving end of the collapse of the CDSs was AIG in the USA. After Lehman Brothers went down people immediately started looking around for who was going to be the next to fall. It was AIG. This could not be allowed to happen - see §15 - it was Too Big To Fail, as were RBS and many others. It eventually cost ~$170B to bail out AIG. Timothy Geithner, the president of the Federal Reserve at the time, was asked where he'd got such a huge quantity of money. He replied simply, and without prevarication, that it was just a matter of entering the number into the computer.

The thing that baffles one is that if Geithner had not typed that number into the computer, the scenario described in §15 would have unfolded. By what unearthly magic does typing a number into a computer prevent worldwide catastrophe? There is something missing from this description of how the bail-out was accomplished.

The secret lies in the true nature of money, which is that money is confidence. The reason why a total system crash would mean that everyone would loose their money is that such a crash represents a total loss of confidence - and hence a total loss of money because money ***is*** confidence, QED. What Geithner's bit of typing really meant was this: "the Federal Reserve, with the full authority of the government of the United States, is taking this debt onto itself". Confidence was restored because people still had confidence in the government's ability to pay. The reason people generally have confidence in a government's ability to pay is that governments can raise money from the people through taxes. Since confidence was restored, money was restored - because money ***is*** confidence.

When central banks around the world bailed out their major financial institutions, by the simple act of typing a few numbers into their computers, they were saying "the people will pay". And so we are. That's what austerity is, the paying down of the banks' debts, something we became liable for when those digits got typed into those central bank computers. Meanwhile 1000 or so of unconscionable bankers/traders in the city of London alone are continuing to pay themselves obscene amounts in the order of several £M each per year. For the rest of society the austerity will continue for most of their lives, even if another crash does not happen. Their austerity is paying for banker's bonuses. This is the second, and better known, mechanism by which we are being robbed.

But the worst thing is that it is inevitable that a crash will happen again because we have done nothing significant to avert it. The root cause of the problem lies in the monetary system, not only in investment banking. This has not been recognised by those in authority. Regulation of the investment banks will not be enough.

17. So where did the money go? What happened in 2008?

When the need for the bail-outs became known in 2008 the public were asking "where did all that money go?". The general misconception was that somehow RBS (to pick just one bank as an illustration) had managed to loose £45B somehow, perhaps through bad investment. This isn't entirely wrong, but at the same time it is grossly misleading. From this view of things you can meaningfully ask who has got that £45B and perhaps get it back. But you should appreciate by now that money is not conserved. If money has gone from your hands (or, rather, a bank's hands) that does not mean someone else must have it. If a bank's client defaults on a loan, the money that was created with that loan vanishes. In the bank's accounting, the bad client's overdraft is paid from the bank's own money. Or, to put it yet another way, there was an entry on the left-hand side (assets) of the bank's balance sheet which represented the loan. This is erased when the loan goes bad. The bank's net assets and equity are reduced and its leverage increased. The bank has lost money right enough, but no one has it. The money has just vanished.

So did RBS really have £45B of bad debts that defaulted? This might seem extraordinary, but the simple truth is that the entire financial system is perpetually liable to collapse. All banks are vulnerable at all times to a bank run. All it needs is a rumour that the bank is in trouble and this will be a self-fulfilling prophecy. If enough people try to withdraw their money at once the bank would fall without intervention by the Bank of England. But what if a rumour went around that all banks were in trouble, and a bank run started on every bank? This would precipitate a systemic crash of the sort that was narrowly avoided in 2008. All it would take is a loss of confidence. The entire financial edifice is held up solely by confidence. Of course it is, because money ***is*** confidence.

The initial spark that started the crashed may well have been sub-prime mortgagees defaulting on their mortgages. Once the housing market went into reverse, the resulting foreclosures would be loss-making for the banks. Large numbers of forced house sales would drive the market down further, resulting in a downward spiral of increasing loss. But surely even RBS didn't have £45B of bad mortgages? Of course not. The sub-prime business was just the spark that started the conflagration. The banking system had made itself highly inflammable by driving its (hidden) leverage up to a dangerous degree. When some banks sensed they might be under threat of insolvency they started to call in loans. They had an urgent need to de-leverage to make themselves less vulnerable. But much of banking business is inter-bank lending. So this process involved one bank calling in loans made to other banks. But the widespread cancellation of loans (by repayment or default) is synonymous with a shrinking of the money supply. This tightening of liquidity would make it increasingly hard for banks to oblige each other in meeting loan obligations. A bank that was found particularly vulnerable during this process of attrition would be driven to insolvency, viz Northern Rock and Lehman Brothers. And once banks start to collapse the problem accelerates. Lehman Brothers collapsed owing money to many smaller institutions, thus denting their balance sheets further and shrinking the money supply further. Everyone was calling in money to protect themselves. The banks which were most vulnerable were those who had played the CDS/SCDO games for the highest stakes and with the greatest volumes of cash, e.g., RBS. The system concentrated the loss of money at these institutions, the biggest of the giant vampire squids. So, for example, RBS in the UK and the insurance company AIG in the USA would have gone down if their respective central banks had not bailed them out.

Governments had no choice regarding the bail outs at this stage because the alternative would have been total systemic collapse as described in §15.

Where did the money go? It went the same place as the confidence.

The finance system is like a game of musical chairs. So long as the music plays you can ignore the fact that there are not enough chairs to go round. Only when the music stops is someone left without. In the case of the financial system there is not even a fixed number of chairs (=money). So a closer analogy would be if, in the mad scramble for a chair, many of the chairs get broken so that even more people end up falling to the floor.

18. Are investment banks of any use to society?

No.

It was the investment wing of the banks which invented and wielded the financial weapons of mass destruction such as CDSs and SCDOs. And they deal in a vast range of derivatives. The volume of derivatives traded annually exceeds the GDP of the whole world by an order of magnitude. Why do they do it? To profit themselves. The banks employ traders to make profit for the banks, and the traders do it for the salary/bonus package, the latter being performance related. There is no benefit to society from these things. There is no relationship between these types of activities and real markets, say in commodities, or the raising of capital for business - things which are part of the real world.

How hard is it to make money as a trader? In good times, on average a trader will make money simply because the money supply is escalating. The markets played by the investment banks can be seen simply as a big bun fight over the cash being squeezed out of the money making machine. The machine is making money, so on average the traders will win. Forget the talk of great skill. That's utter bollocks.

19. Does the financial sector contribute to the economy?

It seems to me that it would be better if the financial system were only part of the mechanism whereby the economy functions, rather than being a business in its own right. But unfortunately our balance of trade would be screwed if the finance sector were turned off precipitately. The position of the UK is such that other parts of the economy would have to be far more robust before we could afford to monkey about with the finance sector. Essentially the finance sector is a drug addiction which, although it is killing us, would kill us faster if we stopped suddenly. We need to wean ourselves off it slowly, whilst replacing it with real economic activity. Sounds like an unlikely dream, doesn't it?

20. Why don't banks just create more commercial money to get us out of recession?

Creating commercial money is synonymous with making loans. So asking why the banks don't create more commercial money is the same as asking why they don't make more loans. And a credit crunch is synonymous with a reluctance to loan. The reason for this reluctance is that the banks have just been caught with excessive loan portfolios, and excessive leverage, and are, in the aftermath of the crash, still in the process of de-leveraging to protect themselves. They are calling loans in, not making more.

If there is one tiny bit of sympathy you might reasonably have for the banks post-crash it is that they are being asked by the government to do two directly contradictory things: to make more loans to stimulate the economy, and to put their balance sheets in order (i.e., de-leverage) to make themselves more secure.

21. What is quantitative easing?

My understanding is that quantitative easing is just a slow form of bail-out. It consists of the creation by fiat of further central bank money which is added to the commercial bank's accounts at the Bank of England. As such it is potentially inflationary. Like the bailouts themselves, ultimately it's the public who will pay.

22. Why are banks using the government's extra money to finance mortgages rather than loans to companies?

The government has been running a scheme of giving even more money to the commercial banks to facilitate their lending. The idea was to stimulate growth of the economy by providing loan funding to businesses. Instead the banks have been using the money to fund mortgages. Why? Because mortgages are less risky than corporate lending, as explained above. Why couldn't the treasury have worked this out?