

# Ireland and the future of the European Union: Updating the banking system to the digital era

PAUL FERGUSON

*Sensible Money*

paul.ferguson@sensiblemoney.ie

TONY WEEKES

*Sensible Money / Centre for Progressive Economics*

tony.weekes@sensiblemoney.ie

March 2013

---

*Abstract:* The current monetary system is very misunderstood as the subject of economics still teaches models of the economy that don't account for the prominence of electronic money. Since cash & coins form only 3% of the money supply, the effects of electronic money on the economy are highly significant and yet economics doesn't accurately teach how this type of money is created or 'deleted'. We would envision first educating economists, politicians and the general public on the origin and effects of electronic money before changing Europe for the better through changing the monetary system. Specifically we would like to apply the same criteria that apply to the creation of cash to that of electronic money, in effect updating our monetary system to the digital era.

# Part 1: How the Current Monetary System Operates

Before we describe how we would like money to be created it is very important for the reader to know how money is created (and destroyed) today. Other papers of ours describe the process in more detail but an overview is provided below

## 1.1 Different types of money

There are three types of money denominated in euros in the euro zone:

### 1.1.1 Cash and coins

Cash & coins are created and issued by the national central banks (NCBs) of the euro zone under the approval of the European Central Bank (ECB).<sup>1</sup> The profit that the NCBs of the eurozone make from the low-cost production and sale of cash is known as seigniorage. The profits from seigniorage and other activities that the NCBs record are pooled together and redistributed to the various departments of finance of the governments of the euro zone. Seigniorage is a source of non-tax revenue and the proportion a country receives from the 'profit pool' depends on its population and its contribution to GDP. Both factors hold equal weighting.<sup>2</sup> Cash makes up less than 3% of the euro zone's M3 money supply and is almost negligible in today's digital world.<sup>3</sup>

### 1.1.2 Reserve-Account-Money

Reserve-account-money is a type of electronic money, created by the NCBs and used by banks to settle payments with each other.<sup>4</sup> This type of money is only available to those organisations which have accounts at the NCBs, i.e. financial institutions. It is recorded on the balance sheet of the central bank and cannot enter general circulation. Even if the central bank created an abundance of this type of money it wouldn't necessarily increase the money supply.

---

<sup>1</sup> In The Treaty on the Functioning of the European Union (The Lisbon Treaty); Article 128 states that the 'The ECB shall have the exclusive right to authorise the issue of euro banknotes within the Union. The ECB and the NCBs may issue such notes. The banknotes issued by the ECB and the NCBs shall be the only such notes to have the status of legal tender within the Union.'

<sup>2</sup> The ECB's Organisational Chart explains the 'capital subscription' which each euro zone country has. From the description 'The capital of the ECB comes from the NCBs of all EU Member States. It amounts to €10,760,652,402.58 (as of 29 December 2010). The NCBs' shares in this capital are calculated using a key which reflects the respective country's share in the total population and gross domestic product of the EU. These two determinants have equal weighting.'

<sup>3</sup> ECB historical monetary statistics 1980 - 2012.

<sup>4</sup> The Treaty on the Functioning of the European Union (The Lisbon Treaty); Article 123 states 'Overdraft facilities...shall be prohibited, as shall the purchase directly from them by the ECB or NCBs of debt instruments. [However this] shall not apply to publicly owned credit institutions which, in the context of the supply of reserve-account-money by central banks, shall be given the same treatments by NCBs and the ECB as private credit institutions.'

### 1.1.3 Bank-Account-Money

The third type of money accounts for approximately 97% of the eurozone money supply.<sup>3</sup> This money is digital and exists as the numbers in our bank accounts. However, unlike reserve-account-money and cash, it is not created by the central bank. Instead, bank-account-money is created by the commercial banks usually in the process of advancing loans.

## 1.2 How banks create money

This section describes how commercial banks create bank-account-money. The main way banks create money is through processing loans. A customer, who we shall call Joe, walks into AIB and asks to borrow €4. In theory the bank will check that it has 'excess' reserve-account-money such that it can take on an additional liability of €4 and still meet its minimum reserve requirements. In practice it's more likely the bank processes the loan first and then looks for the additional reserve-account-money afterwards.<sup>5</sup> In any case, Joe signs a contract confirming that he will repay €4 plus interest over a period of five years. This legally enforceable contract represents a future income stream for the bank and it will be included as an additional asset on their balance sheet worth €4. The interest Joe agrees to pay isn't recorded on the bank's balance sheet. Once the contract is signed AIB is in a position to create a liability on itself in the form of an increase in Joe's current account balance, thus creating a new 'deposit' and brand new money. The balance sheets start as per Box 1 overleaf:

---

<sup>5</sup> Alan Holmes, then Senior Vice President Federal Reserve Bank of New York (1969) said "In the real world, banks extend credit, creating deposits in the process, and look for the reserves later."

The Bank of England's mandate states that "if there is a shortage of liquidity the central bank will (almost) always supply the need".

Victoria Chick (1992) states "Banks are now able to meet any reasonable rise in the demand for loans. Deposits will rise as a result and the shortfall of reserves is met by the system".

Kydland and Prescott, Federal Reserve Bank of Minneapolis, (1990) state "There is no evidence that the monetary base or M1 leads the cycle, although some economists still believe this monetary myth. Both the monetary base and M1 series are generally procyclical and, if anything, the monetary base lags the cycle slightly".

Distayat, Bank for International Settlements, (2010) states, "If anything the process works in reverse, with loans driving deposits".

Furthermore Keynes argued that if the rate of bank lending is similar between all banks in the system a restraint in reserve-account-money may have no restraint on the creation of money by banks because the net difference of daily money exchange between banks can remain the same. 'It is evident that there is no limit to the amount of bank money which the banks can safely create *provided they move forward in step*'.

### Box 1: Starting Position

Starting Position							
Central Bank of Ireland				Allied Irish Bank			
Assets		Liabilities		Assets		Liabilities	
Lending to Credit Institutions	30	Liabilities to Credit Institutions	30	Lending to Irish Residents	890	Deposits from Irish Residents	890
Intra Euro System Balance (if net asset)	0	Intra Euro System Balance (if net liability)	170	Central Bank Balance	10	Borrowing from the Eurosystem	10
Remaining Assets Not Listed	270	Remaining Liabilities Not Listed	100	Government Debt Securities	20	Remaining Liabilities Not Listed	200
<b>Total Assets</b>	<b>300</b>	<b>Total Liabilities</b>	<b>300</b>	<b>Total Assets</b>	<b>1100</b>	<b>Total Liabilities</b>	<b>1100</b>

And they finish as per box 4 below:

### Box 4: Creating Bank-Account-Money Through Loans

AIB Creates Bank-Account-Money for a Customer							
Central Bank of Ireland				Allied Irish Bank			
Assets		Liabilities		Assets		Liabilities	
Lending to Credit Institutions	30	Liabilities to Credit Institutions	30	Lending to Irish Residents	(+4) 894	Deposits from Irish Residents	(+4) 894
Intra Euro System Balance (if net asset)	0	Intra Euro System Balance (if net liability)	170	Central Bank Balance	10	Borrowing from the Eurosystem	10
Remaining Assets Not Listed	270	Remaining Liabilities Not Listed	100	Government Debt Securities	20	Remaining Liabilities Not Listed	200
<b>Total Assets</b>	<b>300</b>	<b>Total Liabilities</b>	<b>300</b>	<b>Total Assets</b>	<b>1104</b>	<b>Total Liabilities</b>	<b>1104</b>

The money supply increases although no money was transferred or taken from any other account; banks create the money they lend. As such, banks are not the financial intermediaries which many economic models assume they are. The vast majority of the euro zone's money is created as described above and this is why almost every euro has a corresponding debt to the financial sector. Indeed because interest is charged on loans banks create more debt in the economy than they do bank-account-money with each loan

transaction.

### 1.3 How banks destroy money

It is also the case that when a loan is repaid to a bank the money used to do so no longer exists. In the example above Joe borrowed €4 conveniently at 20% interest such that he ultimately owes €5. For simplicity let's imagine the loan is repaid in one lump sum, rather than in instalments as is usually the case. Recall the situation from Box 4 directly after Joe secured the loan: the bank had an additional asset of €4, which is Joe's promise to repay the loan, and new liabilities totalling the same amount. Imagine Joe is paid €6 by his employer who banks with National Irish Bank (NIB). When Joe's employer transfers €6 to Joe's account, NIB will transfer €6 in reserve-account-money to AIB.<sup>6</sup> Thus the banks' balance sheets start as follows:

Box 6: Processing a Loan Repayment Starting Position							
AIB's and NIB's Balance Sheets Prior to Processing Loan Repayment							
National Irish Bank				Allied Irish Bank			
Assets		Liabilities		Assets		Liabilities	
Lending to Irish Residents	180	Deposits from Joe's Employer	20	Lending to Joe	4	Deposits from Joe	4
Government Debt Securities	20	Deposits from Other Residents	160	Lending to Other Residents	890	Deposits from Other Residents	890
Central Bank Balance	10	Borrowing from the Eurosystem	10	Central Bank Balance	10	Shareholder's Equity	10
Remaining Assets Not Listed	190	Remaining Liabilities Not Listed	210	Remaining Assets Not Listed	200	Remaining Liabilities Not Listed	200
Total Assets	400	Total Liabilities	400	Total Assets	1104	Total Liabilities	1104

And finish as follows:

<sup>6</sup> If interbank payments happened in real time then NIB would transfer €6 instantaneously to AIB. Of course the banks wait until the end of the working day and transfer the net difference in reserve-account-money between each other and this is what allows the banks to practise fractional reserve banking..

## Box 7: Processing a Loan Repayment

AIB's and NIB's Balance Sheets Post Processing Loan Repayment							
National Irish Bank				Allied Irish Bank			
Assets		Liabilities		Assets		Liabilities	
Lending to Irish Residents	180	Deposits from Joe's Employer	(-6) 14	Lending to Joe	(-4) 0	Deposits from Joe	(+6-5) 5
Government Debt Securities	20	Deposits from Other Residents	160	Lending to Other Residents	890	Deposits from Other Residents	890
Central Bank Balance	(-6) 4	Borrowing from the Eurosystem	10	Central Bank Balance	(+6) 16	Shareholder's Equity	(+1) 11
Remaining Assets Not Listed	190	Remaining Liabilities Not Listed	210	Remaining Assets Not Listed	200	Remaining Liabilities Not Listed	200
Total Assets	394	Total Liabilities	394	Total Assets	(+2) 1106	Total Liabilities	(+2) 1106

As a result the money supply is down by €4 overall and that amount of bank-account-money has effectively been canceled out of existence through the loan repayment. If the economy repays more debt to banks than it takes on, the money supply will decrease. This is the main reason why there can be less money during a recession. People saving rather than spending can make it seem like there's less money also and indeed this is the only explanation that economics offers for why there appears to be a lack of money in the economy. Note that the €1 interest that Joe paid still exists and is initially owed to the bank's shareholders. Ultimately the bank may instead transfer this liability to its staff's current accounts as a means of paying their salaries etc.

### 1.4 The effects of this system of money creation and destruction

#### 1.4.1 The Debt Crisis

Since almost every euro is created with an even higher debt it's no surprise that most developed economies are over-indebted. For there to be money in the economy there has to be a corresponding debt to the banks. If the economy reduces its level of personal and business debt, the money supply drops by the same amount. There is certainly no way of reducing the relative debt burden under this system without defaulting. However a mass default can make the banks' balance sheet unhealthy very quickly leaving them reluctant to create any more money for the economy.

#### 1.4.2 Higher Taxes

The printing of cash is demand driven so in the build up to Christmas, for example, banks exchange reserve-account-money for newly printed cash. Cash is printed at low cost and

sold to the banks at face value, earning a profit for the central bank in the process. The profit from the sale of cash to banks becomes a form of non-tax revenue for the Department of Finance known as seigniorage. Prior to our use of computers at least 20% of the money supply existed as cash and the central bank's ability to print money was quite significant. With the decline in our demand for cash the Government has lost this significant source of non-tax revenue due to the completely arbitrary use of electronic money. That's ultimately why the government is in a position whereby it's under constant pressure to invent new taxes.

#### 1.4.3 Unaffordable housing and the mortgage arrears problem

When banks are deciding what project to create money for it is in their interest to have the borrower's debt repayments supported by a real world asset. Hence banks are more likely to issue new money towards housing and building projects since the asset can be sold to reclaim some or all of the debt. This pushes house prices up, creates a bubble and leaves us in the situation whereby despite houses taking a matter of weeks to build they require two incomes almost their entire careers to repay. Once the economy can't take on ever increasing amounts of debt the money supply starts to contract. Ultimately what's in circulation is the small amount of cash plus the partial principal of every recent loan. What's owed to the banks is the principal plus compound interest. It's just not possible for all loans to be repaid and this is the root cause of the mortgage arrears problem. Even if banks created money only for those with the highest credit rating it's still systemically inevitable that many in the economy will have to default. We cannot blame the banks' for irresponsible or excessive lending. The banking system cannot behave prudently even if all the intentions to make it do so are there.

#### 1.4.4 Unemployment

We always have work to do and people willing to work. The only thing we're missing is an adequate medium of exchange to bring it all together simply because not many are willing or able to organise a bank loan. If central banks were able to maintain an adequate supply of money all the time unemployment and job security wouldn't be an issue, unless we genuinely had less work to do in which case shorter working weeks and job sharing could become a reality.

#### 1.4.5 Environmental damage

In order for the current system to run smoothly we need to take on more debt than we repay and this is often accompanied by growth in what we produce. A growth of perhaps 2% each year in everything we produce may sound reasonable but in actual fact if something grows at 2% a year it quadruples every 70 years. We already have an incredible productive capacity and we cannot expect it to increase as described on our finite planet. Continuous growth as a basis of economic stability is an unnecessary policy.

Planned obsolescence, whereby products are designed to have a very limited lifespan, is a direct result of our debt-based system because it's just not feasible to run a business unless you have a constant income stream to service debt repayments. Planned obsolescence is detrimental to the planet.

Every country's attempt to become a net exporter adds pressure to produce more and sell it further away too.

#### 1.4.6 Extreme inequality and many of our social problems

Ultimately 97% of all euros have a corresponding debt to the banking sector. Although banks delete the vast majority of euros they receive through loan repayments the financial sector benefits greatly from the interest which must be paid on each euro it creates, or the assets which it acquires if not. It's now virtually impossible for an entrepreneur to start a business from savings and so those with access to sufficient bank credit become temporarily rich and the gap between rich and poor widens on a national level.

On an international level any underdeveloped country is so as a direct result of banks creating money as debt. Economies in which not many people are willing or able to get loans cannot compete with an economies at different stages of this system which are going through self-perpetuating expansion of money and debt.

With extreme inequality, poverty and unemployment comes undesirable social consequences.

#### 1.4.7 Weakened democracy

The banks are in a uniquely powerful position since they have the ability to issue and allocate new money. This power has happened through the loophole of their accounting entries being accepted as money. The power to create 97% of the European money supply has happened through arbitrary advances in technology and not through careful consideration by economists.

The central bank still has the power to issue cash for the Government but it's an insignificant ability given the proportion of digital money in the economy. Our democratically elected politicians may have good intentions but are restricted in what they can achieve through a lack of money, and power to create it.

## **Part 2: Our Vision for Europe**

### **2.1 An overview**

We would like to see the NCBs creating the entire euro zone money supply, both cash & digital and we would like to see an end to the routine destruction of money. Any money which the central banks create would be issued without a corresponding debt. From there, the commercial banks would just do banking. i.e. They would facilitate the electronic payments throughout the economy and intermediate existing money between savers and borrowers. The system we envision is a modern variation of a system of full reserve banking which was proposed by many prominent economists in the 1930s.

### **2.2 More detail**

An independent, publicly accountable committee within the central bank of each euro zone country would decide how much money the economy needs to function smoothly. The ECB would approve their calculations and the central bank would adjust the money supply accordingly. The money would be created and issued without a corresponding debt at origin and as such it wouldn't be destroyed through loan repayments either. Given that no money would be destroyed under this system the exact same money could circulate permanently and be used to fund several projects indefinitely. Hence the amount of new money the economy may need to achieve its full potential would be relatively small.

The need for new money would be carefully monitored. The central banks would have all the necessary resources to decide the health of their individual economy and would closely monitor factors like population growth and expected growth in productivity. In theory if the money supply increased in close relation with these two factors then inflation and unemployment, would not become an issue. However rising prices and a lack of jobs in different sectors are caused by several factors and the central bank would keep a close watch on inflation in particular.

After that banks would just do banking. They'd move money between accounts as instructed by customers and they'd intermediate existing money between savers and borrowers.

### **2.3 How would we control banks from creating money in tandem with debt?**

To stop banks from directly creating money through typing a higher bank balance for anyone who borrows from them we'd declare all electronic money (all bank deposits) as legal tender. Only the NCBs could create, or indeed destroy, such legal tender. The accountancy procedures described in section 2.12 would ensure that it was almost impossible for banks to create the nation's money supply. We'd need two types of accounts, which we already have. Namely current accounts and savings accounts. If a person has money in a current account

only they can use it. If a person have money in a savings account only the bank can use it.

#### **2.4 If not through banks' lending, how would money be created?**

If it was agreed by an NCB Committee, and authorised by the Governing Council of the ECB, that new money was required to ensure the smooth operation of the economy the money would be typed into the government's account at their central bank. Money could also be created by printing cash and minting coins and recording them as an asset of the government's. All newly created money would be non-repayable to the central bank.

#### **2.5 What role would the Government play in influencing the economy?**

##### 2.5.1 The Government would not be permitted to create money

For clarity, the governments would not be allowed to create money. This would eliminate the temptation of vote-seeking politicians, with possibly no economics background, to increase the money supply just before an election, for example.

##### 2.5.2 The Government may set the target rate of inflation

In recent decades a Government's main role in influencing the economy has been to decide the target rate of inflation which is generally kept close to, but below, 2% over the medium term. For countries of the eurozone the european central bank (ECB) now fulfills this role and could continue to do so.

However, it would also be possible for the government of each individual country of the eurozone to take back this role and set their own target rates of inflation. A further possibility would be to have the ECB approve such targets. Indeed, this would be our recommendation since it should provide the diversity in economic policy needed for economies at different stages of development. The ECB wouldn't approve unrealistic or unreasonable targets. In addition to this different target rates of inflation between trading partners would affect each other and the ECB could advise of these effects and recommend revised target rates of inflation for the countries involved.

##### 2.5.3 The Government would decide how best to spend its revenue

Any new money that the central bank would type into the Government's *Central Bank Account* would be indistinguishable from money collected through taxes. The elected Government of the day would decide how best to spend their revenue. For clarity, the central bank would have no influence over how the Government allocates its budget. This is a significant detail since today banks decide how much money to create and they also decide the money's first use in the economy. Separating the power to create and the power of deciding money's first use would provide a further safeguard against excessive inflation and corruption.

## **2.6 How would this affect current accounts?**

Current accounts would behave in much the same way as they do today, providing people with an efficient means of settling payments. Behind the scenes your bank balance would be removed as a liability from your bank's balance sheet and it would be recorded in the bank's internal records. The sum total of all current accounts would be recorded at the central bank also. However, details of individual accounts would not.

In the event that a bank became insolvent all current account balances from that bank would move to the bank of the customer's choice since the money would ultimately be 'held' electronically at the central bank. Hence money in current accounts would be completely risk-free and there would be no need for deposit insurance. There would also never be a bank run or bank bailout under this system.

One drawback to the proposed system from an existing customer's point of view is that the banks would no longer pay interest on current accounts. As the rates of interest are rarely higher than 0.5% per year and a tax is charged on any profit gained from this interest this is not a significant loss.

The main issue that customers of the banks will have with the proposed system is that they would most likely be charged for use of a current account. This may be a monthly or annual fee but as the deposit taking sector develops, smaller fees may be applied per transaction or for use of an ATM and so on. Competition for market share should keep the cost of managing a current as low as possible. Indeed, it's likely that some banks would waive the costs of managing accounts in a bid to attract would-be savers.

In any case the current account charge would be a small price to pay for the significant benefits that full reserve banking would bring to the economy and society.

## **2.7 How would this affect savings accounts?**

From the customer's point of view savings accounts, more accurately described as investment accounts, would also operate in a very similar manner to today. You'd give up access to your money for a defined period of time, or set a minimum notice period for ending the investment. However rather than simply being told the expected rate of return on an investment you'd also be told the nature of the investment.

Once you give up access to your money, it would become part of the bank's *Investment Fund Account* and the customer would need to be aware that a risk applies. In the event that the investment didn't go according to plan the contract wouldn't be guaranteed by the taxpayer.

### **2.7.1 A note on loan defaults**

At present it's not possible for all loans to go according to plan since almost every euro has an even higher debt to the banks. Ignoring cash, what's in circulation is the principal, or partial principal, of every recent loan. From this the economy is expected to repay the principal plus compound interest. We owe more than exists and so mass defaults are inevitable.

However under the reform banks would be lending existing money only. As such the economy could never get to the point whereby more is owed than exists and it would be entirely possible for all loans to proceed without default. Of course, given the unknowns involved in investments some contracts would result in default but it wouldn't be anywhere near the same scale as today.

### 2.7.2 A note on the nature of investments

One benefit of full reserve banking is the huge potential for people to decide what they feel is right to invest in. You could choose to invest in research & development into forms of renewable energy for example. Equally, if a borrower wished to take out a loan to mine an area of landscape they'd have to find a willing investor.

Realistically if the potential reward was big enough, a borrower will find investors for any project. As well as this some investments could have vague descriptions to sound more acceptable to people. For example 'Invest in Healthcare' could ultimately mean investment in a pharmaceutical company marketing a medical condition to sound more widespread than it is and so on. Of course, there would be no control, other than the normal procedures for fraud prevention, over any secondary lending (reinvestment) which a company chooses to engage in.

Nevertheless, it would be in an investor's interests to know as much as possible about the nature of their investment and the potential for money going towards projects beneficial to society would be there.

## 2.8 How would this affect credit cards or overdrafts?

Overdrafts and credit cards have become an important feature of the modern economy and they'd continue to provide a 'liquidity buffer' under the proposed system too. The central bank would monitor the use of both and excessive credit card use and/or applications for an overdraft facility could indicate an increase in the money supply was needed.

Credit cards and overdrafts would be funded like any other loan under the reform. i.e. through existing money secured from investors.

## 2.9 How much new money would we create?

The haphazard creation of money by the commercial banks in recent decades has seen the money supply double about every ten years in Ireland and much of Europe. It has led to huge inflation, primarily in asset prices. Under full reserve banking only the central bank could create or destroy the money supply and it would be under far better control. There would be no upper limit to how much the central bank could create or destroy. This is because a rapid rise in population / productivity could require a large increase in the money supply in a short period of time for the economy to achieve its full potential. Equally a sharp decline in population / productivity would require a sharp reduction in the money supply to avoid inflation.

The central bank would monitor factors like the net money supply (Total cash plus total of all current accounts, including the *Central Government Account*, minus 'dormant' current accounts), inflation, unemployment, productivity, requests for new loans, the velocity of money, population growth and the demographics of the populations, foreign currency exchange rates, trends in international trading partners, the ratio of current account money to the banks' investment funds, previous trends in their own issuance of new money, the use of credit cards and overdrafts et cetera. Hence gauging the required money supply would not be an exact science but it would of course be more direct and effective than the current method of adjusting interest rates.

Under normal circumstances the money supply may be increased by around 2% a year. Initially in Ireland this would be around €2 billion in absolute terms.

#### 2.9.1 International trade would limit the amount that central banks could create

To maintain international credibility the central banks could not create an amount of money which the currency exchange rate markets considered excessive. Each country's foreign exchange policy would control excessive money creation and would help to maintain the value of money. (More analysis on the effects of full reserve banking on international trade is given in section 4.6.)

#### 2.9.2 A note on measuring inflation

As it stands the Governing Council of the ECB measures inflation using the Harmonised Index of Consumer Prices, which is formulated using the consumer price indices of the individual eurozone countries. However under the reform it would be best to include asset prices and rent prices in the measurement. If this were the case bubbles in asset prices would be more easily spotted and dealt with.

Inflation of around 10% per annum in house prices in some eurozone countries was completely ignored up until 2007 but it obviously had a huge impact on the economy. When housing and rent are the most expensive items in anyone's 'basket of goods' ignoring them would make the Governing Council's decisions less effective.

## 2.10 The mechanics of money creation and destruction

From the Government's point of view they would be told by the central bank how much non-tax revenue they are due to receive for the upcoming months. They would plan their budget accordingly.

The following would happen behind the scenes:

1. The Government will hold an account, known as the *Central Government Account*, with their central bank. The central bank will simply increase the balance of this account by the amount calculated by the relevant committee, and authorised by the European Central Bank. They will not simultaneously reduce the balance of any other account.
2. The *Central Government Account* will be considered a liability of the central bank's. And so to increase this account the central bank will credit it.
3. The central bank would also have a 'token' account, perhaps known as *Money Outstanding*, and it will be considered an asset of the central bank's. It would also increase in line with the creation of new money and so the central bank would make a matching debit, somewhat to balance the books. For clarity the 'Money Outstanding' account would not be considered a debt of the Government's to the central bank and it would grow and grow as a record of how much the central bank has created to date.
4. The Government can then transfer this money from its *Central Government Account* to various other accounts in the usual way.

Money could also be created through printing new cash or minting new coins. The new cash would be sold to the banks and the profits from the sale of new cash, known as seigniorage, would be a source of non-tax revenue for each government as in the case today.

Money would be destroyed where necessary by reversing steps 1 to 3 above.

## 2.11 Creating money for exceptional circumstances

Under normal circumstances money would be created in this way. However under exceptional circumstances it may be better to introduce an amount of money which is earmarked as only a temporary addition to the money supply. For example, if a country of the eurozone was to host the Olympics, they could expect a lot of economic activity in the build-up and a stop in this activity soon after the event.

In this case it would be best for the central bank to create money with a plan to destroy it again at specified intervals after the event. If such a project was a public affair the Government would spend the new 'extraordinary' money directly on the project. It would actually make sense for the Government to lend this money to a project management company and have the repayments destroyed from the *Central Government Account* as the loan is repaid. This would be the nearest that full reserve banking gets to money being issued

with a corresponding debt at source.

If a large one-off project was a private affair the Government would spend the extraordinary money as it sees fit. It could try to distribute the money evenly into the economy and hope that market forces gear it towards the desired project. Or it could attempt to channel the money towards the desired project in various ways. In the interest of fairness the Government should recoup the money and have it destroyed from whatever sources received it first.

The advantages and disadvantages of the 'Free Market' approach over the 'Government Interference' approach are discussed elsewhere amongst economists. It's important to understand that full reserve banking could accommodate both schools of thought.

## **2.12 What would be the 'mechanics' of the eurozone's payments system?**

Understanding this section is not critical to understanding the wider concepts of the proposed reform. But for those of you interested in the accountancy procedures and paperwork that would follow a payment made to or from banks within the eurozone the following pages describe various scenarios. Bear in mind that 97% of the eurozone's money supply exists as numbers on the banks' computer screens. These are the balances of our current and savings accounts and the vast majority of financial transactions are completed by adjusting these numbers. This section concentrates on this method of money transfer but money could, of course, also be transferred by exchanging cash, even cross border, in the usual way.

### **2.12.1 Each bank would hold accounts with its national central bank**

Each commercial bank already holds accounts at its national central bank, the most prominent of which is their reserve account.

Under the reform each commercial bank would hold the following three accounts at their central banks;

1. The Customer Funds Account
2. The Investment Funds Account
3. The Bank's Operational Account

#### **2.12.1.1 The Customer Funds Account**

This account would record the sum total of the balances of every current account held with each particular bank. Changes to it would facilitate all the daily transactions of the economy. For clarity, the central banks would not have any information on individual customers of the banks. This account would be neither an asset nor a liability of either the commercial bank nor the central bank.

### 2.12.1.2 The Investment Funds Account

This is the account a particular bank would use to manage and intermediate investments from customers to borrowers. Once a saver (investor) pledges money to a savings/investment account, the Investment Funds Account (IFA) will increase. Once a bank approves a loan they would 'take' the money from this account.

Conversely, once a loan repayment is received the IFA would increase and finally once a savings account matures to its conclusion the IFA would decrease.

The Investment Funds Account would be considered an asset of the commercial bank in question.

#### 2.12.1.2.1 Sub-dividing the investment funds account

The investment funds account would be split into sub-accounts in-house to reflect the amount of money that savers have invested in each risk category the bank offers. Apart from different risk categories, investors would also agree to the nature of each loan. However the central banks would not have any information on the desired purpose of each loan, nor its intended risk level. Only the normal fraud prevention tactics would control the misallocation of funds into different sub-accounts of the investment fund.

### 2.12.1.3 The Bank's Operational Account

This is the account in which the bank would hold its own funds. This would include its own share capital, retained profits, money to covers its operational expenses and so on. This account would most likely be sub categorised 'in house' as there would be no requirement for the central bank to know how much from this account is profit of each bank et cetera. This account would also be an asset of the commercial bank to which it belongs.

## **2.13 Payments between domestic current accounts**

If a payment is made between two customers of the same bank it would be very simple. The bank would increase one customer's bank balance and decrease another in house and the balance of its customer funds account (CFA) would remain unchanged.

If a payment is made between customers of two different banks, the central bank would have to get involved. For example if Joe banks with AIB and wishes to pay €200 to Eamon, who banks with NIB, the transaction would unfold as follows:

AIB would lower Joe's bank balance in house. It would then send an electronic message to

the central bank which, in plain english, might read along the following lines; transfer €200 from our CFA to NIB's CFA. Inform NIB the payment is for account number 960108-36778092 from our account number 960107-89367289 with the following message, 'Rent paid...'

The central bank of Ireland in this case would adjust the relevant customer funds accounts and pass on a receipt to both banks. NIB would have all the details to then increase Eamon's bank balance accordingly.

## **2.14 Payments between eurozone current accounts**

What would happen if Joe transferred €300 to someone, who we'll call Peter, who banks with Berliner bank in Germany? This transfer would also be very simple because there's already a system in place at the ECB to facilitate it. The system is called the Trans-european Automated Real-Time Gross-Settlement Express Transfer System, or TARGET 2 for short.

Under this system each national central bank has an account at the ECB which records how much the central banks 'owe' to each other.

The transaction would unfold accordingly:

AIB would lower Joe's bank balance in house. It would then send an electronic message to the central bank of Ireland which would relay the following information.

Reduce our (AIBs) CFA by €300.

We've lowered account number 960107-89367289 by €300.

Increase account number 2783-057884-08 by €300.

Message 'Summer accommodation paid...'

From the account number the central bank of Ireland would know this account belongs to Berliner bank in Germany. They'd send the information to the ECB and in doing so they'd agree to 'owing' the Bundesbank (Germany's central bank) €300.

The ECB would pass on the information to the Bundesbank who would adjust Berliner bank's CFA accordingly. Finally, Berliner bank would increase Peter's bank balance by €300.

### **2.14.1 A note on the central bank of Ireland 'owing' the Bundesbank**

The TARGET2 system would end this transaction showing that the central bank of Ireland owes the Bundesbank €300. However, in the exact same way as the TARGET2 system functions today, the 'debt' between the central banks would simply record the direction of transactions between eurozone countries.

### 2.14.2 The eurozone with a fiscal union

If Ireland was a permanent net importer of German products this TARGET2 'debt' between the two central banks would grow continuously as happens today. All other factors being equal, The Irish central bank could replace the money 'lost' abroad with new money and the Bundesbank could remove the same amount of money from circulation in Germany. This is how the eurozone would behave as if it were a fiscal union (Constantly removing money from 'rich' areas and distributing it to 'poor' areas), if such a union was desired.

### 2.14.3 The eurozone without a fiscal union

In the event that the Bundesbank, or the German people, were unhappy with money constantly being removed from circulation to maintain a one way system of net exports to Ireland the eurozone could behave as if it had no fiscal union. To demonstrate what would most likely happen long term we'll use a simple example involving only two countries.

In the above example the Irish money supply would drop by €300 and so the Irish would be able to buy less German products in the next 'batch'. Irish imports from Germany would decrease.

Equally the German money supply would increase by €300 and there would seem to be more money with which to buy Irish products. Irish exports to Germany would increase. Ireland would then have some or all of the €300 back and the pattern would start again.

Of course this is far too simplified an example to represent the huge numbers involved, the time delay between money supply affecting prices and the complicated array of international trade 'chains'. However the reader should take from the example that trade within the eurozone would still happen much as it does today and it wouldn't have to be the case that a net importing country will get a 'free lunch' by constantly replacing whatever money's 'gone' abroad with newly created money.

## **2.15 Payments between international accounts**

The same methods of transferring money internationally that apply today would apply after the reform. If money was transferred from a Spanish current account to an American one, Bank de Espana (Spain's central bank) would lower the Spanish bank's CFA. The two central banks would exchange 'holdings' of foreign currency in the usual way and finally the American bank would be in a position to increase the American customer's current account. In theory, the American bank would then have to seek new reserve-account-money in the usual way from the Federal Reserve (America's central bank) to 'cover' a portion of this new deposit.

Conversely if money was transferred from an American account to a Spanish account, the Spanish bank would increase their customer's account and inform Bank de Espana to create

an equivalent amount for its CFA. The central bank would exchange inter-central-bank liabilities. The American bank would then deal with its 'excess' reserve-account-money in the usual way.

The fact that the Spanish banks operate under a full reserve system would not affect the Federal Reserve from allowing American banks to practise fractional reserve banking.

## **2.16 How would banks process loans and loan repayments?**

### 2.16.1 Securing funds for lending

First of all banks would have to secure existing money for the purposes of lending. If you opened a savings account with your bank and agreed an amount to invest, money would leave your current account and go into your savings account. Behind the scenes money would be transferred from your bank's Customer Funds Account to its Investment Funds Account at the central bank.

On the bank's balance sheet the money you've pledged to them would become their asset and so they would debit their 'Investment Funds' account. The money they've agreed to repay to you under the terms of the contract would become their liability. They would credit their *Investor's Contracts* account, or equivalent, in house.

Note that while your savings account might have a particular balance, suggesting that there is some money 'in' the account, in reality the money would be 'gone' into the bank's investment fund. The balance would simply record the net amount you've pledged to your savings account to date and would not reflect the performance of the investment. This is what happens with savings accounts today and you'd need to check what is really owed back to you from the banks in the usual way.

### 2.16.2 Advancing a loan

Once a loan is approved the system is very straightforward. The commercial bank would inform the central bank to lower its Investment Funds Account and increase its Customer Funds Account. Once this is done the bank would then be in a position to increase to borrower's current account balance by the amount of the loan.

### 2.16.3 Processing a loan repayment

If you wished to make a loan repayment the bank would lower your current account balance. They'd then inform the central bank to lower their Customer Funds Account and increase their Investment Funds Account by the amount of the repayment.

#### 2.16.4 Processing a maturing investment

If a saver's (investor's) investment matured to conclusion the bank would have the central bank lower their Investment Funds account in favour of an increase to its Customer Funds Account. Once this is completed the bank could then increase the saver's current account balance. It would of course lower the saver's savings account balance to zero also.

### **2.17 How would loans/investments work?**

Banks would offer low-risk, low-return investments and high-risk, high-return investments and everything in between. They would also discuss the nature of each investment in as much detail as the customer desires.

#### 2.17.1 An example of a low-risk, low-return investment

An example of a low risk, low return investment might include mortgages to middle income families.

The bank might charge an interest rate of 6% on these mortgages and it knows that these loans are quite safe. Allowing for defaults, the normal case rate of return might be around 5.8% overall and in the worst case scenario, with a high rate of defaults, the rate of return might drop to 2.5%. In this scenario the bank might guarantee a rate of return of perhaps 1.5% to investors. This provides a good investment vehicle for savers/investors who don't want to take much risk but want their money to 'work' for them. Bear in mind that inflation could be low under this system and so this could be an appreciable return.

#### 2.17.2 An example of a high-risk, high-return investment

An example of this type of investment might be an emerging market tipped to become much bigger.

In this scenario the bank might attract savers by offering a return of perhaps 6% while lending to borrowers at perhaps 12%. If everything goes according to plan both the bank and the saver get the return they expected.

However if the emerging market proves unsuccessful, in a worst case scenario, the bank may only receive perhaps 60% of the money it lent out. It could claim any collateral pledged to the deal in the usual way by the borrower and sell it to recoup some losses. However, some projects might not involve assets which hold their value and in a worse case scenario the bank may only get might only guarantee the investor a return of 70% of their money with the bank paying the 10% shortfall from its profits. i.e. from it's Operational Account.

### 2.17.3 Interchanging between Operational Accounts to its Investment Funds Accounts

A bank could transfer money from its OA to its IFA. In this case it would effectively be using its own money to fund an investment which it's perfectly entitled to do.

The bank could also transfer money from its IFA to its OA although this action could raise some suspicion at the central bank. In effect the bank may be using some of the money from its investors to repay its shareholders, for example, and the bank would have to manage its cash flow to ensure that its IFA didn't become insolvent. If a bank cleared its IFA to its OA just before being declared bankrupt, for example, then the laws aimed at preventing and reversing this would apply.

### **2.18 There would be no Government guarantee on savings/investment accounts**

The exact details of a savings/investment deal would be worked out between the bank and the investor. If the deal, or many many deals, didn't go according to plan there would be no need for the Government to get involved. The risk would be shared between the bank and the investor.

### **2.19 The Financial Services Authority may not authorise unrealistic investment offers**

The Financial Services Authority, or equivalent, of each eurozone country could prevent banks from offering unrealistic guarantees. For example, in section 7.1.1 above we've suggested that the bank would offer the saver/investor a rate of return of 1.5%. However the bank may have offered a return of perhaps 5% based on a 'best case' scenario and if a bank continuously did this eventually it would run into trouble. The relevant authority may prevent the banks from offering unrealistic investment products.

There's no way the Financial Regulator could investigate each investment product in detail but it could easily spot an offered return of investment that was way out of line with similar products offered by other banks. If an overly ambitious investment product avoided detection it would ultimately damage the bank's reputation and the procedures outlined in section 4.8 could be implemented to prevent this situation from happening again.

### **2.20 A More stable banking system**

The major sources of instability in the current system would be removed and we could expect a more stable banking system.

## 2.21 Sources of instability under the current system

Instability under the current banking system comes from a variety of sources:

### 2.21.1 The current system is procyclical

When banks issue loans they create new money, and a liability on themselves, by typing it into the borrower's account. This also creates a new asset for the bank in the form of the borrower's debt. The bank's balance sheet expands and it can use this new asset as collateral to borrow new reserve-account-money from the central bank. This puts the bank in a better position to create more new money through loans, which encourages the bank to create more money again and so on. This 'positive feedback loop' encourages a more rapid expansion of an expanding economy.

The system works reasonably well as long as the economy takes on more debt than it repays. However, this can't continue forever and eventually the rate of new loans decreases. Bearing in mind that the economy owes the principal plus compound interest on each loan to the banks, but only has the principal of each loan, it's inevitable that the banks will have to deal with a range of defaults.

If banks write off debts they lose an asset but the money they created with the debt is still recorded as a liability somewhere in the banking sector. If there are a number of defaults the banks' balance sheet can look unhealthy very quickly. This discourages the banks from creating any more money for the economy and a slow-down in the economy can turn into a long recession.

### 2.21.2 Banks permanently balance liquidity and profit

Most of the banks' customers can, in theory, demand huge amounts of cash at any time. In practise this isn't much of an issue for the banks because they refuse to give out large sums of cash but technically they are susceptible to a bank run at any time.

What can become a real issue for a bank though is another bank looking for reserve-account-money. Just to briefly explain; each bank has an account at its central bank called its reserve account. In any business day money will transfer between current accounts and the banks wait until the end of the working day to 'clear' the difference with each other. For example, if €5billion is transferred from Bank A's customers to Bank B's and €4billion is transferred in the other direction, Bank A will transfer the difference of €1billion from its reserve account to Bank Bs.

Most reserve-account-money is canceled out of existence each week and banks have to post new assets, normally their customer's debts, as collateral to get new reserve-account-money. If their debts are suddenly worthless the banks can struggle to find

collateral to acquire sufficient reserve-account-money to meet the requirements of the clearing system and they suffer a liquidity problem.

Even in the 'normal' run of things when banks can easily find the collateral needed to secure new reserve-account-money each week they still walk a knife-edge between keeping their reserve account high enough to meet interbank debts and keeping it low enough to keep any collateral as their own. Banks attempting to have 'just enough' liquidity is a source of instability.

## **2.22 A much more stable banking system**

### 2.22.1 No bank runs, bailouts or deposit insurance

There would never be a run on a bank by the public. There would never be an 'interbank' run either because banks would no longer worry about the balance of each other's reserve accounts. Consequently there would also be no need for deposit insurance and of course there would never be a need for a bank bailout under this system.

### 2.22.2 The banks' 'cash' flow management system

Money moved from current accounts wouldn't affect the bank in any way as the money is 'stored' in full at their central bank and doesn't need to be 'found' from anywhere when it has to be paid.

Money moved from savings account would need to be 'found' however but the banks would know the following almost precisely;

1. What it will need to repay to customers who have made investments, and when.
2. What it will receive from borrowers making repayments on their loans, and when.

The amounts that the bank will need to repay on any one day will be statistically many times more predictable than under the current system. The banks will have a much better 'cash' flow management system than today.

For savings accounts with maturity dates a bank will know the exact amount that must be repaid on any particular date. It will also know from experience what percentage of customers with maturing accounts will ask for the investment to be rolled over for another period.

With regards to savings accounts with minimum notice periods a bank will know the statistical likelihood of an account being redeemed within the next 'x' days, and so will be able to forecast the payments that will come due on any particular day for many months into the future.

In addition each bank will have a collection of contracts with specified monthly repayment dates and amounts and under full reserve banking it would be entirely possible for all these loans to be repaid without default. The banks will know almost exactly how much money it will receive on any particular month in the near future.

Consequently, the bank's computer systems will be able to easily calculate how much money should be required on any particular day months into the future and could identify a potential 'cash' flow problem. For example, if a large number of savings accounts were due to mature in a short period of time with insufficient income from loan repayments to cover them, the bank can rein back loan making activity until it has built up a 'buffer' to cover the upcoming shortfall.

On the other hand, if the forecasts identify a period when repayments from existing borrowers are in excess of the amounts required to repay investors, the bank could try to increase its loan activity. This would ensure that it does not end up with an 'idle' Investment Fund Account which has to be repaid with interest to its investors at some point.

### **2.23 Sources of uncertainty under the proposed system**

1. There's no guarantee that the percentage of maturing contracts that will be rolled over will stay within a small range and so there is a source of imprecision there.
2. Equally, in the normal run of things only a portion of investors will exercise their minimum notice period in any one month but this portion could change. In an extreme case, if a rumour spread that that bank had made some bad investments, and all these account holders exercised their minimum notice period, the bank may be required to repay a large sum, perhaps only 28 days from now. This would be the nearest that the proposed system would come to a run on the bank.
3. Finally, some people will still default on loans or make late payments and so the banks prediction of how much money is coming in to its Investment Fund account would not be exact.
4. The availability of bank credit may not match that which would allow the economy to achieve its full potential.

### **2.24 Dealing with sources of uncertainty**

There is not a lot that can be done to manage these uncertainties. The most dangerous of these risks is the second one in which a lot of investments with minimum notice periods are 'cashed in' at the same time. If this became a real treat perhaps banks could only allow a fraction of its investors to open up accounts of this nature. However the risk of any bank or all banks suffering a cashflow crisis is significantly lower under the proposed system than under

the existing banking system for the following reasons:

#### 2.24.1 The proposed system is countercyclical

The proposed system is countercyclical. This means that the banking system will not create debt-fuelled booms that turn into economic crashes causing a wave of defaults. Each bank's loan portfolio is likely to be far safer than under the current system. The reason that the proposed system is countercyclical is because banks will attempt to keep their Investment Fund Account as low as possible.

As soon as an investor pledges money to the bank's Investment Fund the bank would owe that investor interest on that money. The more profitable banks would match a borrower with any investment money as soon as possible.

If investor confidence is high, and the bank's Investment Fund was increasing faster than the bank could secure willing borrowers the banks would attempt to discourage investment in a number of ways. This would put a natural control on an investor bubble.

Equally, if investor confidence was low, while the bank was inundated with loan applications, the bank would attempt to attract investors in a number of ways and the system would naturally counteract a slowdown.

#### 2.24.2 The economy will be more benign

Without regular debt-fuelled booms and credit-crunch busts, recessions will be less frequent and less severe. There's no denying that investors would probably all be drawn to the same emerging sectors (bubbles) that they may all attempt to leave at the same time once the speculation ends. However there would always be a significant portion of the money supply safe in current accounts and there's no way a speculative bubble could affect the entire money supply.

#### 2.24.3 The banks will focus on creditworthy debtors

Because banks would have limited funds for making loans and because each loan does not create new money, the incentive for loan making would shift from lending as much as possible to finding good quality borrowers to lend to. As a result, the banks are less likely to lend to high-risk borrowers, and consequently the overall quality of a bank's loan portfolio should be higher.

### **2.25 Provision for emergencies**

If a bank has a liquidity problem the following actions could be taken at the discretion of the national central banks, again under the authority of the ECB.

### 2.25.1 Emergency liquidity loans

In this situation, the central bank has the discretion to make an emergency loan to the bank in question. This loan would always be used to repay maturing savings accounts - it could not be used to fund new loans.

This may sound a little like the taxpayer funded bailout but in reality it is completely different. The emergency loan would be funded with newly-created money and will not cost the taxpayers anything directly. To avoid an indirect cost due to inflation the central bank would cancel the money out of existence again once it was repaid ensuring that the emergency loan has no long-term effect on the money supply. This emergency loan will merely provide some liquidity for the individual bank in unusual cash flow circumstances.

Such an emergency loan should only be provided to meet a short-term liquidity problem and the central bank would closely analyse the bank's loan portfolio and expected future income before granting it. If the problem was purely a short term cash flow problem i.e. loan repayments are out of sync with maturing savings accounts, then the loan could go ahead. However, if the cash flow problem arises because the bank's loan portfolio is 'toxic' and a large proportion of borrowers are defaulting, it may be unlikely the emergency loan will be repaid. In this case, the central bank would probably choose to initiate 'wind-down' procedures for the bank in question.

### 2.25.2 Penalising banks for poor cash flow management

The central banks, or the financial regulator, could penalise banks that have to seek emergency funding. There are a number of ways that they could do this:

- By charging a minimal or high rate of interest on the emergency loan.
- By charging a monetary fine.
- By launching an in-depth investigation into the bank by the banking regulator.
- By any other method that the banking regulator sees fit.

## 2.26 There would be no need for bank bailouts

If a bank is judged to be badly managed or have made bad investments across the board, meaning that all holders of savings accounts are likely to lose money, then the bank in question would be wound down and the normal liquidation procedures would apply. The government would have no exposure or responsibility whatsoever for the funds owed to holders of savings accounts. The savings account holders would become creditors of the liquidated bank and existing insolvency laws would govern whether and by how much they are repaid.

The bank could be sold off to either healthier banks or debt collection firms. Debt collection firms could buy, at a discount, the legal contracts between the bank and its borrowers and collect the repayments from debtors. The debt collection firm could not put pressure on a borrower to repay a loan any faster than agreed in the contract.

Bear in mind that the balance of any customer's current account would simply move to the bank of their choice.

## **Part 3: The Transition**

### **3.1 The transition to full reserve banking**

This section is more technical than Part 2 and again understanding it is not essential to understanding the idea of full reserve banking. But if you'd like to know how various 'loose ends' would be tied up, the transition is described in detail below.

### **3.2 No action from the general public would be required**

If you have a current account no action would be required at all although you'd probably notice that banks were attempting the charge for use of an ATM and so on and it would be in your best interests to shop around for the type of account that best suits you. Even though you wouldn't initially welcome such charges you'd notice a more adequate money supply in circulation with which to pay these charges.

If you have a savings account, again no action would be required if you really wanted to keep the same terms & conditions of your contract. However it would definitely be in your best interest to renegotiate the contract with your bank as you'd have some input into what type of investments and risk level you wished your money to go towards.

If you have an existing debt to a bank you'd still be expected to settle it in full including any interest you agreed to pay. But again, you would begin to notice a more adequate amount of money in circulation and it would be possible for you to repay the loan if you earned the money from circulation.

If you wanted to get a new loan from the bank you'd probably find the process a more serious affair than today.

### **3.3 What changes would occur to the banks' and the central bank's accounts?**

#### **3.3.1 Clearing the banks' balance sheets**

The balance sheets of the banks record the money that's been deposited with them as liabilities of the banks. Of course very little of the banks' 'deposits' actually arises from people depositing cash with the bank. The vast majority of bank deposits are recorded when banks create them through advancing loans.

On the other side of the banks' balance sheets are its assets. This includes any buildings the bank owns, cash in hand et cetera but the asset we're interested in is the bank's loan portfolio. i.e. All the debts to the banks which again are created as a bank processes a loan.

Behind the scenes the balance of your current account or savings account would be declared legal tender. They would no longer be considered a liability of your bank and 'deposits from customers' would be removed from the banks' balance sheets.

Equally 'Debts to the Bank' arising from all its outstanding loans would be removed as an asset from the banks' balance sheets.

Since most 'deposits' are created with a matching debt to the banks these two entries should be roughly the same but how to deal with any imbalances is discussed below.

#### **3.3.2 Restarting the banks' balance sheets**

Everything else on the banks' balance sheets, including share capital, the value of any buildings it owns, cash in hand et cetera would remain unchanged. Any imbalance between 'deposits' and 'debts to the banks' would result in a change in shareholder's equity (what the bank owes its shareholders). The shareholders of a bank which prudently has its loans to deposit ratio low would be rewarded with this once off move by a rise in shareholder's equity and vice versa.

Initially the banks would most likely secure existing savings account holders as investors and the amount invested with each bank would become its new liability.

Once a bank issues a loan from its investment fund it would record the borrower's debt as a new asset.

### **3.4 What would happen to the central bank's reserve accounts?**

The prominence of the banks' reserve account is described in detail in our publication *How Banks Create and Destroy Money* but we'll briefly explain it here. Each commercial bank has an account at its central bank known as its reserve account. Banks hold

reserve-account-money in these accounts which is the type of money banks use to settle payments between each other. The central banks record any reserve-account-money as their liability and the commercial banks record their reserve-account-money as their asset.

reserve-account-money is lent to the commercial banks usually on a weekly basis. Each unit of reserve-account-money is created with a corresponding debt from the banks to the central banks and these debts are recorded as assets of the central banks and as liabilities of the commercial banks. At the end of the week when the reserve-account-money is 'repaid' by the banks to the central bank it is canceled out of existence along with these debts and that's why the banks continuously need to borrow brand new reserve-account-money each week.

Banks lend reserve-account-money to each other and any imbalances would be settled as described in section 3.6 below.

### **3.5 Applying full reserve banking to the banks**

The commercial banks would have the three new accounts described in section 2.2 recorded at their central banks:

The total of all current accounts held with the banks would be recorded in their Customer Funds Accounts. Money pledged from savings accounts would be added to the banks' Investment Funds Accounts. Finally, any share capital and existing central bank reserves would be added to the banks' Operational Accounts.

The banks' reserve accounts would be discontinued. Indeed a week after the reform the bulk of the banks' reserves would be repaid and would cease to exist as happens today and the central banks wouldn't issue any new reserves.

#### **3.5.1 How to deal with the ECB's long term refinancing operations (LTROs)**

The ECB also creates reserve-account-money, via the national central banks, for the commercial banks for longer terms than one week under its long term refinancing operations (LTRO). Most notably, between December 2011 and February 2012 the ECB created around €1trillion of reserves that are not due to be repaid until 2015. As it stands the banks are due to repay the ECB the €1trillion plus 1% interest per annum. There's already a mechanism to tie up this loose end. The ECB has a 'deposit' facility and it pays interest on any reserve-account-money that banks 'hold' at the ECB. We would simply make the deposit interest rate for these LTRO reserves 1% per annum also and it would be in the banks' interest to 'store' them with the ECB. The ECB will owe the banks the exact same amount of reserve money as the banks owe the ECB. Both parties would simultaneously lower what they owe to each other to zero and the LTRO reserves be canceled out of existence as happens today.

### **3.6 How would an end to the banks' reserve accounts affect their balance sheets?**

Any reserve-account-money which a bank 'holds' at their central bank is considered an asset of that bank. However each unit of reserve-account-money is created with a corresponding debt from the bank to the central bank and this debt is a liability of the banks. The banking sector as a whole would 'lose' an equal liability and asset and overall the banks' aggregate balance sheet would be unaffected.

However, an individual bank's balance sheet would be affected. If a bank held more reserve-account-money than it owed to its central bank it would be rewarded for this prudence in the following way. The central bank would owe this bank a monetary sum, although it could not pay them in reserve-account-money as no new reserve-account-money in the traditional sense would ever be issued.

Helpfully, the central bank system is 'closed' and if one bank holds more reserve-account-money than it owes its central bank, there has to be another bank in the system, or a combination of banks, which hold less reserve-account-money than they owe to their central bank. These banks would owe the central bank a monetary sum but again it could not settle this debt using reserve-account-money.

To demonstrate how these imbalances would be settled let's imagine there's only two banks in the system. So if bank A was owed €X in 'old' reserve-account-money by its central bank, it means bank B owes exactly €X to its central bank. Once traditional reserve accounts are discontinued Bank B would transfer €X from its Operational Account to Bank A's Operational Account and bank A, and possibly its shareholders, would be rewarded for holding 'excess' reserves.

### **3.7 What would happen as 'old' loans are repaid to the banks?**

Your mortgages/debt to your bank would still be recorded 'in house' with the bank although your debt would no longer be an asset of that bank. The overall outstanding debt from the public to each bank arising from loans made before the changeover would also be recorded at the central bank in an account perhaps called *Loans Outstanding*. For clarity, the balance of this account would not be considered an asset of the central banks.

If you made a loan repayment the following would happen behind the scenes.

The bank would lower your current account by the amount of the repayment. They'd lower your debt to them by that amount also. They'd then inform the central bank to lower their CFA and their *Loans Outstanding* account by the amount of the repayment.

### 3.7.1 How would interest repayments to banks affect the transition?

In the example above we ignored the fact that some of the money you use to repay a loan serves to pay the interest and some serves to repay the principal. Here we'll explain what actually happens when interest repayments are taken into account.

The bank's *Loans Outstanding* account would record the sum total of the principal, or partial principal, of each outstanding loan and not any interest owed on these loans. It should be exactly equal to the sum total of the banks' existing *Loans to Irish Residents*, *Loans to the eurozone* and *Loans to the Rest of the World* accounts in the case of the Irish banks.

To demonstrate what happens we'll use a simple example. Let's imagine you took out a personal loan of €20,000 one week before the changeover and you agreed to repay the bank €2000 in interest and so €22,000 in total. For simplicity, let's imagine you repay it all in one go a year after the reform.

Your current account balance would read €22,000 and once you instruct the bank that this money is to be used to settle the debt they'd lower your account balance, and your debt to them, to zero. They'd then inform the central bank to lower their CFA by €22,000 and to lower their *Loans Outstanding* account by €20,000. Finally, they'd tell the central bank to increase their *Operational Account* by €2000 and in doing so the banks would receive the interest repayment.

### 3.8 Replacing money 'lost' through loan repayments

Under this arrangement the bank's CFA was lowered and so the money supply drops and the money used to repay the loan no longer exists as happens today. And so for the transition, the central bank would monitor how much money was being 'deleted' in this way and would decide whether to create an equivalent amount or not.

## Part 4: Addressing some Concerns with our Proposal

### 4.1 Controlling the indirect creation of money through the money multiplier

Today, banks directly create money through advancing non-cash loans. However even if banks only advanced cash loans, such that they were literally lending out other people's deposits, they'd still indirectly create money through the *money multiplier*. A quick explanation is as follows; if the central bank printed a fresh €100 note and you deposited it with note with your bank, your current would read €100. The actual note may be stored in the vault of the bank. If the bank later lent this note to someone that person would have €100. However, in today's digital world your bank balance of €100 acts as money in the economy too. So even though the central bank may assume that it has only increased the money supply by €100, it's

effectively increased it by €200.

To control the creation of money by banks through the *money multiplier* banks would not be allowed to advance cash loans directly. If a borrower insisted on a loan in cash form the bank would first have to increase the customer's current account in the normal way and then process the transaction as if it were an immediate withdrawal.

#### **4.2 What if the central bank got it 'wrong'?**

Post-reform, the health of the whole economy will be considered before a decision is made to increase or decrease the money supply. While there are always issues when decisions are made by small committees of 'wise men', it would be hard for the central bank, monitored by the ECB, to do a worse job of managing the money supply than the banks have done to date.

If the central bank created too much money we'd expect to see excessive inflation and this would be corrected gradually through a reduction in the money supply.

If they created too little money they'd see the signs of recession and react accordingly.

In both cases the central banks would have far better, and far more immediate, control over fixing mistakes. At the moment, the central banks' tools involve either encouraging or discouraging people to take out bank loans and they're of little help if no-one is willing or able to take on more debt.

#### **4.3 Would there be enough money available for lending?**

A developed economy requires efficient lending of money to function to its full potential. And a lack of money available for lending is the main concern that we have with our proposal. After all banks would be lending existing money with no guarantee from the taxpayer of getting the money back and this could encourage people to keep their money at no risk whatsoever in current accounts. Noting the points below alleviates our concerns somewhat. And the failsafe option detailed in section 4.3.5 should provide a further safeguard against a lack of money in the banks' investment funds.

##### **4.3.1 There isn't enough money available for lending under the current system**

We acknowledge that highlighting a problem that may persist under both the current and proposed system isn't necessarily a sufficient reason for change. However it is noteworthy that even with thousands of loan officers and mortgage providers across each eurozone country, each capable of creating money for borrowers, there is still a shortage of money available for lending under the current system.

##### **4.3.2 There wouldn't be as much of a need for lending**

As it stands we are forever dependent on bank loans for the economy to run smoothly. After all, money comes from bank loans and it's only by taking on more debt than we repay that the economy can function to its full potential. The money supply is constantly being eroded through loan repayments also and this is why we can't function with whatever money is left in the economy once no-one is willing or able to organise a bank loan.

Of course under the reform none of this would be the case and we wouldn't be in need of perpetually increasing loans. Our dependency on loans is by no means a natural phenomenon but is a direct result of our debt-based system. If anything, we would tend to see an entrepreneur who saves before investing as more prudent than an entrepreneur who borrows beyond their means.

Allowing the economy to return to a more natural level of borrowing and debt would mean that it would be entirely possible for would-be entrepreneurs to save to start up small businesses. It could also be the case that, given time, the housing market could return to one that's more fit for purpose. When technology allows houses to be built in a matter of months, and house building outgrows the need for new houses, it's amazing that mortgages take so long to repay. Indeed house prices have defied the law of 'supply and demand' for decades. Under the reform it could be possible for mortgageless house buying to become a reality again. The generation of house buyers which would live in permanent negative equity under falling house prices would still greatly benefit from the introduction of full reserve banking, especially when compared to the problems of continuing with the current system.

#### 4.3.3 Savings accounts could have a good reputation

Under the current system it's not possible for the banking system to do business without the complications of loan defaults. As noted in section 1.8.4.1 what's in circulation is the principal, or partial principal, of each loan plus the small amount of cash in the economy. What's owed back is the principal plus compound interest. There is more debt in the eurozone economy than there is money. Under the proposed reform however, we could never get to the point where more is owed than exists. A large portion of the money supply would always be in current accounts and only a fraction of the money supply would be needed to facilitate the needs of borrowers. It's likely that savings accounts would have a good reputation of a low rate of defaults.

#### 4.3.4 The demographics of the population would provide some self policing

We will always have a portion of the population saving for a house, a boat or their retirement et cetera and as they stop, the next generation will start and so on. Indeed the central bank would monitor the demographics of the population and could adjust the money supply to suit an 'ageing' population et cetera. In this particular case the central bank could expect less entrepreneurs requesting less loans and perhaps there would be too much money in

circulation in current accounts. They may lower the money supply accordingly.

#### 4.3.5 The failsafe option

Supposing for a moment that the investment funds from which the banks lend had no money in them. This would mean all the money in the economy would be in current accounts and hence able to facilitate transactions. Hence all essential trade could still continue. This is another reason why a shortage of money available for lending wouldn't be as disastrous as it is today. Having said that, some projects and start-up businesses wouldn't get the required funding, the economy wouldn't achieve its full potential and the proposed system would also be unfit for purpose also.

On approach to this unusual scenario the central bank would turn to its failsafe option. That is they would strongly advise, although they couldn't force, the Government to put some of its money into a range of savings accounts, with a range of financial intermediaries, as it sees fit. Indeed, the central bank could create some or all of the money for the purpose. This contingency would ensure that the investment funds of banks would be kept as close to adequate as we can design.

One point to note is about this option is that if the investments did not yield a return the original investor, i.e the taxpayer may lose out. This is the nearest that the proposed system would ever get to a bank bailout. However bearing in mind that it would be entirely possible for all loans to be repaid, this is a highly unlikely scenario to ever unfold.

#### **4.4 Would the proposed system be inflationary?**

Initially the idea of full reserve banking might seem akin to state-created money. This may cause concern over hyperinflation as governments have a bad reputation of creating too much money any time they've been in direct charge of the money supply. However under the reform the Government would still not decide how much to create and the central banks, supervised by the ECB, would have to get it very wrong for there to be excessive inflation.

The present system has allowed the money supply in Europe to double about every decade. Quadrupling every twenty years, this is an incredibly fast expansion and it has resulted in inflation of house prices of around 10% per year. Such exponential growth in the money supply is not possible for the foreseeable future for a number of reasons, primarily because mortgages have reached their natural limit of duration, taking two careers to repay. However even with a declining money supply prices continue to rise.

Under full reserve banking the money supply would rarely be lowered, perhaps only during a period of rapid population decline. Once the central banks create money and the commercial banks only deal with existing money no money would ever be eroded like it is today through loan repayments.

As such the exact same money could recirculate allowing trading and funding for several projects. Money would still exist somewhere in the economy upon completion of such projects and repayment of any loans. There would not be a constant need to 'overshoot' the money supply and the economy could run smoothly on an almost fixed money supply. full reserve banking would be far less an inflationary system than the present one. Research from the International Monetary Fund concludes the same.<sup>2</sup>

#### **4.5 Would the eurozone's international credibility be undermined?**

Repaying the national debts with money created for the purpose would be considered an underhand way of honouring the debt. However under the transition to full reserve banking, and beyond, the governments would still have a limited revenue from which to repay some debt. In any case, holders of government bonds would gladly accept money for them regardless of whether its existing money or not. In fact, as the eurozone governments phase out their issuing of bonds during the transition, investors might be glad to purchase them. They would come with a greater guarantee of pay back than a bond from a government which can only repay it from money that it's citizens must first create through organising a bank loan.

#### **4.6 How would this affect international trade?**

The current debt based system does encourage international trade. Money is very valuable since we owe more to banks than exists. Countries try their utmost to become net exporters because if they manage to do so they have a source of money from another country which doesn't come with a matching debt to their domestic banks. Of course not every country can be a net exporter and the net importing countries will find it even more impossible to pay their domestic debts so this system isn't the best way to run a global economy.

In theory the incentive to import less has equal merit to the incentive to export more and it should be an equal deterrent to international trading. In practise the incentive to export more is a great driver of international trade because, for whatever reason, in their bid to become net exporters countries seem to favour exporting more rather than importing less.

##### **4.6.1 Losing the incentive to export**

Under full reserve banking the eurozone countries may not have as much of an incentive, economically speaking, to export. However it would still be in everyone's interests to mutually trade with other economies and a breakdown in international trade is not realistic no matter how we run the global economy. With the artificial drive on exports removed economies could cooperatively trade more naturally and full reserve banking could make international trade more fit for purpose.

#### 4.6.2 Mismatched money creation and foreign exchange policies

It's hard to tell what influences might drive international trade under full reserve banking but the textbook prediction would be as follows:

If the eurozone as a whole got it 'wrong' and created too few euros for its economies to run well, euros would be scarce, and hence strong, and currency exchange rates would adjust accordingly. Foreign currencies would be able to buy fewer euros than before and European goods would appear more expensive to foreigners. This would discourage exports from Europe. Conversely, Europeans would find that euros would buy more of a foreign currency and foreign products would appear cheaper than before. This would encourage imports into Europe.

If the national central banks of the eurozone reversed this trend by increasing the eurozone money supply beyond what was needed they could expect European exports to increase and foreign imports to decrease.

Each country would have different foreign exchange policies. Some, such as Iceland, would prefer to keep her currency strong to encourage much needed imports of goods she can't produce herself. Others, such as China, might wish to keep her currency weak to maintain the employment levels of its exporting sector.

There's probably no need to suspect that the obvious mutual benefits of international trade wouldn't suffice in keeping international trade going. In any case, if it was felt that a 'driver' was needed to replace the lost incentive to export then differing foreign exchange policies and miscalculated money creation by central banks would fulfill this role.

#### **4.7 What would happen if only one country changed to full reserve banking?**

The benefits that full reserve banking would bring to any one economy would most likely be replicated across the globe. However even if only one country implemented it, that economy could still function well and could still trade internationally with credibility.

As well as the factors listed in section 1.9 the central bank of such a country would monitor the money supplies of its main trading partners. With their money supplies fluctuating under the 'old' system, the central bank would attempt to match its money supply as best it could to remain competitive.

#### **4.8 Wouldn't this be giving free money to people?**

Even though the Government would spend more new money into circulation it's still the case that people will have to earn it to have it. Even if the Government choose to disburse new money via a citizen's dividend, as described in section 1.5.3, the amount of new money would

be relatively small to start with, and even smaller once divided evenly amongst the entire population.

#### **4.9 Would the central bank have too much power?**

Bearing in mind that the existing money supply would rarely be eroded under this system the money supply would almost be 'fixed'. Any amount of new money required to achieve common sense goals like full employment, cooperative trading, no enforced emigration and stable price levels would be very small. As such the Governing Council of the European central bank and the relevant committees of the national central banks would not have as much power and influence as otherwise might be cause for concern.

#### **References**

ALLEN W. R., 1993, *Irving Fisher and the 100 Percent Reserve Proposal*, Journal of Law and Economics, Vol. 36, No. 2,

BAILEY S., HARRAN P., 2012, *Analysis of Recent Monetary Operations & TARGET2 Developments*, Central Bank of Ireland Quarterly Bulletin Q3 2012

BENES J., KUMHOF M., 2012, *The Chicago Plan Revisited*, International Monetary Fund.

CARPENTER S.B., DEMIRALP S., 2010, *Money, Reserves, and the Transmission of Monetary Policy: Does the Money Multiplier Exist?*, Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C.

CHICK V. 1992, *The Evolution of the Banking System and the Theory of Saving, Investment and Interest*, New York: St. Martin's Press

DALY H. 2010, *Money and the Steady State Economy*, The Daly News

DALY H. 1980, *The Economic Thought of Frederick Soddy*, History of Political Economy

DISYATAT P., *The bank lending channel revisited*. BIS Working Papers No. 297

DYSON B., JACKSON A., 2012, *Modernising Money: Why our monetary system is broken and how it can be fixed*, Positive Money

GOODMAN J. C., KOTLIKOFF L. J., 2009, *Solving Our Nation's Financial Crisis with Limited Purpose Banking*, Boston University and the National Centre for Policy Analysis

GREENHAM T., JACKSON A., RYAN-COLLINS J., WERNER R., 2011, *Where Does Money Come From?*, New Economics Foundation

KEYNES J. M., 1930, *A Treatise on Money Volume 1 (The Pure Theory of Money)*

KYDLAND F., PRESCOTT E., *Business cycles: Real facts and the monetary myth*, Federal Reserve Bank of Minneapolis

LOMBRA R. 1992, *Understanding the Remarkable Survival of Multiplier Models of Money Stock Determination*, Pennsylvania State University

O'BRIEN M., 2012, *Understanding Eurosystem Central Bank Financial Statements*, Central Bank of Ireland Quarterly Bulletin Q3 2012

ROWBOTHAM M., 1998, *The Grip of Death*, Jon Carpenter

PHILLIPS R. J., 1995, *Narrow Banking Reconsidered: The Functional Approach to Financial Reform*, The Jerome Levy Economics Institute of Bard College

SHELLER H. K., 2004, *The ECB – History, Role and Functions*, European Central Bank

The Basel Committee on Banking, 2010, *Basel III: International framework for liquidity risk measurement, standards and monitoring*

The Basel Committee on Banking, 2011, *Basel III: A Global regulatory framework for more resilient banks and banking systems*

Central Bank of Ireland, 2012, *Documentation for Monetary Policy Instruments and Procedures*

The treaty on the Functioning of the European Union (The Lisbon Treaty), 2007.

Positive Money, 2010, *Banking 101*