Achieving a Solution to the European Debt Crisis - An Introduction

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by

Sensible Money
A Better Way to Run a Digital Economy

Overview:

Part I of this document will discuss how developed economies operate in terms of how electronic money is created and deleted. We will look at some side effects of the change from use of currency to electronic payments methods.

Part II will provide a brief history of digital money in an attempt to explain the uniqueness of the current European debt crisis. We will also investigate why a solution has so far not been found to return people to full employment.

Part III shall conclude that a portion, if not all, electronic money should be created by the Central Bank and spent into circulation by the Government as debt-free money. We will address some concerns this may bring.

About the Authors

Paul Ferguson has a background in engineering and mathematics and graduated from Trinity College Dublin in 2005 with a first class honours degree in both disciplines. He has studied economics informally for the last three years when there appeared to be a lack of understanding from economics graduates as to how there could be less money during a recession. He set up Sensible Money in January 2012 primarily to address the confusion over how digital money is created and by whom. Sensible Money is also promoting what they feel to be the optimum solution to the European debt crisis taking into account the many factors involved.

James McCumiskey has a background in engineering and accountancy. He has also studied economics informally for over three years and shares the same concerns regarding the lack of understanding by politicians, the media and even some economists about the modern money creation mechanism. James has written a book, Real Honest Money, currently with the publishers proposing similar reforms to Sensible Money's.

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Part I: How Modern Economies Operate

1.1 The importance of the origin of money

Money is the lifeblood of any economy and studying the effects of its origin should be given high priority. Most of us are familiar with the process by which cash and coins are created but digital money, which comprises 97% of the total European money supply[6], has a different origin and different properties. Cash and coins are introduced into circulation as a non-repayable permanent addition to the economy's money supply. In contrast, digital money only exists in tandem with a debt and is only a temporary addition to the economy's money supply. The affects of using digital money as opposed to cash are significant and yet the change to digital money has happened through arbitrary advances in our electronics payments systems, not through careful consideration by economists.

1.2 The origin of digital money

When finalising a bank loan application commercial banks type a higher balance into the borrower's account without lowered the balance of any other account. This is how digital money originates. Since digital money is created through the loan process every digital euro has a corresponding debt.

There are some criteria to meet before a bank manager creates new money for a loan. For example, banks create money somewhat proportional to the numbers in their reserve accounts, representing base money, at the Central Bank. They may also have to manage their liquidity and solvency in certain ways and check the creditworthiness of potential borrowers.

But the fact still remains; once a loan application meets the criteria the bank creates new digital money for the loan by increasing the borrowing customer's current account. While this brings new money to the economy we cannot ignore the fact that bank credit, i.e. digital money, is created in parallel with debt. We see this as the root cause of the debt crisis. Any new money required to stimulate growth in the economy will also have a corresponding debt. We see this as the reason that the current debt crisis has so far proved difficult to resolve.

1.3 The disappearance of digital money during a recession

Once again, when banks process loan applications they create new money in the form of a higher bank balance for the borrower. In economics, the money in current accounts is known as demand deposits. These demand deposits aren't legal tender. Instead they are an agreement to pay the borrowing customer the legal tender should it be requested.
New bank loans become potential demands for legal tender and hence they are recorded on the liabilities side of the bank's balance sheet. Equally, the borrowing customer's pledge to repay the newly created money is recorded on the assets side of the banks balance sheet.

As the loan is repaid both entries of the balance sheet are lowered to zero and the

money is effectively deleted.

Repayments of debts to a financial institution removes both the debt, and crucially, the money from existence. This is why the total money supply can be lower during a recession.

1.4 Some side effects of this system

1.4.1 The continuous need for new money

The money supply to the economy is temporary and is constantly being deleted through the settlement of the debts from which it was created. The money supply is effectively rented from the banking sector and does not necessarily fluctuate in line with our business needs. Individual projects require the negotiation of new digital money every time while previous generations were able to use the same cash, circulating at no risk of deletion, to facilitate many transactions. If ever we're unable to negotiate more digital money we are unable to complete projects which might otherwise be undertaken if we had a more permanent money supply.

1.4.2 The inevitability of defaulting

For decades publicly created debt free cash has complimented privately created bank credit. Previous generations have found it easier to repay bank loans than today's generation because a significant proportion of the money supply has existing as debt free cash circulating continuously unlike today.

At the indiscretion of developments in our electronics payments systems our use of cash has declined. Almost the entire money supply now consists of digital money in the form of demand deposits. And every demand deposit has a corresponding debt to the financial sector. This is why today's generation find it more difficult to repay bank loans in full. Ignoring cash, what's in circulation is the principal, or partial principal, of every loan. From this the economy must repay the principal, or partial principal, plus interest. We owe more digital money than exists[1].

We note that it is mathematically possible to repay all debts in full since banks only delete the principal of each loan upon repayment. Any extra payments received to service the interest are respent into the economy. However in practice repayment of all debts to the financial sector is impossible. Demonstrating this through an unrealistically extreme example, imagine everyone repaid all loans to commercial banks. Every bank account would read zero and we'd still owe some interest on each loan. Before this scenario unfolds inevitably there will be a default on some loans even if, for example, banks lent only to individuals and institutions with the highest credit rating.

Bankruptcies and the complications of mortgage arrears are guaranteed with bank credit as the only source of digital money.

1.4.3 The need for perpetual growth.

Our digital money supply is constantly being reduced through loan repayments. In

order to repay past loans without reducing the money supply we are forever dependant on increasing the amount we borrow collectively.

To increase GDP, strongly linked to the money supply[2], we need to collectively organise more bank loans year on year. A reduction in the rate of bank lending may occur for a number of reasons not linked to our need for money for trading.

Part II: Why this recession is so unique

2.1 A brief history of digital money.

At one stage precious metals, denominated in standardised units as coins, were used as the main medium of exchange. For security of storage, many people choose to leave their coins in
purpose built vaults. A paper receipt would be given to depositors and it soon became apparent that trading using these paper receipts was better than trading with the actual coins themselves. This was the birth of paper money.

When people went to the vault keeper for loans they often choose the convenience of the paper receipts and eventually the vault keeper, or banker, issued paper receipts in excess of the coins in the vault. This was temporarily a helpful thing for the economy since a growing population cannot function well with a finite money supply such as that based on precious metals. Vault keepers or banks, effectively acting as country wide printing presses, also distributed new money more effectively than perhaps a Government based in the capital city could.

However the system repeatedly broke down due to lack of confidence in the receipts. To restore confidence the practice was legalised and it later became known as fractional reserve banking. Eventually links to precious metals were abandoned and Central Banks assumed the role of sole issuers of bank notes and coins in an attempt to provide more economic stability. In Ireland this happened under the 1845 Bank (Ireland) Act[3].

It's possible the underlying purpose of this act was to carefully control the creation of money by a single institution. To that end it failed since there was a loophole unavoidable at the time. Although banks, well established by this stage, could be prevented from issuing new bank notes they could not be prevented from recording new entries in their bank ledgers when processing bank loans. These entries were effectively new money although technically they were simply agreements to pay Central Bank issued bank notes on demand. As private companies, banks could make as many agreements to output these notes as they saw fit. Today, the system is better regulated again and digital money, replacing ledger entries, is easier to police.

2.2 Sources of debt free money

2.2.1 The need for a source of debt free money to stabilise bank credit.

As noted in section 1.4 a money supply existing entirely with an even higher debt cannot form the basis of a stable economy in practice. Defaults and bankruptcies are guaranteed.

However until very recently we've had a sizable source of debt free money to compliment the burden of debt associated with digital money.

As recently as the 1960s the UK's M3 money supply consisted of around 20% debt free cash and coins[4]. We assume most European economies enjoyed a

similar percentage until much later perhaps. This has acted as a buffer to the 80% of bank credit carrying a debt. It is also worth noting that bank credit could only act as money, i.e. facilitate a transaction, through the trust involved in a chequebook transaction. Hence its growth beyond 80% was restricted.

In the Eurozone today around 3% of M3 consists of cash and coins[6] and the other 97% is no longer restricted by the limits of chequebook transactions.

From the 1960s onwards we've had a number of indirect sources of debt free money as replacements for the 'cash buffer'. These are discussed below.

2.2.1 The national debt.

The national debt, despite its name, can feel like a source of debt free money to the economy. This is because it can grow without being repaid in full. Ordinarily businesses and households within the economy each have to incur a debt to have any money to trade. Money entering the economy through the national debt is money that neither businesses, nor households, have had to borrow into existence. And yet it circulates between them as effectively debt free money.

Expanding the national debt as a source of debt free money is no longer feasible as countries worldwide concentrate on reducing growth in their national debts.

2.2.2 An accelerating money supply.

The digital money supply has increased dramatically globally in developed economies since the 1970s. As noted in section 1.1 this has not happened through advances in technology as opposed to recommendations from economists. For many European countries the money supply has doubled about every ten years, or quadrupled about every twenty years[6]. Loan repayments commencing early under such conditions can prove quite manageable. Such an exponentially growing money supply can 'feel' like a source of debt free money if the numbers involved dwarf previous bank loans and repayments are spread over many years.

2.3 Why is this recession so unique?

Within the economy it is either the Government, businesses or households that acquire the loans required for new digital money to come into existence.

Until the 1930s businesses took on a significant portion of the debt required for money to enter the economy. For example in the US in the 1930s business debt comprised 50% of that in the economy. Household debt comprised less than 20%[7].

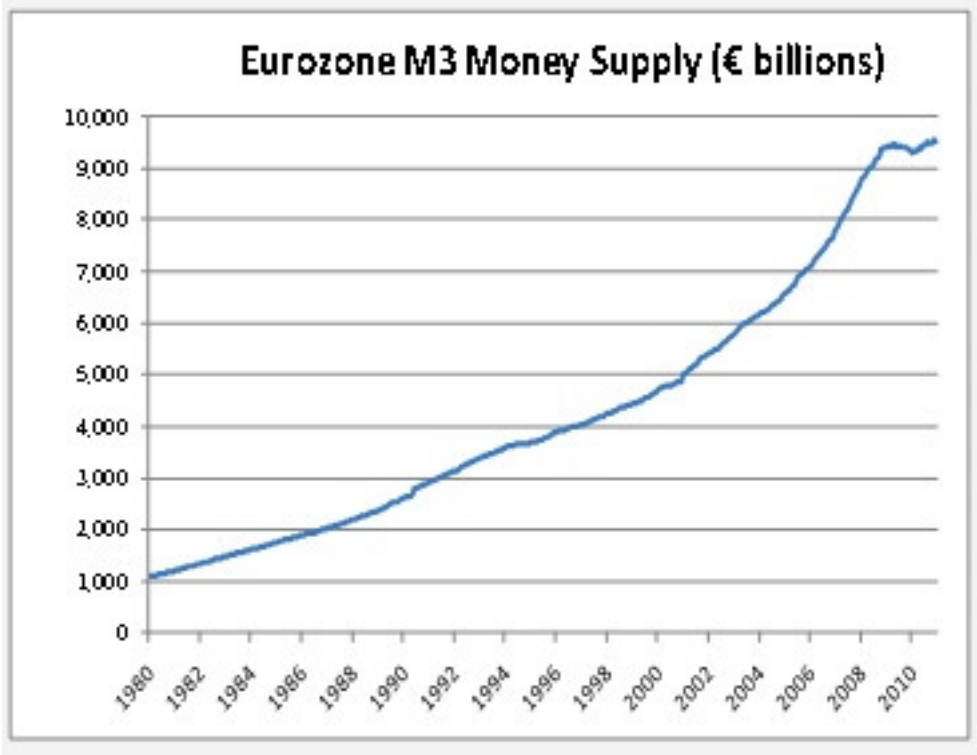
Since the 1940s Governments and households have become the main sources of borrowing. However today Governments in developed economies are concentrating on reducing budget deficits and so their contribution to borrowing is declining.

Perhaps more worryingly, mortgages require two earners and two careers to

repay. They cannot increase in duration, especially at a time of declining income. Households can no longer be relied upon as ever-increasing contributors to borrowing.

For the first time in history Governments, businesses and households appear to have no further borrowing capacity. This is a very unique recession.

To demonstrate just how unique, a graph of the Eurozone M3 Money Supply (Total of all currency, current accounts and savings accounts) is shown below. From the 1980s onwards we can see a doubling of the money supply about every 10 years. This 'decade doubling' explains the apparent functionality of the economy despite a decline in our debt free cash supply. To return to 'business as usual' would require a similar doubling about every decade. Extrapolating €10trillion in 2010 to 2050, we could expect the total money supply around Europe to be €160trillion. Regardless of how inflationary this would be, a doubling of the money supply every decade is not realistic. We believe a return to business as usual is not possible until a second source of digital money is introduced to stimulate the economy.



Eurozone M3 Money Supply from 1980 to 2011[11]

Otherwise, it would appear that IMF loans and an age of austerity are required for the foreseeable future for many European economies.

2.4 Analysing potential solutions to the debt crisis

2.4.1 Adjusting interest rates to near zero.

This technique employed by the ECB, the Bank of England, the Federal Reserve and many others is understandably designed to encourage more bank loans

since this is where new money comes from in modern economies. Of course all bank credit has an even higher debt recorded against it so this policy cannot ease the debt crisis per se.

2.4.2 Quantitative Easing

Although not employed by the ECB, rounds of QE have been attempted by the Federal Reserve Banks of America and the Bank of England.

For clarity, QE involves raising the amount of money in the reserve accounts of the commercial banks by purchasing assets from them with newly created base money. Although this can encourage commercial banks to create new digital money, again this can only happen through the bank loan process and any new money will still incur a matching debt hampering the effectiveness of this tool as a means of resolving the debt crisis.

2.4.2 ECB lending new money directly to Governments

The ECB has lent directly to Governments via the purchase of bonds with newly created base money. Of course unless the rules, and perhaps the mentality surrounding money, are changed the ECB can never give base money to a Government without recording a debt. But given that every digital euro, even base money, comes with a corresponding debt it's difficult to solve the debt crisis under this system.

Part III: A New Source of Digital Money as a Means of Solving the Debt Crisis

3.1 The need for a source of debt free digital money

As discussed in section 2.2.1 it appears economies cannot function well without a source of debt free money. As section 2.3 suggests our sources of debt free money are strained. We're unwilling or unable to create the many bank loans needed to increase the money supply and consequently GDP. All this despite low interest rates, some quantitative easing, the ECB/IMF/EU lending directly to Governments and encouragement given to banks to create new bank credit.

As such at the very least we'd recommend that a portion of the digital money supply should be created by the Central Bank and transferred to the Government to be spent into circulation as debt free digital money. This would be a modern day replacement for the cash money supply which the economies of previous years enjoyed. The required proportion of debt free digital money for stability and inflation control is hard to decipher. However some stable and low inflation economies have existed with a debt free cash supply of around 20%. Examples include America from 1919 - 1929 and Britain 1946 - 1969[6].

3.2 The possibility of an entirely debt free money supply

However, we don't see why the entire money supply, cash and digital, could not exist as debt free money overall. Lending of existing money would of course incur a creditor and debtor but upon repayment the borrowed money would not be deleted as it is today.

As such, we would not be as dependent on new money as we are today. Of course we would still need some institution to create money to service a growing population with growing productivity.

3.3 The Central Bank's role in money creation

As the current crisis demonstrates commercial banks cannot be trusted nor expected to issue new money with economic stability in mind. Governments also have a bad reputation whenever they've been in charge of directly creating money. As such we would see the Central Bank as the best judges of the required amount of new money needed to facilitate trading within the economy.

The Central Bank would create the new money expected to meet the demand for trading and type it directly into the Government's bank account whereupon it would be indistinguishable from money collected through taxes.

The Central Bank would create money with the sole objective of inflation control in mind, while the Government would decide how best to spend it. This would be the main safeguard against hyperinflation since neither institution would benefit from influencing the other's decisions.

3.4 Controlling the creation of bank credit

To control the creation of money through the extension of bank credit we'd need two types of accounts, namely current accounts and savings accounts.

If someone has money in a current account only they can use it. If someone has money in a savings account only the bank can use it.

This is known as full reserve banking, amongst other things.

3.5 Demand deposits as legal tender

Part of this proposal would involve acknowledging demand deposits as legal tender. Technically we're only allowed to pay taxes and/or court fines with cash and coins as the only forms of legal tender for all debts, public and private. We would finally recognise demand deposits as money, as opposed to an a potential payment of legal tender.

3.6 Dealing with current accounts

Currents accounts, consisting of demand deposits, would now be 100% safe. Financial institutions, not necessarily limited to traditional banks, could manage current accounts and transfer numbers from one account to another as means of payment. In the event of one financial institution failing the accounts held would transfer to other financial institutions.

Consequently there would be no need for deposit insurance. There would also never be a bank run, nor bank bailout again.

If anyone wanted to save money completely risk free they could leave money dormant in their current account.

Demand deposits, in current accounts, would no longer be liabilities of the commercial banks and would be removed from the banks' balance sheet as a result. More detail on the appearance of the banks' balance sheets will follow in section 3.9.

3.7 Dealing with savings accounts

Savings accounts, more accurately described as investment accounts, would be more complicated. Financial intermediaries, again not necessarily limited to traditional banks, would only be able to lend existing money and as such they would have to attract the funds they require for lending.
At the point of opening a savings account the bank would be required to inform the customer of the intended uses for the money that will be invested along with the expected risk level.

The risk of the investment now stays between the financial institution and the investor rather than the taxpayer. Brief examples of how savings accounts might be handled are described below.

3.7.1 A low-risk, low-return savings account

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%.

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.

3.7.2 A high-risk, high-return savings account

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 the bank may only receive perhaps 60% of the money it lent. In this case the bank might only guarantee the investor a return of 70% of their money with the bank paying the 10% shortfall from its profits.

3.8 A note on loan defaults

As noted in section 1.4.2 defaults and bankruptcies are guaranteed under today's source of digital money. However if banks were to lend only existing money it would be entirely possible for all loans to go according to plan. The scenario described in section 3.7.2 would not happen as often as today. Furthermore in theory such a scenario would not have an adverse affect on the economy at large since even a mass default on loans would not affect the money supply.

3.9 The transition

The transition to full reserve banking would happen quite slowly for the reasons described below. From the date of changeover all demand deposits would be removed from the liabilities side of the banks' balance sheets and become accounts holding numbers representing legal tender. Time deposits, the numbers in savings accounts, maturing to demand deposits would be treated in the same way.

For clarity, no action would be required by the general public and Governments could still borrow money via the sale of bonds. Time deposits would be honoured as per their original contracts although we would expect some flexibility from both parties in renegotiating them. They would probably form the immediate source of money available for lending if the holders agreed.

Debtors would also be removed from the assets side of the banks' balance sheets and would become entries on the Central Bank's balance sheet. As debtors repay the commercial banks the money they owe, it would be transferred to the Central Bank whereupon the debt would be settled, the Central Bank would remove the relevant entry and the money would effectively be deleted as happens today.

This arrangement would occur until the last repayment of a loan made before the changeover date. After this repayment the entire money supply would exist debt free overall. The biggest share of the transition would occur within 30 years since most of our digital money originates from mortgages of around this duration.

In the meantime, commercial banks would have to attract investors and upon doing so money would leave current accounts and enter the banking sector's pool for investment as liabilities on their balance sheet.

Upon approving a loan the money would reenter circulation by being transferred from the investment pool to the borrowing customer's current account. Their agreement to repay the loan would become an entry on the asset side of the bank's balance sheet.

3.10 Addressing some concerns with our proposals

3.10.1 The need to control inflation

Controlling inflation is given the highest priority by economists and rightly so. There is a school of thought that the issuance of publicly created debt free money into circulation will somehow be more inflationary than commercially profitable bank credit. We believe this reputation arose from the original behaviour of the two sources of new money.

Initially bank credit was issued to industries which subsequently increased GDP. Hence bank credit caused little inflation. In contrast Governments were less concerned with productive activity and have been guilty of causing hyperinflation by over-issuance of cash as a result.

The situation is different today however. As our economy has developed, bank credit is now rarely afforded to productive activities but naturally, it is instead given to whatever investment appears to be the most profitable. This is the main reason why we live in such a high inflation economy. When consulting the consumer price index only we may appear to live in a low-inflation economy. When factoring in the rise in house prices and the lowering of the household's disposable income we see a different picture[8].

We also believe that our current system is perhaps the least-deflationary we've ever had. While businesses may reduce overheads and the cost of production, debt repayments form a 'floor' price below which there is no point in selling. This is perhaps why we cannot enjoy the same standard of living under a declining money supply in contrast to the quantity theory of inflation.

As such we see no reason why the issuance of debt free money would be more

inflationary than our current system. Consulting section 2.3 again should remind the reader how inflationary the alternative would be.

The Central Bank's ability to directly create and delete money from the Government's account would obviously be far more effective than indirect control through adjusting interest rates.

The Government would still have an inability to create money while the Central Bank would behave as responsibly as it does today in adjusting interest rates.

The system would also be policed through international trading. Since the amount of new money being created by the Central Bank would be published, a country would lose international credibility if it created what was considered to be an excessive amount of new money. It's exchange rate would adjust accordingly.

The following safeguards could also be put in place if it were deemed necessary although we would fear a restriction on real world growth should they be strictly implemented. Nevertheless the below safeguards are an absolute defence against inflation should the concern remain.

- *The absolute amount of the increase in any one month must be no more than x% greater than the previous month.*

- *The total annual increase in the money supply should not exceed x% of the current total money supply*

3.10.2 Would there be enough money for lending?

For a start we wouldn't be as dependent on loans and credit since this would no longer be the source of new money.

Also we would live in a more stable economy where perhaps only in cases of extreme population decline would an economic area delete any money. And so investors are more likely to have longer periods of confidence than today.

Also the demographics of the population would keep the system well regulated. We'll always have a portion of the population saving for a house, a pension etc. and as soon as they stop the next generation will start.

But suppose, taking the extreme example, all the money in the economy was in current accounts and there was no money available for lending. On approach to this strange scenario the Central Bank would see this as a sure sign that more money was needed in the economy. An injection of digital money into the economy via Government spending would encourage investment. If this failed the Government would take the emergency action of putting some of its money into a savings account for would be entrepreneurs.

It is also worth noting that under the current system there are times when there is not enough money for lending despite encouragement given to the commercial

banks to exercise their ability to create money.

3.10.3 Would it be economically viable to run a financial institution?

Occasionally we hear that it would be too expensive to run a bank without the benefits they currently receive from creating digital money at very low cost. Interest rates would no doubt increase and banks would no doubt have a variety of charges for managing current accounts so one way or another banks would make it profitable to be in business.

The other side of the argument is sometimes made that it would be too hard to do non-banking business since bank charges would be so high. However we believe trade would indeed be easier under full reserve banking since a high portion of the money supply would always be available in current accounts, even if that current account were the bank's. The hardest economy to do business in is today's in which more money is owed than exists and money is constantly being deleted.

3.10.4 How would this affect international trade?

Under the current system every economy is eager to have a large export market since this brings money into the economy while the associated debt stays with the importing country. It is worth noting that a net importing country will find it even more impossible to pay its domestic debts, so this isn't a good system from the global economy's viewpoint.

Regardless of this point creating money with an equal debt does promote international trade and this incentive would be lost under our proposals. A breakdown in international trade isn't realistic regardless of what monetary system we employ. However, we do concede that some international trade that occurs today wouldn't occur under our proposed reform.

3.11 Examples of effective issuance of debt free money

3.11.1 Wörgl, Tyrol, Austria

Like many places in the 1930s the town of Wörgl in Austria was suffering from the effects of the Great Depression. The town had unemployed people, much work to be done but lacked a medium of exchange to bring it all together.
The Mayor, Michael Unterguggenberger, issued a new currency called 'certificates for services rendered'. It was issued debt free and kept valuable by being the only currency with which to pay local taxes.
The Wörgl currency enabled unemployed people to perform useful work and the town benefited from well-maintained streets, a new drainage system, street lighting, a ski jumping platform, bridges and a new reservoir. The scheme was a great success.

The success story of Wörgl spread and over 200 Austrian mayors proposed similar local debt free currencies. However the Austrian Supreme Court ruled such local currencies unconstitutional on 1st September 1933 and Wörgl suffered the effects of the great depression[9].

3.11.2 The Island of Guernsey

Debt free money creation has been taking place in Guernsey for almost 200 years without excessive inflation[10].

Dr. Bob Blain, Professor of Sociology at Southern Illinois University, wrote of the island of Guernsey in 'The other way to deal with the national debt' *Progressive Review* (June 1994).

''In 1816 its sea walls were crumbling, its roads were muddy and only 4 1/2 feet wide. Guernsey's debt was 19,000 pounds. The island's annual income was 3,000 pounds of which 2,400 had to be used to pay interest on its debt. Not surprisingly, people were leaving Guernsey and there was little employment.

Then the government created and loaned new, interest-free state notes worth 6,000 pounds. Some 4,000 pounds were used to start the repairs of the sea walls. In 1820, another 4,500 pounds was issued, again interest-free. In 1821, another 10,000; 1824, 5,000; 1826, 20,000. By 1837, 50,000 pounds had been issued interest free for the primary use of projects like sea walls, roads, the marketplace, churches, and colleges. This sum more than doubled the island's money supply during this thirteen year period, but there was no inflation. In the year 1914, as the British restricted the expansion of their money supply due to World War I, the people of Guernsey commenced to issue another 142,000 pounds over the next four years and never looked back. By 1958, over 542,000 pounds had been issued, *all without inflation*.''

3.12 Conclusion

We would promote caution in dealing with this recession given its unprecedented nature. Until a second source of debt free digital money is introduced to the economy to compliment, or perhaps replace, bank credit it is difficult to see how the economy can significantly expand again.

We recognise that Ireland has a relatively small economy, deals with an international currency and has accepted an IMF loan. As such we are realistic about our proposal to implement the issuance of an entirely debt free money supply any time in the near future. However we would urge more consideration of at least a partial implementation of a source of debt free digital money.

References

1. Central Bank of Ireland, 2011, *December 2011: Credit Institutions Aggregate Balance Sheet*, (Central Bank of Ireland). 'Loans to Irish Residents' reads €467billion while 'Deposits from Irish Residents' reads €346billion.
2. Zapodeanu D., Cociuba M.L., 2010, *Linking Money Supply with Gross Domestic Product in Romania*. (www.oeconomica.uab.ro/upload/lucrari/1220101/50.pdf accessed 12/01/12).
2. Fisher's Equation, mv = pq.
3. Honohan P., 2004, *The Irish Pound*, The Encyclopedia of Irish History and Culture, (New York: Macmillan Reference).
4. Rowbotham M., 1998, *The Grip of Death* p264 (Jon Carpenter).
5. Central Bank of Ireland, 2011, *Money and Banking Statistics: December 2011, Table A.3 Money Supply - Irish Contribution to Euro Area,* (Central Bank of Ireland).
6. European Central Bank (1998-2007), *Latest monetary, financial markets and balance of payments statistics* (http://www.ecb.int/stats/services/downloads/html/index.en.html).
7. U.S. Census bureau data from 1916 to 1930. E.g. In 1929 Industry debt equated to 51.3% of total debt, personal debt equated to 17.2%.
8. U.S. Flow of funds data 1990 - 2011. E.g. Household debt payments service as a percentage of disposable personal income rose from 10.7% in 1994 to 14% in 2008.
9.Helleiner E., 2003, *The Making of National Money - Territorial Currencies in Historical Perspective* p158-159, (Cornell University Press).
10. Grubiak J., Grubiak O., 1963, *The Guernsey Experiment (Prospectus) 3rd Edition,* (Hawthorne, California Omni Publications).
11. European Central Bank, 1980 - 2011, *Historical monetary statistics*, European Central Bank