



Taking Modern Money Apart

“Taking Modern Money Apart”

Professor Edward J Nell, Malcolm B Smith Professor of Economics at the New School for Social Research, New York

read by, and with introduction by,

Professor Michael Mainelli, Gresham College & Z/Yen Group

18:00, Thursday, 13 June 2013

Gresham College

Barnard’s Inn Hall

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<http://www.gresham.ac.uk/lectures-and-events/taking-modern-money-apart>

Opening Remarks

Professor Michael Mainelli, Executive Chairman, Z/Yen Group

Gresham College
"New Learning"

Taking Modern Money Apart

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GRESHAM COLLEGE
Founded 1597

Good evening Ladies & Gentlemen. For those of you who don't know me, I'm Michael Mainelli, Emeritus Professor of Commerce, Trustee and Fellow of Gresham College. For those of you who know Edward Nell, it's clear that I am not he. Sadly, Edward has had to remain in the USA due to a family problem, but has kindly provided his lecture for me to read this evening. It is a delight to have the opportunity to present this work. I had the great opportunity of meeting Edward back in 2011 when my firm, Z/Yen, was doing some research into capacity, trade and credit, sponsored by the City of London Corporation, Recipco, and the Economic & Social Research Council. Edward Nell's theory of transformational growth had always interested me, but his later thinking on the nature of



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modern money was very *simpatico* with where we had only just arrived. Nell is a critic of simplistic views on money and a proponent of Capacity Exchanges, which we shall explore tonight.



Tonight is about credit and money. One financial crises joke runs, “I went to the ATM this morning and it said ‘insufficient funds’. I’m wondering is it them or me?” We researched the three elements in the title - capacity, trade and credit – and explored the feasibility and benefits of establishing a Capacity Exchange or hub of Capacity Exchanges in the UK.

It’s important to get up front the scale of non-monetary trade that underlies the idea of Capacity Exchanges and common tenders (community, as opposed to fiat, currencies). Regularly quoted figures state that countertrade accounts for 20% or more of world trade, involving some 90 countries and accounting for US\$100 to US\$150 billion (Platt, 1993; Carter, 1997). The figures probably understate the scale of countertrade, and are ambiguous on retail barter and corporate barter. Many trade statistics are based on declared values of goods landed or exported, which may not be the figures that suit taxation targets. Many trade statistics don’t cross-reference values to gross tonnages or sample quality and value. Some suggest higher figures, such as the US Department of Commerce’s 25%, while some scholars suggest perhaps as high as 50% in some trading sectors of Eastern European and Third World Countries. Whatever, it’s huge and often ignored in a money centre such as London.

Our research recommended that a clearer, more solid regulatory framework might encourage more rapid development of Capacity Exchanges and common tenders. This challenge has been taken up by the City, which has commissioned work on a prototype standard for Capacity Exchanges with the BSI. But let’s get back to the start of tonight’s lecture.



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Edward J Nell has been a member of The New School for Social Science faculty since 1969, and has held the position of Malcolm B Smith Professor of Economics since 1990. Nell's contributions are in the field of Macroeconomic Theory, Monetary Analysis and Finance, Economic Methodology and Philosophy, Transformational Growth and Development. He has written twenty books and his articles appear in leading journals such as the American Economic Review, the Journal of Political Economy, the Journal of Economic Literature, and Cambridge Journal of Economics.

Nell is the originator of the General Theory of Transformational Growth and known for his critical view of the methodological and philosophical foundations of Neo-Classical Economics, examined in his best known book *Rational Economic Man* (1975), co-authored with English rationalist philosopher Martin Hollis.



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Professor Edward J Nell, Malcolm B Smith Professor of Economics at the New School for Social Research, New York

Money as a Unity - Money is a unity of an accounting system, a medium of circulation and a store of value

This unity was formed first in the ancient world, where cities with sophisticated crafts traded with each other and with agricultural regions. Cities became interdependent and they extended the division of labour well beyond the limits of barter. But the writ of government did not reliably extend over the region of trade; thus contracts might not be enforceable. Hence transactions normally had to be concluded at the point of delivery; credit was too risky. So a divisible, portable, durable medium that itself had value was needed in order to close transactions by clearing them through ‘making change’.

My central argument is that this unity is marred by a central defect, namely that the relationship between the medium of exchange function of money and its store of value function is inherently unstable, when considered in dynamic terms. There are other economic instabilities, but the core tension is between medium of exchange and store of value. We will quickly examine *seven* different forms that this instability has taken, and try to show that they all rest on the same or similar foundations. When units of the medium of exchange transfer in or out of the store of value, such transfers set up incentives for *further transfers in the same direction* – resulting in positive feedback.



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This destabilising positive feedback affects the working of financial markets. Financial markets are supposed to channel savings into investment, provide venture capital, and supply business with working capital. But today these functions are largely handled in other ways – retained earnings finance most investment, much venture capital arises in-house or through personal contacts rather than markets, while working capital, formerly provided by banks as lines of credit, now comes from the money markets. Instead financial markets are the arena in which questions of corporate control and ownership are settled, executive compensation determined, and above all, the place where risk is evaluated and managed – or believed to be managed. Financial markets price risk and allocate it to those who can best bear it, rewarding them appropriately. But ‘risk management’ tends to increase risk! That is, widespread micro-pricing and allocation of risk tends to promote feelings of security and optimism about prospects while at the same time increasing the ratio of financial costs to revenues, thus raising *systemic* risk. The instability of money further contributes to this by making the supply of credit money pro-cyclical. Expansion of the money supply supports an asset boom and expansion of business credit supports an output boom. In both cases such expansion will tend to increase bank and financial sector earnings and raise the value of collateral, both of which will tend to support further expansion of the money supply.



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Outline

Money is a unity of accounting, medium of exchange and store of value

But the medium of exchange function and the store of value function don't work well together because together they set up positive feedback loops that can create bubbles or crash markets

If the medium of exchange could be separated from the store of value, these instabilities could be controlled

Technically, this separation could be done today, given the advances in communications and information technologies

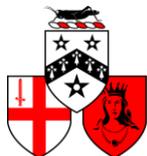
But not politically...

However, the non-financial private sector is interested in getting rid of unnecessary costs - Forex costs, hedging, costs of finance

Hence, current proposals for Capacity Exchanges

To cure money of this instability we must break this unity – and that will not be easy. Sensible proposals for regulation run into ideological criticism and political obstacles; a wildly unrealistic version of general equilibrium theory is advanced to ‘prove’ the efficiency of free markets, in order to defend the high profits of high finance. While it is unlikely that the monetary system can be redesigned, it might be partly replaced by a surprising development. In the private sector, Capacity Exchanges are emerging that free transactions from financial and hedging costs. Barter and assisted barter have been around a long time, especially among small and medium-sized businesses. But new ideas spreading in the corporate world could dramatically change the scale of things.

The eight sections of this lecture will explore fixing this instability. The first four sections show different ways that instability can arise. The next three sections deal with interactions between money and financial markets. The final section examines separating the medium of exchange from the store of value. Let's start with coinage instabilities.



1. Hoarding Instability In A Coinage System

$$MV = \Pi Y$$

where:

M signifies the amount of gold, silver, etc., required to carry out all transactions in money;

V is the number of times this money had to be exchanged;

so that Π would then be the price level (with $1/\Pi$ being the value of money), and

Y is the national income or national product, the total amount to be transacted in money.

1. Hoarding Instability in a Coinage System

The Quantity Equation underlies the working of any metallic currency, e.g. the Gold Standard. It can be written:

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Although prices may adjust to the Quantity of Money in the short run (somewhat unreliably), in the long run it is the Quantity of Money that adjusts. It is sometimes argued that the Quantity Equation indicates that the system is stable, because high prices imply a low value of money; but money is held in proportion to the value of goods and assets. If its value is low the quantity being held should be increased; thus money should be withdrawn from circulation, to build up the holdings. This, however, will imply that prices should be lower.

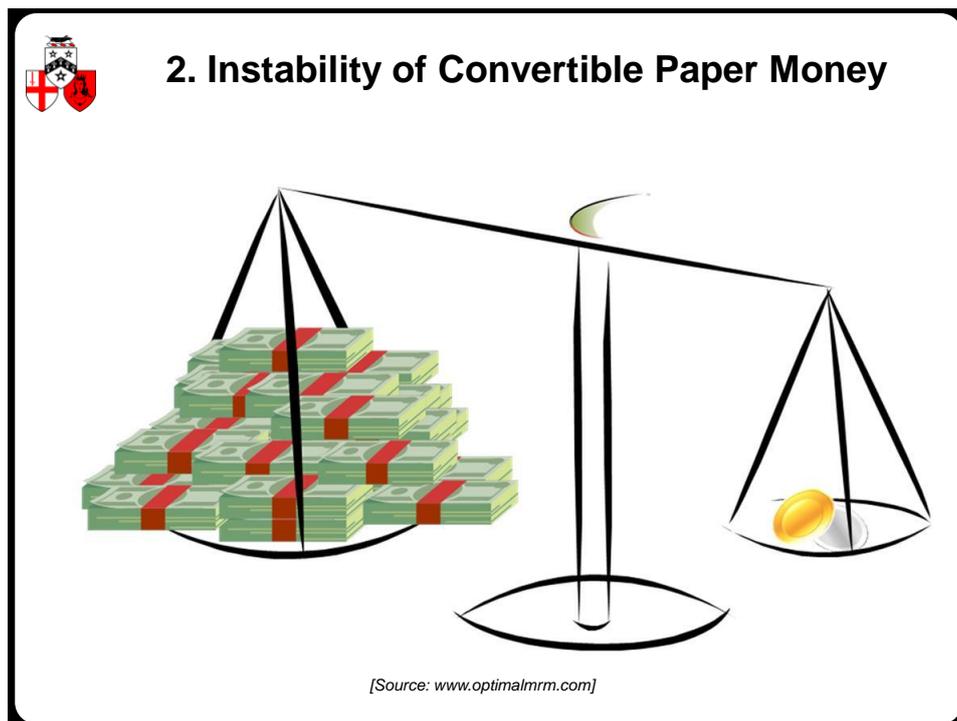
This argument is defective. First, it is an *equilibrium* analysis; the Quantity Equation says that there is a 'correct' proportion between prices and the quantity of money – in the long run. But it doesn't say anything about what will happen when there is a shock to the system and prices, or other variables, *change*. This is the province of dynamic analysis, and things look very differently when considered dynamically. For example, if prices are high *and rising* the value of money will be low and *falling*. If the value of money is falling, better to spend it! Who wants to hold a depreciating asset? But if money from hoards is spent, this will tend to drive up prices even more, putting in motion a self-justifying process. Low prices mean a high value of money, and once again, if prices are low *and falling* the value of money will be high and *rising*, so the public will be tempted to pull money out of



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circulation, in order to profit from its increasing value. Just the opposite of the previous analysis.

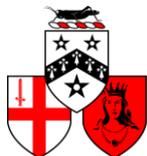
But which is right – the equilibrium approach, or dynamic analysis? Does the money-spending public react to the *levels* of prices, or to their *changes*? There are many issues here, and it's hard to lay down a general rule, but a good candidate would be: if the changes are large, the chief reaction of the public will be to the changes. So a coinage system has the potential for instability, due to the reactions of *holders of money hoards* to changes in the value of money, where these reactions can develop into a self-justifying spiral, moving away from the balanced position (equilibrium?) indicated by the Quantity Equation.



2. *Instability of Convertible Paper Money*

Instead of shipping gold and silver around, better to transfer *claims*, rather than actual metal. Paper and notes are cheaper and safer and, it is implied, the changeover makes no material difference to how the payments system works.¹ But this change has introduced a new element, that of *risk*, since it is always possible that, for unforeseen reasons, the holders of the metal reserves may not be able to meet a valid claim when presented. Let's compare:

¹ There were many skeptics, summed up very well by Marx; "It is an old humbug that changes in the existing quantity of gold in a particular country must raise or lower commodity prices within this country by increasing or decreasing the quantity of the medium of circulation. If gold is exported, then, according to the Currency Theory, commodity prices must rise in the country importing this gold, and decrease in the country exporting it... But, in fact, a decrease in the quantity of gold raises only the interest rate, whereas an increase in the quantity of gold lowers the interest rate: and if not for the fact that the fluctuations in the interest rate enter into the determination of cost-prices, [and into the] determination of demand and supply, commodity prices would be unaffected by them." Marx, 1967, Vol III, Chapter 34, p. 551). It is clear from the context that Marx here assumes a well-developed banking system dealing in commercial paper and bonds. But he does not think that movements in interest rates will be likely to have an inverse impact on investment – since he cites evidence that interest moves together with profits and prices, a relationship sometimes called Gibson's Paradox, (cf Keynes, 1930, vol 2).



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Specie-flow and Metal Coinage

According to the specie-flow analysis, when deficits emerged in international trade, specie flowed out; in the face of shortages in the medium of circulation economic activity contracted and domestic prices fell – the value of the money remaining in circulation rose. Countries in surplus experienced an increased circulation, so economic activity expanded and prices rose – the value of circulating money in those countries fell. If the value of money rose, spending out of hoards would be stimulated – a change in aggregate demand. The mainstream emphasized the price effects: When gold and silver are lost, they become scarcer, and their value rises; when they are gained, they are less scarce, and they fall in value. This is often presented as how metallic currencies like the Gold Standard worked.²

The New System of Convertible Paper

But paper claims became *national currencies*, backed by gold and silver. Formerly made up of coins with intrinsic values dependent on weight and fineness, these currencies became paper notes *convertible* into corresponding quantities of gold or silver. Supposedly this makes no difference; in deficit situations the claims will flow out, reducing reserves, and this will force contraction and price declines as before, and vice versa for surplus conditions. Moreover, Central Banks should act according to the ‘rules of the game’, buying domestic assets (lowering interest rates) when gold flows in, and selling domestic assets when gold is flowing out. The Gold Exchange System of the 19th century should work in the same way as the specie-flow system of metal coins and bullion in the 17th and 18th centuries.

But in fact a wholly new element has been added to the picture – the *risk* inherent in convertibility. Convertibility is a promise, and this promise is normally defined by law and embodied in institutions. But even if the promise is clearly sincere and the arrangements plausible, convertibility may not be possible if the reserves run out. When reserves are lost through trade deficits, the risk that the currency may cease to be convertible rises; when reserves are gained, that risk falls. Hence in a deficit the home currency tends to fall in value against the currencies of other nations. This should encourage exports and constrict the demand for imports, tending to stabilize the system. In the same way, when a country runs a surplus, its currency will tend to rise, making its exports less attractive and imports cheaper. So changes in the international value of money will tend to stabilize the balance of payments, just as the specie-flow system did, while the gains and losses of reserves will act in a stabilizing manner on the capital account.³

Comparing the Two Systems

² *The specie-flow mechanism depends on the traditional interpretation of the Quantity Theory of Money; when the amount of coins in circulation falls, prices will fall, and when the quantity rises prices will increase. Activity, too; but writers on the Gold Standard always emphasized prices, since this corresponds to the scarcity theory. Movements up and down were considered symmetrical. The downward effect on prices of the silver drain certainly figured large among the complaints of the Irish pamphleteers, although the constriction of trade was equally lamented, usually in the same breath.*

³ *For example, “Central banks that were persistently losing gold faced the risk of becoming unable to meet their obligation to redeem currency notes. They were therefore motivated to contract their domestic asset holdings when gold was being lost, pushing domestic interest rates upward and attracting inflows of capital from abroad. Central banks gaining gold had much weaker incentives to eliminate their own imports of the metal. The main incentive was the greater profitability of interest bearing domestic assets compared with ‘barren’ gold. A central bank that was accumulating gold might ... [therefore] purchase domestic assets, thereby increasing capital outflows and driving gold abroad.” Krugman and Obstfeld, 1994, p. 531.*



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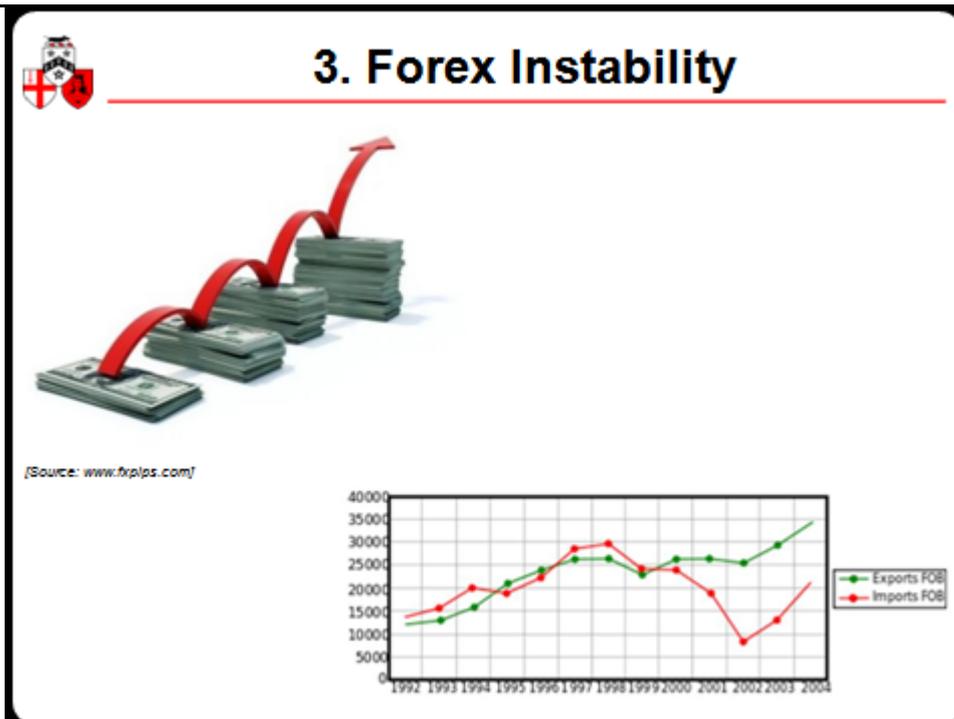
Just because paper developed out of specie doesn't mean the two systems work the same way as regards the current account, and both discussions fail to come to terms with asset markets. In the first system, an outflow of metal – actual coins – leads to a fall in prices and a *rise* in the value of domestic coins remaining in circulation. The domestic currency rises in value in relation to the domestic goods and services. And of course it falls when a country experiences an inflow of metal. But in the second system, with national currencies of convertible paper, an outflow of metal (or claims to metal) brings a rise in risk, which will lead to a *fall in the value of the national currency*, just the opposite of what happened in the first system. Moreover, the higher cost of imports will tend to drive up prices, again in contrast to the first system. It is true that the drain of reserves will lead to contraction in the banking system, but this will translate into higher interest rates, rather than any direct effect on prices. The higher interest rates, of course, mean higher costs for business, tending to raise prices; but the constriction of lending also tends to reduce demand, tending to lower prices. The impact of these two opposing effects is likely to be ambiguous.

Metal coinage can make a claim to generate automatic stabilizing pressures. But specie is in a much weaker position, closer to instability. In the short run devaluation is often likely to make the trade balance worse, as both imports and exports may be inelastic. In the long run this may well improve – but it still may not be enough to ensure that devaluation will have a favourable impact. Further, the drain of reserves tends to higher interest rates, which brings us to asset markets. The rise in interest rates will tend to attract money capital; the corresponding fall of lending rates in the surplus country or countries will tend to promote lending abroad. The inflow of capital into deficit countries from the surplus areas will stop the pressure on the interest rates; the outflow in surplus countries will stop the decline in rates there. The pressures will stop when interest rates are equalized in both countries, and the trade deficit/surplus is just offset by the capital inflow/outflow. Thus we have the possibility of a *chronic* deficit country matched by a country or countries with a corresponding chronic surplus - a balanced disequilibrium!

This will not be a stable position, even though the total accounts are in balance. The chronic deficit, even if steady, will lead to an accumulating debt, so that debt servicing payments – outflows of reserve monies – to the surplus countries will increase. Hence even if the deficit on the current account remains stable, the total deficit, current plus capital, will be rising, so the borrowing and lending will have to rise as well. But if the level of trade is stable, or grows only slowly, a higher level of debt in relation to the volume of trade will surely have to be considered to raise risk, pushing up the interest rate from one period to the next. The pressures for depreciation and appreciation, respectively, will then also be greater, likewise enhancing risk. At some point the risks are likely to seem too great; interest will reach exorbitant levels and lending will dry up.



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3. Forex Instability

In more modern conditions, where capital flows dominate and lead to changes in Forex values, a long-term disequilibrium is possible. Capital flows are uncertain and respond unpredictably; any reliance on them has to be hedged, which can be expensive.

Offsetting Flows on Capital and Current Accounts

Take this plausible scenario: England imports beef and wheat from Argentina, and sells Argentina manufactured household goods and machinery. The terms of trade favour England, and it earns a surplus; Argentina has a deficit. The influx of gold will tend to expand activity, prices and profits in England, while lowering interest rates. Following the 'rules of the game' the Bank of England would buy domestic assets. Argentina will feel the impact of the outflow of reserves in reduced activity, and the need for reserves will bring higher rates and circumscribe lending. The Central Bank of Argentina will sell domestic assets, driving down their prices and raising rates. But England's continued growth calls for Argentina's primary production to expand in a regular manner; England's growth needs steadily increasing imports. Moreover, England's domestic assets now offer low yields. So it makes sense for English capital to finance Argentine development.⁴ English direct investment in Argentina's primary industries will expand Argentina's export capacity. This requires Argentina regularly to import capital to finance the required investment. The English owners do not repatriate their profits; they spend them in Argentina, partly on investment and partly on household imports from England. Both England and Argentina grow, but England's ownership stake in the Argentine economy steadily expands.

We have long-lasting imbalances under quite plausible conditions, imbalances that emerge as a result of the dynamics.

⁴ "...during the period 1880-1913, the principal capital exporter in the world economy, Britain, ran an average current account surplus in its balance of payments, ...equivalent [to] 5% of its GDP... in some years ... as much as 8% of GDP." D. Naayer, *CJE*, 2006, vol. 30, p.140.



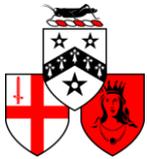
4. Futures Instability

Next, imagine a simple economy of craft workers in a town and farmers in the surrounding countryside. Trading takes place in an annual Harvest market, and all year round at the Trading Post on the edge of town. Trading would be greatly improved if money could be used, but the railroad has not got this far, and there are no supplies of precious metals. Knut Wicksell postulated establishing a bank that issues pure credit money. It can easily be shown that this will greatly simplify and smooth out trading. We can also see what happens when harvest are exceptionally good or bad. But now suppose that a ‘futures market’ develops, so that besides, or even instead of, trading finished goods and services ‘on the spot’ future claims are traded. This changes the distribution of benefits in ways that many might plausibly consider unfair or unwarranted, but even worse, it leads to self-justifying instability spirals.

The argument is that banking in such a simple economy could work quite well, as long as the money it issued served *only as a medium of exchange* and the bank didn’t over-issue money, despite the temptation. When there is an exceptional harvest, it can be shown that the benefits will go chiefly to the townspeople; when there is a bad harvest, it will be the towns that will suffer.

Trouble comes when money *also serves as a store of value*, facilitating speculation. Merchants and farmers can contract ahead. When the harvest is normal, the results will be essentially the same. But when the harvest is either exceptional or poor, the results are very different.

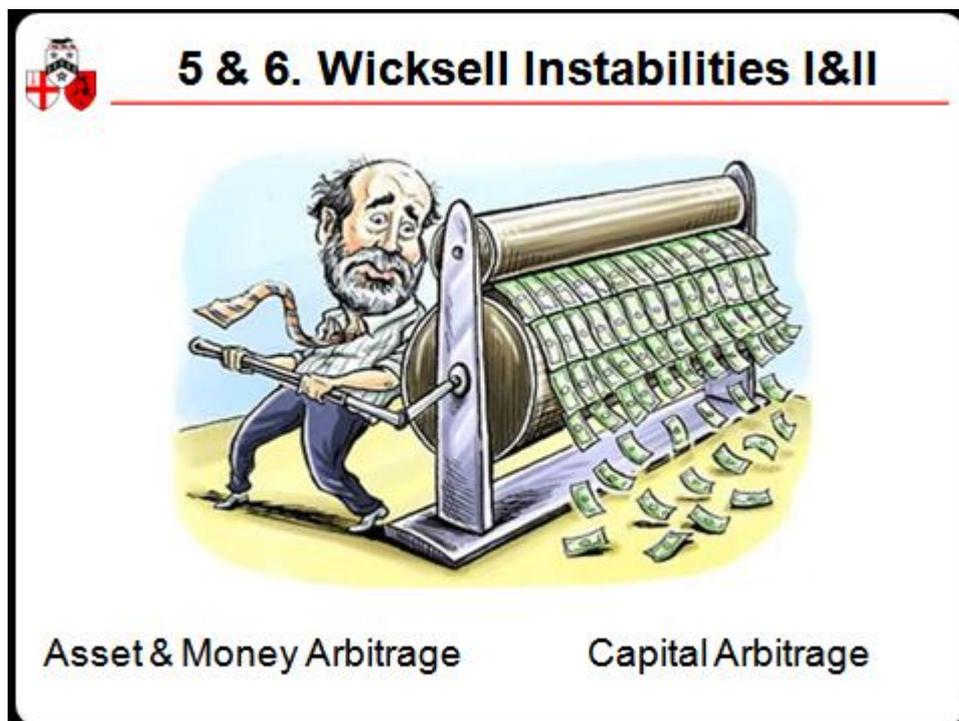
Before an exceptional harvest, merchants take out a loan equal to the uncertainty discounted value of the normal harvest and buy a contract for future delivery of the normal crops. Farmers then buy town goods but the funds flow from countryside to town. At harvest the normal output is delivered to the merchants who store it and put it on sale. But the farmers have produced more than this and will try to sell the excess, driving down the price. Merchants, seeing the falling prices, will try to sell before prices fall too far, thus further



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driving prices down. With agricultural prices down neither farmers nor merchants will make their normal ongoing purchases from the towns, so prices for town goods will weaken. As all prices are down or tending down, liquidity preference will rise; everyone will tend to hold on to money, since it has risen or is increasing in value. Banks will become more and more unwilling to lend, or willing only to lend less, as the value of collateral falls. At this point, panic could well set in: the merchants will not only not be able to pay interest, they will not be able to repay the principal. The Bank will have to stop lending, and start calling in; but the public will now ask, can the Bank meet demands for withdrawals? Once this question arises, a run on the Bank will start.

And a poor harvest is worse – positive feedback spirals that lead to dangers for the banking system.



5 & 6. Wicksell Instabilities I & II –

We haven't the time to deal properly with two instabilities indicated by Wicksell, though they are in tonight's notes. The first is that the value of assets depends on interest and profit rates, which arbitrage with each other and with money as an asset itself. Money itself contributes to the instability.⁵

⁵ Wicksell defined the money rate of interest in contrast to the natural rate, and argued that the relationship between them was unstable, so that arbitrage — shifting of capital — would lead to cumulative movements of prices, without reducing the difference between the two rates. When $i < r$, capital would shift from financial assets into real, and prices would rise without limit; when $i > r$, capital would shift into financial assets, and prices would fall. Wicksell assumes credit-based money, a bank economy, of the sort we have seen. Industrial production, however, is craft-based and capacity constrained, especially in the production of capital goods. If demand exceeds a certain level it can only drive up prices – but since no additional capital goods can be produced, there will be no new workplaces, so there will be no additional demand for labour. Prices will therefore rise relative to money wages; that is, real wages will fall and profits rise. But in the context of an assumption that population



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The second is 'Capital Arbitrage'. Money as a store of value provides the market's link between the present and the future; the stream of returns from an asset is expressed and paid in money. So is the capital value of the asset. Without an easily transferable, divisible, medium expressing the unit of account and reliably maintaining its value over time, these transactions could not be carried on. But these monetary valuations are unstable, and again we have a perverse interaction between real assets and financial assets.⁶

and the labour force are growing, so that business sees long term growth on the horizon, Investment will be governed by the relationship between the costs of borrowing and the returns – profit – expected from building new capacity. The costs of borrowing under some simple assumptions will be reflected in the rate of interest, while profitability can be calculated as a rate of return on capital. If $i < r$, Investment will increase, but if it presses against capacity prices will rise in relation to money wages, so the rate of profit will rise. But this will also mean that banks are doing more business, whereas their costs have not risen. So, they, too, will be more profitable, and so their capital will increase in value, permitting them to make still more loans. The issuance of money is based on the return on bank capital. This means that an expansion engendered by $I < r$ will tend to continue as r rises still further above i . A parallel analysis shows that contraction brought about by $i > r$ will tend to continue on its own, as r falls over time. In both cases arbitrage may lead interest rates to move in the same direction as profit rates; but they will follow with a lag, and there are no forces leading to an equilibrium. --- This argument depends on two institutional arrangements: first that production and employment are both capacity constrained, second, that credit-money will be issued on demand, if borrowers can provide appropriate collateral and show that the loans will be profitable

⁶ *In mass production economies, asset-holders have a choice between stocks or shares in a corporation, and bonds. Profits are ploughed back, so the value of the share reflects not only, and perhaps not chiefly, its current and near term future earnings, but its future growth prospects. In other words, asset-holders arbitrage between the rate of interest and the rate of growth. Asset-holders — households, trusts, non-profit institutions, pension funds. etc. — will be supposed to have portfolios composed of two kinds of holdings: financial assets, such as bonds, which are commitments to pay principal and interest on certain dates, independently of the economic success of the payer, and 'real' assets (in inverted commas to indicate that these are claims), such as growth stocks, holdings of venture capital, and participation in direct ownership, where payments, and market value are conditional on economic performance. If there are good reasons to expect the economy to realize a certain rate of growth (allowing for a normal degree of variation, comparable to the variations one might expect in the rate of profits), and further if this rate of growth is expected to hold for the indefinite future, the value of an asset that constitutes a claim to real resources (or is held in terms that vary strictly with real growth. such as growth stocks) will compound at the rate of growth. (Assuming that stock markets have the appropriate information, the price of the asset — the claim on real invested resources — will appreciate at a rate equal to the rate of growth.) A similar position held in financial assets would compound at the rate of interest. A representative asset-holder must build a portfolio by comparing the rate of growth to the rate of interest.*

When the rate of growth and the rate of interest are equal, after making appropriate allowances for risk and liquidity, portfolio holders must be indifferent at the margin between what we have just termed 'real' and 'financial' assets. And when i is not equal to g , one will compound faster than the other, which creates an incentive to shift capital until





7. Instability Between Present And Future

present = $f(\text{expected future})$, $f' > 0$
expected future = $\phi(\text{present})$, $\phi' > 0$



7. Instability Between the Present and the Future

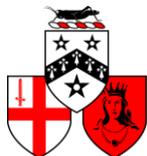
Money as a store of value provides the market's link between the present and the future; the stream of returns from an asset is expressed and paid in money. So is the capital value of the asset. But these monetary valuations are unstable, being based on volatile expectations of an inherently uncertain future.

increasing risk or some other factor offsets the advantage provided by the difference between i and g . So, what will be the effects of portfolio managers selling one kind of asset to buy into the other?

First, suppose market pressures and the monetary authority have combined to establish a position in which $i < g$, both adjusted for inflation. 'Real' assets compound faster than financial; hence asset-owners will tend to shift into real holdings, buying into partnerships, growth stocks, and takeovers, and putting up funds for new investment projects. As a result:

- *Bond prices will tend to drift down, raising i .*
- *Investment in real terms will tend to rise, raising g .*
- *When $i < g$ debt will be falling as a share of income — hence the rise in nominal i will have little or no effect on g . But it will mean higher interest costs. Since demand is strong firms will tend to pass these along in higher prices, setting off a wage-price spiral. The resulting inflation may offset the tendency for nominal i to rise, keeping real interest rates low.*
- *To maintain the level of nominal i initially established, the monetary authority would have to infuse funds into the bond market at a rate equal to that at which funds are shifting into 'real' assets.*

Since both i and g tend to rise, as a result of a certain amount of capital shifting from financial to real, the difference, $g - i$, will tend to be maintained. They need not rise in exactly the same proportion, but there seem to be no grounds for expecting i to rise faster. Hence the tendency for capital to shift will persist; market forces will not eliminate the disequilibrium gap.



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Capital is forward-looking; the value of capital today depends on the stream of returns it is expected to generate in the future. So, the current position depends on present values, discounting expected future streams of returns. But the expected future, in turn, depends on what has proved successful in the present. Nor is this mutual dependence of present and future confined to capital. Investment, the growth of capacity today, depends on the expected expansion of markets in the future, but future markets develop because of marketing efforts today. Our view of the value of education or schooling today depends on the expected development of our careers in the future; while our expectation regarding the development of our careers in the future, in turn, is a projection from the value of education today. Thus two equations:

$$\begin{aligned}\text{present} &= f(\text{expected future}), f' > 0 \\ \text{expected future} &= \phi(\text{present}), \phi' > 0\end{aligned}$$

The first equation says that present capital values will be higher, the higher are the expectations of returns in the future; this is an implication of the Keynesian 'marginal efficiency of capital' (Keynes, 1936, pp.135-6 et passim). The second says that future returns will be expected to be higher, the higher are the values in the present, other things being equal (Keynes, 1936, Chs. 12, pp. 152-3). This is Keynes' convention that we agree implicitly to project the circumstances of the present into the future, except where we have good reason to think otherwise.

The interaction of future and present is (potentially) a determinate system, with two equations, or sets of equations, and two unknowns – the present, and the expected future value of assets. Besides depending on each other, each will also depend on various parameters. These relationships could be linear or non-linear; if the latter there could be multiple equilibria. If the former, then there might only be a single equilibrium, but it will be partially unstable in a simple sense, since both functions have the same sign for the slope. The important thing to realize is that all these judgments are necessarily based on insufficient information, and therefore are likely to change easily. The *whole* system is highly volatile.⁷

⁷ *To examine this further calls for analyzing a model in which we can define the conventional notion of 'efficient markets' and see where patterns of behaviour follow 'martingales' or work through Markov processes. More importantly we will have to take account of divergent opinions of the future, so that we have variances of expectations. When we set this out in probabilistic form we will see that (on certain assumptions) 'the future is the present squared, and the present is the square root of the future'. The main point of such a model is to see how volatile these relationships can be.*



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8. Separating Medium Of Exchange And Store Of Value

Hoarding instability rests on the Quantity Equation; throwing money into circulation or pulling it out in response to value changes leads to price effects that intensify those very incentives. The value changes in question are the changes in *the value of money being held as an asset*. Something like this happens with convertibility too; we fear that the (paper) money we are holding will lose value, so we turn it in for metal, and this act does drive down its value further. We find this pattern also in the futures instability. Wicksellian instability likewise leads to intensification of the incentives that caused the movement in the first place. In each case there is positive feedback, accentuating the incentives that started the process. The relationship is pro-cyclical.

However, there are other elements at work here, too. Uncertainty, in Keynes's sense, means that decisions based on expectations are likely to be unstable. Investment, for example, depends on expectations of future sales and future costs. These cannot be known with any reliability and, since historical cases are always at least partly unique, frequency pools cannot be established as would be needed to calculate probabilities. And one of the costs will be future interest charges, and, again, the future state of bond and security markets cannot be predicted. Thus investment relationships are likely to shift suddenly and unpredictably.

Which leads us to Capacity Exchanges. The basic idea underlying the movement to develop Capacity Exchanges is to provide an institutional framework for exchange, one that focuses on EXCHANGE, without the distractions brought on by the fluctuating value of an asset which is used in the process of exchange. The aim is to provide a simple and inexpensive process, minimizing uncertainty and the costs of uncertainty, effectively separating the medium of exchange from money as an asset.

To make this separation requires creating two distinct spheres of monetary activity, and a great deal of financial regulation can be understood as efforts to seal off commercial and producing activities from speculation. The medium of exchange should be for paying



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income and purchasing output. It will be a trading vehicle, a form of credit, but it will not last; if it is not used within a certain period of time, it will be extinguished. To renew it will require paying a penalty or a tax. It cannot be used to buy assets, capital. Nor can it be loaned as a long-term asset, since it extinguishes. In earlier times, tracking taxes and extinguishing credit could become complex, but modern communication and information systems make it possible to track transactions in ways and to a degree of detail never before possible.

On the other hand there will be asset money, which should not be used to buy goods and services or to pay income. It can be held strategically and it can be used to purchase securities and other assets, including real assets. It can be loaned or made the collateral for a loan. But it should not be allowed to enter into any non-capital transactions. There are many technical details. Dividends and interest can be paid in current money, as part of current income, but capital gains must be in asset money. Other problems include executive bonuses. Stock options can only be sold for asset money. To curtail speculation Tobin taxes, or variants, may be helpful, curtailing not only speculation, but also churning and excessive hedging.



What Is A Capacity Exchange?

A membership-based system within which companies can trade available capacity in the form of goods, services and infrastructure within and across industries, using common tender as a medium of exchange.

Separation of current money and asset money also separates and compartmentalizes the bond market. There will be two rates of interest and two kinds of monetary policy. It can immediately be seen that this addresses – indeed, solves – a serious problem. If the Fed establishes a low interest rate and encourages easy credit conditions, in order to promote economic activity and job growth, it also thereby sets the stage for asset bubbles. As Greenspan said, the job of the Fed is to take the punch bowl away just as the party is getting going. This may help to control asset bubbles, but it means that there will not be an employment boom. But if the market that supplies current funding for production and for inventory is separate from the market that manages large capital investments and underwrites takeovers and other major deals, then there need be no clash of policies. Asset bubbles and predatory practices (e.g. trading on own account) can be controlled, while productive investment is encouraged.



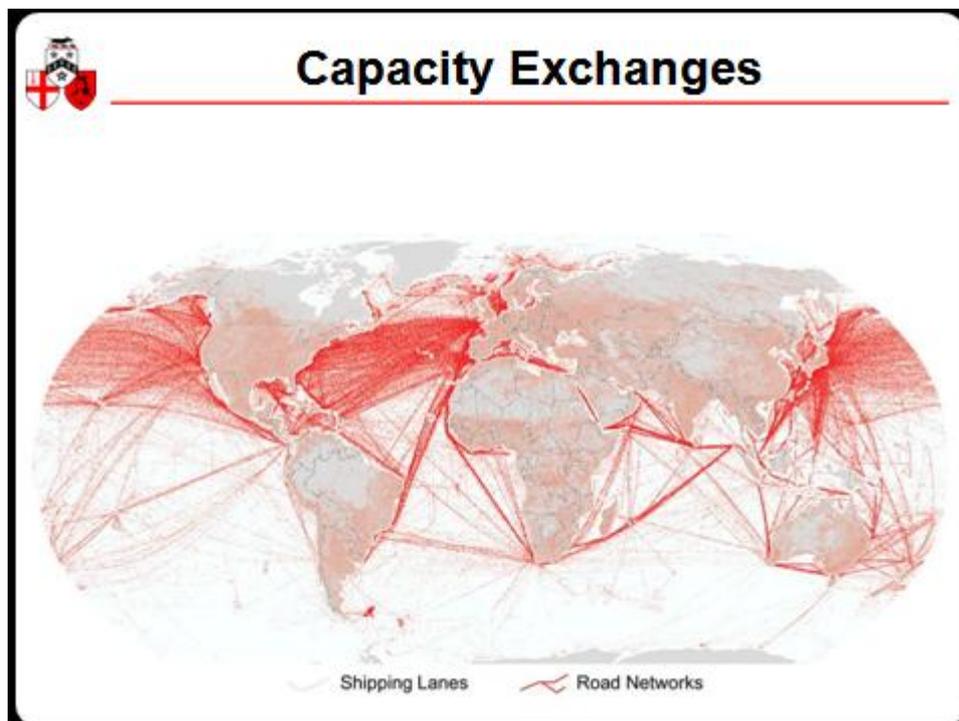
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The case for fiscal policy is very similar; a stimulus will promote demand and increase employment, but it will also raise the degree of optimism and tend to generate bubbles. Tight fiscal policy may help to control speculation and bubbles, but it will result in high levels of unemployment.

It is not hard to see that the separation of medium of exchange from the store of value, or asset, aspect of money might have some real advantages in providing useful policy tools and regulatory opportunities, especially in curtailing socially unnecessary securities production and trading. However, this will take a lot of careful work on detail; what can be shown in a model is only suggestive.

What should be clear is that there is unlikely to be any support at all for such a program within the financial community. Cutbacks in government programs for the poor and middle class are one thing, but cutbacks and austerity for the financial world is quite another!

However, surprisingly, proposals for just this sort of separation have arisen from a completely different quarter: the business community. For a long time small and medium-sized businesses – and some large ones, too – have engaged in various forms of barter, in order to avoid Forex risk, hedging costs and other financial costs, as well as because it is often difficult to obtain credit or enough credit. In the process they frequently create units of credit, or common tenders. But now this movement has begun to take hold in the corporate world. Global corporations can see a lot of advantages to trading in an artificial currency that enables participants in a market to make deals and exchanges without having to trade in Forex, take out costly loans, or engage in hedging. Or waste time looking for adequate credit. A movement has emerged to create Capacity Exchanges, in which something like assisted multilateral barter can take place, drawing on an artificial currency to smooth out transactions and ‘make change’.



A long tradition in British economics – Tooke, Fullarton, Thornton, and more recently, Sir John Hicks – has held that the means of exchange can arise directly from the activity of trading itself. As long as buyers and sellers ‘cancel out’ in the total, as they must in



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equilibrium, trade credits can be issued, which, circulating, will enable all transactions to be completed. Such credits are a pure medium of exchange; they store value, of course, but only for the time of trading. And they arise free of interest, independently of banks and finance. In principle, then, money can be split in two – the medium of exchange can be separated from money as an asset. This has always been a possibility, but now, with high-speed computing and the Internet, it is a practicality. Exchange can be carried out without having to rely on the system of finance – the moment could not be more opportune. Moreover, it is estimated that already about 20% of the world's merchandise trade of over \$18 trillion is carried out by non-monetary means; approximately 70% of the Fortune 500 are thought to engage regularly in non-monetary trading.

In addition to the benefits accruing to the companies engaged in such trading, there may be economy-wide benefits as well, if the level of such trading is large enough. Capacity trading with a special purpose currency appears to offer two kinds of stabilization – of prices on the one hand, and of output and employment, on the other. On price, inflation in the regular economy will raise money prices, but it will generally not have large effects on *relative prices*. But the prices on Capacity Exchanges are the relative prices, normalized in the special purpose currency of the Exchange. So inflation will not spread to the Exchanges; on the contrary, inflation should tend to increase their attractiveness.

The case that a Capacity Exchange tends to stabilize employment and output can be demonstrated by looking at supply and demand⁸. In a boom, trading on the exchange will

⁸ *The stabilisation arguments are also technical but we can sketch them out here. First, consider supply and demand. By 'supply and demand' we mean, of course, the proposed actions of members of the exchanges – business firms, offering capacity to other firms, demanding products and services from each other. (The prices on the Capacity Exchange will be deviations from 'normal levels', basically those of the outside system, adjusted for cheaper credit.) Then we examine how behaviour will tend to shift, in response to changes in key macroeconomic variables in the outside system. In a boom, capacity will be directed to production for the outside system - sellers prefer to sell in the regular economy; hence less will be offered on the Capacity Exchange unless higher prices are paid. (Offer curves will shift in and up.) However demand will be affected differently; buyers will be just as happy buying on the Exchange. In a boom, demand at every potential price level in both regular markets and capacity exchanges will be up. Buyers are buying more in both markets. In effect the normal level of activity has increased, but, while the Sellers shift their Offers away from the Capacity Exchange, the buyers do not. The position of the Offer curve, as indicated by its intercept, depends on the level of activity in the outside economy. All levels of sales on the Exchange will have to be at a higher price; so even to make any sales at all on the Exchange will require a higher price. By contrast the Buyers tend to be indifferent; they will buy either on the Exchange or in the regular economy at the same price. (The position of the Demand curve, as indicated by its intercept, thus depends on the productivity of the good or service in question in the demanding firms' activities, which will not be affected by whether or not the outside economy is in a Boom or a Slump.) But in a Boom the Buyers are already doing well, and don't have to scrimp; they will not be so sensitive to price changes. They will tend to buy what they need, and will not be much tempted by price cuts. So the slope of the Demand curve will become steeper; that is to say, in a boom a change in the common tender price has a smaller effect on demand. In a boom the effects on sellers and on buyers will tend to be offsetting, so that prices will not change. In a slump, Offer curves will shift out, but demand curves will become flatter; a change in price matters more, so has a larger impact. The flattening and steepening of the demand*



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be reduced (compared to a 'normal' level); capacity will be switched to the regular or outside economy. In a slump, however, trading on the Capacity Exchange will increase. This conclusion is strengthened by the consideration that, in a crisis, the special purpose currency will still be available, so companies will not be constricted by credit shortages, or high interest rates. International currency crises likewise will be by-passed by using the special purpose currency.



Summary & Conclusion

Money is a unity of accounting, medium of exchange and store of value

But the medium of exchange function and the store of value function don't work well together because together they set up positive feedback loops that can create bubbles or crash markets

If the medium of exchange could be separated from the store of value, these instabilities could be controlled

Technically, this separation could be done today, given the advances in communications and information technologies

But not politically...

However, the non-financial private sector is interested in getting rid of unnecessary costs - Forex costs, hedging, costs of finance

Hence, current proposals for Capacity Exchanges

Conclusion

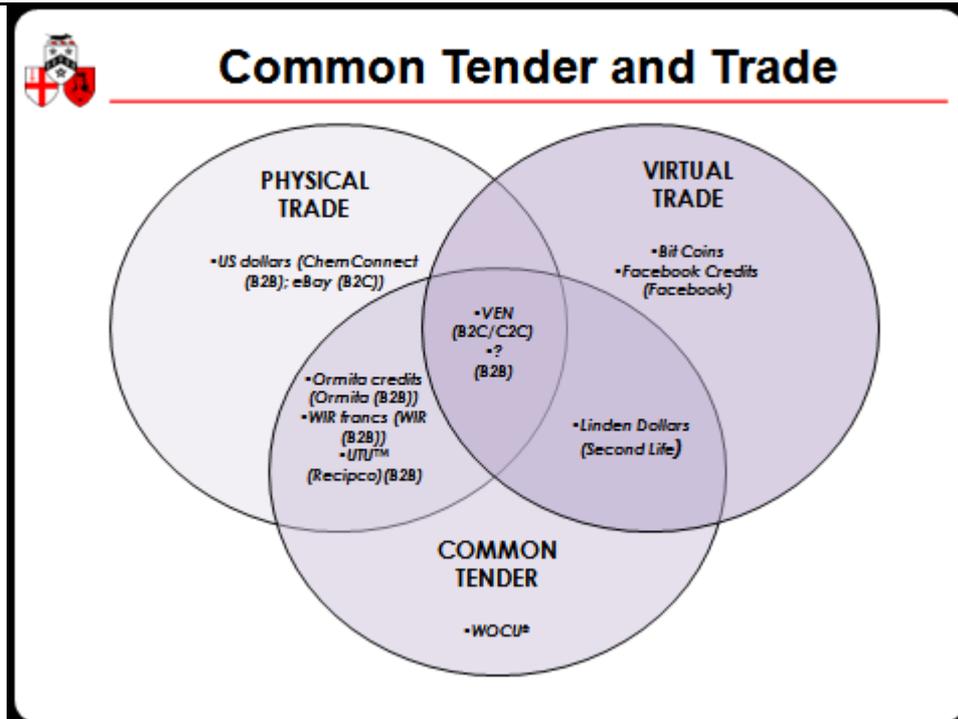
Money developed in conditions that did not provide reliable enforcement of contracts, so transactions could not be closed with credits expressed merely in accounting units. An article of actual value had to be provided, and it had to be readily divisible, durable, widely acceptable, and easily transported. So from the start money was a 'store of value' as well as a medium of circulation. But as the economic system developed, money as a store of value became both a means and an object of speculation, and this led to instability in a number of different forms. To correct this, regulations were developed but at best have proved only partially successful. Further regulation faces strong opposition, and may well backfire or lead to unintended consequences. But remarkably, the business world is taking a different route, namely developing institutions of exchange that provide a medium of circulation generated from the transactions themselves.

[Edward J Nell's lecture ends]

curve tends to offset the shifts in the supply curve, and while quantities traded will reflect the boom and slump respectively, prices will tend to remain stable.



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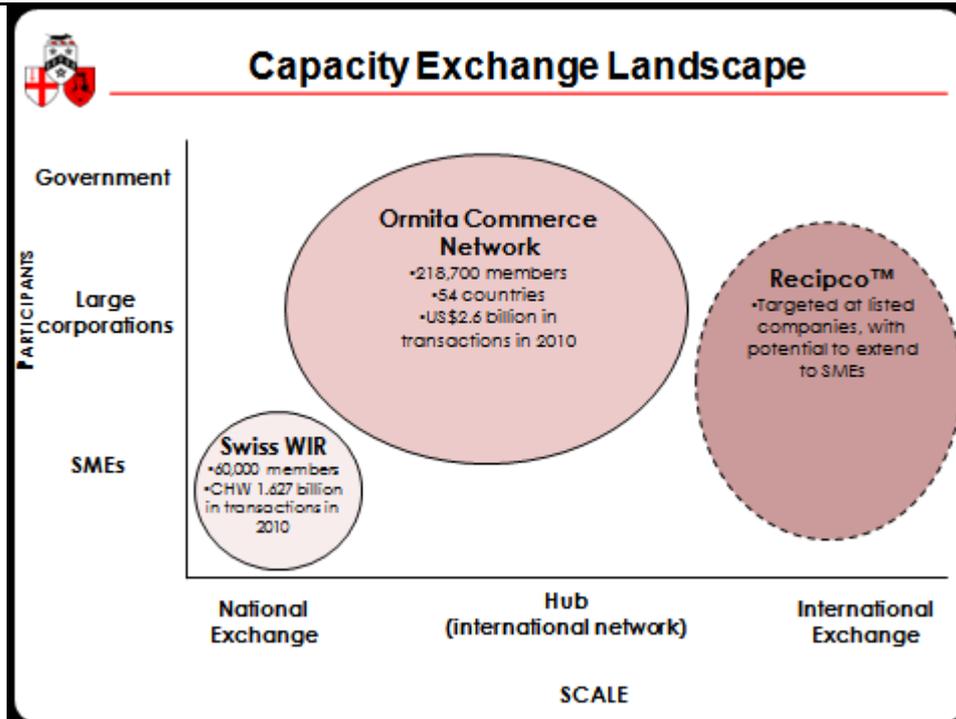
Edward's core point is that money as presently constituted is an unstable mix that contains the seeds of future crises. This is a complex argument, and we haven't the time to address numerous ramifications, let alone bring in the nature of fiat currency or leveraged banking. Edward ends on a strong point about Capacity Exchanges. Did our research support him?

Significant local community exchange movements include the anglo-saxon Local Exchange Trading Systems (LETS), the French SEL (système d'échange local) and the Argentinean Global Trading Network of 'barter clubs'. Two trade bodies – the International Reciprocal Trade Association (IRTA) and the National Association of Trade Exchanges (NATE) – are attempting to self-regulate through lobbying, professionalization of trading and certification, but common tender standards are weak. However, while people are rediscovering creating their own money, the invention is not new. In the early 1930s in America alone, over 1,700 scrip currencies emerged to provide local credit. In 1932 in Austria, there was the famed "Wörgl experiment" with Freigeld that influenced the creation of the Swiss WIR in 1934. Today in the UK, everyone knows of some new local community currency. Alternative currencies were emerging in virtual worlds long before the crises. While noting the older Linden dollars of Second Life, we have seen some interesting headlines this year on new currencies such as Bitcoins or Facebook credits. There have been attempts, such as the Ven, to combine online and real-world markets, but it is notable that as yet no strong B2B non-fiat-currency has emerged.

Yet many Capacity Exchanges don't last. We found evidence of tens of failed exchanges. People in the industry reported much higher figures going into the hundreds - tiny exchanges that failed to reach critical mass, or exchanges that issued more common tender than was sensible, and collapsed through loss of trust, often in clouds of scandal.



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To help you understand the landscape, I'd like to highlight two examples of successful, large scale Capacity Exchanges and one interesting proposition. The first example well worth highlighting is the Swiss WIR. WIR is a cooperative bank facilitating multilateral trading between, and extending credit to, member SMEs. Founded in 1934, the WIR Wirtschaftsring-Genossenschaft (economic circle cooperative) was set up as a result of the adverse economic and monetary conditions resulting from the Great Depression. It was conceived as a way to stimulate trade and create purchasing power between participants, primarily SMEs, thereby enabling local economic growth and reducing unemployment.

WIR Bank first acts as a 'central bank' issuing its own currency – the WIR franc (CHW), which is pegged to the Swiss franc (CHF) and released to members through loans and mortgages backed by collateral, plus the willingness of a community to accept the money as a payment for goods and services. Second, WIR Bank acts as a 'commercial bank' subject to relevant banking regulations in Switzerland. Third, WIR Bank acts as a 'trade facilitator' by providing the WIR platform through which WIR members exchange goods and services with each other using the WIR franc as a partial or full means of payment. Today, 60,000 SMEs, one in five, in Switzerland is a WIR member.

A more recent arrival is Ormita Commerce Network. Established in 2001, Ormita was originally a software provider for corporate and retail barter trade platforms, but subsequently acquired some of those platforms and now operates a franchise model allowing members to trade across an international network of exchanges. Ormita's worldwide network handles annual transactions worth over US\$3 billion for well over 200,000 members, including many governments.

One of the report's sponsors, Recipco, has an interesting proposition, which Edward has helped develop, on how to make Capacity Exchanges work better. Recipco's offering differs from conventional retail and corporate barter in that it focuses on 'global non-monetary trade', with the aim of attracting Fortune 500 companies. Recipco proposes a robust form of common tender – the Universal Trading Unit (UTU) with a member-backed facility – RecipcoClear – to ensure integrity and liquidity of the UTU. Contrary to most



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common tender, the value of the proposed UTU is not defined by the cash-equivalent value of the goods and services traded in any transaction, but by an algorithm that takes into account weightings of five major sovereign currencies.

	Option 1 Small - several UK exchange start-ups	Option 2 National - UK capacity exchange	Option 3 Multinational - capacity exchanges based in the UK
Direct benefits			
Exchange jobs	25 to 100	70 to 300	200 to 500
Increased credit	£20 million to £250 million	£15 billion to £80 billion	£25 billion to £160 billion
Wider markets - increased sales	£2 million to £25 million	£5 billion to £20 billion	£10 billion to £60 billion
Capacity utilisation	£250 million to £3 billion	£8 billion to £20 billion	£50 billion to £200 billion
Participants' jobs	100 to 200	50,000 to 150,000	200,000 to 650,000
Hedging savings	nil	nil	£5 million to £30 million
Wider benefits			
Improving in-kind donation effectiveness	unlikely	likely,	likely
Less volatile economy	nil	£50 million to £1 billion	£100 million to £2 billion
Sustainability benefits			
Reduced wastage	small	high	high
Reduced storage	nil	small	small

Constrained credit supply will lead businesses to seek new credit sources in order to maintain trading activity. A firm is built on its ability to contract credibly on its future capacity to produce. Capacity Exchanges can transform trade credit into pledgeable income. If that pledgeable income is additional to government credit, then the overall system will be more diversified, countercyclical to sovereign currency credit cycles, and possibly more resilient, e.g. the documented and researched Swiss experience with the WIR. Capacity Exchanges not only avoid instability problems, but to some extent actually provide some stabilizing pressures, as Edward points out.

So what might Capacity Exchanges mean for the UK? We examined three options. In Option 1 several Capacity Exchange start-ups are established in the UK. Several hundred SMEs trade on these exchanges at some frequency. Job creation is minimal, and other benefits are relatively small, but there is no reason to impede it. In Option 2 a leading national Capacity Exchange emerges in the UK, a UK WIR if you will. By 2020, such a national Capacity Exchange could increase credit supply by between £15 billion and £80 billion, generate between £5 billion and £20 billion of annual increased sales and with some bold assumptions create between 50,000 and 150,000 jobs. A Swiss model scaled up for the UK is exciting. In Option 3 several multilateral Capacity Exchanges operate internationally but are based in the UK due to a favourable climate. The breadth and scale of formally-recognised trading in London includes foreign exchange, shipping, capital markets, commodity markets and insurance markets. London should be an ideal location for Capacity Exchanges. A highly optimistic estimate might be that, if a hub of Capacity Exchanges in London took a 20% share of an assumed £160 billion multi-sector global Capacity Exchange market, then based on a rough 5% operating cost ratio the hub could comprise operational businesses with turnover of £1.6 billion creating as many as 7,500 jobs to 15,000 jobs. It is important not to overstate the benefits that a Capacity Exchange might bring. The only long-lived, multilateral reciprocal trading system of scale on which



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to base conclusions is the Swiss WIR, while most other efforts are small or short-lived or both.



When banks aren't lending, these exchanges create credit. Capacity Exchanges that issue common tender are creating credit money. There is another credit crunch joke doing the rounds – “The chancellor goes on television: ‘I have good news and bad news. The good news is, we have enough money to create a vibrant economy. The bad news is, it's still out there in your pockets.’” Capacity Exchanges have taken this joke to heart and try to generate trade by providing the trust and confidence needed for real exchange. As Edward Nell notes elsewhere, “To the extent that uncertainty over promises can be eliminated, credit can replace money.” [Nell, 1998, page 159] You can see why Edward is intrigued by Capacity Exchanges. Because of the way they reduce some financial costs and some financial instability, by providing a medium of exchange and thus enabling the separation of the ‘store of value’ function from the ‘medium of exchange’ function of money, Capacity Exchanges do help to Take Modern Money Apart, and put it back together again in two more stable systems.

Capacity Exchanges are clearly at an early stage of (re)development, but appear to have the potential to increase trade and growth, and to provide wider economic and social benefits. As we point out in Long Finance, the key question for our times is “when would we know our financial system is working?” For Edward, one indicator is when there is an appropriate amount of credit for sustainable commerce. Another is when we have an appropriate way to store value over the long term. Capacity Exchanges might just provide that additional credit, and enable us to separate money's two functions so they work better for us.

Thank you.