A New Financial Architecture based on a Global Carbon Standard

Molly Scott Cato

Abstract: The present crisis in the global economy is more serious than anything that we have witnessed since the 1930s, yet policies designed to tackle it are limited and inadequate. Those that have been proposed, in terms of fiscal stimulus, rely on an outmoded view of the economy, where money can be used to force economic growth. Since the recognition of planetary limits such a strategy is no longer admissable. Instead, we need a global system where countries agree to limit their carbon dioxide emissions: this paper outlines the Contraction and Covergence model, which proposes that countries do this within a framework of equal per capita emissions for all global citizens. However, within the existing financial architecture such a policy would do nothing to prevent the US from continuing to print dollars and to use these to gain an unfair share of world production. Other countries controlling reserve currencies would also be able to avoid strict limits. The policy answer proposed is that of the Ebcu (environment-backed currency unit)—a neutral global trading currency to be used by countries that have also signed up to the C&C model.

Keywords: Financial crisis, credit crunch, Ebcu, Contraction and Convergence, climate change, Bretton Woods

1. *Introduction*

There has been much commentary over the past couple of years seeking historical comparison for the crisis we are witnessing in the global financial system. The consensus seems to be that this is the worst crash since that which began on Wall Street in 1929, depressed economies around the world through the 1930s and was only really resolved in the huge reflation that was brought about by the Second World War and the increase in global demand as a result of the destruction of goods that wars always bring (Galbraith, 1994). Following the war the victorious nations met at Bretton Woods to negotiate a system for global finance that would be stable and fair and would ensure prosperity. At this time most of the countries that now make up the United Nations did not even exist—they were still the 'possessions' of the Western industrialized countries, which, under the system of colonialism, also claimed to own their resources. It is little wonder that this system has failed to protect the interests of the states that have been born since 1945.

The system designed at Bretton Woods was flawed but managed to achieve nearly 30 years of stability and steady economic growth for those in the wealthy nations of the West (the system and its consequences, with reflections on its relevance of our current predicament, are well described in an article available online: Davidson, 2008). It relied on nations basing their currencies on the dollar standard, whose value was itself backed by gold. It was Nixon's decision to cut the link with gold to fund the Vietnam War (Douthwaite, 1999) that finally broke the Bretton Woods system and put the world on the slow but inexorable path to another global crash, a destination we arrived at some time during 2008. The question is whether we can find a new global financial architecture that will have the advantages of the Bretton Woods settlement, but without the flaws. This paper argues for a such a system and one which, in addition, comprises a fair method for sharing CO_2 emissions and a new currency in which these emissions can be traded.

The paper builds on two other proposals which are under discussion in various arenas:

- Contraction and Convergence—a mechanism for reducing emissions and sharing them equally between world citizens (see more at: http://www.gci.org.uk/contconv/cc.html)
- Cap and Share—a system building on C&C but extending it to include a proposal for a system of issuing and trading in emissions permits, and a currency (the EBCU) to enable that trade (see more at: http://www.capandshare.org/)

If we could extend the second idea so that, over the next 30 to 50 years, a neutral, carbon-backed global currency gradually takes over from the unstable debt-based reserve currencies that have dominated the global economy since 1945, we may have found a way towards an equitable and sustainable global economy. The paper argues that the current financial crisis makes the creation of a stable and neutral international currency vital and increasingly urgent.

The paper is in two parts, which are then linked in the final section and the conclusion. Two separate discussions represent the two sides of the financial crisis—ecological crisis coin: the first relates to carbon trading schemes as a solution to climate change; the second describes the need for a stable, neutral global currency.

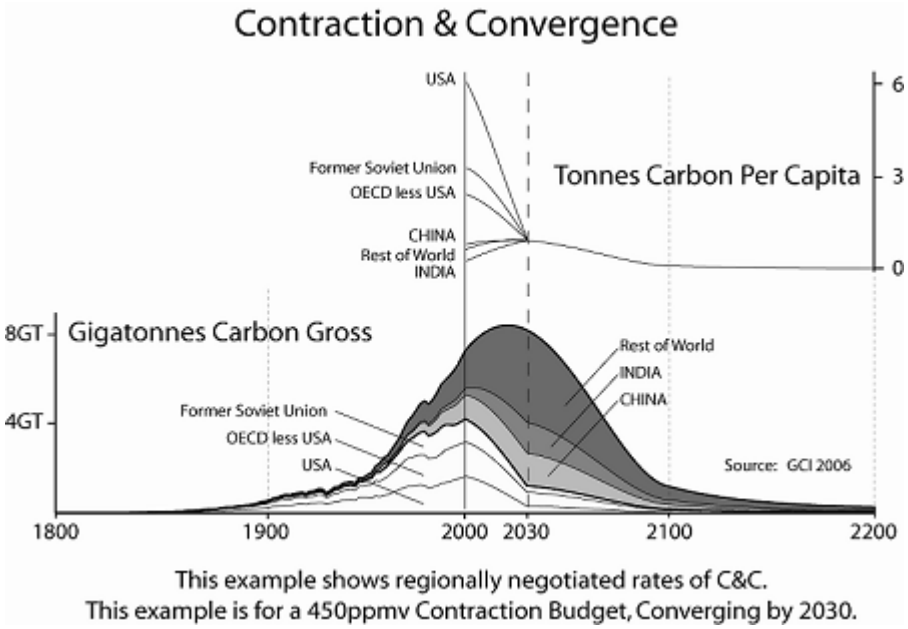
The following section provides a sketch of the two schemes that are proposed to address aspects of the interlinked crisis: Contraction and Convergence as a solution to anthropogenic climate; and Cap-and-Share as a means of sharing emissions fairly within nations. The second part of the paper provides a critique of the reserve currency system we have been living with and argues the need for a new, more stable global currency. It also suggests some ways of closing the gap between money and goods—or between the nominal and real economies—which is the root cause of instability in the financial system. Such policies of monetary management cannot be undertaken by countries in isolation, since investment funds and the speculators who control them can use their financial muscle to undermine them. Hence there is a need for an international agreement to enable domestic economic management, and this provides the focus for the next section. This reprises arguments made at Bretton Woods about the importance of a neutral currency and of balance in international trade before exploring the possibility that the neutral currency might be 'backed' by the global environment and what consequences such a design might have. The final section offers some conclusions and opens the political discussion about how the negotiation of this new financial architecture might be achieved.

2. Contraction and Convergence and Cap and Share

Contraction and Convergence is a proposal from the Global Commons Institute for how the Earth's atmosphere (the 'global commons'[1]) should be shared, which is another way of saying how the right to produce polluting carbon dioxide should be distributed (Meyer, 2000). It is a simple plan to cap total emissions at the level suggested by the best available science (relying on the Intergovernmental Panel on Climate Change[2]) and then to share these equally between all the world's citizens so that everybody receives a carbon credit. Figure 1 illustrates the Contraction and Convergence model, indicating how emissions have risen and how they countries will be expected to reduce them over the next 50 years. The contraction is this decline; the convergence is the movement towards global equality in per capita emissions.

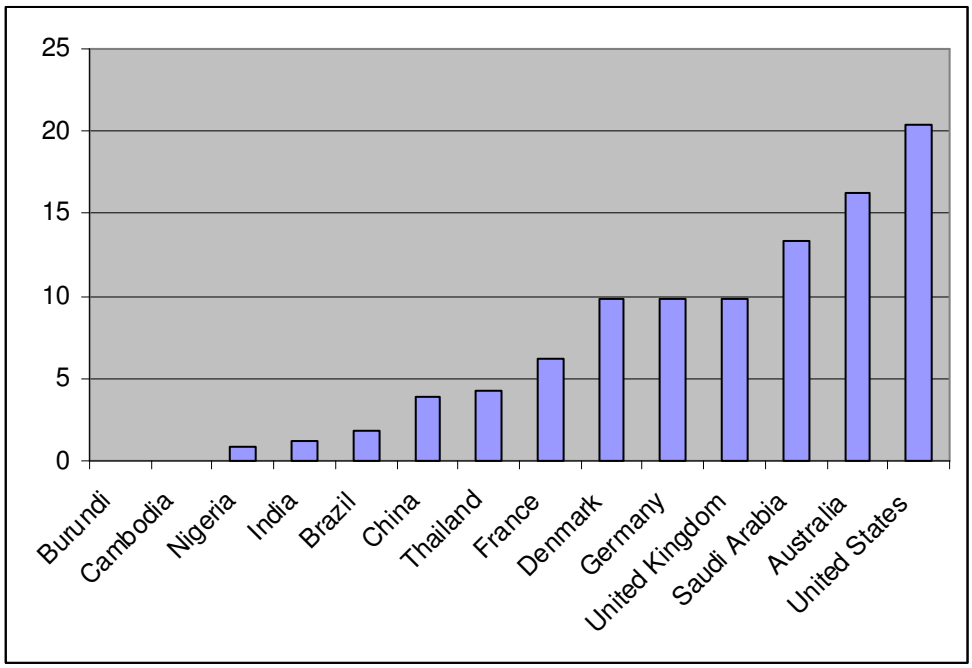
Comparisons of the ratios of various countries' emissions at present and under an equitable regime are presented in Figure 2 and Table 1. The figure indicates that countries have not significantly reduced their per capita emissions since 1990, and that in the case of some, emissions are still increasing. The table makes it clear which countries can expect to gain and lose under the C&C regime.

Figure 1. *Illustration of the Contraction & Convergence Model for Global CO2 Emissions Reductions*



Source: Thanks to Aubrey Meyer and Tim Helweg-Larsen of the Global Commons Institute for producing and giving permission to reproduce this figure.

Figure 2. *Emissions per capita for a range of countries in 2004* (tonnes of CO_2)



Source: UN Statistics Division

An econometric analysis of the C&C proposal (Böhringer and Welsch, 2004), found that such a system combining per capita entitlements with trading was 50 per cent more efficient in terms of reducing CO2 emissions than national limits without trading. The tradable permit regime allowed developing countries to improve their economic welfare, partly as a result of improvements in the terms of trade (resulting from the imputation of carbon cost to production processes and transport).

Table 1. Carbon dioxide emissions per capita, 1990, 2000 and 2004 for various countries (tonnes of CO2)

	1990	2000	2004
Burundi	0.0341	0.0374	0.0291
Cambodia	0.0465	0.0416	0.039
Nigeria	0.4803	0.7185	0.8263
India	0.793	1.104	1.2023
Brazil	1.4023	1.8582	1.8001
China	2.089	2.6295	3.8393
Thailand	1.7645	3.3215	4.2849
France	6.413	6.0409	6.1608
Germany	12.3505	9.7042	9.7881
UK	10.1281	9.8543	9.7934
Denmark	9.6858	8.6761	9.8013
Saudi Arabia	15.6837	13.0743	13.3811
Australia	16.5139	17.647	16.272
United States	18.8256	20.9293	20.3792

Source: UN Statistics Division.

While the idea of per capita shares appears simple and straightforward there has been discussion about exactly what 'equity' would mean in terms of CO_2 emissions (Cazorla and Toman, 2000). Should countries with larger historical CO_2 burdens be allowed lower rates of emissions in future to compensate, for example, or should countries whose citizens have particular requirements for fossil-fuel use (say because they live in colder climes or have more elderly as a proportion of the population) be given larger shares? Countries which rely particularly heavily on fossil fuels to maintain their current standard of living make a case for 'grandfathering rights' to allow them a larger percentage share in the future to match that they have enjoyed in the past (as in the recent case of Poland in the EU negotiations, see Tran, 2008). Others (e.g. Long, 2006), have argued that the 'minority world' (or developed) countries owe debts to the 'majority world' countries for the damage that their historic emissions have already caused, which makes pure equity in fact unjust. These arguments are significant and will play an important role in the negotiations that will secure an international agreement. For the purposes of this paper, however, they are a second-order concern and for this reason 'equity' is here interpreted as meaning exact equality in terms of carbon rights per individual citizen.

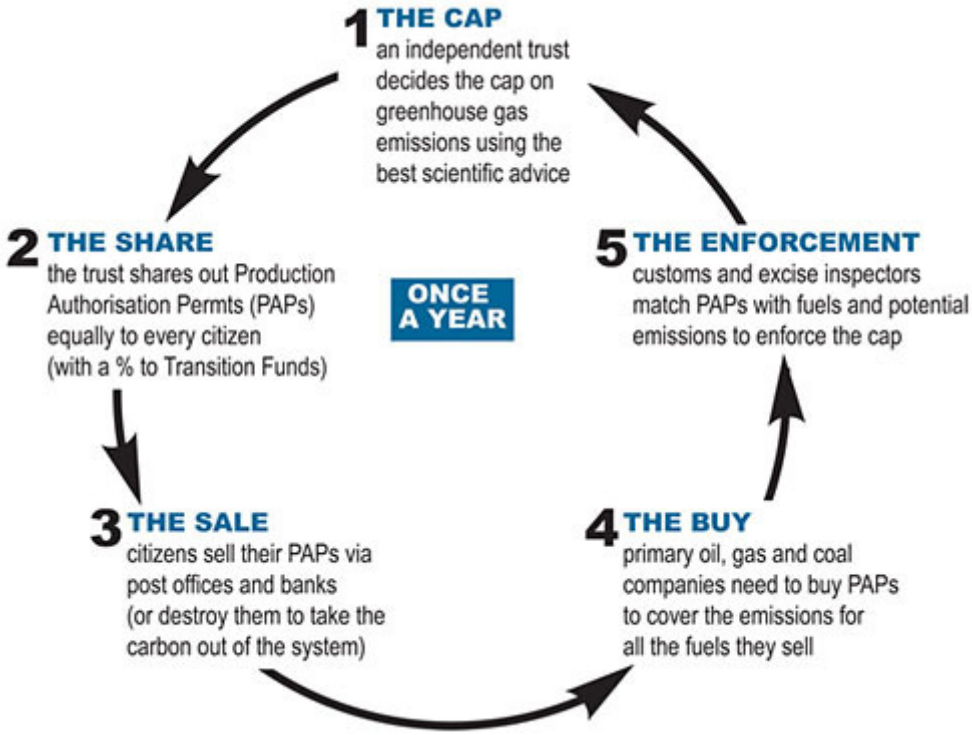
The cap-and-share proposal (henceforth C&S: see Feasta, 2008) operates within the C&C framework but proposes a mechanism to facilitate the exchange between countries that produce too much CO_2 and those which have not yet reached their limit. It proposes that each country is allocated an emissions tonnage share based on its population. This should then be translated into permits to produce CO_2, which would be allocated to citizens who could then decide whether to sell them or destroy them (thus removing potential CO_2 from the atmosphere). The other side of the market for CO_2 will be the purchase of these permits by energy companies: the scheme is 'upstream' in the sense that it controls carbon where it enters the economy, i.e. at the point that suppliers of fossil fuels extract them from the Earth. Without a permit any extraction of fossil fuels would be illegal.

This scheme has been criticised on the basis of the complexity of the permit system. An alternative is Barnes's (2001) idea of the 'sky trust', which is similar, but governments themselves auction the permits and transfer the income generated to citizens via a Citizens' Income scheme. Both types of scheme can be criticised on the basis that there will be problems with enforcement and illegal extraction and trade in permits, as well as forgery, but these are no more serious than for other carbon trading schemes.

So far we are sticking fairly close to the original proposals made by FEASTA, but there is a problem: that of the perverse incentive of taxing 'bads'.[4] As CO2 emissions decline, a significant source of fiscal revenue will decline with them. In democratic, welfarist states we would hope that these revenues would have underpinned the introduction of a form of Citizens' Income as they are either sold by the state and the proceeds shared on a per capita basis (Barnes, 2001), or issued to citizens who can then choose whether to sell or destroy them (Feasta, 2008). People will have grown used to relying on this income, especially those who are carbon-frugal—they need to have a continuing incentive to reduce their consumption and engage in pro-climate behaviour. The value that governments can share through cap-and-share schemes is a windfall gained by commodifying the most critical global commons, the atmosphere, and selling the right to utilise it in the form of emissions permits. As this reduces, it could be substituted by the other crucial global commons, primarily the land itself, via a land tax. The proceeds of this tax could support the

continuing payment of CI, while exemptions could be made available to those using some of their land for sequestration.

Figure 3: An Illustration of the Cap and Share model for the distribution of the right to produce carbon dioxide



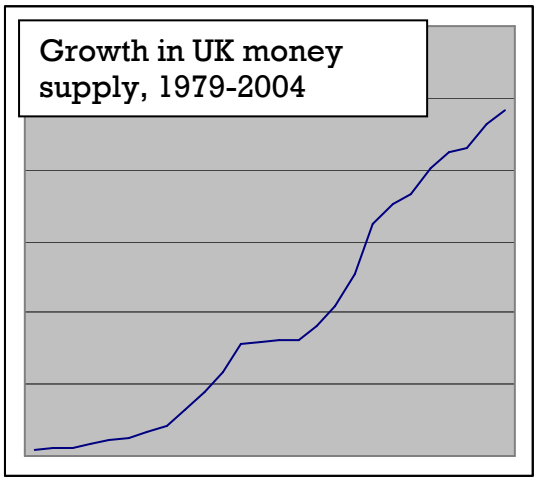
Source: Cap and Share website: www.capandshare.org.

Lengthy and complex discussions will no doubt ensue about the precise design of the trading system that will enforce a cap on CO_2 emissions. For the purposes of this paper the more important question is, what currency will that trade take place in? However just the initial allocation of permits, if the money that is acceptable to buy and sell more is neither fairly allocated nor independent of political control by a nation or bloc of nations, the permits to pollute will eventually follow the money and a just outcome will not be achieved. Thus carbon trading cannot be made equitable without addressing the inequities in the current global financial regime. The following section describes the instability of the current financial system which has led to the current crisis. A system designed for stability and neutrality is necessary to underpin a global carbon trading regime.

3. *Why do we Need New Currencies?*

To grasp the importance of creating new currencies requires an understanding of the nature of money creation. This is a discussion fraught with confusion, even amongst leading politicians and bankers, and rewards considered study, without which any proposal appears senseless (Rowbotham, 1998; Robertson and Huber, 2000; Hutchsinon *et al*. 2002; Pettifor, 2003). In his recent book *Capitalism as if the World Matters* (pp. 190-1) Jonathan Porritt talks about 'the utterly perverse way in which money supply is managed in almost all countries'. He continues:

about 97 per cent of the UK's money supply is created by commercial banks more or less out of thin air as interest-bearing (profit-making) loans; the remaining 3 per cent is created debt-free by the Bank of England and the Royal Mint as bank notes and coins. The banks in the UK make about £20 billion a year in interest from this arrangement. . . The money supply created in this way is not linked to real resource use or to the amount of goods and services in the national economy—it is based entirely upon the banks' commercial judgement about the ability of an individual or an enterprise to repay their loans. The more money there is, the more debt there is; as the money supply increases, so does a nation's indebtedness.

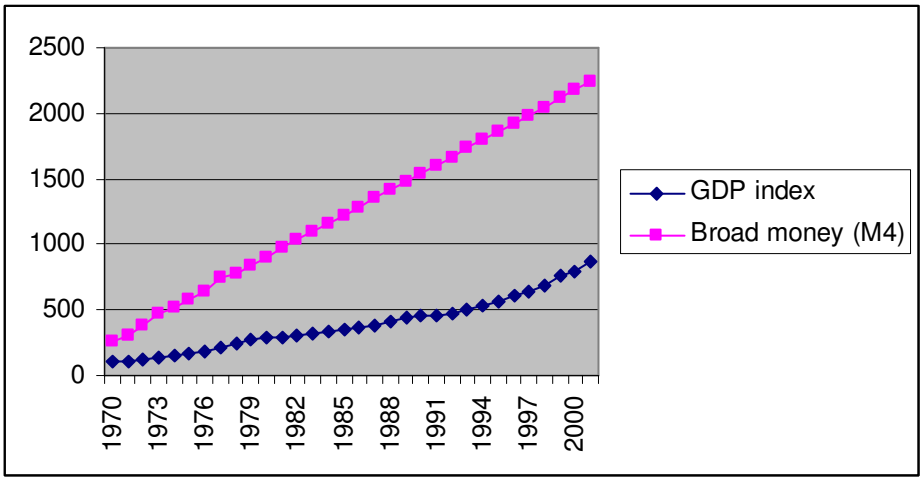


The global economy has become—increasingly rapidly since the total deregulation of financial markets in the 1980s—dominated by finance rather than production (Hutchinson *et al*., 2002). The gap between real physical value and monetary value creates instability and this is the cause of the failure of the financial system labelled 'credit crunch'. Although lending has become increasingly reckless, when the distance between the known value of assets held by a bank or building society and its nominal monetary value becomes unfeasibly large, other financial institutions become unwilling to lend to it. Once this happens the upward spiral of bank lending goes rapidly into reverse: financial players call in their debts and refuse to lend. In a global economy where almost all money is created as credit/debt, once confident in the banking system vanishes and the ability to create more money in this way goes with it, the amount of available money rapidly shrinks, making economic activity impossible. This is the credit crunch, and it is difficult to see a way out of it that does not involve major revisions to the global financial architecture. Evidence that this is so can be found in the desperate strategies being pursued by (especially) US and UK politicians to prevent the collapse of the system—if things were not terminally serious we would hardly expect to see a Republican President pouring $1trillion into the financial system (Milmo, 2008) or the UK trying to sell nearly £150bn. worth of gilts in just one year compared with an annual average of around £20bn. (Field, 2008).

So the first step towards stabilising the financial system will be a rebalancing of the nominal value that financial institutions, businesses and households have on their balance sheets, i.e. accounted value, with the real value they hold in terms of assets. This is similar to the gap between money and GDP, which has accelerated as the bubble has expanded (see Figure 4). Of course, this is always a fluid picture, since at present the value of assets themselves is declining rapidly, but some attempt to bring the lines illustrated in Figure 4 closer together will reduce the financial instability. How can this be achieved? Historically, when governments still ran economies rather than leaving them to their own devices, they would have had tools at their disposal to begin to manage the domestic financial system. There are two approaches that can be taken directly to close the gap illustrated in Figure 4: reducing the value of money via a managed deflation and increasing the value of goods via inflation. A third possibility is to reintroduce some form of credit and exchange

controls so that government intervene directly rather than relying on market mechanisms.

Figure 4. *Growth in Broad Money (M4) Compared with Growth in the Economy (GDP), UK, 1970-2001*



Source: Author's graphic: GDP data from UK Office for National Statistics; M4 date from Bank of England.

A direct means of closing the gap would be a 'managed monetary deflation'. There is little experience of such a process in developed Western economies in recent economic history, although both France and Italy experienced serious dislocation between their monetary and real economies in the period immediately following the Second World War. Casella and Eichengreen (1993) explain this inflation as a consequence of the struggle over value in the economy between labour and capital, which also resulted from the dislocation between productive capacity and the monetary capacity of the economy that arising out of the War. Its solution was effected by a *deus ex machina* in the form of the US government and its Marshall Plan goods, which soaked up the excess demand, on condition that Communist parties were excluded from government in the two countries. Such a solution seems implausible today, when the US is suffering as badly as the other developed economies, and when the problem has been an excess rather than a dearth of cheap consumer goods.

If there were international agreement between the main global players in the world economy, or even those countries that control the reserve currencies (perhaps excluding the US, which seems destined to follow its own route and has most to lose) it might be possible to introduce a co-ordinated deflation—in effect all the countries eliminating their mutual debts and downgrading the nominal value of monetary assets in their economies. In the past the practical problems this has presented have mainly been because of large cash holdings (as, for example, the problems faced by the French in their revaluation in 1960) but in an era of computer-based money this would be much simpler. However, any proposal of deflation automatically leads to the question, relative to what? In the world of floating exchange rates there is no fixed standard to adjust to. This is part of the reason for the suggestion of neutral international standard currency, which is made in the following section.

The political problems are another matter. The key point about a deflation is that people will lose apparent value. The advantage of a politically managed deflation

rather than a market free-for-all is that politicians will have some ability to control who loses. Just as the UK government guarantees individual savings of £50,000 in any one building society, so it could guarantee to exchange savings in pounds sterling up to a certain value and exchange these for a similar value (to the extent that this could be defined) in the new currency. Holders of larger quantities of cash might be recompensed only in some proportion, say 75% between £50,000 and £200,000; 50% up to £500,000 and 25% up to £1m. Beyond that money holdings would be lost. The problem with such a scheme is that the wealthiest (and hence most powerful) would lose most; the reverse of this is that the scheme would be equitable in that the poorest would be protected. And since there are many more in lower asset brackets (only 6% of estates reach the threshold of £312,000 for payment of inheritance tax (O'Neill, 2007) the majority of citizens would gain from such a policy.

In spite of what Stiglitz (2003) has called 'inflation paranoia', there may be a possibility of allowing a steady but significant inflation in the price of goods to rebalance the real and nominal economies. We are suffering from what we might term an excess of 'the wrong kind of money'—debt money that is owed by people who cannot afford to pay it back. We might also argue that the use of reserve currency power to exert a downward pressure on the price of imports during the boom years of globalisation may have created 'repressed inflation': letting this pressure for increased prices express itself might help to rebalance the real and nominal parts of our economy. In a paper that discusses the Russian financial crises of the 1990s, Lines (1998) quotes Hedlund and Sundström (1996: 895) with the inflation anxiety typical of academic economists: 'Wilfully unleashing inflation, in the hope that one will subsequently be able to contain it, may be likened to starting a controlled brush fire'. Their caution is justified in normal circumstances, in that price inflation and wage inflation can easily create a destructive and uncontrollable feedback loop, but in a time of impending slump, inflation does not seem as threatening as it once did. Some inflation may also be unavoidable in the near future, as the depletion of oil supplies leads to an increase in the price of all goods in our heavily oil-dependent economy.

The third possible route for managing the rebalance is credit controls: a tool of monetary policy that has fallen into disuse and almost out of memory, although until the 1970s they were used alongside interest rates as a means of controlling the amount of borrowing taken on by a nation's citizens in most developed economies. The last significant attempt to use such controls to influence economic policy was undertaken by President Carter in 1980 as an attempt to deal with the combination of high inflation and high interest rates. The author of a negative review of the experience concludes thus:

> Although no legislative'authority now exists for credit controls, the U.S. experience with such controls probably has not come to a close. This experience suggests that in times of rising prices and interest rates, there are always voices advocating the use of credit controls. And in such times, Congress grants the authority for such controls, despite its own earlier recognition of the ineffectiveness and economic harm that credit controls have caused. (Schreft, 1990: 49)

Interestingly, we have yet to hear such calls during the current crisis. Even were such controls to be introduced, they would do nothing to deal with the historic inflation of money value relative to real value in the economy.

Credit controls are incompatible with a system of free capital movements, and therefore need to be combined with exchange controls. Sweden was the last of the

developed European economies to fully manage its national monetary system under a policy which lasted for 50 years and represented a time of stability and prosperity for the Swedish people. The system was based on 'exchange and capital controls that isolated Sweden from the outside world financially, allowing the monetary authorities to establish a structure of interest rates and a distribution of credit according to political preferences, not according to market outcomes.' (Jonung, 1993: 347) During this period the Swedish government was able to maintain low interest rates enabling cheap borrowing for socially important investment, especially in housing.

The argument for a reintroduction of political management of credit in the UK today appears strong. Policies that are attempting to provide incentives to the credit market to function effectively, primarily the swingeing cuts in interest rates, are failing to be effective. The market is not responding to price signals—interest rates being effectively the price of money—and therefore is not functioning as a market in the classical sense. The reintroduction of some form of credit management by the government would be an admission of this fundamental market failure and a political commitment to prevent failure in the financial market destroying the real economy.

Jonung identifies the political and ideological conditions that were present in Sweden during the pre- and post-war years to support the political management of the monetary regime. The presence in the government of leading economists of the pro-Keynsian Stockholm School, especially Gunnar Myrdal, was a crucial component of the policies' success. The pro-market ideologues in power in the leading economies today represent a major block to any implementation of similar policies, no matter how effective they might be in practice. The end of the regime of monetary stability in Sweden (and elsewhere) can be traced back to Nixon's decision to cut the link between dollars and gold and the oil prices rises of the early 1970s, which created global turbulence that Sweden could not insulate itself from. This led to the abolition of credit controls selectively through the 1980s, until by 1989 Sweden opened its economy up to the world by removing exchange controls. As Jonung's concluding quotation suggests, Sweden's history may have something to offer us, if we feel the time is right: 'The life-cycle of credit controls has been described here. This description also suggests that the present monetary regime, based on a market oriented approach, may change again in the future. This will occur is and when the present regime is regarded as unsustainable.' (Jonung, 1993: 368).

This section has suggested three means by which politicians might seek to manage the rebalancing of the nominal and real value in our economy. Without such an intervention, and assuming that the policy being followed currently, according to which taxpayers subsidise large financial institutions and use their deposits to support a banking system that does not serve their interests, can only work in the short run, we face a future of disorganized adjustment, where inflation and bankruptcy cause a shrinkage of the real as well as the monetary economy—the opposite of what we want to achieve. This would share the pain very unequally, since those who earn less or are no longer earning would rapidly lose purchasing power. The distortions that would be caused in the real economy during the transition would create social and political crisis that could not be tolerated by democratic policy-makers.

The key point to notice is that all three scenarios are deeply unpalatable to those within our economy who control large amounts of capital. The abandonment of economic management since the 1980s has led to the interests of capital being assigned power in the market, at the expense of the interest of 'labour'—or people. Since what we are talking about here is, essentially, a mechanism to close the gap between the nominal value claimed by capital (bank deposits, shares, bonds, and so

on) and the real value of what people can create with their work using genuinely valuable resources such as land and plant, this will lead to a major shift in value from investors to ordinary people. It will thus inevitably precipitate a deeply political struggle.

4. *The Importance of Balance in Global Trade*

The international financial system is complex and closely interrelated with the system of global trade (for a detailed account see Rowbotham, 2000; Pettifor, 2006). The relationship revolves around the system of reserve currencies—the dollar, euro, yen and pound sterling—which countries are prepared to accept from one another, or from third countries outside the charmed circle, in settlement of external trade balances. This system clearly gives the countries that control these currencies a huge advantage in trade terms, especially the US, which negotiated that its currency should have the supreme advantage of being acceptable alongside gold as the international reserve asset, in face of opposition from the British delegation, at Bretton Woods. Although at that time the US undertook to maintain gold reserves to support the dollar, this agreement was unilaterally suspended by President Nixon during the Vietnam War in 1971, meaning that since that time, the US has been in a situation where it can print dollars and then exchange them for imported goods at virtually no cost (see Rowbotham, 2000).

In the global trade system as currently structured there are winners—those countries which control reserve currencies—and losers—those that do not. According to Rowbotham:

> Allowing the free market to determine the price of surplus goods, offered to corporate monopoly buyers based in powerful industrial nations, produced by underdeveloped nations, carrying massive debts, under pressure to export—this is bound to lead to low prices. In economists' jargon, instead of being a process involving mutual gain and 'equal exchange', there is 'unequal exchange' with the benefits accruing principally to commerce based in the wealthy nations (Rowbotham, 2000: 75-6).

The system has not worked entirely to the advantage of the US, since it is the explanation for that country's vast and growing debt. However, for US consumers it has been a bonanza. This is one side of the critique, since the ability to suck in consumer goods has led to unprecedented levels of consumption at huge environmental cost—a level of consumption that has then been followed by the other countries of the world. The other side of the critique is the poverty generated in the countries which are forced to sell their labour and their resources to support this level of consumption by the citizens of the countries with power within the global financial system. The only way they can finance their own development is through borrowing from Western institutions and then repaying these loans, increasing yet further the gap between rich and poor countries. From the perspective of green economics, we can never 'make poverty history' without renegotiating the terms of the Bretton Woods settlement. It is for this reason that writers such as Ann Pettifor (2006: 118) have turned their attention from campaigns like Jubilee 2000 to an intellectual critique of the global money system: 'IMF and creditor-led policies . . . encourage low-income debtor nations to export raw materials, undermine subsistence agriculture and local businesses, and turn their societies into markets for imported food and irrelevant

consumer goods.' A managed system for global trading would be based around attempts to ensure balanced budgets, so that countries could neither run large-scale surpluses or deficits (Rowbotham, 2000).

Rowbotham (2000) calls for a return to the policy of the Bancor, proposed by J. M. Keynes on behalf of the British government at Bretton Woods. Such a system would create a new non-aligned currency (Keynes called it banc-or or bank-gold) to be used for settling external debts. The trade system should be established with the aim of achieving balance between nations, with fines for those displaying trade balances or trade surpluses. That the currency should not be the preserve of a single country, or a small group of countries, is a basic requirement. A similar proposal for updating Keynes's plan for a neutral clearing system has been made recently by Davidson (2008), but this does not take account of the fact that Keynes was living in an intellectual world that predated the ecological crisis and the recognition of the need to end economic growth. We can build on Keynes's design but include in it a pressure to push the global economy in the direction of lower-carbon production and global equity if we tie it to the C&C proposal.

The C&C proposal is a good basis because it is absolutely clear about the two criteria for a policy response to climate change: global equity and a serious cap on emissions. However, it is rather vague about the mechanism by which those who are producing too much CO_2 exchange this with those who do not use their full quota, and what is exchanged. The reason for the vagueness is that, while the proposal has the benefit of simplicity and political appeal, it does not have a sophisticated approach to economics. As is explained below, if the C&C proposal were introduced into the globalised economy as it operates today, the USA would simply create enough dollars to buy the right to emit CO_2 as it currently does. For this reason, Richard Douthwaite proposed the creation of a new global currency he called the ebcu—environment-backed currency unit (Douthwaite, 1999). This is the link between the two halves of this paper. At the policy level, the need for a new, neutral global currency gives us the opportunity include carbon reduction as a design feature of that new currency. At the conceptual level we can identify the ecological crisis and financial crisis as two sides of the same coin, which represents the way money is created through debt.

The Ebcu might be the ideal design for the neutral, global currency that Keynes was seeking at Bretton Woods. As already proposed by Douthwaite (1999, ch. 4), this currency will, over the 30-year period of its phase-in, become the only currency which is acceptable in exchange for the CO2 emissions permits that regulate emissions under the Cap-and-Share scheme. The fact that the new currency is the only currency acceptable in exchange for CO2 permits will give it real value. Countries might also decide to transact their external trade balances in Ebcus, rather than choosing between the dollar and the euro, as they tend to do now. But what does it mean practically to have a currency that is backed by the environment? Like all currencies, this one would be issued by fiat and accepted by agreement. Nations that chose to sign up to significant CO_2 emissions reductions would agree to meet the rules of the new global trading system and use the Ebcu as their sole trading currency.

Without such a currency, as argued earlier, the US and other holders of reserve currencies would not face real restrictions on their CO2 emissions, since they could simply run larger trade deficits and create money to buy up an unfair share of permits. So long as there was an enforced limit on CO_2 emissions then the new currency would have real value since it would be linked to something of real value and that was scarce, i.e. the right to pollute the Earth's atmosphere.[3] Proponents of the Ebcu propose it as a neat solution to two problems in one. The need to create a new global

currency creates an opportunity—to use the moment of currency creation to introduce a new pressure to reduce carbon dioxide. It is straightforward at the level of theory to argue that 'energy' in the global economy is presently measured in terms of money but should, because of the climate crisis, be measured in terms of carbon instead. Linking the new global currency to carbon emissions would enable this to be made a reality. In future the global economy would operate to support the planet rather than being in conflict with it. This would be infinitely more powerful than merely trading the right to produce carbon dioxide.

The new currency needs to be stable, that is to say it needs to be issued by a neutral and responsible authority, rather than created against debts by a small number of countries. The issuing authority (we might call it the International Reserve Bank) would be the first of the new triumvirate to replace the international organisations created at Bretton Woods: it would be responsible for global banking and currency issue. The second body, the International Clearing Union, would be responsible for monitoring and policing the exchange of CO2 rations and Ebcus between nations. The third body would be the General Agreement for Sustainable Trade, as proposed by Hines (2000; see also Woodin and Lucas, 2004); its primary role would be to ensure trade balances between nations (as proposed by Keynes for the GATT at Bretton Woods), although it would also have a role in managing the decline in the volume of global trade that a serious response to climate change requires in a way that best supports the poorer countries and the global ecosystem.

5. *Conclusion: Moving Towards a Stable Foundation*

There are interesting times in the global economy, and interesting times offer interesting opportunities. The first conclusion is that the credit crunch has resulted from the creation of too much distance between the nominal monetary value and the real asset value of companies, countries and the global economy as a whole. While there appears to be plenty of money out there, this is actually just a reflection of excessive debt. Rather as our trains cannot run because of the 'wrong kind of snow', our economy cannot run because of the 'wrong kind of money'. This dislocation has allowed those controlling paper assets to inflate their value but then use this value to negotiate themselves an unfair share of the real assets, whether in the form of land or goods. Since in a recession, capital loses more seriously than labour, I can only conclude that the reason there has been no policy proposal to take us off the path towards recession is that the interests of capital cannot find such a policy that does not accept my first conclusion. In other words, solving the crisis must require the rebalancing of the interests of capital and labour.

But the environmental crisis has made this a game with even higher stakes, and greater opportunities to be fought for. The global economy is suffering from two shortages at present: of money and of energy. One of the aims of green economists is to create an economy where energy, rather than money, is the main accounting unit. Creating a proposal where the introduction of a new global currency achieves this aim might garner sufficient political support to sideline the sectional interests of the minority of owners of capital. In a sense, the global financial crisis offers a wonderful opportunity for us to replace a monetary system that is unstable, creates injustice and drives the destruction of our global environment with one which is stable and just. The challenge will be how to move from one to the other with the minimum amount of pain—and without the massive power blocs with interests vested in the current

system blocking the path of human development. The main problem that needs to be addressed—whether we are dealing with radical or orthodox solutions—is how to reinstate the balance between the artificial 'value' of the debt-based money that exists in the world economy, with the value of actual stuff that is out there. The more important question is how to build political support for a proposal along these lines.

The first question posed by this paper is whether the system proposed is logical and practical. But the more important question is whether it is politically achievable. In a situation where taxpayers have shown little concern that they are paying to save the fortunes of the super-rich this seems questionable. However, the experience of the credit crunch is bound to be a radicalising one. If we have an agreed system of radical proposals now would be a good time to argue for them. The politically astute way to introduce the system might be, as Douthwaite proposed, to begin with a 'club' of concerned nations. Since the Ebcu is based on per capita emissions it is a scaleable solution. Nations within the club might agree to reduce their emissions, share the proceeds via a C&S system and trade in Ebcus. They could then charge external tariffs on countries which were still over-emitting CO_2.

The main advantage of the proposed system is that it is fair; the converse of this is that, in a global economy which is deeply unfair, some players will lose out very significantly, and these are powerful players. This is a political problem that usually remains unexpressed in discussion of climate change. If nothing else, the proposals outlined here help to make that problem explicit. But it is more than a management school platitude to say that a threat is also an opportunity, and the threat of lasting and global recession—not to mention growing tensions within and between countries—might be expected to focus the minds of our politicians on political solutions to what are, essentially, political problems.

We have a generation of politicians who have grown up with the mantra that 'there is no alternative' ringing in their ears. They have believed their own mythology about the pre-eminence of markets to such an extent that, when those markets fail, they are powerless to act. The expansion of the G7 to G20 is a signal that there is recognition that major shifts of power at the global level are an essential part of tackling this crisis. The next step is to design a system which would offer sufficient advantages to all nations to encourage them to negotiate over a global financial architecture for the 21st century. Here, the prospects are not as bleak as we might imagine. If the settlement works as proposed here, all countries would gain economic stability analogous to that of the 1950s to 1970s and we would stand a far stronger chance of surviving as a species. Beyond that countries gain and lose in different proportions and different ways (as indicated in Table 2).

The largest winners are those who lost most from the Bretton Woods negotiations: the former colonies which are now the poorest nations in the world. The Contraction and Convergence model requires the wealthier nations that emit more CO_2 to make significant transfers to these countries, either in terms of resources or technology, and so they would gain significantly. The countries that presently control reserve currencies would lose significantly in terms of their ability to extort cheap goods from the rest of the world but they would be enabled to extricate themselves from the impossible situation they find themselves in with regard to unpayable debts. The newly powerful nations commonly referred to as BRICs (Brazil, Russian, India and China—although other nations that are succeeding in the global competition can also be included in this group) would have to agree to forego their right to reclaim their ownership of the 'richer' countries, which they have accrued by holding considerable stocks of national bonds, but in return they would not face a catastrophic

loss of their export markets. The biggest losers would probably be the oil-rich nations which, as is evident from Table 1, would be paying the proportionately largest share of the C&C transfers. But even they would gain from the neutral global trading currency and the higher oil price that would result from a revitalised global economy.

Table 2. *Gains and Losses to Various Countries from the Proposed Financial Architecture*

Country/group	*Gains*	*Losses*
USA	Debt forgiveness; stable trading in the global economy; avoidance of recession.	Reserve currency privilege with dollar premium, lower consumption because of reduced CO2 emissions, cost of C&C transfer payments
UK	Debt forgiveness; stable trading in the global economy; avoidance of recession.	Reserve currency privilege, cost of C&C transfer payments
BRICs	End of reserve currency disadvantage	Smaller but stable export markets
Poor countries	C&C transfer payments	None
Oil-rich countries	Higher oil price, end of reserve currency disadvantage	Lower income from oil? Major cost of C&C transfer payments
Planet	Survival	None

Notes

1. The 'commons' is a term used by economists to refer to resources that are owned by the community at large and are outside the realm of standard property agreements. Examples might be land, urban roads, the electromagnetic spectrum, and so on. Green economists argue that, as they are 'common wealth', any value derived from them should be taxed heavily: see e.g. James Robertson, 'Using Common Resources to Solve Common Problems': http://www.feasta.org/documents/review2/robertson.htm.
2. The present limit according to the proposal on GCI's website is 450 parts per million volume of the global atmosphere. This is now considered too high by some authorities, but given that we are not yet seeing significant reductions it is a reasonable starting point. The IPCC process has also been criticised for its compromises to reflect political pressure from the powerful nations of the world, especially the USA. Trainer (2008), amongst others, considers that it relies to heavily on economic modelling and does not suggest the fundamental changes to lifestyle and economic structure that would be necessary for an effective climate-change mitigation policy.
3. James Robertson argues that is no real need to link the currency to something of value: an international agreement would be enough—'an international currency specifically linked to the value of carbon emissions is a distraction from the need for an all-purpose new genuinely international currency for use in international transactions.'

Acknowledgements

Thanks to the following for engaging constructively with earlier versions of this paper: James Bruges, Paul Nollen, Richard Lawson, Richard Godfrey, Pete North, Conall Boyle, and Tom Lines. Special thanks to Chris Hart who is, like many of the best things in life, a seriously undervalued resource.

References

Barnes, P. (2001), *Who Owns the Sky? Our Common Assets and the Future of Capitalism* (Washington DC: Island Press).

Böhringer, C. and Welsch, H. (2004), 'Contraction and Convergence of carbon emissions: an intertemporal multi-region CGE analysis', *Journal of Policy Modeling*, 26/1: 21-39.

Casella, A. and Eichengreen, B. (1993), 'Halting Inflation in Italy and France after the Second World War', in M. D. Bordo and F. Capie (eds.), Monetary Regimes in Transition (Cambridge: University Press).

Cazorla, M. and Toman, M. (2000), 'International Equity and Climate Change Policy', Climate Issue Brief no. 27 (Washington: Resources for the Future).

Galbraith, J. K. (1994), *The World Economy Since the Wars: A Personal View* (New York: Houghton Mifflin).

Jonung, L. (1993), 'The Rise and Fall of Credit Controls: The Case of Sweden, 1939-89', in M. D. Bordo and F. Capie (eds.), Monetary Regimes in Transition (Cambridge: University Press).

Davidson, P., 'Reforming the World's International Money', *real-world economics review*, 48: 293-305; available online at: http://www.paecon.net/PAEReview/issue48/Davidson48.pdf

Douthwaite, R. (1999), *The Ecology of Money* (Dartington: Green Books), chap. 4: www.feasta.org/documents/moneyecology/pdfs/chapter_four.pdf

Dresner, S. and Ekins, P. (2004), *Green Taxes and Charges: Reducing their Impact on Low-Income Households* (York: Joseph Rowntree Foundation).

Feasta (2008), *Cap and Share: A Fair Way to Cut Greenhouse Gas Emissions* (Dublin: Feasta).

Field, F. (2008), 'Face up to the gilt', *Guardian*, 8 December.

Hines, C. (2000), *Localisation: A Global Manifesto* (London: Earthscan).

Hutchinson, F., Mellor, M. and Olsen, W. (2002), *The Politics of Money: Towards Sustainability and Economic Democracy* (London: Pluto).

Jonung, L. (1993), 'The Rise and Fall of Credit Controls: The Case of Sweden, 1939-89', in M. D. Bordo and F. Capie (eds.), Monetary Regimes in Transition (Cambridge: University Press).

Lines, T. (1998), 'The Price of Failure: Money, Prices and Economics Reform in Russia', *IDS Bulletin*, 29/3: 18-25.

Long, S. (2006), 'Market "Solutions" to Climate Change: A Far Cry from Climate Justice', *Chain Reaction*, 28.

Meyer, A. (2000), *Contraction and Convergence: The Global Solution to Climate Change*, Schumacher Briefing no. 5 (Totnes: Green Books).

Milmo, D. (2008), 'After $1tn. Cost of housing collapse, America is now bracing itself for the credit card bill', *Guardian*, 3 December.

O'Neill, M. (2007), 'Death and taxes', *New Statesman*, 8 October.

Pettifor, A. (2003), *The Coming First World Debt Crisis* (Houndsmill: Palgrave Macmillan).
Pettifor, A. and Bush, J. (2003) (eds.), *Real World Economic Outlook: The Legacy of Globalisation: Debt and Deflation* (Houndsmill: Palgrave Macmillan).
Porritt, J. (2006), *Capitalism as if the World Matters* (London: Earthscan).
Robertson, J. and Huber, J. (2000), *Creating New Money: A Monetary Reform for the Information Age* (London: New Economics Foundation).
Rowbotham, M. (1998), *The Grip of Death: A Study of Modern Money, Debt Slavery and Destructive Economics* (Charlbury: Jon Carpenter).
Rowbotham, M. (2000), *Goodbye America! Globalisation, Debt and the Dollar Empire* (Charlbury: Jon Carpenter).
Schreft, S. L. (1990), 'Credit Controls: 1980', *Economic Review*, Nov./Dec. 1990 (Federal Reserve Bank of Richmond).
Stiglitz, J. (2003), 'Inflation paranoia', in A. Pettifor and J. Bush (eds.), *Real World Economic Outlook: The Legacy of Globalisation: Debt and Deflation* (Houndsmill: Palgrave Macmillan), pp. 42-4.
Trainer, T. (2008), 'A Critical Discussion of the IPCC Analysis of Carbon Emission Mitigation Possibilities and Costs', University of New South Wales website: http://ssis.arts.unsw.edu.au/tsw/IPCC-CRIT.html.
Tran, M. (2008), 'Climate change: EU leaders reach compromise deal on emissions', *Guardian*, 12th Dec.