Use It or Lose It – Understanding Recurring Financial Crises through a Circular Flow Balance of Payments Analysis*

Keith Rankin, Unitec New Zealand, 08 February 2010

Abstract

Global financial crises, and the economic contractions that commonly follow them, can be understood through the requirement that a closed system of payments must balance. The model advanced emphasises the role of long-term creditors who persevere with a savings strategy (intentionally selling more than they buy) long after such abstemious behaviour has served its individual or systemic usefulness.

The presence of a substantial group of habitual savers creates imbalances in the global economy that periodically result in (lose it) rebalancing outcomes, because such creditors cannot break their habit and switch at the opportune time to a spending (use it) strategy. Each lose-it event will most likely be a classic financial crisis, realigning historical claims with current incomes through a process of debt-default.

This paper follows a circular flow balance of payments approach, commencing with a global system with just two participating economies. It shows how the presence of ingrained savings behaviour by some complemented by accommodating spending behaviour by others can generate cycles of financial unbalancing and rebalancing, and economic crises whenever the accommodating or rebalancing processes are impeded.

Key Words: financial crisis, global imbalances, creditor behaviour, circular flow, saving, balance of payments, mercantilism
JEL Classifications: A13, D30, E21, E32, F30

Introduction

The global financial crisis of 2008 is popularly attributed to reckless risk-taking by the world's banks and nonbanks in making loans to people who most likely would not be able to service them, and in the creation and speculative trading of complex derivatives. Could it be, instead, that the excesses of financial intermediaries, by recycling incomes from savers to spenders on the scale required to fuel a growing global economy, delayed and ameliorated the economic crisis, averting a more serious "gumming up of the works" (Atwood 2008, p.99) that might otherwise have occurred? [1]

While banks and loose monetary policy are principally blamed for the 2008 crisis, ancillary

* I would like to thank the participants at my presentation ("Use It or Lose It: Understanding the Global Financial Crisis through an evaluation of creditor behaviour") to the University of Auckland Public Policy Group on 29 October 2009, and the participants and organisers of my Café Scientifique (Auckland Museum, 29 April 2009) presentation "Understanding the Global Financial Crisis Through the Analogy of a Traditional Village Market".

[1] Such a process may not have been the most efficient method of demand recycling – Wade calls it "fragile" (2009 p.13) – given that a large proportion of borrowed funds in the mid-2000s was used to purchase financial assets rather than goods, or to purchase financial services ("'finance' financed 'finance'" Wade 2009 p.12).

blame is commonly placed on borrowers generally, and on governments for regulatory failure (Wade 2009 p.7, Davies 2009a). Savers are deemed culpable only for their naivety in evaluation of risk, and not for the stagnation or contraction of economic activity that habitual saving might cause. Saving as a habit – the ongoing pursuit of surpluses, which means the unsustainable creation of financial assets – continues to be seen as the most praiseworthy of activities.

Occam's Razor suggests that we should only look for complex explanations of crises when we cannot find simple ones. Here I offer a simple circular flow balance of payments model that can assist us to understand recurring financial and economic crises. A financial crisis represents an unsustainable accumulation of financial claims on output relative to present or likely future output,[2] whereas an economic crisis represents a contraction of aggregate demand[3] that leads to an abnormally high excess supply of goods and services, and impoverishing market-clearing prices for labour services.[4]

Model of a Very Simple Closed Economic System

My initial approach is to follow the flows of expenditure and income in a very simple closed system. Such a model can be a useful simplification of the global economy, by clarifying basic finance and balance of payments principles. If we think of participating economies as countries, then the actual world economy is a simple closed system with about 200 participants. The simplest possible global model, however, contains just two economies.

I develop a simple circular-flow model in which our participating economies are household-firms that can be interpreted as countries but will not be presented as such. We may call it the '*yeoman model of a simple closed economic system*', with the participants best imagined as Thomas Jefferson's ideal economic unit: households headed by free and enlightened self-sufficient yeoman farmers.[5]

In the simplest version of the model, containing two yeoman economies pursuing

[2] In a typical modern financial crisis, holders of non-liquid financial assets will typically be satisfied if they can exchange their risky assets for money, so long as they believe that money will hold its purchasing value.
[3] An alternative form of economic crisis, not considered here, might be a contraction of aggregate supply unmatched by a commensurate contraction of aggregate demand. The model adopted here could be adapted to give insights into such crises.
[4] There is no labour market as such in the model presented here. Employees are understood simply as self-employed sellers of services. In a world of self-employment, unemployment as we know it does not exist. Such a world is characterised my mass underemployment and very low prices for personal services.
[5] "At the centre of Jefferson's vision of the United States stood the educated, yeoman farmer." Jewett (2005)

complementary strategies, the individual and the collective are one and the same with respect to each strategy. Although the two yeomen interact freely with respect to each other, they operate as autocrats over their own households. They make all of the decisions on behalf of their households, including how many consumables each household member receives.

The language norms of the goods (and services[6]) marketplace (buying and selling), financial intermediation (borrowing, lending and interest), traditional circular flow models (spending, saving, and investing), and balance of payments accounting (trade balance, exports and imports, current account, financial account) may all be usefully applied. Thus, for an individual yeoman, buying goods from another yeoman is the same as both importing and spending. If the goods purchased are capital goods, then the spending may also be called "investing".

Circular flow analysis traditionally represents saver households (consumers) as one node, and debtor firms (producers) as the other. Analysis of the global economy is necessarily different, however, in that each country participant is both household and firm, consumer and producer. Removing the distinction between consumer entities and producer entities leaves us with a simple differentiation of creditors and debtors. The Jeffersonian yeomen of our model are like countries in this respect.

My narrative starts with a global system of two self-sufficient yeoman economies. After a while, our free and autonomous yeomen decide to trade goods, as Jefferson might have expected. Yeoman 1 produces surpluses of some goods, while Yeoman 2 produces more of other types of good. Each yeoman becomes an 'open economy', participating in barter trade. We have a closed economic system made up of two open economies. Each yeoman's current account balances at zero, as do all components and sub-components of each yeoman's balance of payments.

Yeoman 1 sells to Yeoman 2 in order to acquire something else of equal exchange value, and *vice versa*. Standards of living increase for both yeomen because each individually values what he buys more than what he sells. This, pure barter trade, is Position Zero for our analysis. In Position Zero, the trade balance and the current account balance are one and the same. There is no financial account.

[6] For the sake of brevity, I will generally confine my discussion of "goods and services" to "goods" alone.

Mortal versus Dynastic Yeomen

If we wished, we could make our story more expansive by allowing for many yeomen of different ages, and money as a medium to facilitate multilateral exchanges of goods. And we could allow our yeomen to interact through a financial system, with individual yeomen being creditors or debtors at various times in their life-cycles, in line with Ando and Modigliani's (1963) lifecycle hypothesis.

For such mortal yeomen, saving and dissaving balance on average over the life-cycles. Through their lifetimes, individual yeomen might be: (1) deficit-debtors in their early productive years; (2) surplus-debtors as they become more productive and extinguish their debts; (3) surplus-creditors who continue to be productive after their debts have been extinguished; and (4) deficit-creditors as they spend their savings in the later ('retirement') part of their lives. Stages 2 and 3 represent saver (surplus) behaviour (selling more than buying), whereas stages 1 and 4 represent dissaver (deficit) behaviour. The system balances nicely so long as all four stages are always present, and so long as individual yeomen make the transitions between surplus and deficit stages as their lives progress.

Conservative yeomen will generally be biased towards creditor status, focussing on expanded consumption-opportunities in the latter stages of their lives. Liberal yeomen will be biased towards debtor status, preferring to spend more (on consumption and investment goods) when they are young, while paying, throughout their productive lives, real interest (payment in goods, not money) to conservative yeomen. For a global system of mortal yeoman economies to remain stable, the presence of conservative yeomen must be balanced by the presence of liberal yeomen.

The simplest form of the model, however, is a global system of just two yeomen (Yeoman 1 and Yeoman 2), in which each yeoman is both a consuming household and a producing firm. The two yeomen live indefinitely, and remain productive. The analogy here is with a dynasty, rather than with a mortal individual. The life-stages of individual persons do not apply. Dynasties, like countries, do not retire.

Saving on the part of Yeoman 1 can have only one meaning; lending to Yeoman 2. Yeoman 1 becomes C, a conservative *creditor* economy, and Yeoman 2 becomes D, a liberal *debtor* economy. And because dynastic yeomen never die or retire, there is no natural point in the yeoman life-cycle where a creditor yeoman should switch from surplus to deficit behaviour; no

natural point where the initial net flow of goods from C to D should reverse.[7]

Habitual Saving

In the life-cycle story, mortal saver yeomen (lenders, in life-stage 3) spend their savings when they move into their final life-stage of retirement. There is evidence however that retired persons are not always net dissavers. Brown (2008, p.91) cites evidence that persons over 70 "have the highest savings rates in the USA", suggesting that, at least for some generations or some cultures, savings represents an ingrained habit rather than an ephemeral stage in the life-cycle.

In our story of dynastic yeomen who do not retire, habitual saving – and therefore habitual lending – requires an alternative explanation. An observation of why people actually do save must include the answer 'to accumulate wealth', given that, from an individual's point of view, claims on future output are regarded as actual wealth.

This rationale for saving is a version of the mercantilist fallacy; that for an economy to prosper it must pursue a surplus-creditor strategy[8] to accumulate claims on future goods produced by other economies with no intent to realise those claims. The mercantilist fallacy suggests that surpluses are good while deficits are bad, and sees the accumulation of financial assets as a superior objective to the acquisition of goods and the consumption of services. Under such reasoning, production is superior to consumption; selling is more virtuous than buying; work is a better use of time than leisure. The promotion of cultural virtues such as thrift and work accompanies mercantilist reasoning. The "paradox of thrift", noted by Keynes (Knoop 2008 p.80) and implicitly by Wade (2009 p.10), has barely been addressed by a neoclassical paradigm that continues to emphasise price-clearance in factor markets – especially the labour market – as the key to systemic stability (eg Mulligan 2009, Mishkin 2007).

Collective saving is seen as beneficial by neoclassical economic historians, in that increased saving may have facilitated industrialisation episodes in many nations. Past industrialisation can

[7] Moss (2007, p.12) notes, with respect to countries but equally valid for our yeomen: "One puzzle is why any country would want to run a trade surplus, which involves giving more of its output away to foreigners (in the form of exports) than it receives in return (in the form of imports). Why would any country wish to give away more than it received? The answer is that countries running trade surpluses today expect to get back additional output from their trading partners in the future." Rational conservative yeomen, like rational surplus countries, therefore *intend* to run deficits in the future; they are not indefinite savers.

[8] In past centuries, this strategy, when applied to nation-states, came to be called "the commercial or mercantile system" (eg Smith 1991 [1776], p.326), later shortened to "mercantilism". Nation-state economies wanted to accumulate credits, in the form of gold and silver bullion, by selling more goods to other economies than they bought from them.

to some degree be explained by savings-enabled debt spent on capital goods. Savings habits that facilitated successful manufacturing-led "take-offs" (Rostow 1960) can be expected to persevere, at least over a number of generations. Consumer debt dominates (Brown 2008) over investment, however, in a contemporary era of "high mass consumption" (Rostow 1960).

Savings habits which proved advantageous at times of relative scarcity of capital goods may have played a significant role in fostering expectations of interest payments as a general reward for 'thrift'.[9] Prior to western commercialisation, the taking of interest by creditors from the holding of liquid assets ("making money from money") was regarded as a sin – usury – in Europe (Boldizzoni 2008).

Indefinite saving can have real benefits for individual savers, however, even if no interest is payable. Saver, C, might lend to D with real security[10] in the expectation that, if D defaults, then C can thereby acquire land from D. In the contemporary world, however, we note that much saving takes place without such security.

Another individual reason for the savings habit to emerge is the 'rainy day' rationale of precautionary saving. In the context of the two-yeomen model, a future environmental crisis would mean that the combined output of both yeomen would be reduced. The habitual saver, C, could reverse his saving habit and, as his reward for abstinence, claim a disproportionate share of the reduced pool of goods.[11] If he could realise his claims on D during such a crisis, C would become less impoverished than D in that poorer 'rainy day' future world.

Here, yeoman C adopts a saving strategy, rational or otherwise. He decides to sell more (to yeoman D) than he will buy (from D), and on an indefinite basis. C initiates the imbalance. For C

[9] We might note that the squirrel, a metaphor for thrift, acquires durable goods (acorns), not claims on future acorns nor interest. Squirrels therefore are not habitual savers in the sense that our 'frugal' and 'industrious' Yeoman C is. TheFreeDictionary.com includes three words as synonyms for thrift – frugal, industrious, provident – with as an example of the latter "wild squirrels are provident". Squirrels invest in food stores, so are spenders. Further, squirrels lose "up to 74 percent" of their capital; however the lost acorns "aid regeneration and dispersal of oak [tree]s" (University of Richmond 1998). Individual losses represent unintended social investment – the *planting* of capital – in the global system that sustains these populations.

[10] That is, with the security of productive assets such as land, rather than the security of financial claims.

[11] Robertson (1892, p.12) noted that it was "obvious" that "the individual who 'saves money' acquires an advantage over his neighbours who do not". In an economic community of many households, precautionary saving by some has the potential to create a savings 'arms race'. Those within a community who are less parsimonious become alarmed because the increased savings of prolific savers reduces the proportionate claims of lesser savers for goods and services in some future crisis. While habitual saving may be a principal cause of global crises, as the yeoman model will suggest, the most 'prolific' savers will see themselves as relatively well placed to endure such a crisis even if their savings buy substantially less than they would have bought prior to the crisis.

to achieve his surplus, D must be accommodating. C and D form a relationship akin to conjoint twins, "joined at the hip" through debt (Atwood, p.124). C considers that his accumulated claims on the future output of D are a measure of his wealth, and that indefinite accumulation of such credits equates to indefinitely increasing wealth. While C expects D to make provision for future surpluses, C continues to expect D to run deficits to accommodate C's surpluses.[12]

Exposition of the Two-Economy Model

In this simple model, thrifty yeoman (C) exchanges his excess goods for IOU credits[13], given that D is willing to receive them and become a debtor. The possession of financial assets confers on C the right to buy in the future more from D than he sells in the future to D.

The desire by C to oversell (ie run a surplus) can be satisfied by the presence of an accommodating underseller (D). There are no deflationary pressures arising from unsold goods.[14] However, it should be noted that D may have required some persuasion before agreeing to accumulate future obligations to C – IOU debits – in return for more goods in the present. In the early phase of the model, while C's behaviour is autonomous, D's behaviour is substantially induced by C's marketing of his surplus goods.[15] Yeoman C runs a trade (and current account) surplus, while Yeoman D runs trade and current account deficits. Although the basic logic of the process doesn't require interest to be paid, we may assume that D does agree to pay some interest to C, given the observed expectations of saver-lenders today. C's accumulation of IOU credits through repeated surpluses is an *unbalancing process*, represented in Figure 1.

In Figure 1, S represents "surplus" and C represents "creditor". The first "D" represents "deficit", the second represents "debtor". The trade balance is net exports. There is a net flow of goods from C to D – on account of C deciding to sell more than he buys – so payment flows from D to C as '**t**-flows', and back to D as '**f**-flows'. We can imagine such payment as money flows even

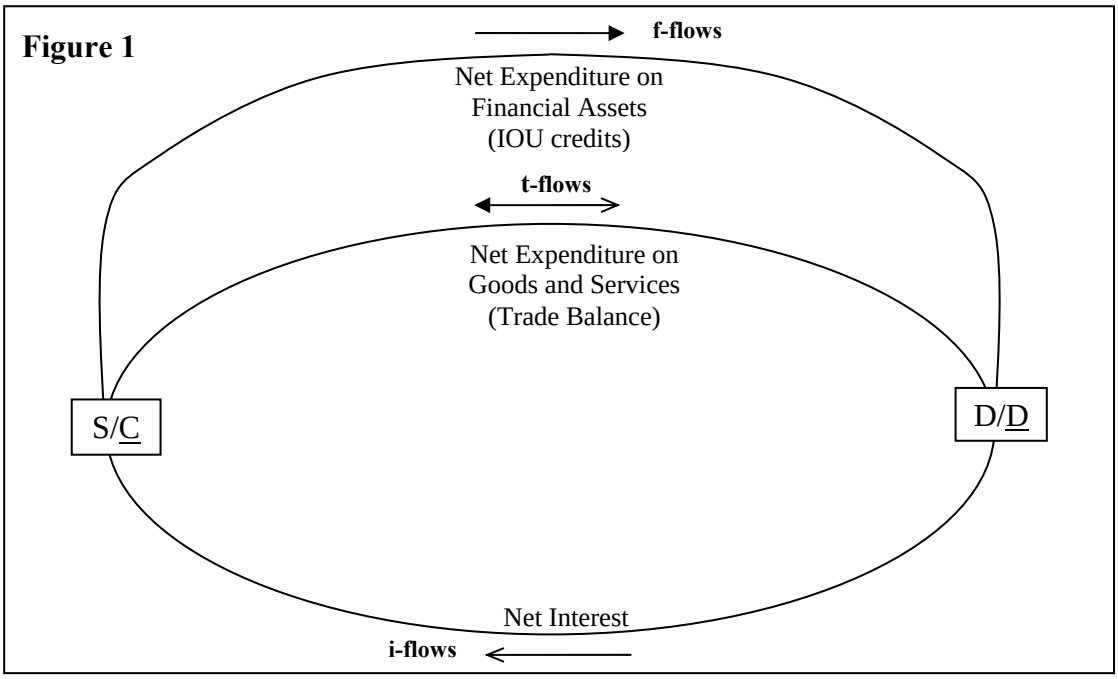
[12] These ongoing surpluses represent conditional transfers of goods from C to D. In a gift-exchange system, there is an obligation for D to reciprocate at a later date. In our situation, C, while maintaining the obligation, is reluctant to accept his return-gift. Rather, he wants to persevere with a net flow of 'gifts' to D. It is D who enjoys the higher standard of living – measured as goods consumed or possessed – and it is the actions of D (in deciding whether or not to use his deficit to acquire capital goods) that determine the likelihood that there can be future repayment. In a traditional gift-exchange system, D gets to choose the timing of the return gift. In our model, it is C who decides when D must repay, or pay real interest on, C's 'gifts'.

[13] In our simple model, there is no financial services industry, no banks. IOU credits are financial assets negotiated directly with debtors.

[14] No amount of deflation is likely to dissuade C from pursuing a saver-surplus strategy. On the contrary, a debt-deflation trap (Fisher 1933) may reinforce C's strategy.

[15] An alternative more conventional story is that habitual indebtedness is autonomous, and that it is creditor behaviour that is accommodating. While Brown (2008 p.77) notes a "proliferating growth of predatory lending", on the whole he still treats the demand for consumer credit as largely autonomous.

though there is no actual money in our model.



The current account is net exports plus net interest (**t**+**i**). D accumulates goods (paid for as **t**-flows) and C accumulates IOU credits (negative **f**-flows). At the beginning of the process, before any interest is paid, C's current account balance is **t** (= -f); D's current account balance is **-t** (= f). For both C and D, **i=0** $\Rightarrow$ **t+f=0**.

When C accumulates IOU credits, he is lending to D; D borrows from C by accumulating IOU debits. As C accumulates credits, some interest (**i**-flows) typically becomes payable by D to C. Thus, as the 2-yeoman model progresses, **i**-flows for C generally become greater than zero.

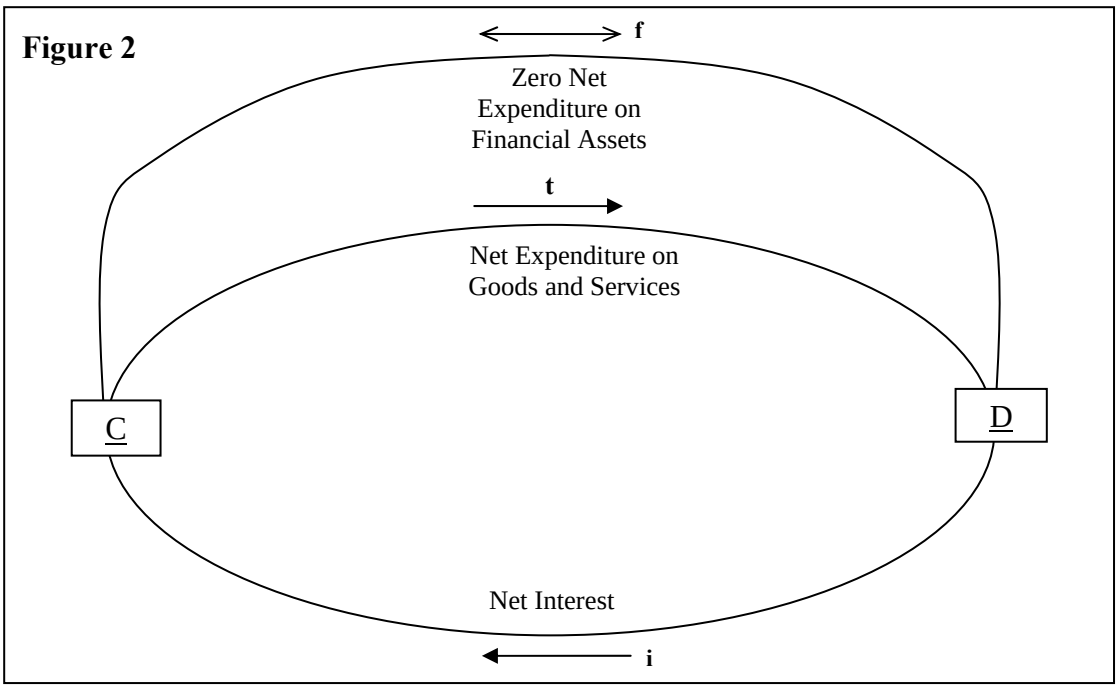
Note: Balance of Trade = **t**; Current Account Balance = **t**+**i**; Financial Account Balance = **f**
Balance of Payments Identity: **t + i + f = 0** (always);
for a **C** (creditor) economy: **i ≥ 0**; for an **S** (surplus) economy: **f < 0**, **t**+**i > 0**.

As **i**-flows increase, it becomes possible for the direction of C's **t**-flows to become negative (ie left to right in Figure 1) while C still maintains financial outflows (negative **f**-flows; accumulation of IOU credits). C in Figure 1 can run a trade deficit while still running a current account surplus, so long as the interest payments exceed the trade deficit.

A stable outcome appears if C discontinues his saving habit, and comes to run a trade deficit that balances his interest surplus (**t**+**i**=0). In this interest-only 'use it' scenario, C's current account (and therefore D's) is in balance. The situation is represented by Figure 2. Yeoman C remains a

creditor but is no longer a surplus (S) economy.[16] Yeoman D remains a debtor, but is no longer running current account deficits. D now runs a trade surplus. Net financial flows become zero as C stops saving and D stops borrowing.

In Figure 2, C has gained his *reward* for his past abstinence; an ongoing trade *deficit* that represents his interest receipts. Each year he receives his interest as goods produced by D. C now buys more than he sells; he has broken his savings habit. This is *real interest*[17], not a compounding claim on D's future output. A fast-living C might produce and sell as much as before, while consuming more. Alternatively, an economising C consumes as much as he did when pursuing his saving habit, while producing and selling even less.



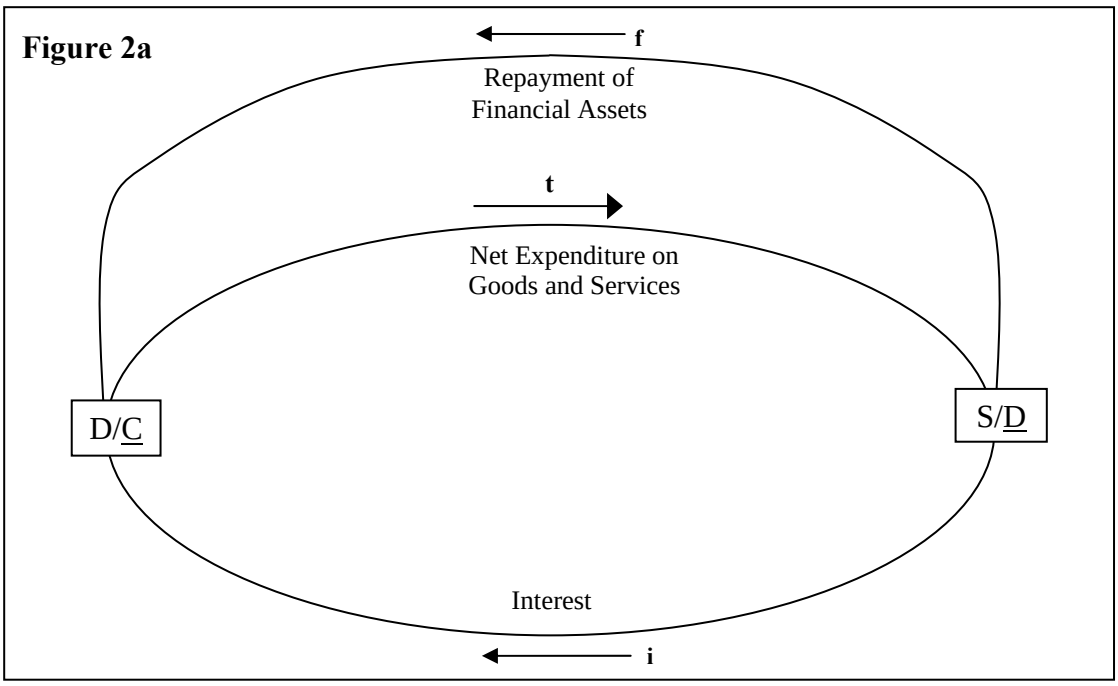
The stable global order represented by Figure 2 is sustainable so long as it is not exploitative with respect to D's labour and environmental resources. If real interest payments are too high relative to D's total output, leaving D with an excessively lower living standard than C, then D can be expected to look for ways to abrogate all or some of his burden.

How might C distribute his increased net imports?[18] A problem might arise if C – an autocrat

[16] Today, creditor economies such as China are commonly known as "surplus economies", as if being a creditor economy and a surplus economy are one and the same thing. Because the habit of saving is so ingrained, we find it hard to even imagine the existence of creditor-deficit economies.
[17] Therefore "real interest rate" here means the 'rate of real interest' rather than the 'real rate of interest'. Servicing liabilities through the payment of actual goods or services can be called *real debt service*.
[18] C's net imports – now positive – could be usefully called an *abstinence dividend*; his reward for his past saving.

over his household – has a strict rule that goods consumed within his household are distributed only on the basis of how much each member of his household produces. If an economising C is unwilling to change his distribution algorithm when his output (though not his consumption) falls, he might be under pressure from less-employed members of his household to curtail his trade deficit with D, and to return to past levels of production. A decision by C to distribute his abstinence dividend equitably among his household members would avert such a domestic crisis.

Figure 2a represents a more complete 'use-it' solution. Here C runs a *current account deficit* – that is, a trade deficit larger than his interest surplus – enabling D to repay some or all of his liabilities (IOU debits) to C.



In practice, the 'use-it' solutions will be hard for C to adopt, because C got into his happy position of being able to run a perpetual trade deficit by developing a habit of parsimony, and by relying on D to develop a routine of borrowing. C might not be mindful to enjoy his opportunity, earned by selling more than he bought, to become a liberal spender. Further, C most likely will have instilled a strong work ethic within his household. Reduced work requirements on household members may lead C to worry that this work ethic might be undermined, and that his household might become playful and undisciplined.

If in practice C has indeed become an incorrigible saver – if C perseveres with his parsimonious credit-accumulating strategy – then not only does he not spend his interest, but he continues to

run trade surpluses, bringing us to Figure 3, which is a more extreme version of Figure 1.

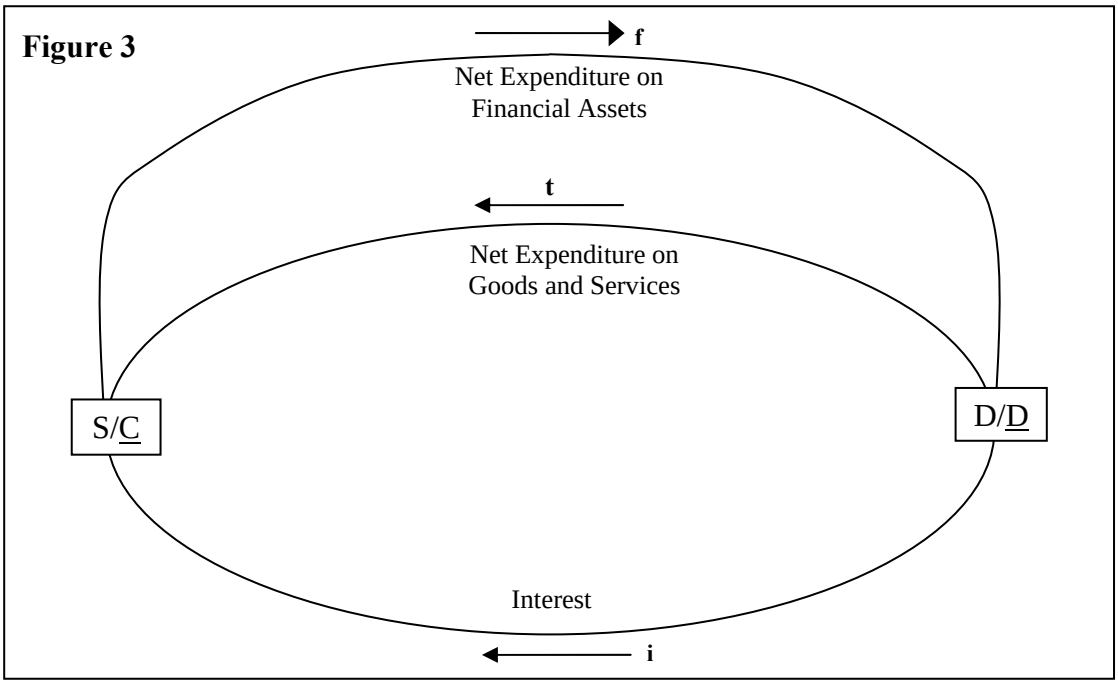


Figure 3 represents the situation, where, by definition, neither of the 'use it' scenarios has been adopted, and the creditor-debtor imbalance has become so large that these resolutions of the unbalancing process are no longer possible. Figure 3 is unstable, in that it represents a choice (explicit or implicit) by C to not follow a 'use it' strategy. The result is a 'lose-it' outcome for C. The simple act of refusing to accept interest in the form of goods is equivalent to C accumulating further financial assets (compound interest) which come to represent unrealisable claims.

As current account deficits add to his debt, D's interest obligations increase.[19] Yet no interest is actually paid, in the real sense of the word 'interest', because no actual payment (ie in goods) is accepted by C. There is no flow of goods from D to C. D simply accumulates advances from C that enable him to fund increased nominal interest to C.

Goods may continue to flow from C to D. D borrows from C to fund his imports from C as well as borrowing from C to fund his interest obligation to C.[20] That is the only way the system overall can balance if C insists on running trade surpluses. So long as C is free to refuse payment

[19] If the global economy is growing – eg thanks to D acquiring and utilising capital goods – then small current account surpluses on the part of C may not create instability. Instability occurs when the stock of C's IOUs grows more quickly than D's output of goods and services. In a broader context, D's output of goods and services – that C has claims over – could be called 'gross debtor product'.

[20] Here we have a financial arrangement that meets Minsky's definition of "Ponzi Finance" (Raines and Leathers 2008 p.149; Knoop 2008 p.85). This arrangement is made necessary, not by D's profligacy, but by C's continued insistence on selling more goods than he buys.

in goods, a continuing refusal to receive goods is tantamount to a negation of D's debts. D will have little incentive to produce (to invest in the production of) stockpiles of goods in the future on the off-chance that C might change his strategy and exercise his claims on D's output.[21] Further, if D understands C's dependence on D not defaulting, D will have every incentive to continue to accept C's credit – which means enjoying C's largesse – especially if the credit is unsecured or unenforceable.

If D senses that C is verging on changing from a surplus to a deficit strategy, and if D cannot meet C's claims, D may simply offer C a higher interest rate as a reward for continuing his surplus strategy. After all, D is not actually paying real interest so has little need to care about the nominal interest rate. D is now driving the process; C accommodates by agreeing to D's interest rate offer, lending to D to avert D's default.

Upon D's eventual default, C loses his unspent credits (or at least some part of their putative value), in a system-wide rebalancing process.[22]

Financial Crisis as a Rebalancing Process

In our very simple 2-economy model, once the global system has become sufficiently unbalanced, rebalancing can only occur through a substantial write-off or write-down of financial assets. The crisis is triggered when C becomes sufficiently concerned about D's ability to meet C's claims as payments of goods. C belatedly requires D to service his liabilities in the form of goods. Sooner rather than later, D will default, because D no longer has a practical capacity to produce a current account surplus.

C may have no means to enforce his financial claims.[23] If D has spent C's credit on protection goods, D will be in a better military position to defend his real property than C is to enforce any claim over it. If C accepts the reality of default in good grace, there need be no economic crisis

[21] D's optimum forecast (ie rational expectation) of C's behaviour is that C will continue seeking to sell more goods than he will seek to buy.

[22] Formally, *financial unbalancing* (or leveraging) can be understood as an increase in the ratio of creditors' financial assets to *gross debtor product*, and *financial rebalancing* (or deleveraging, debt liquidation) as the reverse. Figure 2a represents a use-it rebalancing, as C's spending replaces D's spending. Figure 3 represents the lead-up to a lose-it rebalancing, which holds a substantial risk of an ensuing system-wide economic crisis.

[23] Arguably, the biggest economic story of the second millennium, or at least the 1000 years ended c.1970, takes this form. C becomes China and D becomes Europe/America (the 'West'). China's habitual relationship with the West was to sell more than it bought. The west invested in itself and accumulated real wealth and a huge military advantage. The west's ascent from rags to riches had it's counterpart in China's economic descent. It remains unclear as to whether China can ever break its millennial mercantilist predilection to sell more than it buys.

to match the financial crisis. All that need occur will be a partial write-off of C's unrealisable claims. D and C will continue to spend as before if C continues to save (which means continuing to lend to D).

We can think of crisis rebalancing as a return to the dynamic of Figure 1 through the 'lose-it' process of debt write-off, creating a renewed opportunity to achieve 'use-it' (Figure 2) outcomes in the post-crisis future. Given however that culturally ingrained habits are hard to break, it seems more likely that, once a crisis rebalancing process ends, a repeat unbalancing process then returns the global system to Figure 3 in a further revolution of a financial boom-bust cycle. A further period of rebalancing would then represent just another bust-phase of such a sequence; another periodic financial crisis.

Extending the Model

What if C, instead of representing a single yeoman household, is a collection of economic agents, independently pursuing surplus strategies, and D is a collection of unrelated economic agents accommodating C's strategies by accumulating C's collective credit as debt? Our participating economies could be autocratic households, or nations whose strategic decisions are made by their policy-making authorities. Indeed our participants could be small independent nuclear households. Instead of having a model of a global system of two yeoman economies, we would then have an abstract global system of say two billion autonomous household economies. The extended model treats wage and salary earners as sellers of services to the shareholders of their employers' firms. Thus our global economy continues to comprise participants that both produce and consume. There is no distinction between households and firms.

In the first extension of our model, we have four households: C1, C2, D1 and D2. C1 and D1 are "joined at the hip twins balanced [through debt] on the two sides of a scale" (Atwood p.124); likewise C2 and D2. Before the point of crisis onset, C1 becomes anxious about D1's capacity to conduct real debt service, but does not wish to be repaid in goods and services. Nevertheless, D1 is under pressure from C1 to reduce his net indebtedness, which means D1 is obliged to pursue a surplus strategy; to sell more than he buys. C2, like C1, is not interested in buying more than he sells, so only D2 is available to buy D1's surplus.[24] D2 must increase his debt in order that D1's reduction of debt might be accommodated.

[24] This process may be indirect. C2 may agree to buy goods from D1 and balance that by selling more goods to D2. In this indirect scenario, the burden of a default by D2 falls entirely on C2.

Under these conditions, *one debtor can only reduce his debt by adding to the debt of another debtor*. C2 may become anxious if D2 accommodates D1, because D2's capacity to offer real debt service to C2 has been further compromised. Nobody will allow D2 to sell more than he buys because everyone else is running surplus strategies. The crisis is triggered by D2's default. D2's default may trigger D1's default.[25] Default rebalancing will take place as some of C2's financial assets (and maybe some of C1's) are written off.

If we expand our model one-step further, we introduce a bank. To start with our bank is a non-profit-making conduit, which enables the financial relationships between creditors and debtors to be anonymous, and pooled. (C1 continues to sell goods to D1, and buy goods from D1, with sales exceeding purchases.) C1, however, now holds his IOU credits as bank deposits, while D1 now is indebted to the bank rather than to C1. The same holds for C2 and D2. With the bank in place, C1 and C2 (the creditor collective C) are together "joined at the hip" to D1 and D2 (the debtor collective D). C1 and C2 are now only concerned that their interest receipts are compounded by being credited as new bank deposits. The capacity of D1 to repay C is now the direct concern of the bank rather than of C1. D1 can only repay the bank if the bank lends him the repayments, or if the bank advances the required repayments to D2, and D2 then uses this additional debt to buy sufficient goods from D1 to enable D1 to reduce his bank overdraft.

Individual members of the collective D can only repay debts if other debtors incur more debts. If the bank does not extend D1 or D2's overdraft, then a financial crisis will be precipitated immediately, through D1 defaulting. If the bank makes additional advances to D2, then a crisis may be precipitated later, when D2 defaults. The bank acts, naturally, to delay crises, by marketing additional debt to existing debtors. The real cause of the crisis, when it comes, is the refusal of C1 and C2 to spend their credits by running deficits. As the crisis unfolds, D2 defaults, the bank fails; C1 and C2 lose a substantial part of their financial wealth. D1 is least affected. The crisis passes when a replacement bank lends C's surpluses to D, enabling D1 and D2 to resume their credit purchases from C1 and C2.

We may now make a further small extension to our four-economy creditor-debtor global model. The bank becomes a banker, B; in effect a fifth economy, who sells banking services in return for goods and services produced by C1, C2, D1 and D2. What if the banker himself exhibits

[25] In the indirect version described in the previous note, C1 and D1 will most likely be unaffected by the financial crisis.

C-type behaviour, by habitually earning more than he buys? The banker now becomes C3, a member of collective C. Given that, in our model, recurring financial crises are caused by C-type behaviour, the banker accentuates the boom-bust dynamic by selling banking services with a greater market value than the goods he buys, himself accumulating IOU credits.

In our final extension, we consider a C collective of a billion households (some members of which are bankers who sell financial services), and a D collective of another billion households. C's strategy is to accumulate financial assets. D accommodates C by incurring debts to purchase C's surplus. While some individuals may for some of the time exhibit balancing D/C and S/D behaviour, the predominant creditor behaviour is 'surplus' (S/C: to sell more than to buy) and the accommodating debtor behaviour is 'deficit' (D/D: to buy more than to sell).

In the 2-yeoman model, C, in persevering with the surplus-creditor strategy, reached a critical point (expressed in Figure 3), ensuring that some 'lose-it' crisis rebalancing would eventually take place. In the many-participant extension of the model, what behaviours by individual C and D households might take place when a financial crisis looms? C households seek to avoid both 'using it' and 'losing it' by acquiring less-default-risky (especially liquid) asset portfolios than other C households. Less-indebted D households may be targeted for loans by bankers as the bankers take action to reduce their exposure to more indebted D households. When one D household (eg D1) repays a loan to a bank, if C collectively fails to withdraw and spend that repayment then the banker seeks to pass D1's real repayment on to another debtor as a replacement debt. Bankers need to find households (or firms: 'companies' of households) willing to incur and spend extra debt. When bankers do this, they produce (ie sell, export) services that are bought by C and D.

Crisis rebalancing between C and D takes place when debt-default[26] occurs, bringing the global system from Figure 3 critical mode (characterised by excessive financial leverage) to Figure 1 (deleveraged) safe mode. Thus the global crisis ends when normal creditor-and debtor behaviour is seen as safe to resume. When normal behaviour resumes, however, the process of financial asset accumulation simply repeats. Sooner or later another similar crisis occurs. The only way out of this boom-bust cycle is for sufficient creditors to switch to a deficit 'use-it' strategy before the global financial system enters critical mode. One such use-it strategy – philanthropy – involves giving credits to worthy spenders (Bishop and Green 2008).

[26] Or other mechanism, such as global inflation.

With large collectives of independent creditors and debtors, within the D-collective there is an incentive to be less accommodating than other debtors when rebalancing is imminent, in order to avoid being an early defaulter. Within the C-collective, as a financial crisis commences, there is an intense struggle – liquidity preference – to ensure that creditors other than oneself experience the lose-it scenario which is the inevitable fate of the C-collective as a whole.

In the final versions of our model, the role of the bank(s) becomes critical to the maintenance of the circular flow of payments between the participating economies. Bankers provide services to the C economies by creating markets for the surpluses of those C economies. Banking becomes especially profitable when D economies, accustomed to nominal rather than real debt-servicing, become tolerant of high nominal interest rates.[27]

Resolution

The least painful form of resolution in a world in which creditors do not wish to use their credits is for them to lose them gracefully, much like the squirrels which lose most of their acorns (University of Richmond 1998). Understanding of the underlying dynamic of loss may facilitate acceptance. Our original yeoman C could easily understand his situation because his only relationship was with yeoman D; there could be no muddying of the waters through intermediaries and game-playing between creditors.

Atwood (2008 p.48) cites Mosaic Law from The Bible (Deuteronomy 15:1 and 2), in which debtors would be granted a "sabbatical year" every seventh year, in which all debts would be forgiven. Like many ancient laws, this one could not be applied literally to the modern world. Nevertheless it encapsulates the 'use it - lose it' logic,[28] in that creditors who do not accept real debt-service risk having their financial claims discharged.

While money must *flow* in any complex version of the model, so too must other types of financial asset that otherwise accumulate in the hands of those creditors exhibiting habitual saving behaviour. Atwood (2008 p.99) notes that: "Scrooge's big sin was to freeze his money; for money, as all students of it recognize, is of use only when it's moving, since it derives its value entirely from whatever it can translate itself into. Thus the Scrooge's of this world who refuse to

[27] This tolerance of D economies for high interest rates is evident in D-country monetary policies that attract savers in C economies.
[28] "Money is like an arm or a leg – use it or lose it", quotation attributed to Henry Ford (quotationsbook.com).

change their money into anything else are gumming up the works: currency is called 'currency' because it must flow."

Financial cycles are relatively benign so long as default rebalancing occurs without too much resistance, and C-saving-behaviour continues to be accommodated by D-spending-behaviour. Deeper economic problems occur in the events of collective debtor-resistance (non-accommodation of creditors' continued saving strategies), or substantial creditor resistance to both 'use-it' and 'lose-it' resolutions.

Crisis-Avoidance and Sustainability

A 'use-it' solution requires the avoidance of habitual saver behaviour. If we have four yeoman economies – C1, C2, D1 and D2 – if C1 is running surpluses (ie accumulating financial assets) then C2 should be running deficits (ie running down his financial assets by buying more than he sells). If D1 is accumulating debts, then D2 should be decreasing his indebtedness. After a while C1 and C2 must swap roles; likewise D1 and D2 need to alternate. Always some creditors should be buying more goods than they are selling, and some debtors should be selling more goods than they are buying. This is balancing financial behaviour.

A sustainable 'use-it' solution has one further aspect. Individual economic success need not be seen as a function of how much a participant produces and sells. A sustainable strategy will be, in many cases, for C economies to reveal their success by adopting a resource-conserving use-it strategy; by selling less rather than by buying more. When the financially rich sell less, it creates opportunities for the indebted financially poor to run balancing surpluses without having to adopt unsustainable modes of production to outsell financially rich producers.

It makes good sense that the practice of 'economy' should be rewarded, or at least be convergent with favourable systemic outcomes. Economical behaviour means not only to buy less; more importantly, it means to sell less. Conserving behaviour means the use of fewer resources in production rather than the reduced enjoyment of life that characterises miserliness.

The widespread habit of buying less without earning less – can, as we have seen – only lead to global financial crisis. If we cannot avoid such failures because of deeply-ingrained saving habits, then at least we can do our best to accept our periodic financial losses gracefully, allowing the global marketplace to de-stress itself without experiencing world wars, political

revolutions or great depressions, all of which occurred in abundance in the highly stressed decades from 1910 to 1950.

Application

The creditor-debtor-economy model advanced here can be applied to the real world in many ways, by considering country-by-country strategic behaviour. Countries like the United States, the United Kingdom and New Zealand are easily identifiable as D economies, economically rich but financially poor. China, Japan, and some European and Middle-Eastern countries can be identified as C economies. The model suggests an onus on C-economies to run current account deficits.

Japanese cars, for example, may be fruitfully manufactured in debtor South-East Asian countries, enabling Japanese people to move towards more leisured lifestyles – maybe contributing to the global public domain in the spirit of philanthropy – reducing Japan's gross domestic product without reducing its gross national income. This frees South-East Asian workers to sell their labour services at prices that enable them to more easily buy such cars.

It may be more important, however, to apply the model at the household level, especially as many of the world's most financially rich C households actually live in D countries. 'Use-it' balancing needs to occur at the household level. Thus D households, worldwide, can only reduce their collective indebtedness if C households buy more goods and services from them (D), or at least sell less in competition with them.

Andrew Carnegie once said "He who dies rich dies in disgrace" (Read 2009, p.211). In 1914 Henry Ford (ford.com) understood that his workers had to be paid enough if they were to be able to buy his cars without incurring unsustainable debts. Modern capitalism requires a high degree of equality of expenditure; low-cost goods and services must be sold across expansive markets. Financial crises would be fewer if the global distribution of income was more closely aligned with the distribution of goods and services. So long as a system of consumer borrowing is required to achieve a tolerably efficient distribution of mass-produced goods and services, financial crises will recur as necessary rebalancing events.

References

Ando, A and F Modigliani (1963), "The 'life cycle' hypothesis of saving: aggregate implications and tests", *American Economic Review*, 52(1), 55-84

Atwood, M (2008) *Payback; Debt and the Shadow Side of Wealth* (2008 CBC Massey Lectures), Bloomsbury: London.

Bishop, M and M Green (2008) *Philanthro-Capitalism; How the Rich can Save the World*, New York: Bloomsbury Press

Boldizzoni, F (2008) *Means and Ends; the Idea of Capital in the West, 1500-1970*, Basingstoke UK: Palgrave Macmillan

Brown, C (2008) *Inequality, Consumer Credit and the Saving Puzzle*; Cheltenham UK: Edward Elgar

Davies, H (2009a) *The Financial Crisis: Whodunnit?* presented 30 July, Retrieved December 22, 2009, from http://www.rbnz.govt.nz/research/workshops/75thpubliclecture/3713648.html and http://www.rbnz.govt.nz/research/workshops/75thpubliclecture/3713925.ppt

Davies, H (2009b) "The Financial Crisis: Whodunnit?", Bulletin 72(3):69-75; Reserve Bank of New Zealand

Fisher, I (1933) "The Debt-Deflation Theory of Great Depressions", *Econometrica*; 1, 337-357

Ford.com (nd) *Henry Ford's $5-a-Day Revolution*. Retrieved December 22, 2009, from http://www.ford.com/about-ford/heritage/milestones/5dollaraday/677-5-dollar-a-day

Jewett, T (2005) "Thomas Jefferson: Agronomist", *Early America Review*, Retrieved October 12, 2009 from http://earlyamerica.com/review/2005_summer_fall/agronomist.htm

Knoop, TA (2008) *Modern Financial Macroeconomics; Panics, Crashes and Crises*, Blackwell

Mishkin, FS (2007) *The Economics of Money, Banking and Financial Markets* (8th edition), Pearson Addison Wesley

Moss, D (2007) *A Concise Guide to Macroeconomics*, Boston: Harvard Business School Press

Mulligan, CB (2009) "Is Macroeconomics Off Track?" *The Economists' Voice*: 6(10) Article 6.

quotationsbook.com Retrieved December 22, 2009, from http://quotationsbook.com/quote/27059/

Raines, JP and CG Leathers (2008) *Debt, Innovations and Deflation; the Theories of Veblen, Fisher, Schumpeter and Minsky*, Cheltenham UK: Edward Elgar

Read, C (2009) *The Fear Factor: what happens when fear grips Wall Street*, New York: Palgrave Macmillan

Robertson, JM (1892) *The Fallacy of Saving*, London: Swan Sonnenschein & Co

Rostow, WW (1960) *The Stages of Economic Growth: A Non-Communist Manifesto* Cambridge University Press

Smith, A (1991 [1776]) *Wealth of Nations*, New York : Prometheus Books

theFreedictionary.com *Thrifty* Retrieved December 22, 2009, from http://www.thefreedictionary.com/thrifty

University Of Richmond (1998, November 26). "Researchers Tackle The Nutty Truth On Acorns And Squirrels". *Science Daily*. Retrieved December 22, 2009, from http://www.sciencedaily.com /releases/1998/11/981126102802.htm

Wade, R (2009) "The Global Slump; Deeper Causes and Harder Lessons", *Challenge* 52(5):5-24

==========