Use It or Lose It – Understanding the Global Financial Crisis through a Circular Flow Balance of Payments Analysis

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Abstract

The global financial and economic crisis can be understood through the requirement that a closed system of payments must balance. The circular flow model advanced emphasises the emergence of creditors, and their tendency to persevere with a savings habit (intentionally selling more than they buy) long after such abstemious behaviour has served its underlying usefulness.

The paper suggests that the financial system acts in the service of creditors to both achieve financial returns for them, and to serve as a pump to maintain the circular flow of expenditure in the face of habitual non-spending on the part of many creditors. The financial services industry plays a quixotic role in enabling long periods of 'boom' in what would otherwise be a state of semi-permanent recession.

The presence of a substantial group of habitual savers creates imbalances in the global economy that results, if creditors do not switch to a spending (use it) strategy, in a (lose it) rebalancing. The lose-it scenario may be a classic financial crisis (which may turn into an extended global recession such as the early 1930s), or a period of inflation (which may turn into a period of global stagflation such as the late 1970s).

Sustainable long run solutions require creditors to <u>use</u> their credit balances by running expenditure deficits, with particular emphasis on them selling fewer rather than buying more goods and services.

Introduction

The global financial crisis of 2007-09 is popularly blamed on 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 new types of financial asset. Little attention is given to analysis of the implied counterfactual story; namely that a financial services industry not behaving recklessly would have enabled stable and sustainable economic growth.

Could it be, instead, that the excessive competitive behaviour of the world's financial intermediaries, by pumping up global aggregate demand, averted (or at least postponed) a more serious global crisis?

In the popular story of the financial crisis, while banks are assigned principal blame, secondary blame is placed on borrowers generally, and on governments for regulatory failure. Savers are blamed only for their naivety in evaluation of risk, and not for the stagnation or contraction of economic activity that habitual saving might cause. Saving continues to be seen as the most praiseworthy of financial activities; indeed as part of the cure rather than part of the cause.

Occam's Razor suggests that we should only look for complex explanations when we cannot find simple ones. Here we offer an extremely simple circular flow model, of a global economy with just two agents. Once we develop the basic framework ("version 1") we can, step-by-step, make our model more complex (versions 2 to 4).

Yeoman Model of a Simple Closed Economic System

One very simple approach is to follow the circular flows of expenditure and income in a simple closed economy, which can be used as a good approximation to the global economy. The world economy is a closed system – no exports or imports to or from other worlds. If we think of economic agents as countries rather than as people, then the world economy is a simple closed system with 195 participants.
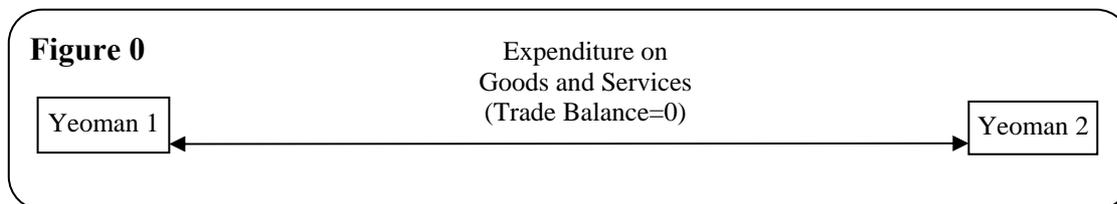
We will develop a simple circular-flow model in which our economic agents – our participating economies – are a conflation of countries and people. We may call it the "yeoman model of a simple closed economic system". We will also conflate the language norms of the goods and services marketplace (buying and selling), financial intermediation (borrowing, lending and interest), traditional circular flow models (spending, saving, and investing), and balance of payments accounting (current account balance, trade balance, exports and imports).

Circular flow models traditionally start with households (consumers) on one side and firms (producers) on the other. The global economy is different, however, in that each participant is equally household and firm, consumer and producer. In our alternative formal and simple model, our participants will be yeomen, representing Thomas Jefferson's ideal of free and enlightened self-sufficient land-owning farmers.[1] Our yeomen are simultaneously consumers and producers; households and firms. They desire both consumer goods and capital goods. Yeomen are motivated to survive and prosper.

We may call our yeomen "economies", and the closed system in which they operate is simply the "global economy". We start with a global economy of just two yeomen. Each yeoman is a free and autonomous decision-making agent.

We start by assuming both yeomen are entirely self-sufficient. As there are no transactions between these yeoman economies, then not only does each economy's current account balance at zero, but so do all components and sub-components of each economy's balance of payments.

After a while, our free and autonomous economies decide to specialise, as Jefferson might have expected; for example as farmer and as artisan. In accordance with the principle of comparative advantage, Yeoman 1 specialises in food production and Yeoman 2 in manufactures. Both our yeomen, through mutual exchange of goods and services, become better off. Each yeoman has become an "open economy", participating in barter trade. We now have a closed economic system made up of 2 participating open economies.

Figure 0   Expenditure on
                    Goods and Services
                    (Trade Balance=0)
Yeoman 1 ←————————————————————————→ Yeoman 2

Yeomen sell to other yeomen *for the purpose of buying something of equal exchange value from another*. There is no other reason for selling. Standards of living increase everywhere because each participating yeoman values what he buys more than what he sells. Both yeomen's trade balances and current account balances continue to equal zero. This, pure barter trade, is

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[1] "At the centre of Jefferson's vision of the United States stood the educated, yeoman farmer." (http://www.earlyamerica.com/review/2005_summer_fall/agronomist.htm)

Position Zero for our analysis. In Position Zero, shown in Figure 0, the trade balance and the current account balance are one and the same.

The Life-Stages of Yeomen

If we wished, we could make our story more complex by allowing for more yeomen, yeomen of different ages, and money as a medium to facilitate multilateral exchange of goods and services between yeomen. And we could allow our yeomen to interact through a basic financial system, with individual yeomen being creditors or debtors at various times in their lives, but not over their lives as a whole.

In this more complete picture, the individual yeomen presented in Figure 0 are grouped into two communities of yeomen. Yeoman 1 becomes Yeomen 1, a community or economy of economic agents. While our balance of payments analysis would account for transactions between economies, it is the individual yeomen who are the autonomous decision-making agents.

Through their lifetimes individual yeomen might be (1) deficit-debtors in their early years, (2) surplus-debtors as they become productive and extinguish their debts, (3) surplus-creditors (ie savers) once their debts have been extinguished, and (4) deficit-creditors as they spend their savings in the later part of their lives. The system balances nicely so long as all four types are always present, and so long as individual yeomen broadly make the transitions from one stage to the next as their lives progress.

We will revert for now, however, to the simplest form of the model: a global system of two yeomen – Yeoman 1 and Yeoman 2 – in which each yeoman is both an economy and an agent. Further our two yeomen live indefinitely, and remain productive. Saving on the part of Yeoman 1 can have only one meaning; lending to Yeoman 2. Yeoman 1 becomes Yeoman C (or simply "C"), a creditor, and Yeoman 2 becomes Yeoman D ("D"), a debtor.

Habitual Saving

The model being advanced here departs from the happy story in which saving is nothing more than a means to postpone consumption. In the complete and happy story above, saver yeomen (in life-stage 3) spend all their savings when they move into their final life-stage (stage 4).

In our alternative story, C adopts a new strategy. He decides to sell more (to D) than he will buy (from D) on an indefinite basis; that is, he decides to produce and sell surpluses without any plan to spend those surpluses in later life. (In our model, C initiates the strategy, and D is accommodating.) This situation is the equivalent to C deciding to accumulate credits, which are in fact claims on the future output of D. This becomes a strategy, or habit, of saving for its own sake.[2] C considers that his accumulated credits are a measure of his wealth, and that indefinite accumulation of credits equates to indefinitely increasing wealth.[3]

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

[3] In reality, these credits represent gifts of goods and services by C to D. In any gift-exchange economy, there is an obligation to reciprocate. 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 and services consumed or possessed – and it is the actions of D (in deciding whether or not to acquire capital goods) that determine whether there will be increases in global output.

On the face of it, such a saving strategy is not "rational" for Yeoman C.[4] To sell without buying involves making a sacrifice without gaining a reward. Selling without buying is much like giving; it's not even gift-exchange. Giving may be a good thing to do, but it is not an activity that would be considered rational by self-interested economic man.[5]

A less fallacious rationale for C to save as an ongoing strategy or habit is for him to lend with security to D in the hope that D defaults, and that C can thereby acquire assets (eg land) from D.

Another individual reason for the savings habit to emerge is the "rainy day" rationale of "precautionary saving".[6] In a possible future rainy day, the combined output of both yeomen may be reduced. C could claim a bigger share of the reduced pool of goods and services. The habitual saver, C, with claims on D, would become less insecure than D in a poorer "rainy day" world.[7]

A final rationale for the saving habit applies equally to national economies (whose lives are indefinite), to yeomen who live forever, and to yeomen who dream of creating dynasties (a kind of immortality). The industrialisation 'take-offs' that characterise many nations' economic histories can to some degree be explained by saving, investment in capital goods, and export surpluses over an extended period of time. The savings habits that facilitated industrialisation may persevere, at least over a number of generations, despite the economy moving into a stage of industrial maturity. Further, savings habits developed at times of relative capital scarcity may have played a significant role in fostering expectations of interest payments as a general reward for "thrift", even when creditors hold default-risk-free financial assets.[8]

Simple Model

In our simple model, based on the assumption of habitual saving behaviour (ie C behaviour), our thrifty yeoman (C) exchanges his excess wares for IOU credits[9] (known as "financial assets" in later versions of the model), so long as D is willing to borrow and become a debtor.[10] The possession of IOU credits enables C to buy in the future more than he sells in the future. In our model the desire by C to oversell is satisfied by the presence of a willing underseller (D). D behaviour (debtor-deficit behaviour) is required to complement C behaviour. Thus, in our basic model, there are no deflationary pressures arising from unsold goods. However, it must be noted that D may have required some persuasion before agreeing to accumulate liabilities

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[4] David Moss *Concise Guide to Macroeconomics* (2007, p.12) notes: "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." A rational creditor _intends_ to run deficits in the future.

[5] An economic agent who seeks to maximise his net enjoyment through buying as much as possible while selling as little as possible. For economic man, buying is pleasure, selling is equivalent to pain; he maximises his pleasure per unit of pain incurred.

[6] What is supposed to happen on a rainy day is that Yeoman C reverses his strategy, from saving to dissaving.

[7] In an economic community of many yeomen, precautionary saving creates a kind of savings arms race. Those within a community of savers who save less 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, as we shall see, habitual saving may be the principal cause of economic crises, such savers may be best placed to endure such a crisis.

[8] We might note that the squirrel, a metaphor for thrift, 'buys' durable goods (acorns) and therefore is not a habitual saver in the sense that our Yeoman C has become.
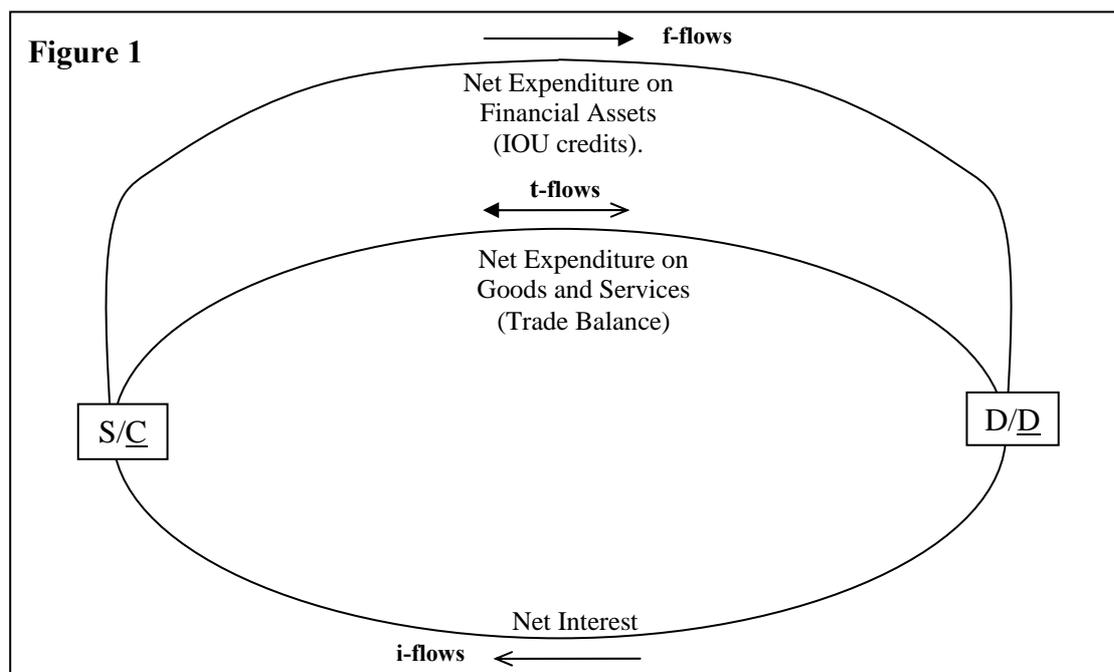
[9] In our simple model, there is no financial services industry, no banks. IOU credits are negotiated with debtors.

[10] It is important to note that this saving behaviour should never be called "investment". Investment means the purchase of capital goods – plant – in preference to the purchase of consumer goods. To a yeoman farmer, investment represents the planting (or breeding) of set-aside food, not simply the non-consumption of it.

(IOU debits) – future obligations to C – in return for more goods and services in the present. In our model, C behaviour is autonomous; D behaviour is substantially induced.

In this early phase of our simple yeoman model of the world economy, Yeoman C runs a trade (and current account) surplus, while Yeoman D runs trade and current account deficits. While the basic logic of the process doesn't require interest to be paid, we shall assume that D does agree to pay some interest to C.[11]

The net circular flow of credits is as follows in Figure 1:

Figure 1

f-flows

Net Expenditure on
Financial Assets
(IOU credits).

t-flows

Net Expenditure on
Goods and Services
(Trade Balance)

S/C

D/D

Net Interest

i-flows

In Figure 1, S represents "surplus" and C represents "creditor". The first "D" represents "deficit", the second represents "debtor". While we differentiate our two yeomen as C (creditor) and D (debtor), in an extension of our model, we could think of our global system as constituting two communities or nations; economies C and D.[12]

The trade balance is net exports. Where there is a net flow of goods and services from C to D – ie on account of Yeoman C deciding to sell more than he buys – then payments (ie credits) flow from D to C. We can call these trade payments '**t**-flows', and we can imagine them as money flows even though there is no actual money in our simple global system.

The current account is net exports plus net interest. D accumulates goods and services (through **t**-flows) and C accumulates IOU credits (negative **f**-flows). Until any interest is paid, the trade balance and the current account balance are equal. At this early stage, C's current account balance is **t**; D's balance is -**t**.

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[11] The issue of interest is problematic, in that our assumption is that savings are not scarce. The argument of the model does not require interest; rather it accepts interest as an observed reality of financial transactions. Indeed, the habit of expecting interest may be as ingrained as the habit of saving, and, at least in modern economies, a competitive financial services sector ensures that savers' expectations of interest are met.

[12] We remind ourselves, however, that communities are not autonomous decision-making agents. While many communities in practice make at least some decisions collectively, our communities' only required commonality is the status of yeoman agents as either creditors or debtors.

As C accumulates IOU credits, some interest (**i**-flows) becomes payable by D to C. Thus, in our 2-yeoman model, **i** > 0. When C accumulates IOU credits[13], he is lending to D; D borrows from C by accumulating IOU debits.

As the quantum of **i** increases, it becomes possible for the direction of **t**-flows to reverse. C in Figure 1 can run a trade deficit while still running current account surpluses (ie while still accumulating IOU credits), so long as the **i**-flow exceeds the reverse **t**-flow.

An equilibrium of sorts may appear once C comes to run a trade deficit that exactly balances his interest surplus (**t+i**=0). In this "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.[14] Yeoman D remains a debtor, but is no longer running deficits. D now runs a trade surplus. C no longer pursues credit-accumulating C behaviour, and D no longer pursues debt-accumulating D behaviour.

In Figure 2, both economies' current accounts balance. There are no surplus or deficit economies, just creditor (C) and debtor (D) economies. There is neither accumulation nor diminution of IOU credits; no saving, no new lending. C has gained his reward; an ongoing trade deficit. Each year he spends his interest on goods and services produced by D. C buys more than he sells; he has broken the savings habit.
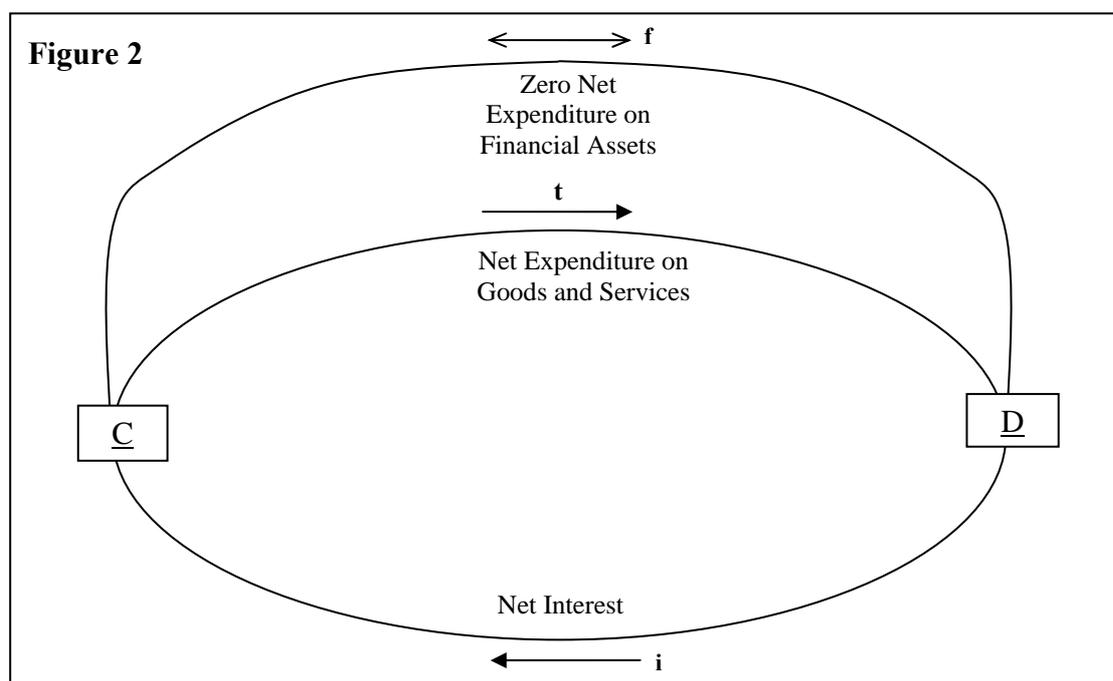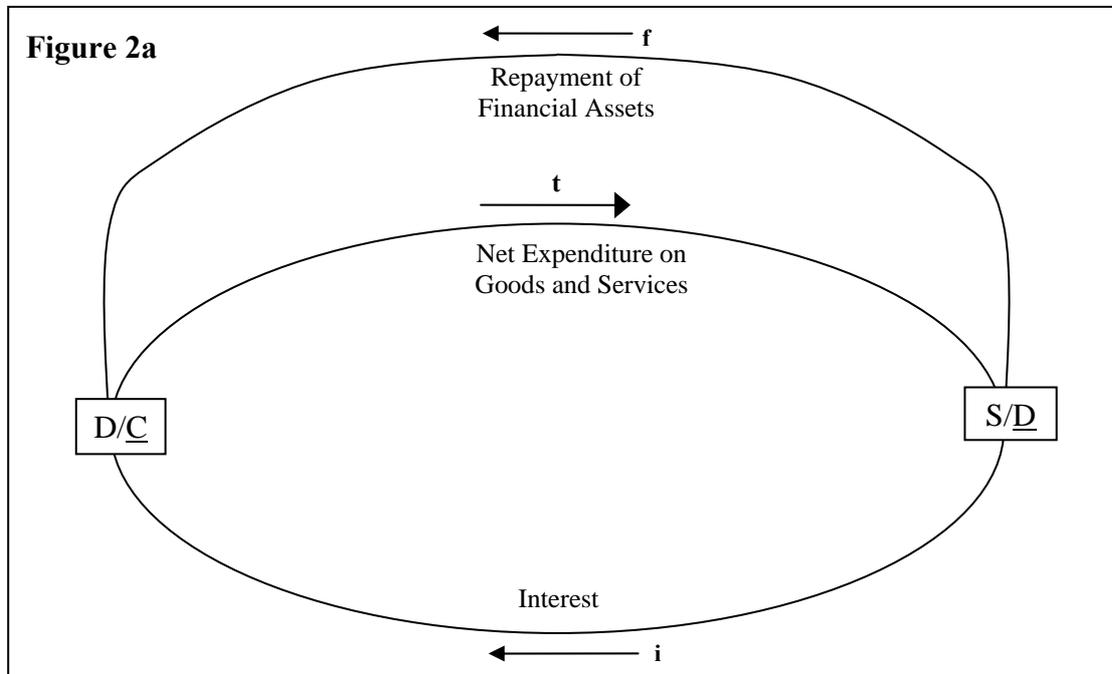

Figure 2

Figure 2 represents an equilibrium story – a stable global economic system – happy so long as interest levels are not too high relative to global output (ie so long as D does not have an

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[13] Such IOU credits may or may not be money. If they are money they will not be interest bearing.
[14] Today, creditor economies – eg China, Japan, Saudi Arabia, Switzerland – 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.

excessively lower living standard than C), and so long as C is content to spend rather than to save his interest.

Figure 2a is possibly even happier, representing a more complete use-it scenario. 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.

Figure 2a

Repayment of
Financial Assets
f

t
Net Expenditure on
Goods and Services

D/C

S/D

Interest
i

In practice, Figure 2 (let alone Figure 2a) is hard to maintain, because C got into his happy position of being able to run a perpetual trade deficit by developing a *habit* of saving, and by relying on D to develop a habit of borrowing. C might not be mindful to enjoy his opportunity, earned by abstinence, to consume more than he produces, to buy more than he sells.

If in practice C has become a habitual saver – if C perseveres with his credit-accumulating
C behaviour 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

Net Expenditure on Financial Assets — f

Net Expenditure on Goods and Services — t
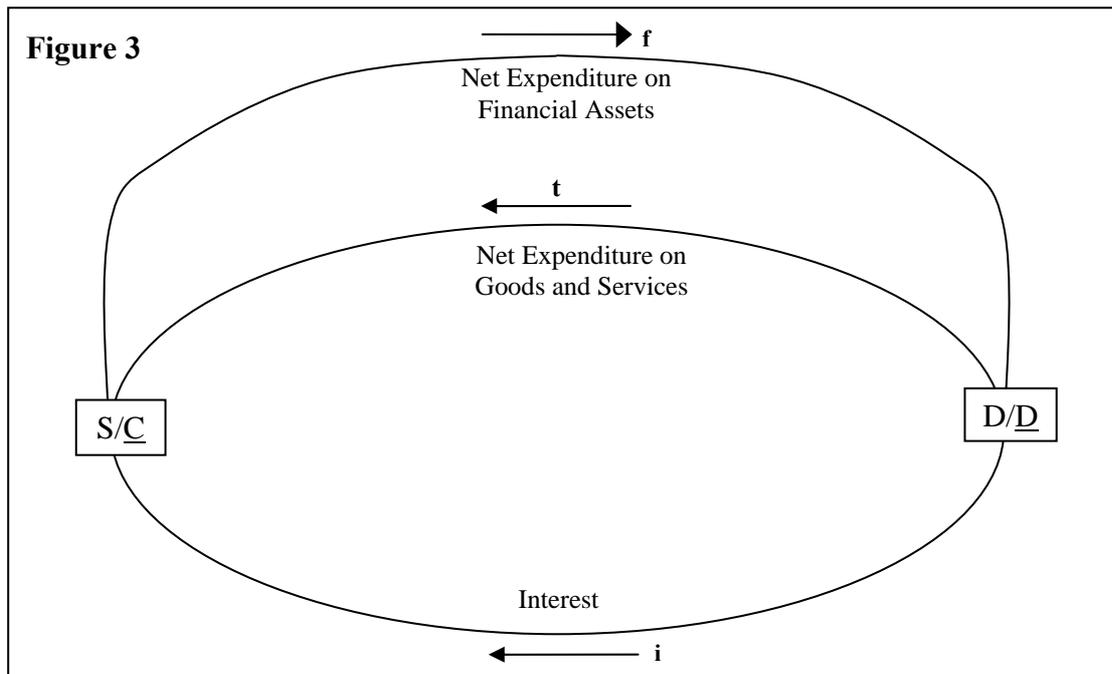
S/C   D/D

Interest — i

Figure 3 is clearly unstable, and results in a lose-it outcome for C. As trade and current account deficits and debts pile up on D, the interest obligations increase.[15] *Yet no interest is actually paid, in the real sense of the word 'interest', because no real payment (ie in goods and services) is required* by C. There is no transfer of goods and services from D to C. D simply accumulates loans from C that enables him to credit the increased nominal interest to C. Goods and services continue to flow from C to D. D borrows (ie accumulates IOU debits) to fund his 'imports' as well as borrowing to fund his interest obligation. *That is the only way the system overall can balance, given that C insists on running trade and current account surpluses.*[16]

If C does not use (ie spend) his credits, he stands to lose them, in some system-wide rebalancing process. Further, if D understands this, D will have every incentive to accept C's ongoing offerings of credit, especially if the credit is unsecured or unenforceable. D will also 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. If D senses that C is verging on changing from a surplus to a deficit strategy, all D may have to do to avert this is to offer C a higher interest rate. After all, D is not actually paying real interest (ie in goods and services) so has no need to care about the interest rate.

Ponzi Finance

When individuals pay all of their interest to their creditors by borrowing from their creditors, it is called Ponzi finance. In our simple model Yeoman D has become a Ponzi financier, living from the savings of Yeoman C; savings that have effectively become gifts.

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[15] If the global economy is growing – eg thanks to D economies purchasing sufficient capital goods – then small current account surpluses on the part of the C economies may not create instability. Instability occurs when the stock of IOUs grows more quickly than the output of goods and services.

[16] C may eventually accumulate land in lieu of IOU credits. For example, if the IOU credits were secured by D's land, then C eventually becomes landlord to D. C will draw land rents from D, in addition to interest. (We will nevertheless continue to use the word "interest" to cover all such yields: interest; profits; rents; royalties.)

In our Balance of Payments terms:
      Ponzi finance exists, for C, when $i > 0$, $t \geq 0$, and therefore $f \leq -i$.
      In the simplest form of global Ponzi finance, $i + f = 0$; $t=0$.

Ponzi finance is disreputable because it is unstable, and because, it commonly involves dishonest debtors. Such debtors take advantage of creditors' collective desire to accumulate rather than spend their credits. The most disreputable Ponzi debtors actively seek to recruit additional creditors, knowing that only a small proportion of their creditors' financial assets can ever be realised as goods and services. Ponzi finance is most problematic when debtors spend on consumer goods rather than invest in capital goods, thereby indicating they have no serious intention of meeting future interest payments or principal repayments in the form of goods and services.[17]

Ponzi finance between countries is more reputable than between individuals. Debtor countries that finance high living standards through perpetual borrowing do not conceal what they do just as Yeoman D cannot conceal the source of his high living standards from his benefactor (Yeoman C). It's all in the public record, in the respective countries' national accounts.

Ponzi finance is a necessary consequence of creditors, such as C, choosing not to be net purchasers of goods and services from their debtors. Such creditors may have visions of becoming very wealthy simply by accumulating credits in the form of compound interest. In the meantime, the pool of tradable goods and services created by debtors shrinks in the face of the lack of demand from creditors.

Economic Crisis as a Rebalancing Process

How does the situation in Figure 3 resolve itself? What are the ways in which system-wide rebalancing might occur? We can think of a rebalancing as a return to the dynamic of Figure 1, with the opportunity of next time achieving the Figure 2 (or 2a) outcome, rather than returning to Figure 3 for another revolution of the boom-bust cycle.

In our very simple 2-yeoman model, because there can be no secondary market for IOU credits[18], rebalancing can only occur through a jump to Figure 2a (the use it scenario - unlikely), or a substantial write-off of IOUs. The crisis is triggered when, eventually, C, concerned about D's ability to pay, belatedly requires D to repay IOUs, or pay interest, in the form of goods and services. Sooner rather than later, D will default. C may have a claim on everything D owns, which may not be much. Further, if D has spent C's loans to protect himself, D will be in a better military position to defend his property than C is to enforce his claim to it.[19]

If C rejects the "use it" option (Figure 2, using the interest; Figure 2a, using the interest and the accumulated credits), then he suffers the "lose it" option.[20]

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[17] Debtor countries that run high exchange rates, for example, are pursuing domestic policies that undermine their ability to service their liabilities in the form of goods and services.

[18] And therefore no global inflation.

[19] Arguably, the biggest economic story of the second millennium, or at least the 1000 years ended c.1980, takes this form. China becomes C and Europe/America (the 'West') becomes D. China's habitual relationship with the West was to sell more than it bought. It was the west which accumulated real wealth, and a huge military advantage over China, with China, in the Opium Wars (c.1840) being forced to accept goods and services as payment for China's exports. It remains unclear as to whether China can ever break its mercantilist habit of selling more than it buys.

[20] The most benign form of the "lose it" scenario is to experience nominal loses only, through a process of global inflation whereby goods and services are revalued against financial assets. As noted, however, this option is not available in our simple 2-yeoman global economy, as there is can be no mechanism to devalue IOU credits.

Extending the Model

Version 2

Let's expand our simple 2-Yeoman Model that demonstrates the consequences of excessive habitual saving,[21] so that we now have three open economies, each made up of 65 independent yeomen (ie 195 independent yeomen in total): C, D and N, where N stands for "neutral". N yeomen each enjoy balanced trade with the other 194 yeomen.

C yeomen can be expected to market their lending to N yeomen, who will be seen as a better credit risk than D yeomen. Ponzi financing D yeomen will be targeting N yeomen as new contributors. Thus, there will be ongoing pressure by C yeomen to turn N yeomen into D yeomen. And there will be ongoing pressure from D yeomen to turn N yeomen into C yeomen. Thus the N yeoman community eventually disappears, with individual N yeoman unable to resist the competing recruitment tugs of C and D. That would leave us with two economic communities each of approximately 90 yeomen, with just a few N yeomen resisting the pressures to become ingrained creditors or debtors.

In version 2 of our model, individual yeomen are no longer immortal, but our C and D economies, as communities respectively of creditor and of debtor yeomen, can be regarded as immortal, like our version 1 yeomen.

In version 2 of our model, IOU credits become bonds (interest bearing debt). Additionally, money is used as a currency (flowing) medium that is directly exchangeable for goods and services. Bonds can be sold at any time for money. This more complex situation opens up more options for a rebalancing crisis to resolve the Figure 3 conundrum.

The crisis begins after the system has been operating for a while in Figure 3 mode. In other words, Figure 2a rebalancing has not taken place. Bond-holders (C), fearing default, start to panic, seeking to exchange their bonds for money. Bond prices fall sharply. C yeomen increasingly hold money as an alternative financial asset, compromising its role as a circulating medium. Spending – purchasing goods and services from other yeomen – decreases, leading, possibly after a period of deflation, to reduced supplies of goods and services. Spending increases when holders of money fear that their money will buy significantly fewer goods and services than previously. When this happens C yeomen – now largely money holders – will seek to exchange their money holdings for scarce goods and services. The exchange ratio between money and goods/services thus increases, meaning that inflation takes place.

The fully-fledged crisis environment thus involves both recession and inflation; both form parts of the rebalancing process. Pre-crisis bonds will be subject to substantial default, and holders of both bonds (subject to default risk and liquidity risk) and money (safe from default risk but subject to inflation risk) will see their financial fortunes largely disappear as these stores of financial wealth will now buy far fewer goods and services than their prior nominal values had suggested. The economic system reverts from Figure 3 to Figure 1 once the ratio of financial asset values to nominal GDP has fallen enough.

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[21] By excessive here we mean saving net of the spending of past savers; eg net of the spending of past savings by retired persons on goods and services; and net of the normal additional debt required to fund an appropriate level of new and replacement capital goods to fund economic growth at a sustainable level. Our model should be equally applicable to a growing or a stationary global economy.

The exact mechanism of rebalance will depend on how easily money is created in this economic system. What we can say is that real money balances will need to be restored before the economic system reverts to its Figure 1 norm. In the absence of sufficient money to facilitate normal trade between yeomen, then yeomen would likely revert to individual self-sufficiency with limited barter trade.[22]

Version 3

Version 3 of our Yeoman Model moves from 195 yeomen to 195 country economies, the number of functionally independent nation-states in our early 21st century world. Countries are to some extent decision-making units, in that they have governments and central banks that make key decisions on behalf of their residents. But, by and large, decisions are made by individual people (households?) rather than by countries. Countries have their own forms of money (currencies), each of which is exchangeable for another country's money. Bonds are able to be denominated in any currency. There is an international financial marketplace, but no financial intermediaries such as banks or finance companies (aka nonbanks). For essentially the same reasons as for version 2, our global system contains about 90 C economies and 90 D economies.

The Figure 3 conundrum exists, in much the same way as it does in versions 1 and 2 of our model. The problem is aggravated as central banks in D countries raise interest rates, with the effect of continuing the C-D imbalance. C counties respond to this incentive for a long time before they start to panic, meaning that Figure 3 may represent a decade of unusually high economic growth, and with only a minority of naysayers recognising the underlying instability of the accumulating IOU credits and debits. When panic finally takes hold, C countries look to sell bonds denominated in the currencies of the most risky D currencies and purchase bonds in the less risky D currencies, further delaying the onset of systemic crisis.

The general behaviour of C countries buying bonds denominated in D currencies leads to the appreciation of the D currencies and the depreciation of the C currencies, thereby reinforcing the current account and trade surpluses of the C countries.

Rebalancing involves a mass sell-off of D-denominated bonds, a sharp depreciation of D currencies, a loss of financial claims held by C countries on D countries' output, and a loss of C country exports. Some further rebalancing will take place via Figure 2a dynamics following the currency overshoot. Sufficient rebalancing will have taken place when the ratio of creditor country claims to debtor country output reaches levels low enough to allow the resumption of C country lending to D countries. Once this happens, the Figure 1 dynamic takes hold once more.

Deflation will accompany the rebalancing (and extend the duration of the process) if central banks do not sufficiently expand their countries' money supplies, as creditors simply switch from bonds to money as a store of financial wealth. If some inflation is enabled to become a part of the rebalancing process – maybe through larger monetary expansions encouraging holders of money to purchase goods and services – the rebalancing will take place more quickly, with much less destruction of business activity, and much less bond default. Generally, creditors holding low-default-risk government bonds will favour a deflationary rebalancing; creditor countries whose residents and governments took greater risks (ie which invested rather than hoarded their savings) holding higher-risk company bonds will favour an inflationary rebalancing.

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[22] The rise of feudalism in Europe 1500 years ago would be an example of systemic replacement of an exchange economy by an economic system based on self-sufficiency.

Version 4

The final extension (version 4) of our yeoman model of the global economy focuses on individual agency (maybe 2 billion decision-making households) rather than 195 agent-countries. It allows for banks and nonbanks, with financial assets now including all forms of debt, plus equities in publicly-listed companies. In version 4, we recognise that a significant proportion of the world's financial asset accumulations are actually held by C households who live in D countries. Habitual saving does not take place only in creditor countries.

As before, the differentiation required is between C and D behaviour. C and D actors are now modern households rather than yeomen or countries. There are no firms; businesses are regarded as companies of households. Hence, for all versions of our model, individual economies – yeomen, communities, countries, households – are both consuming and producing units. Therefore there are no wage and salary earners. All 'employees' are represented in our model as self-employed sellers of services to their monopsonist 'employers'.

While the key causal-dynamic of economic crises in our model is habitual savings behaviour on the part of C economies, we cannot only blame the C countries for C behaviour. Indeed the habitual-saving strategy is common among 'wage and salary earners', understood here as self-employed sellers of services. Employees often do not equate the concept of 'earning' with that of 'selling', and therefore have little sense that by habitually selling (ie earning) more than they buy, they are selling debt (ie lending) to the D households that the global system depends on to enable goods and services markets to clear.

The perception gap that prevents many people from fully appreciating the "joined at the hip" [Margaret Attwood] relationship between C and D households is widened by the presence of the financial services sector; by financial intermediaries such as banks and nonbanks. Nevertheless, by accepting interest, as savers, C households are fully aware that they are lending to other households (or companies of households) who are paying that interest.

The problem of oversaving – of saving by habit for no purpose other than to accumulate credits – is widely associated in New Zealand with three stereotypes: Belgian Dentists (representing the conservative high-earning professions as well as a country with a reputation for C behaviour), Japanese housewives (representing the households of Japanese salarymen), and the Gnomes of Zurich (representing high earnings traditionally available in the financial services industry, as well as representing Switzerland, a long-standing creditor country). We can of course add the Gnomes of Wall St and the City of London, and the many other traders of financial assets and senior executives in debtor countries whose growth of financial wealth has, this decade, far outpaced their capacity to spend.

The problem of habitual saving of course goes far beyond the stereotype. So long as financially rich creditor households (C) lend, on balance, to financially poor debtor households (D) to maintain the circular flow of payments by maintaining substantially negative **f**-flows (as in Figure 3), then the global economic system cannot avoid boom-bust instability. Collectively, the world's creditor households represent Yeoman C, and the world's debtor households represent Yeoman D. Only a combined decision on the part of C households to balance their collective current account (or to run deficits) can take the world economy into the safe scenarios represented by Figures 2 or 2a. In the absence of such stabilising aggregate behaviour from C, crisis rebalancing must inevitably take place.

Crisis rebalancing will be more protracted if government policies attempt to resist the rebalancing process of the crisis, by creating of failing to correct macroeconomic conditions that

are unhelpful to the rebalancing process. Such policies or conditions that cause rebalancing to be protracted include deflation (or disinflation as a policy, which is designed to inhibit rebalancing through inflation), which *ceteris paribus* aggravates creditor-debtor imbalances, policies (such as cutting real wage rates; or suppressing automatic stabilisers such as graduated tax and social security payments), and other circumstances that aggravate financial inequality.[23]

One important aspect of contemporary oversaving is represented by the worlds' pension funds, private and publicly sponsored, which are major accumulators of financial assets. While the intention of these funds is that they later be spent, the fact that these funds are being simultaneously accumulated with the expectation of being simultaneously liquidated in the 2020s and 2030s (as today's 45-65 year-olds significantly reduce their selling activities; ie reduce their labour force participation) suggests that the liquidation of such funds may be triggered and hastened by a general financial panic (like that of 2008) that necessarily follows from Figure 3 financial accumulations.

The Financial Services Sector – Primers of the Pump

By applying Figures 1 to 3 above to version 4 of our model, we can see clearly now that the financial services sector – especially banks and nonbanks – plays a critical growth-facilitating crisis-delaying role, in a world of habitual savers, a critical role in creating aggregate demand for goods and services. In an endemic boom-bust economic system, growth takes place through the financially unbalancing booms outweighing the rebalancing busts. Banks and nonbanks must sell debt to enable the D behaviour that is required to offset the C behaviour of under-spending creditors. The process is unstable, as we have seen in Figure 3, so long as the creditors continue to sell more than they buy.

The upshot is that the requirement for debt-enabled spending and the expanding market demand for professional financial services are both created by the excessive saving (or under-spending) of C households. Finance sector professionals must work hard to market and sell the debt that is required to maintain the circular flow of credits through the global system where spending on goods and services (**t**-flows) by C households is insufficient, and must therefore be transferred to D individuals. The process creates opportunities for finance professionals – by "clipping the tickets" of the **f**-flows and **i**-flows in Figures 1 to 3 – to sell at considerable profit huge amounts of services, thereby themselves selling more financial services than they spend on goods and services. Thus finance sector professionals themselves, by adopting C behaviour, positively reinforce the bubble-like characteristics of markets for financial assets represented in Figure 3. Finance sector employees, many of whom are paid much more generously than employees in other sectors, become major purchasers of financial assets in boom-bubble markets.

The finance sector acts as the principal pump primer in a capitalist economic system that operates under conditions of excess and habitual saving. (Under other conditions the finance sector simply provides a link between non-habitual savers – facilitating the purchase of capital goods – and non-habitual borrowers.) If finance sector businesses did not act in this way, and no other sector (such as government) operated as an alternative pump-primer, the economic system would be in a permanent state of recession and deflation; in an ongoing state of excess supply.

We might note that governments are able to take at least some of the pump priming load requirement off financial intermediaries, as well as taking steps themselves to reduce that load. Such government initiatives include social security, a greater attention generally to addressing

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[23] 'Financial inequality' represents inequality of nominal claims on future output, as distinct from inequality in the actual consumption of output.

income inequality as a form of market failure, and a willingness to adopt D behaviour on a large scale during (and maybe even before[24]) a financial crisis.

Sustainability

The global economy can only stabilise by achieving Figure 2 or 2a outcomes, with respect to creditor and debtor households. D households are contractually obliged to run surpluses (sell more than they buy, so they can pay interest). They can only do so, however, if C households agree to running deficits. If creditors collectively refuse to run deficits, the system runs in Ponzi-mode (Figure 3) until it crashes. The crash is itself a rebalancing, so is self-limiting.

A systemic solution requires creditors to buy more than they sell (negative **t**-flows as in Figures 2 and 2a). *A sustainable systemic solution requires C households to reduce their selling*, rather than to increase their buying.

Country Use-It Solutions

Highly developed creditor countries like Japan and Switzerland can lead the way towards a sustainable systemic solution to unbalancing booms and rebalancing crises, by (i) producing much of their export produce in D countries, and by paying dividends to their citizens, thus encouraging their citizens to purchase goods and services from the D economies, while themselves working (for market remuneration) relatively little.[25] By enjoying the rewards of past abstinence, governments of developed creditor countries can not only offer very high living standards to all of their citizens, they can also contribute to the stabilisation of the global economy. To ensure global environmental sustainability, it is imperative that these countries run substantial and indefinite trade deficits by selling less rather than by buying more.

Developing C countries like China are not yet productive enough to enjoy such rewards. But they can contribute to global stabilisation by introducing a comprehensive social security system, and generally enabling their own citizens to enjoy a substantially greater proportion of what the world produces than they currently do.

D countries' governments face the greater difficulties. Generally their countries are contractually required to run trade surpluses in a systemic environment that prevents them from doing so. They also require a substantial internal rebalancing, so that the burden of those required trade surpluses is appropriately shared. In many cases these are rich Anglo developed countries which have become highly unequal in recent years, which contain many creditor households of habitual rather than goal-oriented savers, and which are at least as much a part of the systemic problem as are Belgian dentists and Japanese housewives. The inequality of financial wealth between creditor and debtor households within debtor countries is a significant part of the overall problem we are addressing here. Policies that resolve such inequalities by means other than crisis rebalancing therefore comprise a significant part of the solution. Certainly, *policies that persuade everyone resident in debtor countries to save more are not a part of the solution*.

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[24] If governments borrow more at times that bank-lending is fuelling bubbles in real estate and equity markets, then lending will generally be more efficient. The major problem here is that eventual D-C rebalancing may require much defaulting (the alternative form of crisis rebalancing is inflation). Governments, unlike speculative property companies, cannot (and should not) easily default.

[25] This situation opens up the gift economy, where creditor households increasingly work for the public good, so long as they do not supply for nothing goods that debtors must produce for sale to meet their contractual obligations.