Circular Flow:
Drawing Further Inspiration from William Harvey

paper by
Keith Rankin
Dept. of Accounting and Finance
Unitec Institute of Technology

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Keith Rankin, Unitec Institute of Technology, 14 June 2012

> [Quesnay's] emphasis on a circular-flow model can be traced to Thomas
> Hobbes's use of William Harvey's model of the circulation of "nutrients" in the
> blood as a physiological analogy for the material foundation of the
> commonwealth."
>
> <div align="right">Kenneth Stokes (1994, p.27)</div>

Introduction[1]

In the 1750s Dr Francois Quesnay founded what many regard as the first true school of economics, known in English as the Physiocrats. Quesnay's basic model (1758) is believed to have been inspired, given his medical knowledge, from William Harvey's conclusions relating to the circular flow of blood through the body.[2]

In the wake of Keynes' *General Theory* (1936), representations of a circular flow of payments appear in most first year textbooks of macroeconomics and economic principles (Samuelson 2001, pp.29,288), enabling students to appreciate the need for balance in a closed economy while allowing for net exports as a balancing item for an open national economy. Such circular flow models are able to convey to students of economics the sense of macroeconomic equilibrium in a way that the aggregate demand - aggregate supply models of comparative statics cannot.[3]

The development of circular flow modelling reached its educational apex in the Keynesian era of the 1950s and 1960s, reflected in the hydraulic modelling process most famously attributed to Bill Phillips, the creator of Moniac.[4] Indeed that gave rise to the phrase "hydraulic Keynesianism"

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[1] I would like to acknowledge Chris Carson for his supply of interesting source material, and Stuart Birks for his comments.

[2] While Schumpeter (1954, p.240 n9) traces circular flow analysis to Richard Cantillon (d. 1734), and believes that Quesnay's later writing was independently inspired by the discovery of the circulation of the blood by William Harvey (1628) and others in the seventeenth century. Cantillon's seminal work, though well circulated, was not published until 1755 (Hébert in Cantillon (2010), p.6). Hébert (p.5) traces Cantillon to Hobbes.

[3] Schumpeter (p.242) describes "the Cantillon-Quesnay *tableau*" as "the first method ever devised in order to convey an explicit conception of the nature of economic equilibrium".

[4] In effect, an analogue computer, that owed much to Phillips' engineering skills in the early development of hydroelectricity in New Zealand.

(Laidler 2001, p.4), coined by Coddington in 1976.[5] Laidler (p.12) noted that this phrase had gained "a distinctly perjorative [sic] overtone", linking that to "the extent to which New-classical ideas have changed the way all of us think about how macroeconomic theory should be done".

I have argued that circular flow approaches have been under-developed in economics' education (Rankin 2010a, 2010b), and that the resulting gap in our thinking has made it difficult for economics to adequately incorporate unbalanced financial phenomena into its models. While we get financial economics as a sub-discipline in which financial assets (claims) are treated as analogues of the goods and services of 'real' economics, we fail to explore some other quite important relationships between financial behaviour and real economic phenomena.

The simple flow model presented here differs markedly from the standard presentation, and draws its inspiration directly from the human body (or at least its upper half) in the spirit of Quesnay and Phillips.[6] It its core form, this is a closed economy model, analogous to the global economic and financial system.[7] And, in the spirit of classical economics, it posits classes of households. These two classes are the 'saving class' (S) – a modern conflation of the classical capitalist and landlord classes – and the 'subsistence class', although for the latter I prefer the prosaic 'lower income class' (L) who essentially spend their income as they earn it. The L-class can be thought of as the labouring or working class, albeit in a modern welfare-state context.

While the expression "savings class" is not commonly used today, it was widely used from 1927 to 1942 (Google), the period of the Great Depression, as shown in Figure 1. Given that, as shown in Figure 2, net realised[8] private surpluses represented 8% of world GDP in 2009 (Rankin 2011e), up from less than 1% two years earlier, it would seem an apposite time for this label to once again return to the lexicon of political economy.

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[5] In Coddington's words (p.1264) "The theoretical content of the body of ideas that has been propagated through the educational system in the West since World War II as 'Keynesian Economics' (by, for example, Paul Samuelson's pedagogically authoritative textbook) I shall proceed to refer to as 'hydraulic Keynesianism'." Coddington, looking for micro-foundations, was concerned that the only decision-making agent in these circular flow models was "the Government" (p.1265).

[6] An analogy with a child's body would enable us to better envisage the concept of growth. However, as the analogy is developed, the capitalist head of the model makes decisions more with the caution of the adult mind.

[7] Strictly, a closed system would be a perpetual motion system. Thus the global economic system requires energy from outside; namely from the sun. In classical 3-factor models, this energy requirement is absorbed into the factor "land", and is treated as a free input.
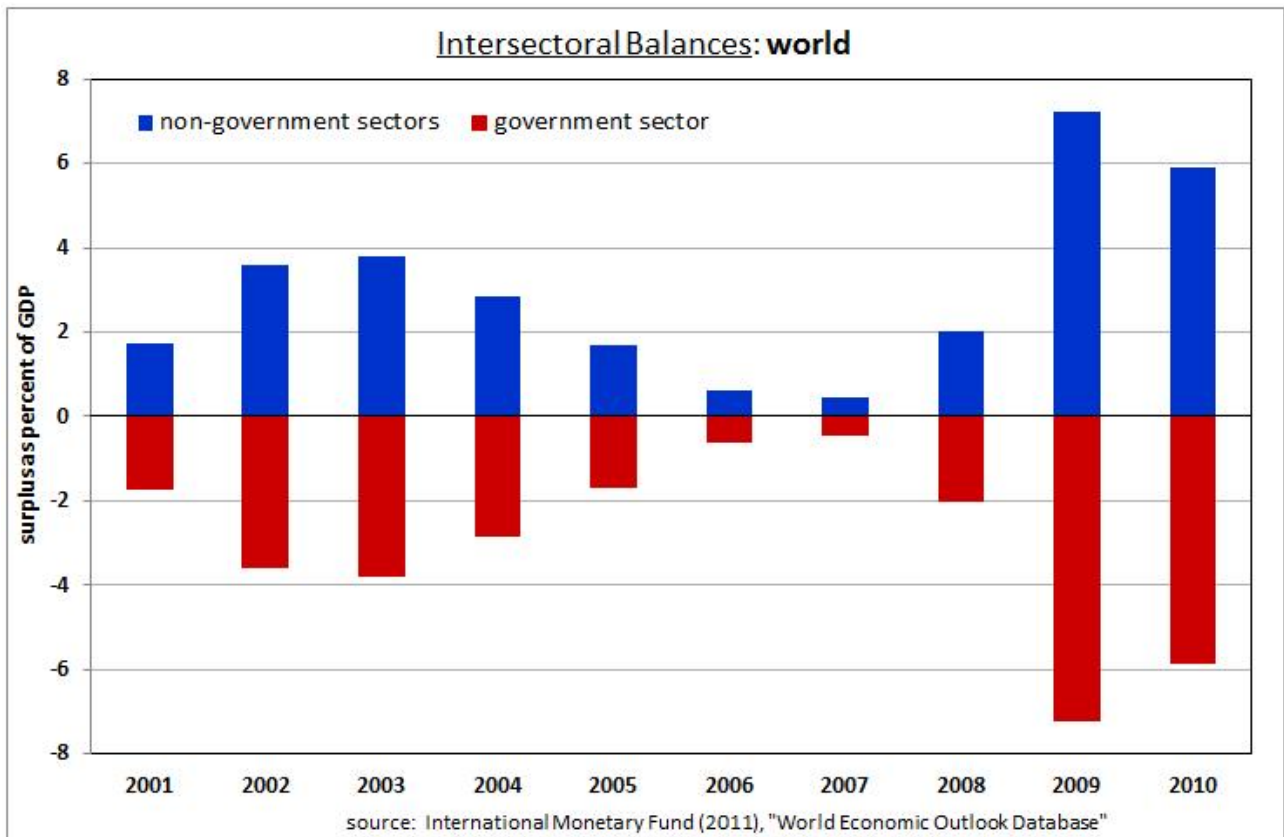
[8] Almost certainly desired private surpluses were much higher.

Figure 1: Frequency of use of the terms 'Saving Class' and 'Saving Classes'
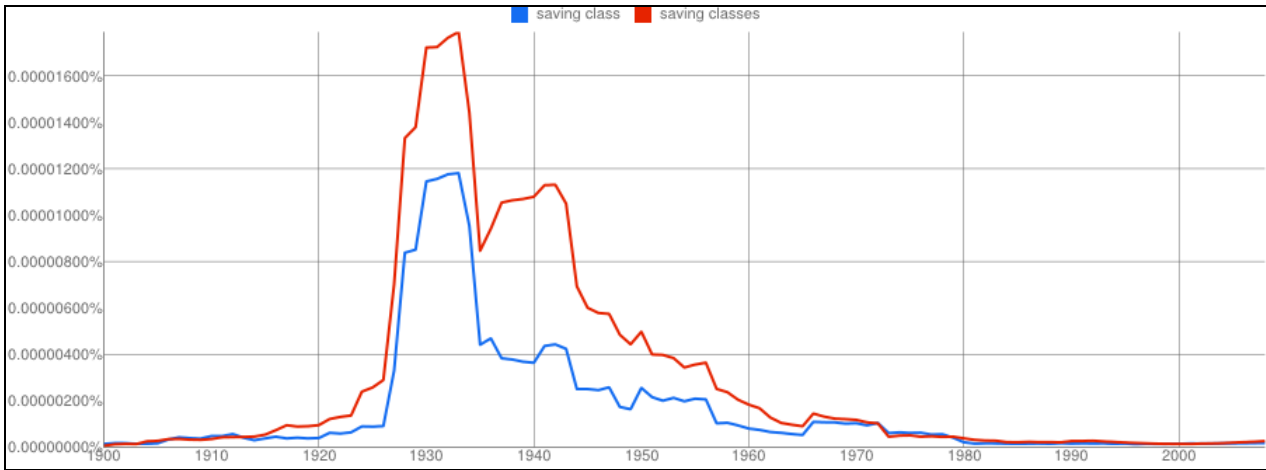


source: Google Ngram Viewer

Figure 2:

In the spirit of contemporary circular flow representations, these classes can best be thought of as sectors. Thus we have an S-sector and an L-sector as nodes of a circular flow model, with S being analogous to the human head, and L an analogue for the left-hand. Appropriately, the word 'capitalism' derives from the Latin word for 'head'.

A third node, or sector, of this flow representation is governments (G), noting that in a global context, governments are much like large households. Our G-sector is represented as analogous to the human right-hand, leaving us with a flow model with three income-expenditure nodes and a production centre (P), shown in Figure 3.

Figure 3: Normal 'Arterial' and 'Venal' Flows between Sectors
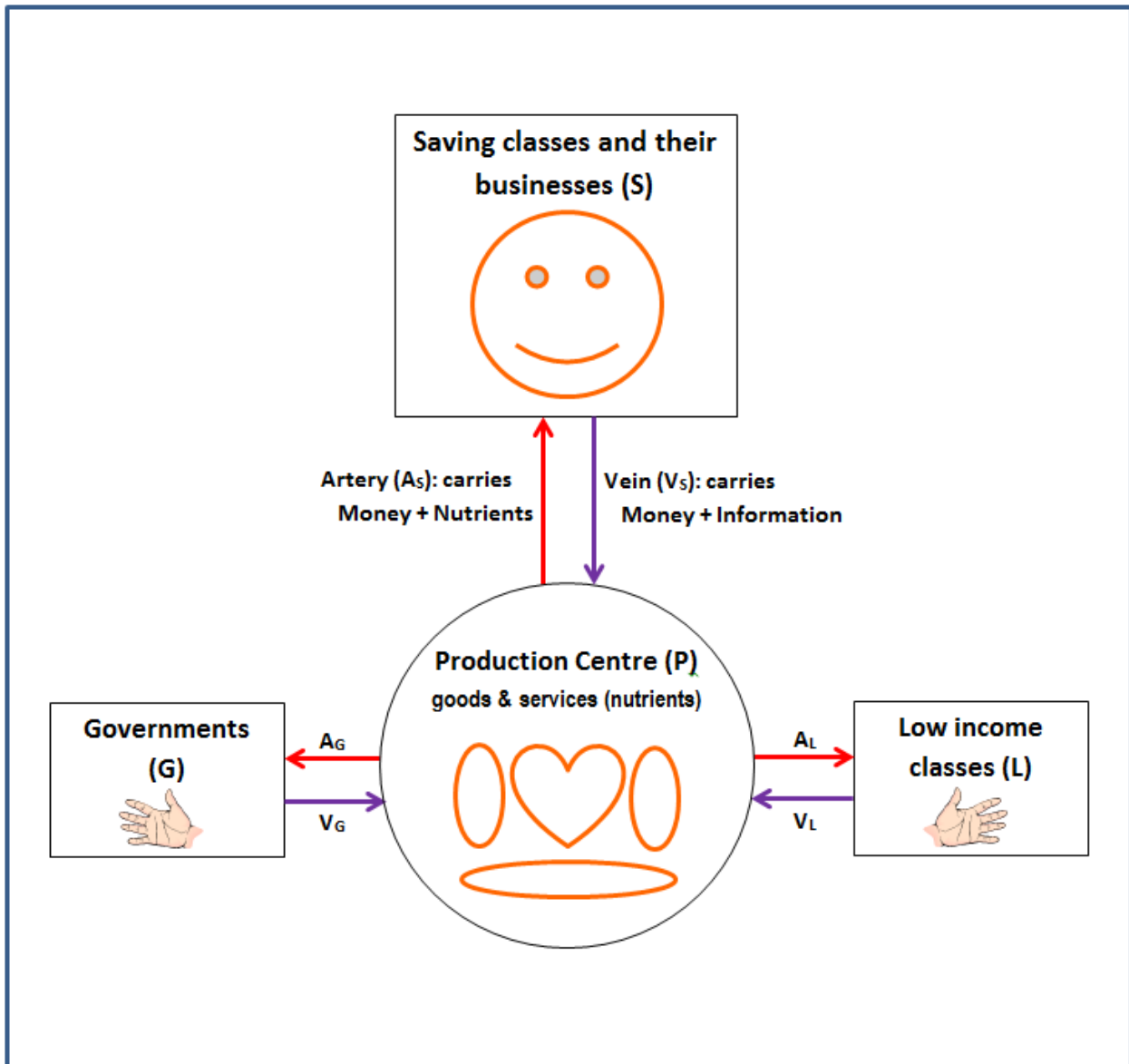
We note that, here, there is no such thing as Coddington's "the Government" (1976 p.1265) ruling over the global economy. Rather, the key decision-making node is S, the saving class, through the extent to which it saves, borrows, purchases investment goods, and concentrates income. This S-sector includes the financial system and all of the spending decisions channelled within it.

The Biological Analogy

The flow model has three nodes (or sectors), plus a production centre. The nodes are the head (analogous to the saving class), the left hand (analogous to the low-income class), and the right-hand (analogous to governments).

The production centre is analogous to the heart, stomach and lungs. Resources coming into the body (oxygen, food, water) combine in the production centre to create goods and services (nutrients) which are transported through the arterial blood to the three sectors.

The nutrients represent real GDP (the 'economic cake'), both aggregate output and the commensurate claims – rights to goods and services – that we call income. Thus the nutrients are distributed through the arterial system to each of the three sectors (S, L, G), in accordance with a set of distributional rules determined principally by the market price system. We note that market prices such as wages are influenced by the relative market power of the S-class.[9] We also note that these rules of income distribution are influenced by governments' rights of taxation, and governments' judicial roles in determining and enforcing property rights.

The blood plasma essentially represents the monetary medium, which does its work by circulating. In this flow model, money flows (like a conveyor belt) with income, rather than against the expenditure flow as is represented in contemporary textbook circular flow models.

Inflation can be said to have existed when the arterial blood has become more dilute than usual, with deflation being represented by blood having become increasingly concentrated. Here, however, my story is about unemployment, the actual consequence of saved income neither allocated to others' consumption nor to investment spending. Under many situations, possibly most situations, the saving class will save (or repay debt) however seductive a deflationary environment might be in persuading them to do otherwise. The compulsion to save in the face of an uncertain future, appears to be hard-wired (Rankin 2010a, p.96) into the behaviour of most (but not all) humans, once physiological needs are met.

The return (venal) flow represents spending. The money travelling from the sectors to the centre carries information (analogous to hormones), and determines both what and how much the production centre should produce.

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[9] This power presumably arises from the marginal utility of S-class members able to be more concerned about future security needs vis-à-vis present needs, for example as expressed in Maslow's (1954) 'hierarchy of needs'.

Figure 3 represents an abstract 'normal' multi-sector global economy, and helps us to see how real world flows differ from normal flows, much as we accept that real world competition is imperfect, rather than the realisation of the 'perfect' norm.

Under these postulated normal conditions, traditional injections and withdrawals disappear. There is no foreign sector, by definition, and the G and L sectors run balanced budgets, by assumption. Saving and private investment is endogenous to the S sector.

The low income (L) sector is made up of households who spend their entire incomes, essentially on consumer goods known as "wage goods" (Keynes 1936, p.7), which are consumed directly. While some L-class households are self-employed – petty capitalists – the sector gains its right to its share of real GDP through its supply of labour (including self-employed labour) to the production centre.

Incomes achieved in the L-sector can be understood as central to the assessment of material living standards in the economic system as a whole, given that incomes are higher in the S-sector. Thus, as a performance measure of rising living standards, L-class per capita incomes must increase.

The government (G) sector is made up of organisations which purchase collective goods and, through their sovereign or municipal rights, have the ability to influence the rules of distribution. Governments have the ability to claim a share of real GDP by levying taxes. While collective goods are generally of an investment nature, some, such as city parks, contain direct consumption benefits to households. Thus living standards are functionally related to the expenditure of governments. Access to collective goods clearly represents an aspect of the well-being of the L-sector.

In the system's abstract normal state of balance, governments spend only their income, and all of their income. Like the L-sector, the G-sector runs a balanced sectoral balance sheet. The flow of arterial blood to each hand is unimpeded in its return, as venal blood, to the centre.

The Saving Class

This group, which represents the decision-making head of the economic system, could be known as the 'saving and borrowing' sector. The saving class purchase a combination of wage goods, non-wage consumer goods[10], and, through their companies[11], investment goods[12]. They also expend

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[10] Sometimes called "profit goods" by socialist writers (Carruthers 1883, Fairman 1888). For these writers, profit goods are pure luxury goods. Keynes (1936) uses Pigou's term "non-wage-goods" alongside "wage-goods".

much effort on the acquisition of financial assets on secondary markets, exchanging one kind of claim on future nutrients for another. Thus, financial services represent a substantial example of a non-wage-good. Further, inflated values of financial assets periodically lead many S-class households to abandon their usual caution, incurring debts for consumption spending that they normally would not have done.

The financial system resides within this S-sector. It is the system through which balance must take place in the context that saving, an inherently unbalancing activity that must be matched by investment spending, represents the *raison d'être* of this class.

The saving of the saving classes represents the capital of the global system; the nutrients passing to the saving class but not required by them for consumption purposes.[13] The most direct way for the saving class to allocate this capital is via their companies as equity capital, through purchases of investment goods. The system balances if the remainder of the capital is allocated within the sector to companies via financial intermediaries, also for the purchase of investment goods.

Figure 4 shows the circular flow within the S-sector. When the sector is in equilibrium, all saved nutrients are allocated as investment goods. All nutrients are utilised by S-class households and their companies (red arterial income flows), albeit with the help of financial intermediaries (banks). The sector as a whole is in balance, neither in credit nor in debt, with new expenditure flows shown in violet. And when the S-sector is in balance, then the whole inter-sectoral system is in balance, given a definition of normality that assumes such balance within the L and G sectors.

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[11] I choose to use the word "companies" rather than 'businesses' or 'firms', because of its clear connotation of businesses as collectives of S-class households.

[12] Almost everyone except some economists regard 'investment' more as a synonym than as a complement of 'saving'. Here, I try to use words like 'spending', 'purchases' and 'goods' in conjunction with the word 'investment', to make my use of this word clear.

[13] We bear in mind that the principal purpose of saving for individuals is to manage their nutrient intake over their life-cycle. Most nutrients unrequired by middle-aged S-class households will be claimed for consumption purposes by younger older S-class households. Capital is net of such consumption. Diamond and Saez (2011) explore the life-cycle hypothesis, that assumes all individuals intend to optimise their life-time consumption, and note the presence of biases that lead to net saving in practice. They also note that versions of the life-cycle hypothesis are dynastic, enabling individuals therefore to plan for infinite life expectancies.

Figure 4: Head (Income, Consumption, Savings and Investment)
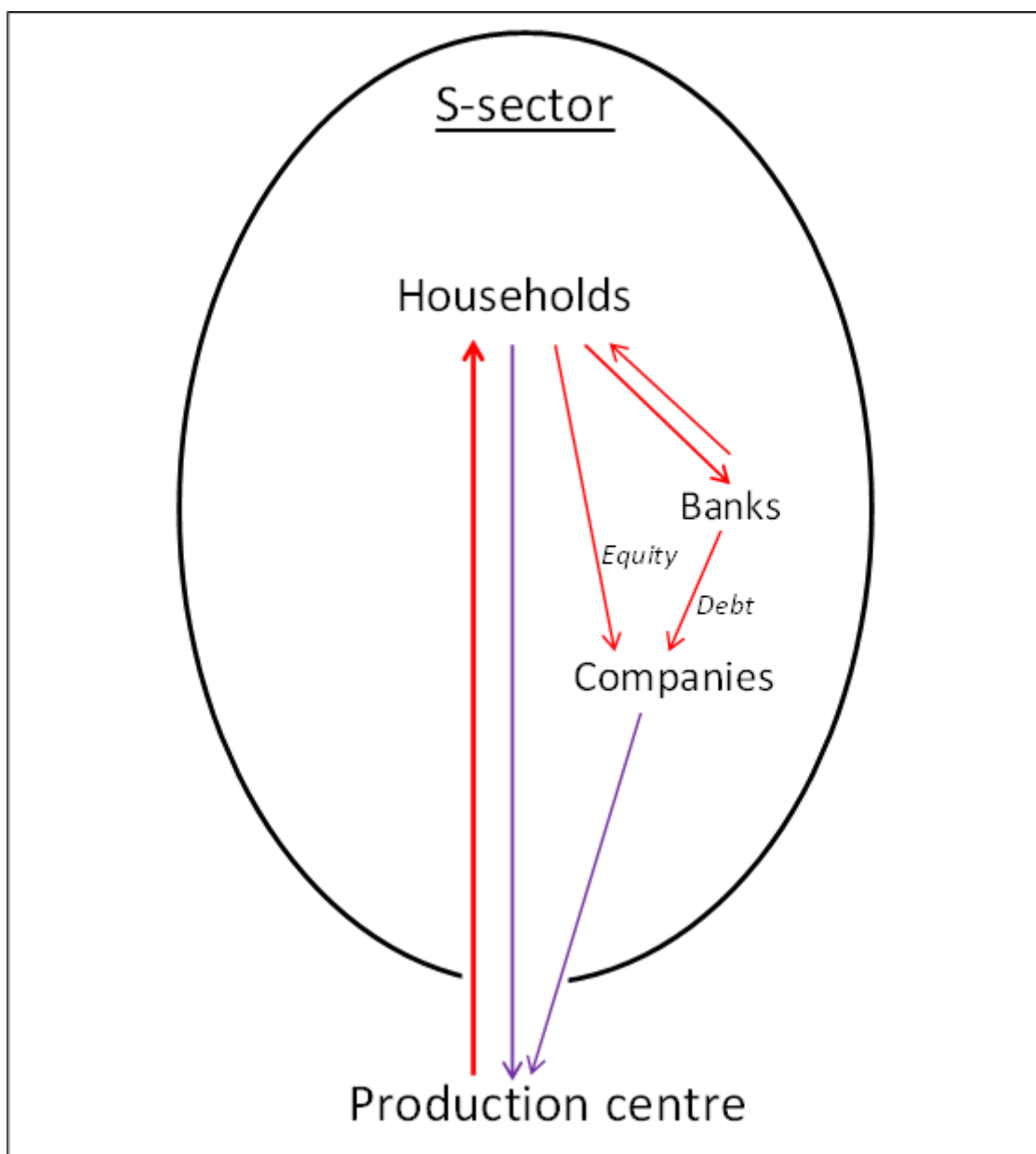
The financial system requires an activist arm, to offset monetary hoarding (which impedes the return flow) and to finance growth. The allocation of capital to new investment goods implies future nutrient growth. Thus, unlike nutrients, modern money – which is more concept than commodity – is able to be created within the financial system.[14] The amount of venal money flowing from the head to the heart may be more, or less, than the amount flowing in. It can be regarded as an equilibrium condition, however, for the amount of venal money to equal the amount of arterial money, subject to a growth requirement.

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[14] In the days of commodity money before modern banking, we could think of money being created in the centre, with specie being minted for governments. Thus modern money represents a departure from the blood analogy

The head becomes the seat of possible imbalance, in particular when the unallocated nutrients we call capital are not fully allocated as investment goods. While crises are endogenous to the saving class, if the distributional rules of the system as a whole have an increasing bias in favour of the S-class, then such crises themselves become more probable.

The saving class grows under a number of conditions. The first condition is simply the presence of proportionate economic growth.[15] Another is net migration from the low-income class to the saving class. A third is increasing inequality that may arise from the relative market power of the saving class. A fourth is a relative reduction of the governments' share of output; a situation that may have been orchestrated by political pressure arising from within the saving class. A fifth is that increased labour productivity tends to increase the quantum of nutrients that pass to S more so than to L; in Marxian terms, an increase in surplus value.

In each of these cases, there is more capital (nutrients flowing to S unallocated to consumption) to allocate, and increased risk of not being able to fully allocate that capital as investment purchases. Industrial capitalism works by allocating capital to the purchase of investment goods that in turn facilitate the production of mass-produced wage goods. If the ability of the L-class to acquire wage goods is being eroded – eg through reduced income shares – then the likelihood that capital cannot be allocated becomes even larger.[16]

Crisis of Imbalance

Nutrients not allocated within the S-sector for consumption or investment purposes translate, through reduced venal monetary flows, into *unemployment* in the production centre. This in turn reduces the output of nutrients, disproportionately to the low-income class and to the government sector, given the market-based rules that determine these flows. Systemic imbalances are aggravated by their effects.

To avert such a crisis of unallocated capital, the financial intermediaries, representing their saving principals, will seek to lend[17] the unallocated slice of GDP to either L or G, rather than allow it to wither as unemployment. Thus we need to construct arteries that connect the head with the hands. The human analogue becomes more abstract. Figure 5 shows these additional inter-nodal arterial

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[15] Whereas growth may arise from investment spending in S, government spending in G, or increased labour supply, it may also result purely from productivity gains, unrelated to any measurable input arising from either sector.

[16] Ponzi schemes represent opportunists within the S-sector acquiring unallocated nutrients in the form of luxury goods. These schemes should be understood as a symptom of the sector's frequent inability to allocate capital.

[17] An alternative dynamic is for the S-class to gift its surplus nutrients to the L-class; charity.

flows as dashed curves. Arterial flows from S to L or G reverse over time, given that lending and borrowing can be characterised as intertemporal exchange.

Because this allocation will usually take the form of loans, the S-class become a creditor sector, and thereby L and/or G become debtor sectors. We may note that intersectoral loans which are written off become gifts (intersectoral transfers), *ex post*; so, to an extent, do loans struck at negative *ex post* real interest rates. Hence inflation has the potential to behave very much like charity (or philanthropy), given that S is now operating as a creditor sector and L as a debtor sector.

Initially the S-sector is likely to look to the L-sector (rather than to G) to receive S's unallocated nutrients, as borrowed wage goods. This helps to resolve the problem of weak demand for wage goods creating an insufficient demand for investment goods.

So, essentially, the S sector seeks to participate in intertemporal exchange with the L sector.[18] In this case, S delivers nutrients to L in the present, in return for a greater flow in the future (the "return journey"; Corden 2011) from L to S.

When this exchange takes place, S becomes a creditor sector and L becomes a debtor sector, meaning that the private sector as a whole appears to be in balance. (See Figure 2, for years 2006 and 2007.) Just as it is appears to be a goal for households within S to accumulate credit balances in intertemporal exchange, it may also be taken as an objective for the sector as a whole.[19] Certainly our common observation is that S-class individuals choose to die with large credit balances, in contradiction to the premise of the life-cycle hypothesis.

The problem of unallocated capital is not commonly seen as a problem by those who choose not to consume or invest the nutrients that their income of nutrients entitles them to. While individuals may succeed in running surpluses, indeed over long periods, a closed system cannot.[20] Surpluses cannot be achieved unless *accommodated* by deficits. S-households tend to assume – without much thought – that there are always sufficient numbers of willing and creditworthy borrowers who will

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[18] I use the term intertemporal exchange rather than intertemporal trade because of the widespread connotation that trade involves exchanges across international borders. Many of the issues addressed here are discussed in Corden (2011), albeit in an international trade context.

[19] This is equivalent to mercantilism (Rankin 2011b), the pursuit of financial surpluses – indefinite surpluses – of a country or sector. Krugman (2012, p.28) and Eichengreen (2011, p.62) allude to Germany's historical mercantilism. This might also be called one-way intertemporal exchange where the creditor party, while always concerned about the capacity of the debtor party to supply goods and services as contracted, has no actual interest in receiving these.

[20] Koo (2011, p.37) refers to this as the fallacy of composition.

acquire their capital in the forms of investment goods, and reward them with compound interest (inflated claims that for the most part will never be realised).

Figure 5: Credit and Transfer Flows between Sector Nodes
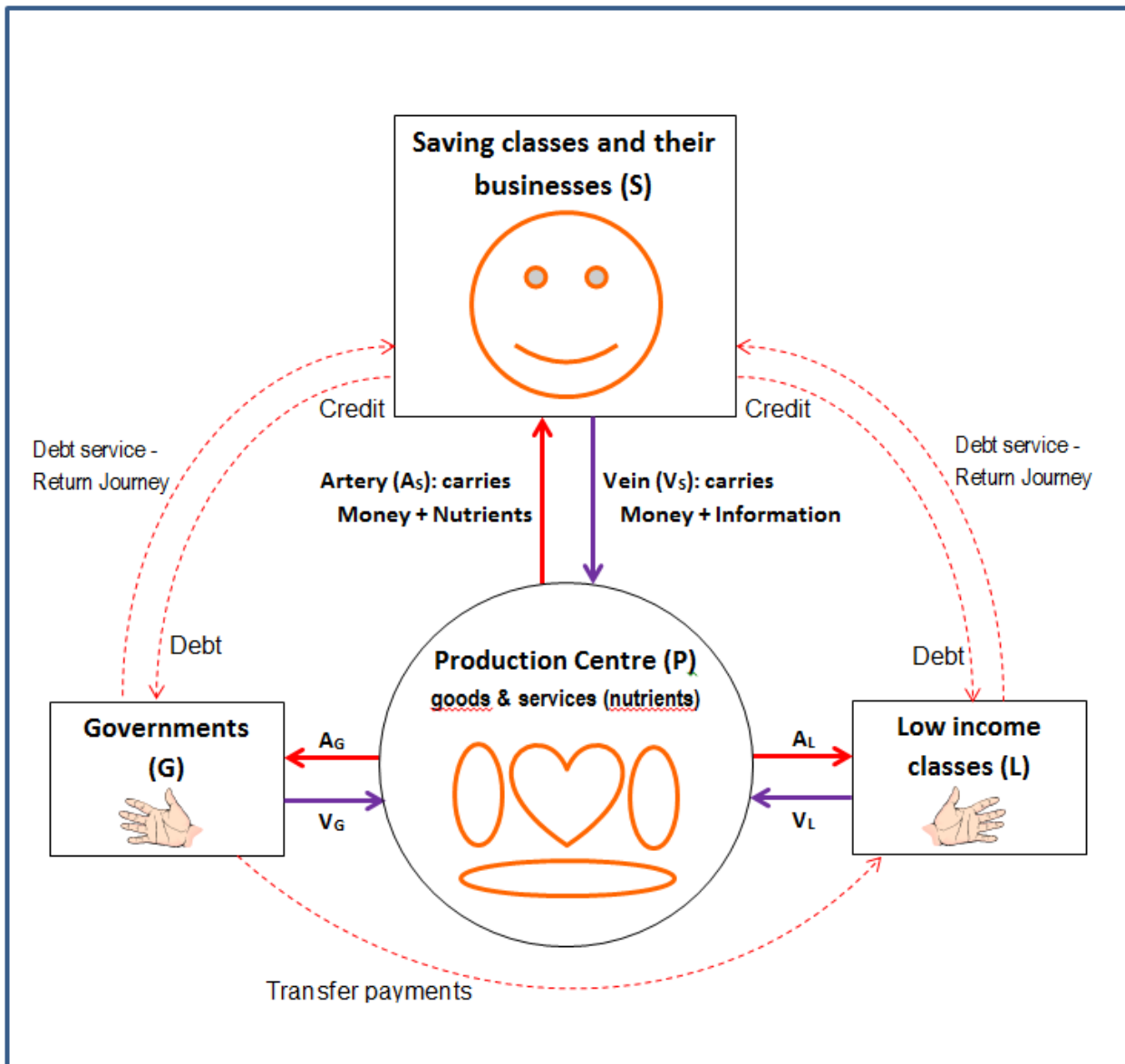
The reality is that it is not easy to persuade other sectors to incur chronic deficits so that the S-sector can run ongoing surpluses. Further, by the very nature of the L-class these loans will be for wage goods, which may include commodity housing. Hard-sell marketing of both goods and loans enables the financial intermediaries to allocate the S-class's surpluses. The crisis of unallocated capital is thus postponed, indeed giving the appearance that all is well, with financial assets offering near-permanent capital-gains that seduce some S-class households into conspicuous consumption.

This solution can work for a while, and was clearly a dominant (if not the dominant) financial dynamic of the 2000s' decade. However, three problems emerged: the capacity of L to sustain the return flow of interest and repayments, the incapacity of S to spend the interest and repayments from L, and the decreased willingness to continue to allocate capital into investment goods that produce wage goods.

The unsustainability of this increased indebtedness of L (and speculative indebtedness within many S companies and households) generated a global "balance sheet recession" (Koo 2011) in 2008. The highly leveraged 'assets' unravelled as households and companies collectively sought to repay debt.[21] Nutrients flowing into the S-sector had nowhere to go, except that is, to governments.

So, when the lend-to-L strategy failed, S, having reverted to a strategy of low consumption and not able to allocate to itself all the GDP-nutrients its income entitled it to, turned to a lend-to-G strategy. Nutrients unallocated by S flowed as loans to G, with the expectation that G in future would be able to raise sufficient taxes to fund a larger future reverse flow. Only faith in this revenue-raising ability of G was required, because so long as S is never actually able to consume or invest its normal income, then the additional nutrients that represent the debt-service "return journey" (Corden 2011) need never make that journey. Increasing public debt may continue to represent the increasing financial wealth[22] (credit) of the S-class; decreasing public debt would equally represent the decreasing financial wealth of the S-class, with individual S-households finding it ever more difficult to achieve their objectives of financial surpluses.

Not surprisingly, this strategy, which worked very well in 2010 and 2011, also proves to be unsustainable, largely (but not only) because what is in reality a crisis of accumulating private sector surpluses (meaning unallocated goods and services, and, increasingly, the additional goods and services that would have been produced by unemployed resources had they been employed) tends to be interpreted as a public debt crisis.

At least within the L-class, there are sound bankruptcy mechanisms whereby many small L-class obligations to S-class creditors are quietly written off. No such mechanisms exist, between G debtors and S creditors, whereby *ex ante* loans become *ex post* gifts. Nutrients not required by S can always find a worthwhile use in G. With higher taxes on S incomes, those nutrients could have

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[21] One important weakness of the textbook circular flow models is their inability to satisfactorily represent the debt repayments of companies.

[22] While the government expenditure made possible by this debt would represent real contributions to living standards.

made a more direct transit to G. Government expenditure would not appear unaffordable if members of the S-class facilitated the required increases in taxation, and minimised their tax-avoidance practices.

Much of the impetus for S companies and households to run surpluses arises from the need to repay debt. In such cases – balance sheet recessions – governments must accommodate private surpluses. Debt repayment is not mercantilist hoarding. In large parts of the world economy in 2012, both S and L (together, the private sector) are trying to pay down debt. They can only succeed if governments will agree to use the actual and potential nutrients that S and L are unable to use. It was the willingness of government in Japan in the 1990s and 2000s to accommodate the private-sector deleverage, that enabled Japan to avert a protracted economic depression (Koo 2011).

Large intersectoral intertemporal exchanges take place mainly through financial intermediaries. Therefore default as a general solution places the whole banking system at risk; not just the savings of the saving class.

Negative Interest Rates

One way to participate in sustainable inter-sectoral intertemporal exchange would be to allow for negative interest rates. Thus flows of nutrients from S to L or to G could be struck at negative underlying interest rates, meaning that required reverse flows (to S) could be smaller than the initial flows (from S).

One way of achieving negative real interest rates is through inflation. While inflation is in reality much more difficult to construct than classical monetary theory would allow[23], inflation does have the virtue of minimising the need for nutrients to flow from those who need them to those who have no present use for them. Certainly inflation did help the global economy to correct the financial imbalances that emerged in the mid-1970s after the oil-producing countries claimed their economic rents.

There are other ways that the global economies can operate with underlying negative interest rates – the rate that is required to enable intertemporal exchange when there are many lenders and few

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[23] Due to liquidity traps. In the 1930s, as in Japan in the 1990s (Koo2011), low interest rates if anything reinforced deflation. Especially in a world of flexible-rate financial contracts, cost-deflation may increase, while demand-inflation cannot occur in a liquidity trap. Inflation generally requires a different type of crisis; a crisis in which nutrients belonging to S are over-allocated. Such a crisis may well exist in the 2020s and 2030s as globally 'invested' pension funds are spent – Corden's "return journey" (2011) writ large (Rankin 2010a, p.99).

borrowers. This is especially true in societies which have embraced electronic payments' systems.[24] Most loans would continue to have positive interest rates, given the risk premiums that pertain to real-world lending.

Modifying the Rules of Distribution

To see how these kinds of problem have been resolved in the past we note the great events of the capitalist era, including global colonisation (Wakefield 1833),[25] world warfare, depressions and inflations. These *ex-post* resolutions of chronic accumulations of credit balances do not represent the self-interest of the S-class, but neither does non-resolution.

A more benign approach is to make changes to the rules that determine the income distribution; the distribution of nutrients. A promising approach is the recognition of public equity (Rankin 2011a) as a part of the answer. Thus the public – the owners of publicly owned and public domain assets – may draw an equity benefit[26] in much the same way that private equity holders draw company dividends. Equity benefits – equal for all citizens – proportionately favour L over S. Thus, more nutrients would flow directly to L, both as equity benefits to supplement wages, and as higher wage rates given the increase in bargaining power a second income stream gives to workers.[27] Thus L-class spending on wage goods, financed by income rather than by debt (direct rather than indirect arterial flows), could, through increased business confidence, facilitate a level of S-class spending on investment goods that would restore full-employment.

Governments would be required to assert and enforce such property-income rights. Given that each government has jurisdiction over only a part of the global economy, such governments would also need to assert the right to tax imports from jurisdictions which do not pay public equity benefits. (Much as today they enhance efficiency by placing tariffs on goods produced with child labour, from unsustainable clearances of rain forests, or incurring other negative externalities.)

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[24] It could be possible to impose negative interest rates on cash. The supply of bank-notes would be fixed, much as the supply of fishing quota or pollution permits is fixed. People who wanted to withdraw money as cash would pay a market-determined premium that would be closely related to 'fees' paid by depositors to banks.

[25] Wakefield's (1833) central concept is the "field of production", meaning profitable investment opportunities.

[26] New Zealand Superannuation is one of the best present examples in the world of a public equity benefit. Public equity benefits payable to people of working age would work best with medium-high flat tax rates – the BIFT tax-benefit system – and of course set at lower amounts than payable to retirees.

[27] In pre-industrial and early-industrial times, when workers owned plots of land, such workers could more easily say "no" to exploitative wages.

In our model, Government payments of transfers – distinct from public equity benefits – are represented by an arterial flow from G to L (redistribution) in Figure 5. Public equity payments however would simply represent a change in the rules of distribution, with, *ceteris paribus*, an increased nutrient share going to L and a decreased share (small, relative to S's current share) going to S. While fewer G to L transfer payments would be required, vertical equity considerations – especially within the L-class – would mean that such transfers would still play a role in the actual modern world economy.

In general, a sustainable solution to a problem of systemic unallocation of capital[28] within the S-sector must involve a reduction of S's income share, or at least an end to the tendency of income to concentrate in the S-class. The public equity benefit approach ensures that, as labour productivity increases, public equity benefits also increase, thus enabling a larger (or at least a stable) income share for L. We might also note that, if L-members have a mechanism that better distributes their productivity gains back to themselves, then they are increasingly empowered to take their gains in a non-material form (namely, as increased leisure, meaning increased free time).[29]

This leads us back to the notion, expressed earlier, that overall economic success can be essentially regarded as the raising of the material (and non-material) living standards that prevail within the L-class. The S-class, of course, always have higher living standards than the L-class.

For the S-class, the rule is 'use-it or lose-it'. The squirrel that hoards its acorns dies with its acorns unconsumed. It might just as well have tipped them down a black hole[30]; or, more sensibly, 'lent' them to another squirrel, without requiring repayment.

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[28] The Economist discusses "Modern Monetary Theory", along with the views of Abba Lerner that "private spending might be chronically weak" and that governments may need to accumulate debt indefinitely. Certainly my view is that private spending in the world economy is in a phase of chronic weakness that goes beyond that of a normal recession. Koo (2011) contrasts normal recessions with balance sheet recessions and convincingly shows that the western world economy at least is stuck in the later. While the possibility of indefinite accumulation of private surpluses is not necessarily pessimistic – it may indeed open up more sustainable development options this century – I think it fairly reflects an innate hard-wired mercantilism; a negative-sum game in which private actors try to exchange actual present wealth for unrealisable claims on future public wealth.

[29] Rankin (2011c) discusses multiple scenarios of productivity increase, and how tax policy may facilitate forms of productivity growth that do not assume inputs (the productivity denominator) have to increase.

[30] A good metaphor for the way mercantilists understand their markets as external to their sector or nation.

Conclusion

Our closed-economy model of three nodal-sectors linked strongly to a production centre and weakly to each other represents a departure from twentieth century circular flow models. As such, there is a close analogy to the flows of nutrients (output from the production centre, income to the nodes) and blood plasma (the circulating medium) in the human body. Income is "stuff", as Krugman (2012) puts it, not money. As in classical economics, the representation highlights inter-class income distributions; in particular the tendency for incomes to accumulate within a societal grouping that is least willing to consume that output.

Unlike classical economics, and in the spirit of Keynesian economics, it exposes the paradoxes of thrift and insufficient investment opportunities, showing how these problems lead to unsustainable inter-sectoral intertemporal exchanges between sectors; first by the saving class lending to the relatively poor, and second through the saving class lending to governments who, not having simple write-off mechanisms, soon come to resist this role of debtor-of-last-resort.

Economic disaster can be postponed by the ever-willingness – indeed wilful blindness (Heffernan 2011) – of saving class creditors to not acknowledge the technical insolvency of their public sector debtors. Indeed, under conditions in which few of those creditors wish to complete their transactions, this pretence, that goods and services are being loaned rather than given to the governments and low-income citizens who need them, may be able to persist for a long time; perhaps decades.

So perhaps it is the governments who are letting their citizens down. They are reluctant to play the game correctly, in not being willing to purchase the otherwise unallocated surpluses, for fear of creditors who have rights to but little desire for such goods and services. There is plenty amidst the poverty, and governments do have the power to prevent further concentration of goods and services in the hands of those who will not make use of them.

The closed-economy nature of the human circulatory system shows that imbalance in once sector must be accommodated elsewhere. The system reaches critical point when there is insufficient accommodation. In the human body that generally means death. In human systems, however, we can choose other outcomes. It was this biological system that inspired early modern economic thinkers into the concept of equilibrium. We can still learn by returning to our original sources of inspiration. By stating the obvious – that for every sector that utilises less than it earns, another sector must utilise more than it earns – we make the implicit explicit.

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