Economics and the Powerful: Faulty Analysis, Economic Advice, and the Imperatives of Power

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> *"Look! Up there in the sky! What is it? Is it a plane? Is it a bird?"*
>
> *No, it's a distraction from the robbery that is taking place in broad daylight on the ground.*

One of the great paradoxes of conventional economics is that, though it starts from the proposition that individuals are motivated solely by self-interest, in my experience the majority of conventional economists are fundamentally altruistic. Based on conventional economic theory, they argue for reforms of the current economic system, not because they would benefit their own self-interests, but because they genuinely believe they would make the world a better place for everyone. Whether or not these theories were deliberately developed in the first instance to favour the powerful (Mirowski 1991), they are largely developed and promulgated by individuals who have a genuine foundation for rejecting any charge of self-interest or social bias in their analysis.

How then could such altruistically-motivated analysis end up supporting the powerful at the expense of the weak? The secret lies in distraction. By framing the debate as to what is important in economics, and arguing for the irrelevance of certain factors that are in fact essential for the accumulation of excessive economic power, they enable that accumulation to take place. The key factor here is the accumulation of private debt.

What is still anachronistically described as Modern Finance Theory has as one of its key propositions that the debt taken on by a corporation has no impact upon its valuation. The gearing used by a corporation on its earnings is, it is argued, easily offset by the gearing used by an individual to buy shares in that corporation: a more-than-normally geared corporations shares can be bought with less than normal leverage by a shareholder, and vice-versa; therefore the firm's valuation is unaffected by its level of gearing:

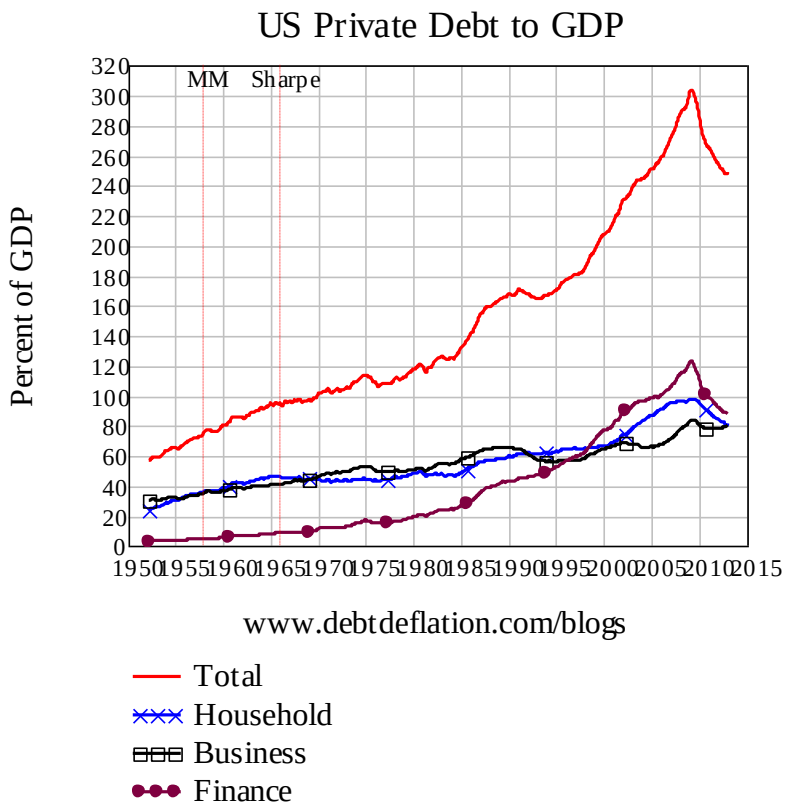
> *We conclude therefore that levered companies cannot command a premium over unlevered companies because investors have the opportunity of putting the equivalent leverage into their portfolio directly by borrowing on personal account. (Modigliani and Miller 1958, p. 270)*

As a consequence, the financing of corporations is irrelevant to their individual and aggregate performance: the realms of corporate finance and macroeconomics can neatly be separated, with the level of debt playing a substantive role in neither at the aggregate level.

Instead, the level of gearing becomes an issue for individual investors and corporations only—it belongs in the realm of micro rather than macroeconomics. And in an important twist, given taxation and the tax-deductibility of interest payments on debt, the optimum level of debt finance for a corporation is 100%. So at the macroeconomic level, private debt at worst is innocuous, while at the microeconomic level it is actually beneficial.

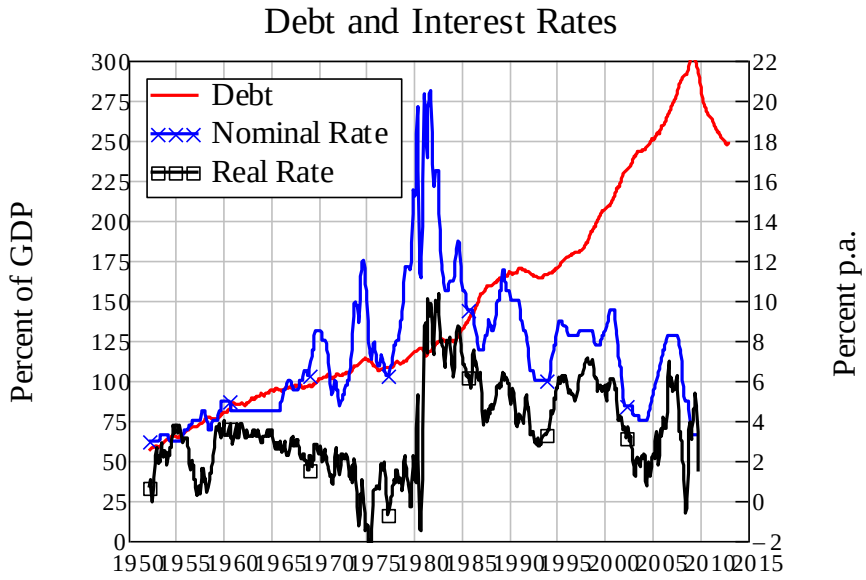
The economic advice of this theory was thus that (a) private debt is irrelevant to macroeconomics and (b) given taxation, corporations could increase shareholder value by financing their operations primarily with debt rather than equity. Since this theory dominated tuition in finance and economics in universities for the past five decades, it is little wonder that the level of corporate (and indeed household) debt has risen so much relative to GDP over those years—until the financial crisis of 2007. When the pivotal papers in finance theory were published, the aggregate private debt to GDP ratio was well below 100%. It subsequently increased to a peak of 303% in 2009, before falling to 250% today.

Figure 1



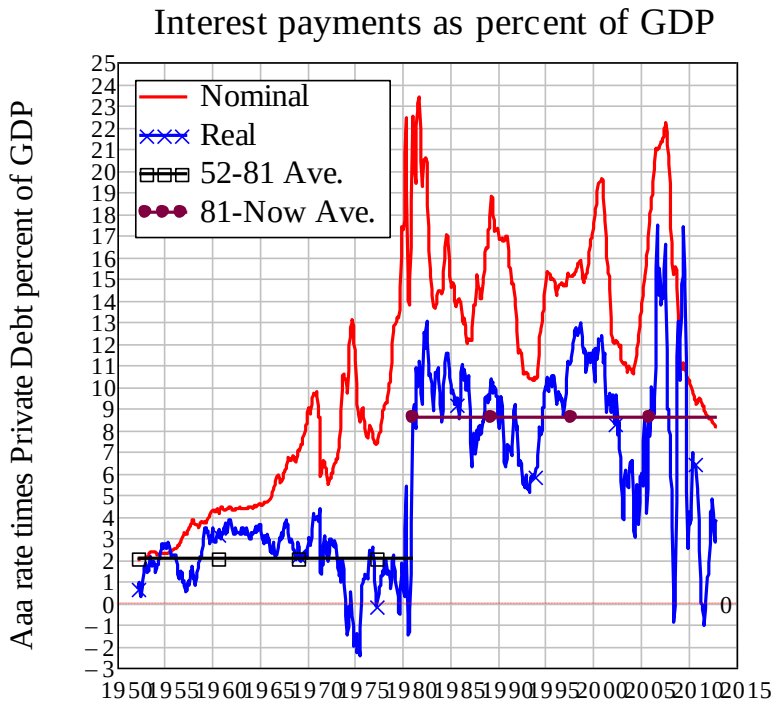
Believers in Modern Finance might assume that the secular increase in debt relative to GDP until 2009 simply mirrored the decline in interest rates, leading to an equilibrium interest servicing cost over time. Casual empiricism is sufficient to knock that idea out of the park.

Figure 2



The interest rate burden in fact tells a very different story. There was a sudden jump in real interest payments as a percentage of GDP in 1981, and though the actual level has been highly volatile over time, the average since 1981 was over 4 times the level that applied between 1952 and 1981.

Figure 3



So much for the distraction of Modern Finance; as even Fama and French have concluded (Fama and French 2004), the CAPM's (Sharpe 1964) empirical failings render it invalid. In the alternative and far more realistic analysis of economics and finance developed by Hyman Minsky (Minsky 1982), debt is crucial to macroeconomics, and rising levels of private debt relative to GDP are a prelude to economic crisis. This hypothesis is thus directly contradictory to "Modern Finance Theory" with

regard to the macroeconomic significance of debt. In my own modelling of this Hypothesis, a second unexpected contradiction emerges: a rising level of debt relative to GDP directly reduces workers' share of income, even in a model in which workers take on no debt. There could therefore be a direct link between the increase in private debt levels over the past three decades in particular, and the decline in workers' share of national income.

If this model captures an actual distributional mechanism in capitalism, then as well as helping cause an economic crisis, Neoclassical economics has also contributed to a redistribution of income from workers to financiers, even if that was not the intention of Neoclassical economists. By advising policy makers that they could and should ignore the level of private debt in macroeconomic management, and effectively promoting the acquisition of debt by corporations, Neoclassical economics has boosted the interests of the powerful at the direct expense of workers' income.

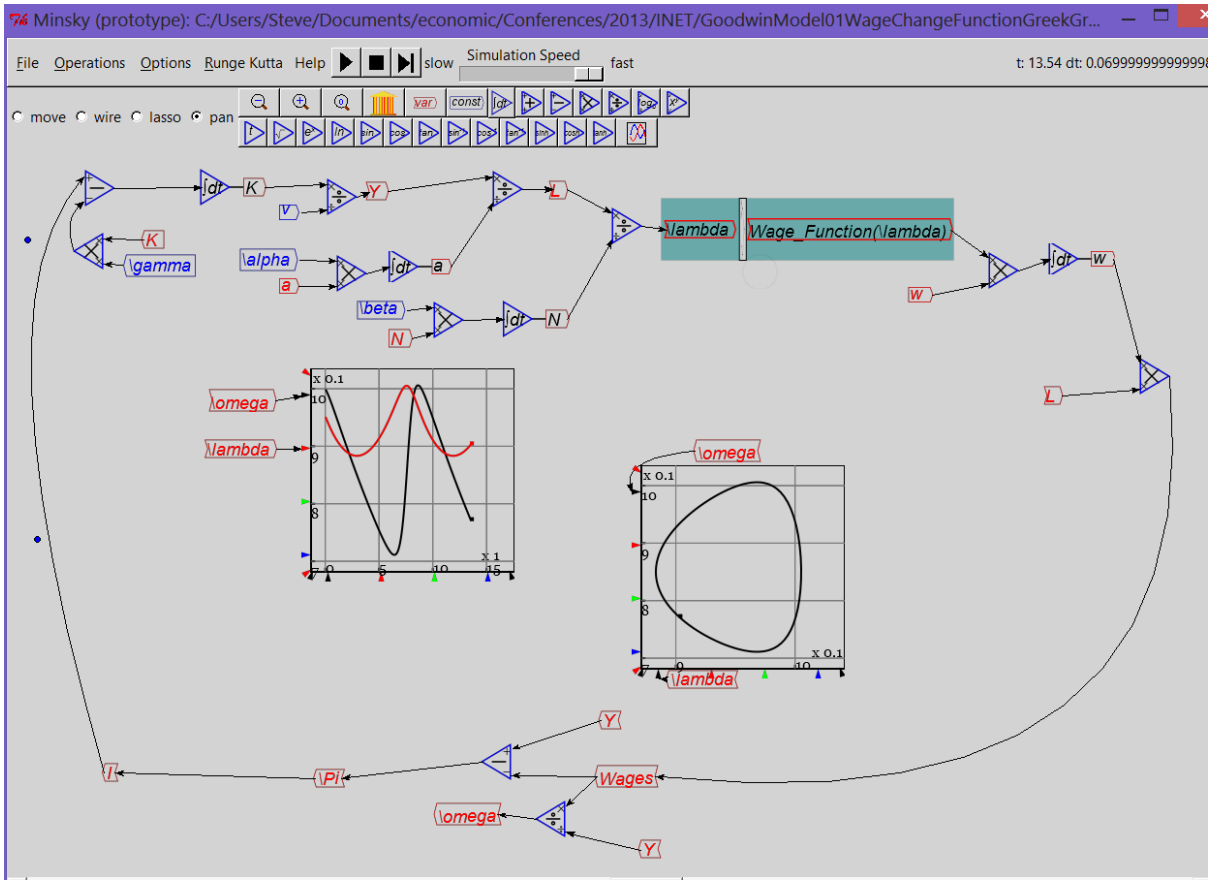
The Keen-Minsky model

My model of Minsky's "Financial Instability Hypothesis" (Keen 1995) was constructed by adding a banking sector to Goodwin's cyclical growth model (Goodwin 1967). Goodwin's model itself is often described as a "predator prey" model, implying that was derived by a biological analogy, but in fact it emerges very naturally from a simple structural model of the economy with the sole behavioural relation that wage rises are affected by the level of employment. The causal chain in Goodwin's model is:

- Capital (K) determines output (Y);
- Output determines employment (L);
- Employment determines the employment rate (l) given population (N);
- The employment rate determines the rate of change of wages (w);
- Profit is output minus the wages bill;
- All profit is invested;
- Investment (I) is the rate of change of Capital.

This is easily illustrated in my INET-funded simulation program ***Minsky***. The system dynamics model in Figure 4 implements the causal chain shown above:

Figure 4: Goodwin cyclical model in Minsky



The equations generated by this model are shown in Equation (1.1):

$$
\begin{aligned}
Y &= \frac{K}{v}\text{; Output is Capital divided by the accelerator}\\
L &= \frac{Y}{a}\text{; Labor is Output divided by labor productivity}\\
\lambda &= \frac{L}{N}\text{; Employment rate is labor divided by population}\\
\frac{dw}{dt} &= \text{Wage}_{fn}(\lambda)\times w\text{; Rate of change of wages}\\
\text{Wages} &= w\times L\text{; Total wages}\\
\Pi &= Y - \text{Wages; Profit is output minus wages}\\
I &= \Pi\text{; All profit is invested}\\
\frac{dK}{dt} &= I-\gamma\times K\text{; Rate of change of capital is investment minus depreciation}\\
\frac{dN}{dt} &= \beta\times N\text{; Rate of growth of population}\\
\frac{da}{dt} &= \alpha\times a\text{; Rate of growth of productivity}\\
\omega &= \frac{\text{Wages}}{Y}\text{; Wages share of output}\\
\text{Wage}_{fn}(\lambda) &= \left(y_{\text{val}}-m_{\text{val}}\right)\times\exp\left(\left(\lambda-x_{\text{val}}\right)\times\frac{s_{\text{val}}}{y_{\text{val}}-m_{\text{val}}}\right)+m_{\text{val}}\text{; Wage change}
\end{aligned}
\tag{1.1}
$$

In reduced form, this model has two system states—the employment rate and the wages share of output—and in this form it corresponds to the classic Lokta-Volterra predator-prey model:

$$
\begin{aligned}
\frac{d}{dt}\lambda &= \lambda\cdot\left(\frac{1-\omega}{v}-\left(a+\beta+\gamma\right)\right)\\
\frac{d}{dt}\omega &= \omega\cdot\left(\text{Wage}_{\text{fn}}\left(\lambda\right)-\alpha\right)
\end{aligned}
\tag{1.2}
$$

Though the model obviously does not converge to equilibrium, its non-trivial equilibrium occurs where:

$$
\begin{aligned}
\omega_e &= 1-v\times\left(a+\beta+\gamma\right)\\
\lambda_e &= \text{Wage}_{\text{fn}}{}^{-1}\left(\alpha\right)
\end{aligned}
\tag{1.3}
$$

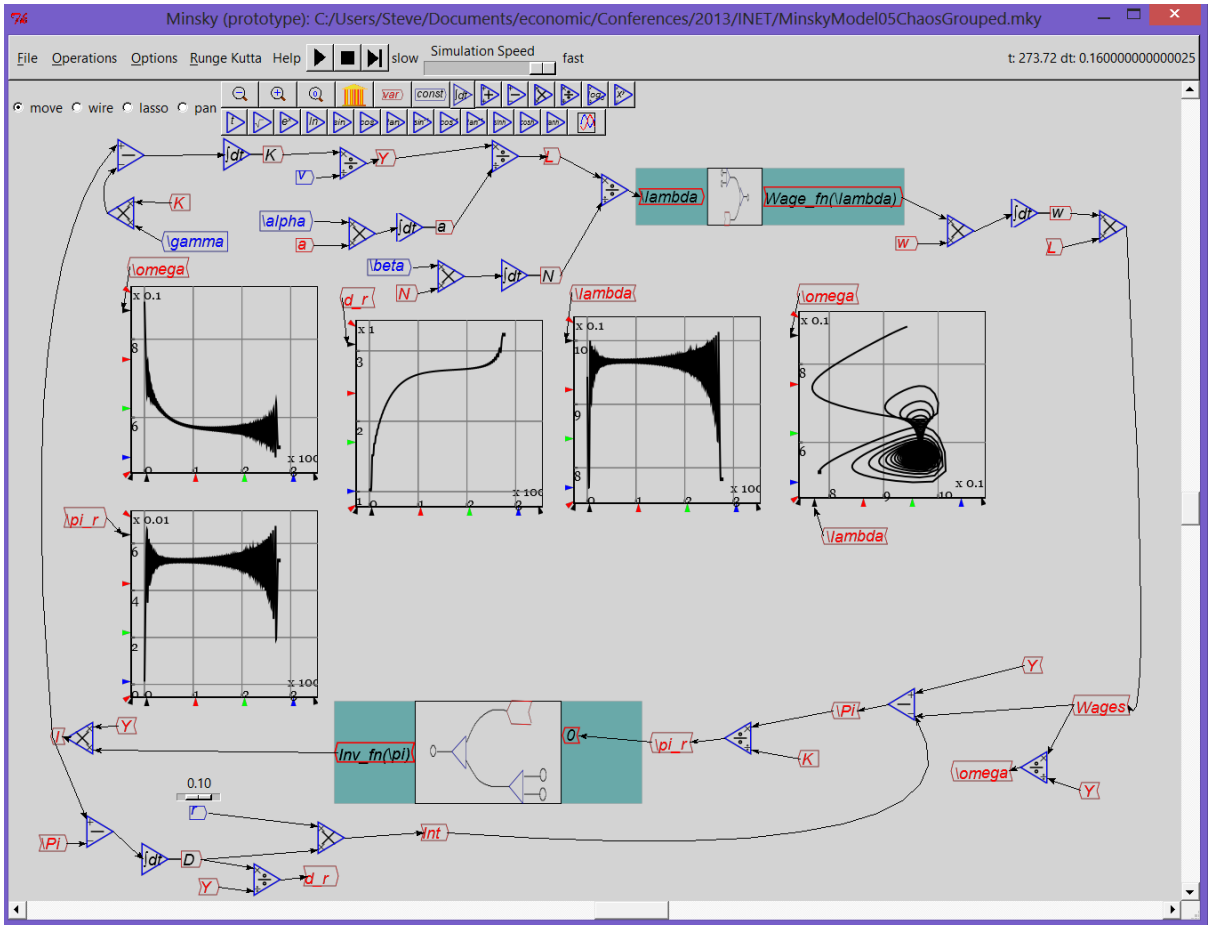
Note that this equilibrium has as one of its variables the workers' share of output ω. That is not the case in my basic Minsky model, which is generated simply by adding two elements of reality to this model:

- Firms invest more than retained earnings during a boom and attempt to repay debt during a slump; and
- Banks provide finance for investment.

This extended model is shown in Figure 5. This simple extension obviously generates complex outcomes, which in the case shown here include a debt-induced collapse. The key facets of its

behaviour that I wish to focus on in this paper concern the distribution of income and its link to the model's macroeconomic outcome: in simulations in which the model concludes with a debt-induced collapse, the workers' share of income falls as the debt level rises. This is no accident, but an emergent feature of the model.

Figure 5: Keen Minsky model showing income distribution dynamics



The additional equations in this model are shown in Equation (1.4):

$$
\begin{aligned}
\Pi &= Y - \left(\text{Wages} + \text{Int}\right) \\
\text{Int} &= r \times D \\
\frac{dD}{dt} &= I - \Pi \\
I &= Y \times \text{Inv}_{fn}(\pi_r) \\
d_r &= \frac{D}{Y} \\
\text{Inv}_{fn}(\pi_r) &= \left(y_i - m_i\right) \times \exp\left(\left(\pi_r - x_i\right) \times \frac{s_i}{y_i - m_i}\right) + m_i
\end{aligned}
\tag{1.4}
$$

In reduced form, this model has three system states: the wages share of output and the employment rate as before, and the debt to output ratio *d* (see Equation (1.5)):

$$\begin{aligned}
\frac{d}{dt}\lambda &= \lambda \cdot \left(\frac{Inv_{fn}\left(\pi_r\right)}{v} - \left(a+\beta+\gamma\right) \right) \\
\frac{d}{dt}\omega &= \omega \cdot \left(\text{Wage}_{\text{fn}}\left(\lambda\right) - \alpha \right) \\
\frac{d}{dt}d &= Inv_{fn}\left(\pi_r\right) - \pi_r - d \cdot \left(\frac{Inv_{fn}\left(\pi_r\right)}{v} - \gamma \right)
\end{aligned} \tag{1.5}$$

With the additional system state, the model acquires the potential for chaotic behaviour (Li and Yorke 1975) and multiple equilibria, including two which Grasselli and Costa Lima characterise as the "good" and "bad" equilibria respectively:

> *We find two economically meaningful equilibria, one with finite debt and strictly positive employment and another with infinite debt and zero employment, and establish that both can be locally stable.(Grasselli and Costa Lima 2013, p. 192)*

There is also a change in the nature of the equilibria that goes beyond simply adding the additional system state for the debt to output ratio. Whereas in the Goodwin model the variables in the formula for the equilibria points are the wages share of output and the employment rate, the variables in the equilibria for the Keen-Minsky model are the debt ratio, the employment rate, and *the profit share of output*. The equations for the good equilibrium are shown in Equation (1.6):

$$\begin{aligned}
\pi_{r_e} &= Inv_{fn}^{\ -1}\left(v \cdot \left(a+\beta+\gamma\right)\right) \\
\lambda_e &= \text{Wage}_{\text{fn}}^{\ -1}\left(\alpha\right) \\
d_e &= \frac{Inv_{fn}\left(\pi_{r_e}\right) - \pi_{r_e}}{\left(\frac{Inv_{fn}\left(\pi_{r_e}\right)}{v} - \gamma \right)}
\end{aligned} \tag{1.6}$$

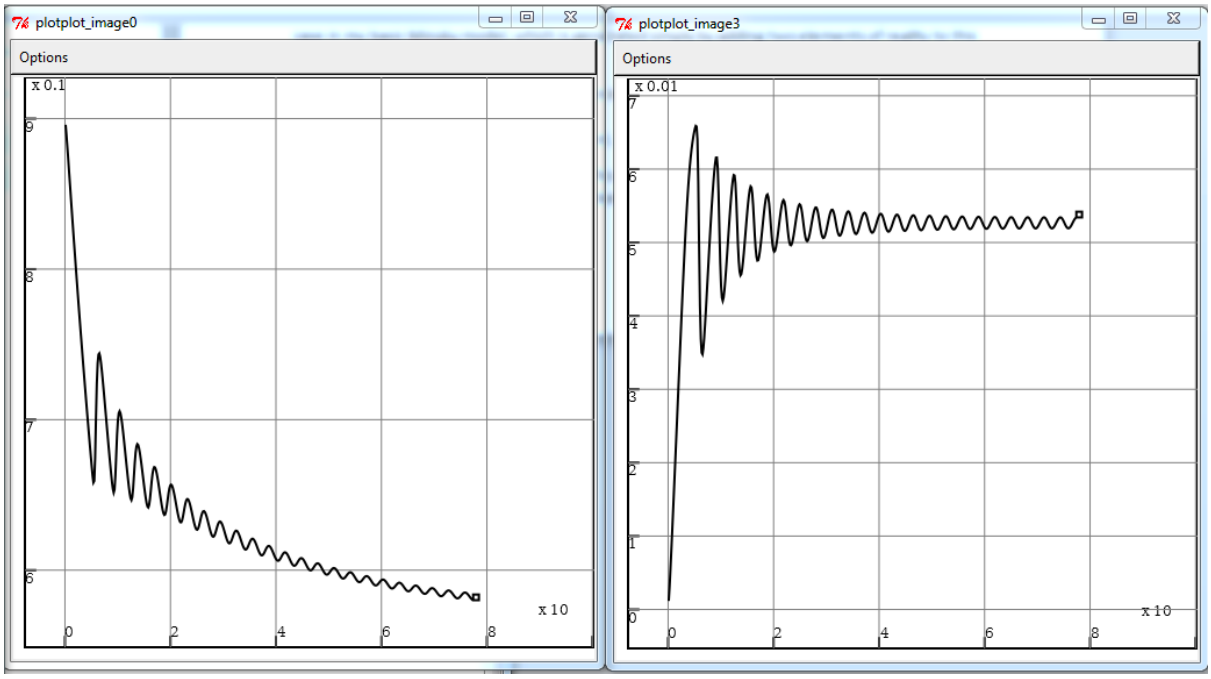
The wages share of output is therefore a residual dependent upon the values of the other system states:

$$\begin{aligned}
\pi_{r_e} &= 1 - \omega_e - r \cdot d_e = Inv_{fn}^{\ -1}\left(v \cdot \left(a+\beta+\gamma\right)\right) \\
\omega_e &= 1 - Inv_{fn}^{\ -1}\left(v \cdot \left(a+\beta+\gamma\right)\right) - r \cdot d_e
\end{aligned} \tag{1.7}$$

As Equation (1.7) shows, the equilibrium wages share of output is a negative linear function of the bankers' share of income—defined as the debt to output ratio times the net real interest rate. The higher the bankers' share of income, the lower the share going to workers. This applies even though, in this simple model, workers do no borrowing at all: though capitalists are the ones incurring and servicing the debt, the dynamics of the model are such that the workers end up paying that servicing cost through a lower share of income.

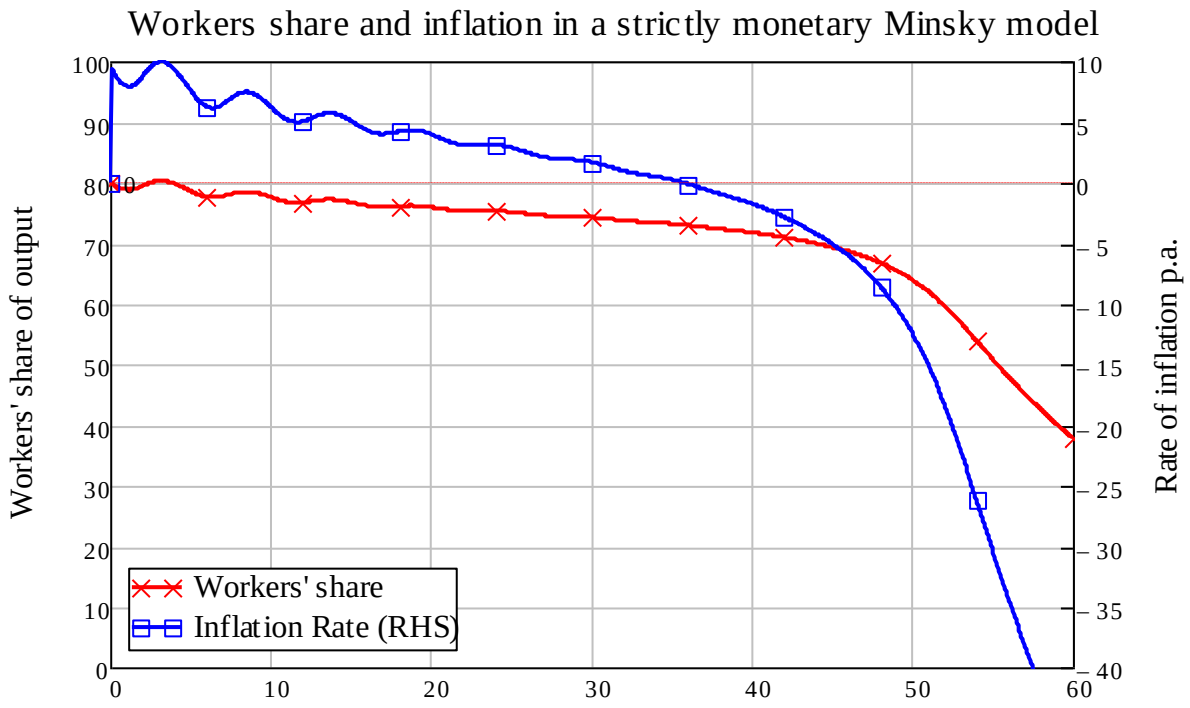
This equilibrium case carries over to the relations between the wages share, profit share and bankers' share in the general case of disequilibrium: as Figure 6 illustrates, the workers' share of output declines as the debt to output ratio rises while the profit share fluctuates around its equilibrium value.

Figure 6: Workers' share of income (Left Hand Plot) and capitalists' (Right Hand)



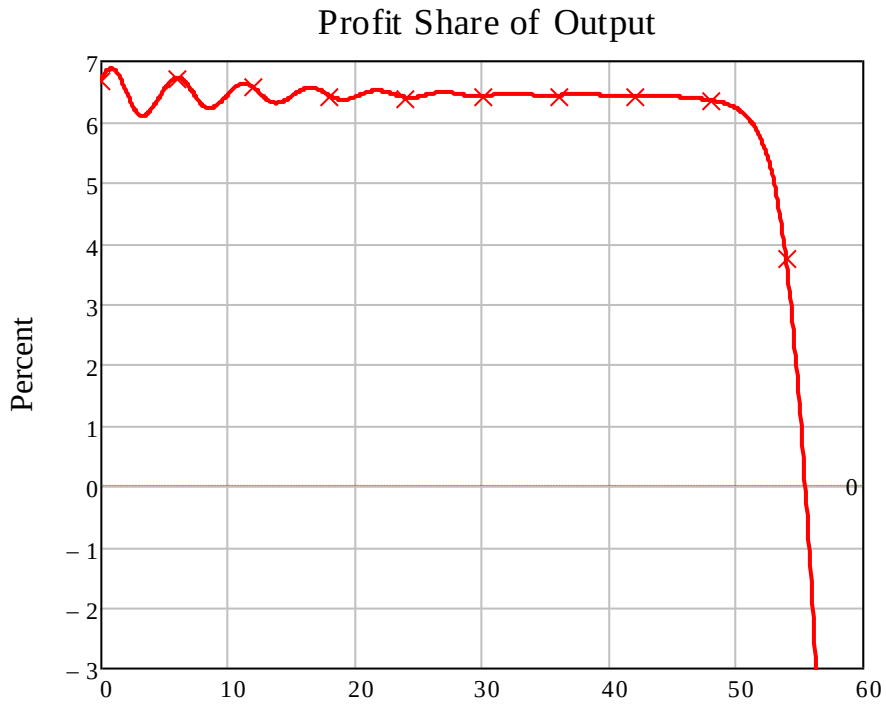
This result carries over to more general versions of this model (Keen 2013) in which price dynamics attenuate the volatility of the income distribution dynamics shown in this simple model.

Figure 7: Lower volatility but same eventual outcome in a monetary model



The final outcome involves far less volatility than in this non-price model, but the end outcome is the same: an economic collapse in which profits show no trend at all—and therefore give no forewarning of crisis ahead—until they suddenly collapse (see Figure 8).

Figure 8: Profit share shows no trend before the ultimate collapse



Inequality Matters

The normal argument against inequality is an ethical one. This model adds a macroeconomic one: if inequality rises, and in particular if the workers' share of income falls, then this can be a prelude to economic collapse. The end-destination of this model is zero employment, zero wages share, and infinite debt—and hence zero capitalists' share of income as well. This is an outcome in which even the winners (bankers) lose, because they acquire 100 per cent of nothing.

There is also an "if and only if" link between rising inequality and economic breakdown in this model. If there is a trend to falling workers' share of income over time, then the "good equilibrium" is unstable and "bad equilibrium" is an attractor: the economy will tend towards the disastrous outcome of zero employment and (relative to income) infinite debt. If on the other hand there is no trend to workers' share of income over time, then the "good equilibrium" with positive wages share, positive employment and finite debt is stable, and the economy will tend to it over time (Grasselli and Costa Lima 2013). Inequality therefore matters, not only for its own sake but because its growth leads to economic collapse.

Of course, this extreme model outcome does not occur in the real world, primarily because bankruptcy eliminates debts and therefore bankers' claims on income. But this in turn will apply during a debt-deflation if and only if we accept on a systemic scale the need to write debts off. An emphasis upon ensuring that debts are in fact paid will lead to the model's outcome being replicated in the real world.

References

Fama, E. F. and K. R. French (2004). "The Capital Asset Pricing Model: Theory and Evidence." The Journal of Economic Perspectives **18**(3): 25-46.

Goodwin, R. M. (1967). A growth cycle. Socialism, Capitalism and Economic Growth. C. H. Feinstein. Cambridge, Cambridge University Press**:** 54-58.

Grasselli, M. and B. Costa Lima (2013). "An analysis of the Keen model for credit expansion, asset price bubbles and financial fragility." Mathematics and Financial Economics **6**: 191-210.

Keen, S. (1995). "Finance and Economic Breakdown: Modeling Minsky's 'Financial Instability Hypothesis.'." Journal of Post Keynesian Economics **17**(4): 607-635.

Keen, S. (2013). "Predicting the 'Global Financial Crisis': Post-Keynesian Macroeconomics." Economic Record: 1-27.

Li, T.-Y. and J. A. Yorke (1975). "Period Three Implies Chaos." The American Mathematical Monthly **82**(10): 985-992.

Minsky, H. P. (1982). Can "it" happen again? : essays on instability and finance. Armonk, N.Y., M.E. Sharpe.

Mirowski, P. (1991). "When Games Grow Deadly Serious: The Military Influence on the Evolution of Game Theory." History of Political Economy **23**: 227-255.

Modigliani, F. and M. Miller, H. (1958). "The Cost of Capital, Corporation Finance and the Theory of Investment." The American Economic Review **48**(3): 261-297.

Sharpe, W. F. (1964). "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk." The Journal of Finance **19**(3): 425-442.