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Corporate Liquidity and Financial Fragility: The Role of Investment, Debt and Interest

Jan Toporowski¹

Abstract

The paper addresses the issue of how debt deflation may arise in a capitalist economy with a sophisticated credit system. It argues that the standard argument of debt deflationists, that debt-financed investment causes a build-up of unsustainable investment, fails to recognise that debt is back by credit. A corollary of this is that the rate of interest is not a factor in investment decisions. Financial fragility is caused by heterogeneity of balance sheets, debt financed operations in financial markets and insufficient debt-financed investment, rather than too much such investment.

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‘... the equality between savings and investment ... (is) independent of the level of the rate of interest ... (I)vestment, once carried out, automatically provides the savings necessary to finance it... ... (I)f some capitalists increase their investment by using for this purpose their liquid reserves, the profits of other capitalists will rise *pro tanto* and thus the liquid reserves will pass into the possession of the latter. If additional investment is financed by bank credit, the spending of the amounts in question will cause equal amounts of saved profits to accumulate as bank deposits’ (Kalecki 1954 p. 50).

In preparing an earlier paper for publication in the *Cambridge Journal of Economics*, a referee raised certain issues too complex and fundamental to be dealt with adequately by amendments to that earlier paper. Those issues are fundamental in that they underlie the debt-based macroeconomics used to analyse the financial crisis of 2007-9 and the credit policy of recent years. The present paper therefore is the response that this author was unable to give at that time. It clarifies confusion, arising from a deficient reading of Michał Kalecki and Josef Steindl, in a wide range of mainstream, Keynesian and Post-Keynesian literature concerning

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the economic and financial significance of debt and interest. In the wake of the financial crisis, Post-Keynesian analyses of the role of debt in financial fragility have highlighted the endogenous generation of such fragility in the course of financing firms' investment activity. The most notable authors are Hyman Minsky and, to a degree, Paul Davidson (Minsky 1986; Davidson 1978). Much of this Post-Keynesian discussion draws on the pioneering essay on debt deflation published by Irving Fisher in 1933. Another strand of analysis was contributed by Paul Sweezy and Harry Magdoff in an article, published in January 1975. This article raised the possibility that business may temporarily overcome deflationary pressures through greater indebtedness (Sweezy and Magdoff 1975). The ambiguous benefits of debt-financed investment have also been emphasised by Marc Lavoie (Lavoie and Seccareccia 2001).

The argument in this paper substantially qualifies and adds new insight to this largely Post-Keynesian discussion around debt and financial fragility. The paper also elucidates certain propositions inadequately theorised in the recent literature on a supposed 'financial accelerator' and in the literature on financialisation (Bernanke and Gertler 1989; Stockhammer 2004; Hein 2007). The 'financial accelerator' is based on a presumption of rising net worth over the course of a financial boom, without explaining how or why net worth changes over the cycle. By contrast, the financialisation literature emphasises the net indebtedness of the business sector, which makes companies vulnerable to interest rate increases. This paper shows how net worth or net indebtedness depends on the financing structures of firms and argues that, as in the Post-Keynesian case, net indebtedness may not evolve in the way suggested in the literature.

1. Investment Expenditure and Corporate Liquidity

The relationship between the cash inflow to companies from productive activities is given by the national income identity between income and expenditure, that is, in a given period of time:

$$Y \equiv C + S \equiv C + I + G + X - T - M$$

Where Y is the total of incomes received in the economy;

C is consumption expenditure;

S is saving;

I is gross expenditure on capital formation;

G is government expenditure;

X is exports;

M is imports;

This is more than just an accounting identity. All of these items are in money terms, and their equality in the above equation reflects the functional dependence of income on expenditure in the economy. The equation therefore summarises the circulation of money and capital in the economy in a given period.

From the above equation, the well-known savings identity may be obtained, that is:

$$S = I + (G - T) + (X - M)$$

In a market capitalist economy, saving may be divided in the saving of households, S_h , and the saving of firms, S_f . The saving of firms is the profits that firms retain, after payment of taxes, interest and dividends. Thus:

$$S = S_h + S_f = I + (G - T) + (X - M)$$

Or

$$S_f = I - S_h + (G - T) + (X - M)$$

Initially, and for the sake of exposition, it is convenient to make the following simplifications. First of all it is assumed that household saving is zero. Insofar as household 'saving' appears to be matched by household 'investment' in the form of purchases of durable consumption this is not an unrealistic assumption (see Fetherston and Godley 1978, and Ruggles and Ruggles 1992). It is also assumed that the fiscal deficit is equal to the trade deficit, or that the economy is closed and with a balanced government budget. Savings are held as deposits in a banking system. These assumptions are removed as the analysis progresses.

These simplifications reduce the saving equation to the Steindl version of the well-known Kalecki profits equation:

$$S_f = I \quad (1)$$

This means that the net ‘cash’ inflow into non-financial businesses is equal to the amount of money that those businesses spend on capital formation (Steindl 1988). In a system in which firms settle their accounts by bank transfer, the net cash inflow (S_f) appears as an accumulation of deposits in the bank accounts of firms (Kalecki 1954, p. 50). In a Ricardian system with commodities, or a commodity, serving as money, the net cash inflow appears as an accumulation of that commodity, or commodities, that accrue to capitalists through their business activity.

2. Debt-financed investment

What happens if firms finance their investment entirely through debt? After a number of years, firms will end up with a stock of debt that is exactly equal to the sum of their expenditures on capital formation over those years. In addition, from equation (1) we know that all firms will have deposited into their banks retained profits exactly equal to the amount that the firms have spent on capital formation. The banking system will have deposit liabilities to firms that exactly equal to the amount that the banks have advanced to firms to pay for that capital formation. The firm sector as a whole will have debts equal to the capital equipment that has been purchased over the years. But those debts will be exactly hedged (for firms as a whole) by deposits in the banking system. If the financing structure of all firms corresponds to some representative ‘average’ firms, then the financing of every firm will be perfectly hedged with bank deposits.

Apart from having their debts ‘hedged’ with liquid assets, the liquidity of firms is also good. Firms’ liquidity may be measured by the ratio of liquid assets to total assets. If there is no depreciation, then it is obvious that, for the ‘average’ firm in this extreme case of wholly debt-financed investment, this ratio stays constant at 50 per cent of total assets. This is because in each year, for that ‘average’ firm, its assets rise by a certain amount of illiquid premises, installations and equipment in which that firm invests. At the same time, because of the impact its and other firms’ purchase of these premises, installations and equipment, that ‘average’ firm’s liquid assets rise by exactly the same amount as its ‘average’ investment.

Depreciation does not change this situation, or changes it only marginally. Firms may follow very conservative depreciation practice, spending in each period the amount of money that is required to maintain their premises, installations and equipment as new, i.e., at the value at which they were purchased. If this type of capital expenditure is also financed, like other capital expenditure, by borrowing, then firms as a whole will receive this expenditure back as net saving, in accumulations of bank deposits. However, since the value of illiquid capital assets is not increased by this kind of expenditure, the total value of illiquid assets will ‘trail’ behind the total expenditure on it. For firms overall, or for the ‘average’ firm the liquidity ratio will actually rise above 50% because of this valuation effect. (If the cost of this maintenance will fall on the liquid assets that firms would otherwise accumulate, then this is equivalent to internally-financed investment discussed in the next section.) If firms prefer to accumulate liquid assets, ‘saving up’ to replace ageing equipment rather than maintaining it, then this amounts to an increase in the ‘liquidity preference’ of firms, and their retained profits will be reduced, by comparison with a situation in which firms maintain their capital equipment continuously. The liquidity ratio for firms overall, or for the ‘average’ firm, will be increased by the depreciation of fixed assets, but this will initially be off-set by reduced net saving of firms because of the reduced expenditure on depreciation.

A common argument around the transmission mechanism of monetary policy is that higher interest rates adversely affect firms financed with debt. However, in this extreme situation in which firms have financed their capital expenditures entirely with debt, it is immediately clear that any higher interest payments payable by firms will be off-set by higher interest income received on their bank deposits. If firms no longer have identical financing structures, then the higher interest liabilities of firms with more debt than their bank deposits will be off-set by the higher interest received by firms with less debt than their bank deposits. (This is further discussed in section 4 below). The net interest payment of firms actually corresponds to the stock of debt times the *margin* between lending and deposit rates, rather than the absolute level of the lending rate, as is widely supposed. There is no reason to suppose that this margin is in any way affected by the interest rate decisions of central banks.

3. Internally-financed investment

Internal finance of investment means the financing of investment out of the reserves, or accumulated retained profits of firms. Accordingly, in each period, firms run down their cash

deposits, and receive them back again as retained profits, in accordance with the profits equation above. The possibility of rising investment, or expanded reproduction of the economy (capital expenditure in excess depreciation), depends solely on the extent of firms' reserves of bank deposits, or liquid assets. In this way, firms' internal liquidity circulates between their accounts in the banking system. Banks, which are now not lending to firms, hold other assets in their balance sheet against their liabilities to firms, i.e., claims on each other, and liabilities of the central bank and the government (but not of households, since by assumption, households hold no net savings).

In this situation, the rate of interest is not a constraint on investment, except as the opportunity cost of investment. But even as the opportunity cost of financing an investment project, for a higher/lower rate of interest to reduce/increase investment, it is necessary for the higher/lower rate of interest to stay higher/lower than the prospective rate of return on an investment for the *life-time* of the project. Interest rate activism of the kind that is nowadays associated with inflation-targetting or some other active monetary policy, would *reduce* the expectation that a higher/lower rate of interest will be so sustained.

Internally-financed investment is therefore a way in which individual firms redistribute their reserves around other firms as profits. If all firms do this, then they all contribute to converting the reserves of all firms into profits. Although, at the end of each successive period in which investment is internally financed, the total amount of business reserves in the economy stays the same, the productive capital equipment of business increases with the net investment in each period. Accordingly, the liquidity ratio of firms (i.e., the ratio of liquid assets to total assets) falls over time. If some capital expenditure represents depreciation, so that the value of productive capital equipment trails behind expenditure on it (see section 2 above), then the liquidity ratio will fall more slowly. However, this slower decline in the liquidity ratio is not because firms have more liquidity than they do if plant does not depreciate. It is simply that, with depreciation, the value of the actual capital stock at the end of each period rises more slowly than actual expenditure on that capital stock.

Despite this falling liquidity ratio, because firms have not borrowed to finance this investment, there are no additional financial liabilities against their increased productive capacity, and therefore no need to 'hedge' their illiquid capital investment with bank deposits. Nevertheless, in the context of the business cycle, the build-up of the capital stock

with net investment eventually results in excess capacity and a falling rate of profit, relative to the capital stock (unless, improbably, investment increases at the same rate as the capital stock). The resulting fall in investment will give rise to a fall in profits accruing to firms. But since, by assumption, all investment is financed from retained profits, all profits are retained in the firm. Accordingly the level of liquidity in the firms sector stays constant. And, even if firms' inclination to invest is reduced by the fall in the rate of profit, or the degree of capacity utilisation, reduced investment will slow-down the build-up of the capital stock, and therefore slow down the fall in the liquidity ratio of the 'average' firm.

4. 'Borrower's risk' and the heterogeneity of firms

Section 2 above concluded that debt creates equivalent cash deposits for firms as a whole (Kalecki 1954; c.f. Withers 1909). For the sake of creating such deposits, firms should finance their investments with debt. However, they will be discouraged from this by 'borrower's risk', i.e., the risk that interest payments will absorb the surplus generated by the investment, or even exceed it. In fact, unless all firms are 'average', i.e., they are making similar investments similarly financed with debt, then, as indicated above, this 'borrower's risk' is off-set for the economy as a whole by the higher retained earnings of some firms, corresponding to the lower retained earnings of less fortunate firms that realise this risk. Nevertheless, as a subjective factor in the calculations of firms, this risk may discourage some firms from financing with debt.

This is very apparent in considering the size distribution of firms (Steindl 1965). Small firms are most likely to debt finance their investments, but are least likely to deposit retained earnings in the bank because of their weaker competitive position in product and financial markets. These firms therefore have the highest borrower's risk. Larger firms, enjoying a stronger position in their product and financial markets, are therefore most likely to deposit the retained profits generated by the investments of firms as a whole. They therefore have the lowest borrower's risk. Nevertheless, on account of their retained earnings, they are least likely to finance investment with debt.

5. Financial fragility and ‘forced indebtedness’

Removing the assumption of zero net household saving, and a zero net balance between the government and the foreign sectors, gives an expanded equation for the net cash inflow (retained profits) of firms:

$$S_f = I - S_h + (G - T) + (X - M) \quad (2)$$

Of these variables, the only one that is under the direct control of firms is investment. If the balance between the fiscal deficit and the foreign trade surplus is negative (the trade deficit exceeds the fiscal deficit, or the fiscal surplus exceeds the trade surplus), then in order to be able to bank positive retained earnings, it is necessary for firms to invest in capital formation at a rate that exceeds household saving and the negative balance of the government and foreign trade sectors. In other words, I must be greater than $S_h + (T - G) + (M - X)$.

If the investment of firms falls short of this threshold, then the sector as a whole falls into a net deficit. (Randall Wray has pointed out to me that over the course of an economic boom, the trade balance may be expected to worsen and the fiscal position to move towards surplus.) Firms will run down their accumulated bank deposits. Those firms with least bank deposits will eventually be forced to borrow in order to survive. But this debt now finances their survival, and the net surpluses that the household, government and foreign sectors wish to take out of the business part of the economy. Accordingly, borrowing will not be matched by accumulating retained profits in the business sector. Such borrowing by firms, if sustained sufficiently long, will lead to the insolvency of individual firms, and debt deflation for the economy as a whole.

Hitherto the analysis has considered only bank financing and credit. Speculative capital markets offer firms the opportunity of financing their investments through equity, which does not entail future liabilities. In practice, very little business investment is financed through the equity market. Most equity is issued to refinance debt. But even here the actual benefits to firms are limited: The equity market is usually a leading indicator of the business cycle, and is therefore least available at the point of greatest need, i.e., as the boom weakens, and firms most need to refinance into equity. The capital market also offers additional configurations in which fragility may emerge in the business sector. This is principally through the

opportunities that such markets offer to firms to take debt onto their balance sheets, without any corresponding income-generating expenditure in the real economy. In such a situation firms may too easily dissipate or tie up their liquid reserves or assets in complex debt operations, for example buying companies with debt, and then using the liquid assets of the companies acquired to pay off the debts incurred in their purchase. These balance sheet effects of capital markets, which are usually ignored by finance theory, are additional complications to the core macroeconomic and financial analysis presented here. They are further discussed in Toporowski (2010).

Occasionally these capital market mechanics of macroeconomic financial crisis surface in the business media. A report in the Business section of the Economist on the 13 December 2008 ('Riding the rollercoaster' pp. 73-74) revealed the key relationship between debt, capital market inflation and investment in the economy. The report reviewed the accounts of the six largest industrial multinational companies. These companies had incurred net debts of \$136 billion. The usual Keynesian, Fisher and Minsky analysis would suggest that this arose because of those companies' enthusiasm for fixed capital investment. In fact, the report states, four fifths of this debt was spent on mergers and acquisitions, driving the leverage ratio (ratio of net debt to equity) of these companies to an average of 2.6 (4.4 in the case of the acquisition-hungry Cemex, 4, in the case of Lafarge, and 3.5 in the case of Tata Steel).

With borrowing at an unsustainable level, what could the companies do? 'Raising equity is tricky since investors had been sucked dry by capital-hungry banks' (confirmation that the supply of equity is not as elastic as theory would suggest (see Toporowski 2009)). Nor would asset sales generate much cash inflow: 'disposals could occur only at miserly prices, if at all, because most potential buyers have no access to funds themselves.' (Economist, *ibid.*). The report concludes by identifying the mechanism that appears to the companies, and the author of the report, the most effective way of cutting their debt:

'... in the fight to survive, the biggest weapons are cuts in production and capital spending. ArcelorMittal has led the way on the former with a reduction of output by one third that even its chairman, Lakshmi Mittal, calls "very aggressive". The cuts to investment plans are as dramatic: ArcelorMittal, Lafarge and Cemex have sliced their budgets for next year by between one-third and one-half, and on December 10th Rio (Tinto) cut its planned capital expenditure in 2009 from \$9 billion to \$4 billion. Xstrata has yet to announce its plans, but a

50% reduction is possible.’ (In the event, Xstrata cut its planned capital expenditure by \$3bn, leaving capital expenditure of \$3.2bn.).

The report concluded that these expenditure cuts ‘would mean a \$15bn boost in annual cashflow – equivalent to about 18 months’ worth of interest costs ... It is a glimmer of hope during these bleakest of times.’ One may forgive a journalist for failing to see beyond the balance sheet that a corporation is trying to repair. But those familiar with the analysis of Fisher, Keynes, Kalecki, Minsky and Steindl, know that this way of dealing with excess debt is the mechanism of economic depression in a finance-driven economy.

Subsequent reports of the debt problems of large companies (i.e., companies with access to the capital markets) have confirmed that it is not their fixed capital investments, but their capital market operations that have driven those companies into difficulties. A report on Tata Motors, promoting its latest venture in car production in India (‘The Tata Nano, The new people’s car – Why the Nano alone cannot solve mounting problems of its maker’ *The Economist*, 26 March 2009) could not overlook the financial difficulties of this branch of the Tata empire. The report revealed that Tata Motors had a financial deficit that was expected to be at least \$3.4bn in 2009. ‘About \$1.4bn of that is in the form of short-term loans raised for working capital’, i.e., the ‘forced indebtedness’ referred to earlier in this section, when firms borrow in order to cover current production costs in excess of sales revenue. The remaining ‘... \$2bn relates to the bridging loan taken out last year (i.e., in 2008) to finance its \$2.3bn purchase of Jaguar Land Rover (JLR), a British premium carmaker, which must be either repaid or refinanced in June (2009)’. At the end of 2008, ‘... an attempt to raise \$885m through a rights issue ended up with Tata Sons, the group holding company, taking up 61% of the ordinary shares’ (ibid.). In other words, the capital market was unable to provide most of the equity capital that the company needed.

Perhaps the most curious relationship between a large company and the capital markets is that of General Electric. This relationship is curious not only because it reveals so much about how large corporations use financial markets. It also demonstrates the willingness of management experts and economists to accept the claims of business leaders made charismatic by the financial boom. Under Jack Welch its chief executive from 1981 to 2001, General Electric was supposed to be managed in accordance with profit targets requiring quarterly increases in those profits. These were enforced by management techniques that

bewitched the business press and the prestigious *Harvard Business Review*. Another recent report revealed that these profit increases were in fact largely due to the financial operations of General Electric's financial subsidiary GE Capital ('General Electric: Losing its magic touch' *The Economist* 19 March 2009). GE Capital had been set up in 1932 as the General Electric Contracts Corporation to assist in financing the company's industrial activities. However, by the 1980s, GE Capital was in effect operating like a bank, raising funds through bond issues and commercial paper to invest in various financial assets. During the period of financial market inflation, GE Capital became a useful source of additional profits: if General Electric was due to miss its profit target, GE Capital would sell financial assets to generate the profits required. It was not the much-touted efficient management of industrial resources that made General Electric so profitable, but the operations of its banking subsidiary GE Capital in the 'shadow banking system'.

In 2008, General Electric was plunged into difficulty when GE Capital found itself unable to roll over commercial paper due for repayment, and holding assets that could not be sold except at a loss. As a bank GE Capital benefitted from U.S. government measures to support banking. However, the company lost its valuable AAA credit rating, which was cut in March 2009 to AA+, and was forced to cut its quarterly dividend by two thirds, the first time the dividend had been reduced since 1938. General Electric was forced to raise \$15bn of new capital from a consortium that included Warren Buffett's Berkshire Hathaway (ibid.).

It should be emphasised that these large companies are by no means representative of all businesses. Most businesses in most economies are small and medium-sized enterprises that have little access to the capital markets. Such enterprises usually employ the majority of the private sector labour force. Such companies are most vulnerable to 'forced indebtedness' due to losses in production or trade. This financial precariousness limits the amount of capital investment that such companies may undertake. The vast bulk of private sector capital investment is undertaken by large companies. As the above examples show, their access to the capital market facilitates capital market operations, out of which excess debt and financial fragility easily arises.

Conclusions

Financial fragility, or the exposure of non-financial firms to excessive debt liabilities, is not endogenous to the normal processes of capitalist production and investment but arises out of unequal competition in markets and the use of debt to finance operations in capital markets. The principal theoretical error behind the monetarist strategies being used by central banks in their efforts to revive economic activities, arises from a Ricardian failure to recognise that modern money, being credit, is backed by debt. The principal and less widely recognised error of debt deflationists and critics of ‘financialisation’ is to regard debt as a form of usury that is not backed by credit. This paper has argued that, when viewed against the totality of firms’ balance sheet liquidity and its link with investment, the rate of interest should be regarded as a purely distributional variable, rather than a significant factor in business investment and failure. The liquidity of corporate balance sheets and the heterogeneity of firms are more critical determinants of investment. Financial fragility therefore arises with the draining of that liquidity by sectoral imbalances and by the financing operations of firms that increase their financial liabilities without any counterpart in expenditure in the real economy.

The ability of the non-financial business sector to keep the balance sheets of its individual firms liquid, i.e., to hedge investments with bank deposits, depends on the willingness of firms to finance their investments with debt. This is because, in the process of investment, firms buy goods and services in the economy, thereby converting loans that are a financial liability into income whose liabilities are extinguished at the moment when the goods and services purchased with the loan are delivered. This paper has focussed on the purchase of investment goods with credit simply because this is the process by which, since Irving Fisher, financial fragility is supposed to develop in the economy. The same process of converting loans into disposable income happens with, say, debt-financed employment, i.e., borrowing money in order to pay wages, or stock-piling raw materials with borrowed money. What makes investment different from these other kinds of expenditure is that investment outlays, along with the fiscal deficit and the trade surplus, have the unique property of ending up as surplus income for firms.

Financial fragility therefore does not arise because of firms' investment, or because of the manner of its financing. In particular, financial fragility emerges not because there has been too much debt-financed investment, but because there has been too little such investment.

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