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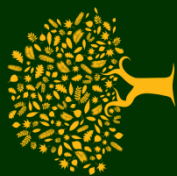
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**TWO PRINCIPLES OF DEBT  
AND NATIONAL INCOME  
DYNAMICS IN A PURE  
CREDIT ECONOMY**

by

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# Two Principles of Debt and National Income Dynamics in a Pure Credit Economy

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## Abstract

The paper puts forward two principles of national income dynamics in a pure credit economy. The first is the commonly known principle of Keynesian/Kaleckian economics according to which total output and employment in a capitalist economy is determined by the level of business investment. In turn that investment has to be financed, so that debt is inherent in such an economy. The second principle is a principle of the conservation of debt, which argues that, while new debt creates deposits in the economy, attempts to reduce debt generate deflationary processes that off-set debt reductions by creating ‘enforced’ debt in other parts of the economy. The analysis reinforces Minsky’s view that debt structures require corresponding investment to manage them, and that debt problems arise when such investment is insufficient.

**Keywords:** Debt, financial instability, credit cycle..

**JEL classification:** E32, H6

## Introduction

The emergence of debt as a key factor in macroeconomic dynamics has been very apparent since the International Debt Crisis of 1982, right up to the present difficulties of the European Monetary Union. However, the introduction of debt into macroeconomic models creates complexities that existing models have not managed to incorporate consistently in dynamic modelling, either because of resort to general equilibrium techniques, with inadequate dynamics, or due to inadequate theorisation of debt. These theoretical inadequacies are very apparent in the discussion of the difficulties of the European monetary crisis, where trade imbalances have been used as explanatory factors in place of macroeconomic dynamics, and commodity (or imported) money is substituted for the credit money that is actually used. On the official, ‘monetarist’ side of the discussion it is argued that changes in public debt do not have long-term effects on national income or on the solvency of banking systems. The Keynesian side of the discussion rightly gives priority to stabilising national income and growth, but offers little analysis of debt and how it may affect national income dynamics.

The model that follows aims to remedy this theoretical lacuna by showing how national income dynamics are affected by changes in debt. In this analysis, a given macroeconomic conjuncture is argued to be the outcome of two principles operating in a financially-advanced market capitalist economy. The first is the relatively familiar Kalecki-Keynes Principle of National Income Determination, in which national income is determined largely by business investment. The second is a principle of the conservation of debt, drawn from the work of Michal Kalecki and Josef Steindl. This argues that changes in national income may be the result of changes in debt stocks, but that attempts to reduce aggregate debt stocks may be frustrated by ‘enforced indebtedness’.

### 1. The Kalecki-Keynes Principle of national income determination

In a closed economy with no government, total income in a given period ( $Y$ ) is equal to consumption in that period ( $C$ ) plus (productive (i.e., non-financial) investment ( $I$ ) in that period. Since income that is not spent on consumption is saved, saving ( $S$ ) is equal to investment. Accordingly:

$$I = S = s.Y$$

where  $s$  is the share of income that is saved. Rearranging gives:

$$Y = \frac{I}{s} \quad (1)$$

or, national income, and hence output and employment, is determined by the level of investment divided by the share of saving in national income.

This is the Kalecki-Keynes macroeconomic principle of national income, output and employment determination, according to which total income, output and employment are determined by the level of investment in the economy rather than, as in the neo-classical system (or ‘classical’ system, as Keynes called it) by prices, wages and interest (Keynes 1936, Kalecki 1936)

In an open economy, with government expenditure and taxes, total saving in that period is given by the familiar ‘Keynesian’ saving equation:

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

In a credit economy, saving represents new credit received as income but, in the case of internally financed investment, may also be previously held (bank) credit handed over in payment for investment goods. Furthermore, credit is backed by debt. Borrowing is also undertaken to buy existing assets, such as real estate and financial assets. The total debt in the economy at one time ( $D$ ), that is equal to the total credit held in the economy, may be divided into total private domestic debt ( $D_{pd}$ ), total government debt ( $D_g$ ) and total external debt ( $D_x$ ) i.e.,

$$D = D_{pd} + D_g + D_x$$

Total private domestic debt is therefore the total borrowing for investment and asset purchase minus borrowing abroad for investment. For the sake of simplicity we may here regard equity, or share capital, as a type of debt on which payments are wholly discretionary.

## 2. The Principle of the conservation of debt

In a credit economy, debts are repaid by returning bank credits received as current income to the banking system, cancelling out debts and credits and, effectively contracting the balance sheet of the bank or banking system. Debt repayment for an individual household, firm or government therefore reduces expenditure below income. It is argued in the next section that debt repayment sets off processes that ‘force’ borrowing elsewhere in the economy. These processes frustrate the reduction of debt and thereby moderate reduction in expenditure (and hence income). But the ‘forced’ borrowing reduces the quality of debt and makes financial crisis more likely.

As a result of the reduced expenditure that arises when debts are repaid, income elsewhere in the economy is cut back. Conversely, debt financed expenditure raises expenditure (and hence other incomes) above current income. It follows that, theoretically at least, at a given price level, adjustments in debt stocks ( $D$ ) take place through changes in national income ( $Y$ ). However, actual changes in national income are inevitably associated with adjustments in the prices of labour and capital that go in the direction of the changes in national income. That is, when national income falls, this is usually associated with falls in prices, or a faster rate of

reduction in wage and profit income than in prices<sup>1</sup>. Thus, the most obvious example of the conservation of debt is in the processes of debt deflation and inflation, in which output, incomes and employment fall, in the case of deflation, or rise in the case of inflation, with the real value of debt ( $D/P$ ) staying more or less constant or, at least much more stable than income and employment (Fisher 1933).

Disaggregating total debt into private sector debt and government debt, and disregarding foreign debt at this stage, the principle of the conservation of debt may be restated as arguing that a reduction in government debt must be matched by an expansion of private debt, if national income is to be kept constant. If, for example, government debt is reduced through using a fiscal surplus to repay debt, then without a corresponding increase in private sector debt, national income will fall. This is because the fiscal surplus reduces income through the tax, or reduced expenditure, required to secure such a surplus. Similarly, if government debt is increased through a fiscal deficit, without a reduction in private sector debt, then national income will rise.

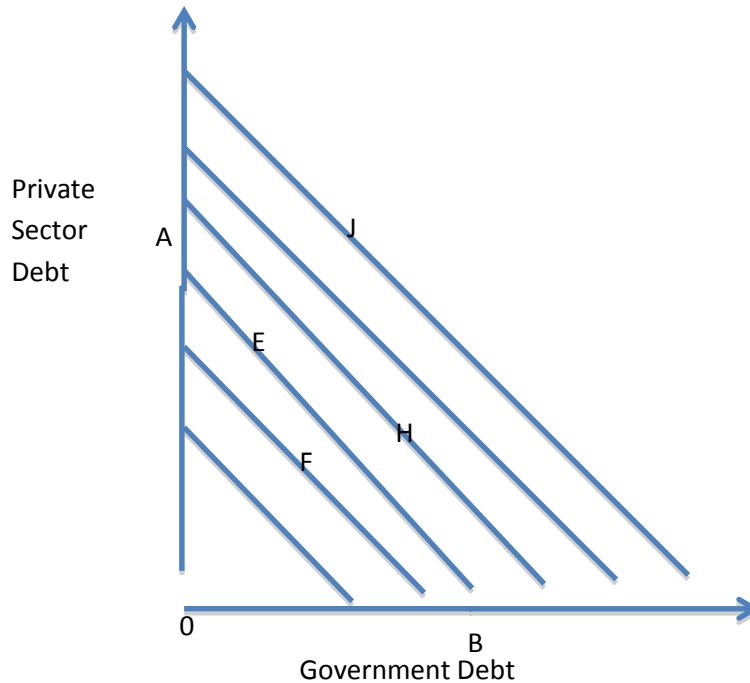
The same arises if the private sector seeks to reduce its debt by reducing expenditure below income. This will reduce income among households and firms causing aggregate income to fall. When debt reduction is undertaken by firms, the resulting fall in national income is Richard Koo's 'balance sheet recession' (Koo 2011). However, if the debt reduction is off-set by fiscal stimulus, in which public debt expands, then the recession may be moderated, or even eliminated.

This may be illustrated diagrammatically in a graph showing different combinations of government and private that correspond to a given level of national income. In Figure 1 below, each of the downward-sloping lines is such an 'iso-income' curve, showing the combinations of private and public debt that may secure the same level of national income. The slope of those lines represents the 'marginal rate of substitution of public for private debt', namely how much additional public debt is required to off-set the effect on national income of a given fall in private sector debt. The slope of this line depends on the ratio of internal to external financing of debt: if private sector investment is financed in part by internal funds in the form of bank credits owned by the investor and transferred in payment for the new investment goods, then this would have the effect of flattening the curve. Similarly, if the government financed a fiscal deficit in part through the sale of assets, then this would have the effect of making the curve steeper. If the lines are shown slightly convex, then this would indicate that, at a point such as A, where government debt is zero, a small amount of debt-financed stimulus may substitute for the repayment of a larger amount of private debt. At the other extreme, B, where private debt is zero, a small amount of private debt may substitute for a larger amount of government debt.

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<sup>1</sup> The fall in real income that occurs in hyperinflation occurs because nominal wages and profits do not keep up with price increases.

Figure 1 Private sector and government sector debt (currency units)

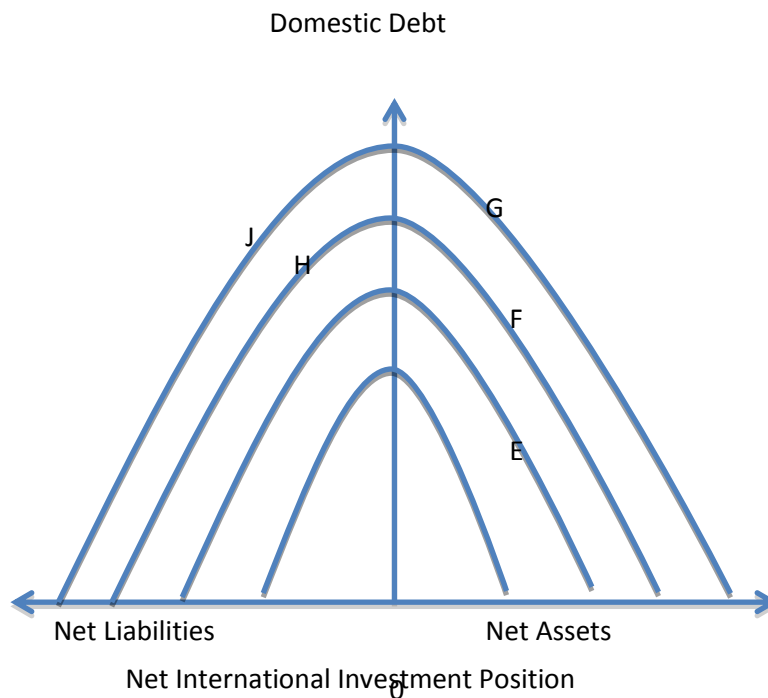


The credit cycle that is the counterpart of the business cycle may be shown on such a diagram as shifts between and along iso-income curves. Starting at point E on the diagram, an economic recession may commence with private sector deleveraging, that is paying back debt, in preference to investment. The resulting fall in national income may reduce government tax revenue and increase welfare payments. There is therefore an increase in government debt at point F, at a lower level of national income. In the initial recovery, government debt expands, and private borrowing resumes, at point H. Eventually, the private sector takes up the financing of the recovery from the government, at point J. Thus, recessions are associated with, and to some degree stabilised by a shift from private sector borrowing to government borrowing. Sustained booms are associated with increases in the private sector's share of borrowing.

The iso-income curves for an open economy may be shown on a diagram with domestic debt on the vertical axis and the economy's Net International Investment Position on the horizontal axis (Figure 2). The Net International Investment Position shows the net foreign assets or liabilities of residents in a country. The slopes of the iso-income curves show the marginal rate of substitution of domestic debt into foreign assets or liabilities (how much would need to be borrowed in the domestic debt market to buy a given foreign asset, or how much foreign debt would need to be incurred to pay off a given domestic debt). In other

words, the slopes show the rate of exchange at which foreign borrowing or assets may be substituted for domestic borrowing.

**Figure 2: Domestic debt and the Net International Investment Position (currency units)**



The international credit cycle counterpart of a business cycle may be shown on this diagram. Starting at point E, an economic boom may be expected to reduce the economy's net foreign assets and increase its domestic borrowing to F, and subsequently to a peak at G. As the economy moves to a net foreign liability position (foreign liabilities exceed foreign assets), the economy moves into recession and domestic deleveraging takes the economy to point H. Government borrowing in the domestic market may then take the economy to point J.

The alert reader will have observed that there is no mention in this paper of the rate of interest, or speculative financial operations as factors in the relationship between debt and national income, for example debt repayments that do not reduce expenditure because they are paid by reducing previously-existing bank deposits. As Keynes showed, there is a tenuous relationship between speculative financial operations and the rate of interest, and between the rate of interest and the level of investment in the economy (Keynes 1936 chapters 15 and 17). Borrowing for speculative financial operations would broaden the gaps between the iso-income lines in figures 1 and 2. But such borrowing affects national income through the



effect of the financial operations on investment and consumption. Speculation and the rate of interest therefore introduce complications into the analysis that do not affect the essential conclusions presented here. Debt repayments out of previously-existing bank deposits would reduce the gap between iso-income curves. A more serious complication is inflation which, within moderation, would affect the gaps between iso-income lines. Insofar as it affects the real value of debt, this is essentially the problem of debt inflation and deflation referred to previously in this paper.

### **3. The conservation of debt by ‘enforced indebtedness’**

The above analysis suggests an immediate impact of debt operations, borrowing or repayment, on national income. This impact may be reduced because much actual borrowing or repayment consists of purely financial operations, without affecting consumption or investment (see previous paragraph). However, key factors in stabilising debt and national income are processes of ‘enforced indebtedness’, a term originally used by Steindl (Steindl 1988). ‘Enforced indebtedness’ is borrowing in order to cover a shortfall in income below what is required to pay for recurrent expenditure. In maintaining the level of expenditure, such indebtedness also sustains incomes in the rest of the economy. As a response to debt repayment elsewhere in the economy, ‘enforced indebtedness’ helps to maintain the previous level of indebtedness in the economy.

Perhaps the best-known case of enforced indebtedness arises from the operation of automatic fiscal stabilisers. A reduction in government expenditure, in order to secure a fiscal surplus from which to repay government debt, may itself result in increased unemployment, higher welfare payments, and reduced tax revenue. The consequent increase in the fiscal deficit and its financing is a case of ‘enforced indebtedness’ frustrating the intended repayment of government debt.

In the private sector, reduced expenditure on consumption and investment due to spending income on debt reduction (Koo’s ‘balance sheet recession’) obviously reduces incomes elsewhere in the economy. Where these incomes fall below necessary recurrent expenditure (for example essential consumption, or outlays necessary to complete investment projects), additional borrowing may be undertaken in order to maintain such expenditure. Such ‘enforced borrowing’ is common among households in poorer countries without welfare support. Again, such borrowing off-sets the initial debt reduction causing the fall in income, and moderates the contraction of income.

A third kind of ‘enforced indebtedness’ occurs within the non-financial business sector where, as has happened in the recent recession, big corporations accumulate large amounts of liquid assets. The reduced expenditure on new assets and production of those corporations causes losses for small and medium-sized enterprises, forcing them to borrow in order to cover their commitments and stay in business. The forced borrowing of those small and

medium-sized businesses is the counterpart of the excess saving of the large corporations (Toporowski 2009).

It is worth pointing out that ‘sound’ borrowing is borrowing to purchase a new or already existing asset. It provides for a solvent balance sheet because there is an asset counterpart to the liabilities entered into. However, as noted above, ‘enforced indebtedness’ is borrowing to cover a shortfall in income, rather than to purchase an asset. Such borrowing therefore constitutes a form of what Minsky called ‘Ponzi’ finance, whose proliferation leads to generalised financial crisis (Minsky 1986, pp. 340-341).

### **Conclusion**

The first part of this paper summarised the Kalecki-Keynes theory that the equilibrium in a simplified capitalist economy (without government or foreign trade) is determined by the level of investment. In a pure credit economy, investment has in fact even greater importance than that attributed to it by Keynes and Kalecki. Such investment, as Minsky pointed out, also determines the ability of the economy to service the debts inherited from previous periods (Minsky 1986, chapters 7 and 9) by transforming new and existing credit into income, through the expenditure of credit on goods and services produced within the current period, rather than on durable goods (i.e., assets) already produced. Investment thereby expands the debt-carrying capacity of the economy. In an open economy with government, this capacity is also expanded by a fiscal deficit and net exports. However, a fiscal deficit increases indebtedness, and net exports depend on the conjuncture in foreign markets as much as (and perhaps more than) the exchange rate policy of the government.

In sections 2 and 3 it was argued that, while individual firms and households may choose, within limits, their levels of indebtedness, the overall amount of debt in the economy tends to be more stable because of endogenous processes of ‘enforced indebtedness’ in the economy. Thrift, individual choice and government debt policy cannot therefore determine levels of debt in the economy. In the final analysis, the only sustainable and effective way of managing debt is by ensuring that investment in the economy is sufficiently high for debts to be serviced.

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