FROM KEYNES' S=I EQUATION TO PROFITS (P) = 0

ROBERT WILLIAM VIVIAN[1]

(Work in progress)

Abstract
Keynes' Savings=Investment equation is well-known and remains influential. However, if Keynes' 'derivation' of the equation is examined it will be seen that the equation was not derived at all. It is merely the expression of an intuitively arrived at conclusions, expressed symbolically. On the other hand it is a simple matter to derive the equation. Once this is done a slightly different equation P=0 is arrived at, which it is suggested is the fundamental macro-economic equation.

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1. KEYNES' DERIVATION OF THE S=I EQUATION

Keynes' derivation of the S=I is simple enough and has been repeated by more often than one cares to mention. He wrote, 'savings means the excess of income over expenditure on consumption'[2] or :

$$S = Y - C \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

or Aggregate Savings (S) = Aggregate Income (Y) - Aggregate expenditure on consumption (C)

Further he wrote 'Income = Consumption + Investment'[3] or

$$Y = C + I \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

or Aggregate Income = Aggregate Consumption + Aggregate Investment

Substituting (2) into (1) gives:

$$S = I \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

or Aggregate savings = Aggregate Investment[4]

Keynes' equation was controversial before[5] it appeared in his *General Theory* and has thereafter

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1 Professor of Finance and Insurance, School of Business and Economic Sciences, University of the Witwatersrand.

2 Keynes 1936:61

3 Keynes 1936:62

4 Keynes 1936:62

5 Keynes dealt with the relationship between savings and investment in his *Treatise on Money,* 1930, some years before the *General Theory* was published.

continued to be so.[6] Nevertheless the idea that S=I remains influential to this day.[7] Of course income minus expenditure is not only what constitutes savings but it is also what constitutes profits. In a corporate environment profits appear at different stages. Firstly as profits before tax, then profits after tax and finally profits after payments to shareowners, or retained profits. Profits = Income - Expenditure as a form of savings refers to retained profits. Instead of using both savings and profits, conceptually one will suffice. If Profits (rather than savings) is selected, then, Keynes' equation can be written as P = I.

That Profits equals Investments is seems to be intuitively correct. Profits which are retained by a firm are logically retained for purpose of reinvestment and saving of the individual are treated as Knight (1937a) pointed out as " 'investing' in money, which is logically correct from the point of the saver."[8]

2 DERIVATION OF THE FUNDAMENTAL MACRO-ECONOMIC EQUATION; P=**0**

The above equations are aggregates and are based on the assumption that what is true for individual transactions is also equally true for aggregates. This point is explicitly made by Lerner (1938a:619 *et seq*):[9]

> The equation y - c = s, since it is true for every individual in the economy, it is also true for any two ... or any other number of individuals in the economy. If we take all the individuals together and add up their incomes and consumptions and savings ... we get Y - C = S. In this respect the whole economy is like any individual.

This will now be demonstrated to be incorrect. The arithmetic of aggregates are not simply the same as for individuals; more than the mere changing from lower to upper case is needed. So if instead of starting with aggregates, the position of the individual transaction is considered then a slightly different result is arrived at. If the convention of using lower case to depict individual transactions and upper case for aggregates is maintained then:

$$p_n = \sum y_{n,i} - \sum e_{n,i}. \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

where p_n is the profit (or savings) of any, say the nth individual, in the economic system, at the end of a period (say a year) and $\sum y_{n,i}$ is the sum of all income monetary receipts of that individual and $\sum e_{n,i}$ the sum of monetary expenditure during the period.

If P is the aggregate of all profits (or savings) by all individual then the aggregates are:

$$P = \sum p_n = \sum\sum y_{n,i} - \sum\sum e_{n,i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

However as Lerner (1938a:)[10] correctly pointed out:

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6 Curtis 1937; Lerner 1938; Lutz 1938; Curtis 1939; Hazlitt 1959:78 *et seq*. As Hansen (1953:59) put it, 'And in the discussion of the savings-investment problem, which followed the publication of the General Theory, a vast confusion arose.

7 Romm 2005; Moore 2006.

8 Knight (1937) reproduced in Hazlitt (1960:76)

9 Lerner's article was recognised as being sufficiently influential to be republished (in part) as part of the collection of influential articles by Harris (1947). Another useful article, on the same subject, by the same author is Lerner (1939).

10 See also Lerner (1938:299 *et seq*)

> But for the whole economy there is another relationship. The sum of all [monetary] incomes of all the individuals in the economy, Y, is equal to the sum of the [monetary] expenditures of all kinds by the individuals of the economy, since these [monetary] expenditures are nothing but the [monetary] payments, the [monetary] receipts of which constitutes all [monetary] incomes. The sum of all [monetary] payments must be equal to the sum of all [monetary] receipts in the same period, since these are the same thing, only looked at from different angles.

A decade later Boulding (1946:126,132)[11] made the same point but more succinctly:

> [M]y income is always somebody else's expenditure, and my expenditure is somebody else's income ... [E]very transfer of money is at the same time income to the person who receives it and expenditure to the person who gives it. This truth is so obvious once it is stated, that it seems almost impossible that it could be misunderstood; nevertheless, the Keynesian revolution in economic thought consists essentially in the explicit recognition of this truth and its incorporation into the body of economic thought.

Thus $\sum\sum y_i = \sum\sum e_i$ or Y = E thus Y - E = 0

or P = 0, not I . . . . . (5)

thus P = 0 aggregate profits are always exactly equal to zero, not I. This equation is slightly different to Keynes' P = I equation. Thus neither aggregate savings or profits can exist in a monetary system. P=0, it is suggested is the derived fundament macroeconomic equation. It is from this equation that other macro-economic equations can be derived. It should also be noted that these equations involve purely monetary transactions.

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11 *The Economics of Peace* New York: Prentice-Hall Quoted in Hutt (1979:90).