

## The independence of finance from saving: a flow-of-funds interpretation

John Maynard Keynes's proposition that consumption-and-saving decisions on the part of the public exert no direct influence on the conditions of finance faced by investors has unsuccessfully been striving to escape the confining realm of unorthodox theory. Keynes's logic in establishing this point has been defined by his critics as "a historical puzzle" (Tsiang, 1980, p. 476), the steps of his analysis as "retrogressive" with respect to Wicksellian tradition (Leijonhufvud, 1981, p. 170), and his consequent statements in terms of the so-called paradox of thrift as "bombastic" (Miller, 1985, p. 276).<sup>1</sup>

Economists who, explicitly or implicitly, adhere to the *loanable funds* theory of interest claim that a public's shift from consumption to saving with the purpose of purchasing securities generates, *ceteris paribus*, an excess supply of funds that eases conditions in the capital

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<sup>1</sup>If a positive relationship between saving-and-lending and finance availability is maintained (which is the case of most of mainstream Keynesian macroeconomics), then the "paradox" holds only under special circumstances. Lipsey and Steiner (1981, p. 527), for example, warn that increased household savings have no impact on investment only if there is some obstacle in the intermediation process between savers and investors. This implies that, normally, aggregate saving is no longer a *residual* in the sense of Keynes (1936, p. 64).

market.<sup>2</sup> It is only when increased saving is simultaneous with an equal buildup of cash balances (either by savers or by borrowers) that conditions in the capital market remain unchanged. This type of criticism has been advanced, in slightly different forms, by various economists such as D. H. Robertson (1931, p. 400; 1936, p. 188; 1937, pp. 434–435) in his controversy with Keynes, Harry Johnson (1951–52, pp. 97–98) in his comment on Robertson, and, recently, Chick (1983, pp. 184–188) in her interpretation of Keynes.

This paper provides a simple kind of *flow-of-funds* model where the flow of savings on the part of households, even when it is entirely directed to the purchase of securities, is not a *net* component of the supply of funds in the capital market. Thus, Keynes's proposition about the independence of finance from saving does not require the assumption of "a hidden increase in liquidity preference" (Johnson, 1951–52, p. 98). It is rather based upon a specific conception of the finance process in a monetary economy.

### A flow-of-funds model

The *flow-of-funds* approach to economic accounting is subsequent to Keynes. It was introduced by Morris A. Copeland in 1947 and later adopted by the Federal Reserve, which, since 1959, regularly publishes quarterly flow-of-funds data. Theoretical and pedagogical uses of the flow-of-funds system of accounting have been limited,<sup>3</sup> given its nature as a collection of *ex post* data and logical *ex post* identities. Although the flow-of-funds analysis still lacks an organizing theory, some theoretical insights can be obtained by providing an interpretative framework of this system of accounts.

Assume a closed economy where three types of economic units operate: (a) households, (b) business firms, and (c) the banking system, which can be aggregated into a single "the Bank." Households sell labor services and purchase consumer goods. Business firms buy labor services and capital goods and sell their products. Two sectors of firms are identified: (b.i) the A-industry, being the set of fully integrated

<sup>2</sup>Along the same lines, today's conventional wisdom among economists, policy-makers, and commentators is that saving-and-lending activity provides a net source of funds to the capital market. Thus, saving incentives policies are expected to relieve financial markets and stimulate accumulation. See, for example, a study by the New York Stock Exchange (1981).

<sup>3</sup>See Powelson (1960), Earley, Parsons, and Thompson (1976), and, for a survey, Cohen (1972).

consumer goods producers, and (b.ii) the U-industry, being the set of fully integrated capital goods producers.<sup>4</sup> The Bank is a single integrated monetary institution whose liabilities are generally accepted as the means of contractual settlement, so that every transaction takes the form of a transfer, in the books of the Bank, of liabilities between accounts.<sup>5</sup>

It is further assumed that (i) the wage bill in each industry is fixed by contract for the length of the accounting period covered by the flow-of-funds data; (ii) the use of resources by the Bank is negligible and therefore can be ignored; (iii) there is no investment activity on the part of the U-industry; and (iv) all purchases of investment goods by the A-industry are ordered forward at a price ( $I$ ) that covers production costs ( $U$ ) and allows a profit. Assumption (i) implies that households' income is not subject to change during the accounting period, so that actual household savings do not differ from planned. Assumptions (ii), (iii), and (iv) avoid undue complications without altering the basic principles involved.

In a monetary economy of this sort Bank finance plays the role of bridging the gap between firms' expenditures and cash availability from the sales of the product. Thus, business firms borrow cash from the Bank at the time wages must be paid: households receive income and firms become debtors to the Bank. In addition, firms of the A-industry need money to purchase capital goods. This is also initially provided by the Bank. In other words, over the time period under consideration, the Bank creates enough liquidity to enable firms to pay their wage bills and to honor their forward contracts when capital goods are ready to be bought. Then, firms repay the Bank with their sale proceeds and *fund* the remaining debt by issuing debt titles to economic units whose cash receipts exceed their expenditure.<sup>6</sup>

Table 1 summarizes non-financial transactions for each sector. Business firms' current expenditure is current production cost expenditure, which consists entirely of the wage bills ( $A$  and  $U$ ) of the two industries,

<sup>4</sup>We thus distinguish between the producers of available (A-industry) and the producers of unavailable (U-industry) output. See Keynes (1930, p. 114) for his definitions of "available" and "non-available" output.

<sup>5</sup>Every household and every firm thus possess a Bank account. This case resembles Wicksell's (1962) *pure credit system*.

<sup>6</sup>See Davidson (1976, pp. 320–325) for the difference between *finance* and *funding*, and Graziani (1984, p. 10) for a similar distinction between *initial* and *final* finance.

Table 1

## Non-financial uses-and-sources of funds account

	A-Industry	U-Industry	Households
1. Current expenditure (use)	$A$	$U$	$C$
2. Receipts (source)	$C$	$I$	$A + U$
3. Saving (2 - 1)	$C - A$	$I - U$	$A + U - C$
4. Capital expenditure (use)	$I$	—	—
5. Net financial investment (3 - 4)	$C - A - I$	$I - U$	$A + U - C$

*Notes:* A-industry = producers of available output; U-industry = producers of unavailable output;  $A$  and  $U$  = wages in A-industry and U-industry, respectively;  $C$  = consumption spending; and  $I$  = investment spending.

for in a closed system of fully integrated firms the wage bill in each sector is the total cost of current production in each sector. This sum ( $A + U$ ) equals households' receipts (i.e., their income). Households' current expenditure consists of consumption spending ( $C$ )—whose value cannot exceed the wage bill total ( $A + U$ )—which is the flow of sales receipts for the A-industry. Receipts of the U-industry are provided by the sale of capital goods to the A-industry, and thus equal A-industry's investment spending ( $I$ ). Table 1 also shows two definitional magnitudes for each sector: *saving* is the difference between (current) receipts (row 2) and current expenditure (row 1); *net financial investment* is the difference between saving (row 3) and capital outlays (row 4). The table is constructed in such a way that, for each sector, total uses equal total sources.<sup>7</sup>

### Implications of the model

The demand for and the supply of funds in the capital market for the period covered by Table 1 is easily derived. Assuming, as we did, that for both households and firms in the U-industry the difference between saving and capital expenditure (i.e., net financial investment) cannot be negative, the *demand for funds* is entirely due to the cash needs of the firms in the A-industry, who are expected to pay back to the Bank their loans in full within the accounting period. This demand for cash is equal to the difference between the amount of credit granted by the

<sup>7</sup>For a brief but detailed presentation of the flow-of-funds accounting system see Ritter (1983).

Bank to the A-industry (i.e.,  $A + I$ ) and A-industry's sales revenue (i.e.,  $C$ ). Thus,

$$(1) \quad \text{demand for cash} = A + I - C.$$

The *supply of funds* is that part of savings that households and firms of the U-industry use to purchase the debt obligations of the firms of the A-industry. Hence, assuming that all household and U-industry savings are used to purchase the new debt securities issued by the A-industry (while A-industry firms' savings—i.e., their profits—are used to repay part of their Bank debt),

$$(2) \quad \text{supply of cash} = Sh + (I - U)$$

where  $Sh$  is the flow of household savings (i.e.,  $A + U - C$ ).

We may easily infer that if there is no buildup of cash balances (Bank deposits) the amount of cash supplied by households and firms (of the U-industry) is exactly equal to the need for cash by firms of the A-industry, aimed to fully repay their Bank debt. For, using the definition of household saving in Table 1,

$$(3) \quad Sh + (I - U) = A + I - C.$$

It can be shown that any change in the volume of household savings (given the level of production in the period) equally affects both the demand for and the supply of funds. If, *ceteris paribus*, the public spends less for consumption and thus saves more with the purpose of purchasing securities, both the supply and the demand for funds will be greater: households have more funds to lend, while firms need more cash to be raised externally, as sales revenue in the consumption goods producing sector is less.<sup>8</sup> Formally, the volume of consumption spending ( $C$ ) appears, with the same sign, on both sides of the capital market—that is,  $C$  is a deduction from both the demand-for-funds equation (1) and the supply-of-funds equation (2).

Extension of Bank credit, capital market intermediation, and Bank debt repayment can be illustrated by the flow-of-funds table of financial transactions (Table 2).

<sup>8</sup>The point that increased savings force firms to raise more cash has been made by Lerner (1951, p. 107) and Rose (1956–57, p. 117). On this point, cf. Tsiang (1980, p. 477n).

The matrix in Table 2 divides the economy into four sectors. Sectoral sources of funds are increases in liabilities (or negative uses of funds). Sectoral uses of funds are increases in holdings of assets (or negative sources of funds). By construction of the table, for each row and for each sector the sum of uses equals the sum of sources. For brevity, *Sh* stays for household saving, *Su* stays for U-industry's saving, and *Sa* stays for A-industry's saving.

Table 2 is a summary statement of financial transactions in the economy described by Table 1 when there is no increment in Bank deposits and Bank loans are fully repaid within the accounting period. Row 1 shows Bank finance granted to the industries as a source of funds for borrowers and a use of funds for the Bank. It also shows Bank repayment as a use of funds of the industries and a source of funds for the Bank. Row 2 shows households' and U-industry's acquisition of debt titles as uses of funds, offset by A-industry's sources of funds. Row 3 shows no increment of Bank deposits by any of the sectors, and row 4 shows sectoral net financial investment, defined above as the difference between saving and capital expenditure, which equals the difference between financial uses and financial sources.<sup>9</sup>

Table 2 shows that *any* hypothesized level of household savings is compatible with full repayment of Bank debt, on condition that households use all their savings to buy new debt issues by firms of the A-industry who need these funds to repay their bank loans, for their current sales receipts do not cover all their bank borrowings. Thus, it is assumed that households never hold their savings in the form of additional bank deposits. Even in the limiting case where household savings are nil, A-industry's source of funds through the capital market (i.e.,  $I - U$ ) still equals the demand for cash as defined by (1) and is equal to the supply of funds resulting from the (positive) net financial investment by the U-industry.

What would be the situation if households used bank deposits to store some of their savings, rather than spending their entire savings on the debt issues of firms in the A-industry?

Table 3 shows the limiting case when all household savings take the form of increased Bank deposits. Funds intermediated by the capital market are now insufficient to provide firms with the necessary where-withal to fully fund their capital expenditure. For now A-industry's

<sup>9</sup>In flow-of-funds accounting, for each sector, saving + financial sources = capital expenditure + financial uses, and thus, saving - capital expenditure = financial uses - financial sources.

Table 2

## Financial uses-and-sources of funds account

	A-industry		U-industry		Households		Bank	
	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources
1. Bank loans	$A + I$	$A + I$	$U$	$U$	—	—	$A + U + I$	$A + U + I$
2. Debt titles	—	$Sh + I - U$	$Su$	—	$Sh$	—	—	—
3. Bank deposits	—	—	—	—	—	—	—	—
4. Net financial investment	—	$Sa - I$	—	$Su$	—	$Sh$	—	—

Notes: A-industry = producers of available output; U-industry = producers of unavailable output;  $A$  and  $U$  = wages in A-industry and U-industry, respectively;  $I$  = investment spending;  $Sh$  = household saving;  $Su$  = U-industry saving; and  $Sa$  = A-industry saving.

Table 3

## Financial uses-and-sources of funds account

	A-industry		U-industry		Households		Bank	
	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources
1. Bank loans	$I - U + C$	$A + I$	$U$	$U$	—	—	$A + U + I$	$I - U + C + U$
2. Debt titles	—	$I - U$	$Su$	—	—	—	—	—
2. Bank deposits	—	—	—	—	$Sh$	—	—	$Sh$
4. Net financial investment	—	$Sa - I$	—	$Su$	—	$Sh$	—	—

Notes: A-industry = producers of available output; U-industry = producers of unavailable output;  $I$  = investment spending;  $A$  and  $U$  = wages in A-industry and U-industry, respectively;  $C$  = consumption spending;  $Su$  = U-industry saving;  $Sh$  = household saving; and  $Sa$  = A-industry saving.

source of funds from the issue of debt titles (row 2) is less than its demand for cash as defined by (1). The lack of funds is provided by the Bank, by accepting a delay of repayments.

It is then the *use* of savings, and not their volume, that matters to Bank debt repayment. Firms of the A-industry are enabled to raise enough funds to fully repay their Bank commitments on condition that households and the U-industry use all their savings to purchase debt titles. The use of some (or all) of their savings to increase Bank deposits, resulting from the desire for additional liquidity, generates, *ceteris paribus*, an excess demand for cash that puts pressure on the capital market. This additional pressure can be met only by either the Bank providing additional liquidity or the borrowers paying a higher rate of interest to induce potential lenders to give up the liquidity of Bank deposits for the lower liquidity involved in holding debt securities.<sup>10</sup>

In sum, when investment decisions by firms and consumption-and-saving decisions by households are taken independently (and the production of capital and consumer goods is made possible—i.e., is financed—by the extension of Bank credit), then saving decisions out of current income are, *per se*, irrelevant for the conditions in the money market. Decisions by households to spend more or less out of this period's income will merely determine how aggregate savings (whose value is fixed at the level of investment) are redistributed among sectors.<sup>11</sup> Thus, for example, a *ceteris paribus* greater flow of consumption expenditure brings about a lower ratio of savings accruing to households and a larger ratio of savings (profits) accruing to the A-industry.<sup>12</sup> Households' saving-and-lending activity, *per se*, does not provide fresh funds to investors. As it takes place at the expense of consumption spending, it simply provides firms with the cash necessary to resolve a problem of lack of funds that was caused by the lack of consumption in the first place.

<sup>10</sup>It ought to be stressed that in a situation when households increase their Bank deposits—thus putting pressures on the capital market—a *further* increase in household saving, even if entirely directed to the purchase of securities, does nothing to relieve the capital market.

<sup>11</sup>See, on this point, Keynes (1930, p. 158ff.; 1936, pp. 211-123; 1937, p. 668; and also 1973, p. 515; 1979, p. 102ff.). For a possible impact of wealth redistribution on capital market conditions, *with ambiguous sign*, see Keynes (1973, p. 224).

<sup>12</sup>Aggregate savings remain unchanged:

$$S = Sh + Sa + Su = (A + U - C) + (C - A) + (I - U) = I.$$

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