invest a significant amount of effort into developing and executing customized trading cases. This is an ongoing cost in that trades have to be executed manually. However, in times of very tight budgets it is a worthy effort to provide students with this valuable tool. The cost of commercial trading software might be prohibitively high for a lot of schools, but the learning experience for the students is worth the extra effort of the instructor.

NOTES

1 *See McClatchey and Kuhlemeyer (2000) for a survey on what types of market simulations are used by faculty*

2 *For different simulations see for example Angel (1994), Cheng (2007), Maxam and Maxam (2003), Lyman and Stone (2006), and Cooper and Grinder (1997).*

3 *Our simulation is different from FTS in that FTS has two simulations one with real data called The Real Time Trader (where you can change the parameter, but it uses real market information and runs over several weeks) and one that is case based, called FTS Markets. This one is fictitious, but runs only for a few minutes per trial. The RE1 case used in this paper to compare student results is from that application.*

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Stephanie Y. Rauterkus is an assistant professor and Andreas H. Rauterkus is an assistant professor at The University of Alabama at Birmingham.

Preparing the Statement of Cash Flows Using the Balance Sheet "Squeeze" Spreadsheet

Robert B. Matthews, Joe James, and Ronald J. Daigle

The statement of cash flows (SCF), established pursuant to Statement of Financial Accounting Standards No. 95 (FAS 95), is perhaps the most useful of the standard financial statements-balance sheet (BS), income statement (IS), and SCF-in evaluating the financial viability of a company, particularly a small business. Unfortunately, the SCF is probably the least understood of the three statements and the most difficult to prepare, and is frequently not included in the financial statement compilations issued by accountants for many small businesses. This paper describes a spreadsheet methodology commonly employed in private industry to facilitate preparation of the SCF, which can be suitable for teaching accounting and finance students at the undergraduate level.

Understanding cash flow is essential for accurate analysis of the financial condition and viability of any enterprise. Among the standard financial statements specified by Generally Accepted Accounting Principles (GAAP)--balance sheet (BS), income statement (IS), and statement of cash flows (SCF)--the SCF may be the most important of all, particularly in analyzing the creditworthiness of small businesses. Unfortunately, perhaps because the SCF is the one basic statement that is not prepared more or less directly from a trial balance, it is usually the last one taught to accounting students, and it is understood by very few non-accountants.

Accountants for many small businesses often omit the SCF (and footnotes) in preparing compilations of financial statements. This presents an obvious problem for users seeking to understand cash flow, such as bank lending officers charged with making small business loans. Such a user must either prepare a cash flow statement with the information available, or request such a statement be included in any additional information to be provided.

What is needed is a methodology that can be useful in preparing the SCF or in validating a SCF prepared by others.

The balance sheet "squeeze" is a method used widely in industry, but the authors have found little evidence of its being taught in universities. It offers the following advantages:

1. It can be learned and understood by anyone with a reasonable knowledge of spreadsheet techniques.
2. It provides a straightforward way to separate changes in cash among operating, financing, and investing activities.
3. The SCF can be prepared fairly directly from the completed squeeze.
4. Validating the SCF by reference back to the squeeze is a relatively straightforward process.
5. Since the method is widely used in industry, students who learn it at the university level will be better prepared to step into jobs after graduation.

One other advantage is that the squeeze provides a fairly straightforward approach to the more difficult, but preferable, direct method of preparing the SCF. In the interest of space, this article addresses only the simpler indirect method, but preparation using the direct method is addressed in the supplemental materials, including teaching notes and further examples, which can be found online at *www.jfcr.org/jitf.html*

PURPOSE, FORM, AND CONTENT OF THE STATEMENT OF CASH FLOWS

The Financial Accounting Standards Board (FASB) defines the purpose of the SCF as being, "to provide relevant information about the cash receipts and cash payments of an enterprise during a period" (SFAS-95, see also ASC-230 and IAS-7). FASB further states that the statement of cash flow, when considered along with the other financial statements and the related disclosures, should help investors, creditors, and others to assess:

1. The enterprise's ability to generate positive future net cash flows;
2. The enterprise's ability to meet its obligations, its ability to pay dividends, and its needs for external financing;
3. The reasons for differences between net income and associated cash receipts and payments; and
4. The impact on the enterprise's financial position of both its cash and non-cash investing and financing transactions during the period (SFAS-95, p. 4).

The general layout of the SCF is:

Cash inflows (outflows) from operating activities
+/- Cash inflows (outflows) from financing activities
+/- Cash inflows (outflows) from investing activities
= Net cash flow
+ Beginning cash and cash equivalents
= Ending cash and cash equivalents

A key to preparing the SCF is applying the following rule setting forth the relationship between the SCF and double-entry accounting:

Credit = Source/Inflow of Cash;
Debit = Use/Outflow of Cash

This rule is simple and obvious. It applies primarily to non-cash accounts, but can be applied to cash accounts if one thinks mnemonically of taking money out of the bank as a "source" of cash, and putting money into the bank as a "use." The following is a list of more detailed classification rules that apply generally in analyzing the changes in accounts other than cash and cash equivalents, with some specific exceptions:

Current assets - Debit changes (increases) are operating outflows; credit changes (decreases) are operating inflows
Non-current assets - Debit changes (increases) are investing outflows; credit changes (decreases) are investing inflows
Current liabilities – Debit changes (decreases) are operating outflows; credit changes (increases) are operating inflows
Non-current liabilities – Debit changes (decreases) are financing outflows; credit changes (increases) are financing inflows
Equity – Net income (loss) is an operating inflow (outflow); capital contributions (credits) are financing inflows; capital distributions (debits) are financing outflows

PREPARING THE SCF

The procedure for preparing the SCF generally consists of the following steps:

1. Determine the net change in each balance sheet account.
2. Segregate the changes in cash (and cash equivalents) from the changes in non-cash accounts.
3. Classify the changes in non-cash balance sheet accounts as resulting from operating, investing, and financing activities, where:
a. Operating activities can be reported applying either: 1) The indirect method, which reconciles net income to cash flow from operations and is most common, apparently because it is easier, or 2)The preferred direct method, reflecting cash received from customers, cash paid to vendors, and cash flows from other operating activities.
b. Investing activities include the cash effects of lending money and collecting on those loans and acquiring and selling investments and productive long-term assets.
c. Financing activities include the cash effects of borrowing and repaying long-term loans; issuing equity securities; and payment of dividends to shareholders.
4. Verify that the total of operating, investing, and financing changes equals the net change in cash.

The balance sheet squeeze provides a logical framework for applying the rules for preparation of the SCF. To demonstrate how the squeeze works, assume the following:

1. Table 1 shows ABC Corporation's balance sheets at December 31, 2009 and 2008.

2. Table 2 shows ABC's income statement for the year ended December 31, 2009.
3. During the year 2009, ABC did the following:
a. Purchased property and equipment totaling $30,000.
b. Repaid $4,000 of commercial paper outstanding at the beginning of the year.
c. Issued $10,000 of new long-term debt, and repaid $4,000 of long-debt outstanding at the beginning of the year.
d. Paid dividends of $5,000.

To illustrate the use of the balance sheet squeeze, the following steps are helpful. In working through these steps it will be helpful to refer to Table 3, which is a completed balance sheet squeeze template based on the above facts.

1. Set up the spreadsheet. An Excel template is provided online at http://www.jfcr.org/jitf.html The general layout of the spreadsheet is Column A-Balance sheet captions, Column B-Beginning balances, Column C-Ending balances, Column D-Changes from beginning to end, Column E-Changes attributable to operating activities, Column F-Changes attributable to financing activities, Column G-Changes attributable to investing activities, and Column H-Check column to capture any changes not spread between operating, financing, and investing.
2. Put the balance sheet captions in Column A, following the format in the company's financial statements.
3. List balances at the beginning of the year on the appropriate line in Column B. Insert debits as positive numbers and credits as negative numbers, regardless of the natural signage for individual accounts or line items in the company's financial statements.
4. List balances at the end of the year on the appropriate line in Column C. Again, enter debits as positive numbers and credits as negative numbers, regardless of the natural signage of the individual account in the company's financial statements. It is extremely important that the data in both columns B and C be entered in accordance with this convention in order for subsequent formulas to work properly. As a validity check, the following equations should be true for both columns B and C:

Total Liabilities and Equity = -1 x (Total Assets)
Total Assets + Total Liabilities and Equity = 0

If these are not true, resolve this error before proceeding further. The most common causes are a reversed sign (debit/credit) or omission of a line item.
5. In Column D, insert a formula to subtract the current year-end amount in Column C from the prior year-end amount in Column B (D6=B6-C6, D7=B7-C7, etc.). Do not include such calculations for lines containing totals or subtotals. Setting up the worksheet this way places the proper signs on the calculated amounts for inclusion.

Table 1. ABC Corporation's Balance Sheets, Fiscal Year 2008 & 2009

Assets	12/31/2008	12/31/2009
Cash and cash equivalents	8,000	32,000
Accounts receivable, net	100,000	102,000
Reserve for doubtful accounts	(10,000)	(11,000)
Inventories	92,000	96,000
CURRENT ASSETS	190,000	219,000
Property, plant, and equipment	250,000	271,000
Accumulated depreciation	(31,000)	(36,000)
TOTAL ASSETS	409,000	454,000
Liabilities and Equity		
Accounts payable and accrued liabilities	105,000	110,000
Income taxes payable-Current	15,000	17,000
Current notes payable	4,000	-
CURRENT LIABILITIES	124,000	127,000
Long-term debt	50,000	56,000
Income taxes payable-Deferred	-	1,000
TOTAL LIABILITIES	174,000	184,000
Common stock	10,000	10,000
Additional paid-in capital	90,000	90,000
Retained earnings	135,000	170,000
TOTAL EQUITY	235,000	270,000
TOTAL LIABILITIES AND EQUITY	409,000	454,000

While not intuitively obvious (this effectively reverses the convention observed in Columns B and C, so that an increase in receivables from the prior year to the current year will be reflected as a negative number in the change column), this convention results in the proper signs for inclusion in the SCF:

a. Debit changes = Uses of cash = Negative numbers in SCF (although debits are positive numbers in Columns B and C)
b. Credit changes = Sources of cash = Positive numbers in SCF (although credits are negative numbers in Columns B and C).

Column D must not include values for subtotal and total lines in order to facilitate an important validity check. If all balance sheet changes are properly accounted for, then the total of Column D must equal zero. If the total of Column D does not equal zero, resolve this error before proceeding further. To assist in resolution, the most likely causes of any errors are:

a. Incorrect sign (debit/credit) in populating Columns B and C
b. Inclusion of total or subtotal lines in Column D.
c. Omission of non-total or non-subtotal line from Column D.

6. Continue to populate the template in this manner until all assets and liabilities are recorded and the net change in each is reflected.

Table 2. ABC Corporation Income Statement for the Year Ended Dec. 31, 2009

Sales	371,000
Cost of goods sold	224,000
GROSS MARGIN	147,000
Selling, general, and administrative expenses	87,000
Depreciation	6,000
	93,000
INCOME FROM OPERATIONS	54,000
Interest income	10,000
Interest (expense)	(4,000)
Gain (loss) on sale of assets	(2,000)
PRETAX INCOME	58,000
Income tax expense - Current	17,000
Income tax expense - Deferred	1,000
NET INCOME	40,000

7. In analyzing retained earnings, it will be helpful to split current year activity into its components. Therefore there would be a beginning balance line (where the prior year balance is shown on this line in the prior year statements), a net income line, a dividends/distributions line, and other lines as necessary to break out current year changes to retained earnings.
8. Next, add columns E, F, G, and H to the spreadsheet. Column E is for changes from operating activities, Column F for changes from financing activities, column G for changes from investing activities, and column H for any amounts in column D that are not spread to columns E, F, or G. The formula for column H is column D minus the sum of columns E, F, and G (i.e., H7=D7-E7-F7-G7). The net change in cash ends up in column H since it is not spread to columns E, F, or G (keeping in mind that a debit is a "use" and a credit is a "source" under this signing convention). Keep working until all noncash lines in column H equal zero. Zeros in column H-except the net change in cash (and cash equivalents)-indicate that all sources and uses of cash have been classified as operating, financing, or investing.
9. In our example, the following items are to be posted to the spreadsheet:

a. Debit changes of $2,000 to accounts receivable and $4,000 to inventories are operating outflows (negative amts in Column E).
b. Credit change of $1,000 to reserve for doubtful accounts is operating inflow (positive amount in Column E).
c. Debit change of $21,000 to property, plant, and equipment is investing outflow (negative amount in Column G).
d. Credit change of $5,000 to accumulated depreciation is investing inflow (negative amount in Column G).
e. Credit changes of $5,000 to accounts payable and $2,000 to income taxes payable-current are operating inflows (positive amount in Column E).
f. Debit change of $4,000 to commercial paper payable is financing outflow (negative amount in Column F).
g. Credit change of $6,000 to long-term debt is financing inflow (positive amount in Column F).
h. Credit change of $1,000 to income taxes payable-deferred is operating inflow (positive amount in Column E).

i. Net credit change of $35,000 to retained earnings consists of several components:
1) $40,000 net income is operating inflow (positive amount in Column E).
2) $6,000 depreciation expense is operating inflow (positive amount in Column E), with offsetting investing outflow of $1,000 (negative amount in Column G) to equal net change of $5,000 in accumulated depreciation.
3) $2,000 loss on sales of assets is reclassified from operating to investing (positive amount in Column E and negative amount in Column G).
4) $5,000 dividend paid is financing outflow (negative amount in Column F).
Posting these amounts to the spreadsheet produces a net cash inflow from Operating Activities of $51,000, a net cash outflow to Financing Activities of $3,000, and a net cash outflow to Investing Activities of $24,000. Note that the sum of the Operating, Financing, and Investing Activities columns produces a net source of cash of $24,000, which is exactly the amount by which cash increased. Once that verification is completed, we can be relatively certain that we have captured all elements of cash flow. Table 3 shows the completed spreadsheet. Note that the sum of the totals for columns E, F, and G is equal to the total amount for column H, but of the opposite sign. Note also that column H has zero values except on the line(s) attributable to cash (and cash equivalents). These are both important validity checks.

Now we must adjust certain components to reflect additional information, as follows:
a. The $6,000 decrease in long-term debt results from $10,000 in new borrowings and $4,000 of repayment of prior borrowings.
b. With respect to property, plant, and equipment and related depreciation:
1) The $21,000 debit change in property, plant, and equipment reflects $30,000 in additions, less assets sold, so the cost of assets sold must equal $9,000.

Table 3. Completed Balance Sheet Squeeze Template

A	B	C	D	E	F	G	H
ABC COMPANY BALANCE SHEET "SQUEEZE"	Dr (Cr) Beginning	Dr (Cr) Ending	Source/Inflow (Use/Outflow) Of Cash	Operating	Financing	Investing	(Increase) Decrease in Cash
Cash and cash equivalents	8,000	32,000	(24,000)	-	-	-	(24,000)
Accounts receivable, net	100,000	102,000	(2,000)	(2,000)	-	-	-
Reserve for doubtful accounts	(10,000)	(11,000)	1,000	1,000	-	-	-
Inventories	92,000	96,000	(4,000)	(4,000)	-	-	-
CURRENT ASSETS	190,000	219,000					-
Property, plant, and equipment	250,000	271,000	(21,000)	-	-	(21,000)	-
Accumulated depreciation	(31,000)	(36,000)	5,000	6,000	-	(1,000)	-
TOTAL ASSETS	409,000	454,000					-
Accounts payable	(105,000)	(110,000)	5,000	5,000	-	-	-
Income taxes payable-Current	(15,000)	(17,000)	2,000	2,000	-	-	-
Current notes payable	(4,000)	-	(4,000)	-	(4,000)	-	-
CURRENT LIABILITIES	(124,000)	(127,000)					-
Long-term debt	(50,000)	(56,000)	6,000	-	6,000	-	-
Income taxes payable-Deferred	-	(1,000)	1,000	1,000	-	-	-
TOTAL LIABILITIES	(174,000)	(184,000)					-
Common stock	(10,000)	(10,000)	-	-	-	-	-
Additional paid-in capital	(90,000)	(90,000)	-	-	-	-	-
Retained earnings	(135,000)	(135,000)	-	-	-	-	-
Net income (loss)	XXX	(40,000)	40,000	40,000	-	-	-
Loss on sale of asset	XXX			2,000	-	(2,000)	-
Dividends paid	XXX	5,000	(5,000)	-	(5,000)	-	-
TOTAL EQUITY	(235,000)	(270,000)					-
TOTAL LIAB AND EQUITY	(409,000)	(454,000)					-
GRAND TOTALS	-	-	-	51,000	(3,000)	(24,000)	(24,000)
						24,000	-

2) The $5,000 credit change in accumulated depreciation reflects $6,000 in depreciation expense, less accumulated depreciation on assets sold, so the accumulated depreciation on assets sold must equal $1,000.
3) The loss on sale of assets is $2,000, so the proceeds from sales of assets must equal the cost of assets sold ($9,000), less accumulated depreciation on assets sold ($1,000), less the loss on sale ($2,000), or $6,000.

We now have sufficient information to prepare the SCF based on the indirect method, as shown in Table 4. The direct method is addressed in the online supplemental materials at www.jfcr.org/jitf.html

Note: Following the signing convention that we have used in preparing the spreadsheet, the signs (plus for sources/inflows, minus for uses/outflows) in the spreadsheet are retained when preparing the SCF. It is certainly possible to follow and alternate signing convention to avoid this, but the authors believe that of all the alternatives, the approach laid out here is the most straightforward. Note further that in the completed SCF, the total cash inflows/outflows from operating, financing, and investing activities equal the corresponding subtotals in the SCF. This is a useful check to ensure that the SCF is prepared properly.

To reiterate, the most important points about setting up the balance sheet squeeze spreadsheet are to ensure that:

a. Debit account balances are recorded as positive numbers and credit account balances are recorded as negative numbers in Columns B and C, regardless of the natural sign of the particular account.
b. Total assets are equal to, but with opposite sign to, total liabilities and equity in Columns B and C.
c. No amounts are calculated for total and subtotal lines in Column D.
d. The total of all amounts in Column D equals zero.
e. All amounts in Column D, except for the changes in cash and cash equivalents, are then spread to Columns E, F, and G, with the same signing convention maintained. Mathematical validity checks can be built into the spreadsheet.
f. The sums of Columns E, F, and G, when added together, are equal to, but with opposite sign to, the net change in cash and cash equivalents in Column H. A relatively easy validity check can be built into the spreadsheet.

CONCLUSION

The statement of cash flows is critical to evaluating an enterprise's financial performance. Unfortunately, knowing of how to prepare the cash flow statement and understanding how to interpret it are not taught as commonly--or as well--as they arguably should be. The balance sheet "squeeze" approach provides a logical method for preparing the statement. This method is easily taught to students with basic spreadsheet skills, provides a straightforward way to separate changes in cash among operating, financing, and investing activities, leads fairly directly to preparation of the SCF, provides a relatively straightforward process for validating the completed SCF, and prepares students to step into the business world, where the method is widely used.

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Robert B. Matthews is an assistant professor of business law, Joe James is a professor of finance, and Ronald J. Daigle is an associate professor of accounting at Sam Houston State University.

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