

Annual Conference

of

**The Association for Financial Counseling  
and Planning Education**

Thursday, October 10 through Sunday, October 13, 1991

in

Kansas City, Missouri

*Westin Hotel, Crown Plaza,  
Kansas City*

**For more information:**

Dr. Tahira Hira  
Iowa State University  
Family Environment Dept.  
Ames, IA 50011  
(515) 294-8886

## How to Use Financial Ratios When Advising Clients

Ruth H. Lytton<sup>1</sup>, E. Thomas Garman<sup>2</sup>,  
and Nancy M. Porter<sup>3</sup>

*Use of financial ratios as a diagnostic and informational tool has become increasingly popular in financial counseling and planning situations. Results of ratio analysis suggest insights not readily apparent from merely studying a balance sheet and an income and expense statement. Nine financial ratios are presented, defined, calculated, and interpreted using an illustrative case family. Application of the financial ratios by practitioners, educators, and researchers will further clarify their usefulness for providing feedback on the financial situation, for measuring change in financial status over time, and for providing recommendations to clients.*

**KEY WORD:** *financial ratios*

Financial ratios are objective measures designed to simplify the process of making judgmental analytical assessments of individual or family financial status. In recent years it has become increasingly popular to utilize and attempt to interpret financial ratios in both financial counseling and financial planning situations.

Financial ratios can provide useful feedback to individuals and families concerning their current financial situation. In addition, ratios can be utilized as measurements of change in financial progress over time. Ratios serve as yardsticks for practitioners in analyzing financial situations and making recommendations to clients. Professionals have an obligation to provide adequate education to clients in the use and interpretation of these ratios.

---

<sup>1</sup> Ruth H. Lytton is Assistant Professor, Department of Housing, Interior Design and Resource Management, V.P.I. & S.U., Blacksburg, VA 24061-0431. (703) 231-6678.

<sup>2</sup> E. Thomas Garman is Professor, Department of Housing, Interior Design and Resource Management, V.P.I. & S.U., Blacksburg, VA 24061-0424. (703) 231-6677.

<sup>3</sup> Nancy M. Porter is Extension Specialist, Cooperative Extension Service, Clemson University, Clemson, SC 29634-0312. (803) 656-3090.

## Literature on Financial Ratios

The literature clearly concludes that there are no standardized approaches to analyzing objective measures of financial situations. After surveying personal finance and financial planning books and finding little financial ratio analysis, Griffith (1985) proposed 16 ratios that used data from personal financial statements to help evaluate a family's financial situation. The ratios represented four major financial factors: liquidity, debt, inflation protection, and derivatives of net worth. Even so, Griffith offered no empirical analysis with the ratios but called for continued work leading to the establishment of standards.

Although ratio analysis was not the primary objective of the research, Johnson and Widows (1985) offered the first empirical work on liquidity ratios. Comparisons were made based on three measures of emergency fund assets to total pre-tax earned and unearned income.

Prather and Hanna (1987) and Prather (1990), utilizing data from the 1983 *Survey of Consumer Finances*, attempted to establish norms for Griffith's 16 suggested financial ratios. Five ratios were determined to be the most useful: liquid assets to monthly expenditures, liquid assets to total debt, liquid assets to non-mortgage debts, liquid assets to short term debt plus 12 months payment on other debt, and net equity plus net tangible assets minus home to net worth. They observed that several of the ratios need to be restructured to facilitate interpretation.

Mason and Griffith (1988) presented 20 current value personal financial statement ratios for consideration and recommended that empirical research be conducted to evaluate their predictive and diagnostic usefulness. On the basis of a net worth statement and a statement of annual changes in net worth, the financial factors considered in the ratios included liquidity, debt, risk exposure, tax burden, inflation protection, and characteristics of net worth. Mason and Griffith suggested that the ratios also should be considered in light of five client factors: life cycle stage, family status, economic status, economic environment, and client objectives and preferences.

Iwuagwu (1989) considered the effect of the five ratios identified by Prather and Hanna (1987) as well as the debt service ratio and the personal debt burden ratio on perceived household financial security. Although the benefits of ratios were noted, and ratios were calculated, interpretation of ratios as a

means of presenting financial statement data was not a primary concern of the research. Using secondary data from the Wisconsin Basic Needs Survey (N=365), Iwuagwu concluded that three ratios were statistically significant predictors of financial security. Two ratios, liquid assets to monthly expenditures and liquid assets to non-mortgage debts, were positively correlated with financial security. The inflationary hedge ratio, or the comparison of inflationary assets to total assets, had a strong negative effect on financial security. This finding suggests that households perceive less financial security as the value of inflationary assets, which are often purchased through debt obligations, nears or equals the value of total assets.

Langrehr and Langrehr (1989) analyzed 14 consumer debt ratios in their development of a rationale for the use of the residual income ratio as the preferred measure of a consumer's ability to repay debt. The authors called for the development of numeric guidelines using income and expense data, similar to the work of Prather and Hanna (1987) using net worth data.

## Problems and Needs in Ratio Analysis

Mason and Griffith suggest that establishing adequate and inadequate levels of selected objective measures can provide valuable information to professionals in helping people to "better manage financial resources, to develop effective spending patterns consistent with consumption and investment goals, and to guard against excessive use of debt" (Mason & Griffith, 1988, p. 72). Before this goal can be accomplished several issues must be addressed.

First, some consensus must be reached on the definitions and measurement of the elements to be included in the ratios. Langrehr and Langrehr (1989) clearly address this issue and the problems it presents. A second issue concerns the configuration of the ratios. Prather and Hanna (1987) concluded that ratios using net worth in the denominator created "specific challenges" to calculation and interpretation because of zero or negative values. A third issue addresses the underlying assumptions on which the ratios are based. In addition to being conceptually accurate, the ratios must also be intuitively accurate. Ratios that ignore the reality of consumer behavior offer little useful information. For these reasons, continued work to develop and empirically analyze financial ratios is warranted.

Useful objective measures of financial well-being would be helpful as criterion measures for both financial counselors and clients. Further, a need also exists for generally accepted financial ratios with target levels established for different stages of the financial life cycle. Such ratios need to be empirically tested to determine their predictive and diagnostic usefulness in explaining financial well-being.

#### An Illustration: Calculating and Interpreting Financial Ratios

What follows is an illustration of how to calculate and interpret nine financial ratios of use to both financial counselors and planners. Interpretation of the ratios should be substantively meaningful to the client for whom they are developed. The ratios represent three broad areas of the financial picture: (a) three ratios pertain to a person's financial status, including the relationship of expenses to income and liquid assets; (b) three add perspective on the burden of debt undertaken; and (c) three tell of progress toward meeting financial goals. Since definitive standards for these ratios do not yet exist, evaluation should occur on the basis of informed judgments and the peculiarities of each individual and/or family circumstance.

The computation and interpretation of the ratios is based on illustrative financial information about the Simpson family (adapted from Hampton, 1988). Chris and Joan Simpson are both in their mid-thirties and have 2 children, ages 9 and 10. Chris is a professor at a state university, and Joan is a buyer for a small retail chain. The Simpson family has established a list of short and long term financial goals. Ratio analysis will provide a useful base of information from which to consider the feasibility of the goals, as well as the likelihood of goal accomplishment.

Information used to generate the ratios would be available from a balance sheet (Table 1) and an annual income and expense statement (Table 2). (Note that the annual and monthly amounts in the tables and text may vary due to rounding.) The balance sheet is used to calculate the net worth, or wealth, of the individual at a given point in time, while the income and expense statement details the aggregate income and expenditure categories over a given period of time, typically one year.

Preparation of both of these documents is fundamental to a determination of financial status and progress, and to provide a foundation of information for future financial actions. Yet when interpreted singularly, or in combination, these two financial statements are of limited usefulness. They cannot provide the insights attainable through basic financial ratio analysis. Furthermore, ratio analysis offers the simplicity of a greatly reduced number of factors for consideration.

#### *Consumption-to-Income Ratio*

The *consumption-to-income ratio* (or *expenditure-to-income ratio*) provides a measure of current financial status by comparing the total monthly expenditures to the monthly disposable income. Net monthly consumption expenditures represent the total of fixed and variable expenditures necessary to maintain the current lifestyle of the household, including necessary credit and mortgage repayments. For this ratio all monthly household expenses, excluding savings and investments, are considered.

Disposable income, sometimes called net pay or take-home income, is the income available after mandatory deductions for taxes and insurance. Automatic salary reductions for charitable contributions, savings, or loan repayments should not be included. If such subtractions from salary have occurred, add these amounts to the take-home income to calculate disposable income. Note also that any automatic salary reductions should appear as expenses on the income and expense statement.

Table 1  
Balance Sheet as of December 31, 1990

MONETARY OR LIQUID ASSETS	
Cash	\$ 100
Checking account	1,328
Money market mutual fund	4,222
<b>Total cash equivalents</b>	<b>\$5,650</b>
TANGIBLE OR USE ASSETS	
Residence	\$129,000
Auto (Toyota)	11,000
Antique jewelry	15,300
Home computer	4,500
Personal property	47,000
<b>Total use assets</b>	<b>\$206,800</b>
INVESTMENT ASSETS	
Certificate of deposit (1)	\$ 9,500
IRA in balanced mutual fund	7,350
Liz Claiborne stock	1,625
Vested retirement benefits	45,890
<b>Total investment assets</b>	<b>\$ 64,365</b>
<b>TOTAL ASSETS</b>	<b>\$276,815</b>
LIABILITIES	
Credit card balance	\$ 1,720
Line of credit balance	4,260
Auto note balance (Toyota)	6,533
Auto lease balance (Ford)	5,251
Computer note balance	3,967
Mortgage note balance	87,829
<b>Total Liabilities</b>	<b>\$109,560</b>
<b>TOTAL LIABILITIES</b>	<b>\$109,560</b>
<b>NET WORTH</b>	<b>\$167,255</b>

(1) Matures in June 1995

Table 2  
Income and Expense Statement, 1990

Cash balance at beginning of year (1)	\$1,000
INCOME BEFORE TAXES	
Chris's salary	\$33,000
Joan's salary	40,000
Consulting income	3,500
Interest income (2)	835
Dividends (3)	213
Sale of securities	<u>1,508</u>
	\$79,056
	(\$6,588 monthly)
TAXES	
Federal income taxes	\$ 9,445
State income taxes	1,465
Social Security taxes	<u>5,938</u>
	\$16,848
	(\$1,404 monthly)
FIXED EXPENSES	
Savings/investments	\$ 2,556
Pension contributions	1,485
Mortgage P&I payments	11,532
Auto note payment (Toyota)	3,072
Auto lease payment (Ford)	4,188
Computer note payment	2,604
Real estate taxes	1,500
Personal property taxes	492
Life insurance premiums	175
Health insurance premiums (4)	1,110
Disability insurance premiums (4)	300
Automobile insurance premiums	1,140
Homeowners insurance premiums	<u>552</u>
	\$30,706
	(\$2,559 monthly)
VARIABLE EXPENSES	
Food	\$ 5,220
Transportation	1,698
Home maintenance & repair	1,555
Utilities	2,760
Household furnishings	1,937
Clothes	<u>1,588</u>

Antique jewelry	867
Personal care	485
Medical & dental care	475
Entertainment	1,244
Vacations	2,558
Charitable contributions	559
Child care	1,800
Children's activities	1,640
Line of credit payments	1,180
Credit card payments	1,868
Unreimbursed business expenses	3,140
Miscellaneous	500
	<u>\$31,074</u>
	(\$2,590 monthly)
<b>TOTAL EXPENSES</b>	<b>\$61,780</b>
	(\$5,148 monthly)
<b>Cash balance at end of year (1)</b>	<b>\$1,428</b>

- (1) Cash and checking account balance
- (2) Includes \$75 interest from checking account & \$760 from C.D.
- (3) Includes \$195 dividend from money market mutual fund & \$18 from stock
- (4) Paid through payroll deduction from salary.

The resulting amount of disposable income should be considered the foundation of the household budget. Additional sources of earned or unearned income should be evaluated on a case-by-case basis to determine their consistency for inclusion in the budget. Only those funds which are continually available in a constant amount should be counted on for the day-to-day operation of the household.

CONSUMPTION-TO-INCOME RATIO =

NET CONSUMPTION EXPENDITURES (MONTHLY)  
DISPOSABLE INCOME (MONTHLY)

= \$4,812

\$4,562

= 1.05 or 105%

Net monthly consumption expenditures include the total of fixed (\$2,559) and variable (\$2,590) expenses exclusive of savings and investments (\$213) and pension contributions (\$124) which equals \$4,812 as shown in Table 2. Because the Simpson's unearned income (\$2,556) and consulting income (\$3,500) is inconsistent, neither should be considered a regular source of income for inclusion in the budget. Consequently, monthly disposable income is the net monthly income of \$4,562 available after annual deductions for taxes (\$16,848) and health and disability insurance (\$1,410) from gross salary (\$73,000). Refer to Table 2 for data to support this calculation (\$73,000 - (\$16,848 + \$1,410)/12).

The resulting consumption-to-income ratio of 105% suggests that the Simpson's expenses, excluding savings, exceed their confirmed disposable income by 5%. The additional sources of irregular income have helped the Simpson family avoid financial difficulties, yet they clearly could be approaching financial problems if (a) their income is reduced, or (b) they incur additional expenses. Their savings provide a modicum of safety.

A consumption-to-income ratio of less than 1 (or 100%) indicates that disposable income exceeds monthly living expenses resulting in a net cash surplus. Conversely, a ratio in excess of 1 indicates the extent to which current living expenses exceed current disposable income. Households might rely on additional sources of income or overtime pay, withdrawals from savings, additional credit, or "creative" bill paying strategies to meet the consumption costs in excess of income. While this ratio is intuitively quite simple, it can be an effective tool for illustrating to financial counseling and planning clients the extent of difficulty, or opportunity, present in their current financial situation.

#### *Basic Liquidity Ratio*

The *basic liquidity ratio* further clarifies personal financial status by revealing the number of months the household could continue to meet its expenses after a total loss of income resulting from illness, disability, or unemployment. It is calculated by dividing total liquid assets by the household's net monthly living expenses.

Liquidity refers to the speed and ease with which an asset can be converted to cash. Therefore, liquid assets are defined as cash or other cash-equivalent assets that could be conveniently converted for immediate use with little or no loss in value. Liquid assets, also described as monetary assets, are designated

in the household financial statements for the payment of typical living expenses or for immediate availability in the event of an emergency. It should be noted that although real assets such as automobiles or jewelry might be pawned or sold, converting the asset into cash could not occur quickly and conveniently without some loss of value.

Net monthly consumption expenditures represent the total of fixed and variable expenditures necessary to maintain the current lifestyle of the household, including necessary credit and mortgage repayments, but excluding any monthly allocations for savings or investments. During a financial crisis, it is logical that the immediate needs of the household would take precedent over the longer term saving and investment goals. Thus, it is assumed that no money would be allocated for savings or investments.

Family financial experts historically have recommended that people should have monetary assets equal to two to six months expenses in emergency cash reserves to protect against unemployment. This would be equivalent to a basic liquidity ratio ranging from 2-6. Mason and Griffith (1988) suggest a ratio of 3-4 as a reasonable target. Today the determination is more dependent upon an individual's family and employment situation.

For example, a smaller reserve of liquid assets may be sufficient if the household earner(s) has adequate loss-of-income protection through employee fringe benefits, an insurance policy, or a union program; is employed in a job that is definitely *not* subject to layoffs or reductions in force; has an employed spouse or other household member; has a continuous stream of unearned income; and/or has a ready source of ample credit. Households dependent upon the income of a self-employed person or a person with very irregular earnings may need a larger emergency cash reserve.

BASIC LIQUIDITY RATIO =

LIQUID ASSETS

NET CONSUMPTION EXPENDITURES (MONTHLY)

= \$5,650

\$4,812

= 1.17 or 117%

As shown in Table 1, liquid assets total \$5,650 for the Simpson family. As shown in Table 2, total consumption expenditures for the Simpson family equalled \$57,739 annually, or \$4,812 monthly. The data suggest that the Simpson family has liquid assets to support them for only 1.17 months, or less than five weeks. Stated another way, the Simpson's liquid assets exceed monthly expenses by 17%. This may very well be insufficient should the Simpson family face a financial crisis involving the loss of both incomes.

#### *Housing Expense Ratio*

Mortgage or rent payments can consume a major portion of family income. But it is important to remember that the monthly rent or mortgage payment is only a part of the total monthly housing expense. Uniquely associated with the cost of every residence are the additional expenses for utilities, real estate taxes, homeowner's insurance, homeowner's association fees and/or maintenance. Unlike the other expenses, costs for home maintenance may vary from year to year. Normal maintenance is estimated to equal 1-3% of the market value of the home per year (Lindamood and Hanna, 1979). An accurate estimate of the true costs of maintenance, in addition to the other associated housing costs, will insure that the *housing expense ratio* reflects the total cost of housing relative to the household's disposable income.

HOUSING EXPENSE RATIO =

TOTAL HOUSING EXPENSES (MONTHLY)

DISPOSABLE INCOME (MONTHLY)

= \$1,492

\$4,562

= .327 or 33%

The total housing expenses for the Simpson household, \$1,492 for rent or mortgage repayment, real estate taxes, utilities, home maintenance and repair, and homeowner's insurance (as shown in Table 2), compared to monthly disposable income yields a ratio of .33. Thus, approximately 33% of the Simpson's disposable income is consumed by housing-related expenses to maintain their current level of living. Conversely, only 67% of disposable income remains available to meet all other non-housing related expenses for the Simpson family, including consumer debt repayments.

A housing expense ratio in the range of 30-40% should be manageable. It seems unwise to devote more than 40% of disposable income to housing, unless this is a primary financial objective. To qualify for a Federal Housing Administration (FHA) or Veterans Administration (VA) insured loan, total housing expenses cannot exceed 35% of net effective income (gross income minus social security and federal, state, and local income taxes). Further, housing lenders and financial intermediaries for conventional mortgages typically limit total housing expenses to 25 to 28% of gross monthly income (Mortgage Bankers Association of America).

#### *Consumer Debt-Service Ratio*

The *consumer debt-service ratio* provides perspective on the burden of disposable income to service (or pay for) consumer debt repayments. This ratio serves as an indicator of the percentage of disposable income required for consumer debt repayments, and alternatively the percentage of disposable income available for other purposes. It is calculated by dividing the total of monthly non-mortgage debt repayments for principal and interest by monthly disposable income. The Simpson's non-mortgage debt of \$1,076 in Table 2 includes repayments for one auto note, one auto lease, a computer loan, a personal line of credit, and credit card debts.

CONSUMER DEBT-SERVICE RATIO =

CONSUMER DEBT REPAYMENTS (MONTHLY)  
DISPOSABLE INCOME (MONTHLY)

$$= \frac{\$1,076}{\$4,562}$$

$$= .236 \text{ or } 24\%$$

To calculate the consumer debt-service ratio, combine the monthly repayments for all non-mortgage consumer debts, including home-equity credit-line loans, and divide by monthly disposable income. A safe debt limit is considered to be 10% or less; 11 to 15% implies reduced financial flexibility; a borrower is fully extended when 16 to 20% of the disposable income goes toward credit repayments (Garman and Forgue, 1991).

One further suggestion when interpreting the consumer debt-service ratio is that the length of time required to repay all obligations should also be

considered. A debt-service ratio greater than 10% is less of a concern if the debts are short term, such as obligations which will be repaid within 10 to 12 months. In fact, most financial institutions only consider the long term debt when determining mortgage eligibility (Mortgage Bankers Association of America). However, any household should carefully consider the implications of exceeding the 10% debt safety level, regardless of the repayment period required.

The Simpson's monthly debt-service ratio of 24% indicates that they are over-extended. No additional consumer debt should be taken on until current debts are reduced.

#### *Annual Debt-Service Ratio*

The *annual debt-service ratio* provides a summational overview of the total debt picture of an individual or family by determining the effect on the budget of all annual liability repayments. This ratio compares the annual debt payments to service all consumer and mortgage debts to the annual disposable income. It provides a measure of how much annual income is required and committed to repay principal and interest on all debts.

ANNUAL DEBT-SERVICE RATIO =

ANNUAL CONSUMER AND MORTGAGE DEBT REPAYMENTS  
ANNUAL DISPOSABLE INCOME

$$= \frac{\$24,444}{\$54,742}$$

$$= .447 \text{ or } 45\%$$

For the Simpson household, total annual debt is defined as non-mortgage debt of \$12,912 (auto note, auto lease, computer loan, personal line of credit, and credit cards) and mortgage debt of \$11,532. (See Table 2.) The annual debt-service ratio of 45% means that \$.45 of every dollar that the Simpsons bring home is committed to payments for consumer and mortgage debts. A ratio of 30% or lower suggests adequate current disposable income to be able to make debt repayments. FHA-insured mortgage lenders permit a maximum annual debt-service ratio of 50% based on net effective income which is defined as gross income minus all deductions for taxes and social security (Mortgage

Bankers Association of America), although that allows very little money for basic living expenses.

The Simpson's ratio implies little or no flexibility in budgeting for other living expenses. Further note that when the Simpson's annual debt-service ratio of .45 is considered along with their monthly consumer debt-service ratio of .24, it is apparent that no further debt should be taken on by this family.

#### *Debt-to-Income Ratio*

An alternate way of considering the impact of debt repayments is based on gross instead of disposable income. The *debt-to-income ratio* provides an incisive view of the total burden of debt of an individual or family by comparing the dollars spent on gross annual debt repayments to gross annual income. The ratio indicates the percentage of gross income that is consumed by debt repayment each year. This ratio should decline as the family ages, or advances through the life cycle. Data provided by the Federal Reserve System indicates that the debt-to-income ratio peaks when the head of the household is between the ages of 35 and 44, and progressively declines as the head of the household ages (Sloan, 1989).

DEBT-TO-INCOME RATIO =

GROSS ANNUAL DEBT REPAYMENTS  
GROSS ANNUAL INCOME

$$= \frac{\$24,444}{\$73,000}$$

$$= .335 \text{ or } 34\%$$

Data in Table 2 suggest that the Simpson's debt-to-income ratio of 34% offers them no room to incur any additional debts. Specifically, \$ .34 of every dollar earned by the Simpson family is required to repay liabilities, while, as shown earlier, \$ .45 of every disposable dollar is committed to liability repayments. Incurring additional debt at this time would be most unwise. But by maintaining a good credit repayment record, additional credit would likely be readily available and even offered to the Simpsons. Such opportunities should be ignored.

Financial institutions use a variation of the debt-to-income ratio to determine qualification for a conventional mortgage. To qualify, long-term debt (extending more than 10 months in the future), mortgage payment, real estate taxes, and homeowner's insurance cannot exceed 36% of gross monthly income. With less than a 10% cash down payment, the rule is tightened to 33% (*Changing Times*, 1989; *Mortgage Bankers Association of America*). Perhaps a maximum debt-to-income ratio ranging from 30-35% would be realistic for most households. Research to determine norms for this as well as other ratios is needed.

#### *Solvency Ratio*

A broad measure of a household's financial liquidity can be obtained by calculating a *solvency ratio*. Solvency is determined by comparing total household assets to total household debts or liabilities. In other words, if all assets were sold, would there be sufficient funds to repay all debts?

Interpretation of the solvency ratio, which summarizes all the data found in a net worth statement, requires some caveats. First, the ratio ignores the amount of time which may be necessary to liquidate all assets for the repayment of all debts, and similarly ignores any reduction of value that may occur due to penalties for immediate withdrawal of the funds or the immediate, and perhaps untimely, sale of assets. Second, the value of personal property is included in net worth, and is reflected in the total asset value in the ratio. Depending on how the value of personal property was derived, the sale of these assets may or may not generate the estimated value. Certainly replacement cost would vary markedly from the depreciated value. Finally, an accurate valuation of personal property is particularly critical if it constitutes the majority of net worth, as is true with many young households. Still, the solvency ratio is a useful source of information.

SOLVENCY RATIO =

TOTAL HOUSEHOLD ASSETS  
TOTAL HOUSEHOLD LIABILITIES

$$= \frac{\$276,815}{\$109,560}$$

$$= 2.53 \text{ or } 253\%$$



Using data in Table 1, total assets and total liabilities of the Simpson family equal \$276,815 and \$109,560, respectively. The resulting solvency ratio indicates that the Simpson family owns 2.53 times more (or approximately 253% more) than what they owe.

Households which are heavily in debt are "technically insolvent" when total household debt obligations exceed the value of all household assets, i.e. a solvency ratio less than one. In such situations, current income may be adequate to pay current bills, but liquidating all assets would not yield sufficient funds to pay all outstanding debts. People in such circumstances should seek credit counseling and some may eventually declare personal bankruptcy.

The solvency ratio can also be interpreted another way. Reversing the figures so that total liabilities are divided by total assets reveals that they owe .40 times what they own. Debt repayment from assets would require the Simpsons to liquidate \$ .40 of every dollar of assets.

#### *Savings Ratio*

The *savings ratio* provides an indicator of progress in achieving financial goals by measuring the percentage of disposable income that is being saved annually. To calculate the savings ratio, annual total savings, including contributions to retirement accounts and pension funds, is divided by annual disposable income.

SAVINGS RATIO =

ANNUAL TOTAL SAVINGS

ANNUAL DISPOSABLE INCOME

= \$4,041

\$54,742

= .074 or 7%

The savings ratio compares all cash inflows over a specific time period, generally one year, to disposable income. If the individual or family does not save any money during the year, the savings ratio will be zero. Moreover, the

savings ratio is a measure of the percentage of disposable income allocated for future, not present, goal attainment.

The idea of accumulating funds in short-term or low-risk savings instruments prior to moving the funds to other investment options is a recognized cash management technique. Thus the annual expenditures for savings might initially appear on the balance sheet as monetary asset, but might eventually appear as investment assets.

Based on the data from Table 2, the Simpson family is saving approximately 7% of take-home income. This is represented by \$2,556 contributed to savings and investments and \$1,485 contributed to pension/retirement funds. The average American currently saves between 4 to 6% of disposable income, however this proportion is exclusive of funds deposited for retirement. Recalculating the ratio and excluding the pension contributions (\$1,485 from Table 2) reveal that the Simpson family is saving approximately 5% of their disposable income ( $\$4,041 - \$1,485 = \$2,556 / \$54,742 = .046$  or 5%). Saving 10% of annual pre-tax income is an achievable goal according to Money magazine (1990).

Conversely, a retirement savings ratio could also be calculated. Approximately 3% of the Simpson's disposable income is committed to pension/retirement funds ( $\$1,485 / \$54,742 = .027$  or 2.7%). To calculate the ratio, consider all mandatory as well as voluntary pension contributions. An obvious shortcoming of this approach is the exclusion of contributions and/or matching funds provided by an employer. A ratio which considers all retirement contributions would be necessary for comparisons between employees and self-employed individuals.

The savings ratio, as defined here, is inconsistent with the concept of realized savings being equal to increases in wealth or net worth (e.g. Avery & Kennickell, 1988-89). Consider the following examples where all other values on the balance sheet are held constant. If credit balances are reduced by \$2,000 from an annual income of \$10,000, the savings rate is 20%. Further, if \$2,000 is added to savings accounts but housing values decline and reduce net equity by \$4,000, the realized annual savings would be negative. These aspects of savings are not reflected in the savings ratio but are considered in other aspects of the ratio analysis.

The savings ratio provides a simple measure for tracking the percentage of disposable income that is saved annually. These funds are readily available for meeting emergency needs or future goal attainment. Although paying off debt is a form of savings, it is not a substitute for accumulating a savings account on deposit in a financial institution.

#### *Investment Assets-to-Net Worth Ratio*

An *investment assets-to-net worth ratio* reveals how well an individual or family is advancing toward financial goals other than home ownership as it compares the value of actual investment assets accumulated to net worth. Net worth is the amount remaining after subtracting total liabilities from total assets. It is what a household would be worth on paper if all assets (monetary, tangible, and investment) were sold at the current market value to repay all debts.

Investment assets include stocks, mutual funds, certificates of deposit, collectibles, rental property, and other capital assets which are held for the purposes of generating income or capital gains. Funds committed long-term to an IRA or other retirement program would be included. The family residence and other tangible, or use, assets would be excluded. These assets, which are maintained primarily for their contribution to the lifestyle and not for income generation, should not be included in this ratio. Because these assets are needed for everyday existence, they would not be sold without significant impact on the household.

INVESTMENT ASSETS-TO-NET WORTH RATIO =

INVESTMENT ASSETS  
NET WORTH

=  $\frac{\$64,365}{\$167,255}$

= .385 or 39%

Calculation of the investment assets-to-net worth ratio for the Simpson family suggests that 39% of the Simpson's net worth is made up of investment assets. Retirement benefits (\$45,890 as shown in Table 1) constitute the bulk of the Simpson's investment assets leaving few other assets to help achieve future financial goals or the repayment of debt obligations in a financial crisis.

Young people often have an investment assets-to-net worth ratio of less than 20%. In the formation stage of the financial life cycle, people often have very little money left over after living expenses to use for investment purposes. If money is available, most young people soon use it as a down payment for a home. The investment assets-to-net worth ratio should increase as the family advances through the life cycle.

Further calculations reveal that the majority of the Simpson's net worth is represented by the value of tangible, or use assets, (\$206,800 - \$109,560 = \$97,240/\$167,255 = .581 or 58%) which are required to meet daily lifestyle needs. Mason and Griffith (1988) suggest that these assets should represent no more than 50% of net worth for a young family in the formation stage of the life cycle. Note that these assets may not be readily convertible into cash and should not be counted on as available to repay debt in times of financial crisis. Liquid assets designated to meet current and/or emergency needs (\$5,650/\$167,255 = .034 or 3.4%) make up a minimal part of the Simpson's net worth. Some experts recommend that at least 25% of a household's assets should be monetary, with that percentage expected to increase as the individual and/or family nears retirement (Garman and Forgue, 1991).

#### Summary

The financial ratios suggested here are broadly applicable and interpretable by financial counselors and planners as well as by individuals and families. The ratios suggest insights not readily apparent from merely studying available balance sheet and income and expense statements. An important point when considering ratio analysis is that recommendations for change should not be made on the basis of one ratio. Instead, it is imperative that these nine ratios be calculated and the combined effects of the results considered in an interrelated manner.

It should be noted that guidelines for the interpretation of some of the ratios are tentative, while for others no guidelines have been suggested. Establishment of guidelines for all ratios would be dependent upon (a) a consensus among professionals as to the most useful ratios; (b) broad application of the ratios by professionals; and (c) empirical research to determine appropriate numerical ranges.

Implications of the ratios must also be considered relative to household characteristics such as stage of the family life cycle, employment situation, financial goals, or other factors which might impact financial decision making. Further use of these ratios does not preclude the need for a thorough analysis of all components of the financial plan; in fact, ratio analysis complements such effective analysis.

The objective nature of financial ratios can be helpful when counselors and clients face the challenges of financial decision making. In addition, some financial ratios can serve as useful objective yardsticks for measuring changes in financial status. Use of these financial ratios by practitioners, educators, and researchers will further clarify their usefulness with individuals and families representing various family and marital situations, incomes, and financial goals throughout different stages of the financial life cycle.

#### References

- Avery, R. B., & Kennickell, A. B. (1988-89). The household balance sheet. In R. Heck (Ed.) *Cornell Consumer Close-ups*, 4, 1-10.
- Garman, E. T., & Forgue, R. E. (1991). *Personal finance* (3rd ed.). Boston: Houghton Mifflin Co.
- Griffith, R. (1985). Personal financial statement analysis: A modest beginning. In G. L. Langrehr (Ed.) *Proceedings of the 3rd Annual Conference of the Association of Financial Counseling and Planning Education* (pp. 123-131).
- Hampton, V. L. (1988). Chris and Joan Simpson. In F. A. Tillman (Ed.), *Cases in financial planning, volume I* (pp. 26-48). Atlanta, GA: International Association for Financial Planning, Inc.
- Iwuagwu, V. S. (1989). *Financial ratios and perceived household financial security*. Unpublished master's thesis. University of Wisconsin, Madison.
- Johnson, D. P., & Widdows, R. (1985). Emergency fund levels of households. In K. P. Schmittgrund (Ed.) *Proceedings of the 31st Annual Conference of the American Council on Consumer Interests* (pp. 235-241). Columbia, MO: ACCI.
- Langrehr, V. B., & Langrehr, F. W. (1989, Winter). Measuring the ability to repay: The residual income ratio. *The Journal of Consumer Affairs*, 23, 393-406.
- Lindamood, S., & Hanna, S. (1979). *Housing, society, and consumers*. St. Paul: West Publishing Co.
- Luciano, L. (1990, September). How to get serious about your savings. *Money*, p. 72.
- Mason, J. W., & Griffith, R. (1988, Spring). New ratios for analyzing and interpreting personal financial statements. *Journal of the Institute of Certified Financial Planners*, 71-87.
- Mortgage Bankers Association of America. (Undated). *What Happens After You Apply For A Mortgage*. Washington, D.C.: Author.
- Prather, C. G. (1990). The ratio technique applied to personal finance statements: Development of household norms. *Financial Counseling and Planning*, 1, 53-69.
- Prather, C. G., & Hanna, S. (1987). Ratio analysis of personal financial statements: Household norms. In M. E. Edmondson and K. L. Perch (Eds.), *Proceedings of the Association for Financial Counseling and Planning Education* (pp. 80-88). Lexington: University of Lexington.
- Sloan, R. L. (1989, October). *Trends in consumer credit: The 1990s and beyond*. Paper presented at the meeting of the Association of Financial Counseling and Planning Education, Ypsilanti, MI.
- Staff. (1989, May). How to pay for your first home. *Changing Times*, pp. 48-58.