

Problems with the Use of Ratio Covenants in Bank Loan Agreements

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Abstract: Credit decisions by commercial banks are based to a large extent on the financial statements provided by corporate borrowers as monitored using financial ratios specified in loan covenants. This paper examines selected standard ratios used to measure the financial condition of a firm and concludes that generally accepted ratios are quite misleading. Instead, total receipts-to-cash flow as a measure of liquidity was determined to be a superior metric to the current ratio. In addition, the ratio of cash flow-to-total debt was found to be more reliable than the usual measures found in credit agreements: interest coverage and the debt ratio. An extensive database was developed for this study using information reported by a standard source for ratios as well as alternative metrics. Suggestions for application of this result and further research are noted.

Keywords: ratio analysis, bank loan covenants, liquidity

1. Introduction

The liquidity crisis that began in 2008 with the collapse of Bear Stearns and Lehman Bros. may be slowly receding, although economists and government officials are not in agreement as to the extent of the recovery or the real condition of business enterprises. It has been purported that banks have been reluctant to lend as related in statements by various observers;¹ actual experience is that lending was 15.2% higher in May 2010 than in the year 2000, a time of relative prosperity in the Western economies.²

If there has been any positive outcome from this situation, it may be in providing a unique laboratory to test the efficacy of existing legislation, regulation and standards used to measure corporate performance to prevent future catastrophes. With regard to the last of these controls, we can examine the results from before and after 2008.

2. Recent Loan Covenant Analyses

Decisions by bankers on lending and by investment analysts on the condition of businesses are often based on statistics developed by the analysis of standard ratios of liquidity, leverage and profitability.³ Until recently, the practice of making

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loan decisions and drafting agreements was known to bankers and borrowers, but no systematic study of the terms of such arrangements had been conducted. There are now several useful reviews of bank loans; the information provided includes loan maturity, amount, type and various other characteristics, including covenants.

The prevalence of these ratios was reported in papers by Paglia and Mullineaux (2006), Sufi (2009) and Davydenko (2009) using slightly different methodologies from observations taken from the DealScan database provided by the Loan Pricing Corporation. The Sufi and Davydenko studies are superior as they utilize thousands of deal transactions, while the Paglia and Mullineaux analysis is limited to a few hundred. A recent paper reviewed the rather ambiguous measurements that have been used in making credit decisions and analyzing business performance, particularly the leading liquidity measure, the current ratio (Sagner, 2009).

The central issue of the current analysis is the usefulness of the ratios generally found in credit agreements, a topic that has not been systematically analyzed using a longitudinal review based on severe economic conditions such as experienced in the credit crisis that began in 2008. The ratios found in credit agreements are of three major types:

- **Liquidity:** The current ratio (CR), measured as current assets divided by current liabilities, and the quick ratio, which uses current assets in the numerator less inventory, divided by current liabilities. The CR is present in about 10% of all loan agreements, and the referenced studies do not report any use of the quick ratio.
- **Leverage:** Financial leverage is measured as total debt-to-total assets or total debt-to-total equity. Leverage ratios appear in about 15 to 20% of lending agreements.
- **Profitability:** Earnings are typically measured as EBITDA (earnings before interest, taxes, depreciation and amortization); however, the statistics on this measure are variously reported and are not used in this paper.

3. Liquidity Ratios

Sagner (2009) previously showed the irrelevance of the CR, and the superiority of a ratio developed by Troy (2006, 2009 and 2010), total receipts-to-cash flow (TR/CF). It was determined that between 2006 and 2008, TR/CF declined from 9.8 times to 6.8 times. Using various data described in the paper, it was determined that cash on balance sheets rose from 10.8% to 15.6%,⁴ an increase of more than one-third in only three years. See Exhibit 1 for summarized results on ratios by aggregated industries and Appendix I for a complete list of industries used in this analysis.⁵

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**Exhibit 1: Percentage Changes in Financial Ratios in U.S. Industry Groups
(2005 – 2009)**

<u>Industry Groups</u>	<u>NAICS Series</u>	<u>Current Ratio</u>	<u>Total Receipts- to-Cash Flow</u>	<u>Coverage Ratio</u>	<u>Cash Flow- to- Debt</u>	<u>Debt Ratio</u>
Agriculture	11	-0.17	0.18	-1.50	-0.33	-0.04
Construction	23	-0.08	0.25	-4.36	-0.50	-0.10
Manufacturing	31-33	-0.15	0.22	-0.65	-0.21	-0.02
Wholesaling	42	0.11	0.25	-2.41	-0.54	0.08
Retailing	44 & 45	0.08	0.13	-0.76	-0.42	0.13
Transportation & Warehousing	48 & 49	-0.09	0.23	-1.18	-0.04	0.04
Information	51	0.24	0.29	-7.59	-0.25	-0.18
Other	62 & 72	-0.10	0.12	-11.55	-0.67	-0.04
Changes in Aggregated Industries		-0.02	0.21	-3.75	-0.37	-0.02

Notes: A negative sign means that the ratio has increased; a positive sign means that the ratio has decreased

*For a complete listing of all NAICS codes, go to www.naics.com.

Source: Derived by the author from data in Leo Troy, *Almanac of Business and Industrial Ratios* (CCH, 2006, 2009 & 2010), Table 1: Companies with and without Net Income.

This increase reflected the sudden decline in the access of businesses to short-term credit lines from banks and other sources and the hoarding of cash to meet transactional and precautionary needs. Obviously, some businesses failed during this period; examples include Linens ‘n Things (small appliances), Circuit City (electronics), Fortunoff (jewelry and home furnishings) and Bennigan’s (restaurants). However, many companies took the necessary steps to survive, such as terminating marginal employees, negotiating with vendors and landlords, and working harder and smarter.

Based on the same sample of industries (but see Appendix I for information on two industries that have been deleted), data from one year later provides the following results: the TR/CF ratio rose to 7.1 times, an increase of about 10%, which reflects a return to close to normal conditions.⁶ The effective percentage of cash on balance sheets fell from 15.6% of total assets to 14.0%, reflecting a greater reliance on access to bank credit lines (and less on cash) than in the previous year. This situation implies a partial resumption of bank lending, somewhat healthier balance sheets and the beginning of an economic recovery.

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In contrast, the CR actually *fell* from 1.13 to 1.11 times (or 0.02%) during the past year, providing effectively no information to bankers or other interested parties on improving conditions in the business climate. In fact, of the 23 industries in the sample, 16 showed no change or a change of only 0.1 times in the CR from 2009. The observer dependent on CR liquidity data may draw the fallacious conclusion that companies are still encountering difficult liquidity conditions, which could lead to the abandonment of expansion plans, less hiring and reduced capital investment.

4. Other Standard Ratios in Bank Loan Covenants

Three other standard metrics appear in various permutations in bank loan covenants: the coverage ratio, the ratio of cash flow-to-total debt and the debt ratio.

- The coverage ratio, defined as the times that interest is covered by earnings before interest and taxes, measures a company's ability to service its debt. This ratio should rise during adverse business conditions, as interest charges decline on nearly all floating rate short-term and some permanent credit arrangements, with floating rate now the preferred terms for borrowing for many global companies.⁷ In fact, the coverage ratio rose for every aggregated industrial group and for 21 of 23 individual industries.⁸ However, the resulting information content for lenders is limited as the ability of the corporation to meet its debt obligations is largely a function of its sales and the management of its costs and not of the amount of interest charges.
- The ratio of cash flow-to-total debt (CF/TD) as reported by Troy and its reciprocal total debt-to-cash flow as required in lending agreements (according to Sufi and Davydenko) measure a company's ability to generate cash for debt service payments. This ratio should improve as business conditions worsen, with companies implementing working capital efficiencies and deferring capital expenditures. In fact, the CF/TD ratio rose for every aggregated industrial group and increased or remained level for 19 of 23 individual industries in the 2005-2009 period.⁹ There is certainly more information content for lenders in the CF/TD than in the coverage ratio. However, less than one-fourth of covenants require adherence to a minimum performance with regard to this ratio (Sufi, Table 6).
- The debt ratio is defined as total debt-to-total assets (as reported by Troy); its complement is the net worth ratio as required in lending agreements (according to Sufi and Davydenko). These metrics should show little change in the face of deteriorating economic conditions, as

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capital financing decisions involve long-term commitments and are unlikely to be strongly influenced by the business climate except over the very long term.

Five of the aggregated industries showed increases in debt (representing half of the individual industries), but the average change was only 2% for all of the industry groups in this analysis. This result is attributable to drawing down prearranged lines of credit and extended accounts payable periods, rather than any major shift in debt financing. Again, there is little information content in these data although some form of financial leverage reporting appears in 30 to 35% of all covenants.

5. Conclusions

There are several conclusions that result from the current research.

- **Adjustment by Businesses.** Companies have generally made remarkable adjustments to the contraction of liquidity and weak economic conditions. Enterprises that have survived were able to overcome conditions unseen since the Great Depression of the 1930s.
- **Liquidity Measures.** Traditional tools for measuring liquidity are fairly useless in the current situation. Managers apparently respond to declining sales by reducing inventory, resulting in lower accounts payables. It should be no surprise that the CR adjusts to these current asset and liability changes by remaining relatively stable. Furthermore, bank loan covenants require a stated level of performance, which results in managing to that requirement so that a lending facility will not be cancelled. Revenue (the TR numerator component in the TR/CF ratio) is more difficult to “adjust” to changing business conditions; consequently, TR/CF appears to be considerably more useful as an indicator of a liquidity position than the CR.
- **Other Standard Ratios.** Ratios that measure interest charge coverage and debt-to-equity are found in some loan covenants. However, the information content provided by these measures is minimal and little guidance is offered to interested observers. Although cash flow-to-total debt (or its reciprocal, total debt-to-cash flow) is a much more useful measure, it is absent in three out of four loan agreements.
- **Economic Conditions.** General economic conditions appear to be recovering at a faster rate than can be measured by traditional metrics. Cash on balance sheets is gradually moving towards the ten percent level which constitutes normal conditions when supported by bank credit.

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The standard ratios used in financial analysis have been in use since the 1920s, and there have been few challenges to their usefulness and relevance. Finance faculty (including the author) continues to teach ratio analysis, bankers continue to “spread” borrower financials using ratios, and every college-level finance text covers the topic, usually in an early chapter.

It is time to take a thoughtful look at the subject and to determine whether a better approach is possible. Avenues of research on ratios include the types of inquiries noted in Exhibit 2. It is possible that standardized covenants would improve lending decisions and the monitoring of corporate borrower actions; however, this step would involve a regulatory approach apparently so far not considered by the Comptroller of the Currency.

Exhibit 2: Potential Problems with Standard Ratios

Problems with Specific Ratios

- Total debt ratio or financial leverage (total debt ÷ total assets): should short-term debt be included or excluded?
- Total asset turnover (sales ÷ total assets): calculation of this ratio reveals nothing about specific asset categories
- Inventory turnover (cost of goods sold ÷ inventory): inventory may be stale, spoiled or incorrectly valued and is among the most difficult of all assets to value

Problems with General Business Comparisons

- Companies seldom compare exactly to their competitors, which may be in different lines of business or markets, at different points in implementing technology or other new processes or subject to varying competitive pressures
- Accounting standards vary across countries: the U.S. uses GAAP; other countries generally use IFRS (International Financial Reporting Standards)
- Accounting practices vary within the U.S. For example, companies may use varying inventory valuation methods (FIFO, LIFO or average cost) and depreciation procedures
- Different fiscal year-ends distort results, particularly due to seasonality
- Unusual (non-recurring) events (e.g., asset sales, a windfall from a legal settlement) may be difficult to remove from results of ongoing operations

Problems with Assets Presented using Misleading Values

- Certain assets are never included in balance sheet presentations
 - people
 - the market value or contribution of intellectual property

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- the potential value of strategic initiatives (such as joint ventures or new product releases)
- Certain assets are included at artificial values which may misrepresent actual value
 - land (at cost)
 - buildings (valued after depreciation)
 - natural resources (valued after depletion)
 - intellectual property (valued after the cost has been amortized)

Problems with Obligations that are not Recognized in Financial Statements

- Various obligations are addressed in footnotes and cannot be evaluated using traditional ratio analysis
 - lines of credit (as discussed in this paper)
 - leases
 - ongoing or threatened legal proceedings
 - value of certain derivative transactions
 - actual foreign exchange values
 - rights to product marketing following an acquisition
 - plans to restructure such as the exiting of certain businesses
 - employee stock options that may be exercised in the future

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¹ A Google search in June 2010 on “banks are not lending” resulted in 12½ million hits! However, Federal Reserve Board statistics indicate a different interpretation of the current situation.

² Derived from data on commercial and industrial (C&I) loans in Federal Reserve Board, Statistical Release H.8 and Historical Statistics, at www.federalreserve.gov/econresdata/releases/statisticsdata.htm. The Fed’s reporting does not include lines of credit that have not been drawn (used).

³ Activity ratios typically do not appear in lending agreements. For an explanation of the financial ratios and how they are used, see any standard finance text.

⁴ Calculated as TR/CF, or for every \$100 of revenue in 2005 there was \$9.26 of cash, equal to 10.8%; there were \$6.39 of cash in 2008, equal to 15.6%, and \$7.14 of cash in 2009, equal to 14.0%.

⁵ Based on calculations by the author from a sample of Current Ratios (#30) and ratios of Total Receipts to Total Cash Flow (#42) for 23 industries (of about 135 industries) in Troy (2006, 2009 & 2010), Table 1: Companies with and without Net Income.

⁶ It is assumed that a condition of “normal” liquidity would demonstrate a TR/CF ratio of between nine and ten times, which varies by type of industry.

⁷ The proportion of floating rate debt more than doubled worldwide in the 17 years between 1993 through 2009 (from 15.4% to 32.6%). “Securities Statistics and Syndicated Loans,” Table 13B, Bank for International Settlements, at www.bis.org/statistics/secstats.htm.

⁸ Industry 311900 (other food manufacturing) declined an imperceptible 4% (from 2.3 to 2.2 times). While industry 511210 (software) fell 30% (8.1 to 5.7 times), in the previous year (2009) it had experienced an increase to 14.3 times.

⁹ Immaterial declines of .1% occurred in three of the four exceptions. The only industry with a significant decrease (.3%) was Other Food Manufacturing (#311900).

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Appendix I: Industries Used in the Analysis

Industry Group	Industry	NAICS Series*
Agriculture	Agricultural Production	111005
Construction	Heavy & Civil Engineering Construction	237105
Manufacturing	Other Food Manufacturing	311900
Manufacturing	Wood Products	321115
Manufacturing	Basic Chemical	325100
Manufacturing	Pharmaceutical & Medicine	325410
Manufacturing	Cement, Concrete, Lime & Gypsum	327305
Manufacturing	Other Fabricated Metal Products	332900
Manufacturing	Computers & Peripheral Equipment	334110
Wholesaling	Metals & Minerals	423500
Wholesaling	Machinery, Equipment & Supplies	423800
Wholesaling	Grocery & Related Products	424400
Wholesaling	Petroleum & Petroleum Products	424700
Retailing	Food & Beverage	445115
Retailing	General Merchandise	452115
Transp. & Warehousing	Rail	482110
Transp. & Warehousing	Trucking	484115
Transp. & Warehousing	Warehousing & Storage	493100
Information	Software	511210
Information	Motion Pictures	512100
Information	Telecommunications	517000
Other	Hospitals, Nursing & Residential Care	622005
Other	Food & Drinking Places	722115

Note: Two industries used in the in 2009 paper were excluded from this study:

- Mining, Oil & Gas Extraction, NAICS 211110, due to the volatility of oil and gas prices and revenues in past years with a record peak of US\$145 reached in July 2008 and a decline to US\$30 a barrel in December 2008.
- Manufacturing, Motor Vehicles & Parts, NAICS 336105, due to the federal emergency funds that were authorized in the Troubled Asset Relief Program (TARP) as authorized by the Emergency Economic Stabilization Act of 2008 (October 3, 2008, Public Law 110-343).

*NAICS = North American Industry Classification System; for a full listing, see www.naics.com