	DEBT AS A PERCENTAGE OF THE MARKET VALUE OF EQUITY AND DEBT (INDUSTRY MEDIANS, %)
High Leverage	
Air transport (451)	57.91
Building construction (15)	40.38
Communications (48)	33.57
Hotels and lodging (701)	44.16
Paper (26)	25.06
Low Leverage	
Biological products (2836)	5.89
Computers (3571)	1.60
Drugs (283)	6.76
Educational services (82)	7.81
Electronics (367)	3.29

Definition: Debt is the total of short-term debt and long-term debt. Values are industry medians of five-year averages.

TABLE 15.3
Capital Structure Ratios for Selected U.S. Nonfinancial Industries (SIC codes in parentheses)

Source: *Ibbotson* Associates 2008, *Cost of Capital Quarterly*, 2008 Yearbook

Should we view these ratios as being high or low? As we discussed earlier, academics generally see corporate tax reduction as the chief motivation for debt. Thus, we might wonder if real-world companies issue enough debt to greatly reduce, if not downright eliminate, corporate taxes. The empirical evidence suggests that this is not the case. For example, corporate taxes in the U.S. for 2008 were about $400 billion. Thus, it is clear that corporations do not issue debt up to the point where tax shelters are completely used up. There are clearly limits to the amount of debt corporations can issue, perhaps because of the financial distress costs discussed earlier in this chapter.

2. *A Number of Firms Use No Debt.* In a fascinating study, Agrawal and Nagarajan examined approximately 100 firms on the New York Stock Exchange without long-term debt.[14] They found that these firms are averse to leverage of any kind, with little short-term debt as well. In addition, they have levels of cash and marketable securities well above their levered counterparts. Typically, the managers of these firms have high equity ownership. Furthermore, there is significantly greater family involvement in all-equity firms than in levered firms.

   Thus, a story emerges. Managers of all-equity firms are less diversified than the managers of similar, but levered, firms. Because of this, significant leverage represents an added risk that the managers of all-equity firms are loathe to accept.

3. *There Are Differences in the Capital Structures of Different Industries.* There are very significant interindustry differences in debt ratios that persist over time. As can be seen in Table 15.3, debt ratios tend to be very low in high-growth industries with ample future investment opportunities such as the drugs and electronics industries. This is true even when the need for external financing is great. Industries such as air transport and paper, with relatively few investment opportunities and slow growth, tend to use the most debt.

To give a more specific example of industry effects, we looked up some capital structure [illegible] Johnson & Johnson (JNJ) and Continental Airlines (CAL), using the ratio

[14] Anup Agrawal and Nandu Nagarajan, "Corporate Capital Structure, Agency Costs, and Ownership Control: The Case of All Equity Firms," *Journal of Finance* 45 (September 1990).