

Introduction

In the midst of the current credit crunch in financial markets, stocks of highly-leveraged companies are widely expected to underperform because access to credit has become more difficult. The new and enhanced Barra Global Equity Model (GEM2), and its inclusion of an explicit leverage factor, can help us to investigate whether this intuitive argument holds true.

In an examination of the leverage factor returns, we find that equities of highly leveraged firms do underperform in times of crises. In general, the relative stock performance of these firms tends to move in the same direction as the market's risk appetite. These results highlight the importance of understanding the portfolio's exposure to leveraged companies. GEM2 assists portfolio and risk managers in managing their exposure and control for any unintended bet towards highly leveraged companies.

The Financial Leverage Factor

The leverage factor captures the return difference between stocks with high and low financial leverage. It is measured using three descriptors, namely liabilities to book value, liabilities to market capitalization, and liabilities to total assets.¹ This factor is one of the 8 style factors in the GEM2, and may be particularly relevant in the current market environment.

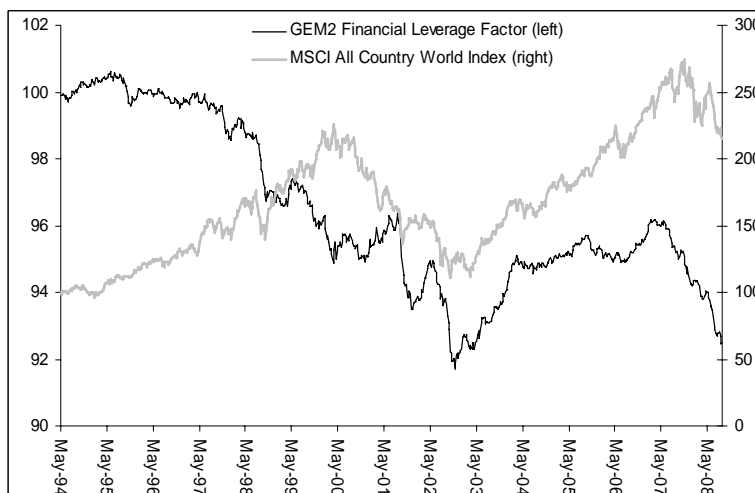
Figure 1 shows the cumulative returns of the GEM2 financial leverage factor against the MSCI All Country World Index. Two observations stand out from the chart:

- In times of market crisis the leverage factor experienced steep and very sudden drops.
- In general, the leverage factor moved in the same direction as the overall equity market.

The only significant period of exception was from 1995 to 2000, which we shall return to later.

These observations suggest a link between the relative performance of highly leveraged firms and the risk appetite in the market. This will be examined in the next section.

Figure 1: The Financial Leverage Factor and Global Equities

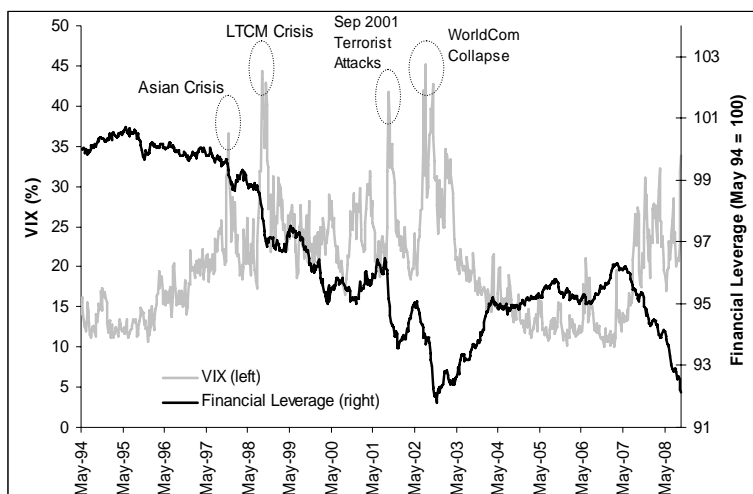


¹ See pp. 69-70 in Menchero, Jose, Andrei Morozov and Peter Shepard (2008), "The Barra Global Equity Model (GEM2)", *MSCI Barra Model Insights* (September).

Financial Leverage and Risk Environment

It is interesting to examine how the leverage factor performs under high levels of risk aversion. For this purpose the Chicago Board Options Exchange Volatility Index (VIX), which measures the implied volatility of the S&P 500 Index in the US and is a general barometer of the global risk environment, is used here. This is displayed together with the financial leverage factor in Figure 2. The most striking are the periods of extreme risk aversion, which are represented by the spikes in the index and are highlighted with the associated risk events in the chart.

Figure 2: Financial Leverage Under Different Risk Environments



During the four highlighted episodes of extreme volatility, the leverage factor performed very poorly. This is in line with expectations since highly leveraged stocks are riskier, and hence would be the first ones to be sold off during periods of market uncertainty. In general, the leverage factor declined as risk aversion increased and vice versa. The rising risk aversion from 1995 to 2000, which was noted earlier as an exceptional period in which the leverage factor moved in the opposite direction to the market, also explains why leveraged firms were performing relatively poorly during this period. The factor had a positive run between the end of 2002 and April 2007, which was a period of dramatically decreasing risk levels, low interest rates, and strong global growth. Not surprisingly, since the summer of 2007, the factor has performed very poorly.

Financial Leverage and Industry Effects

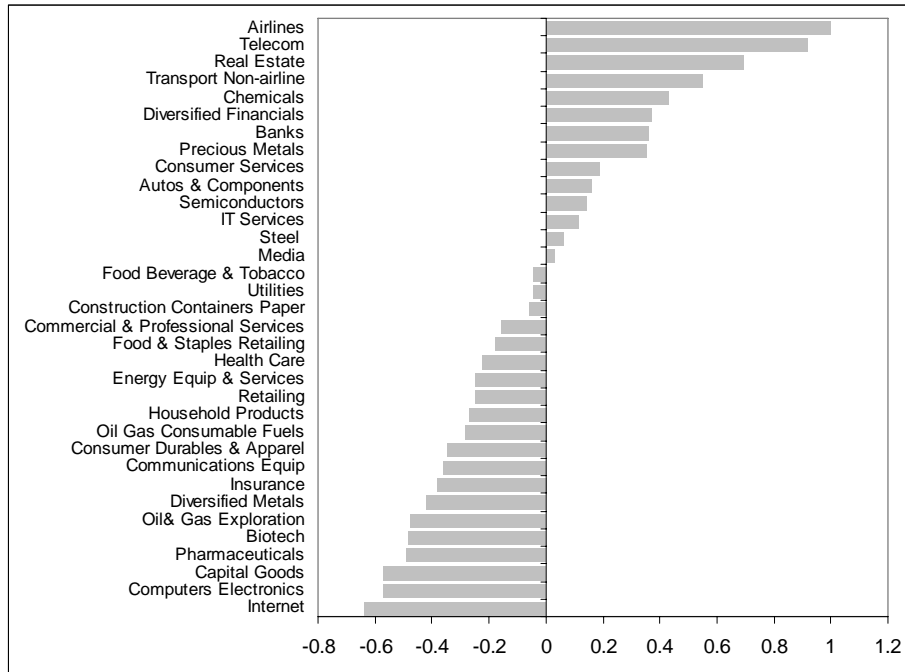
Next we examine if the financial leverage factor has any implied industry tilts, or in other words if certain industries are more highly leveraged than others. This is of particular interest from a risk management perspective, since unintended industry exposures can be tracked or neutralized accordingly. In view of this, the average financial leverage exposures of individual stocks over the whole period from 1994 to 2008 are derived and weighted according to market capitalization (in USD). The results for the different Industries are shown in Figure 3.

In general, the asset-intensive industries are more highly leveraged, while the service industries have lower leverage. The most highly leveraged industries include Transport, Telecoms, Real Estate and Chemicals. The other end of the spectrum is dominated by the technology-related industries, such as Biotech, Pharmaceuticals, Computers & Electronics, as well as Internet.

There are various factors that affect the leverage of individual sectors. Asset-intensive industries have greater upfront costs that have to be financed by taking on more debt, while on the other hand service industries often involve lower initial capital outlays and hence less

debt. Given these industry differences, a manager taking a bet on low-leverage firms globally should therefore be aware that such a bet would likely involve tilts away from industrials in favor of services.

Figure 3: Cap-Weighted Financial Leverage for Various Industries (Average 1994-2008)



Conclusion

The financial leverage factor is a new addition to the new and enhanced Barra Global Equity Model (GEM2), and is aimed at capturing the differences in performance between firms with varying levels of leverage. A positive return to this risk factor indicates that highly leveraged firms are performing better than their less leveraged counterparts and vice versa. It was found that this factor generally moved in the same direction as the overall stock market but was also strongly influenced by the degree of risk aversion, dropping sharply during times of market stress, as observed during the current crisis as well as previous ones in the late 1990s and early 2000s. In addition, there are implicit industry tilts in this factor, with asset-intensive industries having higher leverage and service-oriented industries having lower leverage. The implications for risk management and portfolio construction are significant. In particular, exposure to leverage could hurt performance significantly during market crises. Being able to capture the exposure to leverage as part of risk management and portfolio construction is a key benefit of the GEM2 model.

Earlier Research Bulletin in GEM2 Series:

Country and Industry Effects in Global Equities (Oct 2008)

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