

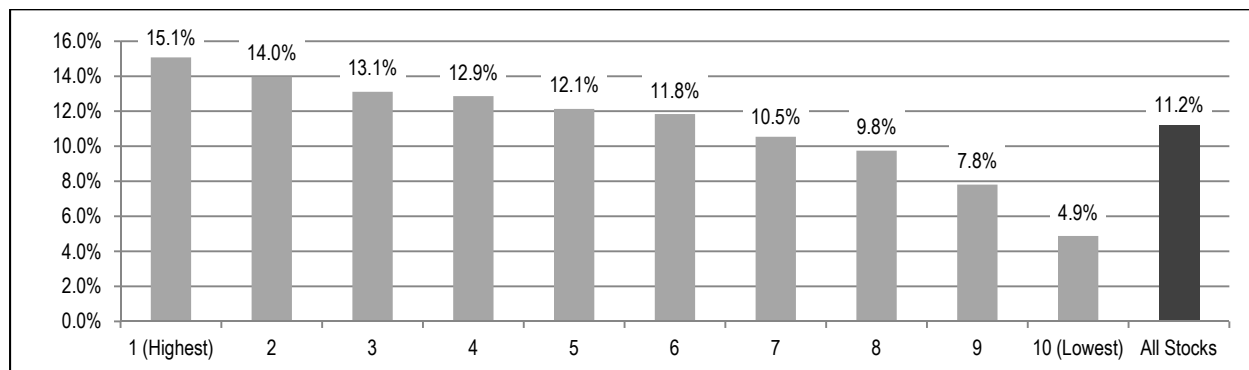
## What Works On Wall Street — Chapter 14 Case Study: Combining the Financial Strength Factors into a Single Composite Factor

As we saw in the fourth edition of *What Works on Wall Street* with Value, Earnings Quality, and Earnings Growth; using a composited approach to building factors can provide superior returns to any of the individual factors on their own. In this supplement to the book I will be investigating whether we might get better, more consistent results by looking at how stocks score on *all* the Financial Strength factors discussed in Chapter 14 rather than just looking at them individually.

Specifically, we will look at a combination of:

- Debt to Equity;
- Percentage Change in Debt;
- External Financing and
- Cash Flow to Debt Ratio.

Much as we did with the earnings quality composite at the end of Chapter 14, we will rank all of the stocks in the All Stocks and Large Stocks universes on each of the four factors, with stocks having the highest percentage change in debt getting a score of 1 and stocks with the lowest percentage change in debt (largest decrease in debt) getting a 100; similarly, stocks that score highest on the use of external financing will receive a 1 whereas stocks in the lowest percentile for external financing will receive a 100. In this instance, we are expecting stocks that achieve the *highest* overall scores will be the most attractive, as they are personified by companies with low changes/decreases in debt; low use of external debt, etc. Stocks that have a value missing will be assigned a rank of 50 for that variable. After all stocks are scored, we will sort them into deciles, with decile one comprised of stocks with the *highest* composite scores (low percentage change in debt; low use of external financing, etc.) and stocks with the *lowest* scores in decile ten. We will also look at the 25 stocks with the highest and lowest scores. Starting on December 31, 1963 and ending December 31, 2009, we see that financial strength really matters to a stock's return. Figure 14.CS1 provides strong evidence that we should pay close attention to a company's financial strength. The deciles offer a perfect downward staircase in performance, with decile



**FIGURE 14-CS1**

Average annual compound return by COMP Fin Strength decile, All Stocks universe, January 1, 1964 to December 31, 2009

one—featuring the ten percent of stocks in All Stocks with the best scores on all four factors—returning 15.07 percent on an average annual compound basis over 46 years of the study with each decile returning lower returns until we reach decile ten, those stocks with the *worst* scores on the financial strength composite. Decile ten’s 4.87 percent average annual compound return is vastly lower than All Stocks and also beaten by an investment in U.S. T-bills, which earned 5.57 percent over the same period. Table 14.CS2 shows the results for investments in Decile one and ten. The differences could not be starker—decile one had a maximum decline of 51 percent, better than All Stocks maximum decline of 55 percent, and *vastly* better than decile ten’s maximum drop of 80 percent. The Sharpe ratios show the difference in risk—stocks in decile ten have a *negative* Sharpe ratio of -0.01 whereas stocks in decile one have a Sharpe ratio of 0.60, significantly higher than All Stocks’ 0.33.

**TABLE 14.CS1**

**Summary Results for COMP Fin Strength Decile Analysis of All Stocks Universe, January 1, 1964 to December 31, 2009**

Decile	\$10,000 Grows to:	Average Return	Compound Return	Standard Deviation	Sharpe Ratio
1 (Highest)	\$6,379,518	16.71%	15.07%	16.81%	0.60
2	\$4,114,135	15.58%	13.98%	16.69%	0.54
3	\$2,886,180	14.78%	13.11%	17.11%	0.47
4	\$2,612,232	14.60%	12.86%	17.44%	0.45
5	\$1,940,535	13.88%	12.13%	17.55%	0.41
6	\$1,721,141	13.69%	11.84%	18.07%	0.38
7	\$1,006,141	12.43%	10.54%	18.31%	0.30
8	\$722,349	11.83%	9.75%	19.29%	0.25
9	\$317,672	10.07%	7.81%	20.24%	0.14
10 (Lowest)	\$89,242	7.60%	4.87%	22.39%	-0.01
All Stocks	\$1,329,513	13.26%	11.22%	18.99%	0.33

**TABLE 14-CS2**

**Summary Return and Risk Results for Annual Data: AS COMP Fin Strength Decile 1, AS COMP Fin Strength Decile 10, and All Stocks; January 1, 1964 to December 31, 2009**

	AS COMP Fin Strength Decile 1	AS COMP Fin Strength Decile 10	All Stocks
Arithmetic Average	16.71%	7.60%	13.26%
Geometric Average	15.07%	4.87%	11.22%
Median Return	21.60%	15.00%	17.16%
Standard Deviation	16.81%	22.39%	18.99%
Upside Deviation	9.90%	12.90%	10.98%
Downside Deviation	12.72%	16.85%	13.90%
Tracking Error	4.20	6.35	0.00
Number of Positive Periods	358	317	329
Number of Negative Periods	194	235	223
Maximum Peak-to-Trough Decline	-50.82%	-80.39%	-55.54%
Beta	0.87	1.14	1.00

T A B L E 14-CS2 (continued)	AS COMP Fin Strength Decile 1	AS COMP Fin Strength Decile 10	All Stocks
T-Statistic (m=0)	6.28	2.22	4.47
Sharpe Ratio (Rf=5%)	0.60	-0.01	0.33
Sortino Ratio (MAR=10%)	0.40	-0.30	0.09
\$10,000 becomes	\$6,379,518	\$89,242	\$1,329,513
Minimum 1 Year Return	-42.75%	-56.59%	-46.49%
Maximum 1 Year Return	77.15%	86.26%	84.19%
Minimum 3 Year Return	-14.20%	-37.92%	-18.68%
Maximum 3 Year Return	37.76%	29.70%	31.49%
Minimum 5 Year Return	-5.12%	-18.42%	-9.91%
Maximum 5 Year Return	31.64%	25.67%	27.66%
Minimum 7 Year Return	-1.29%	-11.41%	-6.32%
Maximum 7 Year Return	29.31%	21.22%	23.77%
Minimum 10 Year Return	4.46%	-9.58%	1.01%
Maximum 10 Year Return	24.94%	17.80%	22.05%
Minimum Expected Return*	-16.91%	-37.19%	-24.73%
Maximum Expected Return**	50.34%	52.39%	51.24%

\* Minimum Expected Return is Arithmetic Return minus 2 times the standard deviation.

\*\* Maximum Expected Return is Arithmetic Return plus 2 times the standard deviation.

The base rates for each decile are featured in Tables 14.CS3 and 14.CS4. Decile one—those stocks with the best scores on the four combined factors—beat the All Stocks universe in 97 percent of all rolling five-year periods and 100 percent of all rolling ten-year periods. Stocks in decile ten—those stocks from All Stocks with the *worst* scores on the four combined factors—managed to beat the All Stocks universe in just four percent of all rolling five-year periods and in no rolling ten-year periods. The results are painfully clear—stocks with the worst scores on the composited financial strength factor are poison to your future returns and should be avoided at all costs whereas stocks with the best scores provide significant help to your portfolio’s overall return.

**T A B L E 14-CS3**

**Base Rates for AS COMP Fin Strength Decile 1 and All Stocks; January 1, 1964 to December 31, 2009**

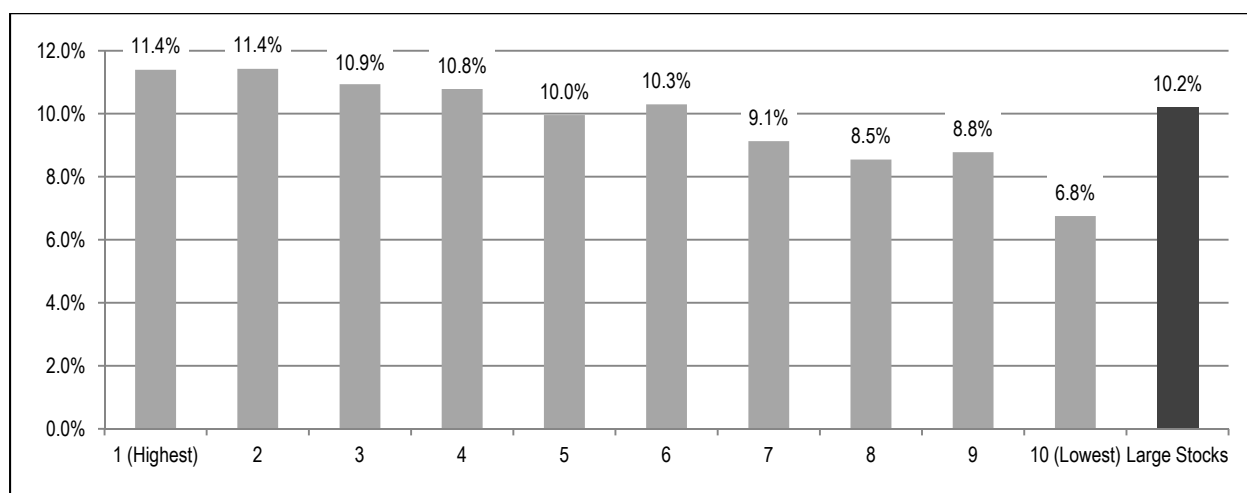
Item	"AS COMP Fin Strength Decile 1" Beat "All Stocks"	Percent	Average Annual Excess Return
Single-Year Return	441 out of 541	82%	3.60%
Rolling Three-Year Compound Return	476 out of 517	92%	4.05%
Rolling Five-Year Compound Return	478 out of 493	97%	4.20%
Rolling Seven-Year Compound Return	469 out of 469	100%	4.28%
Rolling 10-Year Compound Return	433 out of 433	100%	4.27%

**TABLE 14-CS4****Base Rates for AS COMP Fin Strength Decile 10 and All Stocks; January 1, 1964 to December 31, 2009**

Item	"AS COMP Fin Strength Decile 10" Beat "All Stocks"	Percent	Average Annual Excess Return
Single-Year Return	107 out of 541	20%	-5.50%
Rolling Three-Year Compound Return	39 out of 517	8%	-6.35%
Rolling Five-Year Compound Return	18 out of 493	4%	-6.72%
Rolling Seven-Year Compound Return	13 out of 469	3%	-6.97%
Rolling 10-Year Compound Return	0 out of 433	0%	-7.12%

## Large Stocks

Figure 14.CS2 shows the Large Stocks universe sorted by financial strength deciles. It's almost as perfectly symmetrical as the All Stocks group, yet here decile two slightly beats decile one, but only by three basis points, thus the two are statistically identical. Much as we saw with the All Stocks group, as Large Stocks pile on the debt or increase the use of external financing, their returns suffer. Decile ten does significantly worse than the Large Stocks universe and indicates that too much debt is almost as fatal for Large Stocks as it is for All Stocks.

**FIGURE 14-CS2**

**Average annual compound return by COMP Fin Strength decile, Large Stocks universe, January 1, 1964 to December 31, 2009**

Table 14.CS5 shows the summary results for decile one and ten from the Large Stocks universe. Decile one—the stocks from Large Stocks with the best scores on the financial strength composite—earn an average annual compound return of 11.39 percent, better than the Large Stocks universe and significantly better than decile ten—the stocks from Large Stocks with the worst scores on the financial strength composite—which earned an average annual compound return of 6.75 percent. Note that the stocks with the worst scores from Large Stocks also had a higher standard deviation of return than either the Large Stocks universe or the stocks in decile one. The maximum decline for the stocks from decile one was 50 percent; whereas those in decile ten lost 60 percent from peak to trough.

**TABLE 14-CS5**

**Summary Return and Risk Results for Annual Data: LS COMP Fin Strength Decile 1, LS COMP Fin Strength Decile 10, and Large Stocks; January 1, 1964 to December 31, 2009**

	<b>LS COMP Fin Strength Decile 1</b>	<b>LS COMP Fin Strength Decile 10</b>	<b>Large Stocks</b>
Arithmetic Average	12.78%	8.30%	11.72%
Geometric Average	11.39%	6.75%	10.20%
Median Return	15.20%	12.39%	17.20%
Standard Deviation	15.71%	16.93%	16.50%
Upside Deviation	9.73%	10.34%	9.70%
Downside Deviation	11.75%	12.16%	11.85%
Tracking Error	5.34	4.93	0.00
Number of Positive Periods	348	327	332
Number of Negative Periods	204	225	220
Maximum Peak-to-Trough Decline	-50.03%	-59.81%	-53.77%
Beta	0.90	0.98	1.00
T-Statistic (m=0)	5.22	3.20	4.58
Sharpe Ratio (Rf=5%)	0.41	0.10	0.32
Sortino Ratio (MAR=10%)	0.12	-0.27	0.02
\$10,000 becomes	\$1,429,804	\$201,884	\$872,861
Minimum 1 Year Return	-42.98%	-51.51%	-46.91%
Maximum 1 Year Return	58.24%	62.14%	68.96%
Minimum 3 Year Return	-11.94%	-24.31%	-15.89%
Maximum 3 Year Return	35.67%	32.34%	33.12%
Minimum 5 Year Return	-4.84%	-10.08%	-5.82%
Maximum 5 Year Return	30.27%	26.97%	28.95%
Minimum 7 Year Return	-2.64%	-4.96%	-4.15%
Maximum 7 Year Return	23.57%	20.28%	22.83%
Minimum 10 Year Return	0.56%	-4.94%	-0.15%
Maximum 10 Year Return	20.45%	15.84%	19.57%
Minimum Expected Return*	-18.65%	-25.57%	-21.28%
Maximum Expected Return**	44.21%	42.17%	44.72%

\* Minimum Expected Return is Arithmetic Return minus 2 times the standard deviation.

\*\* Maximum Expected Return is Arithmetic Return plus 2 times the standard deviation.

Table 14.CS6 shows the base rates for decile one and Table 14.CS7 shows the base rates for decile ten. While the base rates for decile one aren't as high as they were for the All Stocks group, the Large Stocks in decile one still managed to beat the Large Stocks universe in 76 percent of all rolling five-year periods and 82 percent of all rolling ten-year periods. For the Large Stocks in decile ten, the base rates are nearly as ugly as those we saw with the All Stocks group, beating the Large Stocks universe in just eight percent of all rolling five-year periods and in no rolling ten-year periods.

**TABLE 14-CS6**

**Base Rates for LS COMP Fin Strength Decile 1 and Large Stocks; January 1, 1964 to December 31, 2009**

<b>Item</b>	<b>"LS COMP Fin Strength Decile 1" Beat "Large Stocks"</b>	<b>Percent</b>	<b>Average Annual Excess Return</b>
Single-Year Return	339 out of 541	63%	1.10%
Rolling Three-Year Compound Return	369 out of 517	71%	1.27%
Rolling Five-Year Compound Return	374 out of 493	76%	1.24%
Rolling Seven-Year Compound Return	360 out of 469	77%	1.20%
Rolling 10-Year Compound Return	354 out of 433	82%	1.13%

**TABLE 14-CS7**

**Base Rates for LS COMP Fin Strength Decile 10 and Large Stocks; January 1, 1964 to December 31, 2009**

<b>Item</b>	<b>"LS COMP Fin Strength Decile 10" Beat "Large Stocks"</b>	<b>Percent</b>	<b>Average Annual Excess Return</b>
Single-Year Return	142 out of 541	26%	-3.09%
Rolling Three-Year Compound Return	61 out of 517	12%	-3.27%
Rolling Five-Year Compound Return	41 out of 493	8%	-3.36%
Rolling Seven-Year Compound Return	17 out of 469	4%	-3.51%
Rolling 10-Year Compound Return	0 out of 433	0%	-3.64%

### **Helpful for Individual Investors as Well**

When we limit our study to the top and bottom 25 stocks based upon their scores on the financial strength composite, we see that individual investors could benefit from using this composite to help guide their selection of stocks for their portfolio. As Table 14.CS8 shows, by focusing on the top 25 stocks from All Stocks with the best scores on the financial strength composite, an investor starting on December 31, 1963 with \$10,000 would see his or her investment grow to \$5,980,649, an average annual compound return of 14.91 percent with a lower standard deviation of return than the All Stocks universe. The 25 stocks from All Stocks with the best scores on the financial strength composite had a standard deviation of return of 18.31 percent compared with 18.99 percent for the All Stocks universe.

**TABLE 14-CS8**


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**Summary Return and Risk Results for Annual Data: AS COMP Fin Strength High 25, AS COMP Fin Strength Low 25, and All Stocks; January 1, 1964 to December 31, 2009**


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	<b>AS COMP Fin Strength High 25</b>	<b>AS COMP Fin Strength Low 25</b>	<b>All Stocks</b>
Arithmetic Average	16.86%	1.56%	13.26%
Geometric Average	14.91%	-2.20%	11.22%
Median Return	23.82%	8.90%	17.16%
Standard Deviation	18.31%	26.96%	18.99%
Upside Deviation	10.92%	15.95%	10.98%
Downside Deviation	13.58%	20.45%	13.90%
Tracking Error	7.18	13.44	0.00
Number of Positive Periods	357	305	329
Number of Negative Periods	195	247	223
Maximum Peak-to-Trough Decline	-57.83%	-96.59%	-55.54%
Beta	0.89	1.26	1.00
T-Statistic (m=0)	5.81	0.39	4.47
Sharpe Ratio (Rf=5%)	0.54	-0.27	0.33
Sortino Ratio (MAR=10%)	0.36	-0.60	0.09
\$10,000 becomes	\$5,980,649	\$3,592	\$1,329,513
Minimum 1 Year Return	-48.45%	-73.40%	-46.49%
Maximum 1 Year Return	78.77%	99.94%	84.19%
Minimum 3 Year Return	-18.15%	-58.42%	-18.68%
Maximum 3 Year Return	47.73%	35.47%	31.49%
Minimum 5 Year Return	-6.62%	-36.38%	-9.91%
Maximum 5 Year Return	34.88%	26.20%	27.66%
Minimum 7 Year Return	-1.16%	-28.47%	-6.32%
Maximum 7 Year Return	34.30%	17.35%	23.77%
Minimum 10 Year Return	3.27%	-22.54%	1.01%
Maximum 10 Year Return	30.67%	12.29%	22.05%
Minimum Expected Return*	-19.76%	-52.36%	-24.73%
Maximum Expected Return**	53.48%	55.49%	51.24%

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\* Minimum Expected Return is Arithmetic Return minus 2 times the standard deviation.

\*\* Maximum Expected Return is Arithmetic Return plus 2 times the standard deviation.

Focusing on the 25 stocks with the *worst* scores on the financial strength index provides an excellent example of stocks that you will want to avoid like the plague—the 25 stocks from All Stocks with the *worst* scores on the financial strength composite actually *lost* 2.20 percent per year, turning \$10,000 invested on December 31, 1963 into just \$3,592! If we adjust that for inflation, you would simply be wiped out, with the real, inflation-adjusted value of the \$10,000 invested 46 years earlier worth a measly \$514! Imagine someone with \$10,000 in 1963 having just \$514 to show for after 46 years of investing in these over-leveraged, high risk securities and you'll see just how toxic too much leverage and debt can be to a stock's prospects.

**TABLE 14-CS9**

**Base Rates for AS COMP Fin Strength High 25 and All Stocks; January 1, 1964 to December 31, 2009**

<b>Item</b>	<b>"AS COMP Fin Strength High 25" Beat "All Stocks"</b>	<b>Percent</b>	<b>Average Annual Excess Return</b>
Single-Year Return	364 out of 541	67%	3.81%
Rolling Three-Year Compound Return	407 out of 517	79%	4.15%
Rolling Five-Year Compound Return	424 out of 493	86%	4.26%
Rolling Seven-Year Compound Return	428 out of 469	91%	4.29%
Rolling 10-Year Compound Return	421 out of 433	97%	4.41%

**TABLE 14-CS10**

**Base Rates for AS COMP Fin Strength Low 25 and All Stocks; January 1, 1964 to December 31, 2009**

<b>Item</b>	<b>"AS COMP Fin Strength Low 25" Beat "All Stocks"</b>	<b>Percent</b>	<b>Average Annual Excess Return</b>
Single-Year Return	111 out of 541	21%	-11.13%
Rolling Three-Year Compound Return	34 out of 517	7%	-13.07%
Rolling Five-Year Compound Return	16 out of 493	3%	-13.94%
Rolling Seven-Year Compound Return	18 out of 469	4%	-14.45%
Rolling 10-Year Compound Return	0 out of 433	0%	-14.66%

## Implications

Similar to the Value, Earnings Quality, and Earnings Growth Composites reviewed in the book; we see that by combining several individual Financial Strength factors and using a composited approach yields superior results than using any in isolation. The results make it abundantly clear that investors should steer clear of stocks that pile on debt or use too much external financing and instead should aim for those that have reasonable levels of debt and modestly use external financing.