

Stock Screener

Executive Summary

As part of my undergraduate education at BYU I worked in an on-campus internship that manages a real portfolio of equity investments. This on-campus internship uses a variety of tools to augment our investment practices. One of the tools we use frequently is a screening tool that searches through and filters stocks based on pre-selected criteria. I consider the screening tool to be one of the most important assets we have at our disposal and once we leave the class we no longer have access to it. I have been active in equity markets since 2007 and considered the screening tool essential to my personal investing so I decided to create one for personal use as my final project. The purpose of the program is to use criteria I have developed for my own personal investing and filter through every available U.S. stock to find possible investments and then compare them against their peers. Because there are approximately 14000 publicly traded companies this tool is essential for finding the best investments quickly enough for me to evaluate companies on my own time.

Implementation

My original design for the stock screening tool would have the tool screen the entire universe of publicly traded companies. Shortly after beginning to develop the program I realized that this was unreasonable for two reasons. One, it would take the program literally days if not weeks to run. Two, I already had access to a program through my account at E*Trade which would do a decent job of that for me. I decided to use E*Trade as part of my initial screen in building my stock filtering program. The screening program that E*Trade has is a good program, but I considered it to be only a part of the process. Once you returned the results of a screen you then had to look at each company one by one to continue your evaluation. I wanted a screening tool which would return not only the companies but data comparing them to each other so I could quickly pick out the best of class and move forward.

| | AMGN | ARONA | BBT | BTH | CGA | CNIT | CRTP | CSIO | DEER | GM | HPQ | HGG | HPJ |
|----|-------------------------------|---------------|------------|---------------|------------|------------|------------|-----------|---------------|------------|----------|-----|-----|
| 1 | | | | | | | | | | | | | |
| 2 | Sales Growth (Year over Year) | 3% | -3% | 10% | -9% | 48% | 62% | -18% | 11% | 116% | | | |
| 3 | Sales Growth (3 Yr. Average) | 6% | -7% | 11% | -9% | 52% | 40% | 23% | 1% | 303% | | | |
| 4 | Gross Margin | 39% | 40% | 27% | 57% | 44% | 49% | 19% | 67% | 30% | 18% | | |
| 5 | Net Profit Margin | 27% | 5% | 3% | -1% | | 27% | 6% | 20% | | | | |
| 6 | ROE (5 Yr. Average) | 19% | 30% | 23% | | | 19% | 14% | 20% | | | | |
| 7 | ROIC (5 Yr. Average) | 13% | 29% | 21% | -3% | 16% | 19% | 14% | 16% | 21% | 16% | | |
| 8 | Cash | \$ 3,287,000 | \$ 52,591 | \$ 1,826,000 | \$ 207,394 | \$ 62,335 | \$ 26,511 | \$ 28,960 | \$ 4,581,000 | \$ 35,304 | | | |
| 9 | Current Assets | \$ 23,129,000 | \$ 82,081 | \$ 10,566,000 | \$ 364,057 | \$ 89,478 | \$ 159,045 | \$ 81,503 | \$ 51,421,000 | \$ 117,150 | | | |
| 10 | NCV | \$ 3,587,000 | \$ 38,724 | \$ 1,116,000 | \$ 95,868 | \$ 86,228 | \$ 26,716 | \$ 36,360 | \$ 14,558,000 | \$ 72,243 | | | |
| 11 | Total Assets | \$ 43,486,000 | \$ 127,884 | \$ 18,302,000 | \$ 522,993 | \$ 131,788 | \$ 339,402 | \$ 98,561 | \$ 61,130,000 | \$ 188,642 | | | |
| 12 | Total Liabilities | \$ 19,542,000 | \$ 43,357 | \$ 11,982,000 | \$ 268,189 | \$ 3,250 | \$ 132,329 | \$ 43,136 | \$ 36,863,000 | \$ 44,907 | | | |
| 13 | Total Equity | \$ 23,944,000 | \$ 84,527 | \$ 6,320,000 | \$ 254,804 | \$ 128,538 | \$ 207,073 | \$ 55,425 | \$ 24,267,000 | \$ 143,735 | | | |
| 14 | Debt to Equity | 0.56 | 0.01 | 0.3 | 0.47 | 0.04 | 0.2 | 0.07 | 0.33 | 0.06 | 0.18 | | |
| 15 | Price to Earnings | 13.20 | 14.00 | 3.70 | 8.30 | 7.40 | 4.10 | 4.50 | 13.60 | 7.40 | 11.20 | | |
| 16 | Cash Per Share | \$ 3.53 | \$ 16.64 | \$ 2.35 | \$ 14.21 | \$ 2.19 | \$ 0.35 | \$ 0.49 | \$ 0.89 | \$ 1.01 | \$ 13.49 | | |

When you click the command button to start the program a message box appears asking for the user's E*Trade credentials. Once entered the tool open up Internet Explorer and navigates to E*Trade. Opening the user's account and moving to the screening tool. The program then inputs the basic screening criteria and runs E*Trade's

filter. Once the filter has run the program downloads the ticker symbols for the companies which passed the filtering. Once Excel has the tickers it begins to develop a “Heat map”, which is essentially a peer comparison of the companies. The program pulls investment criteria such as 5-year average return on equity, cash per share, and net-current asset value from Yahoo! Finance and Forbes.com for each company. Once it has retrieved all the information it populates the heat map so that the companies can be easily compared as seen in the screenshot. In my tests the tool generally returns approximately twenty companies and takes nearly ten minutes (on my slow home internet) to run. Although ten minutes may seem like a tediously long time, this is miniscule in comparison to the time it would take to search out and compare all these stocks one at a time.

Learning and Conceptual Difficulties

As mentioned earlier, the original project design included screening the entire universe using Excel. I quickly realized this would be difficult and slow. However, before I began using the E*trade screening tool I first wanted to use Google’s stock screening program. Using Google’s filter would negate the need for the user to have an E*Trade account. After several attempts at manipulating Google’s webpage and consulting with Professor Allen we realized this would be a long and possibly fruitless process. It was at that point that I decided to switch to E*Trade’s stock screener for the initial filter process. Another obstacle I faced in designing the macros developed when some companies did not have all the data I was looking for. As an example, not all companies pay dividends, so attempting to calculate a dividend yield for companies that did not pay a dividend yield would trip up the program. I tried to work around the problem but struggled to find a solution so I spoke with Professor Allen. He helped me create an IF statement that would allow all companies to continue to be filtered through my loop the same way but skip over criteria that specific companies may not share.

Conclusion

I have already found this stock screening tool to be useful, and some of the things I learned while building it can be applied to the on-campus internship tools to improve their functionality. It took a long time to build out the code for this tool, but the end product was worthwhile and completing it was rewarding.