

A black and white photograph of a narrow, cobblestone alleyway between stone walls. A small window with a decorative frame is visible on the right wall, and a hanging lantern is positioned above it. The alleyway leads into the distance, creating a sense of depth.

The ModernGraham

Industry Review

ModernGraham Industry Review Report

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LETTER FROM THE EDITOR

Dear Reader,

Thank you for downloading this month's edition of the ModernGraham Industry Review Report. I hope this will be a useful resource for you as you do your own research (please remember to consult a registered broker or investment advisor before making any investment decisions). On ModernGraham, I review approximately 900 different companies, including all thirty components of the Dow Jones Industrial Average and all of the S&P 500.

Inside these pages you will find the companies which are associated with the Chemicals Industry. ModernGraham is a site devoted to the study and modernization of Benjamin Graham's value investing methods. The requirements for Defensive Investors (an investor not able to do substantial research) and Enterprising Investors (an investor willing to take on more risk by doing substantial research) are taken from Graham's book The Intelligent Investor. The valuation model has also been taken from the same book.

As part of the valuation process, each company is given a grade on a scale from A to F, based on factors such as: price-to-intrinsic-value, price-to-earnings, dividend history and rate, discount-to-Graham-Number, and more.

I find it a pleasure to research companies following Graham's methods, remain disciplined in my personal portfolio, and explore my own passion for investing. I hope you are able to do the same.

If you have any comments regarding this eBook, feel free to send me a note at ben@moderngraham.com.

Thank you again for taking the time to download this eBook, and I hope you return next month!

Benjamin Clark
ModernGraham.com

REQUIREMENTS FOR DEFENSIVE INVESTORS

To be considered by the Defensive Investor, a company must pass at least 6 of the following 7 tests.

1. Adequate Size of Enterprise - market capitalization of at least \$2 billion
2. Sufficiently Strong Financial Condition - current ratio greater than 2
3. Earnings Stability - positive earnings per share for at least 10 straight years
4. Dividend Record - has paid a dividend for at least 10 straight years
5. Earnings Growth - earnings per share has increased by at least 1/3 over the last 10 years using 3 year averages at beginning and end of period
6. Moderate PEmg ratio - PEmg is less than 20
7. Moderate Price to Assets - PB ratio is less than 2.5 or PB x PEmg is less than 50

Note: If the company is a financial or insurance company, test #2 regarding the financial condition is not required; however, the company must pass all six of the remaining tests.

REQUIREMENTS FOR ENTERPRISING INVESTORS

To be considered by the Enterprising Investor, a company must pass at least 4 of the following 5 tests.

1. Sufficiently Strong Financial Condition, Part 1 - current ratio greater than 1.5
2. Sufficiently Strong Financial Condition, Part 2 - Debt to Net Current Assets ratio less than 1.1
3. Earnings Stability - positive earnings per share for at least 5 years
4. Dividend Record - currently pays a dividend
5. Earnings growth - EPSmg greater than 5 years ago

Note: If the company is a financial or insurance company, tests #1 and #2 regarding the financial condition are not required; however, the company must pass all three of the remaining tests.

GUIDE TO READING THE TABLES

In the “Investor Type” column, a “D” indicates the company passes the requirements for the Defensive Investor; an “E” indicates the company passes the requirements for the Enterprising Investor; and an “S” indicates the company does not qualify for either the Defensive or Enterprising Investor and should be considered speculative at this time.

To navigate to the latest ModernGraham valuation of the company, find the company in the list of companies, and click on the name.

THE GRADING SYSTEM

I've often said that the ModernGraham approach is a three-stage method of evaluating investment opportunities. Stage One involves looking at the financial statements to determine if the company is suitable for your investor type. In The Intelligent Investor, Graham provided lists of recommended traits of companies that would be suitable for the Defensive Investor and the Enterprising Investor.

I've utilized those in developing the Stage One requirements for the ModernGraham approach. Stage Two involves estimating the intrinsic value using the ModernGraham formula. Stage Three is to conduct further research to determine if the company fits the individual investor's situation.

There are some key qualities that should be utilized in Stage Three, and the purpose of the ModernGraham Grading System is to simplify those qualities in a way that allows quick screening and comparison between opportunities. Here is a brief look at the qualities considered by the Grading System.

QUALITIES OF STRONG INVESTING OPPORTUNITIES

INVESTOR TYPE

Determining a company's investor type remains a key variable in analyzing a company. Why? Well, for one reason, the entire ModernGraham website is devoted to studying Benjamin Graham's methods and modernizing them for today's environment. Graham considered his requirements to be so key to an investor's research that he devoted multiple chapters of his book to the subject. It would be a disservice to his legacy to move away from that area.

As a result, I believe that whether a company is suitable for the Defensive Investor or the Enterprising Investor should play a significant role in whether a company is considered a good investment opportunity for Intelligent Investors.

MG VALUE

Despite some of the drawbacks of the ModernGraham Valuation Formula, one of the key tenets of Graham Investing is to compare the price to the intrinsic value. Further, there are significant long-term benefits for finding companies when they are undervalued. So, this is another factor that should remain a key consideration when looking at an investment opportunity.

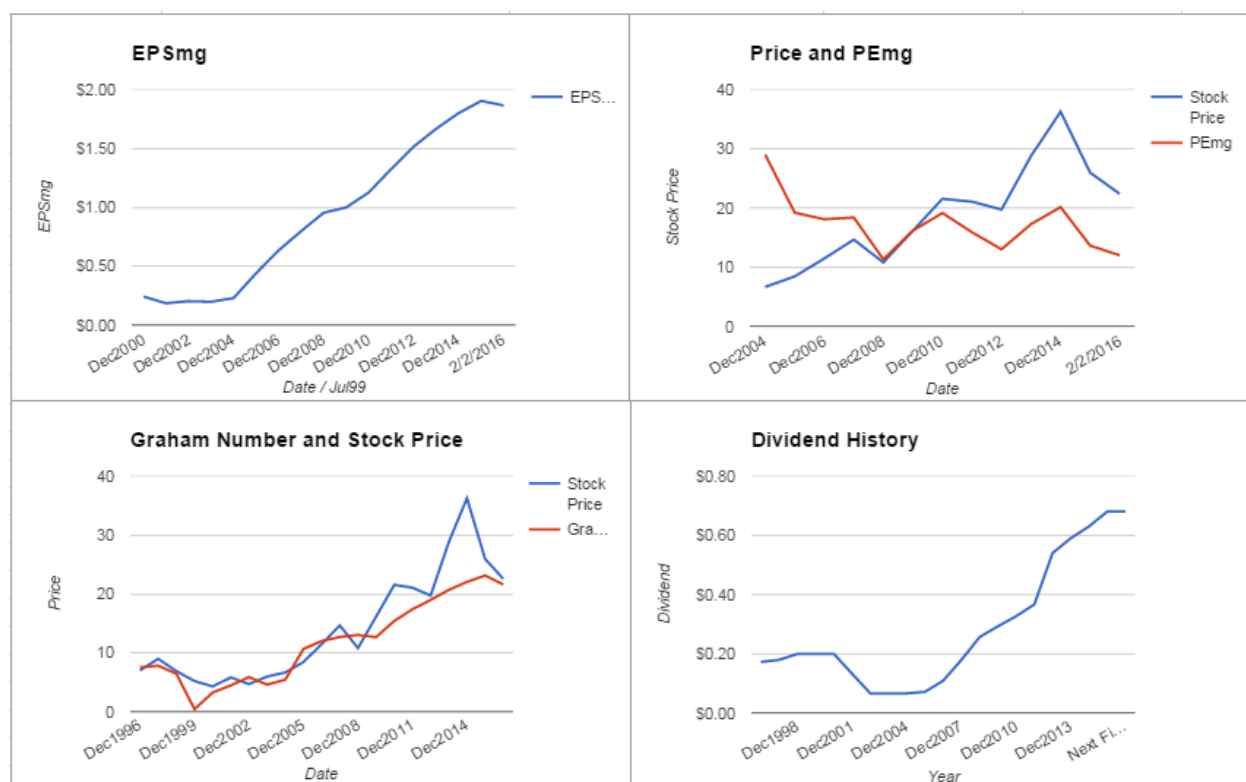
GRAHAM NUMBER

The Graham Number is a common approach used by many investors following Graham's techniques because it is an easy way to determine if a company meets some of Graham's most highly regarded requirements for investors. Buying companies that are trading below their Graham Number has

been proven to have results that generally beat the indexes. For reference, here is the Graham Number:

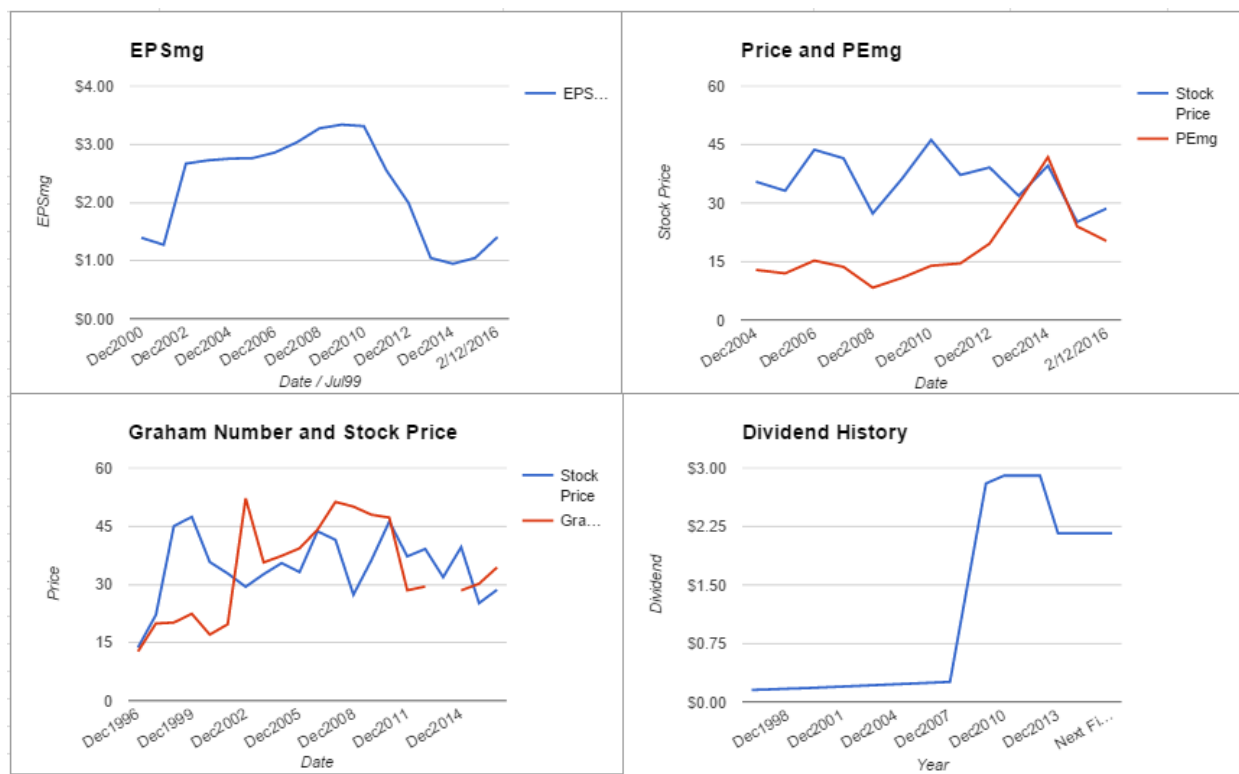
$$Price \leq \sqrt{22.5 \times EPS \times BPS}$$

Similar to how I've been watching my MG Value compared to Price charts for the last several months, I've also been watching a chart I provide that shows the Price compared to the Graham Number. Take a look at this next chart (bottom left in the image), which shows the Graham Number and Price of CSX Corporation (CSX) over the last twenty years.

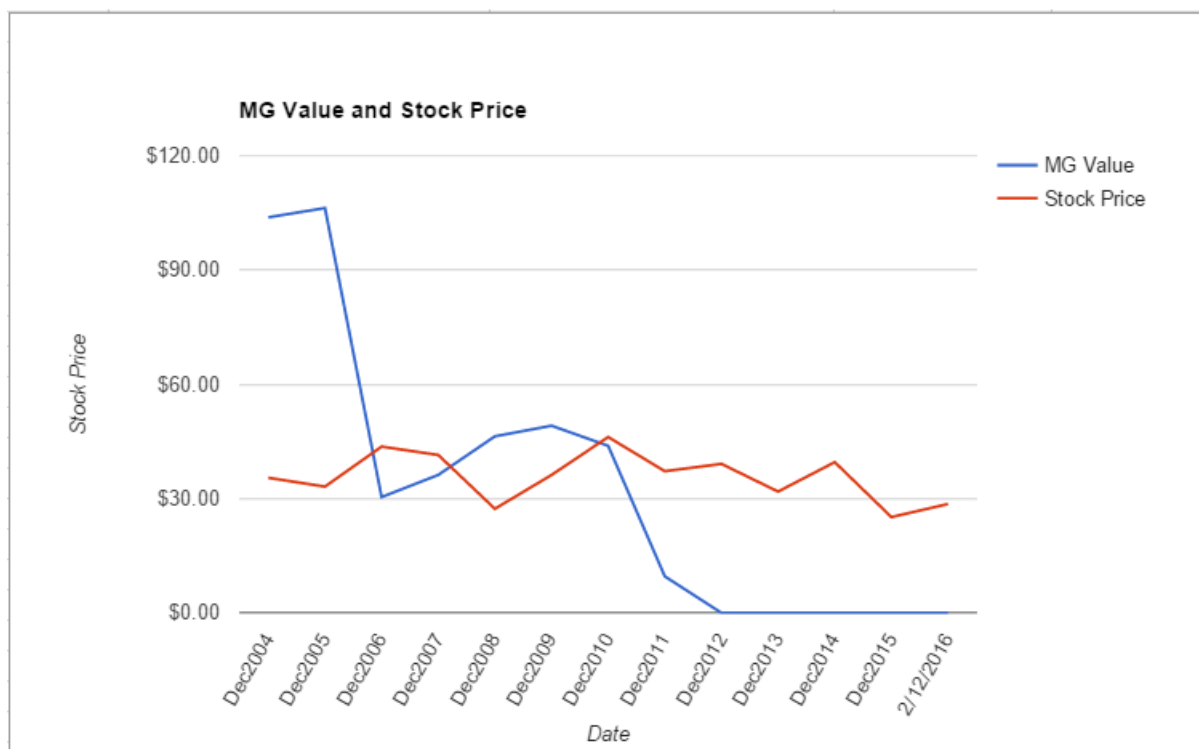


Throughout most of the period, the Price remains above the Graham Number, except for a couple of times. First, somewhere around 2003, next around 2006, and again in 2009. Each of these periods look like they would have been a good time to buy and hold the company. For what it's worth, the company was considered undervalued throughout that time frame.

However, the Graham Number doesn't work perfectly by itself. This next chart shows the data for CenturyLink Inc (CTL) over the twenty-year period.



Over that time, the price was below the Graham Number at several points and there does not seem to be any predictive value. What's most interesting is to look at the chart of CenturyLink's MG Value compared to the Stock Price during some of the same time period:



The company was overvalued most of that time, with the exception of the period of 2008-2010, and I should also note the company is not considered suitable for either the Defensive Investor or the Enterprising Investor. CSX Corporation, on the other hand, is suitable for Defensive Investors. Therefore, an argument could be made that the Graham Number is most effective when utilized as an additional consideration in conjunction with other factors, rather than a sort of "magic" approach.

As a result, it does seem like the Graham Number can be a factor in determining whether the timing of a potential purchase is good, and one of the additional traits that will now be considered in a ModernGraham Valuation is the Graham Number.

DIVIDEND GROWTH & YIELD

Dividends are a key ingredient in any true intelligent investor's approach to equities. Benjamin Graham put it best by saying that "an investment operation is one which, upon thorough analysis promises safety of principal and an adequate return." ([The Intelligent Investor](#), Chapter One). One method of providing an adequate return is through the payment of dividends. Dividends provide the investor with a tangible return independent of potential capital returns. In addition, a long-term record of consistent payment of dividends demonstrates a business operation which could provide assurance to the investor of a continued and regular return on the investment.

Dividend growth is another important consideration that has the potential to have a significant impact on an investor who takes a buy and hold approach. For example, using an example from [Arbor Investment Planner](#), consider a company that pays a dividend of \$4 per share which grows at a 3% annual rate, and a stock price of \$100 per share on day 1 (in other words, a 4% dividend yield at the time of investment). After ten years, that dividend would have grown to \$5.22, after twenty years it would have grown to \$7.01 per share, and after fifty years, it would grow to a whopping \$17.02 per share. That means that if a 22-year-old purchased 100 shares at \$100 per share for a total investment of \$10,000, then at age 72 those 100 shares would be generating \$1700 *per year* in income. And that doesn't even take into account any growth in the stock price or reinvestment of the dividends paid during those 50 years. If you did take that into account, the total value would be \$2,945,703 and the annual income would be \$114,357.38!

Therefore, dividend yield as well as a history of dividend growth are two strong factors to consider when looking at investment opportunities.

LOW PEMG

Using a company's Price to Earnings (PE) ratio as a valuation metric is a well-known approach with favorable results dating back throughout history. The ModernGraham approach is to utilize normalized earnings as the denominator, thus what I call the PEMg ratio is calculated as the price over normalized earnings. But how does one determine whether a company's PEMg ratio is

low? There are two simple ways: (1) set an arbitrary maximum PEmg ratio when selecting potential companies, and (2) compare the company's PEmg ratio to its peers.

The first approach is incorporated in the ModernGraham approach through the factors leading to the determination of whether a company is suitable for the two investor types. The Defensive Investor has a maximum level of the PEmg ratio that a company must be below in order to qualify for further consideration. Since the investor type is already listed as one of the qualities here, a maximum PEmg ratio need not be considered as an independent quality.

The second approach, on the other hand, is something I have not incorporated into the ModernGraham approach in the past. The main reason is because I prefer to use a bottom up approach to investing whereby individual companies are compared to other companies regardless of industry. This is in contrast to the top down approach to investing whereby an investment is chosen by first selecting the industry one believes to be undervalued, then a company within the industry. I like a bottom up approach better because it eliminates one speculative factor from the equation. But that's a discussion for another day.

Going forward, I think it would be useful to put some weight on how a company's price relates to its earnings when compared to its peers. Such an approach would still support a bottom up stock selection strategy, but add a layer of analysis that may be useful in selecting the top candidates for investment.

NET CURRENT ASSET VALUE

The Net Current Asset Value approach to investing is arguably the most famous of all Graham's techniques. The Net Current Asset Value is calculated by taking a company's current assets and subtracting all liabilities, then dividing by the number of outstanding shares. In essence, a company trading below its Net Current Asset Value therefore could be purchased by investors, all liabilities could be paid off with the company's cash, and there would still be cash leftover to distribute to the investors at a net profit.

Companies that fit this quality are of a special nature and are usually extremely depressed in price. It's likely that the market has some significant justifications for bringing the price down, but rationally very few, if any, companies should remain in existence if the price is this low. It just would make more sense for investors to take over and liquidate. That said, just like everything else, sometimes the results don't turn out the way a rational investor would expect. Therefore, this can't be a singular deciding factor.

MODERN GRAHAM GRADING SYSTEM

The grading system is based on a traditional U.S. school grade. In other words, the highest grade attainable is an A+ while the lowest grade possible is an F. The weights I apply to each quality may change over time as I continue to tweak things, but as of now, the following points will be allocated to a company for meeting each criteria:

Quality	Points
Suitable for Defensive Investor	2
Suitable for Enterprising Investor	1.5
Undervalued by MG Valuation Formula	1
Fairly Valued by MG Valuation Formula	0.5
Stock Price Below Graham Number	1
20 Years of Consistent Dividend Growth	1
Dividend Yield Above 2%	0.5
Low P/E Ratio Compared to Industry Average	0.5
Price Below Net Current Asset Value	3

The company's grade is based on the number of points it receives, according to the following table. The maximum number of points a company could theoretically achieve is 9, though a more rational maximum is 6 (since it is unlikely a company trading below its Net Current Asset Value would also meet every other quality).

Grade	Score Required
A+	5.5
A	5
A-	4.5
B+	4
B	3.5
B-	3
C+	2.5
C	2
C-	1.5
D+	1
D	0.5
F	0

INDUSTRY OVERVIEW

Total Companies in Industry (covered by ModernGraham)	19
Suitable for Defensive Investors	1
Suitable for Enterprising Investors	7
Speculative Companies	11
Undervalued Companies	3
Fairly Valued Companies	3
Overvalued Companies	13
Average PEmg Ratio	26.77
Average Price / MG Value	936.51%
Average Price / MG Value – Excluding outliers over 500%	182.04%
Average Price / MG Value – Excluding outliers over 200%	97.10%
Average Dividend Yield	1.84%
Average Beta	1.2

The Chemicals Industry overall would seem to be overvalued at this time, based on the relatively high Average Price / MG Value. However, it is interesting to note that the industry's average PEmg ratio of 26.77 is below the average of the entire MG Universe, which is 28.57 as of this writing.

In addition, there are still three companies that are undervalued by the current market, indicating that investors seeking to put some money in the Chemicals Industry could potentially find opportunities for profit.

This is where the MG Grading System should play a role, as there are four companies in the industry which currently receive a B grade or higher. While none of the companies achieve the coveted A rating, a B rating is still respectable.

THE INDUSTRY

Ticker	Name with Link	Latest Valuation Date	Current MG Grade	Investor Type	MG Value	Recent Price	Price as a percent of Value	PEmg Ratio	Div. Yield	Consecutive Years of Dividend Growth	Graham Number	Beta	NCAV
ALB	Albemarle Corporation	3/8/2018	C-	S	\$24.19	\$101.76	420.67%	31.31	1.26%	20	\$57.36	1.6	-\$14.25
APD	Air Products & Chemicals, Inc.	3/9/2018	B+	E	\$191.64	\$171.10	89.28%	22.34	2.17%	20	\$85.60	1.2	-\$11.97
ASH	Ashland Global Holdings Inc.	3/9/2018	F	S	\$0.00	\$72.62	N/A	42.97	1.69%	0	\$60.19	1.1	-\$53.10
CMP	Compass Minerals International, Inc.	3/9/2018	D+	S	\$0.00	\$63.30	N/A	19.18	4.55%	14	\$36.29	0.7	-\$33.67
DWDP	DowDuPont Inc	2/23/2018	C+	E	\$57.55	\$72.23	125.51%	22.36	2.44%	0	\$60.71	#N/A	-\$17.88
EMN	Eastman Chemical Company	3/2/2018	B	D	\$188.21	\$109.29	58.07%	14.21	1.91%	8	\$84.49	1.3	-\$53.31
FMC	FMC Corp	3/9/2018	C+	E	\$100.52	\$83.55	83.12%	22.10	0.79%	0	\$48.75	1.6	-\$21.36
GPRE	Green Plains Inc	3/7/2018	D	S	\$0.00	\$19.05	N/A	35.94	2.52%	5	\$0.00	1.4	-\$13.01
IPHS	Innophos Holdings, Inc.	3/9/2018	D+	S	\$0.41	\$43.43	10592.68%	20.98	4.42%	0	\$32.51	0.8	-\$7.63
KOP	Koppers Holdings Inc.	3/8/2018	F	S	\$22.46	\$43.60	194.12%	33.80	0.00%	0	\$19.44	0.9	-\$26.72
KRA	Kraton Corp	3/8/2018	C-	S	\$99.36	\$46.32	46.62%	17.95	0.00%	0	\$38.96	1.3	-\$49.66
KWR	Quaker Chemical Corp	3/8/2018	C-	E	\$26.90	\$157.99	587.32%	41.80	0.89%	10	\$58.41	1.3	\$6.94
LYB	LyondellBasell Industries NV	3/2/2018	B	E	\$255.65	\$112.28	43.92%	11.52	3.16%	7	\$66.06	1.1	-\$13.94
NGVT	Ingevity Corp	3/7/2018	C	E	\$94.09	\$81.49	86.61%	33.40	0.00%	0	\$20.88	#N/A	-\$6.98
OLN	Olin Corporation	3/9/2018	D+	S	\$6.67	\$33.01	494.90%	20.76	2.42%	0	\$26.61	1.4	-\$28.13

Ticker	Name with Link	Latest Valuation Date	Current MG Grade	Investor Type	MG Value	Recent Price	Price as a percent of Value	PEmg Ratio	Div. Yield	Consecutive Years of Dividend Growth	Graham Number	Beta	NCAV
POL	PolyOne Corporation	3/7/2018	F	S	\$6.55	\$44.75	683.21%	34.42	1.30%	7	\$20.37	1.7	-\$12.76
PX	Praxair, Inc.	3/7/2018	C-	S	\$40.53	\$160.09	394.99%	29.65	1.97%	20	\$54.63	1.1	-\$38.27
SHLM	A Schulman Inc	3/9/2018	F	S	\$0.00	\$43.70	N/A	N/A	1.88%	0	\$17.77	1.3	-\$25.41
SXT	Sensient Technologies Corporation	3/8/2018	C	E	\$50.96	\$74.75	146.68%	27.08	1.65%	12	\$40.61	0.9	-\$3.19

Thank you for reading this eBook. If you enjoyed it, please take a moment to leave a review.

Thanks!

Benjamin Clark

ABOUT MODERNGRAHAM

ModernGraham.com started with a simple discussion about Benjamin Graham's The Intelligent Investor and its continued relevance today. After the discussion, Benjamin Clark studied the methods put forward by Graham and modified them slightly to meet the needs and conditions of the current market. When it was determined that strictly following a modernized set of rules based on Graham's original investing strategies would lead to low risk and high return portfolios, Benjamin Clark and Jonathon Ritchie decided to start a blog to discuss these findings with other intelligent investors. The site was developed and officially launched in August of 2006.

ABOUT BENJAMIN CLARK

Benjamin graduated cum laude with his J.D. from DePaul University College of Law, and also received a Certificate in Taxation. He passed the Illinois Bar Exam in July 2013 and is licensed to practice law in Illinois. He also holds a Bachelor of Science in Finance (Honors) from DePaul University College of Commerce. In addition to ModernGraham, his writing has been featured on Gurufocus.com, Talkmarkets.com, TheStreet.com, and SeekingAlpha.com.

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