3M Science. Applied to Life.™

INVESTMENT ANALYSIS REPORT

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Equity Recommendation: BUY

Bond Recommendation: DON'T BUY

Price (Market Close 11/17/2020): $173.64

52-week Price Range: $114.04 – $182.55

Market Cap (billions): $100.16

NOVEMBER 18, 2020
INVESTMENT ANALYSIS
PROFESSOR HOFFMAN

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Introduction/Background

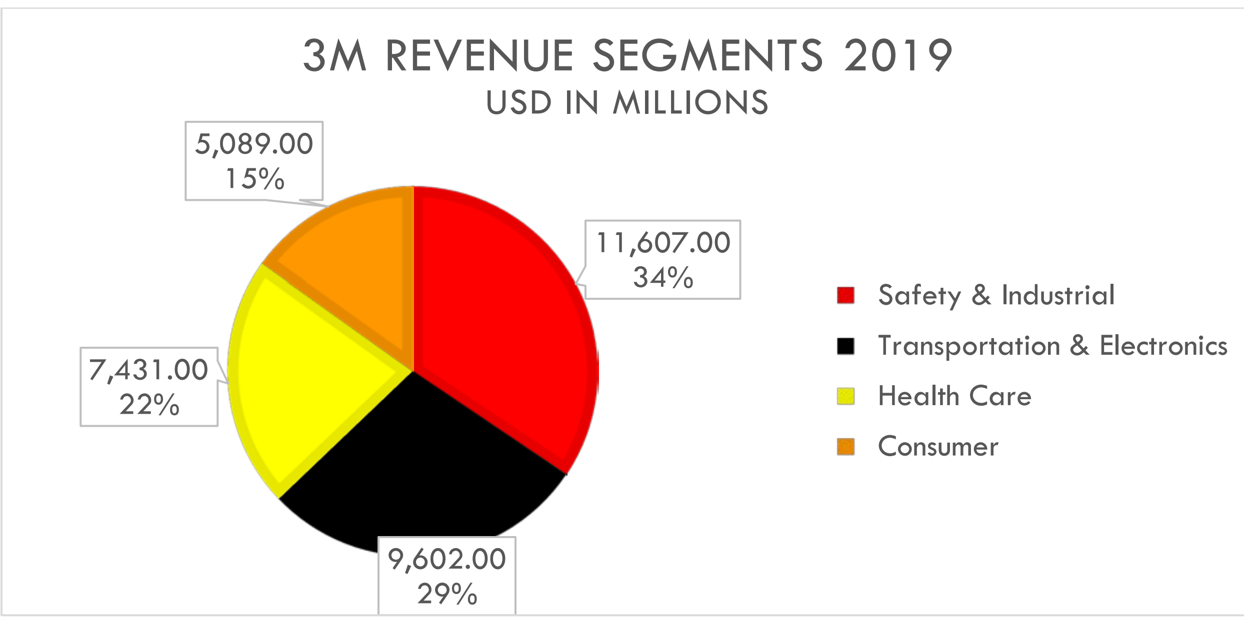
Company History

The 3M Company ("3M", NYSE: MMM) is a highly diversified technology-centric company with a significant presence worldwide. 3M is headquartered in Saint Paul, Minnesota. The current CEO of 3M is Mike Roman, who initially took the position in July of 2018. Founded in 1902, the multinational conglomerate has since expanded its operations through 75 acquisitions, most notably CUNO in 2005, Federal Signal Technologies in 2012, M*Modal in 2018, and most recently, Acelity in 2019.

The 3M Company operates with four main business segments: Safety and Industrial, Transportation and Electronics, Health Care, and Consumer. The Safety and Industrial segment consists of personal safety, industrial adhesives and tapes, abrasives, closure and masking systems, electrical markets, automotive aftermarket, and roofing granules. The Transportation and Electronics segment consists of electronic materials and systems, automotive, aerospace, commercial solutions, and advanced materials and transportation safety. The Health Care segment consists of surgical supplies, skin health products, oral care products, health information systems, drug delivery systems, and food safety products. The Consumer segment houses home improvement products, general office supplies, and retail home care products.

Industry Overview

3M is involved in several different industries, including chemicals, manufacturing, pharmaceuticals, and other consumer products. Teflon was one of the earliest products manufactured by 3M since its founding in 1902. 3M has 4 primary revenue streams: Safety and Industrial, Transportation and Electronics, Health Care, and Consumer. The breakdown of each revenue stream is as follows (as of FY2019):



Safety and Industrial Business: $11.607 billion

a) Personal safety: $3.508 billion
b) Adhesives and tape: $2.737 billion
c) Abrasives: $1.414 billion
d) Automotive aftermarket: $1.243 billion
e) Electrical markets: $1.200 billion
f) Closure and masking system: $1.111 billion
g) Roofing granules: $0.366 billion
h) Other: $0.028 billion

Transportation and Electronics Business: $9.602 billion

a) Electronics: $3.710 billion
b) Automotive and aerospace: $1.943 billion
c) Commercial solutions: $1.760 billion
d) Advanced materials: $1.246 billion
e) Transportation safety: $0.949 billion
f) Other: ($0.006) billion

Health Care Business: $7.431 billion

a) Medical solutions: $3.406 billion
b) Oral care: $1.321 billion
c) Health information: $1.177 billion
d) Separation and purification: $0.790 billion
e) Drug delivery: $0.406 billion
f) Food safety: $0.341 billion
g) Other: ($0.010) billion

Consumer Business: $5.089 billion

a) Home improvement: $2.305 billion
b) Stationary and office: $1.373 billion
c) Home care: $0.991 billion
d) Consumer healthcare: $0.383 billion
e) Other: $0.037 billion

INDUSTRY: (Diversified) Industrials

3M is one of the largest corporations within Diversified Industrials (in many cases, this can also be classified simply as “Industrials”). 3M has continued to be one of the industry’s largest companies since the early 20th century.

The industry has been facing financial difficulties. The industry's year-over-year sales growth is currently -1.85%, its EBITDA margin is 19.93%, and its estimated P/E ratio for the current year is 27.82. These metrics all declined due to the COVID pandemic.

However, most companies within the industry have sufficient liquidity to weather the downturn caused by the pandemic, given the stability of revenues and the relatively inelastic demand of the products produced by companies within the industry. Capital spending, M&A, and stock buyback programs all significantly decreased due to the pandemic as well, with an estimated economic recovery expected not before 2021, a timeframe mainly determined from the industry's recovery period from the 2008 Recession. 3M is well-poised in terms of market risk due to its heavy investments in the healthcare and defense sectors. However, its market stronghold in transportation, building systems, controls and construction, and industrial, factory automation equipment have suffered heavy losses during the pandemic and continue to do so. 3M is poised for a better-than-average 4Q comeback due to its heavy healthcare investments, especially in personal protective equipment (PPE) production.

Company	Commercial Aerospace	Power, Energy, Processing	Transportation	Building Systems, Controls & Construction	Industrial, Factory Automation Equip.	Electronics, Devices & Consumer Goods	Healthcare	Defense
EMR		60%		34%	6%			
ETN	7%		21%	62%	2%			5%
FTV		3%	44%		5%		13%	
GE	33%	39%					23%	5%
HON	24%	8%		16%	32%		6%	15%
ITW			22%	12%	12%	55%		
JCI				96%	5%			
MMM			9%	12%	17%	16%	38%	
PH	12%							6%
ROK		40%			30%	5%	5%	
SWK			11%	58%	15%		2%	
TT				96%				

Note: Parker Hannifin's Diversified Industrials segment is too broad based to determine meaningful end-market impact.
Fortive reflects sales that could be allocated to end markets and does not add up to 100% of sales; most other companies approach 100%.

Company's Economic Moat

3M properly constructed and executed a playbook to give them several advantages in the industry.

Diversified Revenue

3M generates revenue from sales of about 55,000 products across their four main business segments: Safety and Industrial, Transportation and Electronics, Health Care, and Consumer Products. The company also puts a heavy emphasis on investment into Research and Development, with a total of $1.9 billion being invested in 2019. This focus on expanding diversification gives 3M a less risky revenue stream.

Signs of Strong Growth

3M has shown signs of strong growth year after year. For one, 3M has had steadily increasing Free Cash Flow year-over-year. 3M has also been able to consistently increase its dividend for the past 61 years.

Meaningful Economies of Scale

3M has the size and resources that allow the company to adapt production and scale quickly. Most recently, this ability was seen when it came to respirator production. In the first six months of 2020, 3M supplied 800 million respirators around the world. The company is also looking to further increase global respirator production, targeting a capacity of over 2 billion by the end of the year.

Competitive Analysis

3M holds a major piece of the diversified industry sector (~33B/503B revenue) but still needs to contend with some major competitors. The largest ones include household names such as General Electric (~95B revenue), Honeywell (~36B revenue), Siemens (~87B revenue), Corning (~11B revenue), and Emerson (~18B revenue).

The four main businesses 3M exists in are Safety and Industrial, Transportation and Electronics, Health Care, and Consumer. In Safety and Industrial, all the listed businesses compete heavily in the space. With Transportation and Electronics and Health Care, General Electric, Siemens, and Honeywell compete with 3M the most in the space (Honeywell's business for Transportation spun off to Garrett Motion, which is now bankrupt), but the other businesses listed have some type of business in the sector. 3M's Health Care business competes heavily with Siemens, GE, and Honeywell. In Consumer, all companies exist in that space and compete heavily with many products.

As shown above, the diversified industrials sector has a large amount of competition, with numerous industrial conglomerates existing in the space. However, 3M has positioned itself well in the industry with staple products and a competitive business outlook. The table below shows the relative valuation of the aforementioned companies on selected metrics:

As of market close, 11/17/2020

	Market Cap (USD)	Price/Earnings (PE)	Current EV/ TTM EBITDA	Dividend Yield (12M)	ROE
3M	100.16 B	18.70	12.80	3.36%	43.76%
GE	84.80 B	27.50	4.83	0.42%	12.38%
Honeywell	144.08 B	29.43	19.97	1.73%	27.71%
Siemens	107.57 B	22.64	9.69	3.12%	9.45%
Corning	27.87 B	26.74	17.18	2.33%	2.25%
Emerson	45.65 B	23.58	14.79	2.55%	23.80%

Strengths

- One of the top producers of PPE in America (N95 Masks, etc.)
- Generates a significant amount of net profit
- Global reach with a diverse product offering

Weaknesses

- Expansive company focusing on a lot of different segments, hard to get the entire company on the same page
- May operate on a slower basis compared to other companies with specific purposes to solve solutions 3M is trying to solve
- Negative revenue growth over the past few years

Opportunities

- With the large amount of free cash flow, can easily invest into other companies (M&A) or new projects with little risk
- Investment into the electric vehicle market (EV)

Threats

- Other companies are producing a lot of PPE as well (Ansell, Honeywell, etc).
- Producing in a crowded space, constant competition with multiple firms

Porters' 5 Forces

Threat of new entrants

Involved in a large amount of productions, new entrants are a constant threat.
Well-funded startups and single-specific purpose companies can heavily hurt 3M's bottom line.

Threat of substitutes

PPE & other products 3M makes, so do a considerable amount of other companies make
Honeywell, General Electric, and Emerson are 3M's top competitors. There is a serious threat of substitutes in many of 3M's product lines.

Competitive rivalry

Many competitors in the diversified industrials industry such as Honeywell & GE.
3M makes up only ~33 of the 503 billion annual revenue
Many of the companies make similar products which makes it a very competitive industry.

Bargaining power of suppliers

A plethora of suppliers have contracts with 3M. Rare that they will be in a dominant position and be able to demand a higher price

Bargaining power of customers

Other companies are producing a serious amount of PPE & similar products as well (Ansell, Honeywell, etc).
Due to so other companies producing the same or similar products, buyers have relatively high bargaining power

Conclusion/Recommendation

Major Shareholders

Several investment management companies believe in 3M for the long-run, hence their significant stock holdings:

- The Vanguard Group, Inc. 7.50%
- State Street Global Advisors 7.25%
- BlackRock Fund Advisors 5.88%

In total, these investment managers own 20.63% of 3M.

Management Ownership

Inge Thulin, the Executive Chair of the Board at 3M, and former President and CEO from 2012- 2018, owns .27% of 3M and is its largest insider holder, with a $250 million market value. The second-largest insider holder is Edward Liddy, a board member of 3M, who holds almost 60,000 shares (.01% of the company), with a market value of just under $10 million. Mike Roman, the current CEO and Chairman of the Board of 3M, is the third-largest insider holder, with almost 50,000 shares (.01% of the company), worth about $8 million.

Composition of Revenues & Margins Analysis

Operating Profit Margin

2015	2016	2017	2018	2019	LTM
22.90%	23.30%	24.70%	22.00%	19.20%	22.90%

Industrial Conglomerates, as classified by the GICS, have a median Operating Margin (TTM) of 9.46%. 3M's margins have consistently been more than twice that. Their margins imply they can operate efficiently in comparison to the industry as a whole by keeping selling, general and administrative costs of running their business low by industry standards.

Net Profit Margin

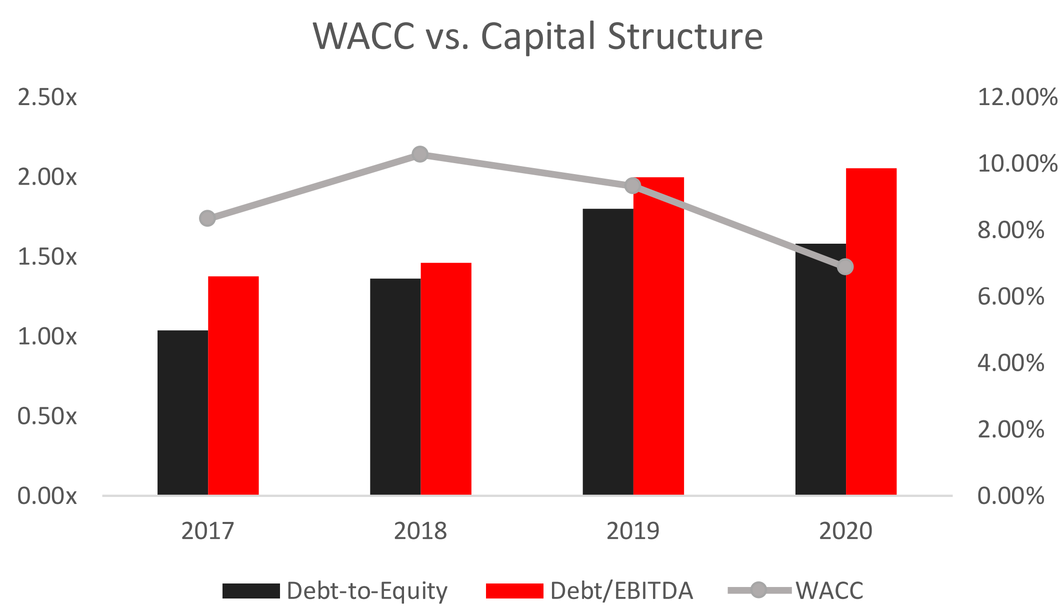
2015	2016	2017	2018	2019	LTM
16.00%	16.80%	15.30%	16.30%	14.20%	15.70%

The median Net Profit Margin (TTM) for industrial conglomerates, as classified by the GICS, was 6.71%. 3M's Net Profit Margins have been much higher than 6.71% and have been more than twice that.

Capital Structure

3M uses leverage to its advantage to minimize its cost of capital. Its weighted average cost of capital (WACC) has fallen in the last year from 9.3% to 6.6%, while overall leverage has increased. 3M's debt to equity ratio has increased from 1.36 to 1.73 in the last fiscal year, showing that the company prefers to issue debt financing for business operations and growth projects. 3M has lowered its WACC by taking advantage of cheap borrowing costs and increasing its leverage.

It is important to note that many companies have experienced a similar peak in their WACC in 2018 and a subsequent decline in the following years. In 2018, the yield on the 10-year Treasury note peaked at 3.24%, raising the cost of equity for most companies. With the yield currently at 96 basis points and the Fed Funds rate's target range at zero to 25 basis points, many companies have seen a downward trend in their WACC since 2018, regardless of capital structure changes. Regardless of the downward trend in interest rates, 3M appears to be moving towards its optimal capital structure as it has increased its leverage.



Debt to EBITDA, or total leverage, has increased from 1.52x to 2.26x from 2018 to 2020, which is still lower than the industry average of 2.80. Historically, 3M has operated at lower leverage than its peers, but after issuing $500 million in debt to acquire Acelity, its leverage is now in line with the industry. Despite operating at 2.26x levered, 3M still generates an interest coverage of 18.02x. 3M can increase its leverage without struggling to afford its interest payments. However, after issuing $6 billion in senior unsecured debt during the COVID-19 pandemic, the company will likely avoid issuing debt to fund business operations in the near future. By freezing its share buyback program in 2020, 3M can sustain its dividend growth through the pandemic by drawing on its large retained earnings balance. Internally funding its dividend program allows 3M to avoid adding unnecessary strain on its balance sheet and debt-service coverage.

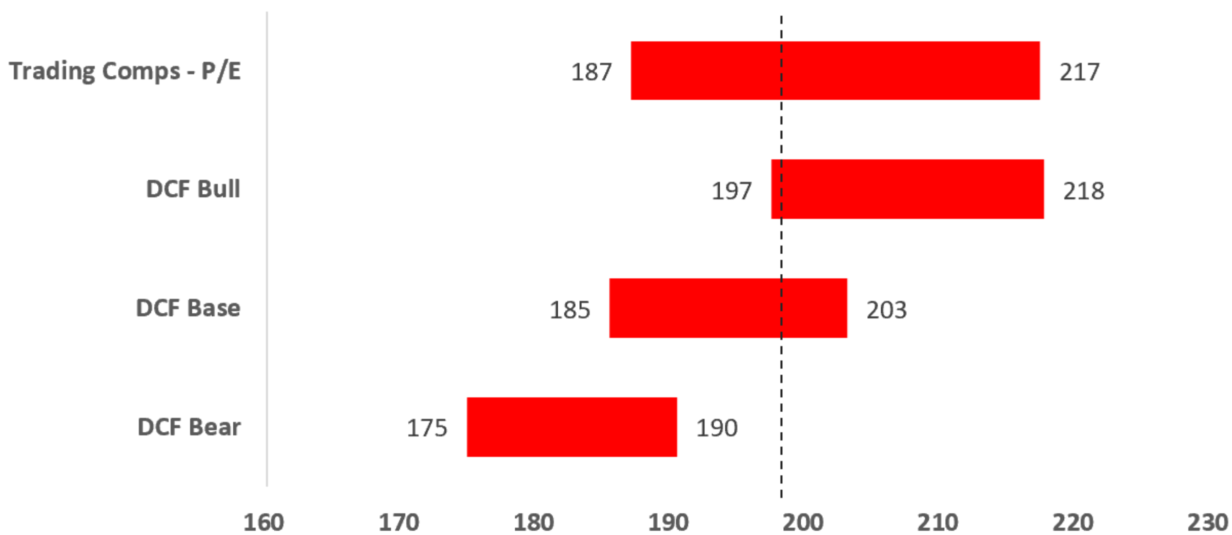
3M's WACC has fallen to 6.60% with a return on invested capital of 14.03%, yielding an economic value-added spread of 7.43%. In the same period, 3M's closest competitors have underperformed in comparison, likely due to less optimal capital structures. For example, Honeywell has a WACC of 8.4% with a return on invested capital of 9.92%, yielding an economic value-added spread of only 1.48%. 3M still generates a significantly higher ROIC than its peers, even after it was negatively impacted by the company's increasing cash balance in anticipation of the Acelity deal. Despite its decline in ROIC from its peak above 17.5%, 3M has effectively used its leverage to create value for future growth.

Honeywell has a lower capex intensity of 2.8% of sales than the 4.48% of 3M. With an EBITDA less capex interest coverage of 14.23x, 3M still has no problem covering its interest payments even after accounting for its largest true cash expense. This analysis indicates that 3M has more effectively used the lower interest rate environment to invest in growth projects, generating a higher return on invested capital than many of its peers.

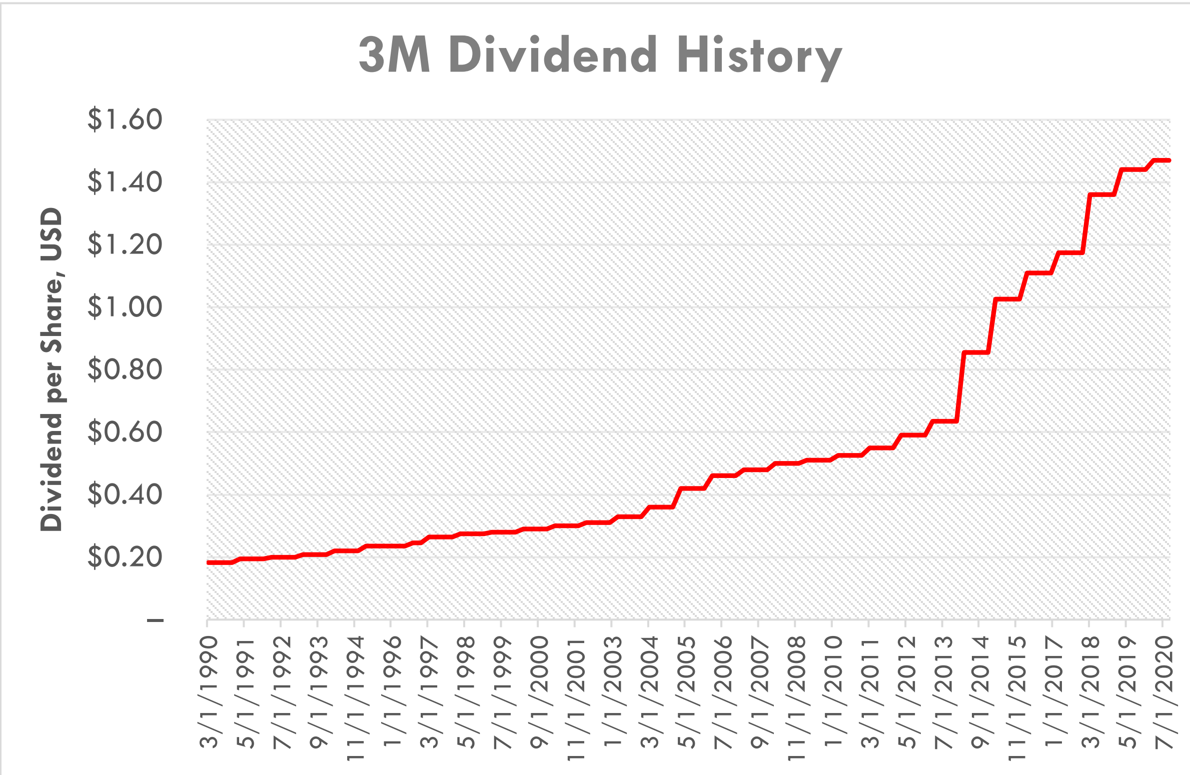
Equity Analysis

After using intrinsic and relative valuation, 3M's equity appears to be undervalued. Using a DCF valuation with a hybrid of both an exit multiple and perpetuity growth, intrinsic valuation generated a price target range from $175 in the bear case to $217 in the bull case. The DCF assumed a 1.75% perpetuity growth and a 21.1x P/FCF exit multiple. Since 3M trades on the lower end of its peers on most multiples, relative valuation using trading comps yielded a price target range of $187 to $217. We see a 3% upside in the bear case, 17% upside in the base case, and a 28% upside in the bull case.

With its EBITDA margin expanding over the last three consecutive years and more efficient use of capex, 3M has generated strong free cash flow. As discussed in the capital structure section, 3M's increasing leverage has lowered its WACC to 6.5%, generating a higher NPV of these future cash flows.



3M has increased its annual dividend for the last 61 consecutive years and has grown its dividend by about 9% each year, on average. The firm even continued to consistently increase its annual dividends during the Financial Crisis and the Dot Com Bubble Crash, two of the last major market crises. As a Dividend Aristocrat, 3M has a payout ratio of 68.58% (Trailing 12 Months of Earnings), showing that the firm has high profitability and works to compensate their investors. Overall, 3M is seen as a safe investment that gives investors a high dividend payout ratio as a Dividend Aristocrat.



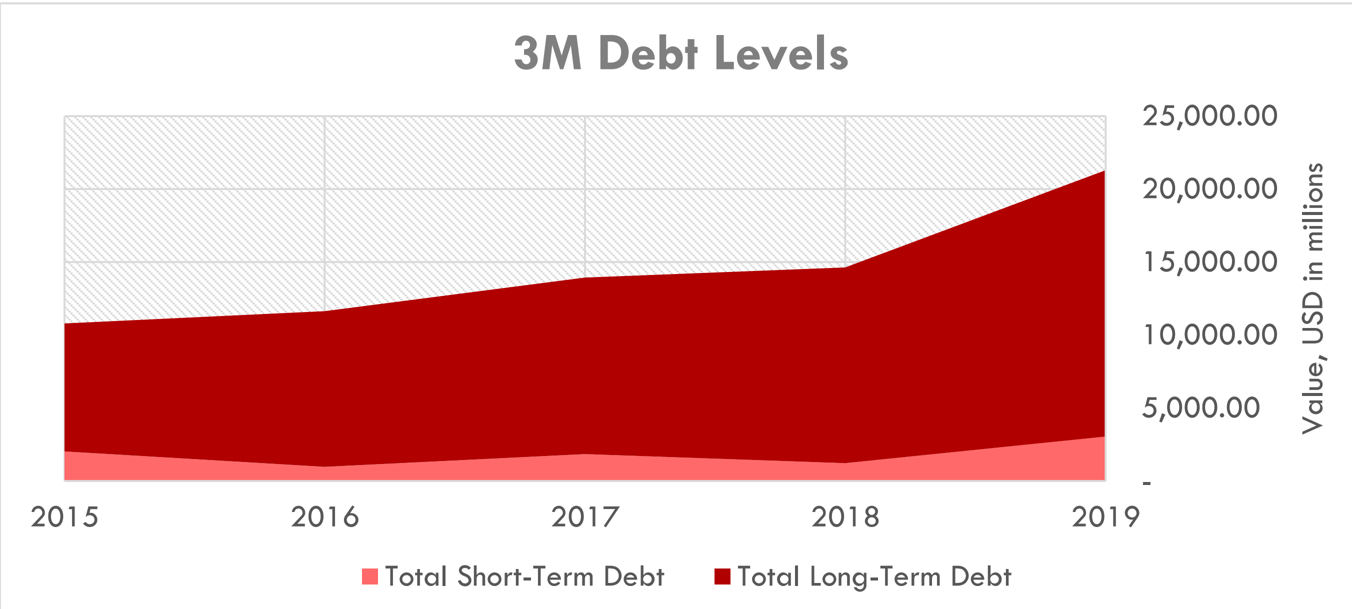
The company has a Forward Annual Dividend Yield of approximately 3.38% as of this paper's writing. That yield is slightly higher than its Trailing Annual Dividend Yield (3.36%), depicting that even in this environment, there may be some (albeit small) growth with their dividends this year. Compared with its competitors, 3M has a higher Forward Dividend yield than GE, Honeywell, Schneider Electric, Illinois Tool Works Inc, and Eaton Corp PLC. The only competitor with a higher Forward Dividend Yield is Siemens AG, whose yield is 0.20 above that of 3M's.

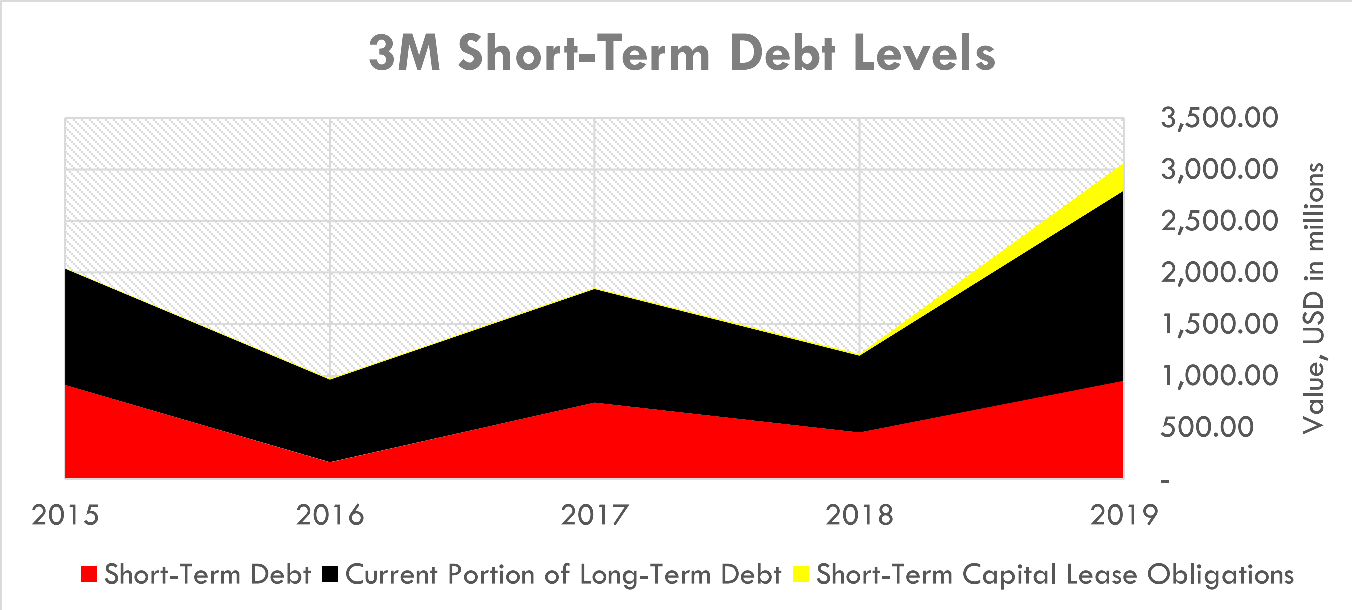
3M has a beta of 0.846 at the time of this report's writing. Since its beta is relatively close to 1, 3M's stock approximately replicates the market's movements. Although the market is quite volatile in this environment, we believe that due to 3M's reputation as a firm that consistently provides a dividend and has increased its annual dividends for the last 61 years, 3M's stock is a safe buy.

Debt Analysis

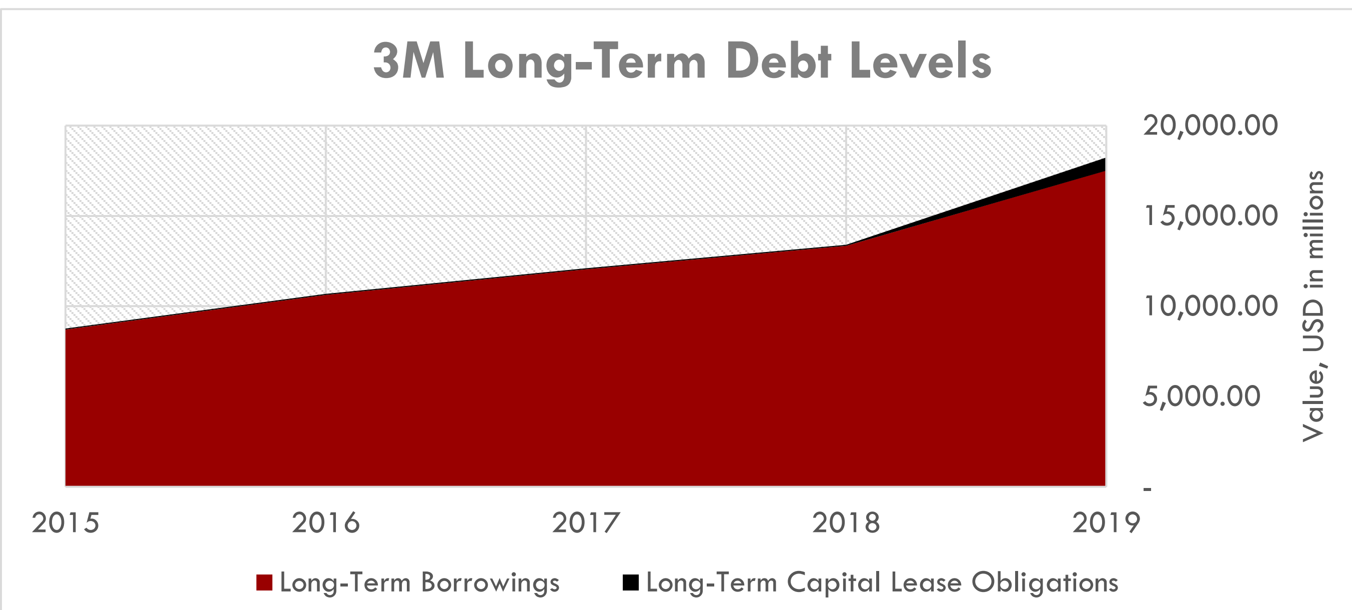
The 3M Company ("3M") had $19.85 billion of total debt on September 30, 2020. As of fiscal year-end 2019, 3M's total debt was $21.299 billion, representing 68% of total capital, with a debt to equity ratio of 210.34. Currently, 3M is rated A+ / A1 (investment-grade) by S&P and Moody's, respectively. In March 2020, S&P and Moody's put 3M on a negative outlook.

This negative outlook reflects an increasing likelihood that 3M's leverage and related financial risk will remain higher than anticipated over the next two years. Moody's expects weaker earnings in 2020 and only partial recovery in 2021, accompanied by peak borrowing levels and uncertainty surrounding the timing and size of future payments related to ongoing environmental liabilities.



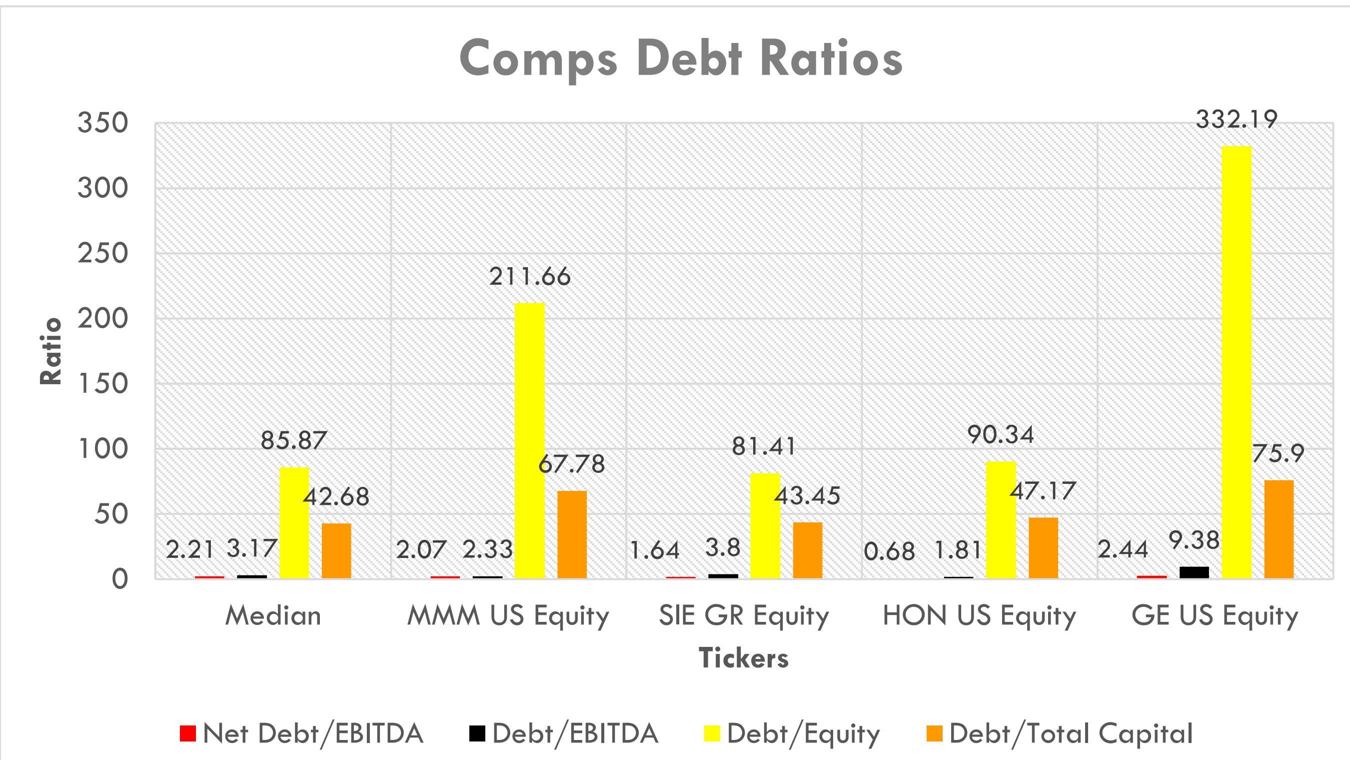


Increasing concerns surround 3M's increasing debt since 2015. Total short-term debt, including short-term borrowings, current portion of long-term debt, and short-term capital lease obligations, has increased almost 50% from the 2015 level of $2.044 billion to $3.063 billion in 2019.

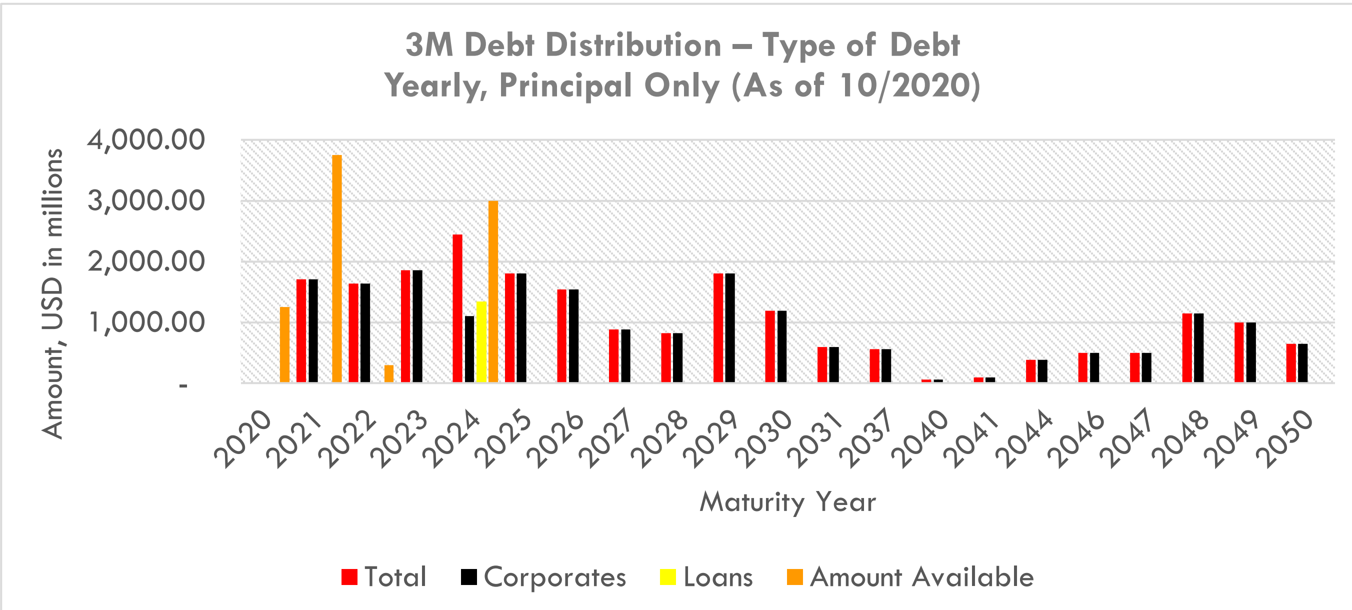


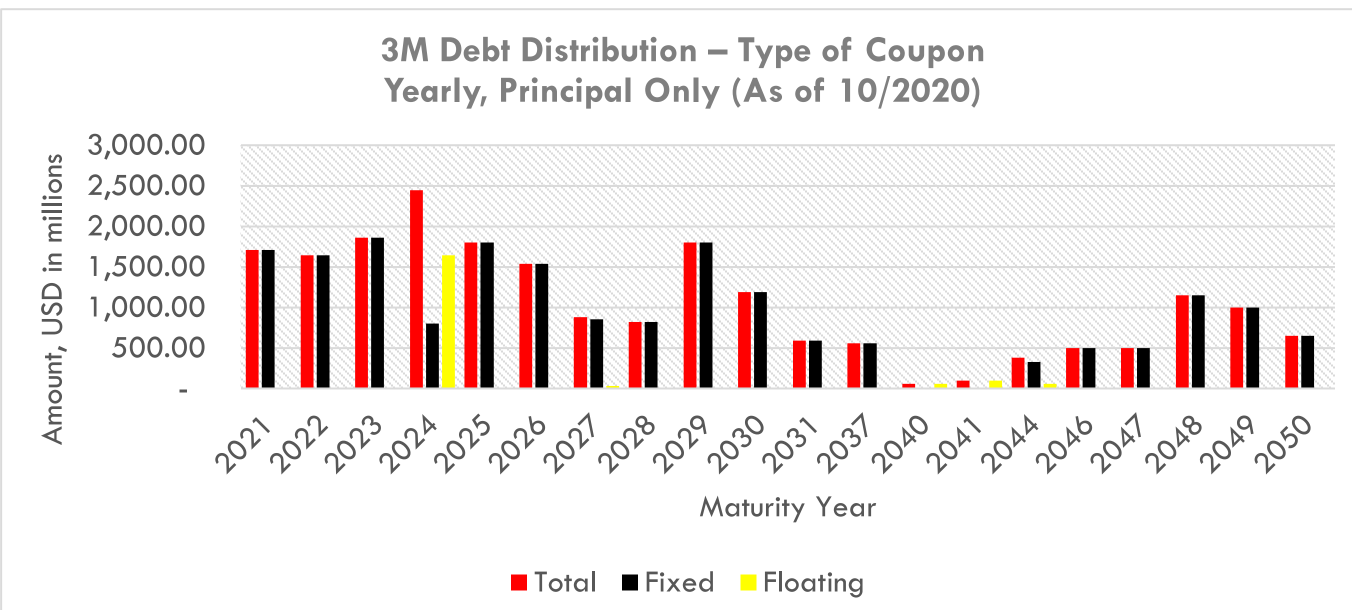
Total long-term debt, including long-term borrowings and long-term capital lease obligations, has increased by 108% from the 2015 level of $8.753 billion to $18.236 billion in 2019. However, the overall impact of increased debt is partially offset by a corresponding increase in total capital. 3M's total debt to capital ratio increased by only 40% from 48.49 in 2015 to 67.78 in 2019, a much lower percentage than the increase in total debt alone in that period of 108%.

The largest jump in short-term and long-term debt occurred from 2018 to 2019 (153% and 36% increases, respectively). 3M tapped the debt capital markets to help finance acquisitions. Two notable purchases were Acelity for a total enterprise value of approximately $6.7 billion and M*Modal's technology business for a total enterprise value of $1.0 billion. 3M acquired Acelity, Inc. to increase innovation and market share in the global medical technology space specializing in advanced wound care and specialty surgical applications. It acquired part of M*Modal for cloud-based, conversational Artificial Intelligence (AI)-powered systems. The consequences of these acquisitions and taking on more debt are a 27% decrease in EBITDA to interest expense from the 2018 level of 24.84 to the 2019 level of 18.02. As 3M has consistently increased its debt levels, its EBITDA to interest expense ratio has declined 68% from the 2015 level of 56.25. Hence, these acquisitions increased leverage and stressed 3M's coverage ratios as its interest burden increased. However, as future debt rolls off, the consistently low-interest-rate environment will likely allow the company to refinance at a lower rate, alleviating some pressure off interest coverage. Though the interest coverage ratio has substantially fallen, 3M's EBITDA is still in a great place to cover its interest obligations even if it continues to raise more debt.



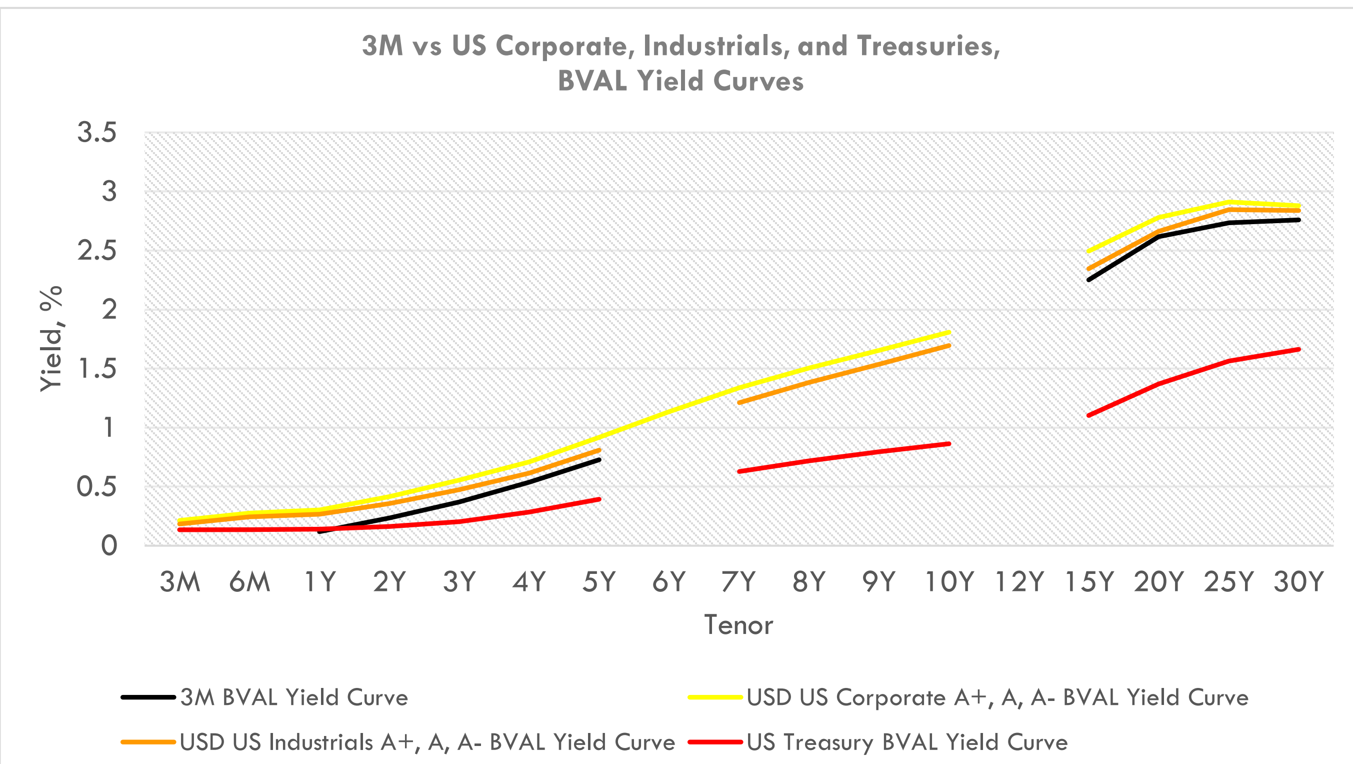
As a result of the debt-funded acquisitions, 3M's balance sheet has become slightly more stressed. 3M's debt percentage of its total capital (68%) is moderately higher than the median of 43% when compared with its 15 closest comparable global companies according to the Global Industry Classification Standard and adjusting for market capitalization. Further, as mentioned before, the company's total debt to capital has been trending upward. 3M's total debt to capital ratio increased by 40% from 48.49 in 2015 to 67.78 in 2019. 3M also has a much higher debt to equity ratio (210.34) than its comparables, which have a median ratio of 85.87. However, the company's total debt to EBITDA of 2.64 is slightly lower than its comparables' median ratio of 3.17. These comparisons indicate that 3M faces more pressure from debt than its industry but may continue to have sufficient earnings to cover this pressure, backed by a solid balance sheet.



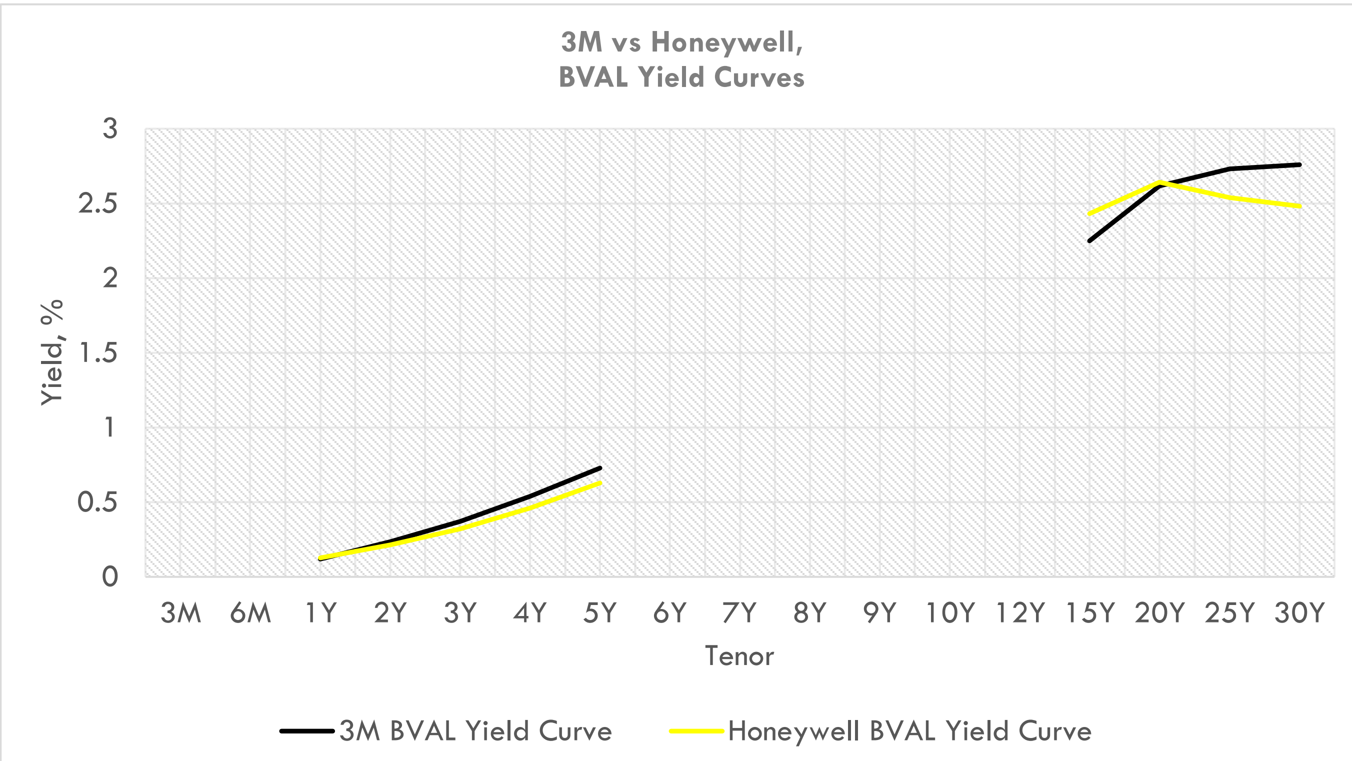


As of October 2020, 3M had 35 corporate bonds with $19.2 billion outstanding; all are senior unsecured and are rated A+ / A1 by S&P and Moody's, respectively. The company also has 3 issues of 1st lien secured loans. Almost all of the corporate bonds (98.8% weighted by amount outstanding) are trading above par and have a weighted average maturity of March 2031. These metrics indicate that the yield on the bonds is lower than others, though they are high-quality. 3M's debt maturity schedule is well-spread out, reducing any significant refinancing risk. It has about $1.7 billion of principal maturing over the next 6 years and then slightly less than $1 billion of principal from 2027 until 2050. The majority of these bonds, weighted by amount outstanding, are in USD (82%), and the remainder are in Euros (18%), resulting in little exchange rate risk. These bonds are mostly fixed and callable 97.2% and 72.7%, respectively, with a weighted average coupon of 2.67%. The large percentage of callable bonds shows that 3M may have expected interest rates to fall when they issued them so that they would have been protected in a lower interest rate environment. However, given that almost all of the bonds have a fixed interest rate, 3M may have been reducing uncertainty regarding their coupon payments by fixing the coupon payment at the time of the issue.

Comparing 3M's outstanding bonds with its comparable companies of Siemens AG, Honeywell International, Inc., and General Electric Co. ("GE"), it has the lowest amount outstanding of $19.2 billion (238% of 2019 EBITDA) except for Honeywell with $17.8 billion outstanding (218% of 2019 EBITDA). 3M also has the highest weighted average coupon of 2.67% except for GE with 3.39%, the longest weighted average maturity of 2031 compared to 2027-2028 for Siemens and Honeywell and 2022 for GE, and the highest proportion of fixed-rate bonds of 97.2%. These characteristics indicate that 3M has a more stable bond offering than its comparables, lending some certainty in these uncertain times.



3M’s yields are slightly disappointing when compared to the overall US market and its industry. US corporate bonds rated A+, A, and A- maintain almost 20 bps yield spread over 3M in the short-medium term tenors of 1 to 5 years, and then they decrease from a peak of 25 bps at 15 years to 12 bps at 30 years. US industrial bonds rated A+, A, and A- maintain a narrower yield spread over 3M that decreases from tenors of 1 year to 5 years but maintains the spread after. When compared to only A+ rated US composite and industrial curves, these curves have a peak yield spread of around 15 bps at 1-year tenor, and then both spreads fall sharply to under 5 bps at year 5, signaling a tighter spread to 3M.



Though the industry and overall market have higher yields, 3M performs better than a comparable company, Honeywell. Honeywell has less yield from tenors of 1 to 5 years (bottoming at -10 bps) and sharply drops from +18 bps at 15 years to almost -28 bps at 30 years. This pattern indicates that 3M’s yields perform better than Honeywell in the short-medium term and long-term after 20 years. The company also performs much better than Treasuries due to the current low-interest-rate environment and potential yield curve control. Overall, 3M performs better than individual companies but is vastly overtaken by industry and market performance.

Though the company has investment-grade debt with yields far surpassing safe assets (Treasuries), given 3M’s weak yields relative to its industry and the overall US corporates market (of similarly rated bonds), we recommend that 3M not be added to an investor’s bond portfolio.

Equity Thesis

We believe that an investor should buy 3M equity. As noted in the report, 3M has a safe and growing dividend income. The company has more effectively used lower interest rates to invest in growth projects. This organic growth, coupled with synergies realized from 3M's recent acquisitions, will result in greater performance relative to its comparable companies. Therefore, while 3M is not a growth stock, it a good buy for its safe dividend income and potentially moderate capital gains.

Bond Thesis

We believe that an investor should not buy 3M's bonds. Overall, 3M has disappointing yields compared to its industry (A+ / A1 rated) and US corporates (A+ / A1 rated). Additionally, though 3M still maintains a solid balance sheet, we feel an increased need to monitor 3M's increasing leverage, and decreasing interest coverage ratio, especially as its new acquisitions are still being integrated, and the economy faces uncertainty amidst the COVID-19 pandemic.

Catalysts/Risks to Thesis

Catalysts for 3M regarding our two investment theses include the fact that 3M has a diversified revenue stream that ensures steady cash flow. Additionally, the demand for their products is fairly inelastic, cementing 3M's pricing power. Lastly, we feel that future regulatory pressures will likely have fewer impacts.

In terms of risks, 3M's recent acquisitions (Acelity, M*Modal) cause us concern about the state of 3M's R&D and its innovation as a whole. If 3M has to look outwards for the next big thing, this may be the sign of its overall decline as an innovative firm with notable R&D. In addition to this, 3M's decreasing revenue growth may reduce its profitability and increase concern about a slightly stressed balance sheet.