

Recommendation	BUY
Target (today's value)	\$172.00
Current Price	\$160.60
52 week range	\$132.90 - \$170.50

Share Data	
Ticker:	MMM
Market Cap. (Billion):	\$101.875
Inside Ownership	0.1%
Inst. Ownership	92.9%
Beta	1.09
Dividend Yield	2.5%
Payout Ratio	44.7%
Cons. Long-Term Growth Rate	17.8%

	'11	'12	'13	'14	'15E
Sales (billions)					
Year	\$29.61	\$29.90	\$30.87	\$31.82	\$32.95
Gr %	11.1%	1.0%	3.2%	3.1%	3.6%
Cons	\$29.08	\$30.60	\$31.30	\$32.56	\$32.95
EPS	\$6.05	\$6.40	\$6.83	\$7.63	\$8.26
Cons	\$6.17	\$6.35	\$6.86	\$7.47	\$8.21
Gr %	5.6%	5.9%	6.7%	11.7%	8.2%

Ratio	'11	'12	'13	'14	'15E
ROE (%)	27.3%	26.6%	26.2%	32.2%	38.0%
Industry	9.9%	14.1%	11.3%	14.7%	15.0%
NPM (%)	14.5%	14.9%	15.1%	15.6%	15.8%
Industry	6.3%	9.1%	7.3%	10.1%	10.5%
A. T/O	0.96	0.91	0.92	0.98	1.02
ROA (%)	14.1%	13.8%	14.0%	15.4%	16.2%
Industry	2.3%	3.3%	2.8%	4.0%	3.5%
A/E	1.94	1.93	1.87	2.08	2.35

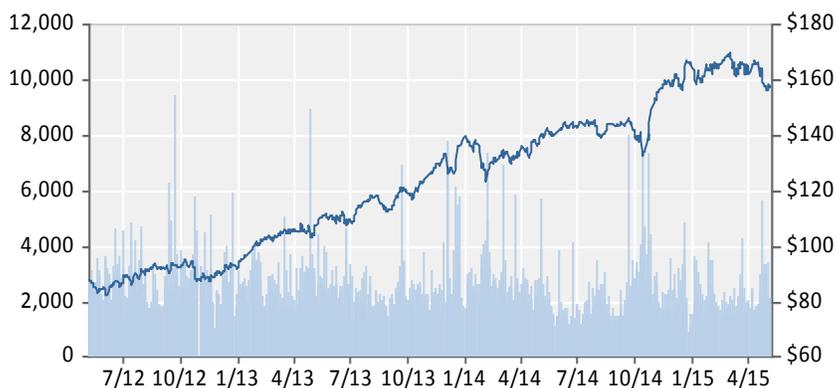
Valuation	'11	'12	'13	'14
P/E	13.88	14.86	21.54	22.52
Industry	19.21	15.50	25.50	17.74
P/S	1.96	2.17	3.08	3.32
P/B	3.38	3.64	5.31	6.51
P/CF	11.30	12.32	17.44	16.80
EV/EBITDA	8.0x	8.5x	12.1x	12.9x

Performance	MMM	Industry
1 Month	-5.2%	1.5%
3 Month	-3.6%	4.9%
YTD	11.5%	0.5%
52-week	12.4%	3.3%
3-year	75.0%	45.4%

Contact: Jordan A. Mielke
 Email: jmielke@uwm.edu
 Phone: 715.441.0052

Industrial Conglomerate

3M Company



Summary: I recommend a buy rating for 3M Company (MMM) with a 12 month target price of \$172.00. Tailwinds from European and Chinese expansion and reduced headwinds from foreign exchange will drive up margins and sales growth. The stock is undervalued based on a weighted average between discounted cash flow and sum-of-parts valuation methods.

Key Drivers:

- Chinese and European expansion: Economic growth in China and Europe will drive sales growth for selected business segments.
- Foreign exchange exposure: Because roughly two thirds of 3M's revenues are derived from outside the US, fluctuating foreign currencies may help or hinder the company's international sales growth.
- Research & development: As 3M steps up R&D expenditures in forward years, it is anticipated that the company will expand operating margins and increase sales growth with exclusivity rights on unique product offerings. Intellectual property derived from R&D investments is a key to 3M's future success.
- Enterprise resource planning (ERP) system: As an ERP database management system is fully implemented in Europe and the United States, it will reduce supply chain risk and expand operating margins.

Valuation: Using two different valuation metrics, 3M is shown to be undervalued. With no direct comparables, a weighted average between a DCF and sum-of-parts valuation provides an accurate target price for the company.

Risks: Threats to the business include foreign currency exposure, introduction of new products, natural disasters, international economic conditions, management and new tax laws

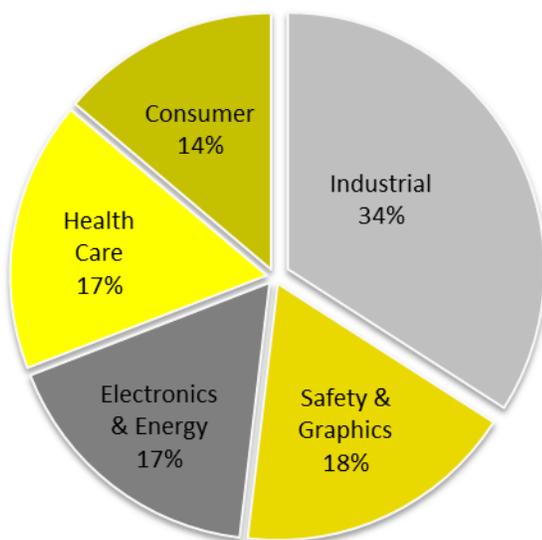
Company Overview

3M Company (MMM) is a global manufacturer of diversified technology and sells products that have a presence in consumer and industrial markets. 3M operates in over 70 countries, sells products in 230 countries and approximately two thirds of its revenues come from outside the United States. 3M Company was founded in 1902 and is headquartered in St. Paul, Minnesota.

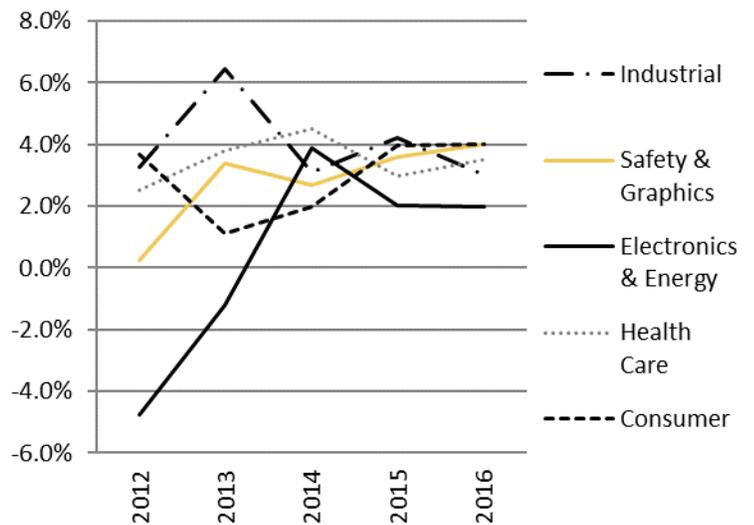
3M generates revenue from the sale of a wide variety of products. The majority of 3M’s revenue is derived from inter-business or non-consumer sales. 3M revenues are generated through the following business segments:

- Industrial: Abrasives, adhesives, specialty materials, and many various components produced for industries such as automotive, electronics, paper and printing, packaging, food and beverage, and construction.
- Safety and Graphics: Equipment made for head, eye, and ear protection, commercial graphics sheeting and films for signs, pavement marking, and other various surfaces, non-woven abrasives.
- Electronics and Energy: Electronics include components for LCD display devices, PCs, tablets, smart phones, and fluids and abrasives for other small electronic devices, energy solutions produces electrical, telecommunications, renewable energy, and infrastructure protection products.
- Health Care: Produces supplies for medical clinics and hospitals, pharmaceuticals, and dental and orthodontic practitioners, and food safety-testing facilities, develops software for health information systems and offers related consulting services.
- Consumer: Includes office supplies, home-care, home improvement (do-it-yourself), consumer health, and personal safety products.

Figures 1 and 2: 3M revenue sources for 2014 (left) and historical revenue growth by business segment (right)



Source: Company reports



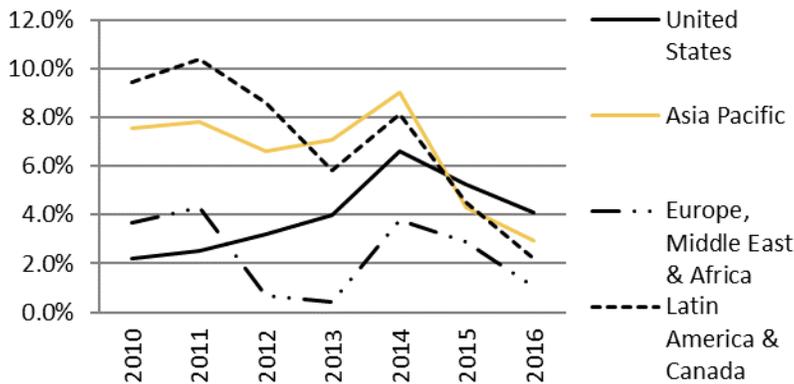
Source: Company reports

Business Drivers

Several factors contribute to 3M's future success; the following are the most important business drivers:

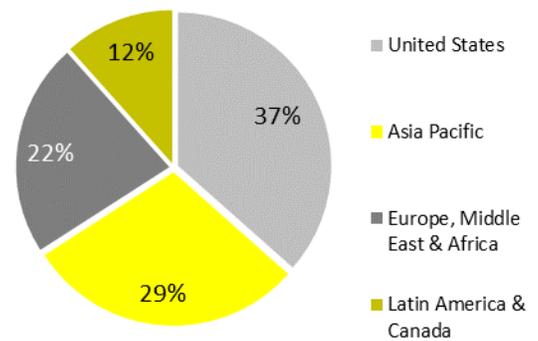
- 1) Emerging market and European expansion
- 2) Foreign exchange exposure
- 3) Research & development
- 4) Enterprise Resource Planning (ERP) System

Figure 3: Historical and forecasted growth by geographic region



Source: Company reports

Figure 4: 3M's sales by geographic region



Source: Company reports

Chinese and European expansion

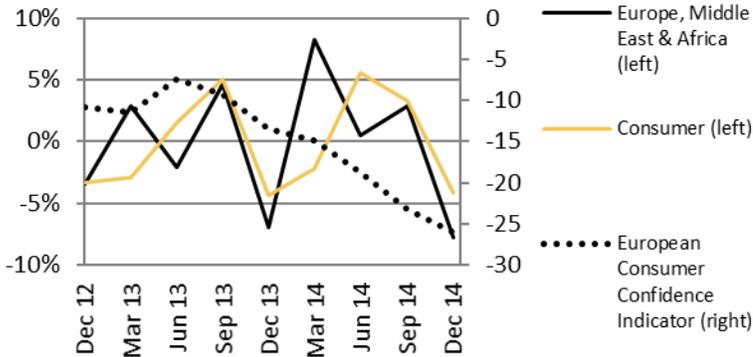
3M has generated the majority of its revenues from outside of the United States for the last 20 years as it has tapped into emerging and developed markets around the world. Asia Pacific has a five-year CAGR of 9.0% as it has had positive growth in all business segments. It has led 3M's Safety & Graphics segment with sometimes double-digit organic growth, heavily due to demand for respirators driven by manufacturing industry growth in China and increasing CO2 emissions (see Figure 5 below).

Figure 5: CO2 emissions in China and Safety & Graphics sales growth



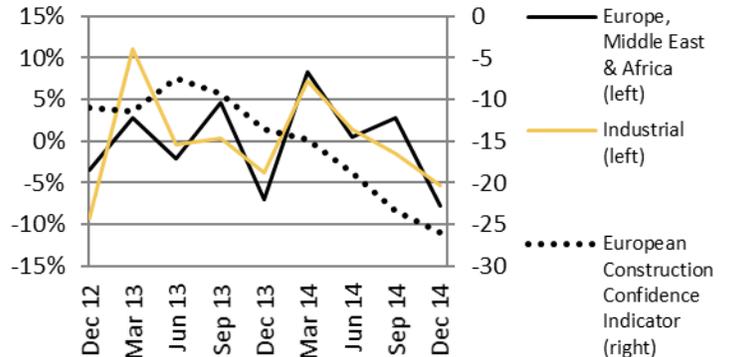
Source: Bloomberg, British Petroleum Statistical

Figure 6: EMEA and Consumer segment sales growth, and European consumer confidence



Source: Company reports, Bloomberg, European Commission

Figure 7: EMEA and Industrial segment sales growth, and European construction confidence



Source: Company reports, Bloomberg, European Commission

“...as this will not only increase the future sustainable growth of the euro area, but will also raise expectations of higher incomes and encourage firms to increase investment today and bring forward the economic recovery.”

-ECB President Mario Draghi on quantitative easing programs in Europe (January 22, 2015)

Source: European Central Bank website

In the Eurozone, the European Central Bank (ECB) is implementing its quantitative easing program, which is intended to lower interest rates and increase economic growth in Europe and thus consumer spending and industrial growth. An increase in European consumer spending and industrial growth will likely spur 3M’s Consumer and Industrial segments’ sales growth as it has in the past (see figures 6 and 7 above). Quantitative easing is likely to increase consumer confidence and industrial investments (see Mario Draghi quote to the left)

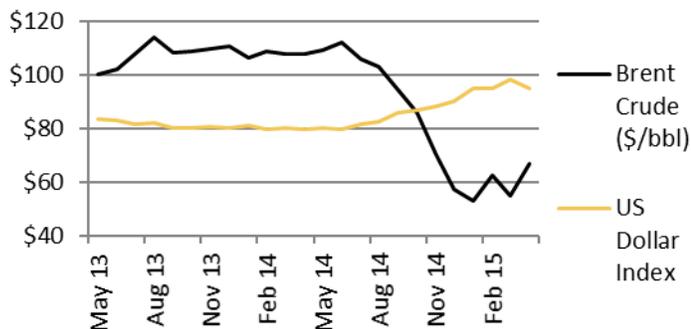
Foreign Exchange Exposure

As shown in figure 4, 63.5% of 3M’s revenues originate from outside of the United States. Within the 69 other countries 3M operates, the company is exposed to various foreign exchange gains and losses. In today’s economy, the United States dollar (USD) is strengthening against most all other major foreign currencies (see figures 9, 10 and 11 on next page).

If this trend continues to prevail, 3M could suffer more foreign exchange (FX) conversion losses than in 2014. In 2014, 3M had sales conversion losses of 2.2% in Asia-Pacific (APAC), 1.6% in Europe, Middle East and Africa (EMEA), and 7.5% in Latin America & Canada which made for a total FX loss of 3.0% from foreign operating sales.

3M will incur losses on current investments in foreign countries given further FX depreciation relative to the dollar, but new investments outside of the US will become increasingly attractive. Also, to mitigate risks, CFO Nicholas C. Gangestad states that 3M has, “...a hedging strategy where we hedge approximately 50% of our economic or P&L exposure. And we hedge that out in the past for 12 months.”

Figure 8: Brent crude oil price per barrel and the ICE US dollar index

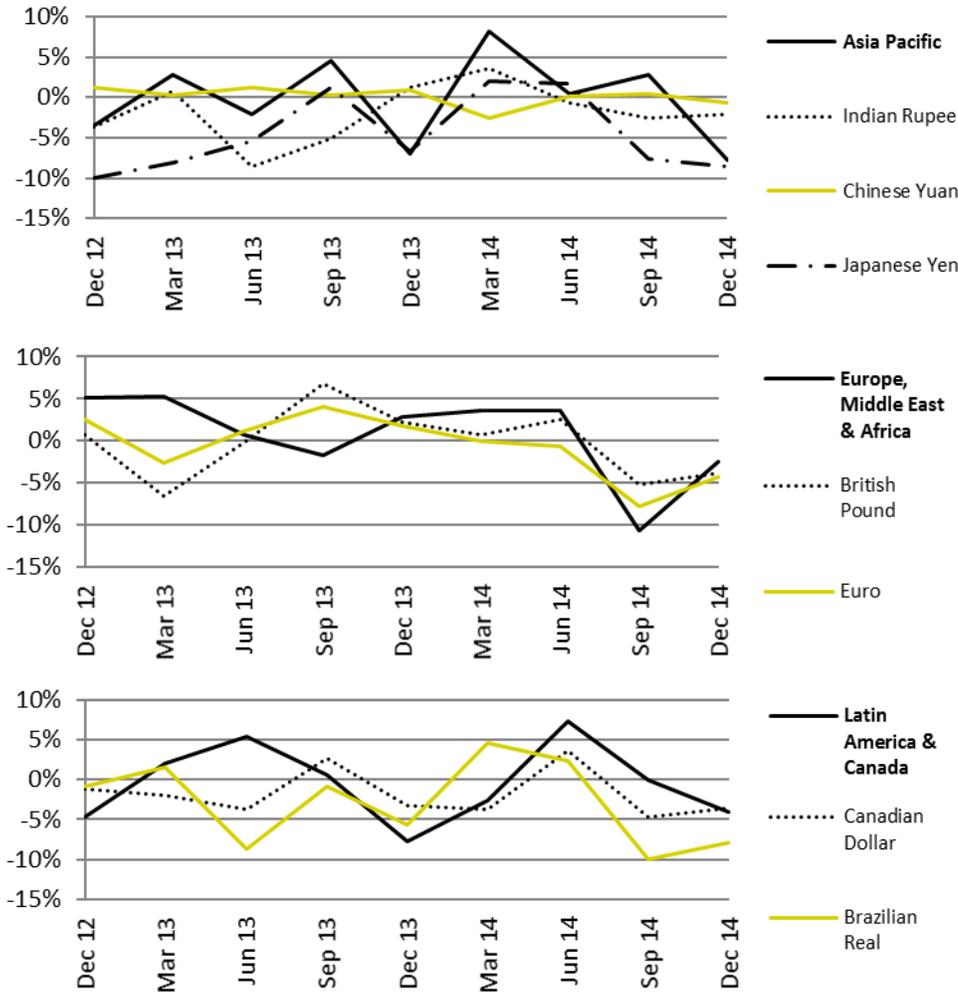


Source: Factset

Fortunately for 3M, Chinese sales have minimal foreign exposure risk due to the fact that the People’s Bank of China artificially pegs the Chinese Yuan to the dollar. Note that in figure 9, the Chinese yuan fluctuates far less relative to the USD than other Asia Pacific currencies.

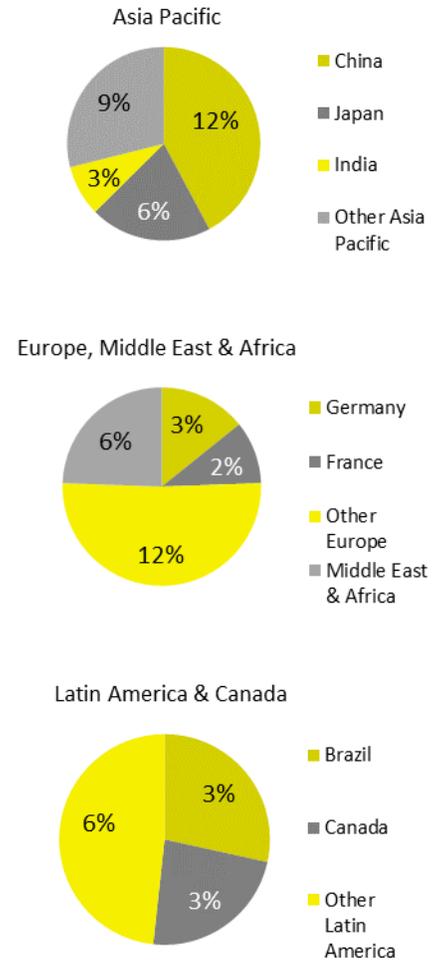
Brent crude and the USD have correlation coefficient of -0.631, so it can be said that in recent months 63.1% of the dollar’s appreciation can be explained by the decline in oil prices. Given that oil prices have stabilized, I do not expect the dollar to appreciate as sharply as it has in recent months.

Figures 9, 10 and 11: Historical quarterly sales growth of international segments (in bold) and change in respective major foreign currencies (not in bold)



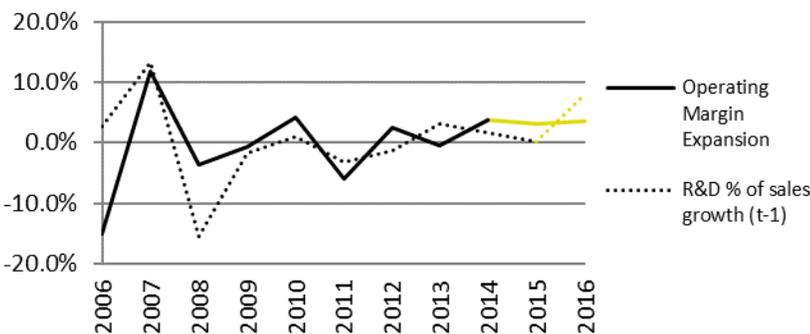
Source: Company reports

Figures 12, 13 and 14: Revenue sources from countries in their respective geographic segments in 2014



Source: Factset, Company reports

Figure 15: Historical annual operating margin expansion and one year lagging R&D expenditures (% of sales) with 2015 and 2016 estimates (in yellow)



Source: Company reports

Research & Development

Investments made in research and development (R&D) provides 3M with patents for new products and improvements on existing products that give the company a competitive advantage. The firm states in its 10K that, "...no single patent or group of related patents is in itself essential to the Company as a whole or to any of the Company's business segments."

At the J.P. Morgan, Transportation and Industrials Conference, Chairman, President & CEO Inge Thulin marks on R&D,

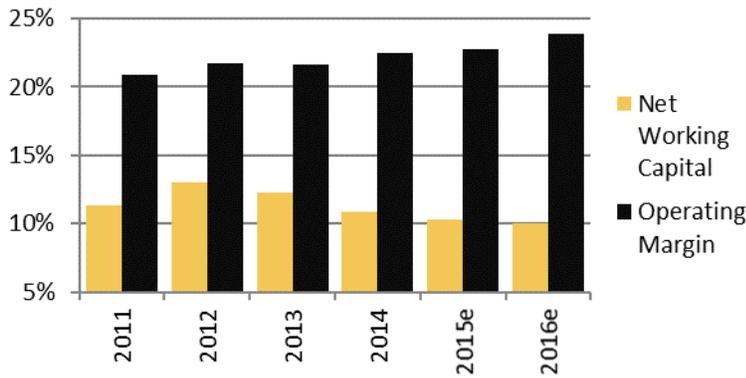
"...we had an average investment of around 5.5% to 5.6% over years and we decided to step that up to 6% as we move ahead." R&D is vital to 3M's success. Over the past 10 years, R&D investments made in the prior year help to expand 3M's operating margin in the following year because these new products have, at least initially, higher margins (see figure 15).

Over the past 15 years, R&D expenditures have made up an average of 5.6% of sales; R&D was 5.6% of sales in 2014. Patents with finite lives total \$581 million and make up 1.8% of total assets.

Enterprise Resource Planning (ERP) System

Since 2010, 3M has been implementing an ERP System. Traditionally the company has outsourced its database systems for inventory and purchasing management. 3M's ERP system will be fully implemented in Europe by the end of 2015 and will be implemented in the United States by the end of 2016.

Figure 16: Historical and forward estimated net working capital (as a percent of sales) and operating margin



Source: Company reports

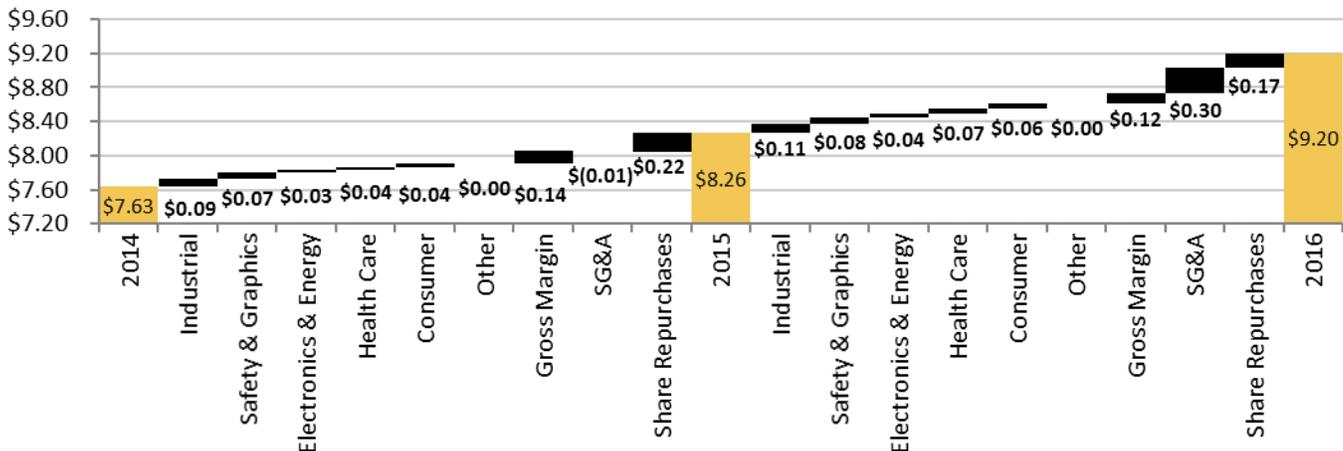
3M will realize an advantage over competitors since one unified ERP System should reduce operating costs and working capital. Management estimates there will be an annual \$600 million in operational savings and a \$500 million decrease in operating net working capital (NWC). A decrease in NWC will increase asset turnover, provide greater liquidity (if the reduced inventory and accounts receivable results in more cash), and lower risk. Furthermore, risk is reduced from having a better system which is more difficult for hackers to gain access. A hacked system could compromise supplier and customer data, which could disrupt 3M's supply chain and tarnish its business reputation.

Financial Analysis

EPS Estimates

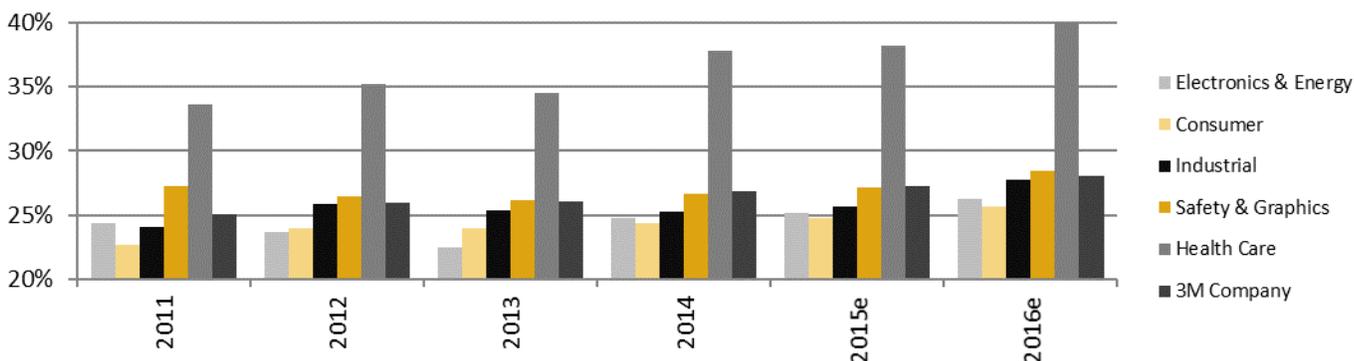
As shown in figure 17 below, I expect EPS to rise to \$8.26 in 2015 and to \$9.20 in 2016. The main drivers of EPS growth are the gross margin expansion, operating margin expansion, Safety & Graphics sales growth, Industrial sales growth, share buybacks and increasing R&D investments.

Figure 17: Quantification of 2015 and 2016 EPS Drivers



As discussed earlier, I predict top line growth in 3M’s industrial segment due to a predicted rise in consumer confidence in Europe. I expect top line growth for Safety & Graphics in China, due to the rise in demand for protective respirator masks. Both business segments have a high EBITDA margin relative to the other business segments (see figure 18 below). With above company average sales growth in these business segments, I anticipate EBITDA and operating margins to expand.

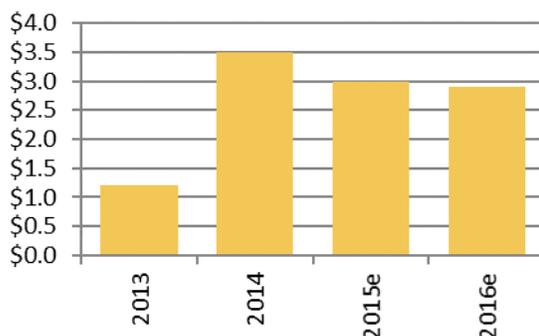
Figure 18: Historical and forward estimated EBITDA/Sales margins by business segments



Source: Company reports

In 2014, I expect 3M’s share buyback program to add roughly \$0.20 to EPS each year with a cumulative \$3 billion spent each year (see figure 19 below). Management has stated that share repurchases will make up for 3.0% of EPS growth in 2015 and in 2016. My estimates are slightly bearish relative to theirs as I predict repurchases will make up for 2.9% of EPS growth in 2015 and 2.1% in 2016.

Figure 19: Historical and forward estimated share repurchases (in billions)



Source: Company reports

I predict increased research and development investments in new products will subtract from EPS in 2015, but the benefits will be realized in 2016 as 3M benefits from with exclusive rights to sell certain products. Operating margin growth has a sensitivity of 0.44 relative to prior-year R&D growth as a percent of sales.

Figure 20: My estimated EPS versus consensus estimates

	FY 2015e	FY 2016e
Estimated	\$ 8.26	\$ 9.20
Consensus	\$ 8.21	\$ 9.00

Source: Factset

As seen in figure 20, my estimated EPS is bullish relative to consensus estimates. This is attributable to my estimates for margin expansion, because my sales estimates are almost exactly in line with consensus (see table on cover page).

Sales Projections

On the next page are sales and EBITDA estimates for each of 3M’s business segments. I project Industrial to grow at 3.5% in 2015 and 3.0% in 2016 due to the nature of it being a mature industry relative to the other segments. I predict Safety & Graphics to grow at 5.0% in 2015 and 4.0% in 2016 because of its growth potential in China and the amount of intellectual property associated with the

segment. Electronics & Energy is projected to grow at 2.0% in 2015 and 2016 because of the mature industry of parts for computers, but the segment has a foothold on the market it is in, with many patents on certain electrical components. I foresee Health Care growing at 3.0% in 2015 and 3.5% in 2016, due to the increasing demand for medical devices, and increasing demand for orthodontic supplies in Europe and medical supplies in the United States. Although, new tax laws have been enacted in the US that have increased taxes on medical technology sales.

Figure 21: Historical and forward estimated sales and EBITDA from each segment

	2011	2012	2013	2014	2015e	2016e
Industrial						
Sales	\$ 9,629	\$ 9,943	\$ 10,584	\$ 10,990	\$ 11,375	\$ 11,716
<i>%of total sales</i>	32.5%	33.2%	34.3%	34.5%	34.5%	34.4%
<i>Sales Growth</i>		3.3%	6.4%	3.8%	3.5%	3.0%
EBITDA	\$ 2,320	\$ 2,567	\$ 2,679	\$ 2,772	\$ 2,918	\$ 3,251
Safety & Graphics						
Sales	\$ 5,458	\$ 5,471	\$ 5,657	\$ 5,732	\$ 6,019	\$ 6,259
<i>%of total sales</i>	18.4%	18.3%	18.4%	18.0%	18.3%	18.4%
<i>Sales Growth</i>		0.2%	3.4%	1.3%	5.0%	4.0%
EBITDA	\$ 1,488	\$ 1,447	\$ 1,482	\$ 1,530	\$ 1,632	\$ 1,779
Electronics & Energy						
Sales	\$ 5,732	\$ 5,458	\$ 5,393	\$ 5,604	\$ 5,716	\$ 5,830
<i>%of total sales</i>	19.4%	18.3%	17.5%	17.6%	17.3%	17.1%
<i>Sales Growth</i>		-4.8%	-1.2%	3.9%	2.0%	2.0%
EBITDA	\$ 1,395	\$ 1,292	\$ 1,214	\$ 1,386	\$ 1,437	\$ 1,528
Health Care						
Sales	\$ 5,011	\$ 5,138	\$ 5,334	\$ 5,572	\$ 5,739	\$ 5,940
<i>%of total sales</i>	16.9%	17.2%	17.3%	17.5%	17.4%	17.5%
<i>Sales Growth</i>		2.5%	3.8%	4.5%	3.0%	3.5%
EBITDA	\$ 1,683	\$ 1,810	\$ 1,843	\$ 2,107	\$ 2,195	\$ 2,416
Consumer						
Sales	\$ 4,230	\$ 4,386	\$ 4,386	\$ 4,523	\$ 4,704	\$ 4,892
<i>%of total sales</i>	14.3%	14.7%	14.2%	14.2%	14.3%	14.4%
<i>Sales Growth</i>		3.7%	0.0%	3.1%	4.0%	4.0%
EBITDA	\$ 957	\$ 1,053	\$ 1,051	\$ 1,103	\$ 1,166	\$ 1,256
Other						
Sales	\$ (449)	\$ (492)	\$ (532)	\$ (600)	\$ (600)	\$ (600)
<i>%of total sales</i>	-1.5%	-1.6%	-1.7%	-1.9%	-1.8%	-1.8%
<i>Sales Growth</i>		9.6%	8.1%	12.8%	0.0%	0.0%
EBITDA	\$ (429)	\$ (399)	\$ (233)	\$ (153)	\$ (369)	\$ (369)
3M Company						
Sales	\$ 29,611	\$ 29,904	\$ 30,822	\$ 31,821	\$ 32,952	\$ 34,038
<i>%of total sales</i>	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<i>Sales Growth</i>		1.0%	3.1%	3.2%	3.6%	3.3%
EBITDA	\$ 7,414	\$ 7,771	\$ 8,037	\$ 8,543	\$ 8,979	\$ 9,861

Source: Company reports

Although there is rising demand for various medical supplies in developed markets, I foresee foreign exchange exposure removing the upside from organic local currency sales growth. Consumer segment sales are expected to grow 4.0% in 2015 and 2016 due to rising consumer confidence in Europe and a strong presence in the United States. Other is simply held constant in regard to sales growth.

DuPondt Analysis

Figure 22: 5-Stage DuPondt Analysis

5-Stage DuPondt Analysis	2011	2012	2013	2014	2015e	2016e
EBIT / sales	20.9%	21.7%	21.6%	22.4%	22.8%	23.9%
Sales / avg assets	0.96	0.91	0.92	0.98	1.02	0.99
EBT/EBIT	0.98	0.98	0.98	0.98	0.99	0.99
Net income (cont) /EBT	72.2%	71.0%	71.9%	71.1%	71.1%	71.1%
ROA	14.1%	13.8%	14.0%	15.4%	16.2%	16.6%
Avg assets / avg equity	1.94	1.93	1.87	2.08	2.35	2.34
ROE	27.3%	26.6%	26.2%	32.2%	38.0%	38.9%

Source: Company reports

In my 5-stage DuPondt analysis, I have the EBIT margin increasing due to the strength of sales growth in more profitable segments and 3M's ERP system implementation. Furthermore, with the implementation of its ERP system, 3M will benefit from a higher asset turnover as net working capital decreases. I expect assets to increase relative to equity due to 3M's share buyback program increasing the treasury stock account balance. ROE will therefore increase by 5.8% in 2015 and 0.7% in 2016. It is also important to note that 3M's Debt/EV and ROE is respectively 3.6% and 32.2% while the industry's Debt/EV and ROE are respectively 13.6% and 14.9%.

Figure 23: Cash flow statement with forward year projections

Cash Flow Statement						
Items	2011	2012	2013	2014	2015e	2016e
Cash from Operations						
Net income	\$4,283	\$4,444	\$4,659	\$4,956	\$5,210	\$5,639
Change in NWC	(884)	(183)	403	231	(97)	84
Cash from operations	\$3,399	\$4,261	\$5,062	\$5,187	\$5,113	\$5,723
Cash from Investing						
Change in Net PP&E	(\$1,070)	(\$596)	(\$321)	\$668	(\$1,397)	(\$911)
Change in Marketable Securities	(\$725)	(\$461)	\$642	\$775	\$0	\$0
Cash from investing	(\$1,795)	(\$1,057)	\$321	\$1,443	(\$1,397)	(\$911)
Cash from Financing						
Change in Debt	(\$286)	\$835	\$8	\$828	\$841	\$850
Change in Other liabilities	1962	(1109)	(942)	1620	0	0
Change in Par and Paid in Capital	299	277	331	4	265	282
Change in OCCl	(1482)	275	837	(2376)	1585	0
Change in Other Equity	88	23	(19)	(413)	0	0
Share Buyback	(1413)	(728)	(2978)	(3922)	(3015)	(2930)
Dividends	(1555)	(1635)	(1730)	(2216)	(2659)	(2819)
Change in Retained Earnings	(375)	(478)	(1192)	(839)	0	0
Cash from financing	(\$2,762)	(\$2,540)	(\$5,685)	(\$7,314)	(\$2,984)	(\$4,618)
Change in Cash	(1158)	664	(302)	(684)	733	194

Source: Company reports

Cash Flow Analysis

3M’s operating income pays for dividends and share repurchases every year. I assumed that 3M will take out a small amount of debt, due to interest rates being at 40 year lows, to pay off old higher cost debt and use to invest in new capital and make acquisitions.

See figure 23 on the previous page for a detailed breakdown of 3M’s cash flows. Please note in figure 23 that depreciation and amortization have been added to operating cash flows and instead have been added to investing cash flows. Furthermore, under financing cash flows, dividends and share buybacks have been made separate from the change in retained earnings line item.

Credit Analysis

3M’s market value of debt to EBITDA is 0.79, which means that 3M can pay off its outstanding loans with less than one year’s worth of cash flow from operations. Its long-term debt to enterprise value is 3.6% where other comparable industrial conglomerates have an average LT debt/EV of 13.6%. The company has a relatively low risk of default on its debt. The rating on long-term debt is AA- credit from Standard & Poor’s and Aa3 from Moody’s Investors Service. Both ratings from each agency are equal in measurement of credit risk and indicate that 3M has very low risk, investment grade bonds.

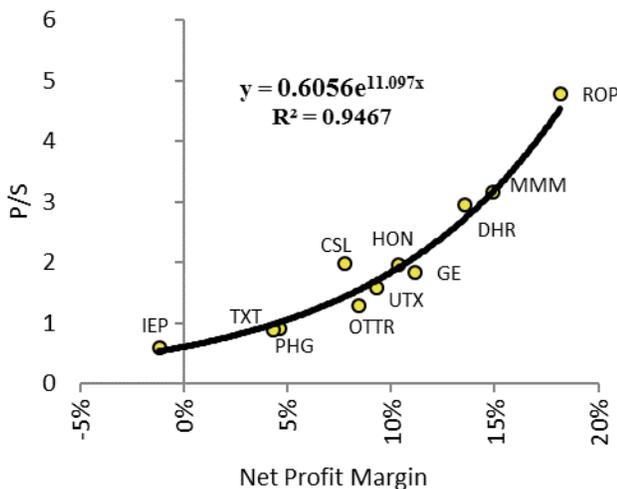
Valuation

Based on two different valuation metrics, I derived with a target price of \$172.00.

Relative Valuation

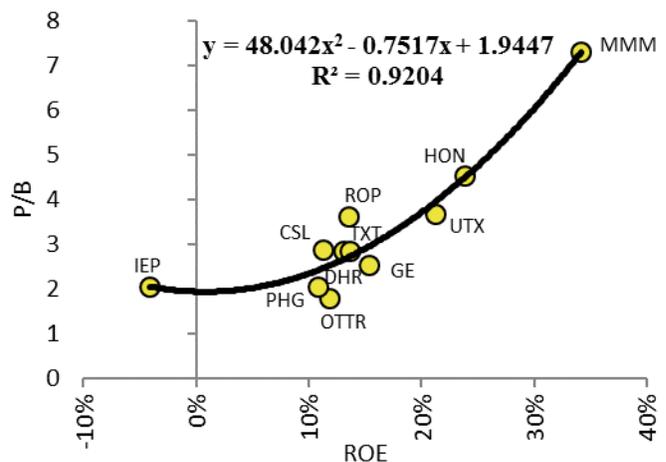
For the first valuation metric, I compared 3M to other industrial conglomerates using price/sales versus net profit margin and price/book value versus return on equity. See figures 24 and 25 below for a regression analysis of industrial conglomerates and see figure 24 on the next page to view 3M’s historical P/S and P/B.

Figure 24: Exponential regression of 3M and its comps (P/S versus net profit margin in 2014)



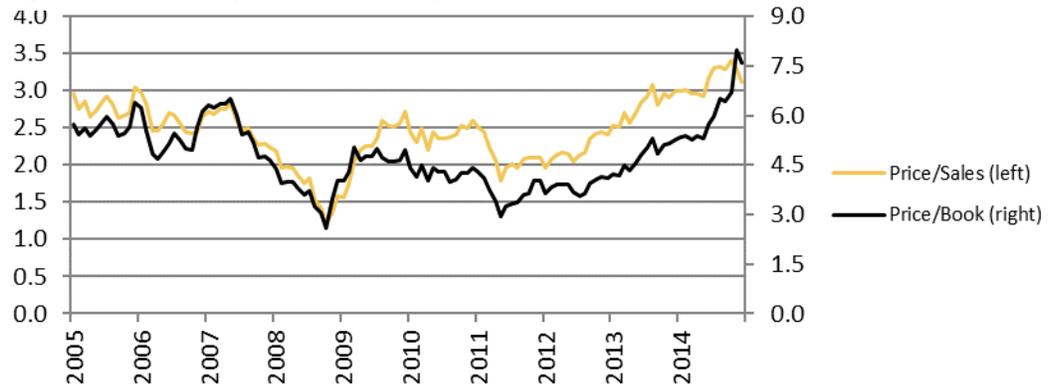
Source: Factset, Company reports

Figure 25: Quadratic regression of 3M and its comps (P/B versus ROE in 2014)



Source: Factset, Company reports

Figure 26: Historical price to sales and price to book of 3M



3M's 10 year historical average P/S is 2.5 and P/B is 4.8

Source: Company reports

It can be seen in figure 26 that 3M's P/S multiple is high relative to its historical average, but relative to its comps (see figure 24 on previous page) it is fairly valued based on its net profit margin (NPM). Also, the company's P/B is at a historical high and relative to other industrial conglomerates (see figure 25 on previous page) it is also fairly valued based on its above-average low leveraged ROE. The R² value of the quadratic relationship between P/B and ROE is 0.92 where the R² value of the exponential relationship between P/S and NPM is 0.95. These two R² values mean that we can conclude 92% of a change in P/B can be explained by a change in ROE, and 95% of a change in P/S can be explained by a change in NPM.

Based on the regression analyses in figure 24, figure 25, and my terminal NPM and ROE estimates, I have concluded 3M's terminal P/S multiple to be 3.8 and its P/B multiple to be 8.9. This will be highly relevant later on in the discounted cash flow analysis section of this report.

Discounted Cash Flow Analysis

In the first stage of the discounted cash flow (DCF) analysis, I find the present value of the next two forward years' free cash flow to equity (FCFE). This is done by forecasting net operating profit after tax (NOPAT) minus change invested capital (IC) minus after-tax interest. Change in IC is found from change in net working capital (NWC) and change in net fixed assets (NFA). FCFE is then multiplied by a discount factor using the cost of equity. The cost of equity calculation is found using the capital asset pricing model (CAPM). I calculated a trailing 10 year beta for 3M versus the market (S&P 500 stock index) based on monthly returns. All CAPM calculations can be seen below in figure 27.

Figure 27: CAPM assumptions, equation (top right), and discount factor calculation (bottom right)

Cost of equity	
Risk free rate	2.0%
Beta	1.09
Market return	10.0%
Market risk premium	8.0%
Stock risk premium	8.7%
3M expected return	10.7%

$$E(r)_{MMM} = E(r)_{rf} + (E(r)_{S\&P\ 500} - E(r)_{rf})\beta$$

$$Discount\ factor = (1 + E(r)_{MMM})^{-t}$$

The second stage of the DCF analysis is the same as the first, but I ultimately assume a terminal growth rate for all line items. See figure 28 below for a detailed explanation of the first and second DCF steps. I assume 3.5% and 4.0% sales growth in 2017 and 2018, which will then pick up to 5% in 2019 and 6% in 2020 and 2021 as the world economies recover. Growth in working is less than sales in early years due to the new ERP system; however, net fixed asset growth is higher as the firm potentially engages in acquisitions. After-tax interest expense is projected to grow 7% per year, as the firm takes advantage of lower cost debt, and shares are expected to decline in 2017 and 2018 as the firm continues with its buyback programs.

Figure 28: Present value of free cash flow to equity per share

Line Items	First Stage		Second Stage				
	2015	2016	2017	2018	2019	2020	2021
Cash flows							
Sales	\$32,952	\$34,038	\$35,229	\$36,638	\$38,470	\$40,778	\$43,225
<i>Growth</i>		3.3%	3.5%	4.0%	5.0%	6.0%	6.0%
NOPAT	\$5,338	\$5,775	\$5,977	\$6,216	\$6,527	\$6,919	\$7,334
<i>% of sales</i>	16.2%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%
- Change in NWC	\$ 97	\$ (84)	\$ 67	\$ 103	\$ 212	\$ 225	\$ 238
<i>NWC EOY</i>	\$ 3,447	\$ 3,363	\$ 3,430	\$ 3,533	\$ 3,745	\$ 3,969	\$ 4,208
<i>Growth NWC</i>		-2.4%	2.0%	3.0%	6.0%	6.0%	6.0%
<i>NWC / S (EOY)</i>	10.5%	9.9%	9.7%	9.7%	9.7%	9.7%	9.7%
- Chg NFA	\$ 1,397	\$ 911	\$ 1,462	\$ 1,341	\$ 1,421	\$ 1,506	\$ 1,597
<i>NFA EOY</i>	\$ 19,971	\$ 20,882	\$ 22,344	\$ 23,684	\$ 25,105	\$ 26,612	\$ 28,209
<i>Growth NFA</i>		4.6%	7.0%	6.0%	6.0%	6.0%	6.0%
<i>S / NFA (EOY)</i>	1.65	1.63	1.58	1.55	1.53	1.53	1.53
Total inv in op cap	\$ 1,494	\$ 827	\$ 1,529	\$ 1,444	\$ 1,633	\$ 1,731	\$ 1,835
Total net op cap	\$23,418	\$24,245	\$ 25,774	\$27,217	\$28,850	\$30,581	\$32,416
<i>S / IC (EOY)</i>	1.41	1.40	1.37	1.35	1.33	1.33	1.33
<i>ROIC (EOY)</i>	22.8%	23.8%	23.2%	22.8%	22.6%	22.6%	22.6%
FCFF	\$3,844	\$4,948	\$4,448	\$4,773	\$4,894	\$5,188	\$5,499
<i>% of sales</i>	11.7%	14.5%	12.6%	13.0%	12.7%	12.7%	12.7%
<i>Growth</i>		28.7%	-10.1%	7.3%	2.5%	6.0%	6.0%
- Interest (1-tax rate)	\$ 77	\$ 86	\$ 93	\$ 99	\$ 106	\$ 113	\$ 121
<i>Growth</i>		11.6%	7.0%	7.0%	7.0%	7.0%	7.0%
FCFE	\$3,766	\$4,862	\$4,356	\$4,674	\$4,788	\$5,074	\$5,378
<i>% of sales</i>	11.4%	14.3%	12.4%	12.8%	12.4%	12.4%	12.4%
<i>Growth</i>		29.1%	-10.4%	7.3%	2.4%	6.0%	6.0%
/ No Shares	630.7	612.7	600.5	594.5	594.5	594.5	594.5
<i>Growth</i>		-2.9%	-2.0%	-1.0%	0.0%	0.0%	0.0%
FCFE per share	\$5.97	\$7.93	\$7.25	\$7.86	\$8.05	\$8.54	\$9.05
<i>Growth</i>		32.9%	-8.6%	8.4%	2.4%	6.0%	6.0%
* Discount factor	0.90	0.82	0.74	0.67	0.60	0.54	0.49
Discounted FCFE	\$5.39	\$6.47	\$5.34	\$5.23	\$4.84	\$4.63	\$4.43

In the third stage of the DCF valuation, I used a terminal P/S multiple of 3.8 and terminal P/B multiple of 8.9. I took the terminal sales per share value, multiplied by the terminal P/S, multiplied by the 2021 discount factor and derived the discounted share value. Using the same methodology, I calculated a different terminal share value using the terminal P/B, terminal book value and the same discount factor. The details of this third step are broken down in figures 29 and 30 below.

Figure 29: Terminal value of future sales

Third Stage (P/S Valuation)							
Terminal value P/S	2015	2016	2017	2018	2019	2020	2021
Sales	\$32,952	\$34,038	\$35,229	\$36,638	\$38,470	\$40,778	\$43,225
Growth		3.3%	3.5%	4.0%	5.0%	6.0%	6.0%
Net profit margin	15.8%	16.6%	16.7%	16.7%	16.7%	16.7%	16.7%
Terminal P/S							3.82
* Terminal SPS							\$72.71
Terminal value							\$277.53
* Discount factor							0.49
Discounted terminal share value							\$136.06

Figure 30: Terminal value of future book value

Third Stage (P/B Valuation)							
Terminal value P/B	2015	2016	2017	2018	2019	2020	2021
Book value	\$14,528	\$14,699	\$14,993	\$15,443	\$16,370	\$17,352	\$18,393
Growth		1.2%	2.0%	3.0%	6.0%	6.0%	6.0%
ROE (EOY book)	35.9%	38.4%	39.2%	39.6%	39.2%	39.2%	39.2%
Terminal P/B							8.92
* Terminal BPS							\$30.94
Terminal value							\$276.05
* Discount factor							0.49
Discounted terminal share value							\$135.33

Through the 3 steps of the DCF, I derived a target share value for 3M of \$172.41 based on P/S and \$171.68 based on P/B. The components of each step are summarized below in figure 31.

Figure 31: 3M 2015 share value derived based on P/S and P/B

Summary		
First stage	\$11.87	Present value of first 2 year cash flow
Second stage	\$24.48	Present value of year 3-7 cash flow
Third stage	\$136.06	Present value of terminal value P/S
Third stage	\$135.33	Present value of terminal value P/B
Value (P/S)	\$172.41	= value at beg of fiscal yr 2015
Value (P/B)	\$171.68	= value at beg of fiscal yr 2015

Figure 32 below shows a detailed summary of 3M and other industrial conglomerates' financial info.

Figure 32: Comps sheet

Ticker	Name	Current Price	Market Value	Enterprise Value	EBITDA	Price Change						Earnings Growth					Beta	LT Debt/Equity			
						1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	LTG	NTM	2014	2015E	2016E			Pst 5yr		
MMM	3M CO	\$160.60	\$101,875	\$105,692	3.6%	\$8,543	1.3	(3.4)	(3.3)	2.6	14.0	(2.3)	8.9	8.0%	11.5%	6.3%	10.6%	10.7%	1.26	46.4%	
DHR	DANAHER CORP	\$84.03	\$59,453	\$60,190	1.2%	\$4,541	1.0	(1.5)	(0.9)	3.5	14.7	(2.0)	11.9	20.5%	11.4%	12.6%	9.3%	16.0%	1.09	13.1%	
GE	GENERAL ELECTRIC CO	\$27.36	\$275,677	\$548,698	49.8%	\$38,579	1.2	9.4	11.6	3.6	3.5	8.3	7.8	1358.4%	0.6%	-13.9%	14.8%	8.2%	1.56	254.0%	
HON	HONEYWELL INTERNATIONAL INC	\$102.12	\$79,828	\$83,337	4.2%	\$7,353	1.1	(1.7)	0.4	5.5	9.9	2.2	9.2	14.2%	7.2%	14.3%	9.7%	13.3%	0.79	32.3%	
IEP	ICAHN ENTERPRISES LP	\$90.66	\$11,161	\$11,186	0.2%	\$1,611	(1.0)	0.8	(9.7)	(13.4)	(10.1)	(2.0)		-283.9%	-120.1%	-410.4%	8.7%		1.02	62.2%	
UTX	UNITED TECHNOLOGIES CORP	\$118.43	\$105,427	\$123,791	14.8%	\$10,889	2.1	0.5	(1.2)	8.6	1.2	3.0	8.5	-0.4%	9.8%	2.5%	9.7%	10.6%	1.02	62.2%	
OTTR	OTTER TAIL CORP	\$27.73	\$1,036	\$1,546	33.0%	\$160	0.6	(13.2)	(10.8)	(10.4)	(2.8)	(10.4)		17.5%	-2.8%	7.4%	17.2%		1.52	36.2%	
PHG	KONINKLIJKE PHILIPS NV	\$27.66	\$25,188	\$29,423	14.4%	\$3,147	(1.6)	(6.0)	(1.4)	0.2	(13.3)	(4.6)	24.5	224.5%	-31.8%	3.5%	21.5%	-2.9%	1.52	36.2%	
CSL	CARLISLE COS INC	\$98.17	\$6,370	\$6,389	0.3%	\$515	0.7	5.3	4.4	10.6	17.1	8.8	51.8	31.6%	6.1%	24.8%	19.7%	10.3%	1.00	33.9%	
ROP	ROPER TECHNOLOGIES INC	\$172.34	\$17,295	\$18,899	8.5%	\$1,200	2.0	1.5	7.0	8.9	22.5	10.2	13.4	8.4%	13.6%	7.0%	9.8%	19.9%	0.56	54.5%	
TXT	TEXTRON INC	\$45.19	\$12,547	\$15,684	20.0%	\$1,555	1.1	(1.4)	3.8	7.9	16.8	7.3	9.3	16.5%	22.9%	16.3%	18.4%		1.45	86.8%	
IR	INGERSOLL-RAND PLC	\$67.44	\$17,845	\$21,717	17.8%	\$1,753	0.4	(0.1)	1.3	6.2	14.5	6.4	10.4	15.7%	24.7%	13.5%	16.9%	21.1%			
Average							0.8	(0.9)	(0.0)	2.5	6.7	1.7	16.1	139.8%	-4.7%	-30.9%	12.7%	11.5%	1.16	65.2%	
Median							1.1	(1.4)	(0.9)	3.6	9.9	2.2	9.3	15.4%	9.8%	6.3%	9.8%	10.7%	1.09	46.4%	
SPX	S&P 500 INDEX	\$2,116					1.3	1.6	2.9	4.1	12.8	2.8		7.6%	1.7%	12.6%				1.00	
Ticker	Website	2014 ROE	2014 P/B	P/E					2014-2015					EV/EBIT			Sales Growth				
				2013	2014	2015E	TTM	NTM	2016E	NPM	P/S	2015	OM	ROIC	Current	5-yr	NTM	STW	Pst 5yr		
MMM	http://www.3m.com	34.1%	7.32	23.9	21.4	20.2	21.3	19.7	18.3	14.9%	3.20	3.07	22.6%	23.7%	15.9	15.7	13.5	-0.4%		6.6%	
DHR	http://www.danaher.com	13.0%	2.87	24.6	22.1	19.6	23.3	19.3	17.9	13.5%	2.99	2.89	17.8%	9.9%	17.2	16.3	14.4	3.2%		12.2%	
GE	http://www.ge.com	15.3%	2.54	16.7	16.6	19.3	289.5	19.9	16.8	11.2%	1.85	2.11	14.8%	3.7%	19.6	11.2	8.2	-11.4%		-0.9%	
HON	http://www.honeywell.com	23.8%	4.55	20.5	19.2	16.8	18.7	16.4	15.3	10.3%	1.98	2.03	16.5%	17.7%	12.7	16.6	13.8	-0.5%		5.5%	
IEP	http://www.ielp.com	-4.1%	2.05	10.0	-49.8	16.0	-29.4	16.0	14.8	-1.2%	0.59	0.64	4.2%	-2.3%	13.4	18.7	12.7	-9.9%	5.7%	20.3%	
UTX	http://www.utc.com	21.2%	3.68	19.1	17.4	16.9	16.7	16.8	15.4	9.3%	1.62	1.62	13.9%	12.4%	13.5	11.7	11.8	1.9%		4.4%	
OTTR	http://www.ottertail.com	11.8%	1.80	18.0	15.3	15.8	21.9	14.7	15.7	8.5%	1.30	1.29	12.2%	5.7%	16.1	8.9	6.7			-4.8%	
PHG	http://www.philips.com	10.7%	2.06	13.1	19.2	18.6	58.7	18.1	15.3	4.6%	0.89	1.00	5.1%	1.6%	19.2	43.6	10.0	-3.4%	5.5%	-2.7%	
CSL	http://www.carlisle.com	11.2%	2.88	27.2	25.6	20.5	25.4	19.3	17.2	7.8%	1.99	1.73	12.7%	8.8%	14.4	18.6		17.2%		6.1%	
ROP	http://www.roperind.com	13.5%	3.63	30.5	26.8	25.1	26.6	24.5	22.9	18.2%	4.87	4.71	28.6%	9.5%	17.3	19.0	16.4	3.8%		11.6%	
TXT	http://www.textron.com	13.6%	2.86	25.8	21.0	18.1	19.7	16.9	15.3	4.3%	0.90	0.88	8.0%	7.7%	13.6	10.6	7.7	2.4%		5.7%	
Average		14.9%	3.29	20.9	14.1	18.8	44.8	18.7	16.7	9.2%	2.02	2.00	14.2%	8.9%	15.7	17.4	11.5	0.3%	5.6%	5.8%	
Median		13.5%	2.87	20.5	19.2	18.6	21.9	18.7	15.4	9.3%	1.85	1.73	13.9%	8.8%	15.9	16.3	12.2	0.7%	5.6%	5.7%	

Source: Factset, Company reports

Sum-Of-Parts Analysis

Although there are many other industrial conglomerates besides 3M, there are no industrial conglomerates that are directly comparable to 3M. The company has many niche businesses that make it hard to compare to other conglomerates with operating segments largely made up of businesses in which 3M does not operate.

To gain a better understanding of how the company should be valued, I used a sum-of-parts analysis, which separately compares each of 3M's five business segments to companies that conduct in the same type of operations. . Displayed in figure 33 on the next page are EV and EBITDA valuation metrics of 3M's business segments relative to their respective comps. This gives a depiction of how each segment can be valued relative to their industry. I used EBITDA as the metric because it shows how much cash is generated from operations by each business. Furthermore, only sales, EBIT and depreciation & amortization metrics are provided for segments in 3M's company reports.

To determine the value of each division, I analyzed the average EV/EBITDA multiples of comps and adjusted them for a couple considerations. First, I adjusted the multiples for my forecast of future valuations. Second, I considered MMM's profitability of its segments versus the comps; however, the relationship was weak. I also varied the multiples (min and max) to determine a range of valuations. 3M's "Other" segment had no comparable companies so I simply used the average EV/EBITDA multiple of industrial conglomerates.

Figure 33: Current year and forward year EV, EBITDA and EV/EBITDA of companies comparable to each of 3M's business segments

Industrials								
Ticker	EV	EBITDA	EBITDA1	EBITDA2	EV/EBITDA	EV/EBITDA1	EV/EBITDA2	
MMM	\$32,926	\$2,772	\$2,918	\$3,251				
AVY	\$6,171	\$744	\$709	\$755	8.3x	8.7x	8.2x	
FUL	\$2,793	\$221	\$283	\$316	12.6x	9.9x	8.8x	
DORM	\$1,662	\$153	\$166	\$190	10.8x	10.0x	8.8x	
DLPH	\$27,371	\$2,578	\$2,583	\$2,920	10.6x	10.6x	9.4x	
SHW	\$29,230	\$1,497	\$1,808	\$2,030	19.5x	16.2x	14.4x	
MAS	\$11,533	\$1,037	\$1,095	\$1,226	11.1x	10.5x	9.4x	
HUN	\$10,074	\$1,280	\$1,416	\$1,658	7.9x	7.1x	6.1x	
DOW	\$79,288	\$8,434	\$8,901	\$9,656	9.4x	8.9x	8.2x	
Average		\$21,015	\$1,993	\$2,120	\$2,344	11.3x	10.2x	9.2x

Safety & Graphics								
Ticker	EV	EBITDA	EBITDA1	EBITDA2	EV/EBITDA	EV/EBITDA1	EV/EBITDA2	
MMM	\$18,174	\$1,530	\$1,632	\$1,779				
UNF	\$2,089	\$265	\$268	\$284	7.9x	7.8x	7.3x	
MSA	\$1,849	\$174	\$175	\$205	10.6x	10.5x	9.0x	
CTAS	\$10,324	\$802	\$869	\$940	12.9x	11.9x	11.0x	
GWV	\$17,136	\$1,632	\$1,610	\$1,734	10.5x	10.6x	9.9x	
Average		\$7,849	\$718	\$731	\$791	10.5x	10.2x	9.3x

Electronics & Energy								
Ticker	EV	EBITDA	EBITDA1	EBITDA2	EV/EBITDA	EV/EBITDA1	EV/EBITDA2	
MMM	\$16,463	\$1,386	\$1,437	\$1,528				
AXE	\$3,431	\$405	\$328	\$360	8.5x	10.5x	9.5x	
COMM	\$7,632	\$868	\$782	\$828	8.8x	9.8x	9.2x	
TEL	\$31,453	\$2,752	\$2,704	\$2,878	11.4x	11.6x	10.9x	
GLW	\$27,196	\$3,027	\$3,599	\$3,598	9.0x	7.6x	7.6x	
Average		\$17,428	\$1,763	\$1,853	\$1,916	9.4x	9.9x	9.3x

Health Care								
Ticker	EV	EBITDA	EBITDA1	EBITDA2	EV/EBITDA	EV/EBITDA1	EV/EBITDA2	
MMM	\$25,027	\$2,107	\$2,195	\$2,416				
BSX	\$27,139	\$1,570	\$1,942	\$2,178	17.3x	14.0x	12.5x	
MDT	\$107,818	\$5,780	\$7,182	\$9,562	18.7x	15.0x	11.3x	
SYK	\$35,001	\$2,576	\$2,721	\$2,878	13.6x	12.9x	12.2x	
ZMH	\$18,922	\$1,740	\$2,074	\$2,332	10.9x	9.1x	8.1x	
Average		\$47,220	\$2,916	\$3,480	\$4,237	15.1x	12.7x	11.0x

Consumer								
Ticker	EV	EBITDA	EBITDA1	EBITDA2	EV/EBITDA	EV/EBITDA1	EV/EBITDA2	
MMM	\$13,102	\$1,103	\$1,166	\$1,256				
GK	\$1,628	\$127	\$144	\$157	12.8x	11.3x	10.4x	
KMB	\$47,744	\$3,980	\$4,080	\$4,295	12.0x	11.7x	11.1x	
CTAS	\$10,324	\$802	\$869	\$940	12.9x	11.9x	11.0x	
MAS	\$11,533	\$1,037	\$1,095	\$1,226	11.1x	10.5x	9.4x	
Average		\$17,807	\$1,487	\$1,547	\$1,654	12.2x	11.4x	10.5x

Source: Factset, Company reports

Figure 34: Present value of enterprise value for each operating segment and implied EV/EBITDA multiple for the whole company

	2015 min	2015 max	2015 avg	2016 min	2016 max	2016 avg
Industrial						
Industrial Enterprise value	\$ 29,176	\$ 35,012	\$ 32,094	\$ 32,094	\$ 37,929	\$ 35,012
Safety & Graphics						
Safety & Graphics Enterprise value	\$ 16,316	\$ 19,579	\$ 17,947	\$ 18,763	\$ 22,026	\$ 20,394
Electronics & Energy						
Electronics & Energy Enterprise value	\$ 12,936	\$ 15,811	\$ 14,373	\$ 14,373	\$ 17,248	\$ 15,811
Health Care						
Health Care Enterprise value	\$ 31,827	\$ 36,216	\$ 34,022	\$ 30,729	\$ 35,119	\$ 32,924
Consumer						
Consumer Enterprise value	\$ 12,831	\$ 14,580	\$ 13,706	\$ 12,831	\$ 14,580	\$ 13,706
Other						
Other Enterprise value	\$ (4,132)	\$ (4,870)	\$ (4,501)	\$ (3,800)	\$ (4,538)	\$ (4,169)
3M Company						
3M Company Enterprise value	\$ 98,954	\$ 116,328	\$ 107,641	\$ 104,990	\$ 122,365	\$ 113,678
Implied EV/EBITDA	11.0x	13.0x	12.0x	10.6x	12.4x	11.5x

Figure 35: Inputs used in sensitivity table

	2014	2015e	2016e
Debt	\$ 6,731	\$ 7,678	\$ 8,528
Preferred Stock	\$ 0	\$ 0	\$ 0
Cash	\$ 1,897	\$ 2,630	\$ 2,824
Minority Interest	\$ 33	\$ 33	\$ 33
Investments	\$ 1,556	\$ 1,556	\$ 1,556
Outstanding Shares	649.2	630.7	612.7

The implied EV/EBITDA is the sum of each of the forecasted segments and divided that sum by the forecasted EBITDA of the entire company .

After finding an EV/EBITDA multiple for the whole company, I created a sensitivity table for 2015 and 2016 based on my forecasts for the future values of 3M's market value of long-term debt, cash account balance, minority interest, investments and outstanding number of common shares. See figure 33 to the left for forecasted values.

See figures 36 and 37 on the next page to view the sensitivity table on the company as a whole.

Figure 36: Sensitivity table for 2015 (above) and percent upside/downside from current share price (below)

		EBITDA 2015				
		\$ 7,979	\$ 8,479	\$ 8,979	\$ 9,479	\$ 9,979
EV/EBITDA	10.0x	\$ 120.92	\$ 128.85	\$ 136.78	\$ 144.70	\$ 152.63
	11.0x	\$ 133.57	\$ 142.29	\$ 151.01	\$ 159.73	\$ 168.45
	12.0x	\$ 146.22	\$ 155.74	\$ 165.25	\$ 174.76	\$ 184.28
	13.0x	\$ 158.87	\$ 169.18	\$ 179.49	\$ 189.79	\$ 200.10
	14.0x	\$ 171.53	\$ 182.62	\$ 193.72	\$ 204.82	\$ 215.92

% upside/downside					
-25%	-20%	-15%	-10%	-5%	
-17%	-11%	-6%	-1%	5%	
-9%	-3%	2.9%	9%	15%	
-1%	5%	12%	18%	25%	
7%	14%	21%	28%	34%	

Figure 37: Sensitivity table for 2016 (above) and percent upside/downside from current share price (below)

		EBITDA 2016				
		\$ 8,861	\$ 9,361	\$ 9,861	\$ 10,361	\$ 10,861
EV/EBITDA	9.5x	\$ 130.56	\$ 138.32	\$ 146.07	\$ 153.82	\$ 161.57
	10.5x	\$ 145.02	\$ 153.59	\$ 162.16	\$ 170.73	\$ 179.30
	11.5x	\$ 159.49	\$ 168.87	\$ 178.26	\$ 187.64	\$ 197.02
	12.5x	\$ 173.95	\$ 184.15	\$ 194.35	\$ 204.55	\$ 214.75
	13.5x	\$ 188.41	\$ 199.43	\$ 210.44	\$ 221.46	\$ 232.48

% upside/downside					
-19%	-14%	-9%	-4%	1%	
-10%	-4%	1%	6%	12%	
-1%	5%	11%	17%	23%	
8%	15%	21%	27%	34%	
17%	24%	31%	38%	45%	

Between the two target prices shown in figures 36 and 37, I took an equal weighted average between the two and acquired a target share price of \$171.75

Summary

The target share price derived from the discounted cash flow valuation is \$172.05 and the target share price derived from the sum of parts valuation is 171.75. After taking an equal weighted average between the two, I come to my final target share price of \$172.00.

Business Risks

Although my estimated target price is 7.1% above 3M’s current share price, there are some factors that may disrupt the company’s forecasted success:

1. Foreign currency exposure
2. Introduction of new products
3. Natural disasters
4. International economic conditions
5. Insider management
6. New tax laws

Foreign Currency Exposure

As stated in the business drivers section, 3M’s success is heavily reliant upon relatively low foreign exchange volatility. Since 1999, 3M has hedged out 50% of all revenues exposed internationally, but if the dollar continues to appreciate relative to other currencies like it has in the past 6 months, 3M is extremely vulnerable and will have a difficult time generating sales growth in its non-US geographic segments.

Introduction of New Products

For 3M to be able to benefit from high operating margins and sales growth, it is required to introduce new products into the marketplace. If there are any difficulties or delays in product development, such as being unable to gain acceptance of newly introduced products or the inability to obtain intellectual property, certain products may prove to be commercially unsuccessful. Unsuccessful products or entirely unsuccessful businesses invested in by 3M may end up taking away from operating profits and sales growth.

Natural Disasters

Natural disasters around the world are infrequent but are inevitably bound to happen. Given that 3M operates in over 70 different countries, natural disasters may disrupt global supply chains in place if a natural disaster were to occur in a part of the world relevant to 3M. Suppliers and/or customers of the company could be damaged or eliminated by a natural disaster, possibly leaving 3M with a surplus of finished products or a shortage of raw materials.

International Economic Conditions

As stated above, a shortage of raw materials may increase direct costs when purchasing scarce raw materials at a premium or could cause 3M to have trouble meeting customer needs. 3M has a process to minimize volatility in unfinished component and raw material pricing, but there is never a clear guarantee that the company will be able to successfully manage price fluctuations in necessary supplies.

Management

Inge G. Thulin has been CEO of 3M since 2012 and is now President and Chairman of the Board of Directors as well. Given that he is an insider and manages the company, there could be a potential conflict of interest between his goals and the goals of the shareholders. Although, it is important to note that Mr. Thulin owns roughly 102,000 shares of the company (more than any other insider). It is important to note this due to fact that because he is a large shareholder in the company, his goals may more accurately align with shareholders' goals. Furthermore, in the three years Mr. Thulin has been CEO, 3M's share price has had 21.6% year-over-year share price growth.

New Tax Laws

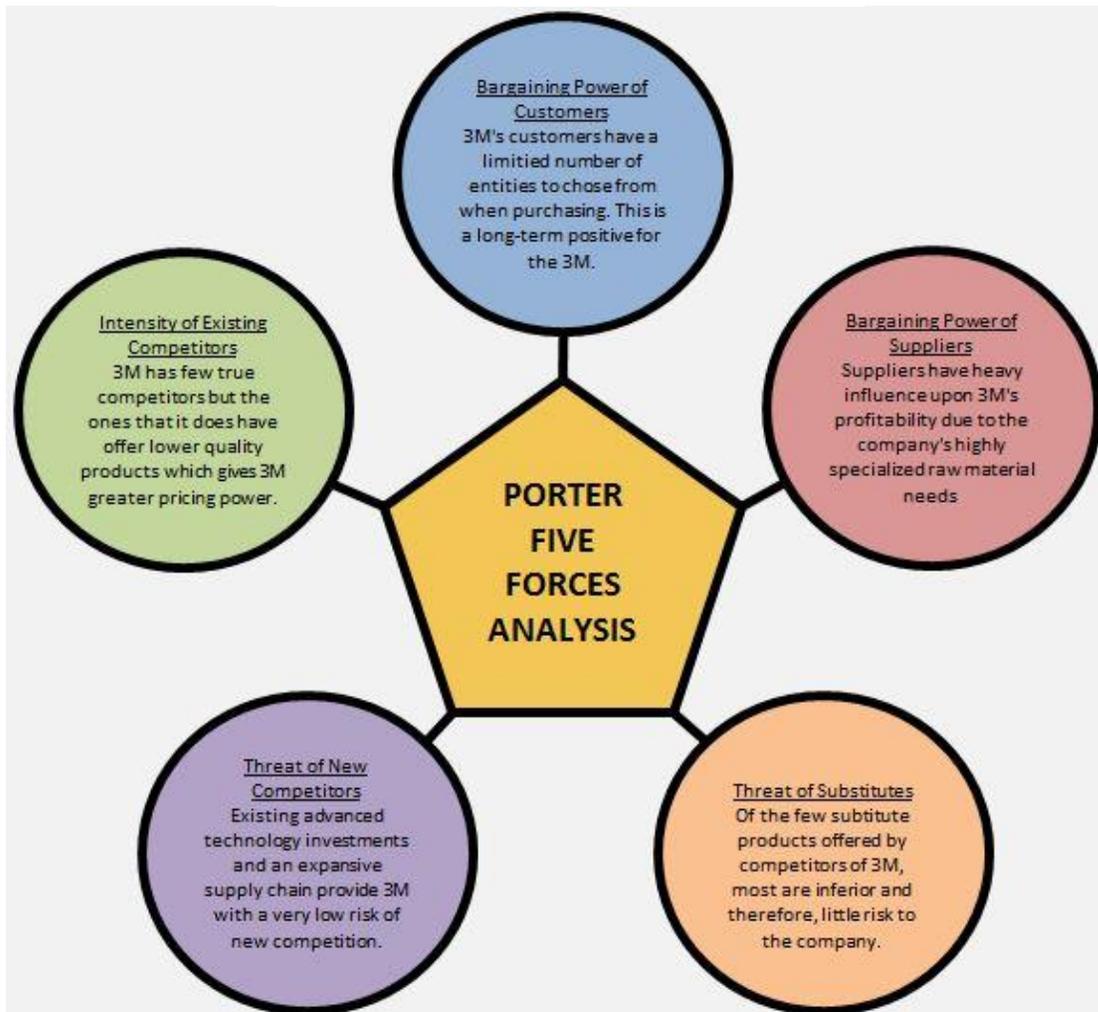
3M is at risk if the tax laws within the United States or abroad change unfavorably. President Obama is suggesting a 19% corporate tax rate on revenue generated outside of the United States even if it is kept within the country where the revenue was earned. This could impact 3M negatively because the tax laws currently in the United States do not tax American corporations' revenue that is made outside of the US as long as the revenue is not brought back to the companies' American bank accounts.

Furthermore, as stated in the financial analysis section of this report, recent laws have been enacted that impose taxes on medical technology sales. This will impact 3M's top line growth in its Health Care segment for all medical technology sales in the US.

Appendix 1: SWOT Analysis

SWOT ANALYSIS		
	Helpful	Harmful
Internal origin	Strengths	Weaknesses
	Globally diversified Diversified products Intellectual property Share buybacks Established supply chain	Insider management Large business to manage Poor R&D investments Unfavorable M&A
External origin	Opportunities	Threats
	Developed markets Emerging markets Acquisitions in key areas Healthcare growth in US	Natural disasters Foreign exchange volatility Unfavorable economic conditions Commodity price volatility Environmental regulations

Appendix 2: Porter five forces analysis



Appendix 3: Income statement

Income Statement							
	2010	2011	2012	2013	2014	2015e	2016e
Sales	\$26,662	\$29,611	\$29,904	\$30,871	\$31,821	\$32,952	\$34,038
<i>Growth</i>		11.1%	1.0%	3.2%	3.1%	3.6%	3.3%
Direct Costs	13,831	15,693	15,685	16,106	16,447	16,905	17,359
Gross Margin	12,831	13,918	14,219	14,765	15,374	16,048	16,678
SG&A	5,479	6,170	6,102	6,384	6,469	6,567	6,518
R&D	1,434	1,570	1,634	1,715	1,770	1,977	2,042
EBIT	5,918	6,178	6,483	6,666	7,135	7,503	8,118
<i>Growth</i>		4.4%	4.9%	2.8%	7.0%	5.2%	8.2%
Interest	163	147	132	104	109	109	122
EBT	5,755	6,031	6,351	6,562	7,026	7,395	7,997
Taxes	1,592	1,674	1,840	1,841	2,028	2,134	2,308
Continuing income	4,163	4,357	4,511	4,721	4,998	5,260	5,689
Other	78	74	67	62	42	50	50
Net income	4,085	4,283	4,444	4,659	4,956	5,210	5,639
<i>Growth</i>		4.8%	3.8%	4.8%	6.4%	5.1%	8.2%

Source: Company reports

Appendix 3: Balance Sheet

Balance Sheet							
Operating Assets	2010	2011	2012	2013	2014	2015e	2016e
Cash	3,377	2,219	2,883	2,581	1,897	2,630	2,824
Accounts receivable	3,615	3,867	4,061	4,253	4,238		
Inventory	3,155	3,416	3,837	3,864	3,706		
Other current assets	967	1,277	1,201	1,279	1,298		
Total operating assets	11,114	10,779	11,982	11,977	11,139	12,112	12,353
Fixed Assets							
Goodwill	6,820	7,047	7,385	7,345	7,050		
Intangible assets	1,820	1,916	1,925	1,688	1,435		
PP&E	20,253	21,166	22,525	23,068	22,841		
Accum. D&A	(12,974)	(13,500)	(14,147)	(14,416)	(14,352)	(15,085)	(15,718)
Other LT assets	1,336	1,696	1,233	1,557	1,600		
Net Fixed Assets	17,255	18,325	18,921	19,242	18,574	19,971	20,882
Marketable securities net	1,787	2,512	2,973	2,331	1,556	1,556	1,556
Total assets	\$30,156	\$31,616	\$33,876	\$33,550	\$31,269	\$33,639	\$34,791
Operating Liabilities							
Accounts payable	1,662	1,643	1,762	1,799	1,807		
Accrued payroll	778	676	701	708	732		
Accrued income taxes	358	355	371	417	435		
Other current liabilities	2,022	2,085	2,281	2,891	2,918		
Total operating liabilities	4,820	4,759	5,115	5,815	5,892	6,036	6,166
Long-term liabilities							
Long-term debt	\$5,452	\$5,166	\$6,001	\$6,009	\$6,837	\$7,678	\$8,528
Other LT liabilities	3,867	5,829	4,720	3,778	5,398	5,398	5,398
Total LT liabilities	9,319	10,995	10,721	9,787	12,235	13,076	13,926
Total Liabilities	\$14,139	\$15,754	\$15,836	\$15,602	\$18,127	\$19,111	\$20,092
Equity							
Common stock	\$9	\$9	\$9	\$9	\$9	\$9	\$9
Additional Paid-in Capital	\$3,468	\$3,767	\$4,044	\$4,375	\$4,379	\$4,644	\$4,926
Retained earnings	25,995	28,348	30,679	32,416	34,317	36,868	39,688
OCCI	(3,543)	(5,025)	(4,750)	(3,913)	(6,289)	(4,704)	(4,704)
Noncontrolling interest	354	442	465	446	33	33	33
Treasury stock	\$10,266	\$11,679	\$12,407	\$15,385	\$19,307	22,322	25,253
Total Stockholders' Equity	\$16,017	\$15,862	\$18,040	\$17,948	\$13,142	\$14,528	\$14,699
Total liabilities and equity	\$30,156	\$31,616	\$33,876	\$33,550	\$31,269	\$33,639	\$34,791

Source: Company reports

Appendix 4: Ratios

	Ratios					
	2011	2012	2013	2014	2015e	2016e
Profitability						
Gross margin	47.0%	47.5%	47.8%	48.3%	48.7%	49.0%
Operating (EBIT) margin	20.9%	21.7%	21.6%	22.4%	22.8%	23.9%
Net profit margin	14.5%	14.9%	15.1%	15.6%	15.8%	16.6%
Activity						
FA (gross) turnover	0.95	0.92	0.93	0.96	0.97	0.95
Total asset turnover	0.96	0.91	0.92	0.98	1.02	0.99
Inventory Turnover	4.78	4.33	4.18	4.35		
Inventory processing period	76	84	87	84		
Accounts Receivables Turnover	7.92	7.54	7.43	7.50		
Operating Cycle	123	133	136	133		
Accounts Payables Turnover	9.50	9.21	9.05	9.12		
Cash Conversion Cycle	84	93	96	93		
Liquidity						
Op asset / op liab	2.26	2.34	2.06	1.89	2.01	2.00
NOWC Percent of sales	20.8%	21.5%	21.1%	17.9%	17.2%	18.0%
Solvency						
Debt to assets	16.3%	17.7%	17.9%	21.9%	22.8%	24.5%
Debt to equity	32.6%	33.3%	33.5%	52.0%	52.8%	58.0%
Other liab to assets	18.4%	13.9%	11.3%	17.3%	16.0%	15.5%
Total debt to assets	34.8%	31.6%	29.2%	39.1%	38.9%	40.0%
Total liabilities to assets	49.8%	46.7%	46.5%	58.0%	56.8%	57.7%
Debt to EBIT	0.84	0.93	0.90	0.96	1.02	1.05
EBIT/interest	42.03	49.11	64.10	65.46	68.93	66.80
ROIC						
NOPAT to sales	15.1%	15.4%	15.5%	16.0%	16.2%	17.0%
Sales to IC	1.24	1.19	1.21	1.29	1.32	1.28
Total	18.6%	18.4%	18.7%	20.6%	21.4%	21.7%
Total using EOY IC	18.3%	17.9%	18.9%	21.3%	20.5%	21.3%
DuPondt ROE Analysis						
5-stage						
EBIT / sales	20.9%	21.7%	21.6%	22.4%	22.8%	23.9%
Sales / avg assets	0.96	0.91	0.92	0.98	1.02	0.99
EBT/EBIT	97.6%	98.0%	98.4%	98.5%	98.5%	98.5%
Net income (cont)/EBT	72.2%	71.0%	71.9%	71.1%	71.1%	71.1%
ROA	14.1%	13.8%	14.0%	15.4%	16.2%	16.6%
Avg assets / avg equity	1.94	1.93	1.87	2.08	2.35	2.34
ROE	27.3%	26.6%	26.2%	32.2%	38.0%	38.9%
3-stage						
Net income (cont) / sales	14.7%	15.1%	15.3%	15.7%	16.0%	16.7%
Sales / avg assets	0.96	0.91	0.92	0.98	1.02	0.99
ROA	14.1%	13.8%	14.0%	15.4%	16.2%	16.6%
Avg assets / avg equity	1.94	1.93	1.87	2.08	2.35	2.34
ROE	27.3%	26.6%	26.2%	32.2%	38.0%	38.9%
ROE using EOY equity	27.0%	24.6%	26.0%	37.7%	35.9%	38.4%
Other						
Payout Ratio	36.3%	36.8%	37.1%	44.7%	51.0%	50.0%
Retention Ratio	63.7%	63.2%	62.9%	55.3%	49.0%	50.0%
Sustainable Growth Rate	17.4%	16.8%	16.5%	17.8%	18.6%	19.5%

Source: Company reports