Analyst: Jacob Meehan

INVESTMENT MANAGEMENT CERTIFICATE PROGRAM

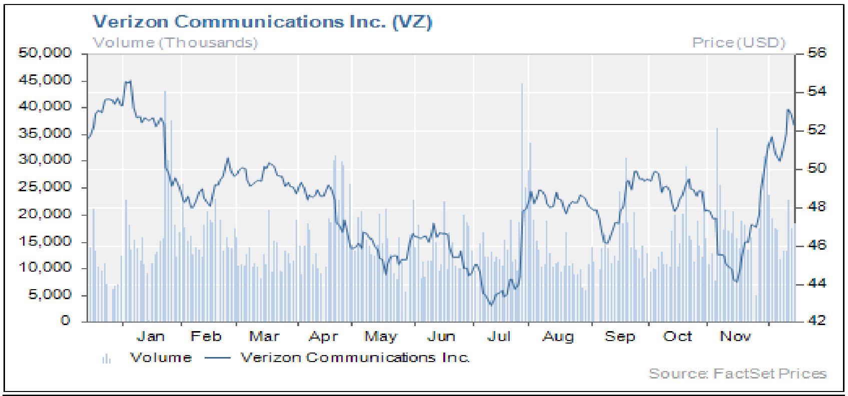
February 16, 2018

Recommendation	**NEUTRAL**
Target (today's value)	$54.00
Current Price	$49.74
52 week range	$42.80 - $54.83

Telecommunications

Verizon Communications Inc.

Share Data	
Ticker:	VZ
Market Cap. (Billion):	$213.52
Inside Ownership	0.0%
Inst. Ownership	65.4%
Beta	0.66
Dividend Yield	4.51%
Payout Ratio	59.6%
Cons. Long-Term Growth Rate	1.6%



Summary: I recommend a neutral rating with a target price of $54. Although VZ has an opportunity to dramatically improve efficiency and increase revenues, declining subscribers and added pressure from competitors are strong roadblocks. This uncertainty seriously offsets my optimism that the core business can greatly improve. The stock is fairly valued based on relative and DCF analysis.

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$131	$126	$124	$126	$128
Gr %	3.6%	-4.3%	-1.1%	1.4%	1.9%
Cons	-	-	$124	$125	$127
EPS					
Year	$4.29	$3.35	$3.32	$3.56	$4.02
Gr %	104.6%	-4.3%	-1.1%	1.4%	1.9%
Cons	-	-	$3.76	$3.87	$3.93

Ratio	'15	'16	'17E	'18E	'19E
ROE (%)	124%	67.4%	67.4%	60.2%	50%
Industry	29.5%	19.3%	19.3%	20.5%	19%
NPM (%)	13.6%	10.4%	10.4%	12.3%	13%
Industry	5.9%	5.9%	5.9%	7.5%	7.8%
A. T/O	0.55	0.52	0.52	0.49	0.49
ROA (%)	7.5%	5.4%	5.4%	6.0%	6.1%
Industry	3.0%	2.9%	2.9%	3.5%	3.7%
D/A	44.5%	46.1%	46.1%	46.1%	47%

Valuation	'16	'17E	'18E	'19E
P/E	14.1	13.1	13.9	13.5
Industry	23.5	18.3	17.8	126.4
P/S	1.57	1.68	1.70	1.68
P/B	10.6	7.8	7.6	6.1
P/CF	6.2	9.4	7.7	6.5
EV/EBITDA	9.0	12.5	11.1	10.9

Performance	Stock	Industry
1 Month	18.4%	10.5%
3 Month	10.9%	-1.3%
YTD	-1.9%	-19.2%
52-week	1.4%	-27.0%
3-year	14.8%	-30.0%

Key Drivers:

- Competition: VZ faces high pressure from competitors to keep prices low. In order to maintain subscription growth and a low churn rate, VZ needs to stand out amongst its peers.

- Mergers and Acquisitions: VZ's ability to expand its business segments relies heavily on acquisitions of media companies. Verizon has effectively completed numerous acquisitions contributing to future growth.

- Technological Advancements: Verizon's greatest opportunity for growth is through the development of new technology. VZ plans to release 5G technology by late 2018 or early 2019.

- Regulations: VZ will see benefits in 2018 through the repeal of Net Neutrality; however, the firm faces risk of potential mergers and acquisitions being blocked by the US government.

Valuation: Verizon was valued on a three-stage discounting cash flow model and also on a relative approach. The firm is fairly valued on an intrinsic basis (target is $54) and appears to be overvalued on a relative price to sales approach. Verizon also appears to be fairly valued using a relative P/E valuation approach.

Risks: Threats to the business include high pressure from competition, increase in regulation and brand reputation. In addition, Verizon faces risk in maintaining subscription growth in a maturing sector.

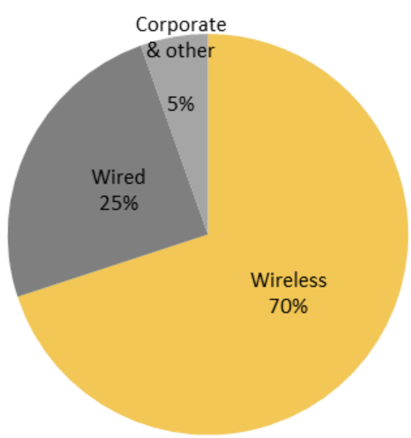
Contact: Jacob Meehan
Email: jmeehan@uwm.edu
Phone: 414-336-9462

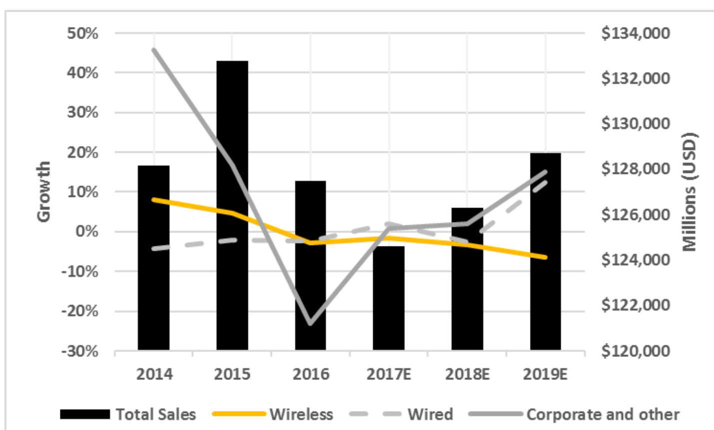
Company Overview

Verizon Communications, Inc. (VZ) is a holding company, which engages primarily in the provision of broadband and communication services. Verizon offers a variety of services and has built a reputation on coverage and reliability. VZ is America's largest telecommunications provider and covers approximately 98% of the United States. Through its subsidiary, Oath, Inc., the company oversees more than 50 media and technology brands. The Oath portfolio includes brands under Yahoo Sports, Yahoo Finance, Yahoo Mail, AOL, Huffington Post, MAKERS, Tumblr, BUILD Studios and more, with an overall goal to build consumer-friendly brands. VZ was founded on June 30th, 2000 and is headquartered in New York, NY. Verizon's revenue is generated primarily through the following three segments:

- Wired communications and entertainment (70%): Verizon offers a wired communications service. This includes Fios, which allows consumers to bundle Internet, TV, and landline services. Wired communication has been steadily declining by about 3% over the last four years.
- Wireless communications (25%). The Wireless segment provides consumers, businesses, and government customers with products on a postpaid and prepaid basis. This segment offers a variety of consumer services including: broadband video, local and long-distance voice services, security and managed network services, data center and cloud services, and corporate networking solutions. Up until recently, the growth rate for the wireless communications segment was very high (16% from 2011 to 2014). However, over the last two years sales have declined 3%, causing telecommunication companies to search for other revenue streams.
- Corporate and other (5%): This includes the Digital Advertising segment of Verizon and is a recent addition to compensate for the negative growth in the wireless and wired communication. Verizon is striving to build a top mobile global media company. This segment also includes telematics, investments in unconsolidated businesses, unallocated corporate expenses, pension, and other employee benefit related costs and lease financing.

Figures 1 and 2: Revenue Sources for VZ, year-end 2016 (left) and Revenue History since 2014 (right)





Source: Company reports, 10-K 2016

Business/Industry Drivers

There are many factors that may contribute to Verizon's future success, but the following four business drivers stand out from the rest:

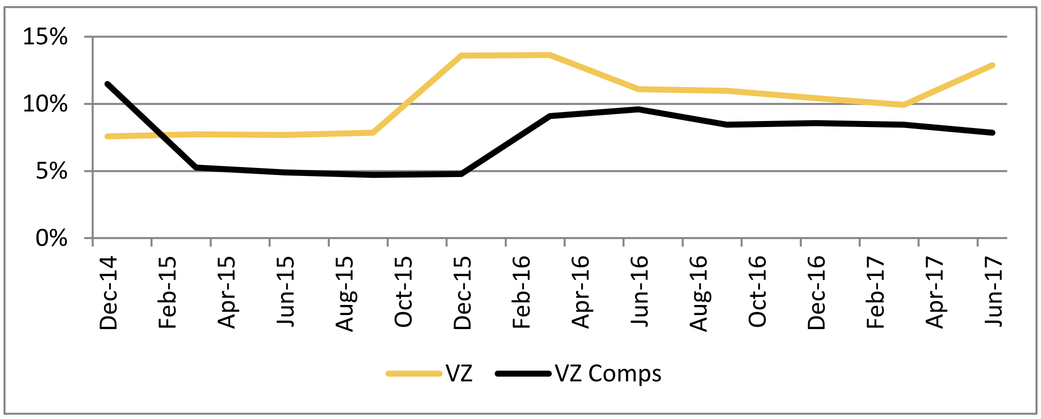
1. Competition
2. Mergers and Acquisitions
3. Technological Advancements
4. Regulations

Competition

The telecomm industry is maturing and companies compete strongly to attract customers. Most people have a landline and/or mobile phone, so growth from new adoption slowed (until 2014). Firms compete aggressively to attract its peer's customers. There are very high barriers to entry, but existing firms like Verizon, AT&T, Sprint and T-Mobile are well entrenched. Success comes from keeping prices low, Verizon has done better than others so far as it has a higher profit margin than its competitors; however, it has a lower growth rate.

VZ's spike in profit margin was attributed to the release of unlimited data plans

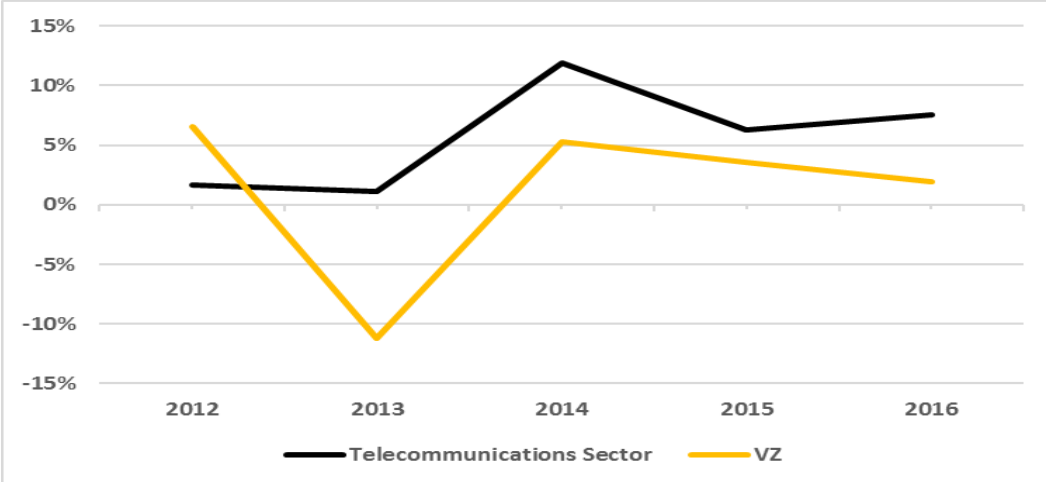
Figure 3: Profit Margin % of VZ vs. Comps



Source: FactSet

On December 31st, 2016, Verizon wireless had 114 million retail connections and revenues of approximately $89 billion for its wireless segment. This made up about 71% of Verizon's aggregate revenues and is a major contributor to its success. Wireless revenues for VZ correlate directly to net additions in subscribers the low churn rate.

Figure 4: Subscription Growth



Source: Bloomberg

The millennial generation is a huge contributor to new subscribers

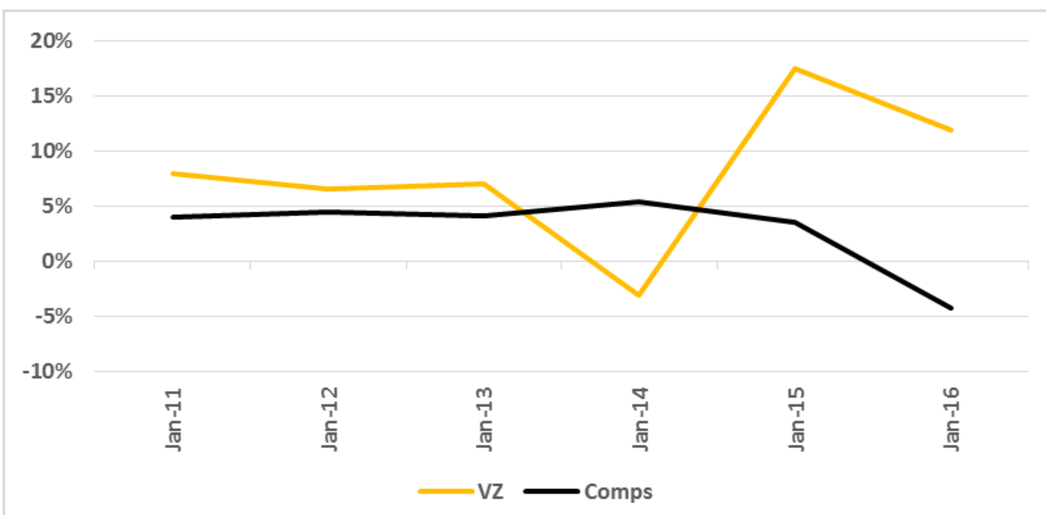
Up until 2014, the subscription growth rate for US telecommunication companies was decreasing. With the increasingly popularity trend of using smart phones for everyday tasks, VZ and the industry experienced a huge spike in subscriber growth in 2014. The implementation of a 4G network and affordable smart phones was a major contributor to this increase is subscriptions. However, growth slowed the next three years through 2Q 2017. Reaching market saturation, VZ experienced a slower growth in subscribers compared to its competitors. Verizon remains the number one wireless service provider, but has lost customers due to lower prices from competition. In order to gain back subscribers, VZ has lowered prices, which in turn has negatively affected revenues.

Mergers and Acquisitions

The telecomm industry is seeking new ways to grow its customer base and revenue streams. Mergers and acquisitions have not offset the decline in sales from the telecomm business; although, VZ has recently outperformed its comps.

VZ's decline in sales growth led it to make strategic acquisitions

Figure 5: Sales Growth of VZ vs Comps

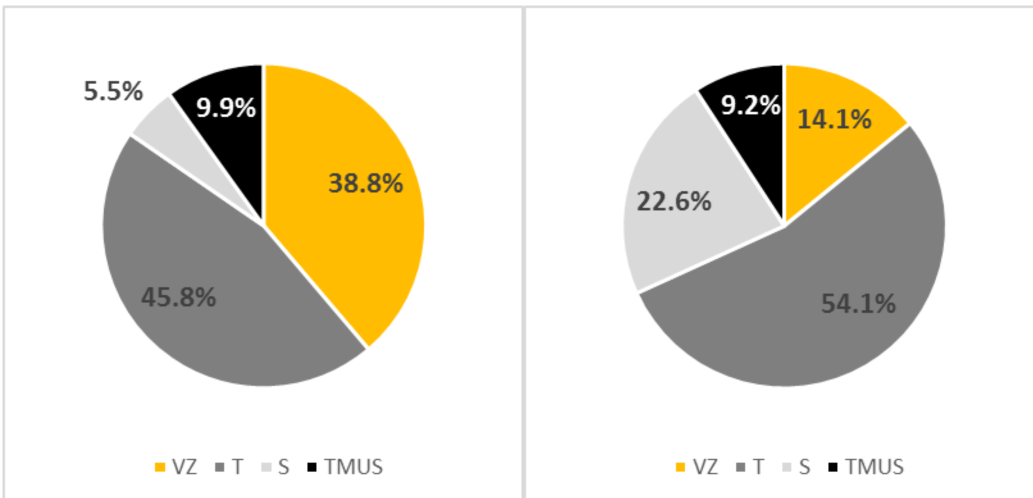


Source: FactSet

Telecommunications are merging with big name media companies in hopes of diversifying to achieve economies of scale. Most companies, such as AT&T, are targeting big name media companies such as Time Warner Cable in hopes of a mutually beneficial merger. On one hand, telecomm companies want to sell more video content and would be able to do so with a well-established media company, and on the other hand media companies are looking for new wireless distribution channels to accommodate the new generation's preference for media via smartphones.

Verizon is the second largest company by market cap in the sector, but is much smaller based on sales. This implies that the market is much more optimistic about VZ than its peers.

Figure 6 and 7: Comparison of VZ Comps by Market Cap (left) and Sales (right)



Source: FactSet, IMCP

VZ views digital advertising as a new source of revenue. Verizon completed a $4.5 billion acquisition of Yahoo in June of 2017 and a $4.4 billion acquisition of AOL in June of 2015. VZ plans to take the billion Yahoo internet users and combine them with AOL's businesses to become an online advertising powerhouse. The combination of these two businesses is known as Oath and is comprised of 50 media and tech brands. VZ faces direct competition from Facebook and Google in the digital advertising business where they control almost two thirds of the online market. Verizon is currently tied with Microsoft for third, contributing only five percent of the online ad market.

Competitors such as Google, Facebook, and Microsoft contribute 70 % of the digital advertising market

Oath currently conducts business in 40 countries and is looking to expand. Oath has 1.3 billion monthly users and hopes to increase this to 2 billion by 2020. With 2 billion monthly users, Oath could generate annual revenues between $10 and $20 billion. This would boost overall revenues by up to 15% and compensate for VZ's lack of sales growth in telecommunications.

Technological Advancements

Verizon is the largest service provider in the United States and distinguishes itself as being one of the most technologically advanced companies in this sector. VZ currently has 147.2 million subscribers and is closely followed by AT&T with 136.5 million subscribers. Verizon provides phone and high speed services coverage across the United States.

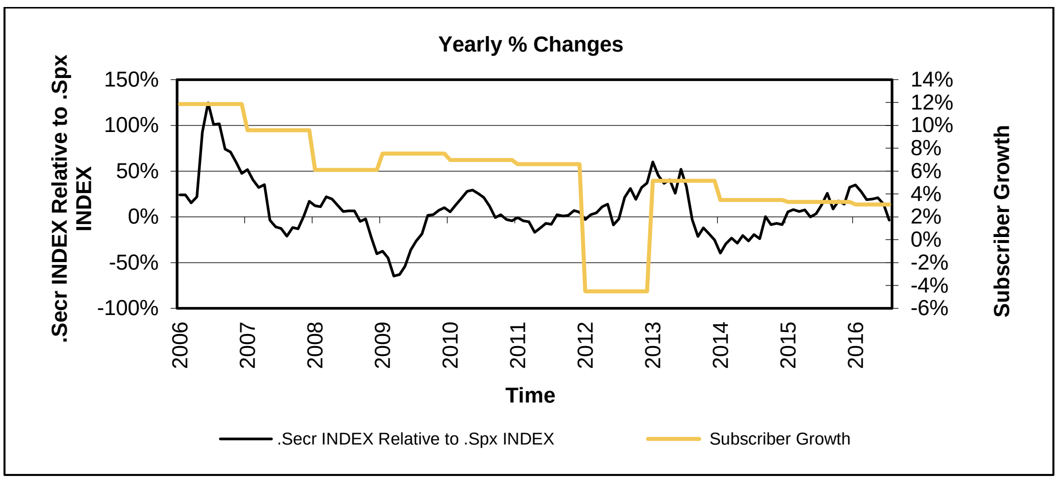
Figures 8 and 9: Coverage of Service Providers, AT&T (left) and Verizon (right)

Source: Whistle Out

Although AT&T comes close, no other competitor can match VZ's coverage

VZ will have a competitive advantage of being the first telecomm provider to implement 5G technology. Sprint was the first to offer 4th generation (4G) broadband speeds for its consumers in 2009 and saw higher subscription growth at that time. Soon after Sprint's release of this technology, other telecomm companies offered 4G data services as well. This contributed to the sector outperforming the S&P 500 index in 2010.

Figure 10: VZ Comps Yearly Return Relative to the S&P 500 Index Compared to Subscriber Growth



Source: Bloomberg

4G technology enabled up to 10 times faster service than previous implemented 3G technology. In May of 2017, Verizon outbid AT&T by paying $3.1 billion for Straight Path Communications. This helped VZ in the race to release 5G services as Straight Path Communications possesses an array of wireless licenses usable in future high frequency technology. By implementing 5G mobile and fixed broadband services, VZ will be able to attract competitors' customers. Verizon plans to start implanting 5G optic internet but the end of 2018 or early 2019. The release of this technology will boost sales in a lacking wireline segment. Revenue from a 5G internet service will rely heavily on the successful expansion of fiber optic into states throughout the US. Currently, 10 states offer these types of internet services and VZ will need fast expansion in order to significantly increase revenue.

Regulations

Government regulations have had a significant impact on the telecomm industry. Most companies have trouble breaking into emerging markets because foreign governments have strict regulations keeping companies from entering. A way around this is by merging with other service providers already established in other countries. Long term success may come from expanding subscriber bases into the global market.

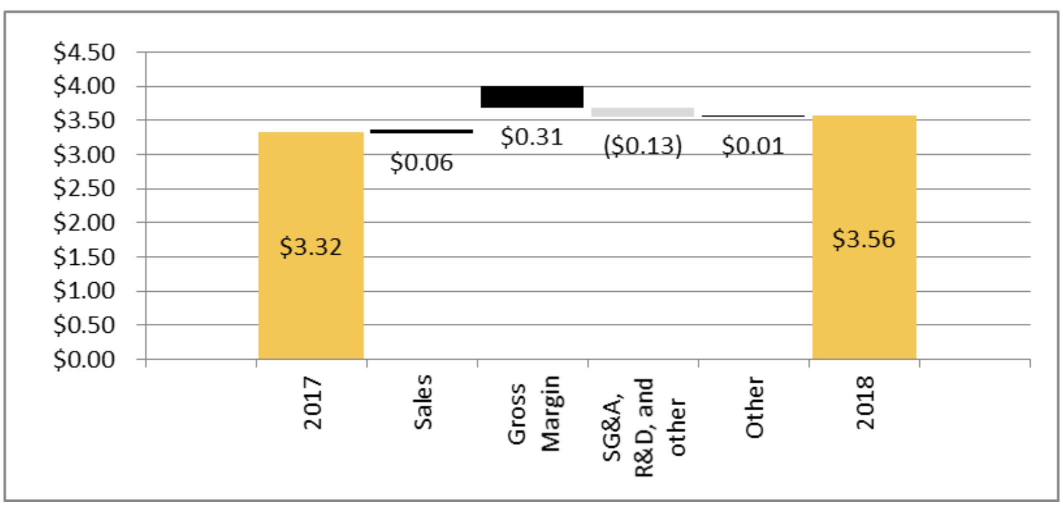
Under the Obama administration, telecomm companies suffered from net neutrality regulations that negatively impacted internet providers such as Verizon, AT&T, and Comcast. Net neutrality is the principle that internet service providers must treat all internet data the same and to not discriminate or charge differently by user, content, website, platform, application, or method of communication. Although Verizon publicly supports net neutrality, repeal could spur growth.

The Federal Communications Commission Chairman proposed a repeal of the 2015 net neutrality act and met support from top telecommunications companies. Deregulating net neutrality would mean more freedom for the internet providers and could spur investments in broadband services. For Verizon, this would be excellent news as it is investing heavily in its digital advertising segment. By having more freedom of what kind of rates a firm can charge customers, VZ could boost revenues and expand this segment significantly. This will not only benefit VZ's wireless segments, but will directly contribute to advertising profits. Verizon can direct customers to use Yahoo's search engine and in turn, create more activity for its advertising segment. Net Neutrality has already been voted to be repealed and VZ will see the benefits off this new policy by the end of 2018.

Financial Analysis

I anticipate EPS to increase from $3.32 in FY2017 to $3.56 in FY2018. An increase in sales should increase earnings by $0.06. A modestly high gross margin is the expected result of Verizon's four year plan to cut $10 billion in costs by FY2020. This $10 billion is nearly 20% of VZ's cost of goods sold. This decrease in expenses will increase the gross margin and should ultimately raise earnings by $0.31. I anticipate R&D expenses to increase in FY2017 as Verizon expedites its development of of a 5G fiber optic network. The increase in expenses should have a negative impact on earnings, decreasing EPS by $0.13.

Figure 11: Quantification of 2018 EPS Drivers

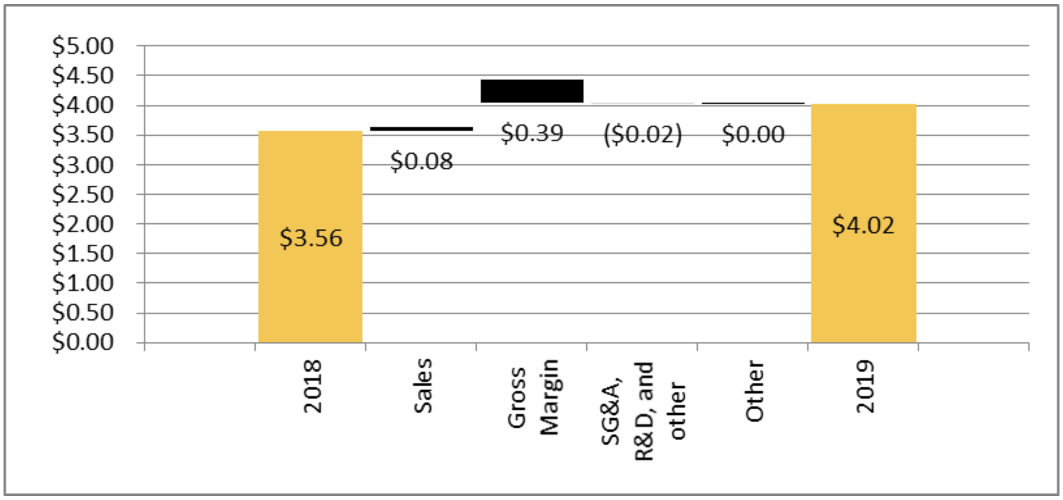


Source: Company Reports, IMCP

VZ announced a plan to cut costs by $10 billion dollars by 2020

In 2019, I expect earnings per share to increase from $3.56 to $4.02. An increase in sales will drive earnings up by $0.08. A continuation of VZ's cost cutting plan will show an even more optimistic gross margin. The new budgeting system is anticipated to increase earnings $0.39 through the gross margin and decrease EPS through higher SG&A by $0.02 (as a percent of sales).

Figure 12: Quantification of 2019 EPS Drivers



Source: Company Reports, IMCP

Revenues and EPS estimates

VZ announced a share buyback plan allowing the firm to buy back up to 100 million shares

I am more pessimistic in my estimates compared to the consensus for 2018. I am predicting a lower EPS based off a more conservative outlook on cutting costs. Although I am predicting higher revenues, I believe Verizon will incur more expenses during 2018 resulting in a lower gross margin and lower EPS. I also believe VZ will be less aggressive on its share buyback program than the consensus anticipates.

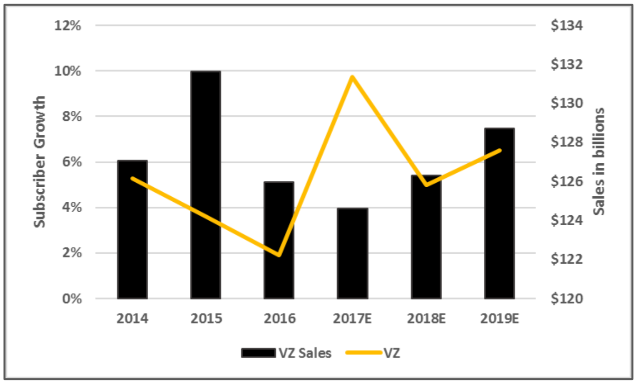
Figure 13: Estimated revenue and EPS vs. Consensus

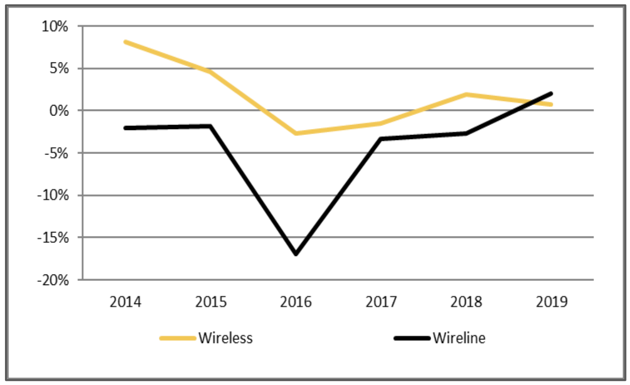
	2018E	2019E
Revenue - Estimate	1,263	1,287
YoY Growth	1.00%	1.90%
Revenue - Consensus	1,253	1,272
EPS - Estimate	$3.56	$4.02
YoY Growth	7.30%	12.90%
EPS - Consensus	$3.76	$3.93

Revenues

Verizon's largest revenue source comes from its wireless business segment, making up 70% of total revenue. The biggest potential for sales growth in this segment is derived from the number of subscribers in a given year. For 11 straight quarters, VZ saw a decline in wireless revenue as well as a decline in subscriber growth from 2014 to 2016. Wireless revenue finally showed growth in Q2 of 2017 as Verizon released its unlimited data plan. Shortly after the release of this plan, VZ saw a huge spike in subscriber growth. Even though subscribers are growing in 2017, sales are down due to added pressure from peers. In order to attract customers, VZ kept prices low and this resulted in a decline in revenue.

Figure 14 and 15: Verizon sales vs. subscriber growth (left) and sales growth by segment (right)





Source: Factset

VZ's subscriber growth in 2017 was met with declining sales as the firm decreased prices to match competitors

Moving into 2018, Verizon will be able to raise its prices to match its peers. Although I anticipate subscriber growth to slow, wireless revenues should increase due to a rise in price of plans.

I anticipate wireline revenues to decrease in 2017 and 2018 due to an increase in popularity from streaming platforms like Netflix and Hulu. VZ's Fios internet service is only available in 10 states limiting its potential for growth. Basic internet companies are also increasing streaming speeds to compete with fiber optic internet services. I anticipate this to cause revenue to fall until 2019 when Verizon plans to release its 5G fiber optic network. Wireline revenues should increase with a successful implementation of a next generation network. Verizon could experience sales growth of up to 5% if the demand increases for fiber optic.

Figure 16: Verizon sales and projected sales by segment

Items	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
Sales	$120,500	$127,080	$131,620	$125,980	$124,600	$126,300	$128,700
Growth		*5.5%*	*3.6%*	*-4.3%*	*-1.1%*	*1.4%*	*1.9%*
Wireless	81,023	87,646	91,680	89,186	87,800	89,500	90,200
Growth		*8.2%*	*4.6%*	*-2.7%*	*-1.6%*	*1.9%*	*0.8%*
Wireline	39,223	38,429	37,720	31,345	30,300	29,500	30,100
Growth		*-2.0%*	*-1.8%*	*-16.9%*	*-3.3%*	*-2.6%*	*2.0%*
Corporate and Other	254	1,005	2,220	5,449	6,500	7,300	8,400
Growth		*295.7%*	*120.9%*	*145.5%*	*19.3%*	*12.3%*	*15.1%*

VZ reported $2 billion in revenue from advertising in Q3 of 2017. I expect this trend to continue in 2018 but I am a little more conservative than the consensus. With a successful development in brand image, VZ could see revenues of up to $15 billion from advertising by 2020. Oath, Inc. faces a lot of risk as Yahoo has been hacked and lost reputation for credibility. Verizon also faces the challenge of competing with powerhouses like Google and Facebook. Although I anticipate revenues to increase significantly through advertising, I do not expect sales to be even near $15 billion by 2019.

Return on Equity

Verizon has maintained a relatively high ROE over recent years, primarily due to high leverage and management expects this trend to continue. I anticipate this trend to decrease through 2019 for a number of reasons. Although I anticipate Verizon to grow its margins and sales, I ultimately think this will be offset with a decrease in its assets/equity ratio as the firm uses FCF to pay down debt.

Figure 17: Verizon 5-stage DuPont ROE

5-stage DuPont ROE	2014	2015	2016	2017E	2018E	2019E
EBIT / sales	14.9%	24.9%	20.6%	19.7%	20.5%	22.2%
Sales / avg assets	0.50	0.55	0.52	0.51	0.51	0.52
EBT / EBIT	74.0%	85.0%	83.1%	82.4%	83.7%	85.5%
Net income /EBT	59.6%	62.8%	63.5%	67.0%	67.0%	67.1%
ROA	3.3%	7.3%	5.6%	5.5%	5.9%	6.6%
Avg assets / avg equity	4.64	15.14	11.67	9.44	8.22	7.11
ROE	15.3%	111.2%	65.3%	52.2%	48.5%	46.7%

Although Verizon has announced a 100 million share buyback program earlier this year, I do not anticipate this to be acted upon. In 2014, Verizon announced a similar deal allowing the repurchase of 100 million shares expiring in February of 2017. Of the 100 million, 97.5 million was still available for repurchase. Upon the expiration of this plan, Verizon announced an almost identical proposal expiring in 2020. To increase A/E, VZ should act more aggressively and use more of its cash to buy back shares.

Free Cash Flow

Verizon's FCFF was $16.6 billion in 2016 and I anticipate this to decrease slightly the next few years as higher NOPAT is offset by higher investments in operating capital. While I expect NOPAT to increase over the next few years, FCFE is lower than FCFF as I anticipate Verizon to focus on paying off debt. VZ is a highly levered company with the recent acquisitions of Yahoo and AOL. It still generates about $11 billion in FCFE even after my debt repayment assumption. This can be used to grow cash, buy shares and increase dividends year over year.

Figure 18: Verizon Free Cash Flow

Free Cash Flow	2013	2014	2015	2016	2017	2018	2019
With cash and debt							
NOPAT	$25,382	$14,414	$21,199	$17,029	$16,980	$17,945	$19,802
Growth		*-43.2%*	*47.1%*	*-19.7%*	*-0.3%*	*5.7%*	*10.4%*
NOWC	47,877	4,247	(6,283)	(1,300)	(1,584)	(2,171)	1,270
Net fixed assets	203,104	203,117	222,360	217,785	218,500	221,481	221,897
Total net operating capital	$250,981	$207,364	$216,077	$216,485	$216,916	$219,310	$223,167
Growth		*-17.4%*	*4.2%*	*0.2%*	*0.2%*	*1.1%*	*1.8%*
- Change in NOWC		(43,630)	(10,530)	4,983	(284)	(587)	3,442
FCFF		$58,031	$12,486	$16,621	$16,549	$15,551	$15,945
Growth			*-78.5%*	*33.1%*	*-0.4%*	*-6.0%*	*2.5%*
+ Net new short-term and long-term debt		19,680	(3,077)	(2,116)	(2,078)	(1,900)	(2,200)
FCFE		$73,957	$6,230	$11,626	$11,491	$10,726	$10,877
Growth			*-91.6%*	*86.6%*	*-1.2%*	*-6.7%*	*1.4%*

I anticipate Verizon's NOPAT to increase over the new three years due to a higher operating margin and an increase in sales. This is offset with an increase in net fixed assets as Verizon uses cash to develop its segments. I also anticipate Verizon to continue to increase its dividend rate year over year. VZ will look to its advertising segment for additional sources of cash. A successful implementation of media and advertising revenues will allow Verizon to continue to pay off debt and focus on increasing dividends for shareholders. A proper implementation of VZ's new budgeting system will allow margins to increase and will cut costs, resulting in a higher net income to the firm.

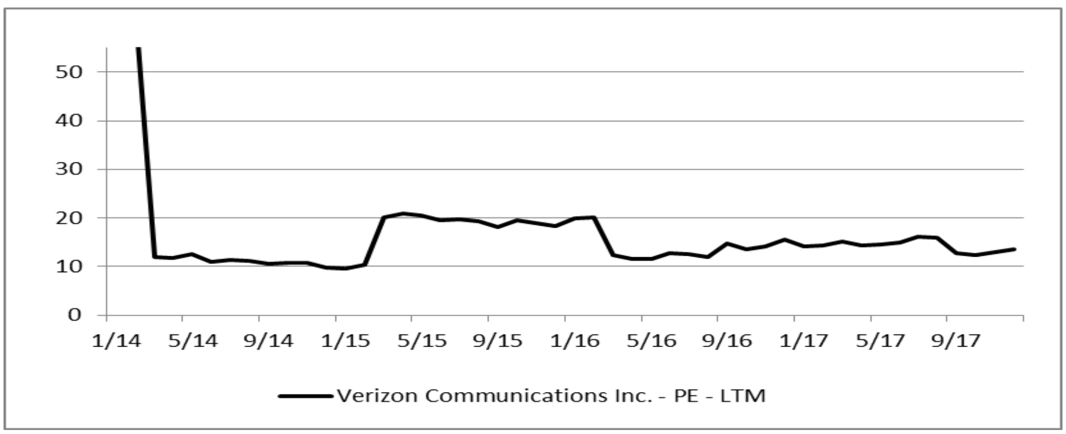
Valuation

Verizon was valued using multiples and a 3-stage discounted cash flow model. Based on forecasted NTM P/E and expected 2019 EPS of $4.02, the stock is overvalued with a target price of $52. A P/B relative valuation regression, based on ROE, shows VZ to be fairly valued compared to its peers. A detailed DCF analysis values VZ at $54. Based on these valuations, I believe VZ is worth about $54.00.

Trading History

VZ is currently trading significantly below its five-year average LTM P/E relative to the S&P 500. Verizon's high P/E from 2010-2013 is the result of expected growth due to the adoption of smartphones. Since 2014, the stock has traded around 0.4-1.2 times the market. VZ's current NTM P/E is 12.9 compared to its five-year average of 13.4. I expect some progression in the next year as Verizon's advertising business gains popularity.

Figure 19: VZ P/E relative to S&P 500



Source: FactSet

Assuming the firm's NTM P/E increases to 14.0 by the end of 2018, it should trade at $56.28 by the end of the year based on my 2019 EPS estimate.

- Price = P/E x EPS = 14.0 x $4.02 = $56.28

Discounting $56.28 back to today at a 8.8% cost of equity (explained in Discounted Cash Flow section), yields a price of $51.72. This seems to be a fair valuation given the lack of expected growth for Verizon; however, I am less bullish about near-term earnings than consensus.

Relative Valuation

Verizon is currently trading at a P/E slightly less than its peers with a TTM P/E of 13.6 compared to an average of 18.9. VZ's P/S ratio is relatively in line with its peers but seems to be on the higher end due to a large net profit margin.

Figure 20: VZ comparable companies

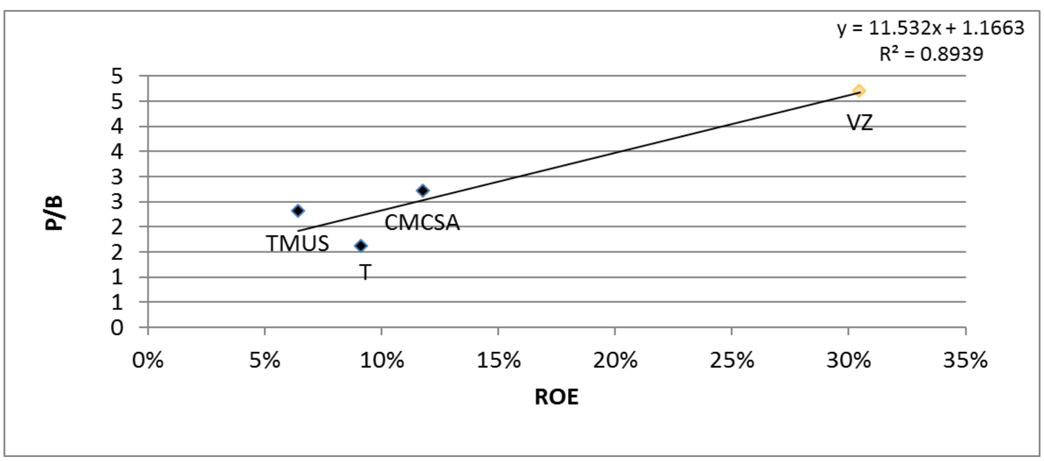
Ticker	Name	Price	Value	1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	Equity	Rating	Yield	Payout
VZ	VERIZON	$49.74	$202,889	0.5	(4.1)	12.8	2.6	3.5	(6.0)	3.8	-37.9%	81.0%	-26.5%	10.6%	12.9%	88.4%	0.66	263.7%	B	4.32%	31.7%
T	AT&T INC	$37.00	$227,180	1.6	0.3	9.4	(3.0)	(10.0)	(4.8)	1.3	-27.0%	99.2%	-11.4%	100.0%	-1.4%	31.5%	0.39	89.4%	B	5.26%	41.4%
S	SPRINT CORP	$5.49	$21,929	3.4	(3.5)	(10.9)	(33.9)	(39.8)	(6.8)		-99.5%	6.3%	-41.2%	-756.0%	-14.9%		0.53	125.1%	B	0.00%	
TMUS	T-MOBILE US INC	$60.44	$51,642	3.1	(5.1)	6.6	(5.4)	(1.4)	(4.8)	14.6	-34.9%	173.3%	106.1%	76.9%	1.3%	19.3%	0.23	129.9%		0.00%	
CMCSA	COMCAST CORP	$40.08	$186,152	1.6	(5.6)	7.8	(3.4)	4.7	0.1	5.3	-47.0%	10.9%	6.7%	163.2%	-1.7%	33.0%	1.18	86.6%	A	1.48%	13.3%
Average			$137,958	2.0	(3.6)	5.1	(8.6)	(8.6)	(4.5)	6.2	-49.2%	74.1%	6.8%	-81.1%	-0.8%	43.1%	0.60	138.9%		2.21%	28.8%
Median			$186,152	1.6	(4.1)	7.8	(3.4)	(1.4)	(4.8)	4.6	-37.9%	81.0%	-11.4%	76.9%	-1.4%	32.3%	0.53	125.1%		1.48%	31.7%
SPX	S&P 500 INDEX	$2,731		1.2	(2.0)	6.5	10.8	16.3	2.2			-0.1%	0.5%	10.3%	11.7%						

		2017		P/E							2017	2017			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	**Website**	**ROE**	**P/B**	**2015**	**2016**	**2017**	**TTM**	**NTM**	**2018**	**2019**	**NPM**	**P/S**	**OM**	**ROIC**	**EBIT**	**Current**	**5-yr**	**NTM**	**STM**	**Pst 5yr**	**Equity**
VZ	http://www.verizon.com	30.5%	4.71	19.3	10.6	16.6	6.8	10.9	14.0	12.4	10.4%	1.61	21.8%	21.1%	12.1	6.7	5.3	2.0%	1.1%	1.7%	$10.57
T	http://www.att.com	9.2%	1.61	28.2	14.5	20.3	7.8	10.6	8.8	8.9	7.9%	1.39	14.9%	11.7%	14.9	5.1	5.3	0.0%	6.9%	4.7%	$22.95
S	http://www.sprint.com	-10.5%	1.15	-5.2	-4.3	-16.8	3.2	621.3	1.7	2.0	-6.2%	0.68		-2.3%	29.6	2.2	3.5	-1.3%	2.3%	-1.2%	$4.76
TMUS	http://www.t-mobile.com	6.4%	2.30	89.8	47.7	34.0	11.6	17.8	20.2	19.9	3.9%	1.39	11.7%	9.1%	17.9	5.2	5.1	6.4%	6.1%	51.4%	$26.25
CMCSA	http://corporate.comcast.com	11.8%	2.71	19.7	17.3	19.8	8.4	15.9	8.8	8.9	10.1%	2.32	21.1%	19.1%	14.3	8.1	7.6	5.9%	2.8%	6.2%	$14.77
Average		9.5%	2.50	30.4	17.2	14.8	7.6	135.3	10.7	10.4	5.2%	1.48	17.3%	11.7%	17.8	5.5	5.4	2.6%	3.8%	12.6%	
Median		9.2%	2.30	19.7	14.5	19.8	7.8	15.9	8.8	8.9	7.9%	1.39	18.0%	11.7%	14.9	5.2	5.3	2.0%	2.8%	4.7%	
spx	S&P 500 INDEX			17.3	17.2	18.8			20.8	18.6											

Figure 21 analyses the relationship between P/B and ROE. The calculated R-squared of the regression indicates that ROE explains nearly 90% of a sampled firm's P/B. VZ currently has a P/B of 4.71 and appears to be fairly valued.

- Estimated P/B = Estimated 2018 ROE (30.5%) x 11.532 + 1.1663 = 4.68
- Target Price = Estimated P/B (4.68) x 2018E Book per share ($10.57) = $49.46

Figure 21: P/B vs ROE



Source: FactSet

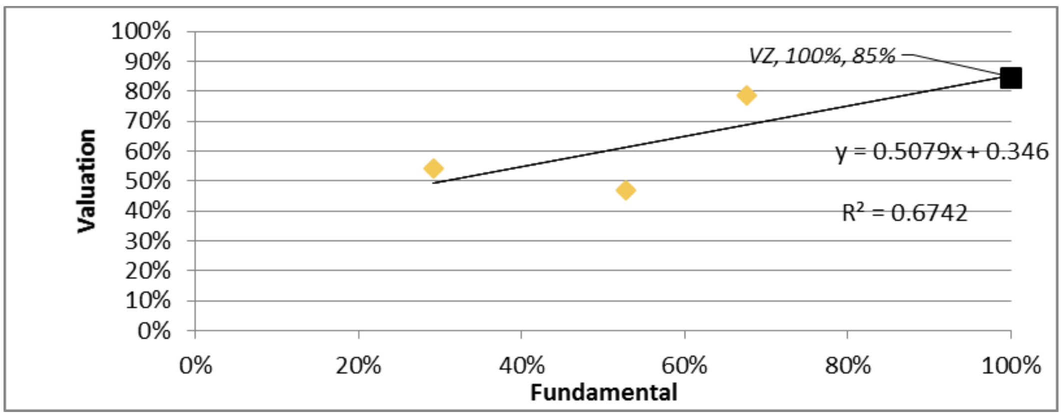
I also created a composite ranking of several fundamental and evaluation metrics. The calculated R-squared of the regression indicates that the fundamental inputs explain over 87% of a sampled firm's valuation. Because the factors have different scales, each one was converted to a percentile before calculating the composite score. An equal weighing of 2017 ROE and 2017 NPM was compared to a composite utilizing 50% P/B and 50% P/S. The regression line had an R-squared of 0.67. From figure 21, one can see that Verizon is expensive based on its fundamentals.

Figure 22: Composite valuation, % of range

				Fundamental Percent of Max		Valuation Percent of Max	
		Weight		50.0%	50.0%	50.0%	50.0%
		Weighted		2017	2017		
Ticker	Name	Fund	Value	ROE	NPM	P/B	P/S
VZ	VERIZON COMMUNICATIONS INC	100%	85%	100%	100%	100%	70%
T	AT&T INC	53%	47%	30%	76%	34%	60%
TMUS	T-MOBILE US INC	29%	54%	21%	37%	49%	60%
CMCSA	COMCAST CORP	68%	79%	39%	96%	58%	100%
Target (for single y-value factor and single or multiple x-factors)							
			Value	30.5%	10.4%	4.71	1.61
			Max	30%	10%	4.71	2.32

Source: IMCP

Figure 23: Composite relative valuation



<u>Discounted Cash Flow Analysis</u>

Through the use of a three stage discounted cash flow model, I was able to value Verizon.

Using the Capital Asset Pricing Model, I calculated the firm's cost of equity to be 8.8%. The underlying assumptions used in calculating this rate are as follows:

- An expected return of the market of 10% (roughly average annual return of S&P 500).
- The risk-free rate, as represented by the ten-year Treasury bond yield, is roughly 2.2%.
- A beta of 0.85, as VZ has slightly less risk than the market.

I estimate the cost of equity to be 8.8% given the above expectations (2.2% + 0.85(10%-2.2%)).

Stage One - The model's first stage discounts fiscal years 2018 and 2019 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $2.04 and $2.95, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $5.00 per share.

Stage Two – Stage two of the model focuses on fiscal years 2020 to 2024. During this period, FCFE is calculated based on revenue growth, NOPAT margin and capital growth assumptions. The resulting cash flows are then discounted using the company's 8.8% cost of equity. I assume a constant 1.5% sales growth rate throughout the period. I expect Verizon to buy back shares in 2020 and 2021 in line with management's plan resulting in a 2% and 1.5% decrease in share growth, respectively. I keep all other ratios constant in stage two from 2019 values. This results in a discounted FCFE of $13.21.

Figure 24: FCFE and discounted FCFE

	2018	2019	2020	2021	2022	2023	2024
FCFE	$2.22	$3.50	$3.86	$3.71	$4.30	$4.08	$4.14
Growth		57.29%	10.49%	-4.05%	16.04%	-5.13%	1.50%
* Discount factor	0.92	0.84	0.78	0.71	0.66	0.60	0.55
Discounted FCFE	$2.04	$2.95	$3.00	$2.64	$2.82	$2.46	$2.29

Stage Three – Net income for the years 2020-2024 is calculated based upon the stage two margin and growth assumptions that I used to determine FCFE. I anticipate EPS to grow from $3.32 in 2017 to $4.61 in 2024.

Figure 25: EPS

	2018	2019	2020	2021	2022	2023	2024
EPS	$3.56	$4.02	$4.30	$4.43	$4.47	$4.54	$4.61

Stage three of the model also requires an assumption regarding the company's terminal price-to-earnings ratio. Historically, Verizon has had a relatively high P/E but I expect this to decrease as the telecomm sector reaches market saturation. Therefore, a P/E ratio of 14 is assumed at the end of VZ's terminal year.

Given the assumed terminal earnings per share of $3.32 and a price-to-earnings ratio of 14, a terminal value of $46.48 per share is calculated. Using 8.8% cost of equity, this number is discounted back to a present value of $35.70.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $53.91 is calculated. Given VZ's current price of $54.29, this model indicates the stock is slightly overvalued.

Figure 26: DCF Summary

	Summary		
First stage	$5.00	Present value of first 2 year cash flow	
Second stage	$13.21	Present value of year 3-7 cash flow	
Third stage	$35.70	Present value of terminal value P/E	
Third stage	$31.75	Present value of terminal value constant growth	
Value (P/E)	**$53.91**	= value at beg of fiscal yr	2018

Scenario Analysis

Adjusting the assumptions in my DCF model shows how different scenarios can affect VZ's valuation. Figure 26 shows a more positive outlook than my original model. For my bull case, I reduced the beta to 0.65 in my CAPM equation reducing the cost of equity to 7.3%. Assuming a one percent higher second stage growth rate, increases second stage present value by $1.20. Increasing the terminal P/E to 17 would increase the terminal value to $48.68. Adding these assumptions together results in a present value of $68.23. This bullish scenario takes into account an optimistic sales growth rate. A higher P/E is used to anticipate continued growth through Verizon's advertising segment and subscription base.

Figure 27: Bull Case

	Summary		
First stage	$5.11	Present value of first 2 year cash flow	
Second stage	$14.44	Present value of year 3-7 cash flow	
Third stage	$48.68	Present value of terminal value P/E	
Value (P/E)	**$68.23**	= value at beg of fiscal yr	2018

Figure 28 shows a more pessimistic outlook than my original model. Increasing beta in my CAPM equation to 0.9 resulted in an increase of cost of equity to 9.2%. Assuming a one percent lower second stage growth rate decreases the second stage present value to $12.75. I lowered the terminal P/E to 13 because of my lowered growth assumptions for sales. Adding the present value of these assumptions results in a value of $47.12. This scenario would represent a situation in which VZ faces increased pressure from competition and a slow advertising growth.

Figure 28: Bear Case

	Summary		
First stage	$4.97	Present value of first 2 year cash flow	
Second stage	$12.75	Present value of year 3-7 cash flow	
Third stage	$29.40	Present value of terminal value P/E	
Value (P/E)	**$47.12**	= value at beg of fiscal yr	2018

Business Risks

Competition:

The telecomm industry faces significant pressure from competing companies. 70% of VZ's revenue comes from its wireless segment. Verizon faces significant risk if its subscription base decreases and this is directly related to competition. The rapid development of new technologies, services and products has eliminated many of the traditional distinctions among telephone companies and cable companies. While these changes have enabled companies to offer new types of products and services, they have also allowed other providers to develop these services as well.

Debt:

Verizon has a significant amount of debt outstanding ($108.1 billion) compared to its peers. Although VZ's debt levels have decreased in recent years, they still face risk of incurring too much interest expense. VZ's loan agreements requires the firm to maintain a certain leverage ratio in line with its credit ratings. This could limit Verizon's ability to obtain additional financing in the future. Verizon also has to dedicate a large portion of its cash flows to pay off debt, restricting opportunities to pursue capital expenditures or acquisitions.

Regulation

Verizon faces risk from being subject to regulation by the FCC and other federal, state, and local agencies. These regulatory regimes frequently restrict and impose conditions to operate in designated areas. New laws or regulations to the existing regulatory framework at the federal, state and local level could restrict the ways in which we manages its wireline and wireless networks. Net neutrality imposes a risk of bad relationships with streaming services making VZ stay competitive with other internet service providers

Appendix 1: SWOT Analysis

Strengths	Weaknesses
Leading subscription base in the industry Strategic mergers and acquisitions	Highly Levered Decreasing Sales
Opportunities	**Threats**
Development of next generation technology Development of media and advertising segment	Brand reputation from 2015 hack of Yahoo Competitors merging to become "powerhouses"

Appendix 2: Porter's 5 forces

Rivalry among Competitors – High

Verizon faces tough competition from several large companies all competing for a limited subscriber base. Revenues are tied directly to net new subscribers and all companies in the telecomm industry are competing for the same customer base.

Bargaining Power of Buyers – Moderate

Buyers have a relatively moderate influence on the power to shift prices. The main companies in this industry offer relatively similar rates on data plans. When looking for a new carrier, customers look for reliability over minor price differences.

Threat of Substitute – Moderate

Verizon competes with a small number of firms, but these firms offer very similar services. VZ needs to stand out from its peers in order to maintain a substantial subscriber base.

Bargaining Power of Suppliers – Relatively Low

Suppliers have relatively low power on telecomm companies, as there are few substitutes for large sized customers.

Threat of New Entrants – Low

In the telecommunications sector, four main companies dominate the US market. The threat of a new company taking over as a top telecomm company is very low. The industry has reached market saturation and top companies compete with each other for subscribers. It is highly unlikely for Verizon to face a threat from new entrants.

Appendix 3: Income Statement (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Sales	$120,500	$127,080	$131,620	$125,980	$124,600	$126,300	$128,700
Direct costs	61,490	66,460	68,570	67,350	66,100	65,171	64,093
Gross Margin	59,010	60,620	63,050	58,630	58,500	61,129	64,607
SG&A, R&D, and other	27,370	41,730	30,240	32,720	34,000	35,238	36,036
EBIT	31,640	18,890	32,810	25,910	24,500	25,892	28,571
Interest	2,670	4,920	4,920	4,380	4,300	4,220	4,138
EBT	28,970	13,970	27,890	21,530	20,200	21,671	24,434
Taxes	5,730	3,310	9,870	7,380	6,200	6,652	7,499
Income	23,240	10,660	18,020	14,150	14,000	15,020	16,934
Other	12,050	2,330	500	480	470	500	550
Net income	11,190	8,330	17,520	13,670	13,530	14,520	16,384
Basic Shares	2,866.0	3,974.0	4,085.0	4,080.0	4,080.0	4,079.5	4,079.0
EPS	$3.90	$2.10	$4.29	$3.35	$3.32	$3.56	$4.02
DPS	$2.07	$1.96	$2.09	$2.27	$2.39	$2.50	$2.53
Growth Statistics							
Sales		*5.5%*	*3.6%*	*-4.3%*	*-1.1%*	*1.4%*	*1.9%*
Direct Costs		*8.1%*	*3.2%*	*-1.8%*	*-1.9%*	*-1.4%*	*-1.7%*
Gross Margin		*2.7%*	*4.0%*	*-7.0%*	*-0.2%*	*4.5%*	*5.7%*
SG&A, R&D, and other		*52.5%*	*-27.5%*	*8.2%*	*3.9%*	*3.6%*	*2.3%*
EBIT		*-40.3%*	*73.7%*	*-21.0%*	*-5.4%*	*5.7%*	*10.4%*
Interest		*84.3%*	*0.0%*	*-11.0%*	*-1.8%*	*-1.9%*	*-2.0%*
EBT		*-51.8%*	*99.6%*	*-22.8%*	*-6.2%*	*7.3%*	*12.7%*
Taxes		*-42.2%*	*198.2%*	*-25.2%*	*-16.0%*	*7.3%*	*12.7%*
Continuing income		*-54.1%*	*69.0%*	*-21.5%*	*-1.1%*	*7.3%*	*12.7%*
Other		*-80.7%*	*-78.5%*	*-4.0%*	*-2.1%*	*6.4%*	*10.0%*
Net income		*-25.6%*	*110.3%*	*-22.0%*	*-1.0%*	*7.3%*	*12.8%*
Basic Shares		*38.7%*	*2.8%*	*-0.1%*	*0.0%*	*0.0%*	*0.0%*
EPS		*-46.3%*	*104.6%*	*-21.9%*	*-1.0%*	*7.3%*	*12.9%*
DPS		*-5.2%*	*6.4%*	*8.6%*	*5.3%*	*4.6%*	*1.0%*
Common Size							
Sales	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
Direct Costs	*51.0%*	*52.3%*	*52.1%*	*53.5%*	*53.0%*	*51.6%*	*49.8%*
Gross Margin	*49.0%*	*47.7%*	*47.9%*	*46.5%*	*47.0%*	*48.4%*	*50.2%*
SG&A, R&D, and other	*22.7%*	*32.8%*	*23.0%*	*26.0%*	*27.3%*	*27.9%*	*28.0%*
EBIT	*26.3%*	*14.9%*	*24.9%*	*20.6%*	*19.7%*	*20.5%*	*22.2%*
Interest	*2.2%*	*3.9%*	*3.7%*	*3.5%*	*3.5%*	*3.3%*	*3.2%*
EBT	*24.0%*	*11.0%*	*21.2%*	*17.1%*	*16.2%*	*17.2%*	*19.0%*
Taxes	*4.8%*	*2.6%*	*7.5%*	*5.9%*	*5.0%*	*5.3%*	*5.8%*
Continuing income	*19.3%*	*8.4%*	*13.7%*	*11.2%*	*11.2%*	*11.9%*	*13.2%*
Other	*10.0%*	*1.8%*	*0.4%*	*0.4%*	*0.4%*	*0.4%*	*0.4%*
Net income	*9.3%*	*6.6%*	*13.3%*	*10.9%*	*10.9%*	*11.5%*	*12.7%*

Appendix 4: Balance Sheet (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Cash	53,528	10,598	4,470	2,880	3,400	1,744	5,131
Operating assets ex cash	17,466	18,901	17,810	23,515	22,926	23,997	25,097
Operating assets	70,994	29,499	22,280	26,395	26,326	25,741	30,228
Operating liabilities	23,117	25,252	28,563	27,695	27,910	27,912	28,958
NOWC	47,877	4,247	(6,283)	(1,300)	(1,584)	(2,171)	1,270
NOWC ex cash (NWC)	(5,651)	(6,351)	(10,753)	(4,180)	(4,984)	(3,915)	(3,861)
NFA	203,104	203,117	222,360	217,785	218,500	221,481	221,897
Invested capital	*$250,981*	*$207,364*	*$216,077*	*$216,485*	*$216,916*	*$219,310*	*$223,167*
Marketable securities	-	-	-	-	-	-	-
Total assets	*$274,098*	*$232,616*	*$244,640*	*$244,180*	*$244,826*	*$247,222*	*$252,125*
Short-term and long-term debt	$93,591	$113,271	$110,194	$108,078	$106,000	$104,100	$101,900
Other liabilities	61,974	80,417	88,041	84,375	83,127	83,127	83,127
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	95,416	13,676	17,842	24,032	27,788	32,082	38,139
Total supplied capital	*$250,981*	*$207,364*	*$216,077*	*$216,485*	*$216,915*	*$219,309*	*$223,166*
Total liabilities and equity	*$274,098*	*$232,616*	*$244,640*	*$244,180*	*$244,826*	*$247,221*	*$252,124*
Growth Statistics							
Cash		*-80.2%*	*-57.8%*	*-35.6%*	*18.1%*	*-48.7%*	*194.2%*
Operating assets ex cash		*8.2%*	*-5.8%*	*32.0%*	*-2.5%*	*4.7%*	*4.6%*
Operating assets		*-58.4%*	*-24.5%*	*18.5%*	*-0.3%*	*-2.2%*	*17.4%*
Operating liabilities		*9.2%*	*13.1%*	*-3.0%*	*0.8%*	*0.0%*	*3.7%*
NOWC		*-91.1%*	*-247.9%*	*-79.3%*	*21.8%*	*37.1%*	*-158.5%*
NOWC ex cash (NWC)		*12.4%*	*69.3%*	*-61.1%*	*19.2%*	*-21.4%*	*-1.4%*
NFA		*0.0%*	*9.5%*	*-2.1%*	*0.3%*	*1.4%*	*0.2%*
Invested capital		*-17.4%*	*4.2%*	*0.2%*	*0.2%*	*1.1%*	*1.8%*
Marketable securities							
Total assets		*-15.1%*	*5.2%*	*-0.2%*	*0.3%*	*1.0%*	*2.0%*
Short-term and long-term debt		*21.0%*	*-2.7%*	*-1.9%*	*-1.9%*	*-1.8%*	*-2.1%*
Other liabilities		*29.8%*	*9.5%*	*-4.2%*	*-1.5%*	*0.0%*	*0.0%*
Debt/equity-like securities							
Equity		*-85.7%*	*30.5%*	*34.7%*	*15.6%*	*15.5%*	*18.9%*
Total supplied capital		*-17.4%*	*4.2%*	*0.2%*	*0.2%*	*1.1%*	*1.8%*
Total liabilities and equity		*-15.1%*	*5.2%*	*-0.2%*	*0.3%*	*1.0%*	*2.0%*

Appendix 5: Sales Forecast By Segment (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Sales	$120,500	$127,080	$131,620	$125,980	$124,600	$126,300	$128,700
Growth		*5.5%*	*3.6%*	*-4.3%*	*-1.1%*	*1.4%*	*1.9%*
Wireless	81,023	87,646	91,680	89,186	87,800	89,500	90,200
Growth		*8.2%*	*4.6%*	*-2.7%*	*-1.6%*	*1.9%*	*0.8%*
% of sales	*67.2%*	*69.0%*	*69.7%*	*70.8%*	*70.5%*	*70.9%*	*70.1%*
Wireline	39,223	38,429	37,720	31,345	30,300	29,500	30,100
Growth		*-2.0%*	*-1.8%*	*-16.9%*	*-3.3%*	*-2.6%*	*2.0%*
% of sales	*32.6%*	*30.2%*	*28.7%*	*24.9%*	*24.3%*	*2.0%*	*23.4%*
Corporate and Other	254	1,005	2,220	5,449	6,500	7,300	8,400
Growth		*295.7%*	*120.9%*	*145.5%*	*19.3%*	*12.3%*	*15.1%*
% of sales	*0.2%*	*0.8%*	*1.7%*	*4.3%*	*5.2%*	*5.8%*	*6.0%*

Appendix 6: Cash Flow Statement (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Cash from Operatings (understated - depr'n added to net assets)							
Net income		$8,330	$17,520	$13,670	$13,530	$14,520	$16,384
Change in Net Working Capital ex cash		700	4402	(6573)	804	(1069)	(54)
Cash from operations		$9,030	$21,922	$7,097	$14,334	$13,451	$16,330
Cash from Investing (understated - depr'n added to net assets)							
Change in NFA		($13)	($19,243)	$4,575	($715)	($2,981)	($415)
Change in Marketable Securities		$0	$0	$0	$0	$0	$0
Cash from investing		($13)	($19,243)	$4,575	($715)	($2,981)	($415)
Cash from Financing							
Change in Short-Term and Long-Term Debt		$19,680	($3,077)	($2,116)	($2,078)	($1,900)	($2,200)
Change in Other liabilities		18443	7624	(3666)	(1248)	0	0
Change in Debt/Equity-Like Securities		0	0	0	0	0	0
Dividends		(7803)	(8538)	(9262)	(9750)	(10200)	(10300)
Change in Equity ex NI and Dividends		(82267)	(4816)	1782	(24)	(26)	(27)
Cash from financing		($51,947)	($8,807)	($13,262)	($13,100)	($12,126)	($12,527)
Change in Cash		(42930)	(6128)	(1590)	519	(1656)	3388
Beginning Cash		53528	10598	4470	2880	3400	1744
Ending Cash		$10,598	$4,470	$2,880	$3,399	$1,744	$5,131

Appendix 7: Key Ratios (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Profitability							
Gross margin	49.0%	47.7%	47.9%	46.5%	47.0%	48.4%	50.2%
Operating (EBIT) margin	26.3%	14.9%	24.9%	20.6%	19.7%	20.5%	22.2%
Net profit margin	9.3%	6.6%	13.3%	10.9%	10.9%	11.5%	12.7%
Activity							
NFA (gross) turnover		0.63	0.62	0.57	0.57	0.57	0.58
Total asset turnover		0.50	0.55	0.52	0.51	0.51	0.52
Liquidity							
Op asset / op liab	3.07	1.17	0.78	0.95	0.94	0.92	1.04
NOWC Percent of sales		20.5%	-0.8%	-3.0%	-1.2%	-1.5%	-0.4%
Solvency							
Debt to assets	34.1%	48.7%	45.0%	44.3%	43.3%	42.1%	40.4%
Debt to equity	98.1%	828.2%	617.6%	449.7%	381.5%	324.5%	267.2%
Other liab to assets	22.6%	34.6%	36.0%	34.6%	34.0%	33.6%	33.0%
Total debt to assets	56.8%	83.3%	81.0%	78.8%	77.2%	75.7%	73.4%
Total liabilities to assets	65.2%	94.1%	92.7%	90.2%	88.6%	87.0%	84.9%
Debt to EBIT	2.96	6.00	3.36	4.17	4.33	4.02	3.57
EBIT/interest	11.85	3.84	6.67	5.92	5.70	6.14	6.91
Debt to total net op capital	37.3%	54.6%	51.0%	49.9%	48.9%	47.5%	45.7%
NOPAT to sales	21.1%	11.3%	16.1%	13.5%	13.6%	14.2%	15.4%
Sales to NOWC		4.88	(129.29)	(33.23)	(86.41)	(67.26)	(285.71)
Sales to NFA		0.63	0.62	0.57	0.57	0.57	0.58
Sales to IC		0.55	0.62	0.58	0.57	0.58	0.58
Total ROIC		6.3%	10.0%	7.9%	7.8%	8.2%	9.0%
NOPAT to sales	21.1%	11.3%	16.1%	13.5%	13.6%	14.2%	15.4%
Sales to EOY NOWC	2.52	29.92	(20.95)	(96.91)	(78.66)	(58.17)	101.30
Sales to EOY NFA	0.59	0.63	0.59	0.58	0.57	0.57	0.58
Sales to EOY IC	0.48	0.61	0.61	0.58	0.57	0.58	0.58
Total ROIC using EOY IC	10.1%	7.0%	9.8%	7.9%	7.8%	8.2%	8.9%
ROE							
5-stage							
EBIT / sales		14.9%	24.9%	20.6%	19.7%	20.5%	22.2%
Sales / avg assets		0.50	0.55	0.52	0.51	0.51	0.52
EBT / EBIT		74.0%	85.0%	83.1%	82.4%	83.7%	85.5%
Net income /EBT		59.6%	62.8%	63.5%	67.0%	67.0%	67.1%
ROA		3.3%	7.3%	5.6%	5.5%	5.9%	6.6%
Avg assets / avg equity		4.64	15.14	11.67	9.44	8.22	7.11
ROE		15.3%	111.2%	65.3%	52.2%	48.5%	46.7%
Payout Ratio		93.7%	48.7%	67.8%	72.1%	70.2%	62.9%
Retention Ratio		6.3%	51.3%	32.2%	27.9%	29.8%	37.1%
Sustainable Growth Rate		1.0%	57.0%	21.1%	14.6%	14.4%	17.3%

Appendix 8: DCF Model (Base Case)

	Year						
	1	2	3	4	5	6	7
First Stage			Second Stage				
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	*1.4%*	*1.9%*	*1.5%*	*2.0%*	*1.0%*	*1.5%*	*1.5%*
NOPAT / S	*14.2%*	*15.4%*	*15.4%*	*15.4%*	*15.4%*	*15.4%*	*15.4%*
S / NWC	*(32.26)*	*(33.33)*	*(33.33)*	*(33.33)*	*(33.33)*	*(33.33)*	*(33.33)*
S / NFA (EOY)	*0.57*	*0.58*	*0.58*	*0.58*	*0.58*	*0.58*	*0.58*
S / IC (EOY)	*0.58*	*0.59*	*0.59*	*0.59*	*0.59*	*0.59*	*0.59*
ROIC (EOY)	*8.2%*	*9.1%*	*9.1%*	*9.1%*	*9.1%*	*9.1%*	*9.1%*
ROIC (BOY)		*9.1%*	*9.2%*	*9.3%*	*9.2%*	*9.2%*	*9.2%*
Share Growth		*0.0%*	*-2.0%*	*-1.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$126,300	$128,700	$130,631	$133,243	$134,576	$136,594	$138,643
NOPAT	$17,945	$19,802	$20,099	$20,501	$20,706	$21,017	$21,332
Growth		*10.4%*	*1.5%*	*2.0%*	*1.0%*	*1.5%*	*1.5%*
- Change in NWC	1069	54	-58	-78	-40	-61	-61
NWC EOY	*-3915*	*-3861*	*-3919*	*-3997*	*-4037*	*-4098*	*-4159*
Growth NWC		*-1.4%*	*1.5%*	*2.0%*	*1.0%*	*1.5%*	*1.5%*
- Chg NFA	2981	415	3328	4505	2297	3480	3533
NFA EOY	*221,481*	*221,897*	*225,225*	*229,730*	*232,027*	*235,507*	*239,040*
Growth NFA		*0.2%*	*1.5%*	*2.0%*	*1.0%*	*1.5%*	*1.5%*
Total inv in op cap	4050	470	3271	4426	2257	3420	3471
Total net op cap	217566	218036	221306	225732	227990	231409	234881
FCFF	$13,895	$19,332	$16,828	$16,075	$18,449	$17,597	$17,861
% of sales	*11.0%*	*15.0%*	*12.9%*	*12.1%*	*13.7%*	*12.9%*	*12.9%*
Growth		*39.1%*	*-13.0%*	*-4.5%*	*14.8%*	*-4.6%*	*1.5%*
- Interest (1-tax rate)	2925	2868	2911	2954	2999	3044	3089
Growth		*-2.0%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*
+ Net new debt	-1900	-2200	1529	1551	1575	1598	1622
Debt	104100	101900	103429	104980	106555	108153	109775
Debt / tot net op capital	*47.8%*	*46.7%*	*46.7%*	*46.5%*	*46.7%*	*46.7%*	*46.7%*
FCFE w debt	$9,070	$14,265	$15,446	$14,672	$17,025	$16,151	$16,394
% of sales	*7.2%*	*11.1%*	*11.8%*	*11.0%*	*12.7%*	*11.8%*	*11.8%*
Growth		*57.3%*	*8.3%*	*-5.0%*	*16.0%*	*-5.1%*	*1.5%*
/ No Shares	4079.5	4079.0	3,997.4	3,957.4	3,957.4	3,957.4	3,957.4
FCFE	$2.22	$3.50	$3.86	$3.71	$4.30	$4.08	$4.14
Growth		*57.3%*	*10.5%*	*-4.1%*	*16.0%*	*-5.1%*	*1.5%*
* Discount factor	0.92	0.84	0.78	0.71	0.66	0.60	0.55
Discounted FCFE	$2.04	$2.95	$3.00	$2.64	$2.82	$2.46	$2.29
Third Stage							
Terminal value P/E							
Net income	$14,520	$16,384	$17,188	$17,547	$17,707	$17,973	$18,242
% of sales	*11.5%*	*12.7%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*
EPS	$3.56	$4.02	$4.30	$4.43	$4.47	$4.54	$4.61
Growth		*12.9%*	*7.0%*	*3.1%*	*0.9%*	*1.5%*	*1.5%*
Terminal P/E							14.00
* Terminal EPS							$4.61
Terminal value							$64.54
* Discount factor							0.55
Discounted terminal value							$35.70

Summary

First stage	$5.00	Present value of first 2 year cash flow	
Second stage	$13.21	Present value of year 3-7 cash flow	
Third stage	$35.70	Present value of terminal value P/E	
Value (P/E)	**$53.91**	= value at beg of fiscal yr	2018