Qualcomm Inc. (NASDAQ: QCOM)

Industry Leader Looking to Diversify its Revenue Stream Amidst Short Term Headline Risk

Yale University

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Price

$51.82 ⬇ -0.10 (-0.2%) Price as of 14 Apr '16 4:00PM ET

Volume	7,915,058	Open	51.85
VWAP	51.73	Previous Close	51.92
Shares Out (M)	1,495	Intraday Range	51.24 – 51.89 (51.82)
Market Value (M)	77,465		
P/E	17.2x		
Short Int (% of Float)	1.1%	52 Week Range	42.24 – 71.90 (51.82)
Trading Since	13 Dec '91		

QUALCOMM

	2014	2015
Sales	26,487	25,281
ROE	20.0%	14.9%
Gross Margin	59.7%	58.9%
FCF	6,091	3,659
P/E	17.1	16.5

Recommendation: Buy (Price Target: $59.47 (15% upside))

- QCOM rallied in Feb 2016 after market reacted positively to its Analyst Day Presentation, but a number of headline risks have pushed the stock down, presenting a strong buying opportunity

- Apple's launch of the iPhone 7 in Fall 2016 is expected to see Intel take share from QCOM. We model in a $1.7bn loss in Core Mobile revenues in 2016, but EPS in 2016 still grows yoy from 2015

- End-market demand from smartphone consumers will dictate smartphone manufacturers' orders for QCOM products, so we apply an initial discount of 3% in 2016 - 2018 to the growth rate of QCOM's Core Mobile segment

- QCOM has $4.9bn remaining in its stock repurchase program as of Q1 2016. We believe the company will repurchase $4.9bn of stock in 2016 to alleviate short-term revenue headwinds, bringing down basic shares outstanding from 1,524 to 1,429

- We are confident that QCOM will reduce annual costs by $1.1bn starting in 2016 via the Strategic Realignment Plan. We believe the market may be overlooking this attempt to improve margins

- We believe China will tighten regulations on IP infringement, improving compliance for QCOM and driving gross margins up 25bps in 2016, 2017, and 2018

- We project that both R&D and SG&A will decrease by 1.5% yoy from 2015 to 2016

- We project investment income to equal 3% of revenues from 2016-2021, slightly below the five-year historical average of 4.17%, as the company expects to generate lower interest and dividend income as well as lowered realized gains in 2016

- **PLEASE REFER TO LAST PAGE OF THE DOCUMENT FOR AN IMPORTANT DISCLOSURE REGARDING USE OF THE REPORT**

Index

1.) Negative Headlines in the Past Year (Loss of iPhone 7, NDRC Anti-Monopoly Ruling, LG Dispute, ZTE Sanctions) Present a Strong Buying Opportunity

Figure 1: QCOM and S&P 500 Performance Over the Last 12 Months

Source: Yahoo Finance

- As Figure 1 demonstrates, QCOM has dropped 25.80% in the past year to its current price of $51.82, while the S&P 500 has returned -2.41% in the same time span
- QCOM rallied in February after the market reacted positively to its Analyst Day Presentation, but a number of headline risks have pushed the stock to such a low level that it presents a strong buying opportunity
- In Q2 2015, the China National Development Reform Commission (NDRC) fined QCOM $975mm for violating China's Anti-Monopoly Law and stipulated that QCOM charge running royalty rates of 5% for 3G CDMA[1] or WCDMA devices and 3.5% for 4G devices[2]
  - Led to market concerns about royalty rates moving forward, but QTL segment actually beat expectations in Q1 2016 due to strong 3G/4G device volumes *and* strong ASPs
- In Q1 2016, QCOM deferred $100mm in revenue because Korean smartphone maker LG took QCOM to arbitration over previous royalty overpayments and future royalty rates[3]
  - While QCOM President Derek Aberle said on a conference call, "We believe LG's claims are without merit," QCOM's stock dropped 8.3% the day after the news broke[4]
    - We think that this is an overreaction – however, we assume that QCOM never recovers the lost $100mm from LG → still substantial upside potential
- Apple's launch of the iPhone 7 in Fall 2016 is expected to see Intel take share from Qualcomm
  - If Qualcomm loses 40% share,[5] JP Morgan predicts $1.7bn in lost revenue in 2016
  - We model in this $1.7bn loss in Core Mobile revenues in 2016, but EPS in 2016 still grows yoy due to lower restructuring charges for the Strategic Realignment Plan and the $975mm fine in 2015 that pushed down EPS
  - We believe share loss to Intel could actually be a net positive in the long-run as it pushes QCOM to diversify away from Core Mobile

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[1] See glossary for a list of acronyms and their definitions.
[2] QCOM FY 2015 10-K.
[3] Law360: Jack Newsham – January 28, 2016.
[4] Law360: Jack Newsham – January 28, 2016.
[5] Barron's.

- 40% of QCOM's revenue comes from Samsung and Hon Hai Precision Industry,[6] illustrating its customer concentration and need to diversify into new market segments
- In Q1 2016, the U.S. government imposed sanctions on Chinese telecom manufacturer ZTE for alleged sales of American-made equipment to an Iranian company in 2012[7]
  - U.S. firms that work with ZTE will likely be forced to apply for export licenses to ship to the company, which will generally be denied (US Commerce Department)[8]
  - However, ZTE Corporation is one of Qualcomm's 64 listed customers[9] and one of 155 companies with royalty-bearing licenses under QCOM's patent portfolio for use in LTE or other OFDMA-based products[10]
  - ZTE is only QCOM's 22nd biggest customer,[11] so we do not believe that difficulty supplying to ZTE is likely to have a tangible effect on QCOM's operations
- In sum, 2015 and early 2016 brought some negative short-term news for QCOM, pushing the price down and creating a good buying opportunity, as QCOM effectively distributes capital to shareholders and is positioning itself to capture growth in IoT and RFFE in the future

2.) Diversifying Revenue Stream From Mobile to Internet of Things and Radio Frequency Front-End Products (RFFE) Puts Qualcomm in a Strong Position for Future Growth

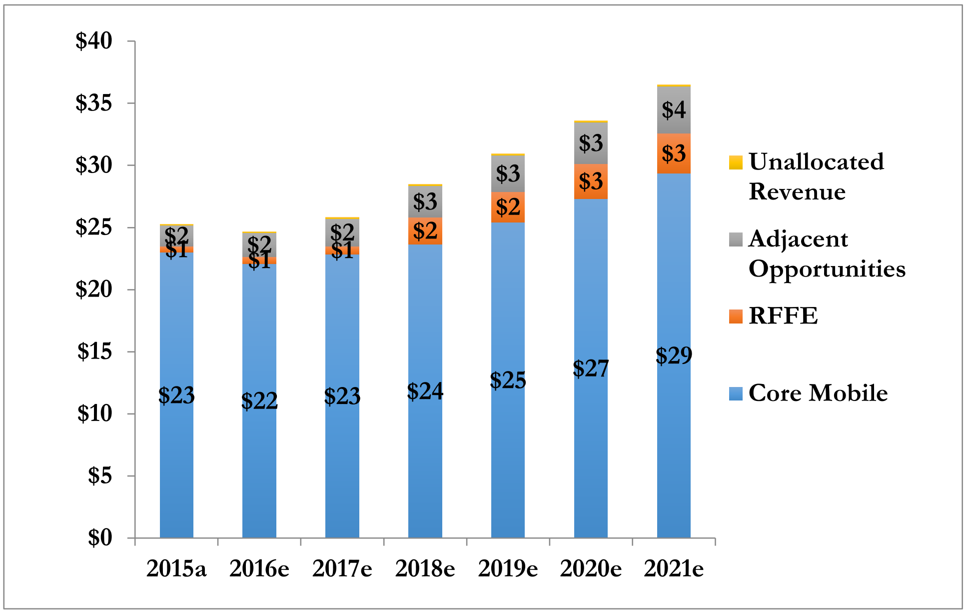

Figure 2: QCOM Revenue Breakdown from 2015a-2021e (in $bn)

For our revenue projections, we break out Core Mobile, Radio Frequency Front-End (RFFE), and Adjacent Opportunities. As of fiscal 2015, Core Mobile comprised about 91% of QCOM's revenues, while RFFE comprised 2% and Adjacent Opportunities made up 7%. Core Mobile represents the chips and technology QCOM produces for smartphones, while RFFE refers to all of the components in a receiver that process the signal at the original incoming radio frequency before it is converted to a lower intermediate frequency. Internet of Things (IoT) is the main component of Adjacent Opportunities, encompassing devices and technology that utilize the network connectivity of physical objects to collect data. The Core Mobile *overall market* is slowing, with an estimated CAGR of 7.5% from 2015 to 2020,[12] while QCOM projects the RFFE Serviceable Addressable Market (SAM) will grow at a 12.5% CAGR from 2015-2020[13] and the Adjacent Opportunities SAM will grow at a

[6] Factset.
[7] Engadget: Steve Dent – March 7, 2016.
[8] Engadget: Steve Dent – March 7, 2016.
[9] Factset.
[10] QCOM FY 2015 10-K.
[11] Factset.
[12] QCOM 2016 Analyst Day Presentation – February 11, 2016.
[13] QCOM 2016 Analyst Day Presentation – February 11, 2016.

19.3% CAGR from 2015-2020.[14] Figure 2 illustrates the breakout of QCOM revenues in Fiscal 2015 as well as projections going forward, as RFFE and Adjacent Opportunities will make up 19% of QCOM's revenues in 2021. We use company estimates for the SAMs of the three segments because over the last three years, QCOM has actually beaten both EPS and sales estimates, as shown in Figure 3, so using its estimates should give our buy recommendation a margin of safety.

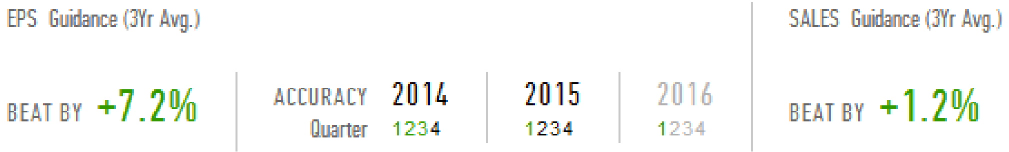

Figure 3: Historical Accuracy of QCOM Management Guidance

Source:Factset

Core Mobile

- According to QCOM's 2016 Analyst Day Presentation, QCOM's Core Mobile SAM is projected to grow from $23bn in 2015 to $33bn in 2020, representing a 7.49% CAGR[15]
- We believe this estimate is too optimistic given slowing growth in smartphone demand in the developed world; while QCOM generates 53% of its revenues in China, this number is misleading, as QCOM records revenue in the country where customers manufacture their products or the invoiced address of licensees, not necessarily where the endmarket is located
    - QCOM is a major supplier for Apple and Samsung, both of which sell mainly to endmarket consumers in the U.S. and Western Europe
    - Endmarket demand from smartphone consumers will dictate smartphone manufacturers' orders for QCOM products, so we apply a discount of 3% in 2016-2018 to the growth rate of QCOM's core mobile segment
    - As will be discussed in the risks section, QCOM has had some recent EU antitrust problems, so we apply an additional 1% discount to Core Mobile growth in 2016-2018 to account for the possibility QCOM has to pay fines / change its licensing practices in this segment
- Additionally, management revealed in its Q1 2016 earnings release an ongoing dispute with LG that has resulted in $100mm in deferred revenue. We make the conservative assumption that LG will not pay and subtract out $100mm from the revenue base in 2016, representing ~50bps of total revenue
- Apple, planning to release the iPhone 7 in September 2016, likely selected Intel over QCOM for about 20-30% of the iPhone 7 baseband,[16] whereas QCOM had historically been Apple's main supplier. We remove $1.7bn[17] in Core Mobile revenue in 2016 as a result
- Figure 4 shows QCOM's actual and projected Core Mobile Revenues for every year from 2015-2021 and the corresponding growth rates

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[14] QCOM 2016 Analyst Day Presentation – February 11, 2016.
[15] Projection based on a combination of third party and internal estimates excluding the impact of any unannounced M&A activity.
[16] Credit Suisse Semiconductor Team – March 10, 2016.
[17] JP Morgan Equity Research – March 14, 2016.

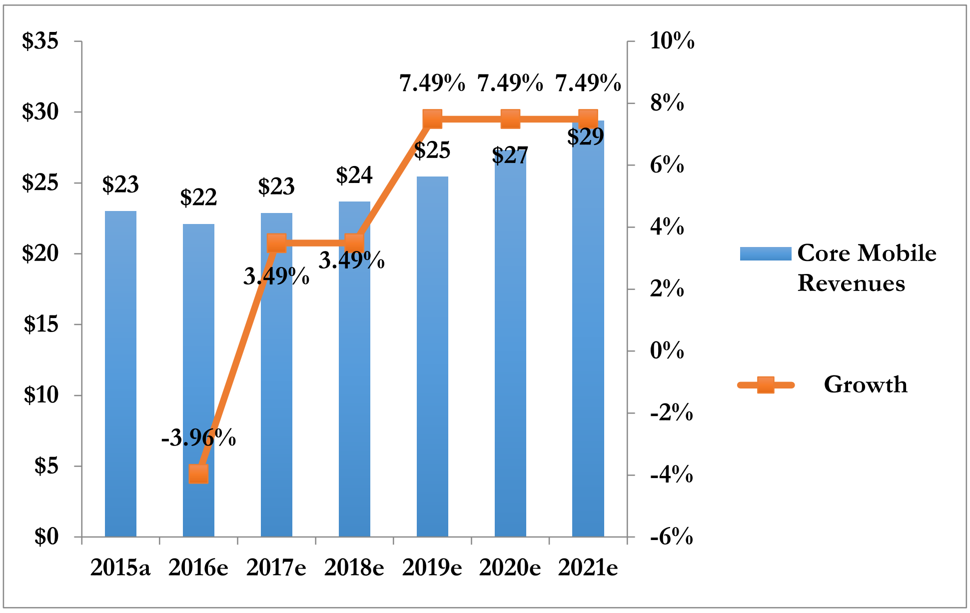

Figure 4: QCOM Core Mobile Revenue (in $bn) and Growth from 2015a – 2021

RFFE

- RFFE currently represents only 2% of QCOM's FY 2015 revenues, but the company wants to become a leading supplier of radio frequency front-end products, as the RFFE SAM is projected to grow from $10bn in 2015 to $18bn in 2020,[18] representing a 12.5% CAGR
- QCOM currently occupies 5% of the market share in the RFFE space, but its recently announced joint venture with TDK (January 2016) indicates it will gain market share while making RFFE a strategic focus, diversifying away from the volatile smartphone chip market
- TDK is a leading electronic components manufacturer that specializes in RF filters and modules, which are expected to be the main drivers of expansion in the RFFE SAM[19]
- The Joint Venture will be called RF360 Holdings, and it is already at $1bn in run-rate revenues
  - Not expected to close until early 2017 but is projected to be accretive to non-GAAP EPS 12 months after closing[20]
  - The filter assets in the JV will be among the top three in the industry, as TDK ships more than 25mm filter functions each day[21]
- Since early 2017 is the middle of QCOM's fiscal 2017, we conservatively estimate that RF360 Holdings will not show up in QCOM's financial statements until 2018
- We believe the additional revenue from RF360 Holdings will have high margins as QCOM and TDK are able to leverage each other's' strengths (TDK in manufacturing RFFE products, QCOM in distributing technology to captive customers) and reduce overall costs
- The JV gives QCOM the option to buy out TDK 30 months after closing, so we project out $1bn outflows in 2018, 2019, and 2020 because the total transaction value is projected to be $3bn,[22,23] and the payments will be spread out between closing and 30 months post-closing
- We assume that RF360 will grow from $1bn in run-rate revenue to $2.2bn in revenue in 2021 based on two factors: (1) the SAM will grow at 12.5%[24] and (2) QCOM will take 100bps of market share in 2017 and 2018 because RFFE is an emerging and fast-growing industry, so no company is so entrenched that taking market share is difficult

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18 Mobile Experts.
19 QCOM Press Release – January 13, 2016.
20 QCOM Press Release – January 13, 2016.
21 Market Realist – January 14, 2016.
22 QCOM Press Release – January 13, 2016.
23 We subtract the $1bn outflows from total revenue rather than RFFE to get a clearer growth profile of QCOM's RFFE segment.
24 Mobile Experts.

- We think Qualcomm's #1 spot in smartphone technology will transition well into the RFFE space, giving it product differentiation as well as cost advantages from the JV
- The main competitors to TDK in the RFFE industry are Murata Manufacturing, Sony, Vishay Intertechnology, KEMET, and TE Connectivity,[25] all of which are smaller than QCOM and none of which have QCOM's global supply chain and distribution network
- Thus, we think the competitive space in RFFE will allow RF360 Holdings to gain market share

- Figure 5 demonstrates QCOM's RFFE actual and projected revenues from 2015-2021, illustrating its rapid growth and increasing importance in QCOM's business strategy

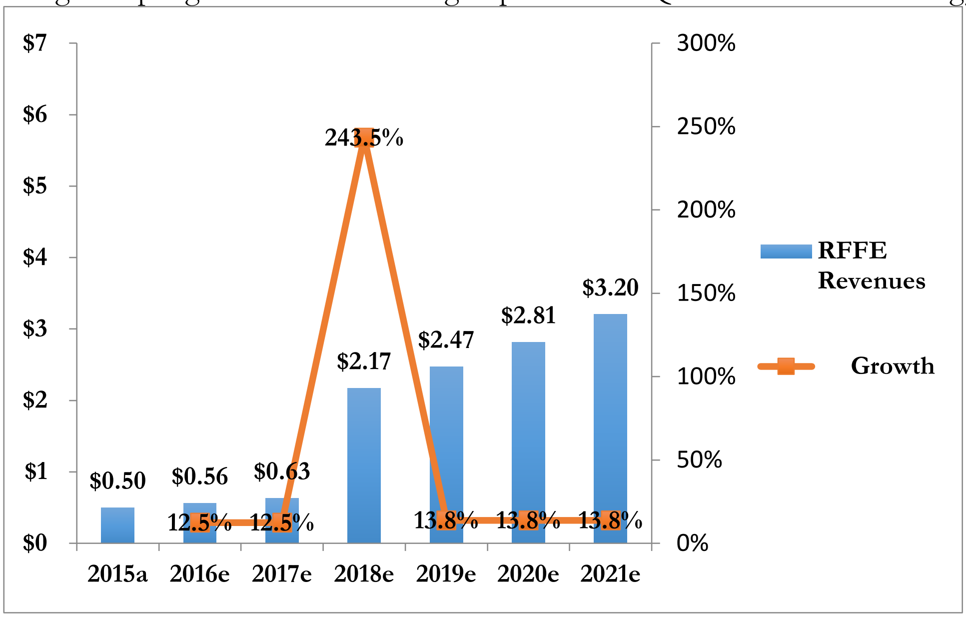

Figure 5: QCOM RFFE Revenue (in $bn) and Growth from 2015a – 2021e

Adjacent Opportunities

- Adjacent Opportunities represents Internet of Things, Networking, Mobile Compute, and Automotive; Internet of Things is the largest of these segments
- QCOM is highly focused in this area; it recently announced a "smart-home reference platform using the Snapdragon 212 processor, the new Qualcomm new aptX HD solution for high-resolution audio over Bluetooth, a new Bluetooth smart SOC, the first commercial drone based on the QUALCOMM Snapdragon Flight platform and the Snapdragon X5 9X07 LTE modem which broadens our family of modem solutions for IoT"[26]
- JP Morgan sees QCOM moving away from the smartphone market into other opportunities, and wording from the company: "We will analyze adjacent opportunities and see what the addressable market is, see what market share we think we can achieve"[27] demonstrates that the company is attempting to diversify
- Currently, QCOM occupies 14% of the $12bn Adjacent Opportunities market, which the company projects will grow to $29bn in 2020, representing a 19% CAGR. International Data Corporation projects a 17.5% CAGR for IoT installed base through 2020, while Business Wire projects a 32% CAGR for IoT. ABI Research expects a 15.7% CAGR in the same period for IoT, while a recent report by Global Industrial IoT Market Research predicts a 26% CAGR through 2019. Since QCOM's estimated growth rate seems to be in the middle of other projections, we believe that is the most relevant growth rate for its specific operations. Furthermore, in 2014, QCOM projected $1.6bn in IoT revenue for 2015, and the company realized revenues of $1.68bn, so we believe in their accuracy

[25] Factset.
[26] QCOM FQ1 2016 Earnings Call.
[27] QCOM 2016 Analyst Day Presentation – February 11, 2016.

- Additionally, Gartner, Inc. (NYSE: IT), the world's leading information technology research and advisory company, projects that IoT spending will grow at a CAGR of 20.5% through 2020, a number very similar QCOM's 19% CAGR. Figure 6 shows Gartner's historical accuracy with its semiconductor forecasts, so we believe that a 19% CAGR for IoT SAM is accurate

	2012	2013	2014	2015
Estimated Revenue	297,550	315,390	339,811	333,718
Actual Revenue	299,912	314,991	340,331	332,813
Deviation	-0.79%	0.13%	-0.15%	-0.3%

Figure 6: Gartner Historical Semiconductor Market Revenue Forecast

Source: Gartner

- In August 2015, QCOM announced a $2.4bn acquisition of CSR plc, a fabless semiconductor company that produces connectivity, audio, imaging and location chips. This acquisition positions QCOM well in the IoT and automotive technology spaces,[28] illustrating its strategic focus on these segments. CSR is a pioneer in Bluetooth technology for machine to machine (M2M) communication,[29] and the acquisition will add products, channels and customers in QCOM's IoT and automotive spaces
  - Furthermore, QCOM paid 3x revenue for CSR and trades at only ~2.8x revenue
  - This demonstrates smart capital allocation, as CSR is well-positioned in the growing IoT space, whereas QCOM is heavily exposed to the mature smartphone market
  - Therefore, CSR should have higher multiples than QCOM, showing that QCOM did not overpay for CSR given QCOM's own multiples
- While we believe that QCOM's acquisition of CSR gives it strong technology in the space, we think the fight for market share in the Internet of Things segment will be very intense, as many technology companies are aware of its high projected growth and are making it a priority
  - Therefore, we conservatively estimate QCOM's market share in Adjacent Opportunities will decrease from 14% in 2015 to 11% in 2021 as the company loses 50bps of market share every year
  - QCOM will face competition not only from Intel but also companies like Google, Facebook, Amazon, and others in the IoT space, making market share gains or even maintenance difficult
- We believe QCOM Adjacent Opportunities revenue will grow at a CAGR of 14.6% due to an expanding market in spite of decreasing market share among stiff competition
- Figure 7 shows projected revenues and growth for QCOM in the Adjacent Opportunities segment from 2015-2021

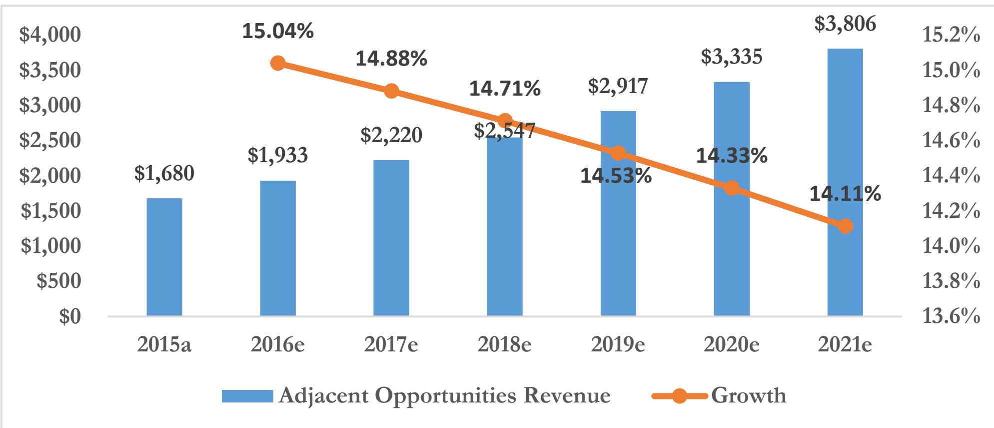

Figure 7: QCOM Adjacent Opportunities Revenue (in $mm) and Growth from 2015 – 2021

[28] Stone Fox Capital – March 29, 2016.
[29] Forbes – October 21, 2014.

3.) Strong Balance Sheet and Planned Capital Returns Limit Downside Risk on Investment

- In March 2015, the company announced a stock repurchase program authorizing management to repurchase up to $15bn of common stock
  - As of the filing date of QCOM's Q1 2016 quarterly report,[30] QCOM had $4.9bn worth of stock remaining to repurchase
  - We believe the company will utilize the $4.9bn in 2016 to alleviate short-term revenue headwinds, as well as to comply with the company policy of returning a minimum of 75% of Free Cash Flow to shareholders
  - At QCOM's current price per share of $51.82, the company can purchase 95mm shares, bringing basic shares outstanding from 1,524 to 1,429, which we then convert to 1,478 diluted shares outstanding based on the historical average difference between basic and diluted shares outstanding
- QCOM recently increased its quarterly dividend by 10%, and the company returned 134% of FCF to shareholders in 2015, above and beyond the 75% threshold, giving us confidence it will continue to return cash to shareholders
- QCOM's constant dividend payouts and share repurchases provide a margin for safety, as investors will get a $0.53 dividend payout every quarter and benefit from further stock repurchases in 2016
- QCOM converts 18% of its sales to FCF, compared to a 15% industry average,[31] and 85% of its $10bn in debt matures in 2020 or later, illustrating a strong cash flow profile
  - Combined with projected constant Capital Expenditure / Revenue requirements, these factors suggest most FCF will be returned to equity holders
- Figures 8 and 9 demonstrate that even accounting for capital expenditures, interest payments, and obligations to other parties, QCOM's FCF profile will be strong enough to support a capital return policy from 2016-2021

	2016	2017	2018	2019	2020	2021
EBITDA	$ 7,437	$ 7,824	$ 8,378	$ 9,097	$ 9,881	$ 11,030
(-) Capital expenditures	(1,150)	(1,203)	(1,281)	(1,395)	(1,519)	(1,701)
(-) Interest Expense	(266)	(266)	(266)	(226)	(226)	(172)
(-) Purchase obligations	(3,017)	(848)	(848)	(440)	(440)	(9)
(-) Operating lease obligation	(99)	(57)	(57)	(22)	(22)	(24)
(-) Other long-term liabilities	(2)	(62)	(62)	(55)	(55)	(5)
"Levered" Free Cash Flow	**$ 2,903**	**$ 5,389**	**$ 5,865**	**$ 6,959**	**$ 7,619**	**$ 9,118**

Figure 8: Projected Levered Cash Flows (in $mm) from 2016 – 2021

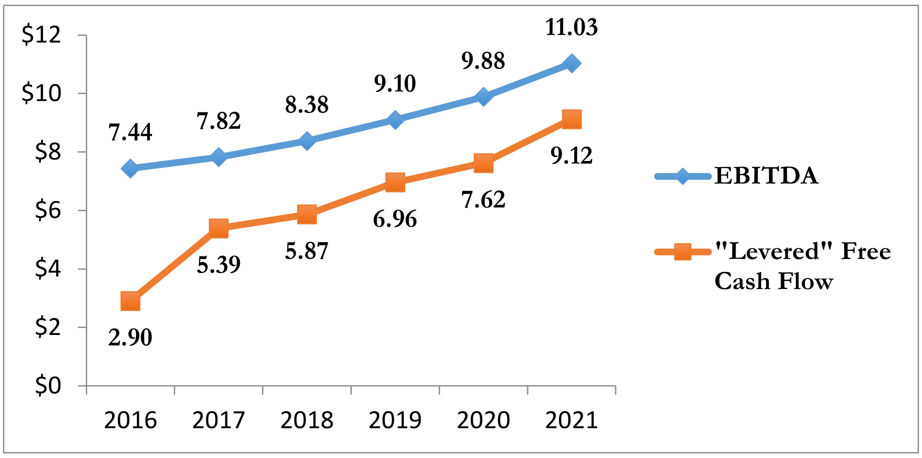

Figure 9: Projected EBITDA and Levered Free Cash Flow (in $bn) from 2016 – 2021

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30 January 27, 2016.
31 Factset.

4.) Strategic Realignment Plan and Margin Expansion

- In Q4 2015, the company announced a Strategic Realignment Plan (SRP), designed to improve execution, enhance financial performance and drive profitable growth[32]
  - Attempting to reduce annual costs by $1.1bn through reductions across businesses, particularly in the CDMA Technologies (QCT) segment
- The company expects these cost initiatives to be fully implemented by the end of fiscal 2016
  - QCOM projects $350-$450mm in restructuring charges, of which $190 was recorded in Q4 2015, so we model out an additional $210 (average of $160mm and $260mm) of restructuring charges in 2016 in addition to QCOM's normal cost structure
  - The company plans to reduce annual share-based compensation grants by $300mm, so we project SG&A costs as the average margin of the last five years – $300mm
  - QCOM revealed in its Q1 2016 earnings call that it was "on track to achieve its cost-savings targets in the strategic realignment plan," so we believe that most of these costs savings will be implemented by the end of 2016
  - Given that QCOM has beaten EPS guidance by an average of 7.2% over the last three years (Figure 3), we believe it will generate the projected cost savings in 2016
- Equity research does not mention the SRP; we believe the market may be overlooking this attempt to improve margins, as the company enjoyed an operating margin of ~29.4% in fiscal 2015 while the global semiconductor industry averaged only 19.3% in 2015 operating margin[33]
  - Market may believe there is no room to cut costs, especially as Average Selling Prices come under pressure from overall competition in the smartphone segment
  - However, QCOM's superior margins come from its leadership in technology, as well as Qualcomm Technology Licensing's (QTL) substantial contribution to consolidated Operating Income (in 2015, QTL generated only 32% of the company's revenue but 74% of QCOM's earnings before taxes)
- It is important to note the risks inherent in any cost reduction program, as some of these reduced costs may have negative effects on the company's revenue
  - However, the main cost that will drive QCOM's revenue going forward is R&D, which we project will stay constant at 21.90% of net sales
  - Reducing share-based compensation could have a potential negative effect on labor morale and productivity, but we think activist investor Jana Partners's proposal to more closely tie executive pay to performance[34] by adding Return on Invested Capital as a metric for determining performance-based equity awards will incentivize management to allocate capital more effectively going forward
- **Licensing Progress in China Will Drive Improved Royalty Rates and Compliance → Room for Margin Improvements**
  - The National Development and Reform Commission's negative ruling in February 2015 resulted in a $975mm charge and altered the terms of QCOM's licensing contracts with Chinese OEMs in 2015
    - The implied royalty rate is projected to decline from 3.17% in 2015 to 2.90% in 2016 as a result, but growth in new licensing opportunities, licensing of 3G/4G essential patents in China, and an improved share among high tier OEMs are potential drivers for improved royalty rates in the future
  - Additionally, a major issue for QCOM is Chinese OEMs' lack of compliance with IP rights, as the company believes that that 44% of Chinese OEMs' global 3G/4G sales went underreported or unlicensed in 2015, a proportion they expect to reduce to 26% in 2016 (see Figure 10)

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32 QCOM FY 2015 10-K.
33 Factset.
34 Vipal Monga – Reuters.

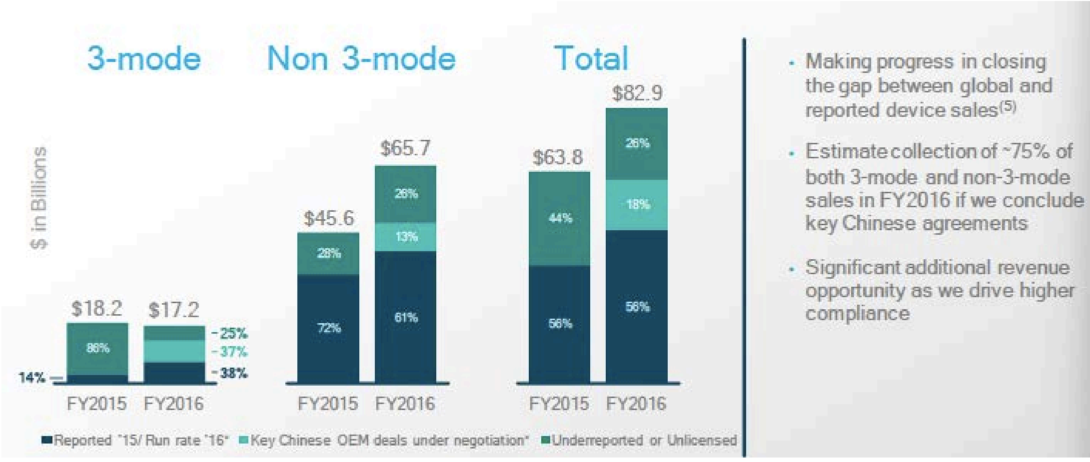

Figure 10: Estimated 3G/4G Global Device Sales (Chinese OEMs)

Source: QCOM Analyst Day Presentation – February 11, 2016, company estimates

- The company is focused on reducing underreporting through litigation and IP enforcement actions and has 120 licensee audits planned in fiscal 2016[35]
- We believe that as China becomes more ingrained in the global economy and the government maintains its focus on becoming an economic superpower, regulations on IP infringement will tighten, thus improving compliance for companies like QCOM
- Increased compliance and improved licensing rates will drive gross margin up 25bps in 2016, 2017 and 2018, eventually leveling out at 59.70% in 2019, 2020 and 2021
  - The company expects to reduce underreported or unlicensed global device sales from 44% in 2015 to 26% in 2016, so we believe that it will consistently shrink the underreported segment from 26% in 2016 to 0% in 2018 if it continues at the same rate
- One other aspect of Qualcomm that we believe will contribute to its gross margin expansion by 25bps in 2016, 2017 and 2018 is its supply chain, which is the most geographically diversified of all its competitors[36]
  - QCOM has 2x the foundry spend of its nearest competitor and 3x the wafer consumption in the leading node[37]
  - QCOM has 45 suppliers across the electronic technology, technology services, producer manufacturing, and other industries, and its suppliers are in the U.S., Taiwan, Korea, China, Great Britain, Hong Kong, Canada, Denmark and Sweden[38]
  - QCOM's scale, extensive supply chain, and industry-leading technology give it leverage and bargaining power in negotiations with suppliers, allowing it to decrease COSE in the event of pricing pressure

5.) Analyzing SG&A and R&D Expenses: Company Projected Tailwinds Offset by Unmentioned Headwinds

- Starting in 2017, we project SG&A as an average percentage of revenue from the past five years - $300mm per year accounting for the reduction in share-based compensation
- The company projects that R&D and SG&A will decrease 2-4% yoy from 2015 to 2016, and given the company's historical accuracy with its guidance (and its realistic decreased revenue guidance for fiscal 2016), we project that both R&D and SG&A will decrease by 1.5% yoy from 2015 to 2016
- We assume that R&D expense as a percentage of revenue will stay at 21.90% from 2016 through 2021 for a few reasons

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35 QCOM Analyst Day Presentation – February 11, 2016.
36 QCOM Analyst Day Presentation – February 11, 2016.
37 QCOM Analyst Day Presentation – February 11, 2016.
38 Factset.

- The five year historical average of R&D/Sales is 20.6%, and we believe that continued investments in 5G, LTE, and peripheral opportunities like IoT and RFFE will keep R&D expenses above the historical average
- QCOM's Analyst Day Presentation references reuse in R&D in adjacent markets as an opportunity to reduce R&D expenses
- It also cites deepening collaboration between TDK and QCOM through RF360 Holdings, as well as knowledge gained from its acquisition of CSR plc, as avenues through which R&D margin may decrease
- However, we believe that these assumptions are overly optimistic, as R&D/Sales has stayed relatively constant over the last five years, and the industry average is 21.90%,[39] indicating QCOM needs to continue investing to maintain its hold on the #1 GPU, #1 LTE Modem, #1 CPU, #1 DSP, #1 Wireless Networks, and #1 Camera ISP[40]
- Additionally, QCOM announced the government's imposition of a permanent R&D tax credit, giving the company more incentive to continue on its recent pace of R&D
- In sum, while the company and some analysts believe QCOM may be able to cut R&D margins, we believe a slightly higher than historical average is the most likely scenario

6.) Interest Expense, Taxes and Investment Income: Recent Leverage, Deferred Tax Assets, and Declining Investment Performance

- QCOM's emphasis on its strong balance sheet and commitment to an investment grade rating[41] make it unlikely that the company will issue further debt in the next six years
- Furthermore, the company raised $10bn in debt in 2015 and has stated goals of preserving strategic flexibility and a commitment to return a minimum of 75% of FCF to stockholders,[42] making any early debt retirements unlikely
- We apply the weighted average interest rate of 2.67%[43] to QCOM's remaining long-term debt balance based on its debt schedule (see Figure 11) to project interest expense through 2021

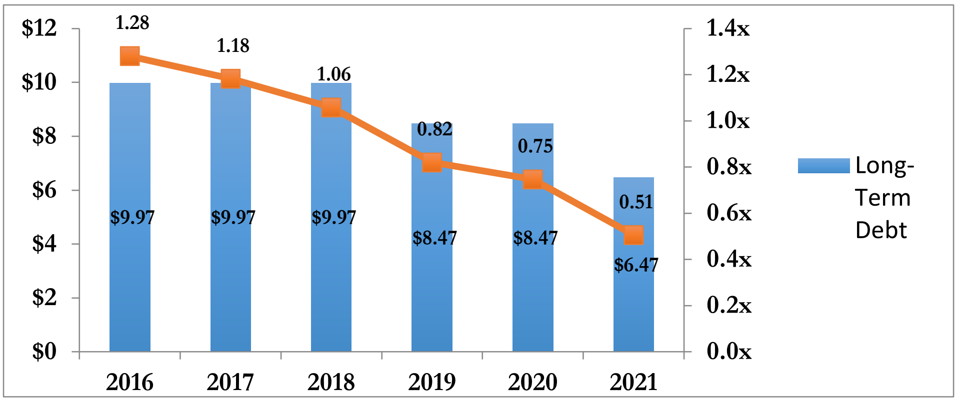

Figure 11: Projected Debt Balance and Debt / EBITDA from 2016 – 2021

- QCOM guided to an 18% tax rate in 2016 on its Q1 2016 earnings call, and given the historical reliability of its projections, we project an 18% tax rate for 2016, close to its five-year historical average rate of 17.76%
- QCOM has federal net operating loss carryforwards of $366mm as of September 27, 2015 expiring from 2021-2033, unused state net operating loss carryforwards of $696mm expiring from 2016-2035, and unused foreign net operating loss carryforwards of $413mm expiring from 2019-2024[44]

[39] Factset.
[40] Strategy Analytics – December 2015.
[41] QCOM Analyst Day Presentation – February 11, 2016.
[42] QCOM Analyst Day Presentation – February 11, 2016.
[43] QCOM FY 2015 10-K.
[44] QCOM FY 2015 10-K.

- In the company's 10-K, it states that it "does not expect its federal net operating loss carryforwards to expire unused,"[45] which we interpret as the company is only expecting to utilize its federal NOL carryforwards in the foreseeable future
  - Therefore, we assume that the federal NOLs will be utilized evenly in every year from 2017-2033, when they expire, amounting to $21.5mm annually in tax savings
  - We assume that tax provisions from 2017-2021 will equal 18% * EBT - $21.5mm
- We project investment income equal to 3% of revenues from 2016-2021, slightly below the five-year historical average of 4.17%, as the company expects to generate lower interest and dividend income as well as lowered realized gains in 2016 due to rebalancing,[46] a trend we conservatively estimate will persist
- We project capital expenditures and depreciation and amortization will remain at five-year historical averages as a percentage of revenue because we do not foresee the capital intensity of the business shifting dramatically over the next five years
- Figures 12 and 13 shows the key income statement and cash flow statement projection drivers

Key Drivers	2015	2016	2017	2018	2019	2020	2021
Revenue Growth	-4.55%	-2.35%	4.58%	6.45%	8.89%	8.91%	11.99%
COSE Margin	41.05%	40.80%	40.55%	40.30%	40.30%	40.30%	40.30%
Gross Margin	58.95%	59.20%	59.45%	59.70%	59.70%	59.70%	59.70%
SGA / Revenue	9.27%	9.35%	9.42%	9.49%	9.58%	9.66%	9.76%
R&D / Revenue	21.72%	21.90%	21.90%	21.90%	21.90%	21.90%	21.90%
Other Operating / Revenue	5.11%	2.82%	2.82%	2.82%	2.82%	2.82%	2.82%
Operating Margin	22.85%	25.12%	25.30%	25.48%	25.39%	25.31%	25.21%
Interest (Expense) / Revenue	-0.41%	-1.08%	-1.03%	-0.97%	-0.75%	-0.69%	-0.47%
Investment Income / Revenue	3.22%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Tax Rate	18.79%	18.00%	17.69%	17.72%	17.74%	17.76%	17.79%
EBITDA	$ 6,990	$ 7,437	$ 7,824	$ 8,378	$ 9,097	$ 9,881	$ 11,030

Figure 12: Income Statement Drivers

	2015	2016	2017	2018	2019	2020	2021
Net Income	$ 5,268	$ 5,475	$ 5,795	$ 6,222	$ 6,804	$ 7,403	$ 8,325
Depreciation and Amortization	(1,214)	(1,235)	(1,292)	(1,375)	(1,498)	(1,631)	(1,827)
Capital Expenditures	(994)	(1,150)	(1,203)	(1,281)	(1,395)	(1,519)	(1,701)
Net Sales	$ 25,281	$ 24,688	$ 25,819	$ 27,485	$ 29,929	$ 32,596	$ 36,505
D&A / Sales	-4.80%	-5.00%	-5.00%	-5.00%	-5.00%	-5.00%	-5.00%
Capex / Sales	-3.93%	-4.66%	-4.66%	-4.66%	-4.66%	-4.66%	-4.66%

Figure 13: Historical and Projected Cash Flow Statement Drivers

7.) QCOM's Core Mobile growth: Well-Positioned Geographically

- While we only project QCOM's Core Mobile segment to grow at a 4.16% CAGR between 2016-2021, it is still important to make sure that even this growth is reasonable given the high penetration rates in most developed countries
- Figure 14 shows the unique subscriber penetration rate by region for 2014 and 2020, as projected by GSMA Intelligence
  - Historically, GSMA Intelligence has been pessimistic in its projections, predicting that by 2015 LTE would account for 4% of the world's mobile connections,[47] while in reality it was 10%[48]

[45] QCOM FY 2015 10-K.
[46] QCOM FY 2015 10-K.
[47] GSMA Intelligence.
[48] GSMA Intelligence.

- Thus, the penetration rate forecasts are, if anything, conservative, illustrating that there is substantial room for Qualcomm to increase overall market *size* in the Core Mobile segment without necessarily increasing its market *share*

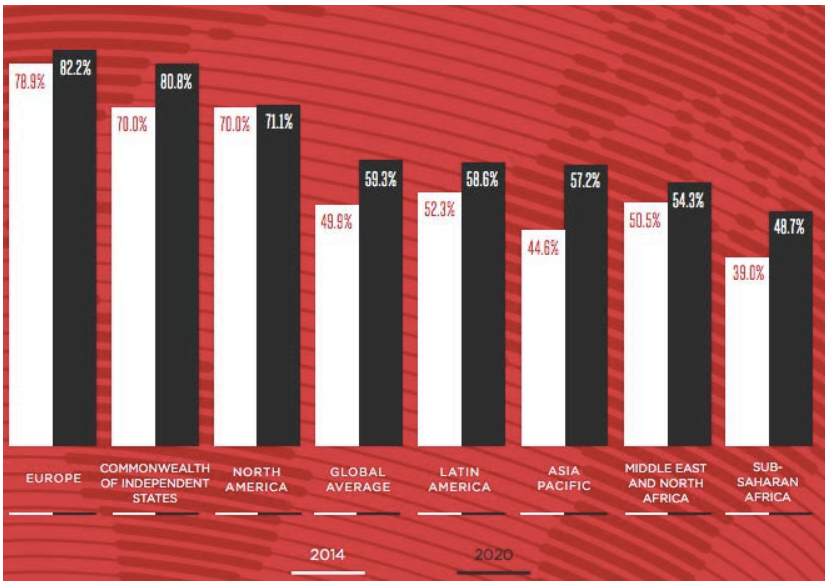

Figure 14: 2014a and 2020e Unique Subscriber Penetration Rate by Region

Source: GSMA Intelligence

- Figure 15 shows Qualcomm's revenue breakdown in fiscal 2015, which is heavily skewed towards China (53%), South Korea (16%), and Taiwan (13%)
  - This is advantageous for Qualcomm because Figure 14 illustrates that the difference in projected penetration rate between 2014 and 2020 is greatest for the Asia Pacific region
  - For QCT, Qualcomm records revenues in the country in which its customers manufacture its products, while QTL records revenue in the country of the invoiced address of its licensees,[49] so the geographic revenue breakdown does not necessarily correspond to endmarket demand, but it does illustrate QCOM's heavy presence in the Asia Pacific region, helping it generate mobile revenues in the future

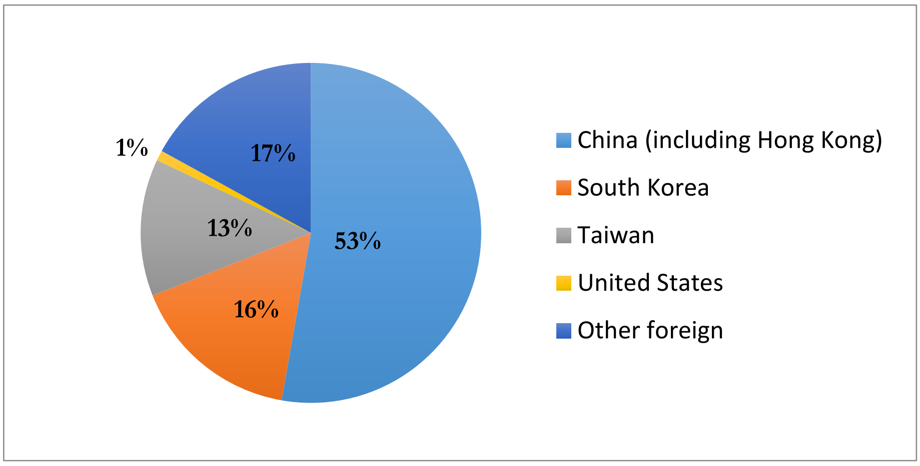

Figure 15: QCOM's Fiscal 2015 Revenue Breakdown by Region

8.) Attractive Business Model and Strategy

- QCOM, pushed by the recent loss to Intel for the iPhone 7, is focused on diversifying its revenue stream away from the volatile mobile segment into RFFE and Adjacent Opportunities, two areas with much higher growth opportunities and potential to gain market share

[49] QCOM FY 2015 10-K.

- QCOM utilizes a fabless production model, meaning it does not manufacture wafers; it contracts with 3rd party suppliers for manufacturing service
    - This model reduces the capital intensity of QCOM's business, thus reducing necessary capital expenditures and improving its cash flow profile
- QCOM's main differentiator is its technology, allowing it to compete on quality and thus have more pricing power and ability to differentiate itself in an increasingly commoditized industry
- QCOM's diversified supply chain and position as a market leader in semiconductor technology gives it leverage in negotiations with suppliers, further enhancing its pricing power
    - Its patent portfolio is the most widely and extensively licensed in the industry with over 285 licenses across China, Brazil, Japan, India, South Korea, Taiwan, and the U.S.[50]
    - QCOM's new Snapdragon processor is the market leader in multiple categories, as Figure 16 demonstrates

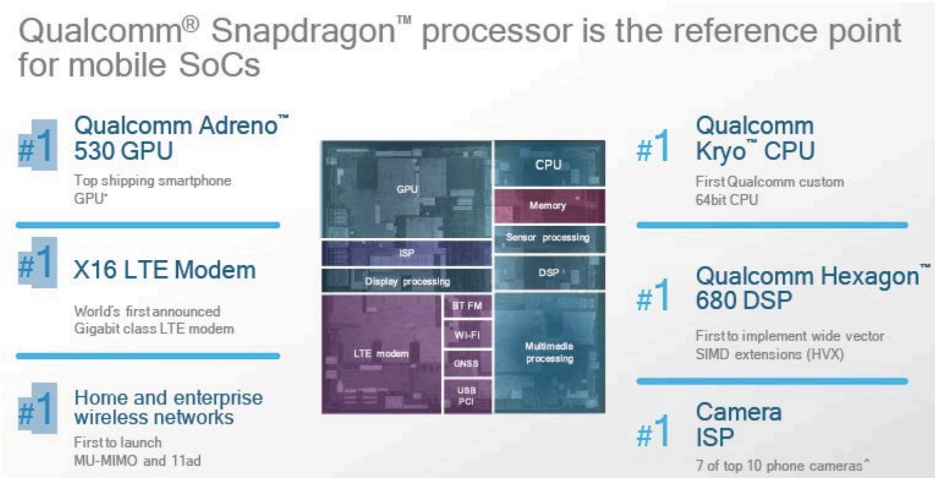

Figure 16: QCOM's Snapdragon™ Processor is the Reference Point for Mobile SoCs

Source: Smartphone Application Processor Unit Shipments, Strategy Analytics, December 2015

9.) APV Valuation

	2016	2017	2018	2019	2020	2021	Terminal Value
Operating Income (EBIT)	$ 6,202	$ 6,532	$ 7,003	$ 7,599	$ 8,250	$ 9,203	
(-) Taxes	(1,202)	(1,246)	(1,340)	(1,467)	(1,599)	(1,801)	
(+) Depreciation and Amortization	1,235	1,292	1,375	1,498	1,631	1,827	
(-) Capital Expenditures	(1,150)	(1,203)	(1,281)	(1,395)	(1,519)	(1,701)	
(-) Change in Net Working Capital	891	(550)	(806)	(1,167)	(1,273)	(1,866)	
Unlevered Free Cash Flows	$5,975	$4,825	$4,952	$5,068	$5,490	$5,661	$102,220
Discounted Free Cash Flows (all-equity)	$5,551	$4,164	$3,969	$3,774	$3,798	$3,638	$65,687
Sum of Discounted Free Cash Flows (all-equity)	**$90,580**						
Projected Interest Expense	$266	$266	$266	$226	$226	$172	
Interest Tax Shield at Relevant Yearly Tax Rates	$48	$47	$47	$40	$40	$31	
Terminal Value of Tax Shield Assuming that Debt Grows at 2%							$554
Tax Shields Discounted at Weighted Average Cost of Debt of 2.67%	$47	$45	$44	$36	$35	$26	$473
Present Value of Financing Effects	**$705**						
(+) Cash	7,560						
(-) Total Debt	(10,969)						
Implied Market Value of Equity	$87,877						
Diluted Shares Outstanding	1,478						
Implied Price per share	**$59.47**						
Current price (as of 4/14/2016 close)	**$51.82**						
Implied Premium / (Discount)	14.77%						

- **Cost of Equity**
    - We regress QCOM's returns against the Wilshire 5000 Index returns monthly for the past five years and get a levered Beta of 1.17
        - Figure 17 illustrates QCOM's Beta over the last five years, which has been drifting upward. However, QCOM's levered Beta dropped in 2016, and the range is pretty tight, as the levered Beta has remained between 0.925 and 1.275

[50] QCOM FY 2015 10-K.

  - Thus, we believe that a levered beta of 1.17 is an accurate estimate, especially considering QCOM's Beta has been above 1.0 since the start of 2014
  - We then unlever the Beta using QCOM's average *historical* capital structure over the past five years because the company recently raised $10bn of debt after carrying an average of only $93mm in debt over the last five years (we want to determine the true historical unlevered beta by accounting for the actual capital structure over the last five years)
  - We also use an 18% tax rate to get an unlevered Beta of 1.12
  - We use a market risk premium of 5.15%[51] and a risk-free rate of 1.89%, the US Treasury 10-year yield,[52] resulting in a cost of equity of 7.65%
- We use a long-term growth rate of 2%

Figure 17: QCOM Levered Beta From 2011-2015

Source: YahooFinance

- **Cost of Debt**
  - We use QCOM's weighted average cost of debt of 2.67% to discount the tax shields and the relevant yearly tax rates (all around 18% or slightly lower)
- Valuation comes to an implied price per share of $59.47, representing a 14.77% premium to the closing price of $51.85 as of April 14, 2016
- Our sensitivity analysis demonstrates a strong margin of safety in our assumptions for cost of equity and long-term growth rate

		Cost of Equity						
		6.1%	6.6%	7.1%	7.6%	8.1%	8.6%	9.1%
LT Growth Rate	0.50%	$ 63.46	$ 58.07	$ 53.50	$ 49.56	$ 46.14	$ 43.14	$ 40.49
	1.00%	$ 68.38	$ 62.10	$ 56.84	$ 52.37	$ 48.53	$ 45.19	$ 42.26
	1.50%	$ 74.36	$ 66.90	$ 60.77	$ 55.63	$ 51.27	$ 47.52	$ 44.26
	2.00%	$ 81.78	$ 72.74	$ 65.46	$ 59.47	$ 54.46	$ 50.20	$ 46.54
	2.50%	$ 91.23	$ 79.99	$ 71.17	$ 64.06	$ 58.22	$ 53.32	$ 49.16
	3.00%	$ 103.69	$ 89.23	$ 78.25	$ 69.64	$ 62.70	$ 56.99	$ 52.21
	3.50%	$ 120.84	$ 101.39	$ 87.28	$ 76.56	$ 68.15	$ 61.37	$ 55.80

<u>10.) Favorable Trading Multiples Indicate Potential Undervaluation</u>

QCOM is currently trading at favorable multiples with respect to its peers as shown by the company comparables analysis:

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51 Aswath Damodaran at NYU Stern.
52 Bloomberg.

- Its long-term growth rate is double that of its peers' average, yet its current P/E ratio is 12.5x compared to a peer average of 16.94x, indicating a potential undervaluation if its multiples come more into line with those of its peers
- QCOM's margins are better than those of its peers and it generates more FCF per $ of sales than its competitors, potential results of its place as market leader and pricing power due to its differentiated technology
    - This outperformance occurs despite a lower ratio of R&D/Sales than its competitors
- The analysis exemplifies QCOM's balance sheet strength, as it carries less leverage than its peers[53]

Company Comparable Analysis - FactSet *Data as of Apr-12,2016*

All values in USD Company	Price	MV	LT Rate	5 yr Avg P/E	Current P/E	5 yr Avg ROE	5 yr Avg Debt/EV	5 yr Avg LT Debt/Equity
Qualcomm	$ 50.62	75,671	11.1%	17.7	12.5	18.3%	0.03	6.5
Airoha Tech.	$ 3.87	234		16.5		41.9%		
HiSilicon								
Intel	$ 31.79	150	8.1%	12.9	14.1	21.5%	0.11	23.9
Marvell Tech.	$ 10.68	5,528	-2.9%	18.0	26.7	10.4%	-	0.1
Maxim Integrated	$ 37.19	10,651	10.4%	26.3	23.0	15.0%	0.07	23.4
MediaTek	$ 7.07	11	-2.6%	19.9	15.7	13.8%	0.07	0.0
Microchip Tech.	$ 48.27	9,834	7.8%	31.1	18.2	17.4%	0.11	44.8
Realtek Semiconductor	$ 2.67	1,350		14.1	15.7	13.6%	0.26	29.7
Samsung	$ 1,082.26	177	4.2%	9.5	9.8	17.0%	0.08	10.0
Spreadtrum								
Average			5.16%	18.44	16.94	18.76%	0.09	17.31

Company Comparable Analysis - FactSet

All values in USD Company	5 yr Avg EV/EBITDA	Current EV/EBITDA	5 yr Avg Gross Margin	5 yr Avg Net Margin	2015 Sales	3 yr CAGR Sales	2015 R&D % of Sales	2015 FCF % of Sales
Qualcomm	11.5	8.4	62.1%	27.1%	25,281	9.8%	21.7%	17.8%
Airoha Tech.			30.0%	10.2%	145			10.5%
HiSilicon								
Intel	5.8	6.6	61.7%	20.9%	55,355	1.2%	21.9%	21.1%
Marvell Tech.	9.4	9.2	52.7%	14.8%	2,758	3.0%	42.2%	6.6%
Maxim Integrated	10.0	11.3	58.8%	15.3%	2,307	-1.4%	26.8%	26.8%
MediaTek	15.1	9.0	42.2%	17.1%	213	29.0%		7.5%
Microchip Tech.	13.4	13.0	52.9%	19.8%	2,147	15.8%	16.3%	26.6%
Realtek Semiconductor	6.8	7.8	39.5%	9.5%	978	8.9%		9.0%
Samsung	4.0	3.3	36.1%	10.6%	174	-0.1%		7.1%
Spreadtrum								
Average	9.50	8.56	48.45%	16.14%		8.28%	25.78%	14.79%

11.) Bear Case / Risks

Analyst Recommendation		
Buy	10	43%
Hold*	13	57%
Sell	-	0%
	23	100%

** 3 downgrades to Hold in last 2 mths, 1 upgrade*

Source: Factset

General street consensus is to buy or hold QCOM, but that is not unusual for such a large-cap company. A few reasons for caution:

- Samsung and Hon Hai Precision Industry Co. together account for about 40% of QCOM's revenue.[54] This customer concentration makes QCOM's revenues more volatile and risky. For

[53] HiSilicon and Spreadtrum are private companies.
[54] Factset.

example, Samsung had a rough 2015, with declining customers and stock price performance, impacting QCOM's stock price performance and operations

- Foreign exchange is a major area of concern for QCOM, as it produces and sells its products all over the world. Its supply chain is extremely diversified geographically, and Figure 15 illustrates a geographic breakdown of its revenues
- In December 2015, the European Commission charged Qualcomm with illegally paying a major customer to only use its chips, forcing competitor Icera Inc. out of the market[55]
    - Further anti-trust risks in the EU will be important to keep an eye on, although a previous EU probe into QCOM's licensing requirements in 2009 ended without any action against the company[56]
    - We impose a discount of 100bps in 2016 – 2018 in QCOM's Core Mobile segment to account for possible fines / licensing practice changes

12.) Glossary

- **RFFE** – Radio Frequency Front End Products, which consist of all components in the receiver of a radio receiver circuit that process the signal at the original incoming radio frequency before it is converted to a lower intermediate frequency
- **IoT** – Internet of Things, network of physical objects embedded with electronics, software, sensors and network connectivity that enables these objects to collect and exchange data
- **CDMA** – Code Division Multiple Access, a channel access method used by various radio communication techniques
- **WCDMA** – Wideband Code Division Multiple Access, based on CDMA technology but is a 3G technology that increases data transmission rates in GSM systems by using CDMA air interface instead of TDMA
- **QTL** – Qualcomm Technology Licensing, refers to Qualcomm's operating segment that grants licenses or otherwise provides rights to use portions of our intellectual property portfolio
- **QCT** – Qualcomm CDMA Technologies, refers to Qualcomm's operating segment that is a leading developer and supplier of integrated circuits and system software based on CDMA, OFDMA and other technologies for use in voice and data communications, networking, application processing, multimedia and global positioning system products
- **TDK** – Japanese multinational electronics company that manufactures electronic materials, electronic components, and recording and data-storage media
- **RF360 Holdings** – Joint Venture in the Radio Frequency Front End space between TDK Corp. and Qualcomm
- **CSR plc –** British multinational fabless semiconductor company acquired by Qualcomm in August 2015
- **SAM** – Serviceable Addressable Market, market opportunity that exists within a firm's existing core competencies and/or past performance
- **ASP** – Average Selling Price

[55] Wall Street Journal – December 8, 2015.
[56] Wall Street Journal – December 8, 2015.