

## **Financial and Managerial Accounting**



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## Deliverable 1

A section on the industry, key competitors, and key drivers/challenges

### **Microchip Technology vs Texas Instruments**

#### **Industry Overview:**

The semiconductor industry lives - and dies - by a simple creed: smaller, faster and cheaper. Smaller the size of transistors more number of transistors can be placed on a chip, making it faster. Increasing competition and new technologies lower the cost of production per chip. As a result, there is constant pressure on chip makers to come up with something better and even cheaper than what redefined state-of-the-art only a few months before. Even in a down market, weak sales are seen as no excuse for not coming up with better products to whet the appetites of customers who will eventually need to upgrade their computing and electronic devices. Traditionally, semiconductor companies controlled the entire production process, from design to manufacture. Yet many chip makers are now delegating more and more production to others in the industry. Chip companies are emerging leaner and more efficient. Chip production now resembles a gourmet restaurant kitchen, where chefs line up to add just the right spice to the mix (1).

#### **Key Drivers:**

1. Semiconductors are used extensively in electronic devices, such as smartphones, flat-screen monitors & LED TVs, civil aerospace, and military systems.

2. The industry is set to grow as needs such as long battery life, AI capabilities, and biometrics surge.
3. Growth in cloud computing, internet-connected devices (IoT), and artificial intelligence will further contribute to semiconductor companies' revenues.
4. According to [SEMI](#), robust volume shipments and higher ASPs for memory, coupled with storage, industrial, wireless, and automotive applications contributed to the strong revenue growth in 2017.
5. Through 2025, the semiconductor industry is set to benefit from the ongoing innovation and development of connectivity, data centers, communications, automotive, and advanced software.
6. Increasing consumption of electronic components used in the safety, infotainment, and navigation of automobiles will further contribute to the growth in the industry. (<https://www.netscribes.com/semiconductor-industry-trends/>)

### **Key Competitors:**

The global microcontroller market is characterized by the presence of many vendors such as Microchip Technology, Infineon Technologies, Cypress Semiconductor, STMicroelectronics, NXP Semiconductors, Texas Instruments, and Renesas Electronics. The semiconductor industry is in a consolidation period and international microcontroller vendors are leveraging M&As to expand their market share and grow rapidly. The global microcontroller market is a highly competitive landscape brought about by recent technological advances, including self-driving cars, vehicle connectivity, and interactive safety systems.



**Cypress Semiconductor:** Cypress Semiconductor designs and manufactures semiconductors. Cypress Semiconductor designs, develops, manufactures, and markets programmable and mixed-signal solutions globally. The major operating segments are memory products division, data communications division, programmable systems division, and emerging technologies division.



**Infineon Technologies:** Infineon Technologies derives its revenue majorly from four operating segments, including automotive, chip card and security, industrial power control, and power management and multemarket. The MCUs come under the automotive segment.



**NXP Technologies:** NXP Technologies' business segments include high-performance mixed-signal and standard products, of which, MCUs come under the high-performance mixed-signal category. The company acquired Freescale Semiconductor that brought core strengths to the combined organization, near field communication from NXP Semiconductors and MCUs from Freescale Semiconductor.



**Renesas Electronics:** Renesas Electronics is a semiconductor manufacturer based in Japan. They have three major segments that are MCU business, analog and power devices, and the SoCs. The company offers microcontrollers for automotive, industrial equipment, and consumer electronics applications.



**STMicroelectronics:** The core business segments of STMicroelectronics include analog and MEMS group, automotive and discrete group, and microcontrollers and digital ICs group. They design, develop, manufacture, and market a broad range of products.



**Texas Instruments:** Texas Instruments designs and manufactures semiconductors for electronics designers and manufacturers globally. Texas Instruments has two reportable segments being analog and embedded processing. It also provides low power and high-performance MCUs with wired and wireless connectivity options.

## **Deliverable 2**

A timeline of the salient information/transactions/products and circumstances that have been instrumental in securing each company's position in the marketplace

<b>Microchip Technology</b>	
Year	Event
1987	When General Instrument spun off its microelectronics division as a wholly-owned subsidiary, Microchip was founded
1989	Acquired by a group of venture capitalists and became an independent company
1993	Went Public
1996	Acquired AsiC Technical Solutions, Inc for \$1.7 million
2001	Acquired TelCom Semiconductor Inc
2002	Acquired PowerSmart Inc
2008	Acquired Hampshire Company

2009	Acquired HI-TECH Software, R&E International
	Announced the nanoWatt XLP Microcontrollers, claiming the world's lowest sleep current
2009	and sold more than 6 billion microcontrollers
2011	Shipped the 10 billionth PIC microcontroller
2012	Acquired Roving Networks
2013	Acquired Novosel
2014	Acquired Supertex
2015	Acquired Micrel
2016	Agreed to buy Atmel for \$3.6billion
2018	Acquired Microsemi Corporation

Reference: [https://en.wikipedia.org/wiki/Microchip\\_Technology](https://en.wikipedia.org/wiki/Microchip_Technology)

<b>Texas Instrument</b>	
Year	Event
1951	Founded by Cecil H. Green, J. Erik Jonsson, Eugene McDermott, and Patrick E. Haggerty

1952	Texas Instruments purchased a patent license to produce germanium transistors from Western Electric, the manufacturing arm of AT&T, for \$25,000, beginning production by the end of the year
1954	Morris Tanenbaum at Bell Labs created the first workable silicon transistor
1967	invented the hand-held calculator (a prototype called "Cal Tech")
1971	Invented the single-chip microcomputer
1978	Introduced the first single-chip linear predictive coding speech synthesizer
1984	Developed the first inverse synthetic aperture radar
1991	The military microwave integrated circuit[44] program was initiated – a joint effort with Raytheon
1996	Acquired Tartan, Inc
1997	Acquired Amati Communications for \$395 million
1999	Acquired Telogy Networks for \$457 million.
2000	Acquired Burr-Brown Corporation for \$7.6 billion
2006	Acquired Chipcon for about \$200 million
2009	Acquired CICLON and Luminary Micro.

2010	TI store was completely redesigned using a new online platform. Additionally, sample EVMs were moved into the eStore from the home-grown application
2011	Acquired National Semiconductor for \$6.5 billion.
2014	At the TI store, integrated circuit samples were moved into the store from the home-grown application and integrated circuit purchase options were added. These changes combined all evaluation and development modules, integrated circuits, and sample programs into one platform
2015	TI store increased its maximum order quantity from 99 to 999.
2016	Code Composer Studio v7 was released at no cost, as it included a new licensing model: Technology Software Publicly Available.

Reference: [https://en.wikipedia.org/wiki/Texas\\_Instruments#History](https://en.wikipedia.org/wiki/Texas_Instruments#History)

## Deliverable3

A section on the Street's position and expectations relative to your chosen companies

### Stock Market Analysis:

#### Microchip Technology:



Street Position: Current market opinion - **BUY**

Microchip Technology's gross profit margin exponentially increased from 2017, 2018 towards 2019. MCHP's Expenses and net income increased over the years.

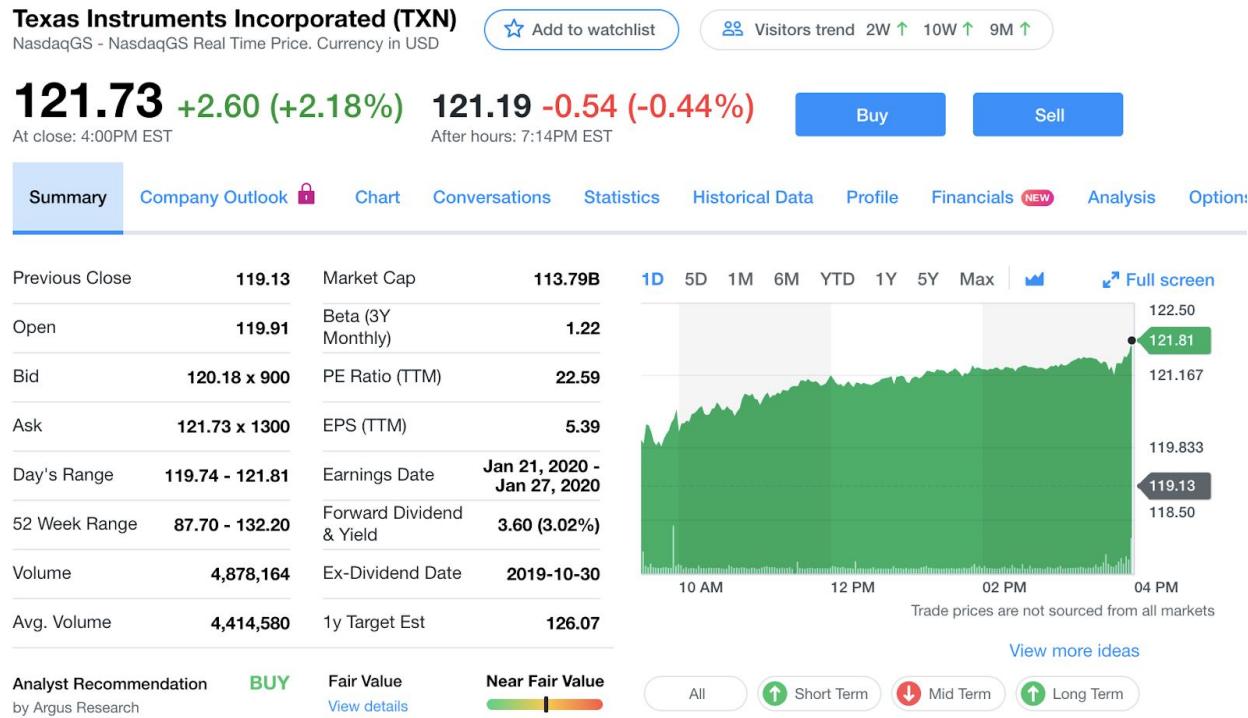
Breakdown	TTM	3/31/2019	3/31/2018	3/31/2017
Total Revenue	5,365,000	5,349,500	3,980,800	3,407,807
Cost of Revenue	2,122,300	2,418,200	1,560,100	1,650,611
Gross Profit	3,242,700	2,931,300	2,420,700	1,757,196
▼ Operating Expenses				
Research Development	871,400	826,300	529,300	545,293
Selling General and Administrative	682,400	682,900	452,100	499,811
<b>Total Operating Expenses</b>	<b>2,421,000</b>	<b>2,183,300</b>	<b>1,466,900</b>	<b>1,382,771</b>
<b>Operating Income or Loss</b>	<b>821,700</b>	<b>748,000</b>	<b>953,800</b>	<b>374,425</b>
Interest Expense	536,100	502,900	199,000	146,346
Total Other Income/Expenses Net	11,400	-48,700	-39,500	-141,371
Income Before Tax	300,200	204,500	737,300	89,787
Income Tax Expense	-83,300	-151,400	481,900	-80,805
Income from Continuing Operations	383,500	355,900	255,400	170,592
<b>Net Income</b>	<b>383,500</b>	<b>355,900</b>	<b>255,400</b>	<b>164,639</b>
Net Income available to common s...	383,500	355,900	255,400	164,639
▼ Reported EPS				
Basic	-	1.51	1.10	0.76
Diluted	-	1.42	1.03	0.71
▼ Weighted average shares outst...				
Basic	-	236,200	232,900	217,196
Diluted	-	249,900	248,900	234,806
FRITDA	-	1,583,800	1,552,200	705,341

## Street Expectations:

“Microchip shares climbed 2.1% to close at 90.63 on the **stock market**. The Chandler, Ariz.-based company earned an adjusted \$1.40 a share, up 21% year over year, on sales of \$1.002 billion, up 11%, in its **fiscal fourth quarter** ended March 31. Analysts expected EPS of \$1.34 and sales of \$985 million. For the next quarter, Microchip expects to earn an adjusted \$1.44 on sales of \$1.037 billion, based on the midpoint of its guidance. Wall Street was modeling EPS of \$1.43 and sales of \$1.03 billion. Microchip's guidance translates to year-over-year grow of 10% in earnings per share and 7% in sales.”

References: <https://www.investors.com/news/technology/microchip-technology-q4-earnings/>

## Texas Instruments:



Street Position: Current market opinion - BUY

Texas Instruments gross profit margin increased from year 2017 to year 2018. The company managed to grow both revenue and net income at a faster pace than the average competitor in the same time period.

Breakdown	TTM	12/31/2018	12/31/2017
Total Revenue	15,240,000	15,784,000	14,961,000
Cost of Revenue	5,408,000	5,507,000	5,347,000
Gross Profit	9,832,000	10,277,000	9,614,000
▼ Operating Expenses			
Research Development	1,569,000	1,559,000	1,508,000
Selling General and Administrative	1,644,000	1,684,000	1,694,000
<b>Total Operating Expenses</b>	3,213,000	3,243,000	3,083,000
<b>Operating Income or Loss</b>	6,619,000	7,034,000	6,531,000
Interest Expense	154,000	125,000	78,000
Total Other Income/Expenses Net	-147,000	-223,000	-373,000
Income Before Tax	6,318,000	6,686,000	6,080,000
Income Tax Expense	987,000	1,106,000	2,398,000
Income from Continuing Operations	5,331,000	5,580,000	3,682,000
<b>Net Income</b>	5,331,000	5,580,000	3,682,000
Net Income available to common s...	5,294,000	5,537,000	3,648,000
▼ Reported EPS			
Basic	-	5.75	3.72
Diluted	-	5.59	3.61
▼ Weighted average shares outst...			
Basic	-	970,000	991,000
Diluted	-	990,000	1,012,000
<b>EBITDA</b>	-	7,765,000	7,062,000

### Street Expectations:

“Shares of Texas Instruments Inc. ([TXN - Get Report](#)) were rising after the chipmaker beat earnings estimates for the fourth quarter but issued slightly worse-than-expected guidance. The stock was up 0.85% to \$96.30 a share in post-market trading Wednesday, after having fallen 1.17% in regular hours. Earnings-per-share came in at \$1.27, beating Wall Street estimates of \$1.23. Revenue was \$3.72 billion, however, missing estimates of \$3.75 billion. Net income was \$1.24 billion. Analysts were looking for slight revenue growth from a year ago, but revenue fell 1%. Revenue decreased 1 percent from the same quarter a year ago as demand for our products continued to slow across most markets. TI has returned \$7.7 billion to owners in 2018 through stock repurchases and dividends. Their strategy is to return all our free cash flow to owners. Over the last 12 months, their dividends represented 42 percent of free cash flow, underscoring their sustainability. Free cash flow was 38% of revenue, an increase from 31.2% in the fourth quarter of 2017.”

References:

<https://www.thestreet.com/markets/texas-instruments-q4-beats-estimates-14843658>

## **Deliverable 4**

A section indicating the specifics of the risks, business segmentation, or business drivers delineated in their latest SEC filing, the executive compensation structure, and a summary of their most recent earnings call

### **Risk Assessment:**

Our analysis of Microchip's current business strategy gives us some interesting insights and potential risks which Microchip would have to consider in planning their future strategy. These risks to Microchip could be due to internal and external factors.

**Internal Factors:** Microchip's current strategy to leverage M&As to expand their current offering has exposed them to enormous levels of debt. In-effective management of debt could affect their financial condition and operations adversely in the event of an economic downturn. Servicing their current debt and future debts to complete their latest acquisition of Microsemi needs significant amount of cash. Cash flows from other business are not on par with their 8-bit MCU market resulting in insufficient cash flow to fund future payments if this business is affected. Microchip could also face risks from maintaining a qualified personnel to be successful. Interruptions in Microchip's information technology systems, or improper handling of data, could adversely affect them.

**External Factors:** Microchip's business strategy is such that they are heavily reliant on distribution sales channels, foreign sales which exposes them to risks caused by changes in geo-political & economic policies. Microchip relies on wafer foundries and contractors to perform key manufacturing functions exposing them to risks which could disrupt their business in the event of environmental disasters, climate change policies etc. Microchip's financial condition and operations could be adversely affected exposes from changes in tax rules and regulations, changes in interpretation of tax rules and regulations, or unfavorable assessments. Microchip faces intense competition in the markets they serve which results in pricing pressures, [risk of reduced sales of their products and/or reduced market share.](#)

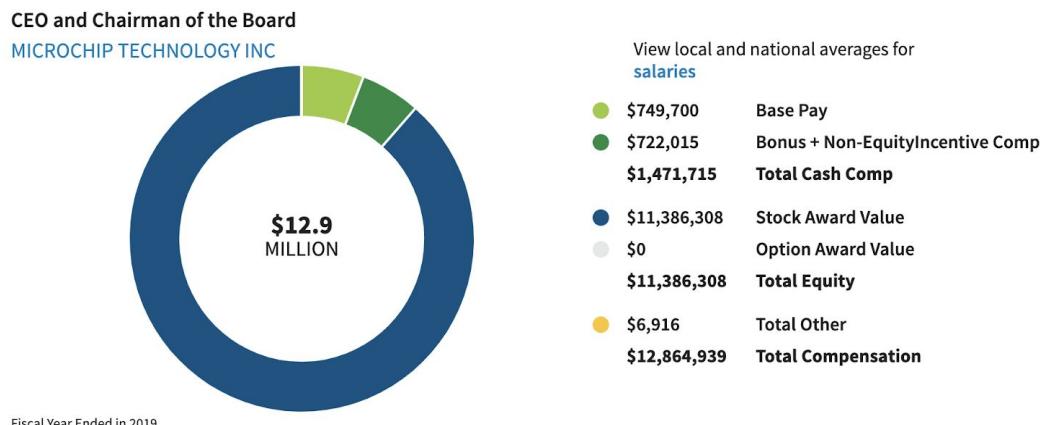
### **Most Recent Earnings Call:**

Net sales in the September quarter were \$1.338 billion, which was up 1.15% sequentially and modestly below the midpoint of our guidance of \$1.349 billion. On a non-GAAP basis, gross margins were near all-time highs at 62.24%, operating expenses were at

25.56% and operating income was 36.7%. Non-GAAP net income was \$365.7 million. Non-GAAP earnings per diluted share was \$1.43, which was in line with the midpoint of our guidance. On a GAAP basis, gross margins were 61.9% and included the impact of \$5.2 million of share-based compensation. Total operating expenses were \$643.9 million and include acquisition intangible amortization of \$248.2 million, special charges of \$3.6 million, \$10.1 million of acquisition-related and other costs and share-based compensation of \$40.1 million.

### **Executive Compensation Details :**

[https://www.forbes.com/lists/2012/12/ceo-compensation-12\\_Steve-Sanghi\\_XHNC.html](https://www.forbes.com/lists/2012/12/ceo-compensation-12_Steve-Sanghi_XHNC.html)



The compensation policy for executive officers, including the named executive officers, and key employees is based on a "pay-for-performance" philosophy. This "pay-for-performance" philosophy emphasizes variable compensation, primarily by placing a large portion of pay at risk.

- rewards performance that may contribute to increased stockholder value,
- attracts, retains, motivates and rewards individuals with competitive compensation opportunities,
- aligns an executive officer's total compensation with our business objectives,

- fosters a team environment among our management that focuses their energy on achieving our financial and business objectives consistent with Microchip's "guiding values,"
- balances short-term and long-term strategic goals, and · builds and encourages ownership of our common stock(<http://ww1.microchip.com/downloads/en/Finance/2010%20Proxy%20Statement.pdf>)

**Business Segments:**

Microchip Technology Incorporated is engaged in developing, manufacturing and selling specialized semiconductor products used by its customers for a range of embedded control applications. The Company operates through two segments: semiconductor products and technology licensing.

1. **Semiconductor Products Segment:** In the semiconductor products segment, the Company designs, develops, manufactures and markets microcontrollers, development tools and analog, interface, mixed signal and timing products. Its functional activities include sales, marketing, manufacturing, information technology, human resources, legal and finance. Its product portfolio comprises general purpose and specialized 8-bit, 16-bit, and 32-bit microcontrollers, a spectrum of linear, mixed-signal, power management, thermal management, radio frequency (RF), timing, safety, security, wired connectivity and wireless connectivity devices, as well as serial electrically erasable programmable read-only memories (EEPROMs) and serial flash memories.
2. **Technology Licensing Segment:** The Technology Licensing segment offers license fees and royalties associated with technology licenses for the use of SuperFlash embedded flash and Smartbits one time programmable technologies.

## **Deliverable 5**

A section(s) on vertical and horizontal analysis for the last two years, respectively

**Vertical Analysis:**

Vertical analysis is the proportional analysis of a financial statement, where each line item on a financial statement is listed as a percentage of another item. This means that every line item on an income statement is stated as a percentage of gross sales, while every line item on a balance sheet is stated as a percentage of total assets.

The most common use of vertical analysis is within a financial statement for a single reporting period, so that one can see the relative proportions of account balances. Vertical analysis is also useful for trend analysis, to see relative changes in accounts over time, such as on a comparative basis over a five-year period.

### **Vertical Analysis of Balance sheet:**

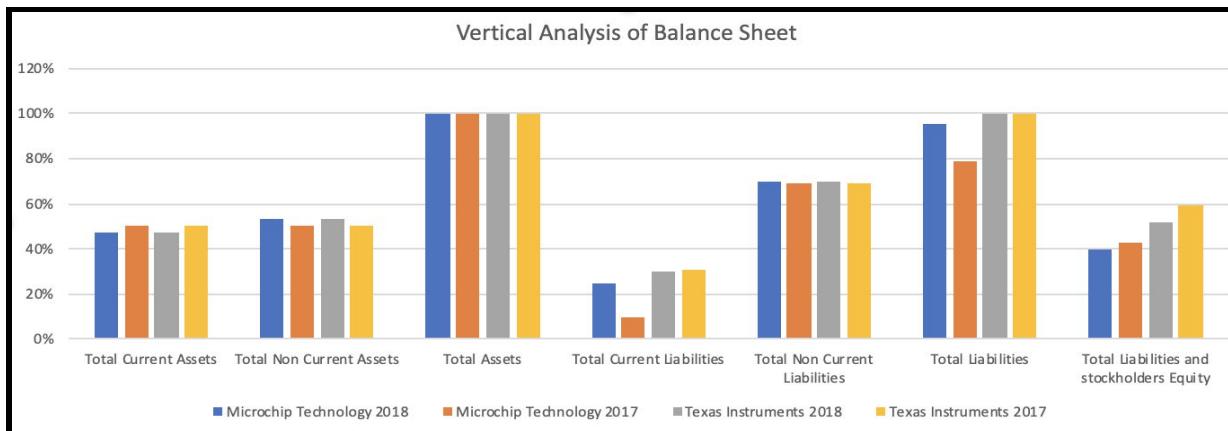
**Microchip Technology Inc and subsidiaries**

	Total Current Assets	Total Non current assets	Total Assets	Total Current Liabilities	Total Non current liabilities	Total Liabilities	Total liabilities and stockholders equity
<b>Microchip Technology Inc and subsidiaries (2018)</b>	47%	53%	100%	25%	70%	95%	40%
<b>Microchip Technology Inc and subsidiaries (2017)</b>	50%	50%	100%	10%	69%	79%	43%

### **Texas Instruments**

	Total Current Assets	Total Non current assets	Total Assets	Total Current Liabilities	Total Non current liabilities	Total Liabilities	Total liabilities and stockholders equity
Texas Instruments(2018)	47%	53%	100%	30%	70%	100%	52%
Texas Instruments(2017)	50%	50%	100%	31%	69%	100%	59%

	Total Current Assets	Total Non Current Assets	Total Assets	Total Current Liabilities	Total Non Current Liabilities	Total Liabilities	Total Liabilities and stockholders Equity
Microchip Technology 2018	47%	53%	100%	25%	70%	95%	40%
Microchip Technology 2017	50%	50%	100%	10%	69%	79%	43%
Texas Instruments 2018	47%	53%	100%	30%	70%	100%	52%
Texas Instruments 2017	50%	50%	100%	31%	69%	100%	59%



## Vertical Analysis of Income

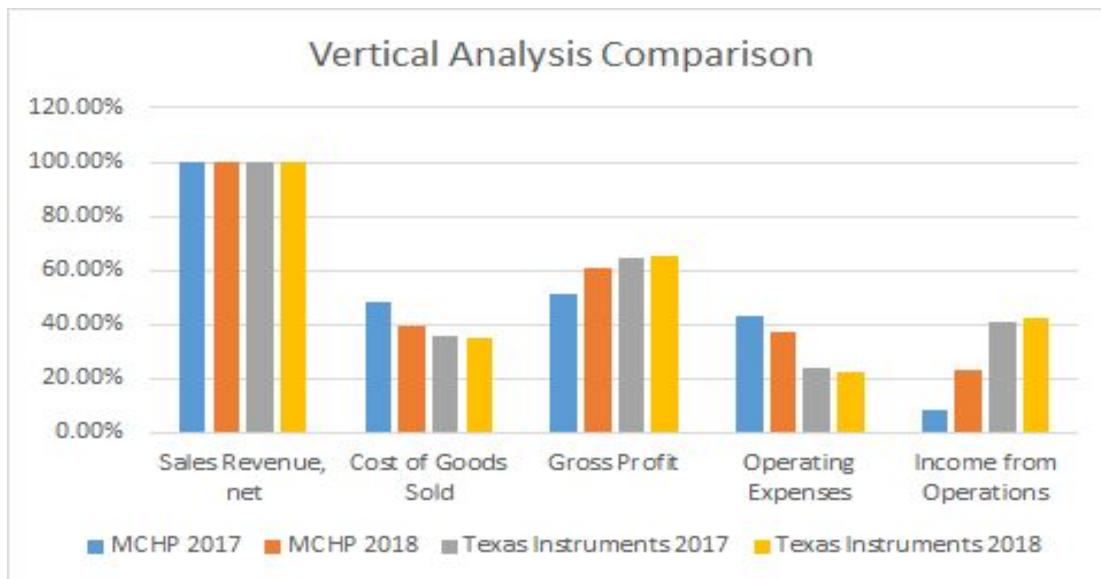
Statement: (<https://www.accountingtools.com/articles/2017/5/17/vertical-analysis>)

The most common use of vertical analysis in an income statement is to show the various expense line items as a percentage of sales, though it can also be used to show the percentage of different revenue line items that make up total sales. The information

provided by the income statement format is useful not only for spotting spikes in expenses, but also for determining which expenses are so small that they may not be worthy of much management attention.

**Reference Formula:** COGS/Net Sales.

	Sales Revenue, net	Cost of Goods Sold	Gross Profit	Operating Expenses	Income from Operations
MCHP 2017	100.00%	48.44%	51.56%	43.47%	8.09%
MCHP 2018	100.00%	39.19%	60.81%	37.29%	23.52%
Texas Instruments 2017	100.00%	35.74%	64.26%	23.60%	40.66%
Texas Instruments 2018	100.00%	34.89%	65.11%	22.58%	42.53%



**Horizontal Analysis:**

Horizontal analysis (also known as trend analysis) is a financial statement analysis technique that shows changes in the amounts of corresponding financial statement items over a period of time. It is a useful tool to evaluate the trend situations.

The statements for two or more periods are used in horizontal analysis. The earliest period is usually used as the base period and the items on the statements for all later periods are compared with items on the statements of the base period. The changes are generally shown both in dollars and percentage.

Dollar and percentage changes are computed by using the following formulas:

$$1. \text{Dollar change} = \text{Amount of the item in comparison year} - \text{Amount of the item in base year}$$

$$2. \text{Percentage change} = \frac{\text{Dollar change}}{\text{Amount of the item in base year}} \times 100$$

<https://www.accountingformanagement.org/horizontal-analysis-of-financial-statements/>

## Horizontal Analysis of Balance Sheet

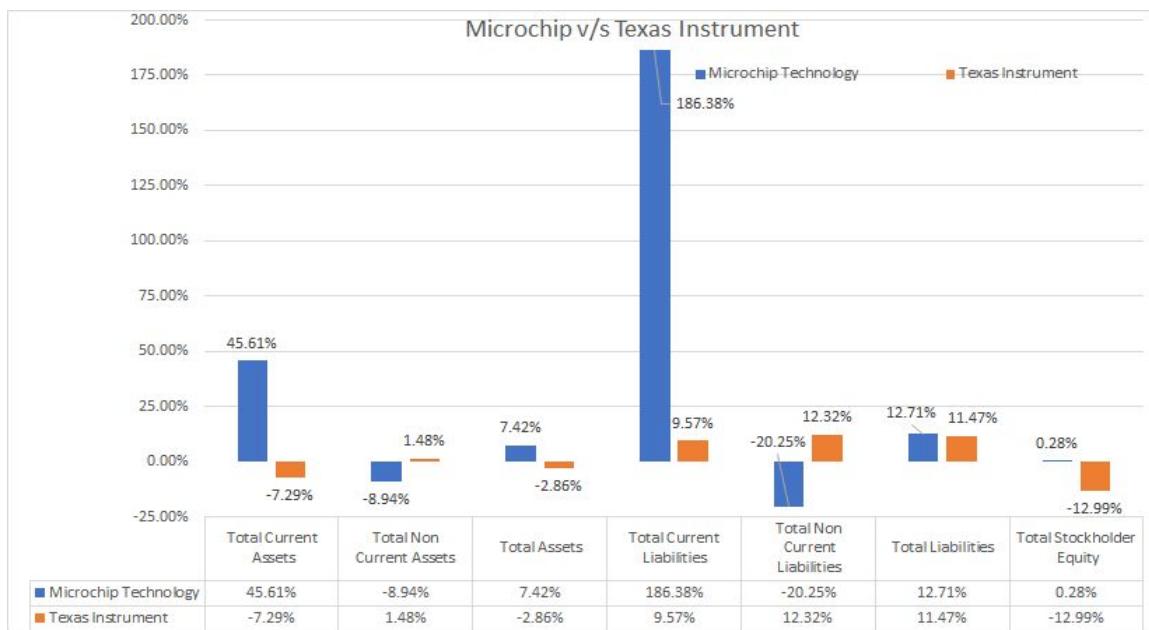
### Microchip Technology

Microchip Technology Incorporated and subsidiaries Balance Sheet				
Breakdown	2018	2017	Increase or (Decrease)	
			Amount	Percent
Assets				
Current Assets				
Cash				
Cash And Cash Equivalents	901,300.00	908,684.00	(7,384.00)	(0.81)
Short Term Investments	1,295,300.00	394,088.00	901,212.00	228.68
<b>Total Cash</b>	<b>2,196,600.00</b>	<b>1,302,772.00</b>	<b>893,828.00</b>	<b>68.61</b>
Net Receivables	563,700.00	478,373.00	85,327.00	17.84
Inventory	476,200.00	417,202.00	58,998.00	14.14
Other Current Assets	55,900.00	58,880.00	(2,980.00)	(5.06)
<b>Total Current Assets</b>	<b>3,356,300.00</b>	<b>2,305,040.00</b>	<b>1,051,260.00</b>	<b>45.61</b>
Non-current assets				
Property, plant and equipment				
Gross property, plant and equipment	2,644,100.00	2,452,353.00	191,747.00	7.82
Accumulated Depreciation	(1,876,200.00)	(1,769,015.00)	(107,185.00)	6.06
<b>Net property, plant and equipment</b>	<b>767,900.00</b>	<b>683,338.00</b>	<b>84,562.00</b>	<b>12.37</b>
Equity and other investments		107,457.00		
Goodwill	2,299,000.00	2,299,009.00	(9.00)	(0.00)
Intangible Assets	1,662,000.00	2,148,092.00	(486,092.00)	(22.63)
Other long-term assets	71,800.00	75,075.00	(3,275.00)	(4.36)
<b>Total non-current assets</b>	<b>4,900,900.00</b>	<b>5,381,841.00</b>	<b>(480,941.00)</b>	<b>(8.94)</b>
<b>Total Assets</b>	<b>8,257,200.00</b>	<b>7,686,881.00</b>	<b>570,319.00</b>	<b>7.42</b>
Liabilities and stockholders' equity				
Liabilities				
Current Liabilities				
Total Revenue	1,309,900.00	49,952.00	1,259,948.00	2,522.32
Accounts Payable	144,100.00	149,233.00	(5,133.00)	(3.44)
Taxes payable	-	-		
Accrued liabilities	229,600.00	212,450.00	17,150.00	8.07
Deferred revenues	333,800.00	292,815.00	40,985.00	14.00
Other Current Liabilities	-	-		
<b>Total Current Liabilities</b>	<b>2,017,400.00</b>	<b>704,450.00</b>	<b>1,312,950.00</b>	<b>186.38</b>
Non-current liabilities				
Long Term Debt	1,758,400.00	2,900,524.00	(1,142,124.00)	(39.38)
Deferred taxes liabilities	205,800.00	409,045.00	(203,245.00)	(49.69)
Deferred revenues	-	-		
Other long-term liabilities	240,900.00	217,206.00	23,694.00	10.91
<b>Total non-current liabilities</b>	<b>2,960,000.00</b>	<b>3,711,720.00</b>	<b>(751,720.00)</b>	<b>(20.25)</b>
<b>Total Liabilities</b>	<b>4,977,400.00</b>	<b>4,416,170.00</b>	<b>561,230.00</b>	<b>12.71</b>
Stockholders' Equity				
Common Stock	200.00	229.00	(29.00)	(12.66)
Retained Earnings	1,397,300.00	1,479,400.00	(82,100.00)	(5.55)
Accumulated other comprehensive income	(17,600.00)	(14,378.00)	(3,222.00)	22.41
<b>Total stockholders' equity</b>	<b>3,279,800.00</b>	<b>3,270,711.00</b>	<b>9,089.00</b>	<b>0.28</b>
<b>Total liabilities and stockholders' equity</b>	<b>8,257,200.00</b>	<b>7,686,881.00</b>	<b>570,319.00</b>	<b>7.42</b>

## Texas Instruments

Texas Instruments Balance Sheet				
Breakdown	2018	2017	Increase or (Decrease)	
			Amount	Percent
Assets				
Current Assets				
Cash				
Cash And Cash Equivalents	2,438,000.00	1,656,000.00	782,000.00	47.22
Short Term Investments	1,795,000.00	2,813,000.00	(1,018,000.00)	(36.19)
<b>Total Cash</b>	<b>4,233,000.00</b>	<b>4,469,000.00</b>	<b>(236,000.00)</b>	<b>(5.28)</b>
Net Receivables	1,207,000.00	1,278,000.00	(71,000.00)	(5.56)
Inventory	2,217,000.00	1,957,000.00	260,000.00	13.29
Other Current Assets	308,000.00	-	308,000.00	-
<b>Total Current Assets</b>	<b>8,097,000.00</b>	<b>8,734,000.00</b>	<b>(637,000.00)</b>	<b>(7.29)</b>
Non-current assets				
Property, plant and equipment				
Gross property, plant and equipment	5,425,000.00	4,789,000.00	636,000.00	13.28
Accumulated Depreciation	(2,242,000.00)	(2,125,000.00)	(117,000.00)	5.51
<b>Net property, plant and equipment</b>	<b>3,183,000.00</b>	<b>2,664,000.00</b>	<b>519,000.00</b>	<b>19.48</b>
Equity and other investments	251,000.00	268,000.00		
Goodwill	4,362,000.00	4,362,000.00	-	-
Intangible Assets	717,000.00	1,056,000.00	(339,000.00)	(32.10)
Other long-term assets	140,000.00	86,000.00	54,000.00	62.79
<b>Total non-current assets</b>	<b>9,040,000.00</b>	<b>8,908,000.00</b>	<b>132,000.00</b>	<b>1.48</b>
<b>Total Assets</b>	<b>17,137,000.00</b>	<b>17,642,000.00</b>	<b>(505,000.00)</b>	<b>(2.86)</b>
Liabilities and stockholders' equity				
Liabilities				
Current Liabilities				
Total Revenue	749,000.00	500,000.00	249,000.00	49.80
Accounts Payable	478,000.00	466,000.00	12,000.00	2.58
Taxes payable	103,000.00	128,000.00		
Accrued liabilities	420,000.00	442,000.00	(22,000.00)	(4.98)
Deferred revenues	-	-		
Other Current Liabilities				
<b>Total Current Liabilities</b>	<b>2,474,000.00</b>	<b>2,258,000.00</b>	<b>216,000.00</b>	<b>9.57</b>
Non-current liabilities				
Long Term Debt	4,319,000.00	3,577,000.00	742,000.00	20.74
Deferred taxes liabilities	42,000.00	78,000.00	(36,000.00)	(46.15)
Deferred revenues				
Other long-term liabilities	684,000.00	668,000.00	16,000.00	2.40
<b>Total non-current liabilities</b>	<b>5,669,000.00</b>	<b>5,047,000.00</b>	<b>622,000.00</b>	<b>12.32</b>
<b>Total Liabilities</b>	<b>8,143,000.00</b>	<b>7,305,000.00</b>	<b>838,000.00</b>	<b>11.47</b>
Stockholders' Equity				
Common Stock	1,741,000.00	1,741,000.00	-	-
Retained Earnings	37,906,000.00	34,662,000.00	3,244,000.00	9.36
Accumulated other comprehensive income	(473,000.00)	(384,000.00)	(89,000.00)	23.18
<b>Total stockholders' equity</b>	<b>8,994,000.00</b>	<b>10,337,000.00</b>	<b>(1,343,000.00)</b>	<b>(12.99)</b>
<b>Total liabilities and stockholders' equity</b>	<b>17,137,000.00</b>	<b>17,642,000.00</b>	<b>(505,000.00)</b>	<b>(2.86)</b>

## Microchip Technology v/s Texas Instruments



### **Horizontal Analysis of Income Statement - Microchip Technology**

MICROCHIP TECHNOLOGY INCORPORATED AND SUBSIDIARIES  
 CONSOLIDATED STATEMENTS OF INCOME  
 (in millions, except per share amounts)

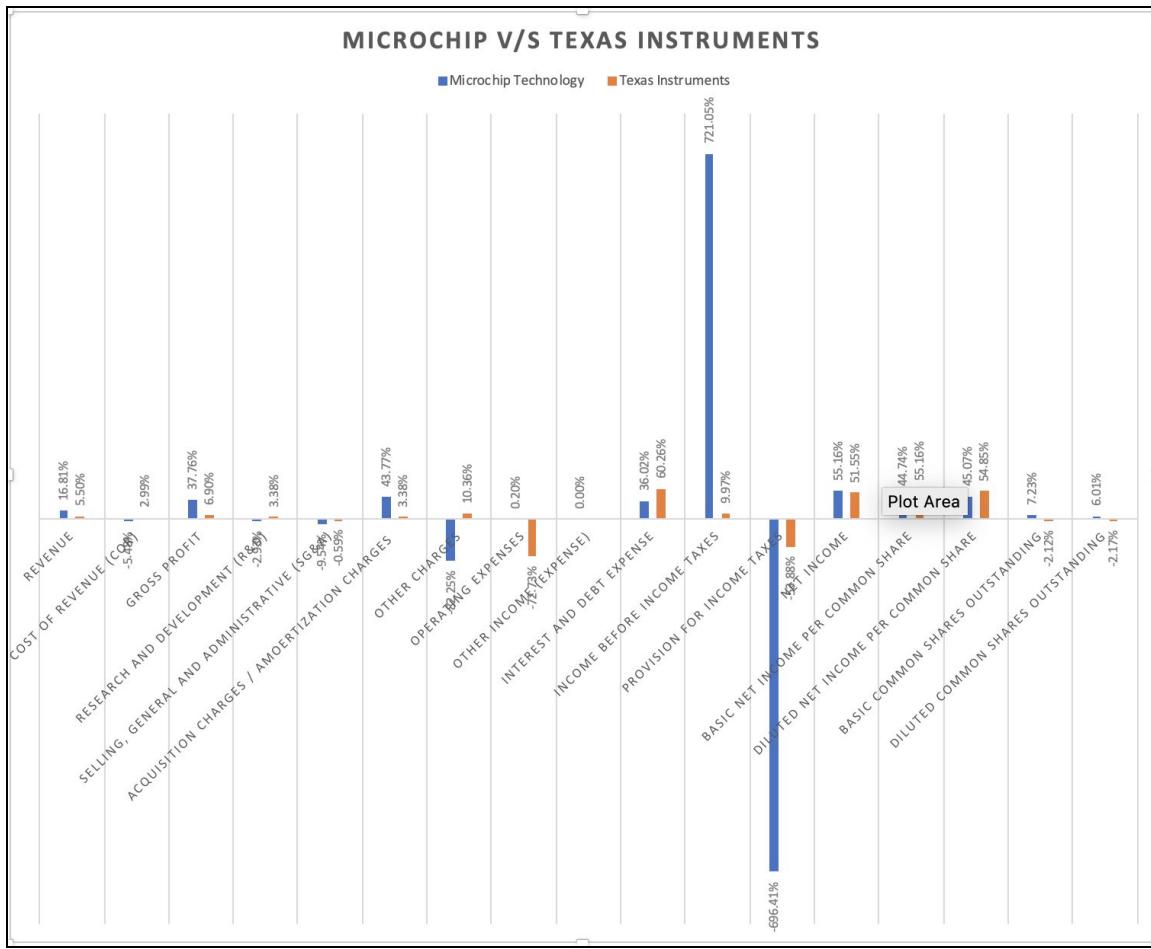
	2018	2017	Amount	Increase/ Decrease Percentage
Net sales	3,980.80	3,407.80	573.00	16.81
Cost of sales	1,560.10	1,650.60	(90.50)	(5.48)
<b>Gross profit</b>	<b>2,420.70</b>	<b>1,757.20</b>	<b>663.50</b>	<b>37.76</b>
Research and development	529.3	545.3	(16)	(2.93)
Selling, general and administrative	452.1	499.8	(47.70)	(9.54)
Amortization of acquired intangible assets	485.5	337.7	147.80	43.77
Special charges and other, net	17.5	98.6	(81.10)	(82.25)
<b>Operating expenses</b>	<b>1,484.40</b>	<b>1,481.40</b>	<b>3.00</b>	<b>0.20</b>
Operating income	936.3	275.8	660.50	239.49
Other income (expense):				
Interest income	22	3.1	18.90	609.68
Interest expense	(199)	(146.3)	(52.7)	36.02
Loss on settlement of debt	(16)	(43.9)	27.90	(63.55)
Other (loss) income, net	5.8	1.3	4.50	346.15
<b>Income before income taxes</b>	<b>737.3</b>	<b>89.8</b>	<b>647.50</b>	<b>721.05</b>
Income tax (benefit) provision	481.9	(80.8)	562.70	(696.41)
<b>Net income from continuing operations</b>	<b>255.4</b>	<b>170.6</b>	<b>84.80</b>	<b>49.71</b>
Income tax benefit	—	(7.6)	(7.6)	
Net loss from discontinued operations	—	(1.6)	(1.6)	
<b>Net Income</b>	<b>\$255.40</b>	<b>164.6</b>	<b>90.80</b>	<b>55.16</b>
Basic net income per common share from continuing operations	\$1.10	0.79	0.31	39.24
Basic net loss per common share from discontinued operations	—	(0.03)	(0.03)	
<b>Basic net income per common share</b>	<b>\$1.10</b>	<b>0.76</b>	<b>0.34</b>	<b>44.74</b>
Diluted net income per common share from continuing operations	\$1.03	0.73	0.30	41.10
Diluted net loss per common share from discontinued operations	—	(0.02)	(0.02)	
<b>Diluted net income per common share</b>	<b>\$1.03</b>	<b>0.71</b>	<b>0.32</b>	<b>45.07</b>
Dividends declared per common share	\$1.45	1.441	0.01	0.56
<b>Basic common shares outstanding</b>	<b>\$232.90</b>	<b>217.2</b>	<b>15.70</b>	<b>7.23</b>
Diluted common shares outstanding	\$248.90	234.8	14.10	6.01
Includes share-based compensation expense as follows:				
Cost of sales	\$13.80	18.7	(4.90)	(26.20)
Research and development	\$42.50	46.8	(4.30)	(9.19)
Selling, general and administrative	\$36.90	62.6	(25.70)	(41.05)

## Horizontal Analysis of Income Statement -Texas Instruments

	TEXAS INSTRUMENTS INCORPORATED CONSOLIDATED STATEMENTS OF INCOME (Millions of dollars, except share and per-share amounts)		
	Year ended December 31,		
	2018	2017	Increase/Decrease
Revenue	15,784	14,961	823 5.50
Cost of revenue (COR)	5,507	5,347	160 2.99
<b>Gross profit</b>	<b>10,277</b>	<b>9,614</b>	<b>663 6.90</b>
Research and development (R&D)	1,559	1,508	51 3.38
Selling, general and administrative (SG&A)	1,684	1,694	(10) (0.59)
Acquisition charges	318	318	0 0.00
Restructuring charges/other	3	11	(8) (72.73)
Operating profit	6,713	6,083	630 10.36
Other income (expense), net (OI&E)	98	75	23 30.67
Interest and debt expense	125	78	47 60.26
<b>Income before income taxes</b>	<b>6,686</b>	<b>6,080</b>	<b>606 9.97</b>
Provision for income taxes	1,106	2,398	(1292) (53.878)
<b>Net income</b>	<b>5,580</b>	<b>3,682</b>	<b>1,898 51.55</b>
 Earnings per common share (EPS):			
Basic	5.71	3.68	2 55.16
Diluted	5.59	3.61	2 54.85
 Average shares outstanding (millions):			
Basic	970	991	(21) (2.1191)
Diluted	990	1,012	(22) (2.17)
 A portion of net income is allocated to unvested restricted stock units (RSUs) on which we pay dividend equivalents. Diluted EPS is calculated using the following:			
Net income	5,580	3,682	1,898 51.55
Income allocated to RSUs	42	33	9 27.27
<b>Income allocated to common stock for diluted EPS</b>	<b>5,538</b>	<b>3,649</b>	<b>1,889 51.77</b>

## Horizontal Analysis of Income Statement - Microchip Technology V/s Texas Instrument

Microchip technology and Teaxs Instruments Comparative Income Statement For years ended 2018 (all figures in millions USD except per share data)		
	2018	
	Microchip Technology	Texas Instrument
Revenue	3,980.80	15,784
Cost of revenue (COR)	1,560.10	5,507
Gross profit	2,420.70	10,277
Research and development (R&D)	529.3	1,559
Selling, general and administrative (SG&A)	452.1	1,684
Acquisition charges / Amortization charges	485.5	318
Other charges	17.5	3
Operating expenses	1,484.40	3,564
Other income (expense)		
Interest and debt expense	(187.2)	223
Income before income taxes	737.3	6,686
Provision for income taxes	481.9	1,106
Net income	255.40	5,580
Basic net income per common share	1.10	5.71
Diluted net income per common share	1.03	5.59
Basic common shares outstanding	232.90	970
Diluted common shares outstanding	248.90	990



### **Deliverable 6:**

A section highlighting the key ratios that are formative for each company

#### Key Ratios

Financial information presented in a company's financial statements helps reduce financial ratios which are a valuable tool to understand the company's financial status and provides owners and managers a measure to estimate progress towards predetermined internal goals. Some of the key ratios are as below:

1. Solvency Analysis: The company's ability to pay its current and non-current liabilities.

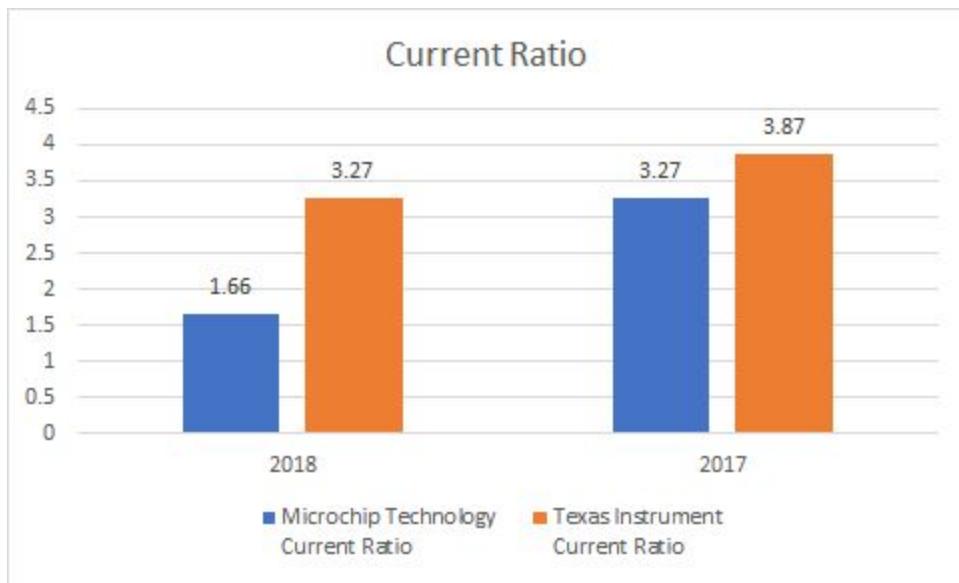
1.1 Current Ratio : The company's ability to pay its current liabilities.

Current Ratio = Current Assets / Current Liabilities

<b>Microchip Technology</b>		
Year	2018	2017
Current Assets	3,356,300.00	2,305,040.00
Current Liabilities	2,017,400.00	704,450.00
<b>Current Ratio</b>	1.66	3.27

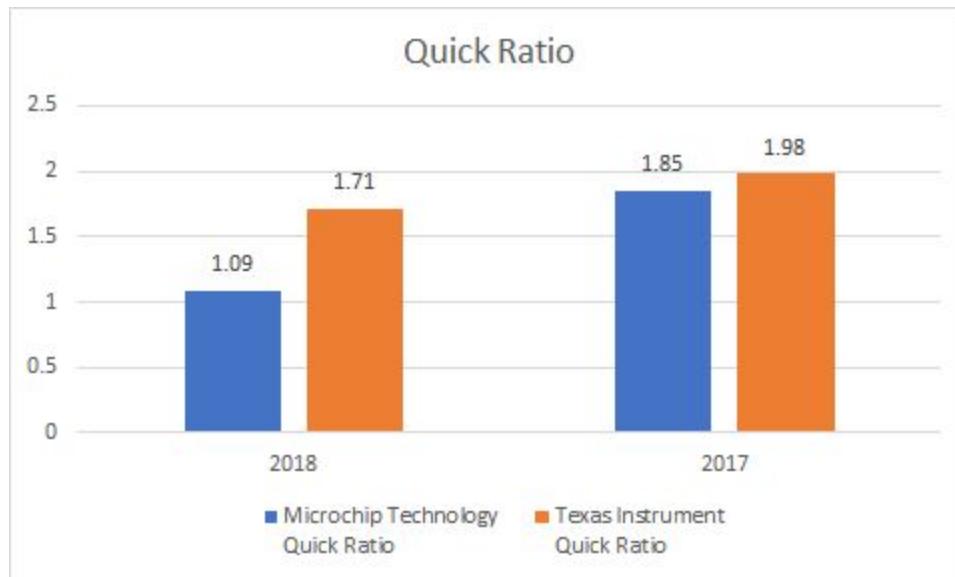
<b>Texas Instruments</b>		
Year	2018	2017
Current Assets	8,097,000.00	8,734,000.00
Current Liabilities	2,474,000.00	2,258,000.00
<b>Current Ratio</b>	3.27	3.87



1.2 Quick Ratio: The instant debt paying ability of a company

Quick Ratio = Quick Assets / Current Liabilities

<b>Microchip Technology</b>		
Year	2018	2017
Quick Assets	2,196,600.00	1,302,772.00
Current Liabilities	2,017,400.00	704,450.00
<b>Texas Instruments</b>		
Year	2018	2017
Quick Assets	4,233,000.00	4,469,000.00
Current Liabilities	2,474,000.00	2,258,000.00
<b>Texas Instrument</b>		
<b>Quick Ratio</b>	1.09	1.85
<b>Quick Ratio</b>	1.71	1.98



1.3 Accounts Receivable Turnover: Quantifies a company's effectiveness in collecting its **receivables** or money owed by clients. The ratio shows how well a company uses and

manages the credit it extends to customers and how quickly that short-term debt is collected or is paid.

Accounts Receivable Turnover = Net Sales / Average Accounts Receivable

Number of Day's Sales in Receivables = 365 / Accounts Receivable Turnover

<b>Microchip Technology</b>		
Year	2018	2017
Net sales	3980800	3407800
Average Accounts Receivable	563700	478373
Accounts Receivable Turnover	7.0619124	7.12372981
Num of days in sales receivables	51.69	51.24

<b>Texas Instruments</b>		
Year	2018	2017
Net sales	<b>1,578,400</b>	1,496,100
Average Accounts Receivable	1,207,000.00	1,278,000.00
Accounts Receivable Turnover	1.3077051	1.1706573
Num of days in sales receivables	279.11	226.37



1.4 Inventory Turnover: To assess the efficiency in the management of inventory  
Inventory

Turnover = Cost of Goods Sold/ Average Inventory

Number of Day's Sales in Inventory= 365 / Inventory Turnover

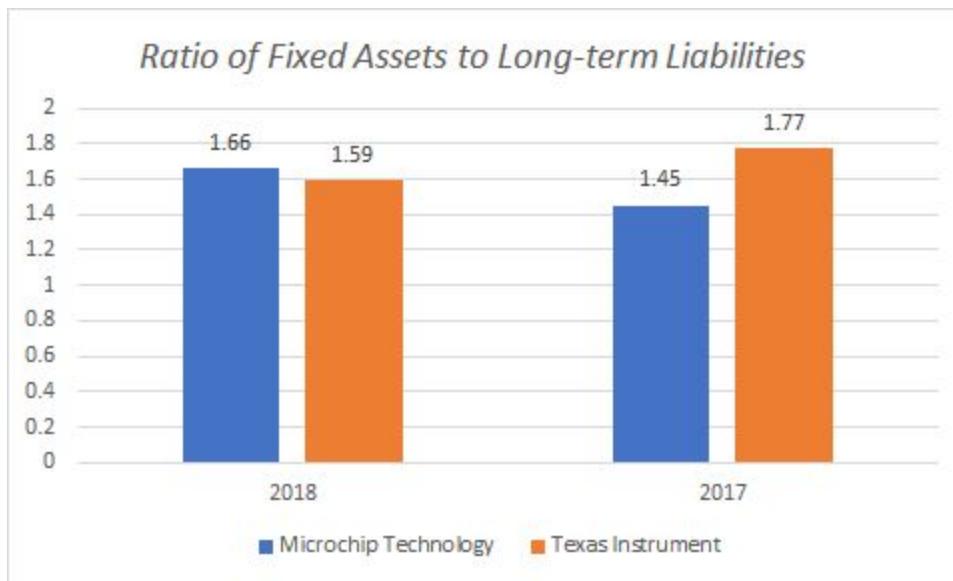
<b>Microchip Technology</b>		
Year	2018	2017
Cost of Goods Sold	1,560,100.00	1,650,600.00
Average Inventory	476,200.00	417,202.00
Inventory Turnover	3.28	3.96
Num of days sales in inventory	111.41	92.26
<b>Texas Instruments</b>		
Year	2018	2017
Cost of Goods Sold	<b>5,507,000</b>	5,347,000
Average Inventory	2,217,000.00	1,957,000.00
Inventory Turnover	2.48	2.73
Num of days sales in inventory	146.94	133.59



1.5 Ratio of Fixed Assets to Long-term Liabilities: The margin of safety of the note-holders or bond holders. Also indicates the ability of the business to borrow additional funds on a long-term basis

Ratio of Fixed Assets to Long-term Liabilities= Fixed Assets(Net) / Long-term Liabilities

<b>Microchip Technology</b>		
Year	2018	2017
Fixed Assets	4,900,900.00	5,381,841.00
Long-term liabilities	2,960,000.00	3,711,720.00
<b>Microchip Technology</b>	1.66	1.45
<b>Texas Instruments</b>		
Year	2018	2017
Fixed Assets	9,040,000.00	8,908,000.00
Long-term liabilities	5,669,000.00	5,047,000.00
<b>Texas Instrument</b>	1.59	1.77



1.6 Ratio of Liabilities to Stockholders Equity : Indicates the margin of safety to the creditors.

Ratio of Liabilities to Stockholders Equity = Total Liabilities / Total Stockholders Equity

<b>Microchip Technology</b>		
Year	2018	2017
Total Liabilities	4,977,400.00	4,416,170.00
Total Stockholder's equity	3,279,800.00	3,270,711.00
<b>Microchip Technology</b>	1.52	1.35
<b>Texas Instruments</b>		
Year	2018	2017
Total Liabilities	8,143,000.00	7,305,000.00
Total Stockholder's equity	8,994,000.00	10,337,000.00
<b>Texas Instruments</b>	0.91	0.71

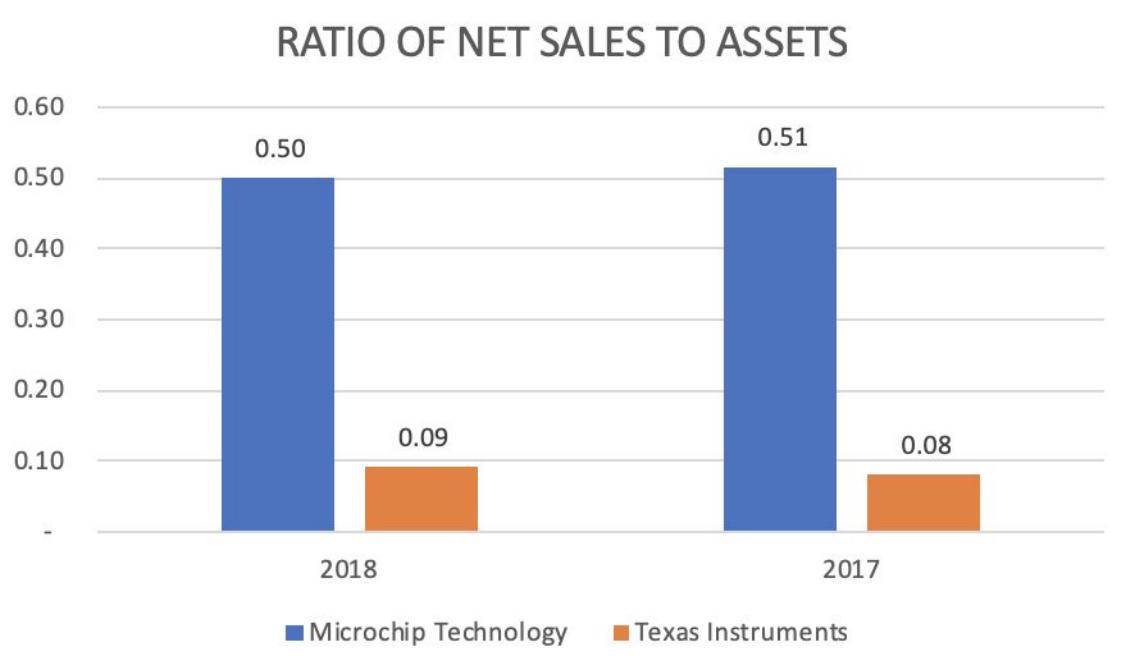


**2. Profitability Analysis:** The relationship between operating results and the resources available to a business

2.1 Ratio of Net Sales to Assets: Indicates how effectively a company utilizes its assets

Ratio of Net Sales to Assets = Net Sales / Average Total Assets (Exclude Long-term investments)

<b>Microchip Technology</b>		
Year	2018	2017
Net Sales	3980800	3407800
Avg total assets (Excluding long term investments)	7972040	6627198
<b>Microchip Technology</b>	0.499345212	0.514214303
<b>Texas Instruments</b>		
Year	2018	2017
Net sales	<b>1,578,400</b>	1,496,100
Avg total assets (Excluding long term investments)	17389500	17036500
<b>Texas Instruments</b>	0.090767417	0.087817333



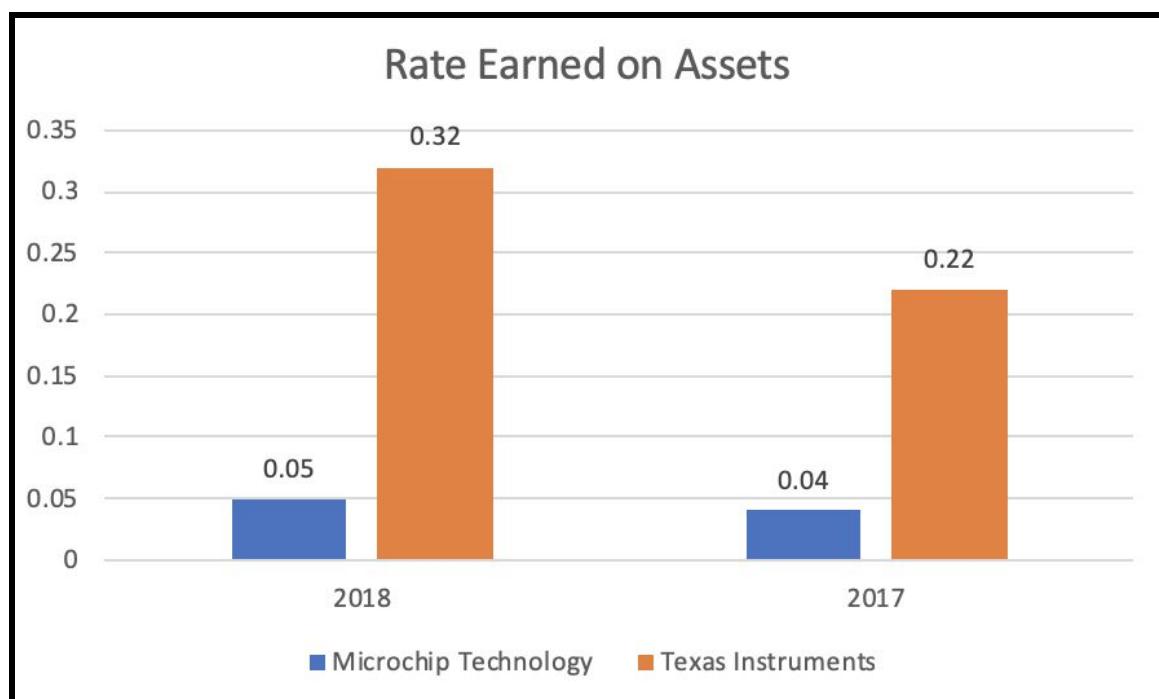
2.2 Rate Earned on Assets: To assess profitability of assets.

Rate Earned on Assets= ( Net Income+Interest Expense) / Average Total Assets

<b>Microchip Technology</b>		
Year	2018	2017
<i>Net Income</i>	255400	164639
<i>Interest Expense</i>	199000	146346
<i>Average Total Assets</i>	7972040	6627198
<i>Rate earned on assets</i>	0.056999212	0.046925563

<b>Texas Instruments</b>		
Year	2018	2017
<i>Net Income</i>	5580000	3682000
<i>Interest Expense</i>	125000	78000
<i>Average Total Assets</i>	17389500	17036500
<i>Rate earned on assets</i>	0.325368757	0.220702609



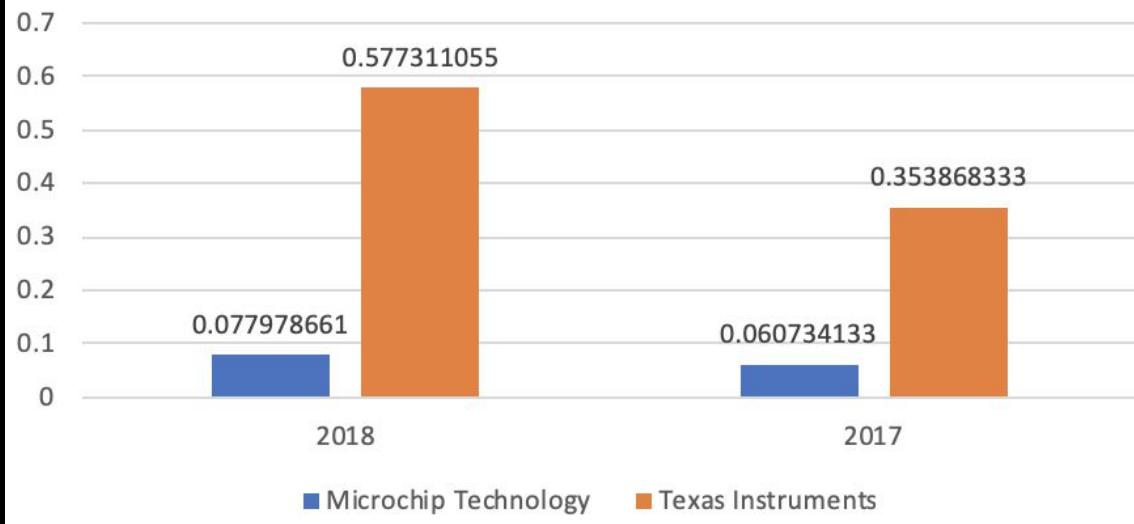
2.3 Rate Earned on Stockholders Equity: To assess the profitability of the investments by stockholders.

Rate Earned on Stockholders Equity= Net Income / Average Total Stockholders Equity

<b>Microchip Technology</b>		
Year	2018	2017
<i>Net Income</i>	255400	164639
<i>Average Total Stockholders Equity</i>	3275255	2710815
Rate earned on stockholders equity	0.077978661	0.060734133

<b>Texas Instruments</b>		
Year	2018	2017
<i>Net Income</i>	5580000	3682000
<i>Average Total Stockholders Equity</i>	9665500	10405000
Rate earned on stockholders equity	0.577311055	0.353868333

## RATE EARNED ON STOCKHOLDERS EQUITY



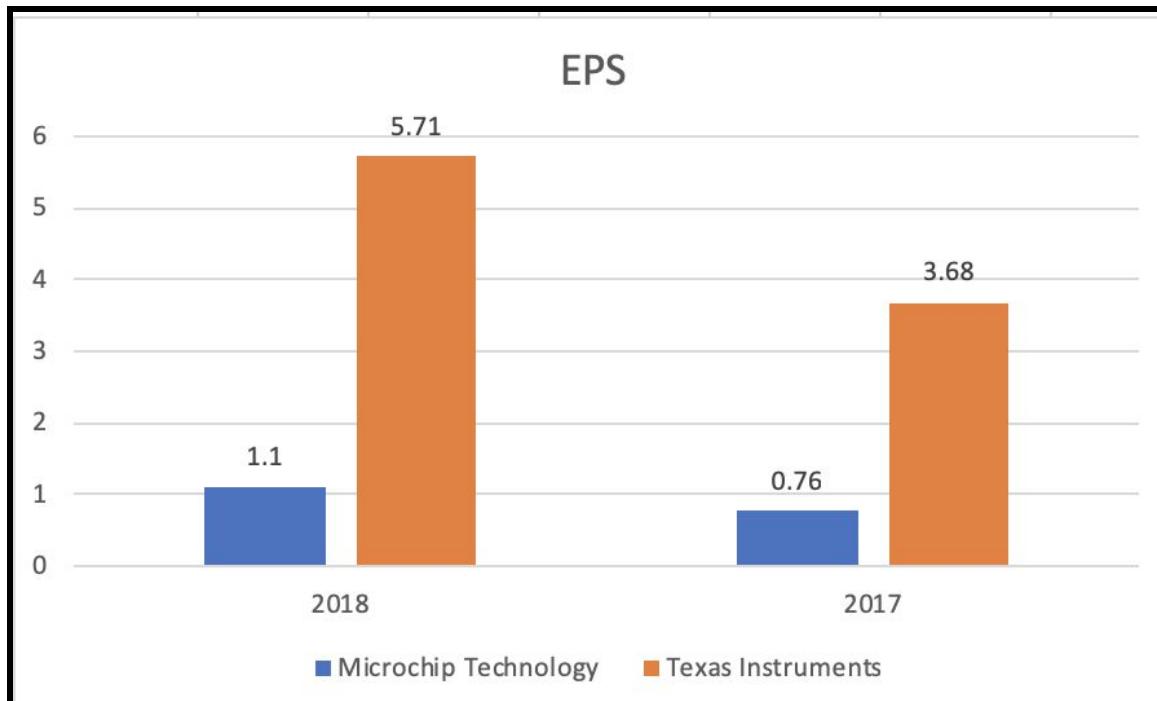
2.4 Earnings Per Share : To assess the profitability of the investment made by the stockholders

EPS = (Net Income - Preferred Dividends) / Shares of Common Stock Outstanding

<b>Microchip Technology</b>		
Year	2018	2017
Net Income-Preferred Dividends	253.95	163.15
Shares of Common Stock Outstanding	232.90	217.20
<b>Microchip</b>	<b>1.1</b>	<b>0.76</b>

<b>Texas Instruments</b>		
Year	2018	2017
Net Income-Preferred Dividends	5,538.70	3,646.88
Shares of Common Stock Outstanding	970.00	991.00
<b>Texas</b>	<b>5.71</b>	<b>3.68</b>



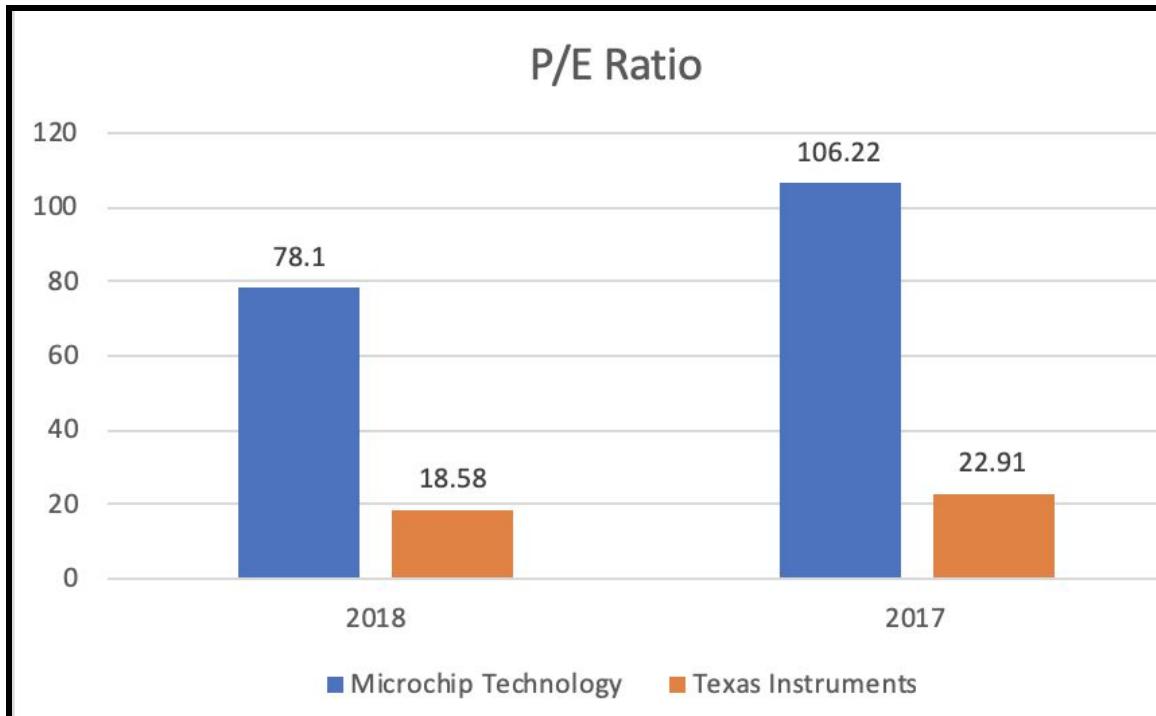
2.5 Price-Earnings (P/E) Ratio : To indicate future earnings prospects, based on the relationship between market value of common stock and earnings

(P/E) = Market Price per Share of Common Stock / Earnings per Share on Common Stock

<b>Microchip Technology</b>		
Year	2018	2017
Market Price Per share of Common Sto	85.92	80.90
Earnings Per Share of Common Stock	1.10	0.76
<b>P/E Ratio</b>	<b>78.1</b>	<b>106.22</b>

<b>Texas Instruments</b>		
Year	2018	2017
Market Price Per share of Common Sto	106.11	84.33
Earnings Per Share of Common Stock	5.71	3.68
<b>P/E Ratio</b>	<b>18.58</b>	<b>22.91</b>



#### Deliverable 7:

A section discussing your position on the value of each company: would you invest, if so over what time horizon?

(<https://www.fool.com/investing/2018/10/04/better-buy-texas-instruments-vs-microchip-technology.aspx>)

### Growth:

Microchip tends to have more growth as its a smaller company compared to Texas Instruments.

The growth rate of Microchip technology has been tremendously increasing 24.73% from Q to Q over the year of 2016-2018 in opposed to Texas Instruments being minimal of around 8.77%.

Microchip's strategic acquisitions have given them a cutting edge towards the new technologies and ideas emerging in the market. With the acquisition of Microsemi, Microchip Technology is expected to generate additional revenue through new technologies, industries and geographical market.



### Profitability:

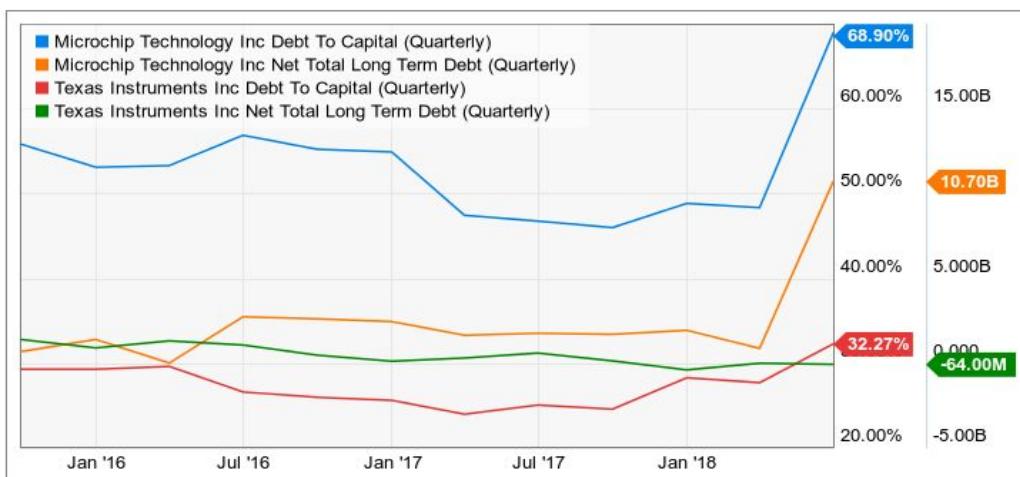
Comparing the two companies, Texas Instruments has more market capitalization share than Microchip as Microchip technology is one of the emerging and significantly growing companies in the semiconductor industry. The profit of MCHP was \$2,420.7 million in fiscal 2018, \$1,757.2 million in fiscal 2017 whereas Texas Instruments grossed a total profit of \$10,277 million in 2018 and \$9,614 million in 2017. While Microchip technology being the faster growing company, Texas Instruments is more profitable

while looking at the numbers. After a careful observation at operating margins and gross profits, Texas Instruments lead by a big number.



### Balance Sheet:

MCHP's EBITDA is 5 times more than required with a debt of around \$10 Billion. The debt to capital percentage topped 68.9% in the first quarter of 2018 for MCHP as Microsemi acquisition was done purely on debt. On the other hand, Texas Instruments has a small net cash position, meaning it has roughly as much cash as debt on its balance sheet.



**Decision:**

How risky investment you want, the choice depends on the individual. The lower valuation of Microchip along with its higher growth prospects, gives it much more of a growth potential. That being said, Microchip Technology's investors are taking on much more risk than Texas Instruments.

For a safer deal, Texas Instruments is a better choice due to its steadier growth and fatter margins. Its steadier growth and fatter margins enable Texas Instruments to have a higher dividend yield (2.86%) than Microchip (1.85%). By the way, Texas Instruments just raised that dividend a whopping 24% for the second straight year. That's in contrast to Microchip, which likely won't be raising its dividend anytime soon as it pays down its acquisition debt.

So investors who like steady and rising payouts might opt for Texas Instruments, while those with a bit more risk appetite in pursuit of large capital gains could opt to bet on Microchip's turnaround instead. Absent a global recession, both companies will be chosen if going forward.

**Deliverable 8:**

A section delineating your position as a creditor, would you lend and how much leverage would you tolerate?

**Creditor point of view for Microchip Technology:**

- The revenue of the company has increased tremendously from 2016 and continues to maintain it till date. It increased by 16.81% in 2018 and the gross profit increased by 37.76%
- Current Ratio measures the ability of the company to pay its short-term obligations with short-term assets. This ratio is 1.66 which is a good indicator of liquidity. But it was reduced by 49.23% than the previous year.
- Ratio of Liabilities to Stockholders Equity indicates the margin of safety to the creditors. A high debt/equity ratio is often associated with high risk; it means that a company has been aggressive in financing its growth with debt. This ratio for Microchip is 1.52 and it has increased from 1.35 from the previous year.

- It has \$3.356 million in current assets and \$8.257 million in total assets.
- Working Capital is the dollar difference between total current assets and total current liabilities. It has a working capital of 1.339M to cover its operational need.
- It has a current receivable turnover of 7.06 and DSO of 51.69 days. It can gather cash pretty quickly.

**Creditor point of view for Texas Instrument:**

- The revenue of the company has increased by 5.5% than the previous year and the gross profit increased by 6.9%.
- Current Ratio measures the ability of the company to pay its short-term obligations with short-term assets. This ratio is 3.27. But it was reduced than the previous year.
- Ratio of Liabilities to Stockholders Equity indicates the margin of safety to the creditors. A high debt/equity ratio is often associated with high risk; it means that a company has been aggressive in financing its growth with debt. This ratio for Texas Instruments is 0.91 and it has increased from 0.71 from the previous year.
- It has \$8.097 million in current assets and \$17.137 million in total assets.
- Working Capital is the dollar difference between total current assets and total current liabilities. It has a working capital of 5.623M to cover its operational needs.
- It has a current receivable turnover of 1.31 and DSO of 279.11 days.

As a creditor, we would feel safer to invest in Texas Instruments than Microchip.

**Deliverable 9:**

Any other salient information helping you form your conclusions as well as the appropriate source attribution

Both Microchip and Texas Instruments offer dividends to their investors, paid out every 3 months. Dividend paying stocks are attractive to investors that are looking for low risk stocks that contribute to an investor's income; whereas companies that invest back

retained earnings into the business are often seen as valuable as they have more growth potential:

Below are the dividend price and yield of both companies:

Microchip technology:

- Dividend Price - \$0.3645
- Dividend Yields - 2%

Texas Instruments:

- Dividend Price - \$0.77
- Dividend Yields - 3.3%

### **Deliverable 10:**

### **Conclusion**

Texas Instruments generated significant cash flow in 2018. Texas Instruments' free cash flow of 38% exceeded expectations which stands as a testament to the company's resilient end markets in analog chips and embedded microcontrollers. Additionally, the company has the competitive advantage of being a low-cost producer of many industry-standard chips. Texas Instruments has a better diversified, less capital-intensive, and more shareholder-friendly strategy. TI is one of the safer semiconductor stocks, and it remains a sound long-term investment.

Microchip Technology's highlight remained acquiring Microsemi which inadvertently ballooned total company debt to more than \$10.3 billion. Microchip has maintained \$300 million synergy target and said that the Microsemi inventory buildup should be cleared by the end of this year. Hence, one should see how the risks and issues are addressed. Investing stocks in Microchip presently might not be safe.