General Motors Company Valuation

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Summary and Investment Conclusion

Capsule Description of the Company

General Motors is an automobile manufacturer that was founded in 1908 by William Durant. Over the past 100 years, GM has grown to become one of the largest auto manufacturers in the world. GM has plants and facilities in over one hundred twenty different countries. GM employs over two hundred fifteen thousand people throughout the world (General Motors Company, 2017). GM is best known for its four major American brands Chevrolet, Buick, Cadillac, and GMC.

Major Recent Developments

In 2009, GM was forced to file bankruptcy because they had amassed a large amount of debt and the auto industry as a whole slowed way down. In 2010, GM had an IPO as a new company where they raised 20.1 billion dollars and it was the biggest IPO in U.S. history. GM faced a recall of 2.6 million cars for faulty ignition switches that killed 124 people. GM came out the other side of these recent struggles and sold a record 10 million cars in 2016. GM is continuing to distance itself from its recent past and working toward becoming the world's largest automobile manufacturer once again.

Earnings Projection

General Motors has seen a lot of recent success after the bailout and has great opportunity to continue to grow. The company's earnings have grown by 7.31% since 2010 when they began trading as a new company. The earnings growth rate was found using the net income of the company. This is the constant growth rate that will be used to project earnings. GM is well positioned to continue growing at a similar rate. While the earnings in the U.S. may fall, GM has a tremendous opportunity in China to make up the difference.

Valuation Summary

There were four models used when doing the valuation for General Motors. These models were the dividend discount model, free cash flow model, residual income model, and the market-based model. The lowest model was the free cash flow model at $31.41, followed by the residual income model at $34.49, then the dividend discount model at $36.92, and finally the market-based model at $38.83.

Aspects of certain models seemed to fit better with the company when coming up with the stock price. For this reason, it was decided to use a weighted average when coming up with the final stock price. The highest weights were given to the residual income model and the market-based model; each with 35%. The dividend discount model and free cash flow model were given the lower weights with each having 15%. The automotive industry is very competitive so how GM relates to its peers is a good indication of its value. General Motors does not have a long history of paying dividends. For this reason, the value using the dividend discount model may be skewed since the forecasts do not have a lengthy history to be derived from. In the residual income model, less emphasis is placed upon the company's dividends. With GM, the free cash flows vary tremendously from year to year and relies heavily upon forecasted data. The final weighted stock price for General Motors was $35.91.

Investment Action

Based on the current trading price of General Motors, the value derived from the models indicates that the company is trading at a discount. This notion also holds true when looking at the 52-week range for GM's stock price. The current trading price of GM being undervalued compared to our valuation is also demonstrated when looking at its EV/EBITDA and EV/Sales compared to its peers. For these reasons, we give General Motors a buy rating.

Business Summary

Company Description

General Motors Company is a major global, American-based automobile manufacturer. It is considered one of the "Big 3" automobile manufacturers in the U.S., with the others being Ford Motor Company and Fiat Chrysler Automobiles. GM has plants and facilities in over one hundred twenty different countries. These countries include the United States of America, Canada, Mexico, China, and more. The company does business in six different continents in twenty-three time zones and speaks seventy languages. It employs over two hundred fifteen thousand people throughout the world (General Motors Company, 2017). General Motors is headquartered in Detroit, Michigan and has helped to give the city the nickname of "Motor City."

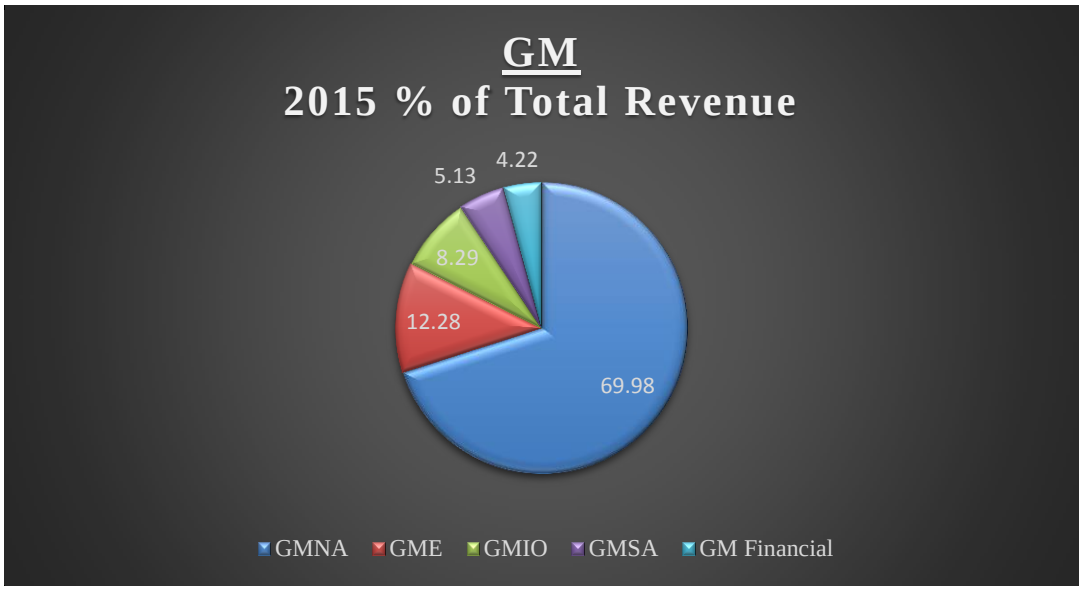
There are many different automobile brand names within General Motors. Currently, these different automobile brands are Chevrolet, Buick, Cadillac, GMC, Opel, Baojun, Holden, Isuzu, Jiefang, Vauxhall, and Wuling (General Motors Company, 2017). There have also been brands which have since been discontinued. These discontinued brands include, but are not limited to, Pontiac, Oldsmobile, and Saturn. There have also been countless models within each brand which are no longer available. Besides brands, General Motors is also made up of five business segments. These segments are GM North America (GMNA), GM Europe (GME), GM International Operations (GMIO), GM South America (GMSA), and GM Financial (GALE I2501318092). These segments are primarily geographically based with the exception of GM Financial. The geographical ranges of the segments are as followed:

- GMNA – U.S., Canada, and Mexico

- GME – Russia, Germany, the UK in addition to other countries throughout the rest of Europe
- GMIO – Egypt, Australia, the Middle East, and Asia
- GMSA – Brazil, Argentina Columbia, and Venezuela

(Plunkett, 2017)

In 2015, General Motors sold 9.95 million units across the globe in the retail market and 5.87 million units wholesale for a total of 15.82 million units sold world-wide. GMNA accounted for the bulk of sales with 7.17 million units making up 69.98% of the company's total revenue. GME had a sales total of 2.303 million units which accounted for 12.28% of the company's total revenue. GMIO total number of units sold was 5.113 million which made up 8.29% of GM's total revenue. GMSA, having the smallest of the sales, sold 1.248 million and accounted for 5.13% of GM's annual revenue. GM Financial made up the smallest portion of General Motors' annual revenue at 4.22%. The following chart shows the GM's different business division's contributions to its total annual revenue for 2015:



(Avention, Inc., 2017)

The history of General Motors Company starts with its founder, William Durant. In 1886, Durant started with the selling of horse-drawn carriages and eventually founded his own business with dealing with these sales. By 1900, Durant later met up with James Whiting. Whiting was the founder of the Buick Motor Company. After some time, Durant became the owner of the Buick Motor Company. Working off of his previously obtained knowledge of horse-drawn carriage sales, Durant helped make the Buick Motor Company the leader in automobile sales by 1908. Durant then looked for other automobile and parts manufacturers to acquire. Once he gained control of 13 automobile companies and 10 parts manufacturers, he then founded General Motors Company in 1908 (GALE I2501318092).

General Motors has a rich history engrained in the fabric of the United States. The company enjoyed growth and success the years following its founding. However, when World War I broke out in 1917, it pointed its manufacturing plants into a new direction out of necessity. To help with the war effort, General Motors Company turned from manufacturing automobiles for civilian use to instead manufacturing military equipment. In a span of 18 months, the company transitioned to 90% of its manufacturing towards military products (GALE I2501318092).

After the war, General Motors turned back to business as normal in manufacturing for civilian use. The company emerged on top as the industry leader by 1927. This did not last long after as the Great Depression soon followed. General Motors needed to restructure its company. A new management policy was implemented which was actually adopted by many other businesses as an ideal model (GALE I2501318092).

By 1941, America was gearing up to go to war again. Almost instantaneously, General Motors was able to divert their plants to manufacturing for the war effort. The company built

everything from guns to tanks to ships. In the span of 1940-1945, GM produced $12.3 billion worth of military products (GALE I2501150759). After the war was over, General Motors again went back to building and manufacturing automobiles for civilian use. The effort of the company, and the automobile industry as a whole, undoubtedly had a profound effect on the outcome of both world wars.

Years following World War II were a time of expansion and growth for the United States. The country was out of the Great Depression and did not have to rebuild infrastructure much like other areas of the globe. The 1950s were characterized by new innovations and styles in the automobile industry. These new features included:

- All American automobile models came with the automatic gear box option.
- The vehicles had better batteries.
- The interior became more luxurious with the option of air conditioning.
- Power steering and brakes became available.
- Automobiles' windows were enlarged for better visibility.

During this time of growth, a new trend was emerging: two-car households (GALE I2501318092). It is unclear if the new innovations piqued the interest of the consumer causing for more demand and the new trend or if the two-car household was the driving factor for the new innovations. The following decade, the 1960s, GM further enjoyed expansion and growth. General Motors went into other areas of business including insurance, electronics, and finance (GALE I2501318092).

The next few decades were a time of what seemed to be a decline for General Motors. In the 1970s, the price of gas was high and the government was becoming stricter on air pollution regulations. General Motors had to pay billions of dollars to comply with the regulations. The

high gas prices caused demand and sales of low miles-per-gallon vehicles to decline. But with this decline, came a rise in demand for more fuel-efficient automobiles. GM earnings declined from 1985 to 1992 and its market share dropped during the years of 1982 through 1992. By 1999, the company's market share was below 30% of the United States market. This was less than the combined total of the Asian producers. To combat this, General Motors looked to penetrate the Asian markets as those markets were thought to have massive growth opportunities. (GALE I2501318092).

This leads into the 2000's. The company's plan for these years was to get more into foreign markets. A deal was forged between GM and the European automaker, Fiat Auto S.p.A. GM would acquire 20% of the company and Fiat Auto S.p.A. was to acquire a 5.1% stake in GM. The plan was to fill the demand for smaller, compact automobiles in the European market. In 2002, GM would acquire a majority interest in the South Korean company, Daewoo Motor Company after Ford backed out of the deal. GM became prosperous in the early 2000's relative to the other big automobile makers in the U.S. with having a market share of now over 30% (GALE I2501318092). From this prosperity, came more innovation.

In the coming years, the company looked into more fuel-efficient vehicles. They debuted the first full-sized, hybrid pick-up truck line (with the Silverado and Sierra), the Chevrolet Volt (an electric car with batteries backed up by gasoline power), and offering vehicles which could be powered by either gasoline or ethanol (GALE I2501318092). The prosperity of the decade would not last long though. Soon the country would face the worst economic downturn seen since the Great Depression.

The Great Recession hit GM hard and was a difficult time for the company. It suffered for two consecutive years with reported losses of $38.7 billion in 2007 and $32 billion in 2008.

GM looked to its across-town and long-time rivals, Ford and Chrysler, for a possible merger but the merger never came to be. With devastating losses, GM then filed for Chapter 11 bankruptcy. The Chapter 11 was discharged in 2009. The bankruptcy was government sponsored which meant GM was awarded money to the sum of $50 billion in order to make it through (GALE I2501318092). If the company did not receive the government bail-out, it would have failed and went out of business. This would have caused a ripple effect through the economy; furthering the downward spiral with many job losses.

The company was split up into two different companies, General Motors and Motors Liquidation. Motors Liquidation was comprised of the assets which were not included in the "new" General Motors Company. In 2010, General Motors completed the largest initial public offering in United States history ($20.1 billion) and was trading once again on the New York Stock Exchange (NYSE) under the ticker GM (GALE I2501318092). Currently, and in addition to the NYSE, the company is traded on the Berlin Stock Exchange (8GM), Frankfurt Stock Exchange (8GM), XETRA (8GM), and the Toronto Stock Exchange (GMM.U) (Avention, Inc., 2017).

In 2011, General Motors sold the most automobiles globally with sales north of 9 million and was once again the world's largest automobile manufacturer. A driving force in the 2011 year for the company was its Chevrolet brand. The brand had a global record sales high of 4.76 million units sold annually (GALE I2501318092).

In 2013, GM announced a new CEO, Mary Barra. She is the first female CEO of a United States automobile manufacturer. Since she has become CEO, she has also been appointed as chairman of General Motor's board of directors (GALE I2501318092). Other notable current

executives of General Motors include the CFO, Charles Stevens and the Chief Accounting Officer, Thomas Timko (Plunkett, 2017).

General Motors is a large company with a total of 924 companies apart of its corporate family. Some of the most notable companies apart of the GM corporate family are the GM Powertrain Group, GM Daewoo Auto & Technology Co., General Motors of Canada, Ltd., and General Motors Financial Company, Inc (Avention, Inc., 2017).

Industry Analysis

General Motors has been around for more than 100 years and has been a large part of a very competitive industry. When analyzing a company, it is important to consider the industry that they are in and their place within that industry. Competition within the industry plays a large role in profitability. Many different things affect how a company is competitive within an industry. Evaluating the competition within an industry can provide insight into external threats to the company.

A good way to analyze the competitive landscape of an industry is to conduct a five-force analysis. These forces are the threat of entry, the power of suppliers, the power of buyers, the threat of substitutes, and the rivalry among existing competitors. The threat of entry pertains to barriers of entry and the ease in which new competitors can enter the automobile industry. The power of suppliers relates to the suppliers that provide components to automobiles and the manufacturing of automobiles. The power of buyers is the influence that can be put on a company by the consumers of their product. The threat of substitutes is the threat that people could purchase other types of vehicles from other manufactures. Lastly, rivalry among existing competitors evaluates the competitive structure of the industry.

The threat of entry for the automobile industry is not very large. There are incredibly

large capital requirements in order to compete within the industry. By nature, automobiles are large ticket purchases that require large amounts of capital in order to be produced. In addition, to compete substantially in the industry a manufacture would need to have a very large volume of sales to fund these capital requirements. General Motors sold more than 10 million cars in 2016 across all of its brands (Isidore, 2017). The capital requirements to produce a number of cars that could compete with a company the size of GM are substantial. It is not easy for a company to enter the automobile market because there are few companies in the industry.

The auto industry is in the mature stage of the industry life cycle. There is little growth in the industry and the majority of the market share is centered on a few large companies. These companies have very efficient cost structures so they are able to produce many cars relatively cheap. Companies that produce superior cars will experience above average growth and profitability in the industry.

Additionally, companies like GM have well established brands, which carry a lot of brand loyalty. These brands have been around for a long time and are very valuable. A new company trying to enter the automobile market would have to establish a brand that competes directly with Chevy, Cadillac, Buick, and GMC. Consumers know and trust these brands, where a new company would have to build that trust over time.

There is a large amount of innovation that is required in the automobile market. As technology evolves, automobiles become more and more advanced. A large degree of research and development goes into creating new technologies for cars. In 2015 alone GM spent 7.4 billion dollars on these costs (Sedgwick, 2016). A new entrant would have a hard time keeping up with the technological advances of companies like GM.

The power of suppliers in the automotive industry can play a large role in profitability.

The components required to manufacture cars include labor, parts, and materials. Large automotive manufactures have a great deal of leverage over suppliers of parts and raw materials. This is because they purchase such a large quantity of goods that have the ability influence these suppliers. GM can negotiate prices that are very beneficial because of the purchasing power that they have.

The one area where GM is susceptible to suppliers is with its labor requirements. The UAW while not as strong as it once was, it has the ability to negotiate with GM and other auto manufactures. The UAW has the ability to strike if they believe they are not being treated fairly. This would negatively affect not just GM but the entire auto industry. The UAW is a powerful union that can negotiate with GM where not a lot of other suppliers can.

The power of buyers in the automobile industry is not very large. Consumers can negotiate prices with dealerships but not with manufactures. A person is not likely to purchase many vehicles so they do not have the ability to negotiate on pricing. The automobile market is made up of many individual buyers that do not have a lot of power on their own. A person can decide to buy a car from a different manufacture but the effect of that one person buying a different car is minimal.

The threat of substitutes is important to consider because people can purchase cars from other manufactures. Each company competes on different types of vehicles. Because of the large nature of the purchase price is an important aspect of how companies compete. Auto manufactures develop many different car types across many different brands. There are many substitutes available models of cars because there is a comparable model sold by another manufacture.

Certain models of cars are also susceptible to other market conditions that cut into sales.

When gas prices are high, there is a larger demand for fuel-efficient cars. When gas prices are low, SUVs and trucks are in higher demand. Additionally, as people become more environmentally conscious they may transition away from gas engines and move to electric vehicles. Substitutes are an important part of what makes the auto industry as competitive as it is.

The auto industry is one that is very competitive. Cars are major purchases so their sales are very sensitive to price. Competitors are always trying to gain market share from each other and price is an important point that they can try to do so. Because there are many substitutes for any given model of car, it is easy for a buyer to purchase a different car if it is cheaper.

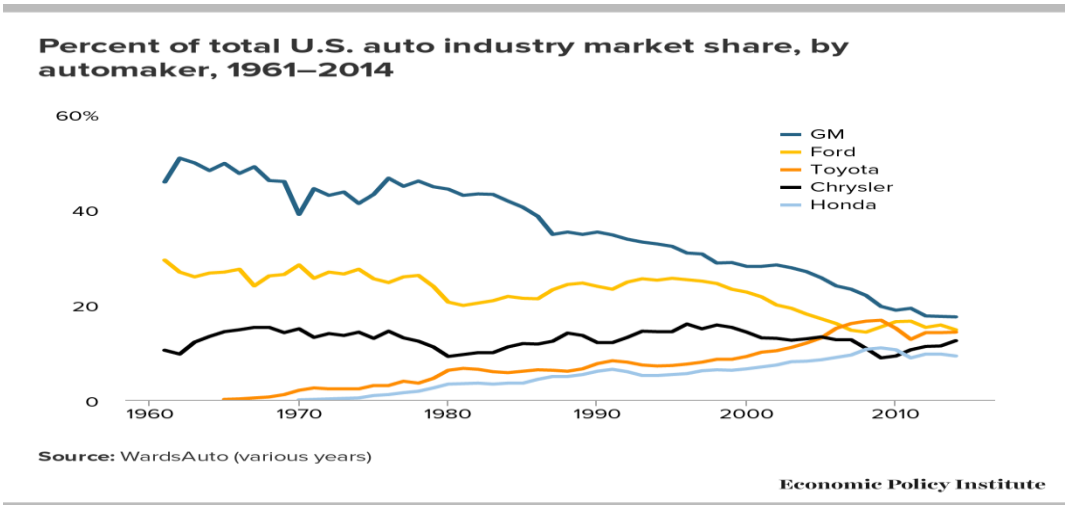
Additionally, auto manufactures compete on the features they provide in their cars. With the increased technology in cars in recent years, there has been a lot of competition on that front. The goal of each company is to make cars smarter and be able to provide a higher level of utility to consumers. They are introducing technology like back up cameras and cars that park themselves to try to increase sales. The drive to stay one-step ahead of the competition is providing a great deal of innovation in the auto industry. If a company does not keep pace with the rest of the industry, they are likely to lose market share and a significant amount of revenue.

One of the biggest areas that companies are competing in is the driverless cars space. The race to develop driverless cars is happening very quickly and is very costly. GM purchased Cruse Automation for over 1 billion dollars in 2016 (DeBord, 2016). Driverless cars are seen to be the future of the automobile industry. Auto manufactures are shelling out a lot of money in order to keep up with each other. This points to how competitive the industry is as a whole because each company is obligated to innovate in order to keep market share.

Competition has grown much more competitive in the last few decades. GM has seen its market share continue to decline throughout the years. As other car companies continue to

innovate and bring exciting new vehicles to market the ability to maintain market share is becoming more and more difficult. Figure 1 shows how market share of the U.S. auto industry has grown much closer in the last couple of decades. The industry market share points to the competitive nature of the auto industries major companies.

Figure 1



Source: Economic Policy Institute (Cutcher-Gershenfeld, Brooks, & Mulloy, 2016)

Another important factor in the automobile industry is how macroeconomic influences affect sales. When the broader economy is doing well, car sales tend to be better. The opposite can be said for a sluggish economy. The auto industry is a cyclical industry. In prior cycles, demand for cars has been driven by job and income growth, consumer confidence, the stock market and interest rates (Hirsch, 2015). This prolonged low interest rate environment, coupled with the growing economy, has provided the industry with a tremendous uptick in sales after the recession.

By the very nature of a car purchase being a big-ticket decision it makes sense that the economy plays a big role in this. When there are more jobs to go around and more people have money to spend, more cars are purchased. Additionally, when interest rates are low people are

able to borrow much cheaper and cars are more affordable. As the economic conditions change so does the sale of automobiles. The automobile industry in largely depended on macroeconomic factors to drive growth.

Government regulation also has a large effect on the industry in many different ways. The vast majority of cars require fossil fuels for operation. Carbon emissions are playing a large part in the cause of global warming. Reducing the effect of these emissions is a major concern for the future of the environment. Fossil Fuels have a negative effect on the environment and this has caused the EPA to take action. They required that automobile manufactures meet a 34 mile per gallon mandate by 2016. By 2025, automobiles have to reach 54.5 mpg. If the standard is not met, auto companies will be fined $5.50 for each tenth of a mile-per-gallon that their average fuel economy falls short of the standard multiplied by the number of vehicles that missed meeting the required standard (EPA Moves the Goalposts on its Fuel Economy Mandate, 2016).

These fuel standards are one of many regulations that the government places on the automotive industry. Not only do they have to meet regulations in the U.S., but each country has their own regulations that have to be met. These regulations are important because they have a cost associated with them. In order to meet these standards there is a lot of investment into furthering current technologies.

The automotive industry is massive and is influenced by many different factors. The economy, regulation, technology, and many other things play a role in the industry. It is a tough industry to compete in because there are so many moving parts. The industry is in the mature stage of the life cycle, which makes it hard for companies to grow. The only way to do so is to create superior products and cut into competitor's market share.

GM is well positioned in the market to capture many of the opportunities that are there.

They have the largest amount of market share in the U.S. and have the capital required to compete with everyone else in the industry. The industry looks to be very different in the next few decades and GM is positioned to be at the forefront of the industry.

Competitor Analysis

The automotive industry is very large and expands the entire globe. To this effect, General Motors has many competitors. Some of the top competitors for GM can be found in the on the following page table:

General Motors Competitors Report			
Company Name	**Location**	**Employees**	**Ownership**
Audi AG	Ingolstadt, Germany	86,001	Public
Bayerische Motoren Werke AG	Munich, Germany	126,013	Public
BorgWarner Inc	Auburn Hills, Michigan, United States	30,000	Public
Brilliance China Automotive Holdings Ltd	Hong Kong, Hong Kong	7,330	Public
Daimler AG	Stuttgart, Germany	284,482	Public
DPH Holdings Corporation	Troy, Michigan, United States	12,700	Private
Eaton Corporation	Cleveland, Ohio, United States	73,000	Private
FCA US LLC	Auburn Hills, Michigan, United States	77,817	Private
Ford Motor Company	Dearborn, Michigan, United States	199,000	Public
Hyundai Motor Company	Seoul, Korea, Republic of		Public
Isuzu Motors Ltd	Tokyo, Japan	32,418	Public
Jaguar Land Rover Holdings Ltd.	Solihull, United Kingdom		Private
Kia Motors Corporation	Seoul, Korea, Republic of	34,121	Public
Mazda Motor Corporation	Hiroshima, Japan	46,398	Public
Mitsubishi Motors Corporation	Tokyo, Japan	29,555	Public
Navistar International Corporation	Lisle, Illinois, United States	12,400	Public
Oshkosh Corporation	Oshkosh, Wisconsin, United States	13,800	Public
PACCAR Inc	Bellevue, Washington, United States	23,000	Public
Peugeot S.A.	Paris, France	184,000	Public
Renault SA	Billancourt, France	120,136	Public
Scania AB	Södertälje, Sweden		Private
Suzuki Motor Corporation	Hamamatsu, Japan	61,601	Public
Toyota Motor Corporation	Toyota, Japan	348,877	Public
Volvo Car Corporation	Gothenburg, Sweden	21,512	Private

(Avention, Inc., 2017)

Of the many competitors for General Motors listed above, this comparative analysis will focus primary on three; specifically: Bayerische Motoren Werke AG, Daimler AG, and Ford Motor Company. These three companies are all publicly traded and are somewhat close in size, market share, and employee numbers to General Motors.

Bayerische Motoren Werke AG (BMW). BMW is German-based automobile and motorcycle manufacturing company with approximately 126,000 employees. It operates in many countries outside of Germany. These areas include China, the United States, Indonesia, as well as other countries in Europe. The company splits up its activities into four separate business divisions as followed:

- Automobiles – This segment is responsible for the developing, manufacturing, assembling, and selling of cars and off-road vehicles in addition to spare parts and accessories. Well-known brands which fall under this categories control include BMW, MINI, and Rolls-Royce. BMW and Rolls-Royce specialize in the luxury vehicles while MINI is geared more towards compact cars. The company reportedly sold 2,247,485 automobiles in 2015 and this made up approximately 76.9% of BMW's total annual revenue.
- Motorcycles - This segment is responsible for the developing, manufacturing, assembling, and selling of motorcycles and accessories. Motorcycle brands include BMW and Husqvarna. BMW sold 136,963 motorcycles, which made up about 1.8% of the company's revenue, in 2015.
- Financial Services – This segment is focused on several different areas of financial activities including car leasing, multi-brand financing, fleet business, retail customer and

dealer financing, customer deposit business, and insurance. Financial Services made up roughly 21.3% of BMW's annual revenue for 2015.

- Other Entities – This is a broad segment which involves other operating companies. These companies include BMW Services Ltd, BMW (UK) Investments Ltd, Bavaria Lloyd Reisebuero GmbH and MITEC Mikroelektronik Informatik. The Other Entities segment is the smallest contributor to BMW's total revenue with making up only .01% of the company's total for 2015.

(Avention, Inc., 2017)

Daimler AG. This company is an automobile manufacturer which is based in Germany. It was incorporated in early 1998 and currently trades on the XETRA exchanged under the symbol DAI. The company currently employees over 284,000 people. Products sold by Daimler AG are known for their premium, high quality. It separates its company into five different business segments:

- Mercedes-Benz Cars – This business division is responsible for the designing, developing, manufacturing, assembling, and selling of passenger cars on automobiles. Brands which make up this segment include Mercedes-Benz, Mercedes-AMG, Mercedes-Maybach and Smart. The Mercedes-Benz Cars division made up around 54.16% of the overall revenue for 2015 and sold 2,001,438 units.
- Daimler Trucks – This segment focuses on designing, developing, manufacturing, assembling, and selling trucks. The trucks are offered through a variety of brands from the division including Mercedes-Benz, Freightliner, Western Star, FUSO and BharatBenz. The Daimler Trucks segment accounted for roughly 23.83% of Daimler AG's total annual revenue from the sale of 502,478 units in 2015.

- Mercedes-Benz Vans – Daimler AG, through its Mercedes-Benz Vans segment, designs, develops, manufactures, and sells vans of all sorts. Different types of vans offered include camper vans and multipurpose vans (MPVs) in addition to vans for personal or commercial use. Brands which are represented under this division include Mercedes-Benz and Freightliner. In 2015, the Mercedes-Benz Vans business segment comprised approximately 7.45% of the company's total revenue which was attributed to selling 321,017 units.
- Daimler Buses – This division is responsible for the designing, developing, manufacturing, assembling, and selling of buses, bus chassis, coaches, as well as spare parts and accessories. The brands associated with this segment are Mercedes-Benz and Setra. The Daimler Buses division sold 28,081 units in 2015 which accounted for roughly 2.71% of Mercedes-Benz's total revenue.
- Daimler Financial Services – This segment of Mercedes-Benz focuses on sales of its vehicles, fleet managing services, leasing, insurance, investment products, and credit cards. It made up about 11.86% of the total revenue for 2015.

  (Avention, Inc., 2017)

Ford Motor Company. Ford is an American automobile manufacturer and distributer which is based in Michigan. The brands which make up Ford's automobile products are Ford, Ford-Lincoln, and Lincoln. It operates on a global scale through two distinct business segments which include automotive and financial. The automotive segment deals with the manufacturing, designing, selling, and servicing of Ford automobiles. It is further divided into geographical regions which span North America, South America, Europe, Middle East & Africa, and Asia Pacific. In 2015, Ford Motor Company sold a total of 6,635,000 units which accounted for 94%

of its total annual revenue. The financial segment operates through the solely owned Ford subsidiary of Ford Motor Credit and Other Financial Services. It handles the leasing, insuring, and financing of automobiles. Ford's financial segment made up 6% of the company's annual revenue (Avention, Inc., 2017).

How does General Motors Company compare to its three competitors? The following numbers were reported for the year of 2015. GM came in second, with Daimler AG having the most, for a total revenue of $152,356 million. Even though GM was not top for the revenue category, it reported the highest net income of the four companies with $9,687 million. General Motors came in third for total assets with around $194,520 million and came last in market cap with only 51,015 million. GM had the least amount of operating income however it was second only to Ford in the cash from operating activities category. General Motors Company was second only to BMW in net profit margin with GM's being 6.36% and BMW having 6.91%. The following table illustrates how GM compares to its competitors as well as whether it out preformed or under preformed average of its three competitors.

Key Indicators USD (mil)	BMW	Daimler AG	Ford	Competitor Average	GM
Total Revenue	100,591	163,114	149,558	137,754	152,356
Operating Income	10,650	14,148	8,064	10,954	4,897
Net Income	7,071	9,352	7,373	7,932	9,687
Basic EPS	10.77	8.74	1.86	7.12	6.11
Capital Expenditures	-6,538	-8,144	-7,196	-7,293	-7,874
Cash from Operating Activities	1,066	247	16,170	5,827	11,978
Total Assets	187,894	236,994	224,925	216,605	194,520
Total Liabilities	141,481	178,543	196,283	172,102	154,649
Employees	119,688	284,015	199,000	200,901	215,000
Total Common Shares Outstanding	657	1,070	4,031	1,919	1,500
Market Cap	69,979	90,576	56,797	72,451	51,015
Net Profit Margin	6.91%	5.64%	4.93%	5.83%	6.36%

(Avention, Inc., 2017)

Historical Performance

General Motors has been around for over 100 years. However, it is not the same company that it was back then, it is not even the same company it was a decade ago. That is because in 2009 GM was forced to file bankruptcy as a result of crippling debt that they had amassed. In 2009, GM had assets of $82.2 billion and had liabilities of $172 billion (The bankruptcy of General Motors, 2009). In 2010 GM had an IPO as a new company where they raised 20.1 billion dollars. This was the biggest IPO in U.S. history.

GM had many issues before with its business model before 2008. They were always one-step behind the market, which created many of the losses that GM sustained. In the 1990's they beefed up spending on SUV and Trucks because they saw the huge profit margins that these vehicles had. Consumers wanted these vehicles because gas was cheap and the economy was doing well. During this time, the EPA was pressuring the auto industry to reduce emissions. To balance out the much less fuel efficient trucks GM sold more fuel-efficient cars at a loss just to reach the EPA's standards.

These fuel-efficient cars were losing GM money so they did not invest heavily in them. As consumer preference started to change in the 2000's GM did not have the ability to compete with others manufactures with better fuel-efficient vehicles. As 2008 approached, gas prices were $4 a gallon and demand for more fuel-efficient cars was even greater. GM was trying to improve their fuel-efficient car lineup but the economy would not allow them the time. As the housing market crashed people were not buying cars anymore too. Car sales plummeted and GM could not sustain their business with the ever-growing debt.

GM struggled because they lost sight of what was important, the product they put out. They were only looking at what made them the most money right now and not what would in the

future. They lost touch with the market and the consumer. Consumers wanted a quality car and that is not what GM gave them. It was only a matter of time before GM was going to go bankrupt.

The historical performance of GM has had a tremendous effect on where the company is today. After the bankruptcy in 2009, GM launched an IPO in 2010. They began trading as new company after they restructured. GM is an entirely new company relative to its 2009 version. It has shed the debt that encumbered it and is running as a much leaner company. It operates today with the constant reminder of the past.

GM has seen some fluctuations in its stock price since its IPO in 2010. The stock price is down 5.8% as of year-end 2016 compared to its IPO price. This can be attributed to several different things. Firstly, after the came out of bankruptcy they still had not paid back a large portion of the government bailout money. They were paying this off by purchasing back shares of the company that was owned by the government. Secondly, GM had a recall of 2.6 million cars because of faulty ignition switches. General Motor's flawed ignition switch, one of the deadliest auto recalls in history, killed 124 people (Isidore, Death toll for GM ignition switch: 124, 2015).

GM paid out $594.5 million to families affected by the ignition switch malfunctions. Additionally, GM has paid a $900 million criminal fine for hiding the problem from safety regulators (Isidore, Death toll for GM ignition switch: 124, 2015). This scandal has been the main reason that GM's stock price has not grown since the IPO. Just as GM was trying to restore consumer confidence, this caused a halt in its growth.

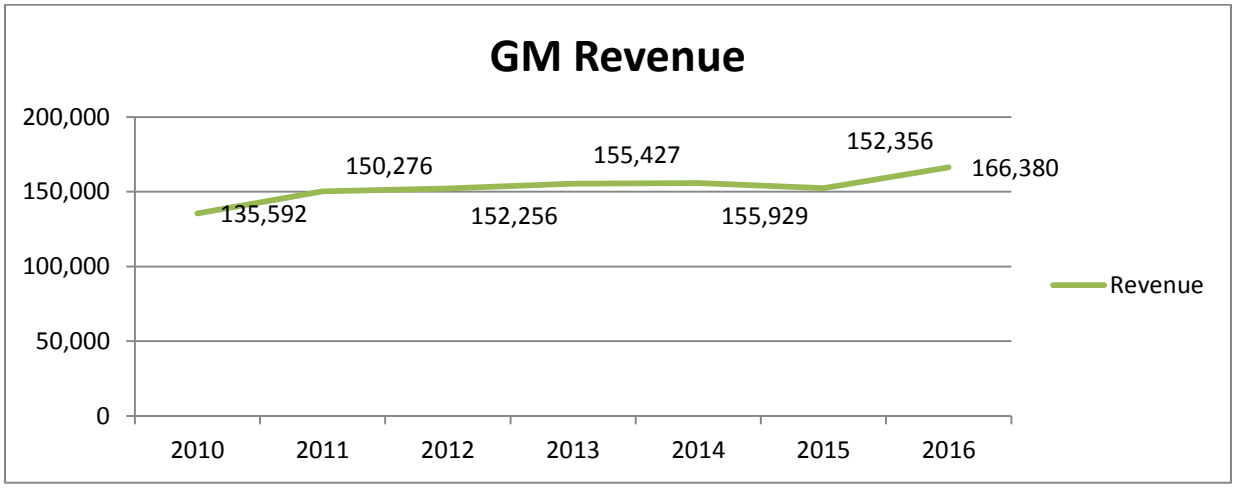
However, even amidst the scandal GM continued to produce quality cars, and was selling them at a record pace. General Motors sold 10 million cars in a year for the first time in its

century-plus history in 2016 (Isidore, GM sells 10 million cars for first time thanks to China, 2015). U.S. car sales grew substantially after the recession as more people had money to afford new cars. The U.S. saw seven years straight of growth in car sales.

The U.S. is not GM's biggest market. China is now GM's largest market. Sales growth there lifted it to volume it never achieved when it was the world's biggest automaker (Isidore, GM sells 10 million cars for first time thanks to China, 2015). China's economy is continuing to grow and it is providing GM the greatest opportunity for growth. The demand for cars in China is only expected to grow as China develops a larger middle class.

As sales hit record numbers GM's revenue climbed substantially in 2016 relative to recent years. Revenue is up 18.5% compared to year-end 2010. Figure 2 shows revenue for GM from year-end 2010 until year-end 2016.

Figure 2

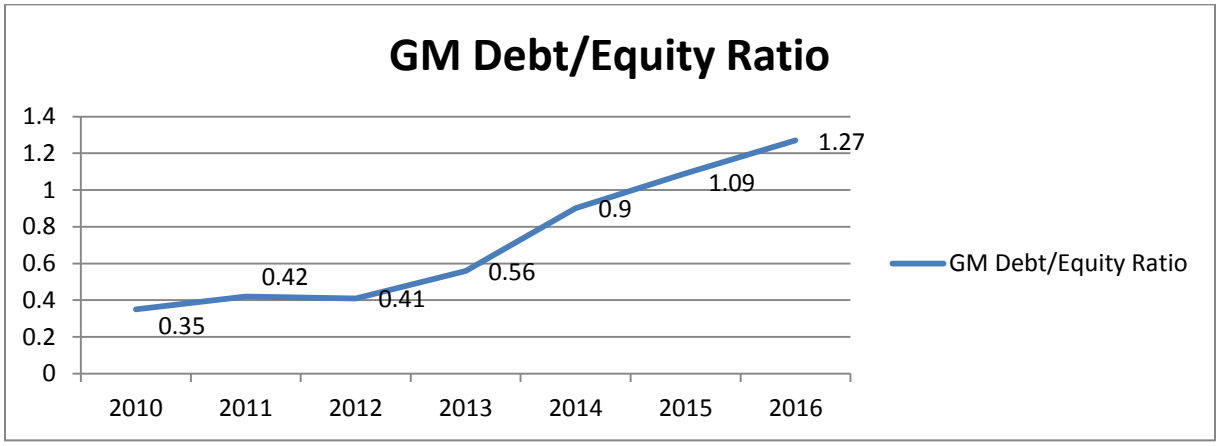


Note: Revenue in millions Source: Morningstar, Inc.

This is great news for GM as they are continuing to produce quality cars and the sales and revenue numbers support that. Revenue and sales is key for GM because they are trying to gain back market share from their competitors and they need to continue to increase car sales.

With the large increase in car sales, it is expected that GM would take on more debt as capital expenditures increase. Figure 3 shows GM's debt/equity ratio since 2010.

Figure 3



Source: Morningstar, Inc.

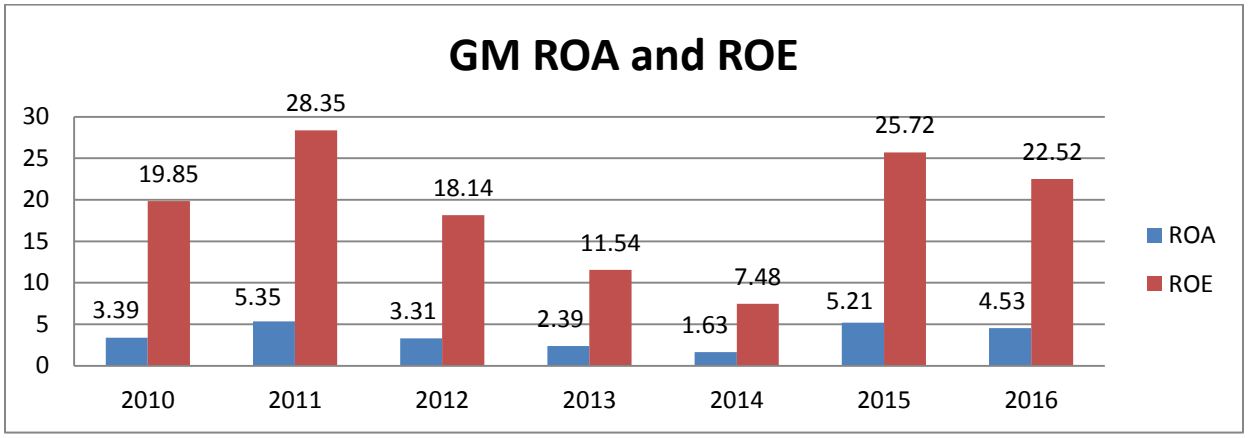
Figure 3 shows that GM was conservative about taking on debt while they were still paying back the federal government money from the bailout. As the bailout money was paid back, GM began taking on more debt. This is not a bad thing because the automotive industry is very capital intensive and certain levels of debt are expected to fund this. Debt/equity for GM reached its highest point in 2016 but considering GM had record sales that falls in line with expectations.

Another important factor to look at is GM's dividend history. GM suspended its dividend in 2008 because of cash flow issues it was having. Gm did not pay a dividend until 2014 and this was likely because they were still paying the government back form the bailout (Wallace, 2014). As GM began paying a dividend of $1.20 per share in 2014, they have increased it to $1.38 per share in 2015 and $1.52 per share in 2016. The dividend yield has increased from 3.44% in 20144 to 4.06% and 4.36% in 2015 and 2016 respectively. The growing dividend yield is important because it shows that GM is continuing to improve on its financials and to drive

shareholder value.

Additionally, it is important to look at ROE and ROA as they relate to profitability of the company. Please find on Table 1 below which shows ROA and ROE for GM yearly from 2010 until 2016.

Table 1



Source: Morningstar, Inc.

GM's has continued to post strong numbers since the bailout. ROA has average 3.86% from 2010 until 2016. This is lower than it could be because of the ignition switch scandal. GM paid hefty fines and had to settle many lawsuits, which cost them money. Particularly 2014 was affected the most as that is when the recall occurred and the fines were assessed.

ROE has averaged 19.09% over the years 2010 to 2016. This is a good indicator that GM is providing a good value to shareholders. Like ROA, ROE is also dragged down by 2014 and the ignition switch scandal. This number would be much higher if not for the large expenses associated with that.

This indicates that GM has been performing well and has maintained profitability post bailout. This is an excellent sign for shareholder as it shows GM is continuing to do well financially and increase profitability. The data shows that GM has been doing very well in the

years after the recession and that they are in a good place to continue to do so.

While the data paints a good picture for GM, there are limitations with the amount of data. As GM restructured after 2010 they were able to shed a ton of debt and get a fresh start. There is only financial data available from 2010 as GM is essentially a new company. Even though GM has performed well relative to its peers, it is important to note that the overall automotive industry has been growing tremendously since the recession. The U.S. car market, which rose seven straight years to its own record, may have topped out in 2016. Sales are forecast to decline slightly in 2017 (Isidore, GM sells 10 million cars for first time thanks to China, 2015).

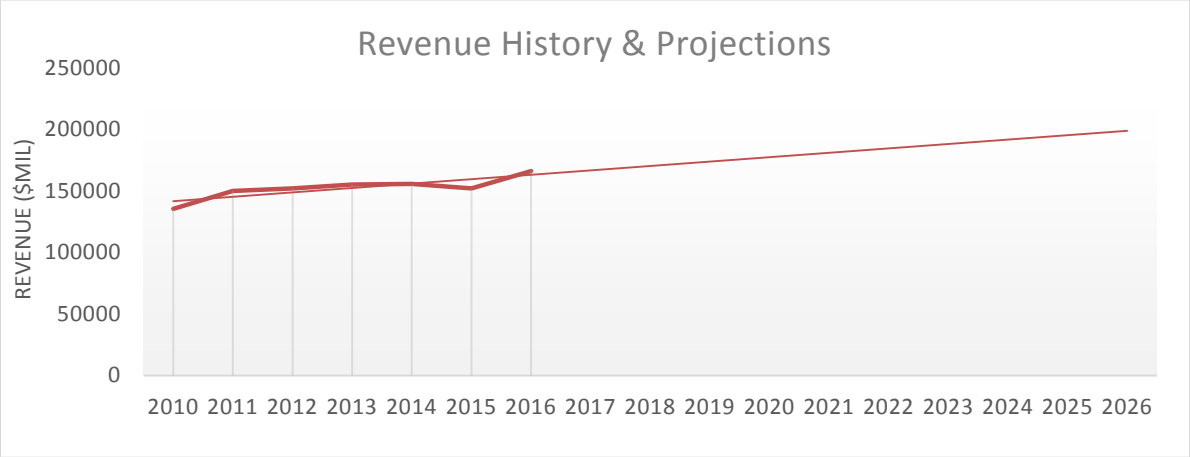
GM has performed well over the last 7 years, but it is important to point out that the entire automobile industry has also performed well. Additionally, companies like Ford and Toyota did not have the luxury of shedding any bad debt that they may have had. They had to endure the recession and come out the other side. With that in mind, GM has been doing really well since the recession and they are positioned to continue to do well in the future.

Financial Forecasts

General Motors is a company which suffered greatly from the recession. It had to file bankrupcty in 2009. Because of this, 2008 & 2009 financial data has been excluded in forecasts. In the years following the bankruptcy, GM has done well to reestablish itself in the highly competitive automobile industry.

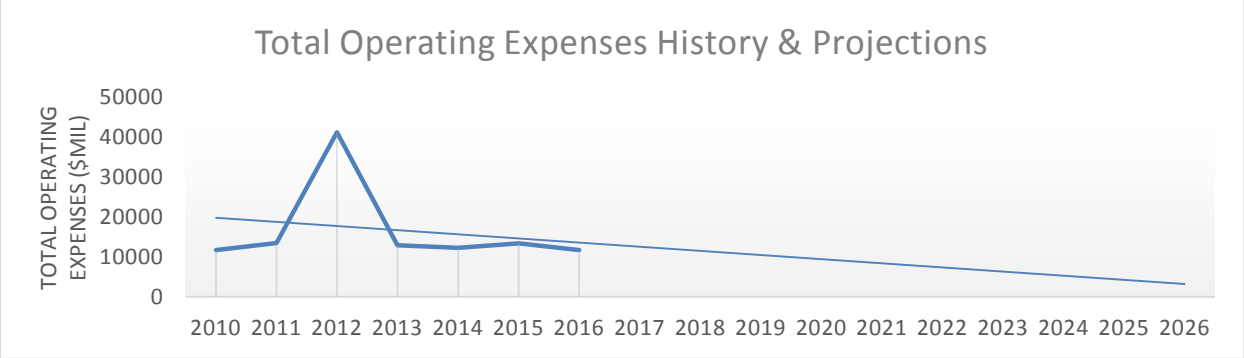
Since 2010, General Motors has been steadily increasing its revenue and it is expected to continue rising all the way through to 2026. In 2016, revenue for the company was $166,380 million. Through forecasting, the company's revenue for 2026 is $199,122 million. This represents a 19.68% growth in revenue over the next ten years. The following chart outlines

General Motors' reported revenue for years 2010-2016 as well as forecasts its revenue through to 2026. The revenue is expressed U.S. dollars in millions.



(Morningstar, 2016)

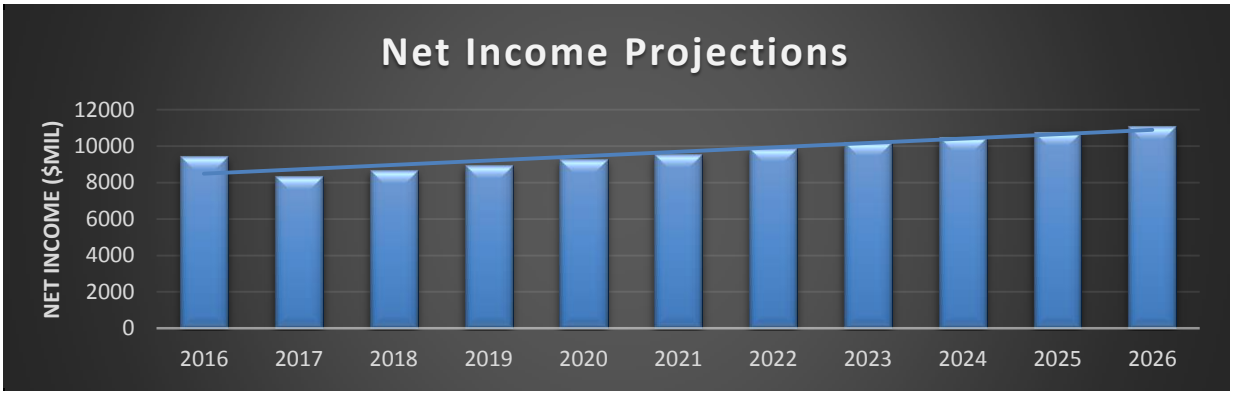
GM has historically done well in controlling costs. It had a large spike in its total operating expenses in 2012 however it followed by a large decrease in 2013. The overall trend for its operating expenses is decreasing. GM is projected to follow the trend through the next decade as demonstrated below.



(Morningstar, 2016)

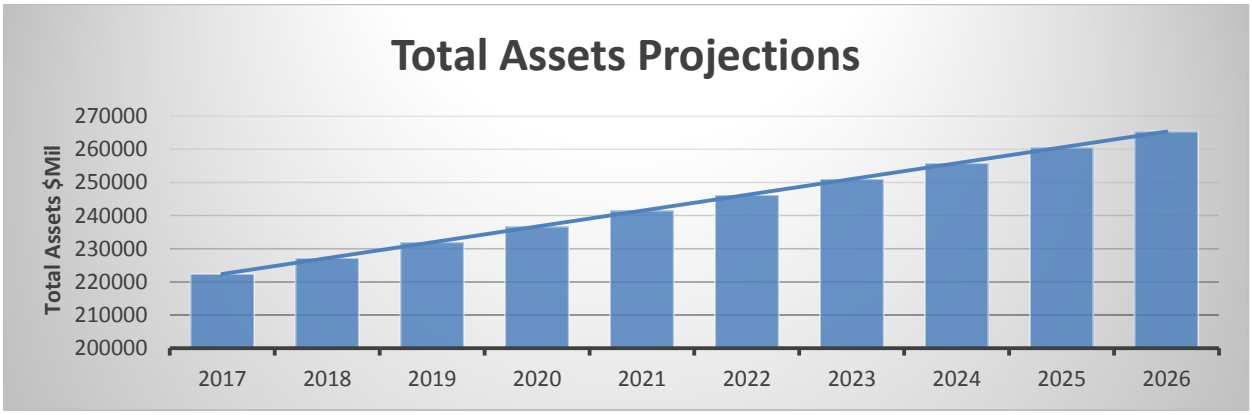
General Motor's growing revenue and decrease in total operating expenses contributes to an increase to its bottom line by 2026. Starting with 2016, GM's net income was $9,427 million. The year immediately following 2016, the company's net income can be expected to decrease.

From there, GM can expect its net income to increase again with finally surpassing its 2016's number by 2021. The net income for the comapny is projected to be $11,093 million. The bar graph below illistrates how General Motors can anticipate its net income to decrease from 2016 to 2017 then gradually increase for the following years. Net income is expressed U.S. in millions.



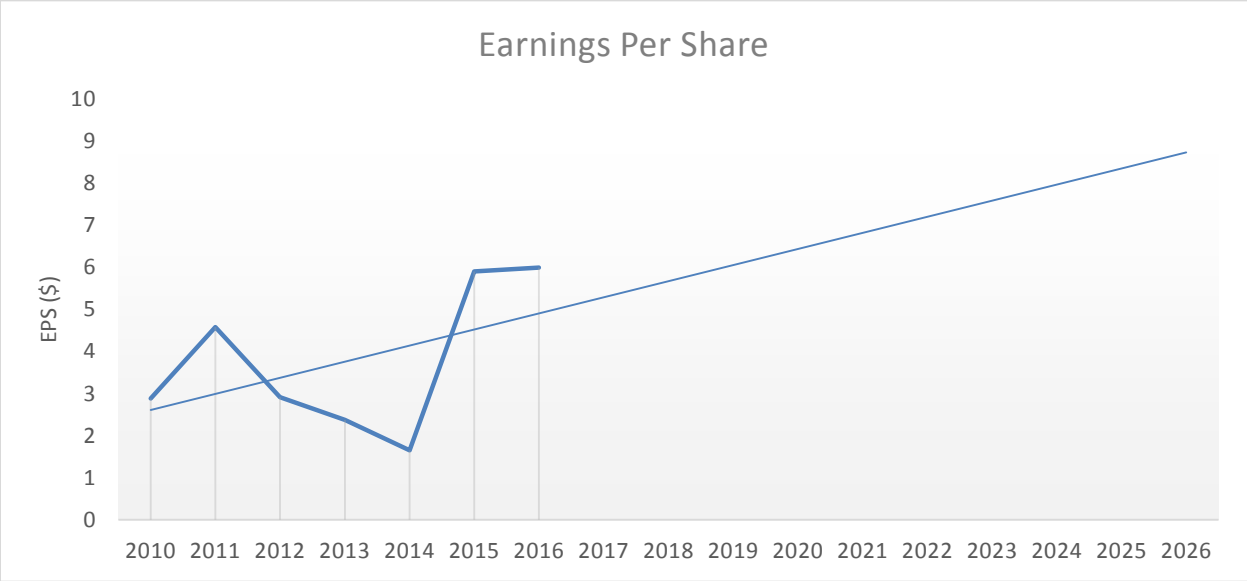
(Morningstar, 2016)

Using the price-ratio method, Genereal Motors' balance sheet can be projected out. Over the span of the next decade, GM is expected increase in size. Its total assets will grow from $221,690 million in 2016 to $265,317 million by 2026.



(Morningstar, 2016)

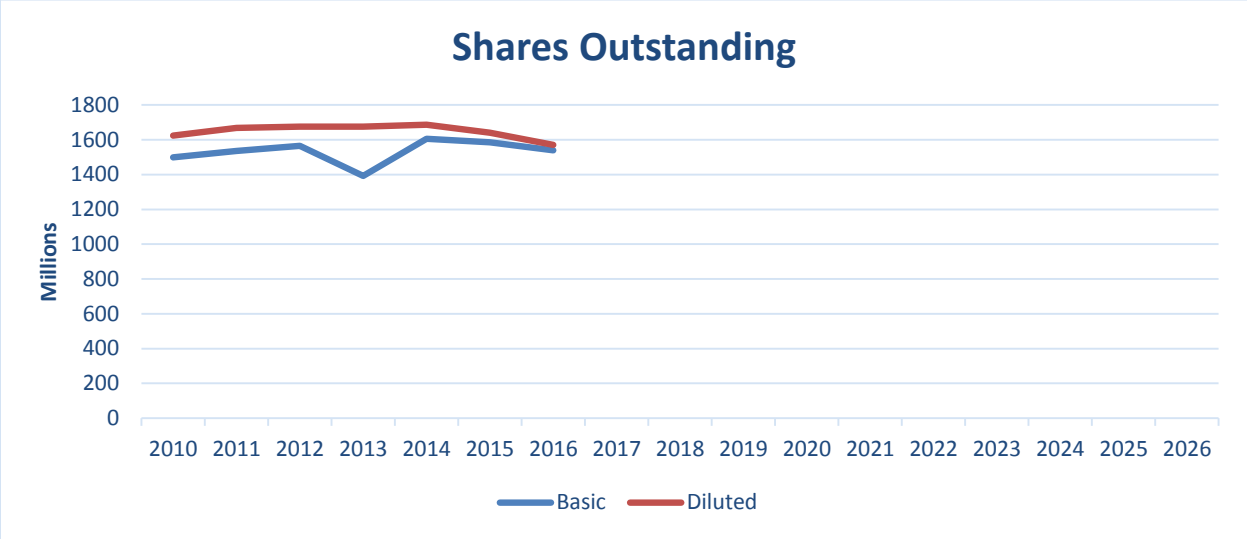
General Motors' earning per share (EPS) has flucuated quite a bit from 2010-2016. EPS decreased for three years straight before rebounding in 2015. GM's EPS then increased more, but not quite as much as in 2015, in 2016. Forecasts show that General Motors can anticpate an increase to their EPS in the coming decade. Target earning per share may be as high as $8.74 by year 2026.



(Morningstar, 2016)

When looking at the weighted average of shares outstanding, General Motors has had a stable amount from 2010-2016. There has been little fluctuations over the years, however it has mostly remained around the same. Basic shares outstanding had a dip but then increased. The trend for basic shares oustanding is increasing. When using diluted shares outstanding, it would be noticed that they have been decreasing slightly. In 2016, basic shares oustanding equaled 1,540 million while diluted shares oustanding equaled 1,570 million. By year 2026, the number of shares outstanding for each category can be expected to be around 1,653 & 1,553 million,

should each keep on the same trajectory. The prior year activity for which the trend lines have been derived from are demonstarted on the following graph:



(Morningstar, 2016)

One thing to keep in mind when forecasting an automobile company is the price of oil. It has been low in the recent past years but is expected to increse. As the cost of oil increases, sales may slump. To combat this, General Motors should look into more fuel efficient vehicles as well as alternative engergy. If oil does rise, revenue may not grow as much as projected. With that being said, as oil rises there could be a change in what makes up the bulk of the sales. General Motors could anticipate its higher fuel costs products, such as the Chevrolet Silverado, to decrease in sales volume while its more fuel efficient products, such as the Chevrolet Spark, to increase in sales volume.

Risks

Possible Negative Industry Developments

The automotive industry is highly competitive. The participants within the industry are constantly trying to innovate and push out new products to capture more consumers. The

exceedingly competitive nature of the industry may force competitors into price wars in order to obtain or maintain market share. The pricing pressures could result in manufacturers selling products at unsustainable prices.

Many consumers of automobiles are loyal to specific brands. In order to maintain that loyalty, participants in the automotive sector must continually develop products which satisfy customer needs and wants at price points which the customer can afford. One way industry participants seek to maintain brand loyalty is by offering incentives on purchases. These incentives can become another reason for price wars between companies and drive down profit margins.

Consumer dynamics may change over time as well as demand for certain products. The industry relies heavily upon automotive sales in order to turn a profit. Due to low fuel costs, full-size pick-up trucks and large sports utility vehicles (SUVs) have sold well throughout the industry in recent years. Low fuel costs are a driving factor for the high demand in the truck and SUV market. These vehicles also happen to be the ones with the largest mark-up and where most automobile manufacturers obtain the highest profit margin. If the price of oil increases, the industry may see a negative impact on sales of these higher fuel cost products. Consumer preference may switch gears and turn to compact cars with higher fuel efficiency. Although most automobile manufacturers have diverse product lines, this change in consumer taste could cause for a decrease in profits as the lower fuel cost products have a smaller profit margin than that of the pick-up trucks and SUVs. (General Motors Corporation, 2017)

The economic environment can have a significant effect on automobile sales. Some of the economic conditions which may have an adverse effect on the automotive industry include:

- The housing market

- Unemployment
- Financing options
- Fuel costs
- Consumer confidence
- Political environment

The proceeding economic conditions cannot be accurately predicted with 100% certainty. Because the conditions cannot not be known for sure, they pose risks to the automobile industry as a whole (General Motors Corporation, 2017).

Increased interest rates could pose a threat to the automotive industry. Since the recession years, interest rates have been very low with the target rate being 0.00-0.25% up until the first rate hike in December 2015. Another rate hike came in December 2016. The Federal Open Market Committee (FOMC) is expected to raise rates three times in 2017. According to Fed models, a 1.00% raise in the Federal Funds Rate could cause a 3.50% decline in sales and a 12.00% drop in production levels for the automotive manufacturers (Cox, 2015). This low rate environment has been a leading factor in how the automotive sector has been able to bounce back after nearly collapsing. As interest rates rise, consumers may not be able to afford financing options for vehicle purchases. In addition, the automotive companies themselves will find the cost of borrowing to be more expensive. This increase in cost can slow growth and expansion for the sector as necessary capital requirements for investments will be harder and more expensive to obtain.

The automotive industry relies heavily on its suppliers. Increases in input costs could cause a negative impact. The suppliers of the industry span the entire globe. The suppliers are crucial to providing systems, parts, and raw materials to the manufacture. The systems, parts and

raw materials are necessary to the manufacturers in order to maintain satisfactory production levels. If a disruption occurs between an automotive supplier and a manufacturer, the manufacturer must be able to quickly and effectively find an alternative. (General Motors Corporation, 2017). The systems, part and raw materials which go in to manufacturing the automobiles may increase overtime.

Adverse weather conditions could pose a threat to the industry as it could impede shipments from the suppliers to the manufacturers. Not only do weather conditions affect the industry's supple chain, but bad weather can also affect the manufactures directly. This can be done by destroying factories or at least rendering factories unfit to operate while rebuilding from a storm. In 2011, a flood in Thailand forced Honda, Toyota, Ford, and other manufacturers to temporarily stop production. Another example of this would be the earthquake and tsunami that hit Japan in 2011. This resulted in a loss of production for months for Japanese auto makers (Infor, 2012). Extreme weather conditions are unpredictable and can cause major problems in the sector. It is important for industry participants to recognize these unknowns and implement disaster plans should these negative events happen.

In addition to weather conditions, foreign regulatory changes could also have a negative impact on the automotive industry. Many manufacturers within the automotive industry are global companies. International changes can affect the industry. New taxes as well as new regulations implemented by foreign governments may lead to a decline in profits. Many countries are pushing towards cleaner vehicles and have more emission regulations. In order to be in compliance, the industry must develop new and more efficient products or face hefty fines. This may lead to an increase in costs to the companies within the industry.

Other international events may also play a significant role in the automotive industry. Large economic downturns in a country's economy could affect an automobile manufacturer; even if that country was not the one in which the company has its headquarters. The international economic environment is changing and it cannot be certain what the outcome will be. For one recent example, the United Kingdom has removed itself from the European Union. This may negatively impact countries who trades frequently with the United Kingdom. Many manufacturers are investing heavily in the emerging markets such as China, Brazil, India and Russia. These markets are thought to expand rapidly in the number of consumers looking to own automobiles in the future. Competition is tight to gain market share while these markets expand. Down turns in these markets could pose a risk if the industry invests too heavily.

The automobile industry business model may see changes in future years. Some of these changes include driverless vehicles, ride-sharing companies and transportation services (General Motors Corporation, 2017). Companies who are devoted primarily to these changes, known as non-traditional competitors to the automotive industry, disrupt how the industry is typically operated currently. If industry leaders do not seek to accompany these services or innovate new ways towards having the services, declines could be realized as the non-traditional competitors gain a foothold in the automotive market. The companies must also find ways to capitalize on these new services by not only providing them but also finding new ways to monetize the services.

Controlling costs is very important and the automotive sector is dependent upon it. Participants must seek ways to innovate new products through engineering and information technology (IT) departments while still being able to advertise the new products and features the consumers. One of the biggest future costs to the industry may be its investments in new

technologies. Many of the needed advancements may not become available for quite some time. Automobile manufacturers are not only beefing up internal IT departments, but are also seeking outside companies for developing new software. The software companies are quickly becoming a new supplier to the industry. Should a manufacturer invest too heavily in one technology company and that technology company fail, it will be important to find an alternative.

Automobiles are becoming increasingly dependent on computer technology. Vehicles of today are connected to the internet and have digital interfaces. The digital interfaces control everything from the audio system to climate control as well as displaying system information such as tire pressure and engine temperature. Future vehicles will be autonomous and will not require a driver. These features require extensive experimentation, testing, and new advanced technologies (Viereckl, et al., 2016). The connected and driverless vehicles of the future may be subject to cyber-attacks. The automotive industry must be able to maintain the security of the vehicle's software. This new way of operating motor vehicles can increase the risk and liability of the automobile manufacturers.

Massive investments are being made into these new technologies however it is unknown at this time if and when the investments will pay off. Driverless technologies are yet to hit the market. It is unknow how consumers will react to the new technologies. Consumers may not prefer the self-driving feature and it may not directly translate in to more sales. The expensive nature of the added technology could translate into higher product costs and exclude some customers.

Possible Regulatory and Legal Risks

There are many legal issues that automobile manufactures face. These legal issues stem from the right consumers have to purchase reasonably safe vehicles. General Motors Company

has a great responsibility, not just morally, but also legally to produce safe vehicles. If GM produces vehicles that are unsafe they could be forced to pay fines, recall vehicles, and settle lawsuits. This creates a large liability for GM because they manufacture vehicles in very large numbers so the risk is magnified greatly.

General Motors has several risks that stem from legal issues. One of which would be the risk of recalls. If GM produces cars that are not up to certain standards that are placed upon them they may have to recall vehicles to fix these issues. Recalls create a large liability for the company if they do not produce cars up to these standards. There is a large cost in recalling vehicles to fix issues that arise.

Recently, GM faced a recall due to faulty ignition switches in many of their vehicles. The ignition switches would unexpectedly switch to the off position, which would disable the cars brakes and power steering, resulting in cars not being able to stop or steer clear of causing an accident. GM was force to recall 2.6 million vehicles to solve the ignition switch problem (Hays & Krisher, 2015).

As a result of the faulty ignition switches, GM also faced many other legal issues. The faulty ignition switches caused 124 deaths and was one of the deadliest automobile recalls in history (Isidore, Death toll for GM ignition switch: 124, 2015). As a result of these deaths, GM faced many lawsuits for the role that it played.

GM knew of the faulty ignition switches a decade before they actually recalled any vehicles. GM paid out $594.5 million to families affected by the ignition switch malfunctions. Additionally, GM has paid a $900 million criminal fine for hiding the problem from safety regulators (Isidore, Death toll for GM ignition switch: 124, 2015).

The faulty ignition switch created a massive liability for GM. GM payed a large amount of money in fines and settlements, in addition to the cost of the recall. GM wasn't just affected monetarily by the scandal; it was affected by a public relations standpoint as well.

GM was in the midst of recovering from the bankruptcy and was trying to reestablish the brand when the ignition scandal came to light. GM hid the faulty ignition switches from regulators and people lost their lives because of it. This was very detrimental to GM because consumers were losing confidence in the company. They put profits ahead of the lives of people and that is extremely detrimental to the brand.

Week after week, General Motors had to deal with a seemingly unending number of new lawsuits related to their faulty ignition switches. This was a constant reminder to the public of what GM had done. The company consistently had to defend itself in the public eye and try to minimize the effects of the scandal. The scandal definitely set GM back and they are still working to recover their image.

GM isn't insulated from similar instances in the future. There could be legal issues that arise that could significantly impact business. As with any large manufacture they are at an increased risk of having to recall products, especially when you consider the nature of the product they sell. Recalls and other legal issues can affect profitability in the future for GM because of the large cost that can be associated with them.

The automobile industry faces many regulations from governmental bodies across many different countries. They are tasked with creating automobiles that are safe for consumers and that are safe for the environment. These regulations are put in place to ensure that automobiles are produced to achieve these standards. These regulations create additional costs and present

risks to GM. Failing to reach these standards can have negative consequences that will even further reduce profitability.

GM is in an incredibly competitive industry and there are many challenges with that. Cars are becoming much more advanced pieces of technology and the cost to create them is continually rising. Not only is GM going to have to innovate to create cars that have better technology than its competitors it also has to do so while meeting regulation standards. The cost to create these technologies alone is substantial, but when they also have to meet regulation standards the costs can be far greater. For example, the cost to create an autonomous car that is safe will be very costly. The regulation that will be place on these vehicles will add another substantial cost to the already expensive technology.

With the nature of the product that GM sells it is expected that there will be regulations. In 2016, forty thousand people were killed in automobile crashes (Korosec, 2017). Regulators are tasked with implementing laws that create safer vehicles for consumers. There is a lot of risk getting behind the wheel of car and making it as safe as possible is the goal. This creates a financial burden on companies like GM because they must extensively test and make their vehicles safer for consumers. The safety of cars is one of the biggest regulatory hurdles that automobile manufactures face.

Another regulatory hurdle for GM is the emission standard that the EPA has placed on automobile manufactures. They required that automobile manufactures meet a 34 mile per gallon mandate by 2016. By 2025, automobiles have to reach 54.5 mpg. If the standard is not met, auto companies will be fined $5.50 for each tenth of a mile-per-gallon that their average fuel economy falls short of the standard multiplied by the number of vehicles that missed meeting the required standard (EPA Moves the Goalposts on its Fuel Economy Mandate, 2016).

The costs to reach these standards are substantial. GM has to spend large amounts of money on technological advances in order to adhere to the regulations. GM anticipates that to comply with these standards, they will have to increase the production and sale of its hybrid vehicles and increase the fuel capability of the internal combustion engine (General Motors Corporation, 2017). There is no assurance that consumers will buy these vehicles or that GM can sell the amount required to adhere to the EPA standards.

The risk of not being able to create vehicles up to these standards poses a large problem to GM. They may not be able to create a car that meets these fuel efficiency standards that people want to buy. They could be forced to sell the vehicles at a price that isn't profitable just to boost the amount of fuel efficient cars they have sold. They are subject to meeting these standards or facing fines that will cost them if they don't. Additionally, because GM may be forced to sell many more hybrid vehicles they could be forced to sell less SUV's and trucks. SUV's and Trucks perform much worse in terms of gas mileage compared to hybrids and electric vehicles. This is a problem for GM because SUV's and trucks are the most profitable type of vehicles for GM. Forcing them to sell cars with smaller profit margins will adversely affect GM's profitability.

If GM could easily create a car that was environmentally friendly and very profitable, they would do that. Regulation forces them to create a car that they might not be able to sell efficiently to create a profit. The EPA standards are making them focus more time and money on product lines that aren't as profitable. Investing large amounts of money into less profitable products could pose many profitability risks.

Additionally, there are many macroeconomic factors that drive the type of car that consumers purchase. When oil prices are low more people buy SUV's and Trucks. They are also

more likely to buy those types of vehicles when interest rates are low because they are more expensive. GM can't control the demand for certain product types. If people don't want to purchase these cars then GM will not be able to adhere to the emission standards.

With the increased awareness of global warming and climate change there could be even stricter regulations placed on automobile manufacturers in the future. It is likely that regulations will continue to evolve as technologies enhance. Once established emissions standards are reached it is probable that new ones will be created. It is a problem that will likely be around for GM for a while.

The legal and regulatory framework for the automobile industry is constantly changing. It is hard for GM to anticipate the costs that they will face because of future regulation. They can't plan for regulations that will come in the future. This uncertainty can create a risk for GM because of unanticipated costs that could arise. Regulation is the automobile industry will be increased as new technology is developed.

Regulation in the auto industry is a significant risk to the profitability of automobile manufactures like GM. They are forced to create products that aren't as profitable and to try to create demand where there currently isn't. Regulation creates some inefficiency in GM and drives up the cost of them doing business. Being able to anticipate future regulation is very challenging especially as the technology for vehicles is continually changing. The ability to meet regulatory requirements and produce vehicles that consumers want to buy is a tremendous challenge for GM. Not being able to do so will adversely affect its business.

Possible Negative Company Developments

General Motors Company itself is not without risks. GM may face significant threats in the future which may be unforeseen and unpredictable. These complications may adversely

affect the company's business operations and cause a decline in the company overall financial position.

General Motors must work to improve product reliability. Recalls of company products damage consumer confidence in the company and increase the chances of the company having to pay fines. In 2014, GM recalled more vehicles than it has sold since it filed for bankruptcy (O'Brien, 2015). The company made up three fourths of the entire amount of recalls made across the industry in 2014. The total recall number for 2014 was a staggering 30.4 million. This accounted for a $4.1 billion total cost for the recalls in 2014. Of the $4.1 billion, a decline in operating profits to the sum of $6.5 million was realized (Isidore, GM's Total Recall Cost: $4.1 Billion, 2015).

The massive amounts of recalls did not end in 2014, as the company continued to recall vehicles by the millions in both 2015 and 2016. The reasons for the recalls can undermine product safety and lead to injury and death. If the company cannot decrease the amount of recalls, purchases may decline and investor confidence may dwindle.

One of General Motors Company's growth strategy is to capture market share in emerging markets. The biggest emerging market which GM is operating in is currently China. In order to operate in China, GM has formed joint ventures with Chinese companies (General Motors Corporation, 2017). GM does not solely own its operations in China and must maintain adequate relationships with its co-owners. With maintaining the proper relationships, GM may have to compromise on some plans which may be best for themselves and instead move forward with plans which benefit all of the co-owners equally.

Joint ventures are owned by two or more separate companies. Because the joint venture is owned by multiple parties, it may take longer for decisions to be made. This can slow the growth

and efficiency of the joint venture overall making it more vulnerable to pressures from outside competition.

General Motors' operations in China are under constant danger from its competitors. Other large auto manufacturers are trying to gain market share in the Chinese market as well as smaller, domestic automakers. This aggressive competition may lead to GM either being forced to reduce price levels or risk losing market share (General Motors Corporation, 2017). With China being such a big part of GM's global growth strategy, losing market share may not be a viable option. The company may seek to lower its profit margins in China in order to beat out its competition (General Motors Corporation, 2017). However, there is no telling if lowering target profit margins will work to drive out competition.

Success of General Motors is dependent on vehicle sales, especially those vehicles with the largest profit margin. Current consumer preferences are to purchase the vehicles with the highest profit margin for the company. This could change in the future and is dependent on several factors, including the price of oil and the state of the economy (General Motors Corporation, 2017). If consumer preferences do change to less profitable products, General Motors will need to seek out ways to increase revenue and profit margins for the newly, more desirable products.

General Motors has a diversified product line ranging from compact cars to full-size pick-up trucks and vans as well as cross-overs and SUVs. In order to combat possible changes in consumer preferences, the company must maintain adequate investments in its diversified product lines. Investing too heavily in the currently sought after product could pose potential difficulties in the future.

In addition to maintaining sales of high profit margin vehicles, GM must be able to maintain adequate sales levels overall. In 2016, GM gained market share but it also had a decline in sales. This was the first decline in sales since 2009. The total amount of decline in 2016 was 1.3% (Bunkley, 2017). General Motors must constantly match their products to changing consumer tastes or risk becoming stagnant.

GM's defined benefit pension plan is complex and requires monitoring. The plan is currently underfunded. The funding requirements could increase significantly in the future. This is dependent on laws, interest rates, and the overall performance of the financial markets (General Motors Corporation, 2017). General Motors may need to start contributing more to the pension plan which could eat away at company profits.

The suppliers of General Motors are crucial to the company operating optimally. The company uses a "just-in-time" manufacturing process (General Motors Corporation, 2017). This makes it so the company does not carry excess inventory. While this is generally a good thing, it could pose a potential risk.

If one or more of General Motors' suppliers fails to get the goods the company needs, production may suffer. In a recent example, one of GM's only supplier for certain parts, Clark-Cutler-McDermott Co., filed for bankruptcy in 2016. General Motors was able to avoid any disruption this time by getting out of its contracts with the failing supplier and finding a substitute (Burden, 2016). If the company was unable to find a different supplier, production could have stopped for a lengthy period of time throughout all of General Motors' production facilities in North America. This could have hurt the company's earnings and made the company less appealing to investors.

General Motors may divest or restructure some of its product lines and brands in the future. One example of this, which may happen in the near future, is GM selling its Opel brand to Peugeot Motors. Opel has not had profits since the 1990's despite GM as a whole doing well in recent years. General Motors has tried to sell Opel in its past problematic years during the recession but was unsuccessful (Ewing, 2017).

There are a few risks which could be associated with this particular deal and similar ones. One risk would be that the deal could fall through just as it did in 2009. If the deal fell through, GM would still be left with the unprofitable brand. The company would waste time, money, and efforts on completing the deal as opposed to putting time into making the brand better. On the other side of this, if the deal does go through, General Motors will no longer be in the European market. While the European automobile market has not been doing so well recently, divesting too heavily can pose significant problems in the future if the market goes on an upswing. General Motors would no longer have a foothold in the market and would either lose out on potential profits or have to try to get back in.

Exiting out of the European market also makes GM more susceptible to problems should one of its other geographical divisions suffer since it would not have it to pick up any slack. As stated before, the European market may not be doing the same sales volumes that it once had, however it is a mature market. With GM's growth plan relying heavily on volatile emerging markets, having another position in a mature market may be beneficial. The European market could serve somewhat of a back-up plan should one of the emerging markets decline.

General Motors depends heavily upon its GM Financial division for financing its customers' needs. In addition to supplying financing for vehicle purchases and leases, GM Financial also offers commercial lending to its dealerships around the globe. The segment is a

part of the financial sector and must adhere to all of the laws, rules and regulation of that sector. Future changes in these laws, rules, or regulations could be problematic for GM Financial and make it more difficult to provide the financing needed to maintain adequate sales volumes for General Motors overall. Failure to comply with the rules could result in penalties and fines for the company (General Motors Corporation, 2017).

In addition to stricter requirements to adhere to, GM Financial must also maintain adequate performance of its loan portfolio. This can be obtained by sound underwriting of its loan products and services. Too many defaults or delinquencies may adversely affect not only the GM Financial division, but General Motors Company as well (General Motors Corporation, 2017).

General Motors faces many risks and threats. These can be unpredictable which make them difficult to account for. It is crucial for the company to correct certain actions which present known risks such as recalls related to product reliability. General Motors is seeking a global growth strategy which puts the company at risk of adverse international economic events. GM must maintain adequate relationships with its suppliers and make sure not to rely too much upon one supplier alone. The company has a financial division which is subject to all the laws and regulations of the financial sector. It is imperative that the company maintain in compliance to avoid paying fines. Although all future risks cannot be predicted, it is necessary for General Motors to strive to try to mitigate the amount of risk the company is taking on and correcting any past actions which have proven harmful.

Possible Risks in the Forecast

Risks can also develop from the inability to forecast information correctly. If forecasts in the economy or in inflation and interest rates is incorrect, this could cause the forecast to be

inaccurate, which will affect the valuation of GM. With sales in the car industry being dependent on the economy and other macroeconomic factors, the ability to forecast correctly is even more important.

The growth of the automobile industry is dependent on the growth of the economy. When people are doing better and they have more money, they are able to purchase big ticket items like automobiles. During the recession, the automobile industry suffered greatly. GM declared bankruptcy and was forced to accept bailout money from the U.S. government just to stay afloat. A large part of this was because the economy was in really bad shape and GM is dependent on a good economy to help drive sales. GM and other automobile manufacturers are sensitive to shifts in the economy.

If the U.S. economy were to go through another recession GM would suffer financially from that. If the forecast doesn't accurately predict a downturn in the economy then the forecast will be inaccurate. It is impossible to predict which way the economy is going to go so the forecast can only be so accurate. Assumptions have to be made about the overall state of the economy in order to forecast the performance of GM. This creates the possibility of errors in the forecast.

If GM isn't able to accurately predict the direction of the economy they could face troubles in the future. The U.S. automobile market has risen by 68 percent since 2009 and sales are expected to be flat through 2020 (Drezner, 2017). If the forecast for sales on Automobiles is correct it is important the GM runs the business accordingly. For instance, it wouldn't be the best idea to invest heavily in new manufacturing plants at a time that sales are projected to flatten. It would be important for GM to control cost when demand isn't as high.

The automobile industry is cyclical so the recent success that has been experienced is likely to end at some point. Knowing when to deploy capital and when not to deploy capital is an important part of profitability. Spending money on plants and manufacturing will see more benefit when demand is increasing. GM will do much better financially if it is able to accurately gage the market for any downturns in demand.

The profitability of GM is somewhat dictated by the overall economy. If the economy is in poor shape, less people will buy cars. The part that GM can control is how it manages its capital expenditures and limits the amount of debt that it takes on. Being able to weather a downturn in the market will be important to GM. Because of the bankruptcy, it is important that GM establishes more disciplined spending habits to ensure they are financially able to weather a poor economy.

Another risk in the forecasting ability of GM is interest rates. One of the reasons that there is expected to be flat sales for automobiles is because interest rates are expected to rise. The Fed is forecasting three rate hikes in 2017 (Torry, 2016). The prospect of future rate hikes is likely to curtail sales in automobiles to some degree. As borrowing becomes more expensive people are less likely to purchase automobiles.

Additionally, consumers may be less inclined to purchase trucks and SUV's because they tend to be more expensive than cars and hybrid vehicles. A shift in the type of vehicles that are sold will affect profitability. SUV's and trucks have much higher profit margins, so a shift away from these vehicles will affect the bottom line of GM. A rising interest rate environment could affect the sales of GM.

If interest rates don't behave in the manner expected, it could cause the forecast to not be correct. Because interest rates play a large role in the sales of automobiles it is important they be

forecasted accurately. The Fed has been cautious about raising rates so if something keeps them from doing so sales could be better than expected. Previously, they have been slow to raise rates because of uncertainty in the global economy. Most recently they have kept rates where they are because of uncertainty with the policy that Trump would enact. There could be other unforeseen factor that keeps the Fed from raising rates which will impact the forecast.

Inflation could also play a role in the accuracy of the forecast. If inflation is not what it is expected to be, that could cause the forecast to skew one way or another. If inflation is higher than what is forecasted it will result in a lower purchasing power and a lower inflation adjusted return. If inflation is less than what is forecasted it will result in a greater purchasing power and a higher inflation adjusted return.

All of these macroeconomic trends tie together. The economy could experience a slowdown, which could keep interest rates at current levels and inflation could be less than expected. If interest rates aren't raised in a timely manner, that could cause inflation to grow faster than anticipated. An incorrect prediction in one of these factors could also cause our forecast to be incorrect on the others.

Correctly predicting and hedging against foreign currency exchange risk is important to GM's profitability also. At December 31, 2016 GM's most significant foreign currency exposures were the Euro/British Pound, U.S. Dollar/Canadian Dollar, Euro/U.S. Dollar, U.S. Dollar/Mexican Peso, Euro/South Korean Won and U.S. Dollar/South Korean Won (General Motors Corporation, 2017). Because GM operates in many different countries managing foreign exchange risk will be important to them. Fluctuations in foreign currency exchange rates can therefore create volatility in the results of operations and may adversely affect our financial condition (General Motors Corporation, 2017).

Another potential risk in the forecast could be the overall accuracy of the forecast. If there is a miscalculation, that could affect the output. Making an error in one calculation could have repercussions on several other calculations that are based off of that. Making sure the forecast is accurate will be important to ensure that the valuation is not thrown off by a simple mathematical error.

Reliance on Historical data is another important risk when forecasting GM's financials. GM was forced to file bankruptcy in 2009. The company began trading again in 2010 as a new company. Any historical data that went along with the pre-bankruptcy GM no longer applied to the new company. GM was able to shrink its debt from over 60 billion dollars to about 17 billion dollars as a result of filing chapter 11 bankruptcy (Welch, 2009).

GM was essentially a new company in 2010 and was able to shed a large portion of the bad debt that they had on the books. This allowed them to achieve a level of efficiency that they never would have been able to do otherwise. GM was fundamentally changed from a financial prospective and was also able to shed many poor performing business units.

The ability to forecast GM's financials accurately could be hindered by the lack of historical data. There is no financial data prior to 2008. Without having 10 years of historical data there is a chance that the forecast could be inaccurate. Having limited financial data could make the data that is available an aberration. If the recent historical data doesn't reflect accurate trends in the company, that will have a major impact on the forecast.

Additionally, when comparing GM to its peers in the industry it might paint a better picture for GM than what is really accurate. GM was able to shed most of the bad debt that they had as a result of the bankruptcy. Other automobile manufactures like Ford had to endure the recession and continue to fulfil their debt obligations. When comparing GM with other auto

manufactures it is possible that the forecast will look better for GM without being able to include numbers from before 2008.

GM also was subject to paying back money from the bailout so its profitability in the few years after the bailout is not going to be an accurate representation of how well GM performed. They were operating under strict government oversight and were not taking on as much debt to ensure the ability to pay back the bailout money. In essence GM wasn't operating at maximum capacity because it was encumbered by the debt obligation of the U.S. government.

GM did not even begin paying a dividend until after it had paid back all of the bailout money. The length of dividend history is even shorter than the rest of the financial data. There are going to be limitation with the accuracy of the data because there just isn't as much available. The data that is available may be skewed because of how GM conducted business after the bailout. They shied away from taking on debt and were focusing on paying back the government. They were not operating as they would under normal circumstances which could cause inaccuracies in the data that is available.

With the limitations to the amount and the quality of the historical data for GM, there could be issues with the reliability of the forecast. This could in turn affect the accuracy of the calculations that are used to value GM. It will be important to ensure that our forecasts align correctly with expectations for GM because there is the possibility of them being skewed.

Sensitivity Analysis

Several assumptions were used throughout the valuation of General Motors. Each assumption had an effect on the overall value obtained for the company. For this reason, it is necessary to look at the impact of the assumptions may have on the valuation. High and low

assumptions are given in the following table to show the impact each assumption may have on the valuation:

Sensitivity Analysis			
Assumptions			
Variable	Initial	Low	High
Beta	1.40	1	1.8
Risk-Free Rate	4.61%	3.61%	5.61%
Market Return	10.53%	7.53%	12.53%
FCF Term. Growth	8.50%	7%	10%
DDM Term Growth	8.31%	6.00%	10.00%
Cost of Debt	4.52%	3%	6%
Tax Rate	13.62%	10%	17%

The stock price produced by the dividend discount model is affected by the beta, risk-free rate, market return, and the DDM term growth as depicted in the following table:

Sensitivity Analysis			
DDM Valuation			
Variable	Initial	Low	High
Beta	$36.92	$75.76	$24.23
Risk-Free Rate	$36.92	$33.97	$40.41
Market Return	$36.92	$448.24	$22.93
FCF Term. Growth	$36.92	$36.92	$36.92
DDM Term Growth	$36.92	$24.53	$58.65
Cost of Debt	$36.92	$36.92	$36.92
Tax Rate	$36.92	$36.92	$36.92

The variable which has the largest impact is the market return. The lower the market return, the higher the stock price produced by the dividend discount model. Consequently, the higher the

market return, the lower the stock price produced. The free cash flow terminal growth rate, cost of debt and the tax rate did not affect this sensitivity analysis.

The free cash flow model is affect by all of the variables aside from the DDM terminal growth rate as show in the following table:

Sensitivity Analysis			
FCF Valuation			
Variable	Initial	Low	High
Beta	$31.43	$562.84	$10.02
Risk-Free Rate	$31.43	$25.46	$39.55
Market Return	$31.43	-$80.25	$8.35
FCF Term. Growth	$31.43	$11.12	$247.51
DDM Term Growth	$31.43	$31.43	$31.43
Cost of Debt	$31.43	$42.98	$24.04
Tax Rate	$31.43	$43.44	$19.68

The FCF model being affect by almost all of the variables is expected as it is one of the most in-depth models used in the valuation. A lower beta gave quite a swing giving it the stock a high value. A high market return actually resulted in the stock price being negative.

The residual income model is affect only by the beta, risk-free rate, and the market return as show in the next table:

Sensitivity Analysis			
RI Valuation			
Variable	Initial	Low	High
Beta	$34.49	$41.07	$29.06
Risk-Free Rate	$34.49	$33.51	$35.50
Market Return	$34.49	$47.39	$28.28
FCF Term. Growth	$34.49	$34.49	$34.49
DDM Term Growth	$34.49	$34.49	$34.49
Cost of Debt	$34.49	$34.49	$34.49
Tax Rate	$34.49	$34.49	$34.49

This sensitivity analysis does not have as wild of swings as did the DDM and FCF sensitivity analyses. Again, the lower market return resulted in the highest produced stock price as well as the highest market return resulting in the lowest price.

The multiples model's sensitivity analysis was affected by the same variables as the RI model; the beta, risk-free rate, and the market return as show by the following table:

Sensitivity Analysis			
Multiples Valuation			
Variable	Initial	Low	High
Beta	$38.83	$39.65	$38.92
Risk-Free Rate	$38.83	$38.69	$38.96
Market Return	$38.83	$40.33	$37.89
FCF Term. Growth	$38.83	$38.83	$38.83
DDM Term Growth	$38.83	$38.83	$38.83
Cost of Debt	$38.83	$38.83	$38.83
Tax Rate	$38.83	$38.83	$38.83

This model had the mildest swings in stock price. The highest stock price given was when a lower market return was used as with the other models. However, the stock price only deviated slightly from the model's valuation compared to the others'.

Overall, the dividend discount model and free cash flow model were affected the most when performing the sensitivity analysis. This factored in the on the decision of later on using lower weights for these models when coming up with a final stock price. The residual income model and multiples model seemed to deviate less from the models produced value and were deemed more suitable models to be used for the valuation of General Motors.

Valuation

CAPM

The Capital Asset Pricing Model (CAPM) is an economic theory that describes the relationship between risk and expected return, and serves as a model for the pricing of risky securities (Capital asset pricing model (CAPM)). CAPM seeks to measure the systematic or market risk that a company faces. The CAPM rate will yield a required return on a stock or portfolio that an investor would require in order for the level of risk that they are assuming.

The equation for the CAPM is as follows:

$$R= Rf + ß(Rm - Rf)$$

Where:

- Rf = Risk Free Rate
- ß = Beta
- Rm = Return of the market

In other words, the required return is equal to the risk-free rate, plus beta times the risk premium. The risk premium is the return of the market minus the risk-free rate. The risk-free rate is the rate of an investment that doesn't carry any risk.

Market risk is the risk that captures the entire market. This is affected primarily by interest rates and inflation. Major market events like recessions paint a good picture of the effect of systematic risk. A collapse in the market can't be avoided through diversification and so each company is susceptible to some level of market risk.

The level of market risk that a company takes on can be measured by beta. Beta is the measure of volatility compared to the market as a whole. A company with a beta of one implies that the company moves with the market. A beta of greater than one implies that the company

moves more than the market. A beta of less than one indicates a company moves less than the market. Beta is important to the CAPM model because it is the measure used to gauge the risk the company is in relation to the market.

General Motors was found to have a beta of about 1.4. This implies that GM will be 40% more volatile than the market. This makes sense when you consider that GM does better when the economy does better. Automobiles are expensive and GM sells more when the economy is in good shape. This means that an investor is going to require a greater return than the market as a whole to justify the extra risk associated with purchasing GM shares.

Beta was found by using the slope function in excel and plugging in the excess returns for GM as the y coordinates and the excess returns of the S&P 500 for the x coordinates. The excess return is simply the return that is greater than a 3-month treasury bill. GM only has financial data going back until December of 2011. So, the time period used to measure beta was from December 2011 until December 2016.

Morningstar has GM's beta at 1.65 (Morningstar). Our beta is less than the beta that Morningstar came up with. This would signify that GM may be even more volatile relative to the market than our beta would suggest. This can be calculated over many different time periods so beta can differ from analyst to analyst.

The risk-free rate is the rate of an investment that doesn't carry any risk. Generally, a version of a U.S. treasury is used for this rate. A U.S. treasury is considered one of the safest investments in the world so it will work well for the risk-free rate. For the purposes of calculating CAPM, a 20-year average return of a 20-year treasury was used. The average of a 20-year treasury is 4.61%

The return of the market is simply the return of the market as a whole. This can be measured by the return of an index. Generally, the S&P 500 index is used to capture the return of the market. However, if a company is tracked by another index like the NASDAQ, that index can be used as well. General Motors is tracked by the S&P 500 so that is the index used to calculate the return of the market. The return of the market was found to be 10.53%. The return for the market was found over the same time period that GM had financial data, which was December 2011 until December 2016. This kept the time period that we used for the beat and the return of the market consistent.

We can now calculate our beta by plugging in the inputs into our formula as follows:

$$R = 0.0461 + (0.1053-0.0461)1.3956$$

$$R = 12.88\%$$

This means that in order for an investor to be willing to purchase GM they must earn at least a 12.88% return in order for the investment to be worth the risk. This calculation will be the basis for the rate that the DDM model and the RI models are discounted at.

Discounted Dividend Valuation

The Dividend Discount Model (DDM) is a model of intrinsic value that views the value of an asset as the present value of the stocks expected future dividends (Pinto, Henry, Robinson, & Stowe, 2015). The Dividend Discount Model has a couple different variations that can be used for valuation purposes. There is the Gordon Growth Model and the multistage dividend discount models. The multistage discount models can be broken out further into the two-stage dividend discount model, the three-stage dividend discount model and the H-model.

The Gordon Growth Model is a very important and often used model in security valuation. This model assumes that dividends grow at a constant growth rate. This model is most

appropriate for a company that is in the mature stage of growth because they typically have consistent dividend payments. The equation for the Gordon Growth Model is as follows:

$$V_0 = \frac{D_0(1+g)}{r-g} \text{ or } V_0 = \frac{D_1}{r-g}$$

Where:

- g = Constant growth rate for dividends
- D_1 = Dividend next period
- r = required return on common equity

This model assumes that r > g otherwise the model will not work. Additionally, the Gordon Growth Model is sensitive to the inputs for the required return on common equity and the constant growth rate. A slight change in either can have a large impact on stock price.

The second model is the multistage discount model. There are two common adaptions to this model the two-stage model and the H-model. The two-stage model assumes that a company has a period of greater than normal growth and then has a period of normal growth as the company matures. The equation for the general two-stage model is as follows:

$$V_0 = \sum_{t=1}^{n} \frac{D_0\left(1+g_S\right)^t}{\left(1+r\right)^t} + \frac{D_0 \times \left(1+g_S\right)^n \times \left(1+g_L\right)}{\left(1+r\right)^n \times \left(r-g_L\right)}$$

Where:

- D_0 = Dividend in time 0
- g_s = Short term growth rate
- g_L = Long term growth rate
- r = required return on common equity

The two-stage model is used because often companies have periods of higher growth and then as they mature they have more constant growth. Forecasting dividends with non-constant growth rates can give a more accurate representation for companies that have experienced abnormal growth for a period of time. This model can be used for companies that are in the growth or the transition phase because they will likely have larger growth rates followed by a more stable growth rate.

The H-Model assumes a high rate of growth at the beginning of the period and declines gradually to a constant normal growth rate. This model is appropriate for a company that is experiencing large growth in the beginning and growth levels off over time. The equation for the H-model is as follows:

$$V_0 = \frac{\left[D_0 \times (1+g_L)\right] + \left[D_0 \times H(g_S - g_L)\right]}{r - g_L}$$

Where:

- D_0 = Dividend in time 0
- H = half-life (in years) of high-growth period
- g_s = Short term growth rate
- g_L = Long term growth rate
- r = required return on common equity

The limitations in this model are that the company may have a longer period of large growth than what is forecasted or when there are large differences between the short and long-term growth rates the model will be off.

The DDM model that is most appropriate for valuing GM is the Gordon Growth Model. This is because GM is in the mature phase of growth cycle and it has a relatively constant growth

rate. The growth rate that was chosen was 8.31%. This growth rate is equal to our CAGR for all years of historical and forecasted dividends. This growth rate was chosen because GM has only recently started to pay a dividend again and they were cautious when doing so. GM has the capacity to increase dividend payments and they should continue with their trend of a growing dividend payment. Especially, when you consider that the reduction of regulation that is forecasted should have a positive effect on the economy as a whole. As GM's beta suggests when the economy does better so do they.

A constant growth rate was used because GM has the capacity to pay a higher dividend as retained earnings continues to grow substantially even with large capital expenditures in recent years. Additionally, the economy should continue to do well, which should be good for GM. Choosing an appropriate growth rate has its challenges because of the limited dividend history and the newly restricted GM is a much more efficient company. Additionally, when the growth in China is factored in that leads to more positive signs of growth. Even if the U.S. economy were to slow some the growth in China should make up for that and some.

GM can sustain a constant growth rate because they restructured the company and have growth opportunities in several different countries. The impact that China will have on the growth of GM can't be understated. That market will likely become bigger than the U.S. and GM is well positioned to capture a large share of that. China is already GM's largest market in terms of retail sales (Isidore, GM sells 10 million cars for first time thanks to China, 2015).

In order to use the DDM model dividends must be forecasted. To find D_1 the forecast function was used in excel. Are known x's were the years 2014 through 2016 and our known y's are the historical dividend prices for each of those years. Our x is 2017. Using these inputs the value in D_1 is 1.68.

The discount rate that is used to calculate our share price through the DDM model is our capital asset pricing model (CAPM) rate. CAPM seeks to find the required return on an investment for the amount of risk an investor is taking above the risk-free rate. Essentially, CAPM seeks to measure the systematic risk of a stock or portfolio. Systematic risk is the market risk that each stock is susceptible to, that can't be diversified away. The discount rate that was used is 12.88%. The 12.88% represents the return that would satisfy an investor for taking on an investment with this level of risk. For the investment to make sense the investor must earn at least 12.88%.

Using the Gordon Growth Model, we can calculate the intrinsic stock price of GM as follows:

$$V_0 = \frac{1.68667}{0.1288\text{-}0.831}$$

$$V_0 = \$36.92$$

The stock price of General Motors using the DDM model is $36.92. This is currently higher than the actual stock price of GM which is trading at $34.16 at the time of this writing. This would imply that GM is undervalued and an investor should purchase GM shares. However, because of the limitations to the model's application to GM it likely will not have as high of weight in the overall valuation of GM.

Choosing an appropriate growth rate for GM has its difficulties. GM only recently began paying a dividend again after they finished paying the bailout money back to the government. This led GM to only have a three-year dividend history. There are limitations in the accuracy of our forecast as there isn't enough historical data to feel confident in the projection of future dividends. The 8.31% growth rate falls closely to the geometric mean of dividends in year D_1

through D_{10} which is 7.71%. Using a growth rate that only includes forecasted dividends seems incomplete because of the potential inaccuracy of the forecast. Using a complete dividend history seems like a more accurate representation because with only three years of dividend history it is much harder to project growth.

With the limitations in the dividend history the DDM model likely isn't going to be as helpful as other models in the valuation of GM. The model relies on the ability to forecast dividends and the assumptions around the growth rate. A three-year dividend history is just not long enough for a reliable forecast of future dividends. This leads to weaknesses in the model for the valuation of GM. Without being able to confidently project dividend growth it is likely that the model may have some inaccuracies. For these reasons the DDM model will likely not have as large of an impact as other models on the valuation of GM.

The Gordon Growth Model is very sensitive in regards to the growth rate. A small change in the growth rate can have a big impact on the value of the stock. With the dividend history being very short, the growth rate is hard to project. The valuation of the stock using this model is very dependent on having an accurate growth rate. Without an accurate growth rate the model will not be effective in the valuation of GM.

The DDM model is a good model for finding the intrinsic value of a company. There are several different variations of the model that can be applied to different situations. The multi-stage models can be used for companies that are not in the mature phase of the growth cycle. These companies will likely have varying growth rates throughout different periods. The Gordon Growth model can be used for companies in the mature stage of the growth cycle that pay consistent dividends. If accurate assumptions are made the DDM model will do a very good job of finding intrinsic value of the stock.

Free Cash Flow Valuation

Discounted cash flow valuation (DCF) attempts to find the intrinsic value of a company as the present value of its expected future cash flows. This model differs from the dividend discount model in that its free cash flows are the cash flows which are available to be given to shareholders whereas the dividends are the cash flows which are actually paid to shareholders. The DCF model is used favorably when a firm does not pay dividends or the dividends it does pay are significantly different from the company's actual ability to pay dividends. The DCF model also uses information which is not readily available. One of these pieces of information is the free cash flow to the firm (Pinto, Henry, Robinson, & Stowe, 2015).

When using the free cash flow model, the first step is to find the free cash flow in time period zero, which is 2016 for this valuation. The equation for finding free cash flow of time period zero is as followed:

$$FCF_0 = EBIT\ (1\text{-}Tax) - (\Delta NOWC + \Delta CapEx)$$

For GM, it was necessary to go a little deeper into the change in net operating working capital (NOWC) and capital expenditures (CapEx). Using only 2015 and 2016 data, FCF_0 was far too negative and affected the overall usefulness of the model. Instead, it was obligatory to go back to 2009 and find the change in NOWC and CapEx for each year up to 2016 then take an average of each. The average NOWC was calculated to be -269.2 and the average CapEx was calculated to be 7379.9. The same inputs for current assets and current liabilities were used in finding NOWC for all years. The following table outlines the information used in finding NOWC and CapEx for 2015 and 2016. However, as noted before, an average going back to 2009 was used when calculating year zero's free cash flow.

NOWC	2015	2016

Calculations		
CA		
Receivables	26388	31703
Inventories	13764	13788
Total	40152	45491
CL		
Accounts payable	24062	26961
Accrued liabilities	25615	26437
Total	49677	53398
NOWC	-9525	-7907
Net Fixed Assets	51401	70346
CapEx		18945

With the average NOWC (-269.2) and CapEx (7379.9) plugged into the formula along with EBIT (9545) and the tax rate (13.62), GM's FCF_0 was found to be $1133.90.

The value of operations was found using a constant growth rate. Constant growth rate was chosen over a nonconstant growth rate because using the nonconstant model forced the stock value to be negative by a large amount. The constant growth rate which was used was 8.5%. This is similar to what rate was found when using the dividend discount model. In finding the value of operations, it is necessary to find GM's weighted average cost of capital (WACC).

WACC is found by using the following formula:

$$\text{WACC} = \frac{\text{MVD}}{\text{MVD} + \text{MVCE}} r_d(1 - \text{Tax rate}) + \frac{\text{MVCE}}{\text{MVD} + \text{MVCE}} r_e$$

Where:

- MVD = Current market value of debt
- MVCE = Current market value of common equity
- r_d = Before tax cost of debt
- r_e = Cost of equity

GM's market value of common equity is $48,743.62. This is found by multiplying the price of the stock by the shares outstanding and is demonstrated by the following table:

Market Value of Common Equity	
Price of stock	$32.54
Shares outstanding	1497.96
Market value	**$48743.62**

General Motors' market value of debt is found by summing the market value of its bonds and its other debt. The sum of the market value of GM's bonds is $9597.20 and the value of GM's other debt is $9920.00. The sum of these two figures gives the market value of debt as show next:

Bond	MV
General Mtrs 6.25%	$1,674.00
General Mtrs 4.875%	$1,599.01
General Mtrs 3.5%	$1,521.16
General Mtrs 6.6%	$1,440.00
General Mtrs 5.2%	$1,240.00
General Mtrs 6.75%	$888.00
General Mtrs 5%	$741.00
General Mtrs 4%	$493.50
General Mtrs 144A 3.5%	$0.51
General Mtrs 144A 4.875%	$0.02
General Mtrs 144A 6.25%	$0.00
Other Debt	$9,920.00
Market Value of Debt	$19,517.20

The weighted value of debt is equal to the market value of the debt divided by itself plus the market value of equity. The weighted value of equity is equal to the market value of equity divided by itself plus the market value of debt. The sum of both the market value of debt and equity should equal 100%. For General Motors, the weighted value of debt is 28.59% and the weighted value of equity is 71.41%.

The cost of debt (r_d) is found from summing the weighted yield to maturities for the company's bonds. In order to find the cost of debt, the weights for the market value of each bond must first be found. This is done by dividing the market value of each individual bond by the sum of all of the bonds. These weights are then multiplied by the corresponding bond's yield to maturity. The weighted yield to maturities are then added together to find the cost of debt which was calculated to be 4.52%. The following table shows the numbers used and found for each variable:

Bond	MV	Weight	YTM %	Weighted YTM
General Mtrs 6.25%	$1,674.00	17.44%	5.42%	0.95%
General Mtrs 4.875%	$1,599.01	16.66%	3.72%	0.62%
General Mtrs 3.5%	$1,521.16	15.85%	2.30%	0.36%
General Mtrs 6.6%	$1,440.00	15.00%	5.32%	0.80%
General Mtrs 5.2%	$1,240.00	12.92%	5.25%	0.68%
General Mtrs 6.75%	$888.00	9.25%	5.48%	0.51%
General Mtrs 5%	$741.00	7.72%	5.10%	0.39%
General Mtrs 4%	$493.50	5.14%	4.18%	0.21%
General Mtrs 144A 3.5%	$0.51	0.01%	3.50%	0.00%
General Mtrs 144A 4.875%	$0.02	0.00%	4.88%	0.00%
General Mtrs 144A 6.25%	$0.00	0.00%	6.25%	0.00%
Cost of Debt				**4.52%**

The cost of equity (r_e) is equal to CAPM which is 12.88%. General Motors tax rate is averaged out to be 13.62%. These are all the variables needed to find WACC for General Motors. Once each value is plugged into the equation, GM's WACC is found to be 10.31%.

Now that GM's free cash flow for period zero (FCF_0), weighted average cost of capital (WACC), and constant growth rate (g) are known, the value of operations (V_{op}) can be calculated with the following equation:

$$V_{op} = \frac{FCF0\ (1 + g)}{(WACC - g)}$$

When this equation is applied to GM's numbers, the company's value of operations is found to be $67,922.76.

The next step in the free cash flow model is to find the company's equity. This is derived from taking the value of operations and adding any non-operating assets, subtracting debt, and subtracting preferred stocks. General Motors does not have any non-operating assets or preferred stocks showing for 2016 so these were left out. From here, the equity is divided by the number of shares outstanding to get the stock value. This is summed up with General Motors' numbers in the following table:

V_{op}	$67922.76
NonOp	-
Less:Debt	$19,517.20
Less:Pref	-
Equity	$48,405.55
Div:Shares	1540
Price	$31.43

General Motors' cash flows vary tremendously from year to year. Because of this reason, we are unsure how fitting this model is for the valuation of the company. If using only 2016

numbers, the stock value for the company is negative by quite a bit. The price is brought positive and to a more normal range compared to other models only when previous years are taken into consideration.

The discounted free cash flow model relies heavily upon forecasted results since it gets its value from future cash flows discounted back to today. This is another reason why we believe this may not be the best model to use in the valuation of General Motors. In order to get accurate forecasts, many years of data should be collected and used. With General Motors, this is just not possible. Financial data for the years prior to the bankruptcy is just simply not available. Pre-bankruptcy years are known as "Old GM" which are not relevant to the General Motors of today. Instead, only financial data going back to 2008 is available, and even using this data causes problem. Because the years of 2008 & 2009 were so volatile for the company, the forecasts actually started with using data from 2010. The lack of financial data able to be used may skew the results of the forecasts and for a model which relies heavily upon this data, this can cause the valuation to be erroneous.

The growth rate which was used is higher than that found from the dividend discount model by nearly a percent and this value is still lower than that found using other models. The average growth rate for free cash flows going back to 2010 is -31.86%. These wild swings lead me to believe the free cash flow model may not be the best when looking to value General Motors.

Residual Income Valuation

The residual income model is a model of stock valuation that views intrinsic value of stock as the sum of book value per share, plus the present value of the sock's expected future residual income per share (Pinto, Henry, Robinson, & Stowe, 2015). The residual income model

seeks to find the intrinsic value of equity. This is done by adding the current book value of equity to the present value of expected future residual income. The residual income model can be derived from the DDM model. Theoretically, the valuation should be equivalent when using the DDM model, FCF, or the residual income model. However, some different assumptions may cause the models to differ.

Like the DDM model the residual income model also has some different variations to it. There is the general residual income model, the single stage residual income model, and the multistage residual income model. The general residual income model can be calculated as follows:

$$V_0 = BV_0 + \sum_{t=1}^{\infty} \frac{RI_t}{(1+r)^t}$$

Where:

- V_0 = value of a share of stock today
- B = current per share book value of equity
- r = required rate of return on equity (CAPM)
- RI_t = expected per share residual income, equal to E_t-rB_{t-1}
- E_t = expected EPS
- B_t = expected per share book value of equity

The single-stage model assumes that a company has a constant return on equity and a constant growth rate. In this model, a company with an ROE than is less than the cost of equity will have a negative residual income. The opposite can be said of an ROE that is greater than the cost of equity. The downside to the single-stage model is that it assumes any ROE above the cost

of equity will continue. A company's ROE will likely level off over time (Pinto, Henry, Robinson, & Stowe, 2015). The equation for the single stage model is as follows:

$$V_0 = B_0 + \frac{\text{ROE} - r}{r - g} B_0$$

The multistage model is used to forecast residual incomes for a time period and then estimating a terminal value at the end of that time period. This model assumes that ROE levels off over time toward the cost of equity with the residual income approaching zero. The longer the forecasted period there is a greater chance that a company's residual income will move toward zero. The equation for the multistage model is as follows:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{E_t - r_E B_{t-1}}{(1 + r_E)^t} + \frac{E_t - r_E B_{T-1}}{(1 + r_E - \omega)(1 + r_E)^{T-1}}$$

Where:

- r_e = required rate of return on equity (CAPM)
- RI_t = expected per share residual income, equal to $E_t - r_E B_{t-1}$
- E_t = expected EPS
- B_t = expected per share book value of equity
- V_0 = value of a share of stock today
- B_0 = current per share book value of equity
- ω = persistence factor

The residual income model has several strengths to it. A strength that is useful for firms that don't pay dividends or for firms without free cash flow. Also, it uses available accounting data so it is fairly easy to calculate relative to some other models. Some weaknesses of the model

are that it assumes that cost of debt equals interest expense. Also, it relies on accounting data so a company may have adjusted some numbers which could affect the valuation.

The first step in calculating residual income is to find the book value. To do this we take the most recent total stockholder equity and divide that by the number of shares. GM has a book value of equity of 43836 (in millions) and they have 1540 shares. By dividing those numbers, we get a beginning book value of 28.46.

Next, EPS and Dividends must be added to the beginning book value to give us an ending book value. The EPS is 5.41 and the dividend is 1.69. Earnings per share were previously forecasted on out income statement. This was done using the forecast function in excel for the years 2010 through 2016. This time period was chosen because GM has a substantially negative EPS in 2008 and a substantially high EPS in 2009. These values were not included because they do not represent GM's EPS under normal circumstances.

Dividends were previously forecasted for the DDM model. These values can be applied to the Residual Income model. Dividends are added to the beginning book value which then is used to come up with the equity charge. Inaccuracies in the forecast of dividends can have an impact on the final stock price for that reason. The book value development can be seen in the table below:

	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Beg. Book	28.46	$ 32.19	$ 36.11	$ 40.22	$ 44.54	$ 49.05	$ 53.76	$ 58.67	$ 63.78	$ 69.08
EPS	$ 5.41	$ 5.77	$ 6.12	$ 6.48	$ 6.84	$ 7.20	$ 7.56	$ 7.91	$ 8.27	$ 8.63
Dividend	$ 1.69	$ 1.85	$ 2.01	$ 2.17	$ 2.33	$ 2.49	$ 2.65	$ 2.81	$ 2.97	$ 3.13
End Book	$ 32.19	$ 36.11	$ 40.22	$ 44.54	$ 49.05	$ 53.76	$ 58.67	$ 63.78	$ 69.08	$ 74.59

Adding EPS and dividends to the beginning book value will give an ending book value of 32.19. From there we can use our ending book value of 32.19 as our beginning book value for

the next year. We would repeat the process in each year after that to arrive at book values for each following year.

Dividend growth was assumed by the forecast function in excel. There are limitations to our forecast of dividends. GM only recently in 2014 began paying a dividend again after the bankruptcy. They still owed the government money and didn't begin to pay a dividend until after that was paid back. This left us with only a three-year dividend history. A forecast of future dividends will likely have some inaccuracies because of the limited history to forecast from.

After we find the ending book value we can now calculate the residual income. This can be done by subtracting earnings per share from an equity charge. The equity charge is simply our CAPM rate multiplied by the beginning book value in a given year. Our EPS is 5.41 and we subtract that from our CAPM multiplied by our beginning book which is 12.88% × 28.46. This gives us a residual income of 1.74. We follow the same process each year to come up with residual incomes for a period of 10 years.

A ten-year period was chosen because that gives us a decent amount of projected residual income. Additionally, our residual income decreases each year and extending it out further would continually yield us negative numbers. A ten-year forecast gives us a good indicator of these future residuals and provides a good basis to value the company. The data for the NPV of GM's residual income can be found below:

EPS	$ 5.41	$ 5.77	$ 6.12	$ 6.48	$ 6.84	$ 7.20	$ 7.56	$ 7.91	$ 8.27	$ 8.63
Equ. Chg.	$ 3.67	$ 4.14	$ 4.65	$ 5.18	$ 5.73	$ 6.32	$ 6.92	$ 7.55	$ 8.21	$ 8.90
RI	$ 1.74	$ 1.62	$ 1.48	$ 1.30	$ 1.11	$ 0.88	$ 0.63	$ 0.36	$ 0.06	$ (0.27)

From there we can use the NPV function in excel to discount the future residual income back to its present value. Doing this yields us a present value of our residual incomes of $6.02. To get our final stock value we take the beginning book value in year one and add in our present

value of residual incomes. Our beginning book value is 28.46 and if we add our PV of residual incomes of 6.02 that gives us a stock value of $34.49. The data used to calculate the final stock price can be found in the table below:

Beg. Book	$	28.46
PV of Ris	$	6.02
Premium	$	-
Stock Value	$	34.49

A premium was not used because the forecast of residual incomes declines each year and turns slightly negative in year 10. The premium that would be applied would only marginally affect the price of the stock. Additionally, because that last year is slightly negative the premium amount was negative as well which reduced the value of the share price.

The residual income model is fairly easy to use relative to other models. It uses readily available accounting data and there aren't as many assumptions that an analyst has to make to determine a stock price using this model. That is one of the biggest benefits to using the RI model. The biggest problem with the RI model is that it is susceptible to manipulation in accounting data that can affect the final value of stock price.

The residual income model is helpful when valuing a company like GM. GM has a short dividend history and large capital expenditures that affect other models. The residual income model is more helpful where they may be shortcomings in the other models. The residual income model will likely have a higher weight in our final determination of stock price than the DDM model and FCF because of the shortcoming in those models.

Market Based Valuation

The multiples model is one of the most familiar models used in valuing a company. Within this model are two widely used tools. The first one is price multiples. Price multiples are

ratios of a stock's market price to some per-share fundamental metric. The second tool is enterprise value multiples which relate is the enterprise value divided by the amount of earnings before interest, taxes, depreciation, and amortization (EBITDA). This second tool uses the total market value of a company's capital as opposed to using a specific fundamental value (Pinto, Henry, Robinson, & Stowe, 2015).

A market based valuation model is known for its ease of use. Out of the four models used for the valuation of General Motors, it is one of the simplest. This model requires that the company which is being valued have comparable companies which are also publicly traded since it uses the comparable companies' stock price in the metrics of the company valuation. This could be a draw back to the model as the company being valued may not have closely related peer companies, its closest peers may not be publicly traded, and/or the company which the analyst is trying to value may not be publicly traded.

In using this model for the valuation of General Motors, it was decided to use peer comparable companies rather than the entire industry for the price multiples ratios. The entire industry and the peer comparable companies were very close in all respects besides price to cash flow. The company comparable was chosen over the entire industry because the price to cash flow was closer to that of General Motors for the comparable companies.

The peers which were chosen were Toyota Motor Corporation, Honda Motor Corporation, and Ford Motor Corporation. These companies are direct competitors to General Motors in the automobile industry. The chosen companies all have similar market caps with the exception of Toyota being larger. Information was obtained from Morningstar for the comparable companies and then averaged between the three to be used in the ratios as shown on page 74.

	Toyota	Honda	Ford	Average
Price/Earnings	10.2	14.1	10	11.43
Price/Book	1.1	0.8	1.6	1.17
Price/Sales	0.7	0.4	0.3	0.47
Price/Cash Flow	5.3	6.8	2.3	4.80
Div. Yield %	3.4	2.8	5.2	3.80

The next step in this model is to come up with the General Motors multipliers. The multipliers were found for each category listed above; starting with price to earnings and ending with price to cash flow. There is not a multiplier for dividend yield percent as that is not done with a multiplier when coming up with GM's stock prices later on. How each multiplier was developed and obtained is outlined as seen next:

- Price to Earnings – this multiplier is equal to the earnings per share amount for the first projected year, 2017.
- Price to Book – this multiplier is equal to the end book value of 2017 as found in the Residual Income Model.
- Price to Sales – this multiplier is equal to the projected first year (2017) sales divided by the projected first year shares outstanding.
- Price to Cash Flow – this multiplier is equal to the sum of first year projected year (2017) net income and depreciation divided by first year projected year (2017) shares outstanding. Depreciation was found by finding the difference between the first projected year (2017) and the depreciation shown for 2016 as found on the balance sheet.

The results of each multiplier previously discussed are all summarized in the table shown on page 75.

	GM Multipliers
Price/Earnings	$5.41
Price/Book	$32.19
Price/Sales	$106.36
Price/Cash Flow	$5.36

The stock price can now be easily obtained. This is done by taking the comparable company average numbers and multiplying it by the General Motors multipliers. Dividend yield is done separately than the before mentioned multipliers when coming up with the stock value. This is done by taking the first year (2017) forecasted value for dividends and dividing it by the average comparable companies' dividend yield. The dividend yield of the comparable companies was not expressed as a percent so it was necessary to then multiply the number by one hundred to come up with the stock price. The results of the GM stock prices for each have been calculated and are shown below:

	Stock Price
Price/Earnings	$61.84
Price/Book	$37.55
Price/Sales	$49.64
Price/Cash Flow	$25.73
Dividend Yield %	$44.39

An unweighted average of the stock values was then obtained to come up with GM's stock price of $43.83. It is necessary to discount this stock price back to today because it was obtained using projected numbers. This is done by finding the present value of the stock price ($43.83). The stock was discounted at the CAPM rate of 12.88% to give today's stock value of $38.83.

Another important aspect of the multiples model is the enterprise value. Enterprise value is equal to the market value of equity plus the market value of preferred plus the market value of

debt minus cash and investments. Market value of equity is equal to the stock price multiplied by the number of shares outstanding. General Motors did not have any preferred stock in 2016 so this was omitted in the enterprise value calculation. The market value of debt is the sum of the market value of all bonds outstanding plus other debt found on the balance sheet. Cash and investments is subtracted out so it is a negative number. Cash and investments is found on the balance sheet and uses current year rather than a projection. The following table gives the enterprise value of General Motors and sums up how it was calculated:

GM Enterprise Value		
MV Equity		48743.6184
+MV Preferred		0
+MV Debt		19517.20153
-Cash and Invest.		-24801
Enterprise Value =	$	43,459.82

It is now necessary to look at how GM's enterprise value relates to EBITDA and sales. This is done by taking the enterprise value and dividing it by EBITDA and doing the same for the enterprise value and sales. GM's EV/EBITDA and EV/Sales is then compared it the comparable companies'. The numbers for the comparable companies were all taken from Yahoo!Finance. Both GM's and the comparable companies' amounts are shown in the following table:

	GM	Toyota	Honda	Ford
EV/EBITDA	1.92	8.98	9.79	12.1
EV/Sales	0.26	1.22	0.8	1.06

These are indicators as to how General Motors is priced compared to its competition. With GM being below all three of the comparable companies in both EV/EBITDA and EV/Sales, it could be said that the GM stock price might be undervalued.

We believe the market based valuation does well with General Motors. The automotive industry is highly competitive so there are many comparable companies to choose from. This model does not rely heavily upon forecasted results as some of the other models do. This helps with the valuation of GM since there is not much data to go off of since the bankruptcy. With that being said, the automotive industry expands the entire globe. With this, it is important to note that different accounting practices may be different in other countries compared to the United States where General Motors is headquartered. This may have an impact on how the peer company's adequately compare to GM since two foreign companies were used.

Recapitulation of Inputs

The Dividend Discount Model (DDM) is a model of intrinsic value that views the value of an asset as the present value of the stocks expected future dividends (Pinto, Henry, Robinson, & Stowe, 2015). The Dividend Discount Model has a couple different variations that can be used for valuation purposes. There is the Gordon Growth Model and the multistage dividend discount models. The multistage discount models can be broken out further into the two-stage dividend discount model, the three-stage dividend discount model and the H-model. The Gordon Growth Model was used for our valuation of GM.

Using the dividend discount model to value GM yielded us a stock price of $36.92. Currently GM is selling for $33.71 so that implies that GM is selling at a discount and that an investor should purchase GM shares. However, there are limitations to the applicability of this model to the valuation of GM.

GM has only recently begun paying a dividend in the last three years because they were still paying bailout money back to the government. This limited history makes forecasting dividends challenging. There simply isn't enough historical data to feel confident in the forecast

of GM's future dividends. The DDM model relies on the ability to forecast these dividends out into the future.

Choosing an appropriate growth rate for the model also poses challenges. With the potential for inaccuracies in the forecasted dividends it makes it tough to settle on an accurate growth rate. The 8.31% growth rate that was used falls closely to the geometric mean of dividends in year D_1 through D_{10} which is 7.71%. Using a growth rate that only includes forecasted dividends seems incomplete because of the potential inaccuracy of the forecast. Using a complete dividend history seems like a more accurate representation because with only three years of dividend history it is much harder to project growth. For this reason, the DDM model will not be weighted as high in our final determination of a share price. There is just not enough historical data to feel confident that our forecasts are accurate.

The free cash flow model requires the finding of the change in the net operating working capital (NOWC) and the change in capital expenditures (CapEx). The NOWC calculation was found using receivables & inventories (current assets) in addition to accounts payable and accrued liabilities (current liabilities). The CapEx calculation was found using net fixed assets. The changes in these using only the years of 2015 & 2016 caused the free cash flow in year zero to be negative over 12,000. This resulted in largely negative overall stock price. Because of this result, it was necessary to go back to 2009 and 2010, find the change in those years and then do the same all the way to 2016. These values were then averaged to find the change. From here, we were able to have a more reasonable FCF_0.

The value of operations was found using \$1133.90 for FCF_0, 8.5% for constant growth rate, and 10.31% for WACC. From using the previously mentioned inputs, the value of operations was calculation at \$67,922.76. After calculating the value of operations, General

Motors' value of equity is found by taking the value of operations and adding any non-operating assets, subtracting debt, and subtracting preferred stocks to get $48,405.55. The equity value is then divided by the number of shares outstanding, 1540, to get the stock price of $31.43.

The residual income model is a model of stock valuation that views intrinsic value of stock as the sum of book value per share plus the present value of the sock's expected future residual income per share (Pinto, Henry, Robinson, & Stowe, 2015). The residual income model seeks to find the intrinsic value of equity. This is done by adding the current book value of equity to the present value of expected future residual income. The residual income model can be derived from the DDM model.

The residual income model yielded us a stock price $34.49. GM is currently selling for $33.71 so using this model we find that GM is currently selling at a slight discount and an investor should purchase shares in GM. The price of GM was just recently much closer in price to our valuation and has fallen in recent days potentially providing increased value to investors.

The residual income model will hold a higher weight in our final determination of stock price because it doesn't have some of the limitations that other models have with our company. This model isn't affected by large capital expenditures or a short dividend history. These things presented problems in other models for the valuation of GM.

The residual income model provides a relatively simpler approach to valuing a company than other models. The ability to pull information right from GM's balance sheet makes it easy to use. With the simplicity of the model and the lack of limitations that other models have make the residual income model a better fit for the valuation of GM.

The multiples model requires price ratios to be obtained from peer companies. For this valuation of General Motors, Toyota, Honda, and Ford were used for the comparable companies.

The metrics used for valuation were price to equity, price to book, price to sales, price to cash flow, and dividend yield percent. These metrics of the peer companies were then averaged to come up with 11.43, 1.17, 0.47, 4.80, 3.80, respectively. From here, multipliers for General Motors were found for P/E, P/B, P/S, & P/CF. Respectively, the multipliers for GM were $5.41, $32.19. $106.36. and $5.36. The company comparable metrics were then multiplied by the GM multipliers to come up with the stock price using each price ratio. The dividend yield does not have a multiplier so the stock price was instead calculated by dividing the forecasted 2017 dividend by the dividend yield percent average of the peer companies and multiplied by one hundred. All of the stock prices found for GM were then averaged to be $43.83. This model used first year forecasts so it was necessary to discount it back to present value. CAPM, 12.88%, was used to discount the average stock price back to present value. The final stock price using the multiples model was found to be $38.83.

Statement of Conclusions

General Motors has been valued using for different models for valuation. Using an unweighted average of the for stock prices obtained, we get an average price of $35.42. We had some worries about the integrity of our valuations using the discounted dividend valuation and the free cash flow valuation. Because of these uncertainties, we decided to do a weighted average with adding more emphasis to our values found by using the multiples model and the residual income model. The weights for each stock price obtained are summarized below:

Model	Stock Price	Weights
DDM	$36.92	15%
Multiples	$38.83	35%
RI	$34.49	35%
FCF	$31.43	15%

Using the values and weights given in the above table gives us an average stock price of $35.91. While this is not much different than the unweighted average stock price, we feel more confident in it.

General Motors is currently trading at $33.71 as of April 7, 2017. The 52-week range for General Motors stock price is $27.34-38.55. The median of this range is $32.945. General Motors' stock had three spikes within the last 52 weeks and all of which were in the last four months. One of the spikes was in December of 2016, the next in late January of 2017, and the most recent was in early March of 2017. The stock currently seems to be trading at a discount. We would recommend a hold strategy as the stock rises closer to the $35 mark or if someone bought in at a time when the stock was trading around that price. Should someone buy now at the discounted $33.71 price, we would recommend sell at $38.83. This sell number is the highest value obtained out of all four valuation models used. It is also higher than the 52-week range peak of $38.55 by 73 basis points. Both our unweighted and weighted average is lower than both the current trading price and 52-week trading price peak. In addition to this, our EV/EBITDA and EV/Sales indicate that General Motors is currently undervalued compared to its peers. Our conclusions from the valuation and from the stock currently trading at a discounted price compared to its 52-week range peak and median results us to recommend General Motors stock as buy.

GENERAL MOTORS CO INCOME STATEMENT - HISTORICAL										
Fiscal year ends in December	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Revenue		148979	104589	135592	150276	152256	155427	155929	152356	166380
Cost of revenue		149257	112195	118792	131171	141443	137373	142121	134054	145125
Gross profit		-278	-7606	16800	19105	10813	18054	13808	18302	21255
Operating expenses										
Sales, General and administrative		14253	12167	11716	12163	13593	12382	12158	13405	11710
Other operating expenses		6699	1250		1286	27583	541	120		
Total operating expenses		20952	13417	11716	13449	41176	12923	12278	13405	11710
Operating income		-21230	-21023	5084	5656	-30363	5131	1530	4897	9545
Interest Expense		2525	6122	1098	540	489	334	403	443	572
Other income (expense)		-5716	129638	1751	869	595	2661	3119	3264	2711
Income before taxes		-29471	102493	5737	5985	-30257	7458	4246	7718	11684
Provision for income taxes		1766	-2166	672	110	-34831	2127	228	-1897	2416
Other income		186	558	1438	3412	1562				
Net income from continuing operations		-31051	105217	6503	9287	6136	5331	4018	9615	9268
Other		108	-396	-331	-97	52	15	-69	72	159
Net income		-30943	104821	6172	9190	6188	5346	3949	9687	9427
Preferred dividend			131	1504	1605	1329	1576	1145		
Net income available to common shareholders		-30943	104690	4668	7585	4859	3770	2804	9687	9427
Earnings per share										
Basic		-53.47	113.18	3.11	4.94	3.1	2.71	1.75	6.11	6.12
Diluted		-53.47	113.18	2.89	4.58	2.92	2.38	1.65	5.91	6
Weighted average shares outstanding										
Basic		579	925	1500	1536	1566	1393	1605	1586	1540
Diluted		579	925	1624	1668	1675	1676	1687	1640	1570
EBITDA		-16743	123766	13758	13869	8994	15833	11887	16178	22664

GENERAL MOTORS CO INCOME STATEMENT - FORECASTED										
Fiscal year ends in December	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Revenue	166916.1	170494.6	174073.1	177651.5	181230	184808.5	188386.9	191965.4	195543.9	199122.3
Cost of revenue	147931.7	150983.3	154034.8	157086.3	160137.9	163189.4	166240.9	169292.5	172344	175395.5
Gross profit	18984.43	19511.36	20038.29	20565.21	21092.14	21619.07	22146	22672.93	23199.86	23726.79
Operating expenses										
Sales, General and administrative	12594	12630.82	12667.64	12704.46	12741.29	12778.11	12814.93	12851.75	12888.57	12925.39
Other operating expenses	-6360.5	-9414.5	-12468.5	-15522.5	-18576.5	-21630.5	-24684.5	-27738.5	-30792.5	-33846.5
Total operating expenses	12521.86	11486	10450.14	9414.286	8378.429	7342.571	6306.714	5270.857	4235	3199.143
Operating income	6462.571	8025.357	9588.143	11150.93	12713.71	14276.5	15839.29	17402.07	18964.86	20527.64
Interest Expense	288.7143	222.3571	156	89.64286	23.28571	-43.0714	-109.429	-175.786	-242.143	-308.5
Other income (expense)	3594.857	3958.929	4323	4687.071	5051.143	5415.214	5779.286	6143.357	6507.429	6871.5
Income before taxes	9768.714	11761.93	13755.14	15748.36	17741.57	19734.79	21728	23721.21	25714.43	27707.64
Provision for income taxes	728.8571	2024.464	3320.071	4615.679	5911.286	7206.893	8502.5	9798.107	11093.71	12389.32
Other income	2509.333	2571.333	2633.333	2695.333	2757.333	2819.333	2881.333	2943.333	3005.333	3067.333
Net income from continuing operations	8141.571	8385.607	8629.643	8873.679	9117.714	9361.75	9605.786	9849.821	10093.86	10337.89
Other	212.5714	272.8214	333.0714	393.3214	453.5714	513.8214	574.0714	634.3214	694.5714	754.8214
Net income	8354.143	8658.429	8962.714	9267	9571.286	9875.571	10179.86	10484.14	10788.43	11092.71
Preferred dividend	1058.3	983.6	908.9	834.2	759.5	684.8	610.1	535.4	460.7	386
Net income available to common shareholders	8460.857	9047.5	9634.143	10220.79	10807.43	11394.07	11980.71	12567.36	13154	13740.64
Earnings per share										
Basic	5.408571	5.766429	6.124286	6.482143	6.84	7.197857	7.555714	7.913571	8.271429	8.629286
Diluted	5.292857	5.675714	6.058571	6.441429	6.824286	7.207143	7.59	7.972857	8.355714	8.738571
Weighted average shares outstanding										
Basic	1569.286	1578.536	1587.786	1597.036	1606.286	1615.536	1624.786	1634.036	1643.286	1652.536
Diluted	1619.143	1611.786	1604.429	1597.071	1589.714	1582.357	1575	1567.643	1560.286	1552.929
EBITDA	19630.29	20852.75	22075.21	23297.68	24520.14	25742.61	26965.07	28187.54	29410	30632.46

GENERAL MOTORS CO BALANCE SHEET - HISTORICAL										
Fiscal year ends in December	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Assets										
Current assets										
Cash										
Cash and cash equivalents		14053	22679	21061	15499	18422	20021	18954	15238	12960
Short-term investments		141	134	5555	16148	8988	8972	9222	8163	11841
Total cash		14194	22813	26616	31647	27410	28993	28176	23401	24801
Receivables		8340	7768	8699	9949	10395	8535	9078	26388	31703
Inventories		13195	10107	12125	14324	14714	14039	13642	13764	13788
Deferred income taxes		3146	1777	1805	1657	9429	10349	9760	8599	
Other current assets		5392	16782	3808	2670	8048	19585	23014	5855	5911
Total current assets		44267	59247	53053	60247	69996	81501	83670	78007	76203
Non-current assets										
Property, plant and equipment										
Gross property, plant and equipment		83377	19972	22512	27558	31401	32654	35810	63750	88309
Accumulated Depreciation		-43712	-1285	-3277	-4601	-5556	-6787	-8067	-12349	-17963
Net property, plant and equipment		39665	18687	19235	22957	25845	25867	27743	51401	70346
Equity and other investments		4063	9425	8529	6790	6883	8094	8350	9201	8996
Goodwill			30672	31778	29019	1973	1560	1427	1371	1868
Intangible assets		265	14547	11882	10013	6809	5668	4983	4576	4391
Deferred income taxes		98	564	308	2900	27922	22736	25414	28443	35092
Prepaid pension benefit		109	98							
Other long-term assets		2572	3055	14113	12677	9994	20918	26090	21521	24794
Total non-current assets		46772	77048	85845	84356	79426	84843	94007	116513	145487
Total assets		91039	136295	138898	144603	149422	166344	177677	194520	221690
Liabilities and stockholders' equity										
Liabilities										
Current liabilities										
Short-term debt		16920	10221	1616	1682	5518	14158	14988	18745	29028
Capital leases									817	
Accounts payable		22259	18725	21497	24494	25166	23621	22529	24062	26961
Accrued liabilities		32427	22288	24044	22756	23308	23357	26562	25615	26437
Deferred revenues							1276	1622	2227	2755
Other current liabilities		4002	1201							
Total current liabilities		75608	52435	47157	48932	53992	62412	65701	71466	85181
Non-current liabilities										
Long-term debt		29018	5562	9142	11650	10532	22025	31853	35601	55600
Deferred taxes liabilities		17392	13279	13021	12336	13169				
Deferred revenues							1249	1556	2007	2362
Pensions and other benefits		54097	35794	31188	31911	34729	26596	31276	27429	24552
Minority interest		484	708	979	871	756	567	567	452	239
Other long-term liabilities			7268	1231	783		10888	11267	17694	9920
Total non-current liabilities		100991	62611	55561	57551	59186	61325	76519	83183	92673
Total liabilities		176599	115046	102718	106483	113178	123737	142220	154649	177854
Stockholders' equity										
Preferred stock				10391	10391	10391	3109			
Common stock		1017	15	15	16	14	15	16	15	15
Additional paid-in capital		16489	24040	24257	26391	23834	28780	28937	27607	26983
Retained earnings		-70727	-4394	266	7183	10057	13816	14577	20285	26168
Accumulated other comprehensive income		-32339	1588	1251	-5861	-8052	-3113	-8073	-8036	-9330
Total stockholders' equity		-85560	21249	36180	38120	36244	42607	35457	39871	43836
Total liabilities and stockholders' equity		91039	136295	138898	144603	149422	166344	177677	194520	221690

GENERAL MOTORS CO BALANCE SHEET - FORECASTED												
Fiscal year ends in December	2016	% of Sales	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Assets												
Current assets												
Cash												
Cash and cash equivalents	12960	7.79%	13002	13281	13559	13838	14117	14395	14674	14953	15232	15510
Short-term investments	11841	7.12%	11879	12134	12389	12643	12898	13153	13407	13662	13917	14171
Total cash	24801	14.91%	24881	25414	25948	26481	27015	27548	28081	28615	29148	29682
Receivables	31703	19.05%	31805	32487	33169	33851	34533	35214	35896	36578	37260	37942
Inventories	13788	8.29%	13832	14129	14426	14722	15019	15315	15612	15908	16205	16501
Deferred income taxes		0.00%	0	0	0	0	0	0	0	0	0	0
Other current assets	5911	3.55%	5930	6057	6184	6311	6439	6566	6693	6820	6947	7074
Total current assets	76203	45.80%	76449	78088	79726	81365	83004	84643	86282	87921	89560	91199
Non-current assets												
Property, plant and equipment												
Gross property, plant and equipment	88309	53.08%	88594	90493	92392	94292	96191	98090	99990	101889	103788	105688
Accumulated Depreciation	-17963	-10.80%	-18021	-18407	-18794	-19180	-19566	-19953	-20339	-20725	-21112	-21498
Net property, plant and equipment	70346	42.28%	70573	72086	73599	75112	76625	78138	79651	81164	82677	84190
Equity and other investments	8996	5.41%	9025	9218	9412	9605	9799	9992	10186	10379	10573	10766
Goodwill	1868	1.12%	1874	1914	1954	1995	2035	2075	2115	2155	2195	2236
Intangible assets	4391	2.64%	4405	4500	4594	4688	4783	4877	4972	5066	5161	5255
Deferred income taxes	35092	21.09%	35205	35960	36715	37469	38224	38979	39734	40488	41243	41998
Prepaid pension benefit		0.00%	0	0	0	0	0	0	0	0	0	0
Other long-term assets	24794	14.90%	24874	25407	25940	26474	27007	27540	28073	28607	29140	29673
Total non-current assets	145487	87.44%	145956	149085	152214	155343	158472	161601	164730	167860	170989	174118
Total assets	221690	133.24%	222404	227172	231940	236709	241477	246245	251013	255781	260549	265317
Liabilities and stockholders' equity												
Liabilities												
Current liabilities												
Short-term debt	29028	17.45%	29122	29746	30370	30995	31619	32243	32868	33492	34116	34740
Capital leases			0	0	0	0	0	0	0	0	0	0
Accounts payable	26961	16.20%	27048	27628	28208	28787	29367	29947	30527	31107	31687	32267
Accrued liabilities	26437	15.89%	26522	27091	27659	28228	28797	29365	29934	30502	31071	31640
Deferred revenues	2755	1.66%	2764	2823	2882	2942	3001	3060	3119	3179	3238	3297
Other current liabilities												
Total current liabilities	85181	51.20%	85455	87288	89120	90952	92784	94616	96448	98280	100112	101944
Non-current liabilities												
Long-term debt	55600	33.42%	55779	56975	58171	59367	60562	61758	62954	64150	65346	66542
Deferred taxes liabilities												
Deferred revenues	2362	1.42%	2370	2420	2471	2522	2573	2624	2674	2725	2776	2827
Pensions and other benefits	24552	14.76%	24631	25159	25687	26215	26743	27271	27799	28328	28856	29384
Minority interest	239	0.14%	240	245	250	255	260	265	271	276	281	286
Other long-term liabilities	9920	5.96%	9952	10165	10379	10592	10805	11019	11232	11445	11659	11872
Total non-current liabilities	92673	55.70%	92972	94965	96958	98951	100944	102938	104931	106924	108917	110910
Total liabilities	177854	106.90%	178427	182252	186078	189903	193728	197553	201379	205204	209029	212854
Stockholders' equity												
Preferred stock												
Common stock	15	0.01%	15	15	16	16	16	17	17	17	18	18
Additional paid-in capital	26983	16.22%	27070	27650	28231	28811	29391	29972	30552	31132	31713	32293
Retained earnings	26168	15.73%	26252	26815	27378	27941	28504	29066	29629	30192	30755	31318
Accumulated other comprehensive income	-9330	-5.61%	-9360	-9561	-9761	-9962	-10163	-10363	-10564	-10765	-10965	-11166
Total stockholders' equity	43836	26.35%	43977	44920	45863	46806	47749	48691	49634	50577	51520	52463
Total liabilities and stockholders' equity	221690	133.24%	222404	227172	231940	236709	241477	246245	251013	255781	260549	265317

GENERAL MOTORS CO STATEMENT OF CASH FLOW										
Fiscal year ends in December	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cash Flows From Operating Activities										
Net income		-31051	105217	6503	9287	6136	5331	4018	9615	9268
Depreciation & amortization		10203	15151	6923	7344	38762	8041	7238	8017	10408
Amortization of debt discount/premium and issuance costs				163	200	188	114	181	176	
Investment/asset impairment charges		8710	270							
Investments losses (gains)						-57				
Deferred income taxes		1163	-2027	242	-311					
Accounts receivable		1315	392	-641	-1572	-460	8	-1248	-254	-1285
Inventory		77	3194	-2229	-2760	-326	59	-309	-1350	-320
Prepaid expenses		-287	1731	299	-195	-255				
Accounts payable		-4556	-3483	2259	2095	162	-485	19	1953	3469
Accrued liabilities		1607	-10040	-92	-654	1041	784	6089	-801	1015
Income taxes payable		1044	1007	51	-289	155	-161	-145	60	-227
Other working capital		894	342	-613	-522	370	-1531	-4162	-1362	-3090
Other non-cash items		-1184	-128993	-6085	-4457	-35111	470	-1623	-4076	-2693
Net cash provided by operating activities		-12065	-17239	6780	8166	10605	12630	10058	11978	16545
Cash Flows From Investing Activities										
Investments in property, plant, and equipment		-7530	-5379	-4200	-837	-9118	-7565	-7091	-7874	-19624
Property, plant, and equipment reductions		347	105	188		59		533	1096	2557
Acquisitions, net		231	-2122	-3263	4768	-26	-1727	-53	-928	-809
Purchases of investments		-3771	-1269	-12317	-16176	-10884	-9968	-9154	-9363	-15444
Sales/Maturities of investments		5866	356	6871	5613	17786	10104	8755	10221	11743
Other investing activities		3093	-10669	13954	-6108	-1322	-5206	-8688	-21187	-14066
Net cash used for investing activities		-1764	-18978	1233	-12740	-3505	-14362	-15698	-28035	-35643
Cash Flows From Financing Activities										
Debt issued		5928	1710	1418	9034	9036	28041	31373	35679	45141
Debt repayment		-4100	-2716	-13052	-8468	-7377	-20191	-19524	-17256	-23815
Common stock issued				4857	11	4				
Common stock repurchased				-1462	-100	-5098	-2438	-3277	-3520	-2500
Dividend paid		-283	-97	-1572	-916	-939	-1687	-3165	-2242	-2368
Other financing activities		2298	45677	41	81	-367	6	268	1025	681
Net cash provided by (used for) financing activities		3843	44574	-9770	-358	-4741	3731	5675	13686	17139
Effect of exchange rate changes		-778	660	-57	-253	-8	-400	-1102	-1345	-213
Net change in cash		-10764	9017	-1814	-5185	2351	1599	-1067	-3716	-2172
Cash at beginning of period		24817	13662	23070	21256	16071	18422	20021	18954	17332
Cash at end of period		14053	22679	21256	16071	18422	20021	18954	15238	15160
Free Cash Flow										
Operating cash flow		-12065	-17239	6780	8166	10605	12630	10058	11978	16545
Capital expenditure		-7530	-5379	-4200	-7078	-9118	-7565	-7091	-7874	-29166
Free cash flow		-19595	-22618	2580	1088	1487	5065	2967	4104	-12621

3-MONTH TREASURY BILL		
Frequency: Monthly		
observation_date	TB3MS	%
2016-12-01	0.51	0.043%
2016-11-01	0.45	0.038%
2016-10-01	0.33	0.028%
2016-09-01	0.29	0.024%
2016-08-01	0.30	0.025%
2016-07-01	0.30	0.025%
2016-06-01	0.27	0.023%
2016-05-01	0.27	0.023%
2016-04-01	0.23	0.019%
2016-03-01	0.29	0.024%
2016-02-01	0.31	0.026%
2016-01-01	0.26	0.022%
2015-12-01	0.23	0.019%
2015-11-01	0.12	0.010%
2015-10-01	0.02	0.002%
2015-09-01	0.02	0.002%
2015-08-01	0.07	0.006%
2015-07-01	0.03	0.003%
2015-06-01	0.02	0.002%
2015-05-01	0.02	0.002%
2015-04-01	0.02	0.002%
2015-03-01	0.03	0.003%
2015-02-01	0.02	0.002%
2015-01-01	0.03	0.003%
2014-12-01	0.03	0.003%
2014-11-01	0.02	0.002%
2014-10-01	0.02	0.002%
2014-09-01	0.02	0.002%
2014-08-01	0.03	0.003%
2014-07-01	0.03	0.003%
2014-06-01	0.04	0.003%
2014-05-01	0.03	0.003%
2014-04-01	0.03	0.003%
2014-03-01	0.05	0.004%
2014-02-01	0.05	0.004%
2014-01-01	0.04	0.003%
2013-12-01	0.07	0.006%
2013-11-01	0.07	0.006%
2013-10-01	0.05	0.004%
2013-09-01	0.02	0.002%
2013-08-01	0.04	0.003%
2013-07-01	0.04	0.003%
2013-06-01	0.05	0.004%
2013-05-01	0.04	0.003%
2013-04-01	0.06	0.005%
2013-03-01	0.09	0.008%
2013-02-01	0.10	0.008%
2013-01-01	0.07	0.006%
2012-12-01	0.07	0.006%
2012-11-01	0.09	0.008%
2012-10-01	0.10	0.008%
2012-09-01	0.11	0.009%
2012-08-01	0.10	0.008%
2012-07-01	0.10	0.008%
2012-06-01	0.09	0.008%
2012-05-01	0.09	0.008%
2012-04-01	0.08	0.007%
2012-03-01	0.08	0.007%
2012-02-01	0.09	0.008%
2012-01-01	0.03	0.003%
2011-12-01	0.01	0.001%

S&P500			
S&P			Excess
Date	Adj Close	Returns	Returns
12/1/2016	2238.8301	1.82%	1.78%
11/1/2016	2198.8101	3.42%	3.38%
10/3/2016	2126.1499	-1.94%	-1.97%
9/1/2016	2168.27	-0.12%	-0.15%
8/1/2016	2170.95	-0.12%	-0.15%
7/1/2016	2173.6001	3.56%	3.54%
6/1/2016	2098.8601	0.09%	0.07%
5/2/2016	2096.95	1.53%	1.51%
4/1/2016	2065.3	0.27%	0.25%
3/1/2016	2059.74	6.60%	6.57%
2/1/2016	1932.23	-0.41%	-0.44%
1/4/2016	1940.24	-5.07%	-5.10%
12/1/2015	2043.9399	-1.75%	-1.77%
11/2/2015	2080.4099	0.05%	0.04%
10/1/2015	2079.3601	8.30%	8.30%
9/1/2015	1920.03	-2.64%	-2.65%
8/3/2015	1972.1801	-6.26%	-6.26%
7/1/2015	2103.8401	1.97%	1.97%
6/1/2015	2063.1101	-2.10%	-2.10%
5/1/2015	2107.3899	1.05%	1.05%
4/1/2015	2085.51	0.85%	0.85%
3/2/2015	2067.8899	-1.74%	-1.74%
2/2/2015	2104.5	5.49%	5.49%
1/2/2015	1994.99	-3.10%	-3.11%
12/1/2014	2058.8999	-0.42%	-0.42%
11/3/2014	2067.5601	2.45%	2.45%
10/1/2014	2018.05	2.32%	2.32%
9/2/2014	1972.29	-1.55%	-1.55%
8/1/2014	2003.37	3.77%	3.76%
7/1/2014	1930.67	-1.51%	-1.51%
6/2/2014	1960.23	1.91%	1.90%
5/1/2014	1923.5699	2.10%	2.10%
4/1/2014	1883.95	0.62%	0.62%
3/3/2014	1872.34	0.69%	0.69%
2/3/2014	1859.45	4.31%	4.31%
1/2/2014	1782.59	-3.56%	-3.56%
12/2/2013	1848.36	2.36%	2.35%
11/1/2013	1805.8101	2.80%	2.80%
10/1/2013	1756.54	4.46%	4.46%
9/3/2013	1681.55	2.97%	2.97%
8/1/2013	1632.97	-3.13%	-3.13%
7/1/2013	1685.73	4.95%	4.94%
6/3/2013	1606.28	-1.50%	-1.50%
5/1/2013	1630.74	2.08%	2.07%
4/1/2013	1597.5699	1.81%	1.80%
3/1/2013	1569.1899	3.60%	3.59%
2/1/2013	1514.6801	1.11%	1.10%
1/2/2013	1498.11	5.04%	5.04%
12/3/2012	1426.1899	0.71%	0.70%
11/1/2012	1416.1801	0.28%	0.28%
10/1/2012	1412.16	-1.98%	-1.99%
9/4/2012	1440.67	2.42%	2.41%
8/1/2012	1406.58	1.98%	1.97%
7/2/2012	1379.3199	1.26%	1.25%
6/1/2012	1362.16	3.96%	3.95%
5/1/2012	1310.33	-6.27%	-6.27%
4/2/2012	1397.91	-0.75%	-0.76%
3/1/2012	1408.47	3.13%	3.13%
2/1/2012	1365.6801	4.06%	4.05%
1/3/2012	1312.41	4.36%	4.36%
12/1/2011	1257.6	#DIV/0!	#DIV/0!

GM STOCK PRICE			
GM			Excess
Date	Adj Close		Returns
12/1/2016	34.84	1.99%	1.95%
11/1/2016	34.15944	9.27%	9.23%
10/3/2016	31.26089	-0.54%	-0.56%
9/1/2016	31.42906	0.72%	0.70%
8/1/2016	31.20387	1.20%	1.18%
7/1/2016	30.8324	11.45%	11.42%
6/1/2016	27.66509	-8.38%	-8.40%
5/2/2016	30.19385	-1.64%	-1.66%
4/1/2016	30.6958	1.18%	1.16%
3/1/2016	30.33864	8.10%	8.07%
2/1/2016	28.06577	-0.67%	-0.70%
1/4/2016	28.25643	-12.85%	-12.87%
12/1/2015	32.42244	-5.06%	-5.08%
11/2/2015	34.15052	3.70%	3.69%
10/1/2015	32.93356	16.29%	16.29%
9/1/2015	28.32041	3.22%	3.22%
8/3/2015	27.43569	-6.57%	-6.58%
7/1/2015	29.36476	-5.46%	-5.46%
6/1/2015	31.06085	-6.38%	-6.38%
5/1/2015	33.17751	2.60%	2.59%
4/1/2015	32.33816	-6.51%	-6.51%
3/2/2015	34.58873	1.33%	1.33%
2/2/2015	34.13324	14.38%	14.38%
1/2/2015	29.84257	-6.56%	-6.56%
12/1/2014	31.93759	5.36%	5.36%
11/3/2014	30.31319	6.46%	6.46%
10/1/2014	28.47245	-1.69%	-1.69%
9/2/2014	28.96211	-7.42%	-7.42%
8/1/2014	31.2817	2.90%	2.90%
7/1/2014	30.40077	-6.83%	-6.83%
6/2/2014	32.63004	5.85%	5.85%
5/1/2014	30.82684	0.29%	0.29%
4/1/2014	30.73769	0.17%	0.17%
3/3/2014	30.6842	-4.07%	-4.08%
2/3/2014	31.98702	0.33%	0.33%
1/2/2014	31.88098	-11.72%	-11.72%
12/2/2013	36.11351	5.53%	5.52%
11/1/2013	34.22257	4.82%	4.81%
10/1/2013	32.64973	2.72%	2.72%
9/3/2013	31.78378	5.55%	5.54%
8/1/2013	30.11374	-4.99%	-4.99%
7/1/2013	31.69542	7.69%	7.68%
6/3/2013	29.43336	-1.71%	-1.72%
5/1/2013	29.94585	9.89%	9.89%
4/1/2013	27.25082	10.86%	10.85%
3/1/2013	24.58229	2.47%	2.46%
2/1/2013	23.99026	-3.35%	-3.35%
1/2/2013	24.82086	-2.57%	-2.57%
12/3/2012	25.47474	11.40%	11.39%
11/1/2012	22.86806	1.49%	1.48%
10/1/2012	22.53229	12.09%	12.08%
9/4/2012	20.10234	6.56%	6.55%
8/1/2012	18.86527	8.32%	8.31%
7/2/2012	17.41613	-0.05%	-0.06%
6/1/2012	17.42497	-11.17%	-11.18%
5/1/2012	19.61635	-3.48%	-3.49%
4/2/2012	20.32324	-10.33%	-10.34%
3/1/2012	22.66483	-1.42%	-1.43%
2/1/2012	22.99177	8.33%	8.32%
1/3/2012	21.22453	18.50%	18.50%
12/1/2011	17.91096	#DIV/0!	#DIV/0!

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