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Success of American Automotive Industry Post General Motors and Chrysler Bankruptcy

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***Abstract*— In 2008, when U.S. automotive industry was facing a financial crisis, congress turned down GM's, Chrysler's, and Ford Motor Company's request for $25 billion in emergency funding to prevent bankruptcy. However, in 2009 the U.S. Department of the Treasury loaned GM and Chrysler $80.7 billion as part of the Automotive Industry Financing Program (AIFP) (Auto Industry, [1]. Several researchers have investigated the success and failure of the bailout [2],[3],[4],[5]; however, such research did not cover the interactions of specific economic indicators like employment numbers, vehicle sales and production, value added to U.S. Gross Domestic Product (GDP), and gross profit margin percentage. This paper utilizes secondary data to analyze the success of the automotive industry post GM's and Chrysler's bankruptcy. Data analysis supports a significant growth in automotive employment that, still falls short of its peak of over 1 million. Analysis reveals that post-bailout, the automotive industry has contributed $163.1 billion of value added to the U.S. GDP. Research concludes that post-bailout U. S. vehicle production and sales are at the highest level in a decade, value added to the U.S. GDP has increased year-over-year, and the gross margin percentage for Ford, Chrysler, and General Motors are posting record profits for 2016. Together, these findings suggest that the automotive industry is healthy and profitable post-financial bailout after steady increases in vehicle sales, production, employment, profits and value added to the U.S. GDP.**

Keywords—component; : General Motors, Chrysler, Ford Motor Company, Automotice Industry, qualitative analysis, bankruptcy, bailout, profitability, automotive, employment, vehicle sales, production, gross domestic product.

I. INTRODUCTION

General Motors (GM) and Chrysler were on the verge of financial collapse in 2008, and later filed for Chapter 11 bankruptcy. The U.S. and Canadian governments loaned Chrysler and GM $80 billion dollars to maintain employment and manufacturing operations, [2]. Studies conducted on the impacts of the 2008 government bailout of the U.S. automotive industry provide conflicting views on whether the bailout was a success, [2], [3], [4], [5]. However, little research has been done to include the automotive industry and its overall contribution on the U.S. gross domestic product (GDP) from the years directly before the financial crisis in 2008 until present day. McNulty and Wisner [2] used fixed effects model to test the impacts of the bailout on employment and sales. Samuelson,[4] based the success of the bailout on manufacturing and dealership employment numbers and the potential impact to United States total unemployment estimations. Amadeo, [5] compared automotive and parts manufacturing employment and wages, along with whether Ford, Honda, and Toyota would have picked up market share if there were no bailout. As a determination of whether the automotive bailout was a success, Goolsbee and Krueger, [3] consider GM and Chrysler's profitability post bailout. This paper examines available research on the impacts of the 2008 bailout on the U.S. automotive industry. Further analysis includes available employment, production, sales, profit, and U.S. GDP data in order to prove if the automotive industry has successfully recovered. For consistency, research will include data from the Big Three automotive companies, Ford, GM, and Chrysler. For the automotive bailout to be considered a success, we expect to see a direct correlation of year over year growth in employment, production, sales, profit, and contributions to the U.S. GDP.

II. LITERATURE REVIEW

A. Bailout Overview

In December of 2008, General Motors (GM) and Chrysler were facing a financial crisis, and congress turned down GM's, Chrysler's, and Ford Motor Company's request for $25 billion in aid to provide emergency funding to prevent bankruptcy, [2]. Just two months earlier the Bush administration had signed into law the Emergency Economic Stabilization Act, which providing funding for the U.S. banking crisis. The Troubled Asset Relief Program (TARP) is part of the stabilization act, and congress decided to loan GM and Chrysler $20 billion to prevent the collapse of the automotive industry into the early months of 2009, [6]. The bailout provided $17.5 billion directly to GM and Chrysler, while the remaining $2.5 billion went to financing firms of GM (General Motors Acceptance Corporation (GMAC) and Chrysler Financial, [3]. Ford chose not to seek government support due to previously seeking support in 2006. The money Ford had received in 2006 allowed them to restructure before the financial crisis of 2008, enabling them to withstand the current economic crisis.

Both GM and Chrysler were required to develop financial and restructuring plans by February 2009, leaving the final approval for economic relief up to the Obama administration. According to Goolsbee and Krueger, [3], GM agreed to cut their debt by $30 billion and employment from 96,000 to 45,000 by 2012, reducing their model offerings from 45 to 40 and selling the Saab, Saturn, and Hummer divisions. GM was unable to meet the agreed upon conditions of the bailout and filed for bankruptcy on June 1, 2009 with $173 billion in liabilities and $82 billion in assets. GM eliminated over 20,000 jobs, 1,000 dealerships, and a dozen manufacturing plants to emerge from the bankruptcy on July 10, 2009, [3].

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Chrysler closed 789 of their dealerships with an additional expectation of eight manufacturing plant closures as part of their bankruptcy reorganization in April 2009, [3], [7]. The United Autoworkers Union (UAW) cut wages in half, and reorganized their benefit offerings. In a final effort to save the company, Chrysler merged with Fiat who in turn gained a minority ownership and corporate control, [3].

In 2009, General Motors received a total of $51 billion while Chrysler received $12.5 billion in assistance from the U.S. Department of the Treasury as part of the Automotive Industry Financing Program (AIFP). GMAC was restructured and renamed Ally Financial, who in turn received an additional $17.2 billion (Auto Industry, 2015) [1]. In May of 2011, Chrysler finished repaying the Treasury $11.2 billion, six years ahead of schedule and by December 2014 Ally Financial paid he Treasury $19.6 billion, which was a surplus over the original $17.2 billion borrowed [5]. In December of 2013, the U.S. Department of the Treasury had recovered $39.7 billion of its original investment with GM, [5]. The final total cost of the automotive bailout to the United States government, after selling shares and repayments, was $9.2 billion [1]. Table 1 displays a breakdown of bailout funding.\

TABLE I.

Company	Invested	Sold To Treasury	Profit/Loss	Date Bailout Ended
General Motors	$51.0 Billion	$39.7 Billion	-($10.3 Billion)	December 9, 2013
GMAC (Ally)	$17.2 Billion	$19.6 Billion	+$2.4 Billion	December 18, 2014
Chrysler	$12.5 Billion	$11.2 Billion	-($1.3 Billion)	May 2011
TOTALS	$80.7 Billion	$70.5 Billion	-($9.2 Billion)	

Note. Reprinted from Auto Industry Bailout (GM, Ford, Chrysler), by K. Amadeo, 2016, Retrieved from https://www.thebalance.com/auto-industry-bailout-gm-ford-chrysler-3305670

B. Bailout Opinions

Opinions from various research sources disagree on whether the automotive bailout was positive or negative on the automotive industry and U.S. economy as a whole. According to McNulty and Wisner, [2], the government bailout hurt GM and Chrysler as it had a negative impact on vehicle sales and revenue. Automotive News, Hoover's, and Kantar Advertising databases were utilized to pull data for analysis, and McNulty and Wisner, [2] used annual, quarterly, and monthly statements from the automotive companies themselves from 2005 until 2013.

The bailout had a positive impact on both Chrysler and GM's employment as the UAW resisted layoffs and pay cuts, [2]. The concern is that by avoiding layoffs when vehicle demand is low, GM and Chrysler struggled to meet pension and wage costs, which ultimately led to bankruptcy, [2]. McNulty and Wisner [2], argue that the long-term viability of GM and Chrysler will not be certain unless employment practices adjust to market demands.

Government backing for GM and Chrysler pushed both companies to keep less profitable manufacturing facilities open, which would have otherwise closed. The view from the public for the bailout was unpopular, driving down automobile and truck sales from these facilities, [2]. The Canadian government had a 10% stake in GM by loaning $10 billion; this ensured that unprofitable Canadian factories remain open despite the economic impacts on GM [8]. McNulty and Wisner [2] question if it is more important to have higher employment with lower sales due to the bailout, or would higher sales and less or lower paid hourly employees have been preferred? Table 2 shows U.S. total vehicle sales market share by company.

TABLE II.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
%/Totals	52.50	50.45	46.89	43.66	44.47	46.21	43.90	44.57	44.62	44.53	44.23
Chrysler/FCA	12.57	12.62	10.77	8.79	9.22	10.55	11.12	11.33	12.49	12.62	12.56
Ford	16.04	14.59	14.19	15.29	16.44	16.47	15.22	15.70	14.72	14.64	14.64
GM	23.89	23.24	21.93	19.58	18.81	19.19	17.56	17.54	17.41	17.27	17.03

Note. Adapted from "U.S. Vehicle Sales Market Share by Company, 1961-2016," WardsAuto, 2017, Retrieved from http://wardsauto.com/datasheet/us-vehicle-sales-market-share-company-1961-2014 Copyright 2017 by WardsAuto, a division of Penton

Samuelson [4] argues that the automotive bailout was a success, albeit controversial at the time. Chrysler and GM initially laid off workers and closed manufacturing and dealership facilities. At the height of the automotive industry in 2006 (pre-bailout), automotive and parts manufacturers employed over 1 million workers [5]. As of 2014, automotive manufacturing jobs had increased by 41% since the low of 623,300 jobs in 2009, or an additional 256,000 positions [4]. According to Samuelson (2015) [4], the Big Three regained profitability as early as 2010 and increased market share to 45.1% by mid-2014, which is higher than initial post-bailout, but still below pre-bailout 50.45%.

According to Samuelson, [4], one of the key deciding factors of Chrysler's bailout was that two-thirds of their suppliers were shared between GM and half with Ford; if Chrysler failed so would the suppliers. Without the bailout, close to 1 million jobs would be lost, with approximately 300,000 from Chrysler. The potential shock from such a closure could have caused consumers to further reduce spending and lengthen the lasting effects of the economic downturn (Samuelson, 2015) [4]. Amadeo's [5] opinion sides with McNulty and Wisner and believes that the automotive bailout was not critical to the U.S. economy. "If there had been no bailout, Ford, Toyota, and Honda would have picked up market share. That would have increased U.S. factories and jobs once the recession was over," [5]. The loss of Chrysler or GM would essentially be a loss for the American psyche, not the long-term health of the economy.

Goolsbee and Krueger, [3] considered the bailout a success as both Chrysler and GM returned to profitability in 2010. This in turn was due to the U.S. economy rebounding and increased consumer demand for new automobiles. Although, the bailout does not ultimately ensure the long-term success of GM or Chrysler, as Goolsbee and Krueger [3] also cautioned that they must maintain efforts to restructure their businesses and improve managerial decisions.

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C. *Automotive Projections*

As of 2015, the total employment generated by all automotive manufacturing is estimated at 5.6 million, with $375 billion in total compensation [9]. The Center for Automotive Research (CAR) forecasts that hiring would rise 10.8% between the years 2013 to 2018, with an additional 12.6% rise in production over the same [9]. As shown in Figure 1 and Figure 2, the projected increase in employment and production displays trends that support automotive sales increasing from 15.6 million vehicles in 2013, over 16 million in 2014, to an expected sales of 17.6 million vehicles by the year 2018 [9]. With strong sales and the estimated 11 million vehicles manufactured in 2014, the automotive industry is vital to the success of the U.S. economy. "Approximately 3.8% of all U.S. private sector jobs are supported by the strong presence of the auto industry in the U.S. economy," [9].

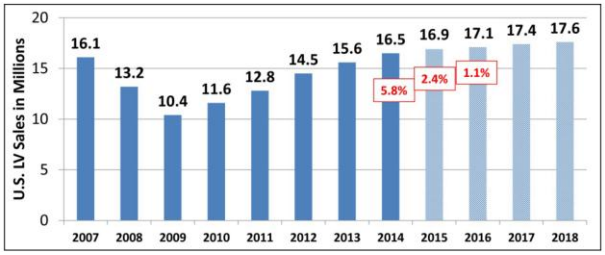

Figure 1. U.S. Automotive Sales and Forecast, 2007-2018

Reprinted from *Contribution of the Automotive Industry to the Economies of All Fifty States and the United States*, by Hill, K., Menk, D., Cregger, J., & Schultz, M., 2015, Retrieved from http://www.cargroup.org/?module=Publications&event=View&pubID=113. Copyright 2015 by Center for Automotive Research

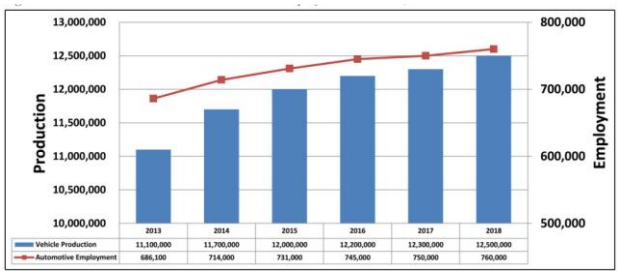

Figure 2. U.S. Vehicle Production & Automotive Employment Forecasts, 2013-2018.

Reprinted from *Contribution of the Automotive Industry to the Economies of All Fifty States and the United States*, by Hill, K., Menk, D., Cregger, J., & Schultz, M., 2015, Retrieved from http://www.cargroup.org/?module=Publications&event=View&pubID=113. Copyright 2015 by Center for Automotive Research.

III. METHODOLOGY

Secondary data was utilized for the analysis of determining the success of the automotive industry after GM's and Chrysler's bankruptcy. The source of the data pulled is from publicly available databases including the Bureau of Labor Statistics, U.S. Department of Commerce, Bureau of Economic Analysis, Bureau of Transportation Statistics, and the American Automotive Policy Council, among others. Additional financial data is pulled from the original equipment manufacturers (OEM) and financial websites. The North American Industrial Classification System (NAICS) classifies the automotive manufacturing industry into specific 4-digit categories [10]. For a complete picture of the health of the automotive manufacturing industry, three NAICS categories are included:

- 3361: Motor Vehicle Manufacturing: Includes OEMs
- 3362: Motor Vehicle Body and Trailer Manufacturing: Includes vehicle bodies, special purpose vehicles, trailers, and Recreational Vehicles (RVs)
- 3363: Motor Vehicle Parts Manufacturing: Includes OEM suppliers for engines, electric systems, steering and suspension, other.

IV. DATA and ANALYSIS

A. *Employment*

A search conducted within the Bureau of Labor Statistics for employment information revealed that in the years prior to the automotive bailout, employment reached a peak of over 1 million employees with a steady decline until 2010, after receiving financial support from the government. As shown in Figure 3, the peak employment in the previous ten years was in 2005 with 1,096,700 employees, while the least number of automotive workers was in 2009 at 664,100 workers.

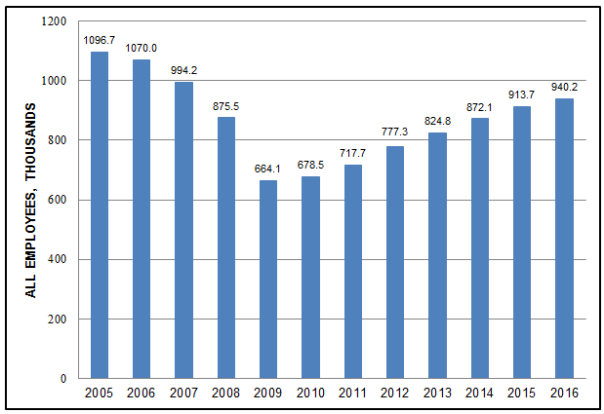

Figure 3. All employees, thousands, motor vehicles and parts, not seasonally adjusted. NAICS: 3361, 3362, & 3363.
Adapted from Bureau of Labor Statistics, n.d., Retrieved from https://data.bls.gov/pdq/SurveyOutputServlet

Figure 4 shows the 12-month percent change in employment numbers from 2005 until 2016. Employment numbers began to increase after 2009 as the automotive industry rebounded and began to hire back its workforce.

These numbers indicate that employment levels were on the decrease as the U.S. economy struggled during the economic recession. Automotive manufacturers were forced to temporarily or permanently close manufacturing and assembly factories [9]. After the financial bailout was received and post-bankruptcy for GM and Chrysler, the automotive industry restructured their businesses in order to return to profitability in 2010, which in turn improved automotive employment numbers.

B. *Profits*

Pre-financial bailout General Motors and Chrysler struggled to keep manufacturing operations running as profit numbers were on the downturn. As seen in Figure 5, in 2008, General Motors was negative -019% profit, Chrysler was barely breaking even, and Ford held a 12.41% profit [11]. Ford was able to maintain a positive gross margin throughout the economic downtown without the need for government assistance, having restructured two years prior. Both GM and Chrysler returned to profitability post-bailout due to restructuring, employee layoffs, plant closures, and for

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Chrysler their merger with Fiat S.p.A in 2009. In the latest financial information available GM (12.77%), Chrysler (14.4%), and Ford (16.61%) are showing one of the most profitable years over the last 5-year period.

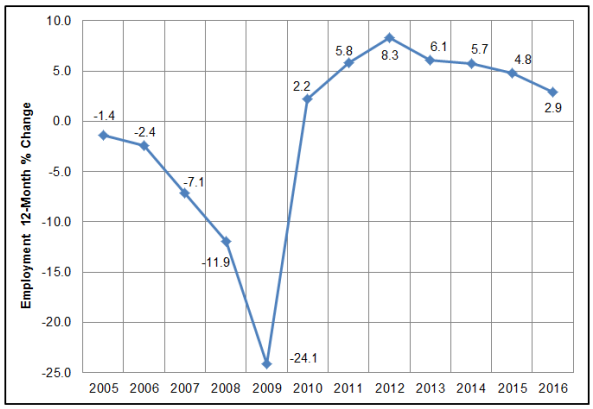

Figure 4. All employees' hours, thousands, motor vehicles and parts, not seasonally adjusted. NAICS: 3361, 3362, & 3363.
Adapted from Bureau of Labor Statistics, n.d., Adapted from https://data.bls.gov/pdq/SurveyOutputServlet

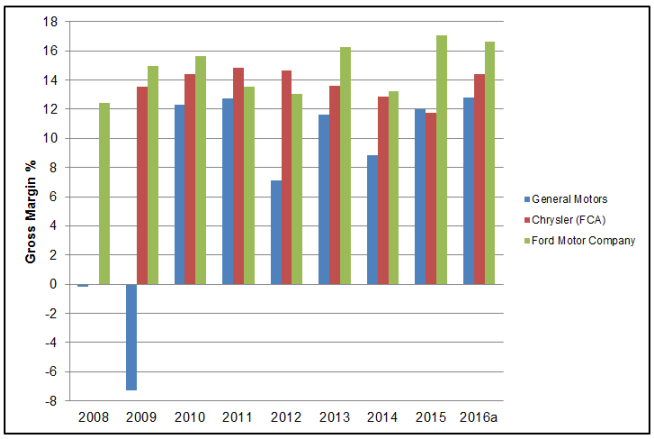

Figure 5. Annual Gross Margin %.

Note. [a] Chrysler (FCA) Gross Margin % from September 2016.
Adapted from GuruFocus, n.d., Retrieved from http://www.gurufocus.com/

C. Gross Domestic Produt

Another metric in determining the health of the automotive industry is to look at the value added to the U.S. Gross Domestic Product from data gathered by the Bureau of Economic Analysis (BEA). The total U.S. GDP in 2005 was $13,093.7 billion, while the value added by the automotive industry as a whole was $136.9 billion or approximately 1.04% of the total U.S. GDP [12]. As seen in Figure 6 the value added to the GDP took a sharp downturn in 2009 at $48.4 billion and 0.34%, which aligns with the automotive and financial crisis [13]. Post-financial bailout the value added to the GDP has slowly began to rise with the year 2015 posting $163.1 billion, or 0.90% of the total U.S. GDP ($18,036.6 billion) [13]. These are the highest numbers seen since the two years prior to the automotive bailout. Figure 7 displays the value added to U.S. GDP versus automotive employment in the years 2005 thru 2015.

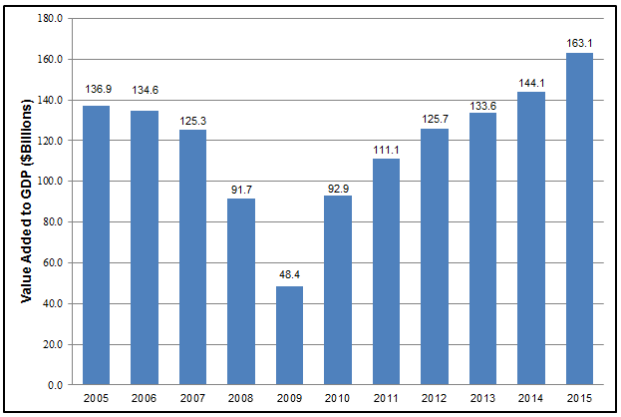

Figure 6. Value Added to U.S. GDP (Billions). NAICS: 3361, 3362, & 3363.
Adapted from U.S. Bureau of Economic Analysis. n.d., Retrieved from https://www.bea.gov/iTable/iTable.cfm?ReqID=51&step=1#reqid=51&step=51&isuri=1&5101=1&5114=a&5113=3361mvva&5112

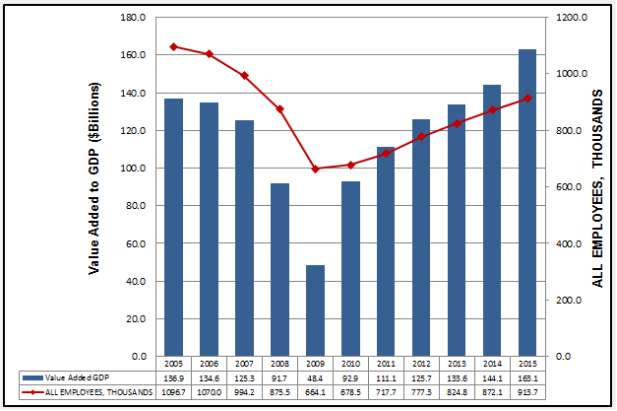

Figure 7. Value Added to U.S. GDP (Billions) vs. Employment. NAICS: 3361, 3362, & 3363.
Adapted from *U.S. Bureau of Economic Analysis*. n.d., & from *Bureau of Labor Statistics* n.d. Retrieved from https://data.bls.gov/pdq/SurveyOutputServlet https://www.bea.gov/iTable/iTable.cfm?ReqID=51&step=1#reqid=51&step=51&isuri=1&5101=1&5114=a&5113=3361mvva&5112

One of the correlations that can be drawn from Figure 7 is that employment levels were higher in the years prior to the automotive bailout, but the market was strong enough to support these numbers. As part of the GM and Chryslers' bankruptcy and bailout agreements, both organizations were required to lay off workers in order to cut costs [3]. Post-bailout employment numbers slowly rebounded, but never reached pre-bailout levels. In order to affirm the correlation between automotive employment and value added to the U.S. GDP, statistical analysis was conducted to determine the Pearson correlation and P-value. The null hypothesis that automotive employment numbers do not significantly affect the value added to U.S. GDP was tested and is shown in Figure 8.

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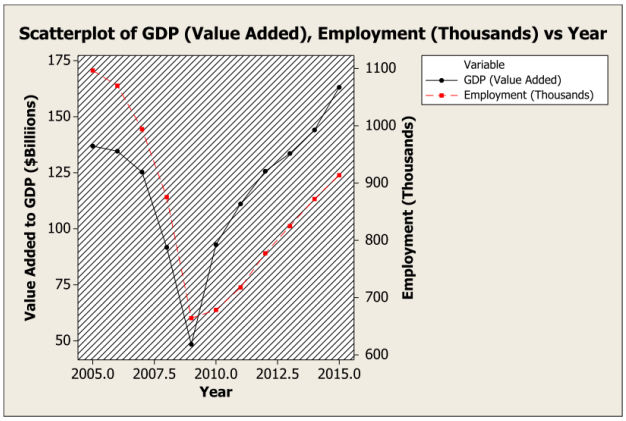

Figure 8. Value Added to U.S. GDP (Billions) vs. Employment. NAICS: 3361, 3362, & 3363.
Adapted from *U.S. Bureau of Economic Analysis*. n.d., & from *Bureau of Labor Statistics* n.d. Retrieved from https://data.bls.gov/pdq/SurveyOutputServlet https://www.bea.gov/iTable/iTable.cfm?ReqID=51&step=1#reqid=51&step=51&isuri=1&5101=1&5114=a&5113=3361mvva&5112

D. Automotive Production & Sales

Looking beyond the financial and employment impact the automotive industry has on the U.S. economy, automotive sales and production can be key indicators to automotive health. Annual U.S. motor vehicle production and sales numbers were obtained from the Bureau of Transportation Statistics (BTS) for three years prior to the bailout until the year 2015. Total vehicle production dropped significantly in 2009 to 5.7 million vehicles, [14]. Vehicle production post-bailout has steadily ramped up to higher numbers than seen since 2005, with total production of 12.1 million vehicles seen in the year 2015 as seen in Table 3 [14].

TABLE III. Year-Wise Vehicle Production

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Production, total	11,947	11,260	10,752	8,672	5,710	7,744	8,662	10,336	11,066	11,661	12,105
Passenger cars	4,266	4,312	3,867	3,731	2,196	2,732	2,978	4,109	4,369	4,253	4,162
Commercial vehicles	7,681	6,949	6,885	4,941	3,514	5,012	5,685	6,227	6,698	7,408	7,943

Note. Adapted from "National Transportation Statistics," BTS, 2016, Retrieved from https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/index.html

Providing further detail, Figure 9 displays a relation of employment versus vehicle production. Vehicle production levels have rebounded past pre-bailout numbers, while employment levels have never fully rebounded. This indicates that automotive industry is running leaner; providing increased vehicle output with less variable labor costs.

Total new passenger car sales for the years prior to the automotive bailout exceeded 7 million units, for both domestic and import automotive manufacturers. Per the BTS, [14] passenger vehicle sales were at their lowest in the year 2009 with 3.5 million; this is approximately a 2 million-vehicle decline from the year 2005. As seen in Table 4, vehicle sales have steadily increased since the bailout and as of 2015; new passenger vehicle sales reached 7.5 million vehicles.

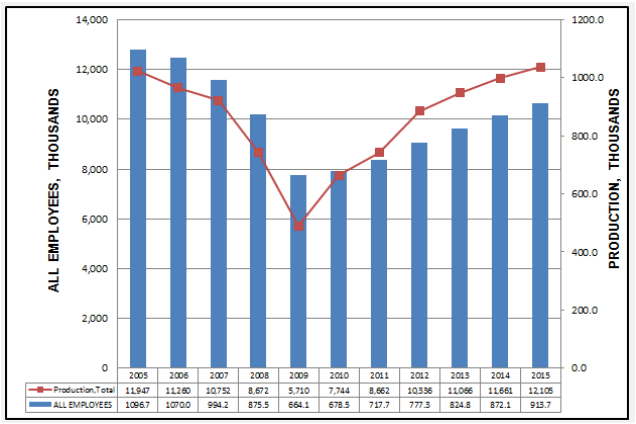

Figure 9. U.S. Motor Vehicle Production vs. Automotive Employment.
Adapted from "National Transportation Statistics," BTS, 2016, & from Bureau of Labor Statistics Retrieved from https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/index.html

Total new passenger car sales for the years prior to the automotive bailout exceeded 7 million units, for both domestic and import automotive manufacturers. Per the BTS [14] passenger vehicle sales were at their lowest in the year 2009 with 3.5 million; this is approximately a 2 million-vehicle decline from the year 2005.

TABLE IV. New Passenger Car Sales (Thousand Units)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total New Passenger Car Sales	7,660	7,762	7,562	6,769	5,402	5,636	6,090	7,244	7,858	7,689	7,525
Domestic[b]	5,473	5,417	5,197	4,491	3,558	3,791	4,143	5,119	5,433	5,591	5,611
Imports	2,187	2,345	2,365	2,278	1,843	1,844	1,947	2,125	2,153	2,098	1,914
Japan	923	1,154	1,183	1,142	829	799	806	905	897	820	731
Germany	534	575	582	507	407	482	522	545	566	546	468
Other	729	616	600	630	606	563	619	676	690	733	714

[a] Retail new car sales include both sales to individuals and to corporate fleets. It also includes leased cars.
[b] Includes cars produced in Canada and Mexico. Adapted from "National Transportation Statistics," BTS, 2016, Retrieved from https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/index.html

Domestic passenger vehicle sales exceed production, allowing for the sale of previous model years and the automotive import market. Another observation as shown in Table 4, is the percentage of import vehicle sales has reduced, meaning that domestic vehicle sales are taking on a larger portion of the market.

V. DISCUSSION AND CONCLUSION

As outlined, there were two possible conclusions regarding the financial bailout in the automotive industry:

1. Bailout was a success and vehicle sales and production increased, employment rose, and valued added to the U.S. GDP improved with a correlation to automotive employment;

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2. Bailout failed and vehicle sales and production remain low, employment levels did not recover, and the value added to the U.S. GDP is less than pre-bailout numbers with no correlation to automotive employment.

Results supported the first alternative as the U.S. automotive industry has seen a steady increase in vehicle sales, production, employment, and value added to the U.S. GDP.

According to Hill et al., [9], the U.S. automotive sales expected increase year over year through 2018. U.S. automotive sales reached an all-time record in 2016 at 17.46 million vehicles sold, which is a 0.4% increase over 2015 [15]. As shown in Figure 10, passenger car and light truck sales have achieved levels above pre-bailout. The automotive industry is vital to the health of the U.S. economy as it is a significant driver in American employment and tax revenue. As of 2015 the direct and indirect jobs, number of jobs available were 2.44 million for automakers, 3.16 million for auto suppliers, and 1.65 million for automotive dealers [9]. In 2013, the auto industry funds both federal and state governments; the auto industry generated $95.5 billion in federal tax revenue and $110 billion in state government revenue [9].

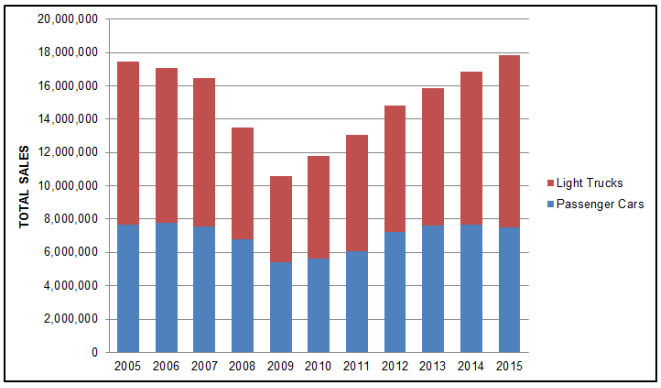

Figure 10. Total U.S. Automotive Sales.

Source: Auto Alliance. Adapted from https://autoalliance.org/wpcontent/uploads/2017/01/2016_Cars_Move_America_Report.pdf

In 2016, GM, Chrysler, and Ford posted record North American profits: GM $12 billion, Chrysler (FCA) $5.1 billion, Ford $9 billion [16]. All the three automotive manufacturers announced at the beginning of 2017 profit sharing bonuses with General Motors sending out checks up to $12,000 to the UAW; Chrysler (FCA) $5,000, and Ford an average of $9,000 to the UAW [16]. In total, 150,000 checks were distributed to nearly unionized, hourly workers for the Big Three. These numbers provided insight on the health of the automotive industry.

VI. LIMITATIONS AND FURTHER RESEARCH

Although the findings within this study indicate, the automotive industry has successfully rebounded to profitability post-financial bailout; there are limitations to the data provided. Further research is needed to gather data into the bailout impacts on automotive supplier employment, profitability, and the number of suppliers servicing the automotive industry. Data is required to analyze supplier profit sharing, industry segment diversity, and total contribution to automotive employment and U.S. GDP. Additional research on the number of automotive dealerships pre and post-bailout and their effect on state and federal revenue could provide a broader picture of total industry economic health

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