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For Release: 11/17/2017  
9:30 A.M.

## The Michigan Economic Outlook for 2018–2019

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### I. Introduction

Michigan's job growth engine has downshifted a bit in 2017, but a slowdown was bound to come sometime to a state that has now posted eight consecutive years of payroll employment growth. The state is on pace to add a total of 41,900 jobs during 2017. That is the lowest annual total since the start of the recovery, but in our view it is still very tangible progress toward a stronger labor market for the state's workers. The state's unemployment rate averaged 4.0 percent in the third quarter, its lowest level since the year 2000. With less labor market slack than earlier in the recovery, we see 2017 as the new normal for Michigan over our forecast period: steady job growth, low unemployment, tame inflation, and an economy that continues to diversify. All in all, we see that profile as a winning combination for Michigan.

It is worth acknowledging that there are some blemishes on Michigan's economic performance this year. The labor force participation rate drifted down by four-tenths of a percentage point from the fourth quarter of 2016 to the third quarter of this year, meaning that a substantial part of the drop in the state's

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unemployment rate came from Michiganders exiting the labor force rather than finding jobs. U.S. light vehicle sales have been running below their 2016 pace, and the Detroit Three's share of sales has also nudged down from a year ago.

The external environment remains supportive of economic growth for Michigan, the slowdown in the auto industry notwithstanding. The national business cycle is now well into its mature phase, but we expect moderate growth to persist over the next two years. The Federal Reserve's deliberate normalization of monetary policy continues to support growth, as do financial conditions more generally. The slow pace of the recovery in housing construction has been one of the most disappointing elements of this economic expansion, both nationally and in Michigan, but that does mean there is room left for sustainable growth. The recent downtick in the value of the dollar since its post-election highs should also provide some comfort to Michigan's manufacturers.

Of course, there are plenty of risks to our sunny outlook for fretful types to keep an eye on. The Federal Reserve may misjudge the appropriate pace of monetary tightening, restraining growth in the national economy. Political intrigue in the Middle East could lead to a sharp spike in oil prices, damaging prospects for vehicle sales, especially of light trucks. And severe disruptions to our international trade arrangements could affect our manufacturing industry in a number of ways, a topic to which we will return near the end of this report.

On balance, though, we consider the most likely outcome for Michigan's economy to be continued growth over the next two years, albeit at a more muted tempo. Before considering our forecast in more detail, we first take a look at 2017, to gauge how well we anticipated this year's developments at last year's Economic Outlook Conference.

## II. Review of the Forecast for 2017

RSQE has been presenting its forecast of the Michigan economy at the Economic Outlook Conference for over four decades. The track record for each of the previous forecasts is set forth in summary form in Table 1.

At last November's conference, we forecast that job gains in Michigan would decelerate from the brisk rate of 2.0 percent in 2016 to 0.9 percent in 2017. While data revisions earlier this year adjusted job counts going back to 2012, the relative changes were not large enough to alter the overall historical growth rates in Table 1. Although we were correct in predicting a deceleration in total payroll employment, job gains exceeded our expectations and are currently on pace to register 1.5 percent growth. The 0.6 percentage-point error (1.5 minus 0.9) represents an underprediction of 23,600 jobs.

Our forecast shortfall is concentrated in two industry sectors: manufacturing and government. Nearly half of our underprediction—11,600 jobs—occurred in manufacturing, with a quarter of that coming from the transportation equipment manufacturing subcategory. Last November, we predicted that after gains through the first three quarters of 2016, employment in transportation equipment manufacturing would gradually decline from the fourth quarter of 2016 through 2017. Current data suggest that jobs in that sector continued to grow modestly until the second quarter of 2017, when they turned downward—hence, our prediction was two quarters premature.

For the "other manufacturing" subcategory, we underpredicted 2017 gains by 8,700 jobs, which was mostly due to an unexpected jump in the second quarter. Manufacturing jobs in 2017 have benefitted from a weaker than anticipated dollar and rising fixed investment in industrial equipment.

**Table 1**  
**Review of RSQE Forecast of Employment and Income**  
**in the State of Michigan**

Year	Percent Change in Michigan Wage and Salary Employment		Percent Change in Michigan Personal Income	
	RSQE Forecast <sup>1</sup>	Observed	RSQE Forecast <sup>1</sup>	Observed
1973	4.6	5.4	9.6	11.6
1974	1.5	-0.2	7.4	7.0
1975	-1.3	-4.3	5.8	7.0
1976	3.4	4.7	12.7	11.7
1977	2.1	4.8	11.4	12.5
1978	2.8	4.8	11.2	11.5
1979	-0.6	0.8	8.3	9.6
1980	-2.5	-5.3	6.1	7.0
1981	2.2	-2.3	10.8	7.0
1982	-0.9	-5.1	7.1	3.2
1983	1.0	0.9	7.0	6.3
1984	5.5	4.9	11.3	10.6
1985	2.6	5.3	8.0	8.5
1986	1.3	2.7	4.8	6.5
1987	1.8	2.1	3.8	4.0
1988	0.3	2.2	3.7	6.7
1989	1.8	2.7	6.4	7.7
1990	1.3	0.6	6.0	4.6
1991	-0.4	-1.5	5.0	2.1
1992	0.7	0.8	5.1	6.1
1993	0.3	2.1	4.9	5.3
1994	1.1	3.6	4.7	7.5
1995	2.1	3.1	6.4	5.8
1996	1.6	2.0	4.6	5.3
1997	1.6	1.9	5.1	5.3
1998	1.2	1.6	4.8	6.1
1999	1.4	1.6	3.5	5.2
2000	1.4	2.1	5.2	6.7
2001	0.5	-2.4	4.6	1.7
2002	-0.6	-1.7	2.3	0.1
2003	-0.3	-1.6	3.5	2.1
2004	0.8	-0.4	4.9	2.9
2005	0.8	-0.2	4.7	2.0
2006	-0.2	-1.4	4.9	2.4
2007	-0.7	-1.4	3.3	2.8
2008	-1.7	-2.5	1.6	2.2
2009	-3.0	-7.0	0.7	-5.1
2010	-2.2	-0.2	1.0	3.4
2011	0.2	2.3	2.0	6.2
2012	0.8	2.1	3.0	3.6
2013	0.9	1.9	2.6	1.4
2014	1.7	1.7	4.5	4.3
2015	1.5	1.5	4.6	5.5
2016	1.4	2.0	4.4	2.8
2017	0.9	1.5 <sup>2</sup>	3.7	3.1 <sup>2</sup>

<sup>1</sup>Forecast presented at the Economic Outlook Conference of the preceding year.

<sup>2</sup>Estimated by RSQE as of November 2017.

Most of the remaining shortfall in our prediction of total payroll job gains is in the government sector. Here we underpredicted gains in 2017 by 10,200 jobs. This is a sector that we continue to watch closely. After falling every year from 2002 to 2015, for a total loss of 92,500 jobs, the calendar year average finally turned upward in 2016. At last year's conference, we correctly predicted that government jobs would continue to increase in 2017, but we expected much more modest growth of 0.3 percent compared with the rapid 2 percent increase that we are currently on pace to achieve.

Turning our attention to income, the bottom of Table 1 shows that we overpredicted income growth in Michigan by 0.6 percentage points: we projected a 3.7 percent increase in Michigan personal income compared with the 3.1 percent we now estimate. At first glance, this result may appear inconsistent with our underprediction of job growth. In fact, we underpredicted wage and salary income growth by 0.4 percentage points; our overprediction of personal income was concentrated in transfer payments and property income.

The category for property income includes rental income as well as dividends and personal interest. A year ago, we forecast 4.5 percent growth in this category for 2017. Data revisions over the past year raised the level of this category significantly in both 2015 and 2016 while lowering the observed growth rate between the two years. Based on the revised history, we now expect growth in property income of 2.4 percent in 2017. A similar story holds for transfer income, which we initially projected to grow by 4.8 percent in 2017. Data revisions lowered both the level and growth rate for 2016 and now lead us to expect a more modest 2.3 percent growth rate this year. It bears notice that the state personal income data for the year are incomplete at this time and will be subject to several rounds of revision over the next few years.

### III. Inputs to the Forecast

Our Michigan forecast depends on the overall health of the national economy, national economic policy, and a set of assumptions specific to the state model. Major elements from our national forecast include the following:

- Real GDP growth rebounded from a disappointing 1.2 percent annualized pace in the first quarter of 2017 to a much healthier 3.0–3.1 percent pace in the second and third quarters. We believe that pace is above the underlying trend rate of growth, and we expect growth to decelerate over our forecast horizon. On a fourth-quarter-to-fourth-quarter basis, output growth slows from 2.5 percent in 2017 to 2.2 percent in 2018 and 2.1 percent in 2019.
- All of the pieces seem to be in place for a hike in the federal funds rate at the Federal Open Market Committee’s meeting in December. We expect a measured pace of two rate hikes per year in 2018–19, reflecting our assessment that the neutral federal funds rate is much lower than in the past. We expect President Trump’s nominee as chair of the Federal Reserve Board of Governors, Jerome Powell, to maintain a high degree of continuity in Fed policy, although the high number of vacancies remaining on the Board generates substantial uncertainty.
- Congressional Republicans have passed a budget resolution allowing tax reform legislation to increase the federal deficit by \$1.5 trillion over the next decade. The Tax Cuts and Jobs Act (TCJA) released by House Republicans contains tax cuts only about a quarter as large as promised on the campaign trail. It severely limits the state and local tax deduction and also reduces the mortgage interest deduction, which is likely to spark skepticism from Republican lawmakers in high-priced coastal states. The bill also faces procedural hurdles in the form of the so-called Byrd rule and PAYGO Act. We continue to expect Congress to pass some sort of tax reform, but we do not anticipate a noticeable growth impact over our forecast horizon.
- The U.S. economy adds 2.0 million jobs during 2017, and matches that pace in 2018, before slowing to a pace of 1.7 million job additions in 2019. We see the unemployment rate ticking down very slowly over the next two years, from 4.2 percent at the end of 2017 to 4.1 percent at the end of 2018 and 4.0 percent at the end of 2019. The labor force participation rate also holds roughly steady in the 62.8–62.9 percent range over the forecast horizon, as the strong labor market attracts more previously discouraged and other marginally attached workers, offsetting the downward pressure from retiring baby boomers.
- Oil prices, which had been relatively steady for most of the year, spiked recently on news of political intrigue in Saudi Arabia. Crown prince Mohammed bin Sultan appears to be attempting to consolidate power by purging his potential rivals under the guise of an anti-corruption campaign. We expect prices for West Texas Intermediate crude to fall back toward the \$50 to \$55 per barrel range if the political situation is resolved, admittedly a big “if.” Prices then rise slowly over the forecast period, reaching \$55 per barrel by the end of 2019.
- Inflation dipped unexpectedly in the second quarter of 2017, with the headline Consumer Price Index (CPI) falling on a quarterly basis. Large declines in the prices of cellular telephone service accounted for a surprisingly large part of the slowdown in inflation, which rebounded in the third

quarter. We see core CPI inflation, which strips out the effects of volatile oil and food prices, rising from 1.6 percent on an annualized basis in the fourth quarter of 2017 to 2.2 percent at the end of 2019. Headline CPI inflation runs a bit behind core inflation over most of the forecast period.

- Housing starts rise from 1.20 million units in 2017 to 1.27 million units in 2018 and 1.31 million in 2019. Those are meaningful gains, but residential construction remains extremely weak relative to history. On a per capita basis, we project annual housing starts in 2019 to remain lower than in any year from 1959 to 2007. The gains we foresee are concentrated in single-family starts, with multifamily starts essentially flat over the forecast period.

Some additional inputs affect the outlook for Michigan, particularly those related to the automotive industry. The United Auto Workers and the Detroit Three automakers are currently operating under four-year labor agreements that are in effect until September 2019. The contracts include provisions for pay increases, profit-sharing, and lump-sum payments. At all three companies, eligible workers can expect varying lump-sum payments for the next two years and 3 percent wage increases in 2019. Workers outside of Tier 1 are scheduled for augmented wage increases.

Profit-sharing payouts per eligible worker in early 2017 were \$12,000 at General Motors (GM), \$9,000 at Ford, and \$5,000 for Fiat Chrysler Automobiles (FCA). Based on current year-to-date profits, we anticipate declines in profit sharing in 2018 to \$7,200 for Ford and \$9,750 for GM, with FCA level at \$5,000. We expect payouts in 2019 to be roughly equal to 2018. A contract reopening is not anticipated during the forecast period.

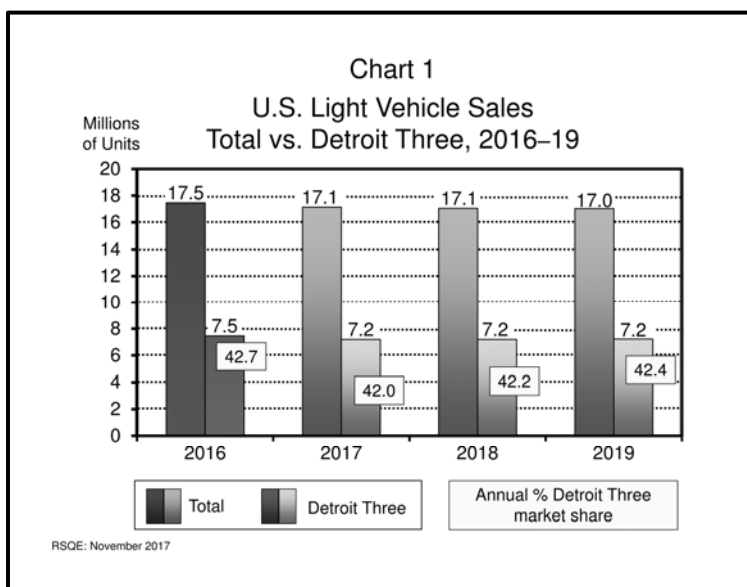


Chart 1 shows our forecast of total unit sales of light vehicles—cars, minivans, sport utility vehicles (SUVs), crossovers (CUVs), and pickup trucks—in the United States as well as the share sold by the Detroit Three. Based on the first three quarters of data for 2017, we forecast sales to decline from the record high of 17.5 million in 2016 to 17.1 million this year. Sales hold steady at 17.1

million in 2018 before nudging down to 17.0 million units in 2019. Light truck sales, including SUVs and CUVs, rise over the forecast, and car sales decline as consumers continue to shift away from smaller vehicles.

We see the Detroit Three's share of the light vehicle market declining from 42.7 percent in 2016 to 42.0 percent in 2017 before rebounding a tad to 42.2 percent in 2018 and 42.4 percent the following year. The projections for total sales and the Detroit Three's share of that market, taken together, yield our outlook for Detroit Three sales, which remain flat at 7.2 million units for 2017 through 2019.

We now turn to our view of the prospects for the Michigan economy through 2019.

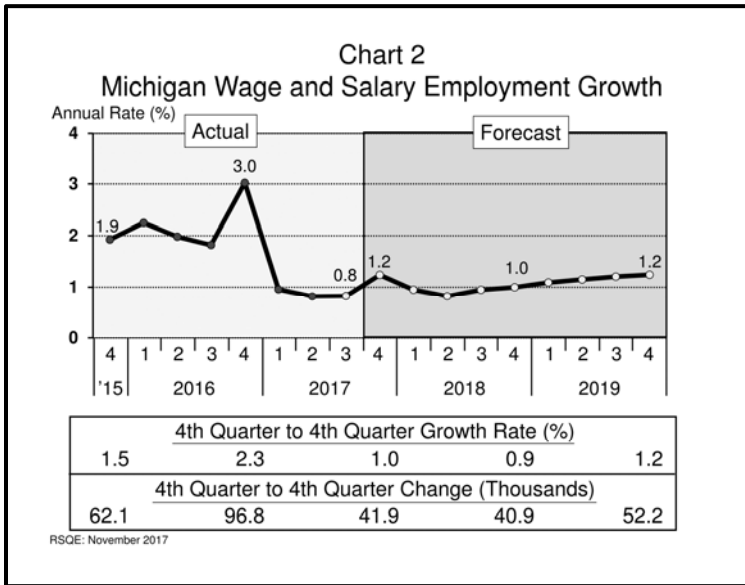
#### **IV. The Forecast for 2018–2019**

Michigan is now entering its ninth year of economic recovery, having created an average of 70,500 net job additions per year from the previous recession's low point in the summer quarter of 2009 to summer 2017. This amounts to an annual growth rate of 1.7 percent, nosing above the national rate of 1.5 percent over the same period. This is the longest period of sustained job growth in Michigan since the nine-year interval that spanned the spring quarters of 1991 to 2000, although employment growth averaged a brisker 2.1 percent per year in that expansion.

Growth intensified during 2016 with the addition of 96,800 jobs, highlighted by an unsustainable surge to 3 percent at an annual rate in the closing quarter of the year after expanding at a pace of 2 percent in the previous nine months. The job gain during 2016 was tied with 2011 as the largest annual increase since 1995. The first three quarters of 2017 have seen a pronounced slowdown in Michigan's job growth, however, registering an annual rate of 0.9 percent compared with 1.4 percent for the nation. We anticipate employment growth to notch up to an annual rate of 1.2 percent in the fourth quarter, contributing to a gain of 41,900 job additions during 2017, the smallest annual increase over the current recovery period.



Our projected growth path for payroll employment from there through 2019, measured in quarterly time intervals, is shown in Chart 2. The box at the bottom of the chart translates the path into changes in employment *during* each year—that is, the change from the end of one year to the end of the next year—shown both as a percentage and in thousands of jobs.



We see job growth coming in at an annual rate of 0.9 percent during the first half of 2018, similar to its one-percent pace during 2017. Growth drifts up from there by a modest tenth of a percentage point for each half year through the second half of 2019, ending up at 1.2 percent. The tempo of job growth moving forward translates into gains of 40,900 jobs during 2018, rising to

52,200 in 2019. Along with 2017 these would be the smallest annual job additions in Michigan's current economic recovery to date, as the local recovery matures, the labor market becomes increasingly tighter, the U.S. economy slows, and Detroit light vehicle sales flatten out. Our outlook does extend Michigan's economic recovery period to over ten years, however—among the longest continuous stretches of job growth in the state since the Great Depression.

The industry movements underlying the forecast path for total payroll employment provide more insight into its expected trajectory through 2019. The changes for payroll employment during 2016 and the forecast years 2017 through 2019, displayed at the bottom of Chart 2, are duplicated (and rounded) in the first row of Table 2. The rest of the rows show the same information for major sectors contributing to these movements in employment. (Note that not all of the sectors are included here, thus the columns don't add up to the total for each time period.)

**Table 2**  
**Change in Payroll Employment by Industry Sector**  
**(Thousands of jobs)**

	2015q4 To 2016q4	2016q4 To 2017q4	2017q4 To 2018q4	2018q4 To 2019q4
Total jobs	97	42	41	52
Manufacturing	9	3	-8	-1
Construction	8	5	6	6
Professional and business services	22	10	18	19
Trade, transportation, and utilities	8	1	5	9
Private education and health services	9	6	5	4
Leisure and hospitality	16	1	7	8
Government	15	8	3	3

Manufacturing was one of two sectors, along with professional and business services, that were the engines of growth in the earlier stages of the current recovery period. From yearend 2009 to yearend 2014, manufacturing contributed over a third of the job gains in the Michigan labor market while making up less than a seventh of its employment base. Manufacturing's pace of growth has been slowing more recently, dwindling from 24,700 job additions during 2014 to 13,100 in 2015, 8,700 in 2016, and by our estimate, 2,900 in 2017—contributing a mere one-twelfth of the job gains in Michigan during the two-year period 2016–17. We see a small decline in employment for the sector from the end of 2017 to yearend 2019, cumulating to a loss of 9,000 jobs over the two-year period. Two of every five job losses is directly attributable to the auto industry, and much of the rest derives from auto-related industries. The downshift reflects the more mature stages of the recovery overall, flat Detroit Three vehicle sales, and weaker vehicle output combined with further productivity gains, counterbalanced in part by a boost from the weaker dollar. Although the slowdown in the light vehicle market is some cause for concern, it need not lead to a decline in the broader labor market, an issue we address later in this section of the paper.

Five major industry divisions account for nine out of every ten job gains in the private nonmanufacturing sector from the end of 2017 to the end of 2019: construction; professional and business services; trade, transportation, and utilities; private education and health services; and leisure and hospitality.

The construction industry was hit hard during the previous recession, losing about three in seven of its workforce in the state from the closing quarter of 2000 to the end of 2009. The industry then struggled to gain traction in the earlier years of the recovery that followed, adding an average of 2,700 jobs annually in the first three years of the upturn, to the end of 2012. Construction employment then bounced back to average 7,300 job additions per year during 2013–16. After a more modest addition, by our estimate, of 4,900 jobs during 2017, we are forecasting construction employment to grow by about 5,700 jobs per year during 2018 and 2019. The industry benefits from the continuing overall improvement in the local economy and our projection of a considerable rebound in purchasing power, counterbalanced in part by a weak profile for building permits going forward. There is also a risk that higher mortgage rates will take a larger bite out of growth than we currently anticipate.

The professional and business services sector is a broad category containing three major subcategories: professional, scientific, and technical services; management of companies; and administrative support services, including temporary help. The sector averaged 22,100 job additions from the closing quarter of 2009 to yearend 2016, about 30 percent of the total job gains in the state at that time, double its employment base of 15 percent. After a slowdown during 2017 with the addition of only 10,300 jobs, the sector springs back to contribute 37,300 jobs from the end of 2017 to yearend 2019, amounting to two in five of the total jobs created in Michigan over the period. Most of the job contributions originate from the professional, scientific, and technical subcategory and the administrative support subgroup, split about evenly between the two. Growth in the sector benefits from a continuing supportive commercial environment locally and growth in engineering and other areas of the white-collar automotive industry.

The trade, transportation, and utilities (TTU) sector is the largest super sector in the Michigan labor market, containing four major subcategories: wholesale trade, retail trade, transportation and warehousing, and utilities. After averaging 9,000 job additions during the first three years of the current recovery period through the end of 2012, job growth in TTU rose to 15,000–16,000 additions per year during 2013 and 2014, before falling back to average in the neighborhood of 9,000 gains per year again

during 2015 and 2016. By our estimate, job growth in the sector has retreated considerably to 1,100 additions in 2017, after which we forecast some modest improvement during 2018 and 2019, with job gains totaling 13,400 over the two-year period. The pattern of job movements for TTU over recent times follows that of its retail trade subcomponent, which also is the main source of the sector's recent weakness. The downward pressures on retail employment in recent times have been well publicized, including competition from online shopping and movement toward less labor-intensive big-box stores. Half of the job additions for TTU from the end of 2017 to yearend 2019 come from the retail trade subcomponent.

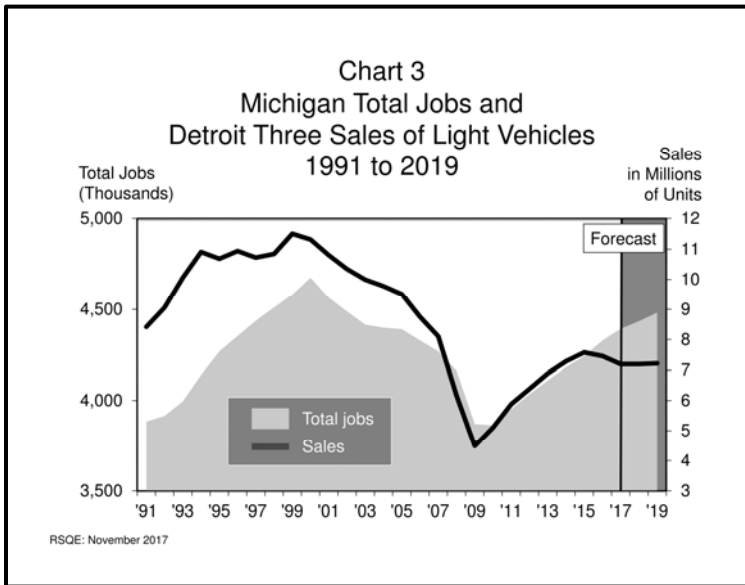
Nearly 90 percent of employment in the private education and health services sector is in the health services component. This sector has been relatively immune from the business cycle, and has the distinction of being the only major industry division that added jobs every year during Michigan's previous downturn. Indeed, the sector has generated a string of yearly job gains that extends from 1999 to current times. The sector averaged 6,900 job additions per year from yearend 2009 to 2014 before accelerating to 14,600 additions in 2015, and then ratcheting back to contribute 9,000 jobs in 2016. We judge that the acceleration in job growth was driven in large part by the Healthy Michigan Plan, the state's expansion of Medicaid under the Affordable Care Act. The Healthy Michigan Plan opened for enrollment in spring 2014, and enrollment grew rapidly through the end of 2015. Current projections are for enrollment growth to slow substantially going forward, and we foresee job growth in the private education and health services sector drifting down as well, adding about 6,000 jobs during 2017, 5,000 in 2018, and 4,000 in 2019. Repeal of the Medicaid expansions under the Affordable Care Act at the federal level would pose a substantial risk to growth in this sector, but we do not anticipate such a development within our forecast horizon.

The leisure and hospitality sector is made up of two major subcategories: arts, entertainment, and recreation; and accommodation and food services, with the latter currently making up 88 percent of the employment in leisure and hospitality. Accommodation and food services also has been the more rapidly growing subcategory over the current recovery period, with the strongest growth in its restaurants and

other eating places subcomponent. Leisure and hospitality added 8,000–9,000 jobs per year in the four years prior to 2016, before spiking to 16,400 job additions in 2016. After a pause in 2017, we are forecasting a return to growth of 7,000 to 8,000 jobs per year during 2018–19. The job gains over the next two years supply 16.3 percent of the total payroll job gains in the state economy, well above the sector's current job market share of around 10 percent. A rebound in purchasing power and continuing improvement in the local labor market overall support a bounce-back in the sector going forward.

Among the rest of the major industry divisions in the private nonmanufacturing sector, modest job gains over the forecast period occur in each of the financial activities and the miscellaneous other services sectors, while the natural resources and mining sector and the information sector see no growth in employment over the period.

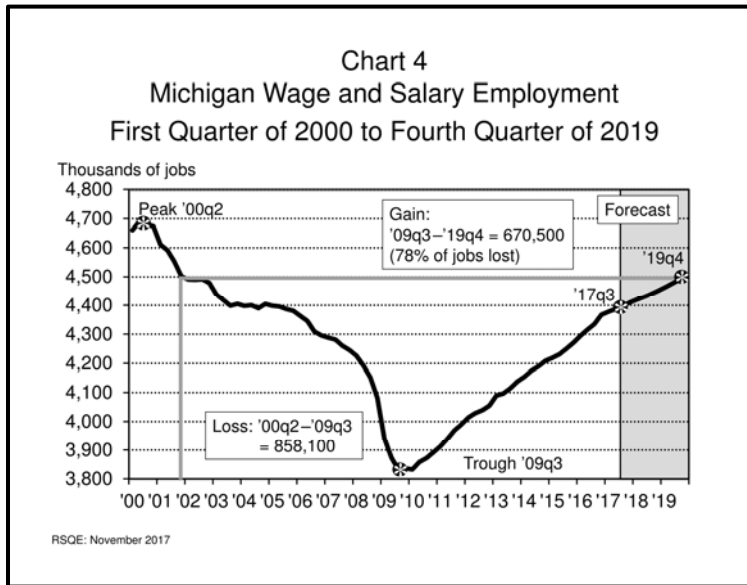
Government sector employment in Michigan turned around in 2016 with a surprising spurt of 14,600 additions following declines every year for thirteen consecutive years. The majority of those additions occurred in the state government component, which includes public universities and state hospitals, with most of the rest attributed to the local government category, including K-12 public education and community colleges. We estimate a smaller addition of 7,800 government employees during 2017. We see the turnaround to positive growth continuing over the forecast period, but at a more sustainable rate of 3,100 employees per year during 2018 and 2019. Government appears to have adapted over recent years to its new financial situation.



It is frequently observed that there is a very tight relationship between the performance of the Michigan economy and movements in the domestic auto industry. This relationship is confirmed in Chart 3, which shows the path of total payroll employment compared with the trajectory of Detroit Three light vehicle sales annually from 1991 through 2016, with an extension

through 2019 to include the forecast period. Note that the employment measure displayed is economywide payroll employment in Michigan, not manufacturing or auto employment, where the relationship to auto sales would be more obvious. The correlation coefficient between the two measures over the historical period is 0.72. When Detroit Three light vehicle sales are rising, so does total payroll employment, by and large. When sales plummet, so does total employment. The trajectories in the chart do suggest, however, that even with no more than a stable sales environment, there can be a rising number of jobs in the state. The instructive episode is stationed in the mid-to-late 1990s, when the state added jobs at a healthy rate while facing flat Detroit Three vehicle sales. Although admittedly not derived from a rigorous analysis, that observation becomes relevant when we consider the forecast period, which is characterized by a similar pattern of fairly stable sales and economywide employment that continues to rise.

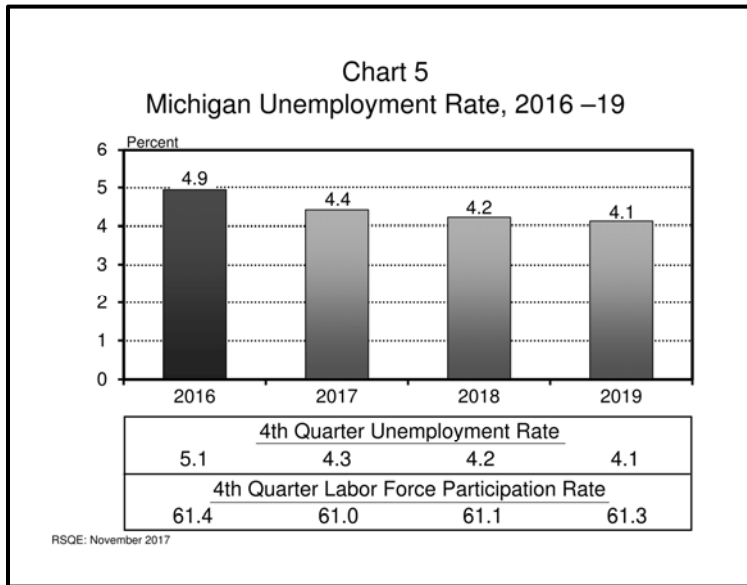
The current recovery is put in broader historical context by considering how much ground the Michigan economy is making up from the third quarter of 2009 through 2019 relative to what it lost in the preceding decline—a challenging benchmark considering the severity of the downturn.



The quarterly path of payroll employment from the start of 2000 to the end of 2019 is shown in Chart 4. From its peak employment quarter in the spring of 2000 to its trough in the summer of 2009, Michigan lost 858,100 jobs, half of them in the last two years of the decline, reflecting the severity of the Great Recession. In the recovery from the low point in the third quarter of 2009 to

the end of the currently published data in the third quarter of 2017, Michigan gained 563,800 jobs. From then to the end of 2019, we are forecasting that the state economy will create an additional 106,700 jobs, thus cumulating to 670,500 job additions (563,800 + 106,700) from the bottom of the downturn through 2019. That would replenish a little short of eight in ten (precisely 78 percent) of the jobs lost from the spring of 2000 to the summer of 2009, returning the state to the job levels it posted in the fourth quarter of 2001, a year and a half into the nine-year decline.

Michigan's seasonally adjusted unemployment rate came in at 4.3 percent for this September, up four-tenths of a percentage point from August. The September reading was one-tenth of a percentage point above the national rate and seven-tenths of a percentage point below the state's reading the previous September. This September was the first month since April that the state's rate came in above the national rate, as a relatively large number of people entered the Michigan labor force seeking employment. Michigan's rate still remains low compared with prior years. After sitting in the relatively narrow range of 4.8–5.3 percent from mid-2015 through the first three months of 2017, the rate moved down precipitously through July's reading of 3.7 percent before increases were posted for both August and September. Michigan's unemployment rate for the third quarter of 2017 computes to 4.0 percent, the lowest quarterly rate recorded since the state booked a rate of 3.8 percent in the third quarter of 2000. It bears noting that the state had over 300,000 more employed then than it does today.



As suggested by the fourth-quarter unemployment rates shown in the box at the bottom of Chart 5, the jobless rate drifts up from the posted reading of 4.0 percent in the third quarter of 2017 to 4.3 percent in the fourth quarter. The rate then ticks down to stabilize in the 4.1–4.2 percent range throughout the forecast period, as the labor force rises at a similar pace as household

employment. The state and national jobless rates run essentially in tandem over the forecast period, a general pattern that has held since mid-2015.

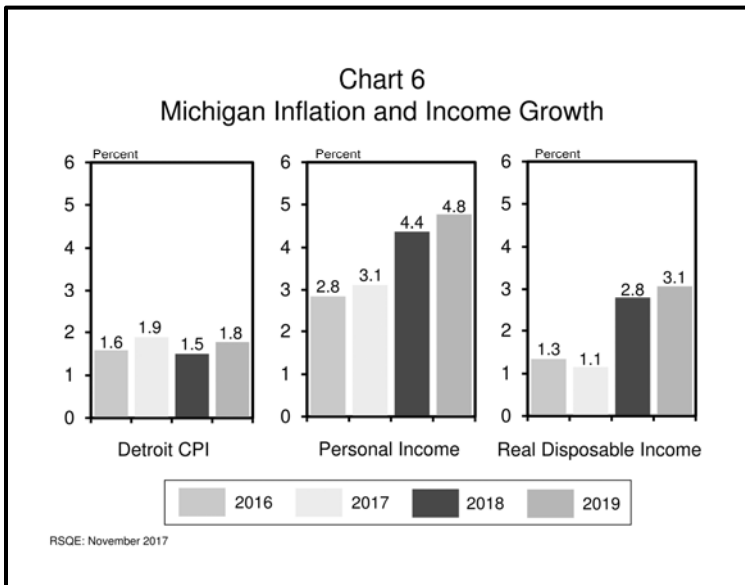
As shown in the main body of Chart 5, following a rate of 4.9 percent posted for 2016, our forecast path for the Michigan unemployment rate translates into calendar year averages of 4.4 percent for 2017, 4.2 percent for 2018, and 4.1 percent in 2019.

Since March 2015, the state's labor force increased every month through April 2017, before declining in each month from May through August. As noted above, the labor force then increased substantially in September as entrants sought out employment. We are forecasting continued but modest growth in the labor force through 2019, as improving job opportunities entice greater numbers of residents to reenter. If the labor force grows more slowly than we anticipate, or even declines, then the unemployment rate would be lower with the employment gains we are projecting.

Our forecast path for the civilian noninstitutional labor force participation rate is summarized in the last row of the box at the bottom of Chart 5. The participation rate fell by four-tenths of a percentage point, from 61.4 percent in the fourth quarter of 2016 to (by our estimate) 61.0 percent in the closing quarter of 2017. We see the participation rate creeping up from there by three-tenths of a percentage point over the next two years, reaching 61.3 percent at yearend 2019, reflecting our expectation of a sufficiently



expanding labor force motivated by perceived economic opportunities. A countervailing force is the growing exit from the labor force of retiring baby boomers.



Our forecast of local inflation and income is provided in Chart 6. Local inflation, measured by the growth rate of the Detroit CPI, is shown in the first panel. In 2016, local prices rose by 1.6 percent following a decline in 2015, led in part by a pickup in U.S. inflation. We project a further increase to 1.9 percent in 2017, spurred by a rebound in energy prices from their 2016 levels and an

increase in Michigan's gasoline and diesel fuel taxes that took effect at the beginning of the year. As energy prices stabilize in 2018, local inflation retreats to 1.5 percent, and then picks up to 1.8 percent in 2019 with increasing national inflation and upward pressure from a tightening local labor market. Local inflation runs one-tenth of a percentage point below the national rate over most of the forecast period.

The income side of our forecast is summarized in the other panels of Chart 6. Nominal personal income growth accelerates over the forecast period, bumping up from 2.8 percent in 2016 to 3.1 percent in 2017, and then moving up to 4.4 percent in 2018 and 4.8 percent in 2019. Growth picks up over the period in most major categories of nonwage income, including proprietors' income, property income, and transfer payments, as well as in wage and salary income in 2018 and 2019.

Real disposable income (personal income adjusted for taxes and inflation) fell back to a growth rate of 1.3 percent in 2016 from an unsustainable 6.5 percent in 2015, reflecting a sharp rebound in local prices and slower growth in nominal income. Real income growth slows a bit more to 1.1 percent in 2017 with the increase in inflation and a larger increase in federal personal taxes. Real income growth moves up rapidly to 2.8 percent in 2018 with much stronger nominal income growth and the softening of inflation.

Real income growth then nudges up to 3.1 percent in 2019 with the continued strengthening in nominal income growth and a smaller increase in federal personal taxes.

Our income forecast has implications for the state revenue outlook, to which we now turn.

## V. The State Revenue Outlook

In recent years, business tax receipts have been a reliable predictor of whether General Fund General Purpose (GFGP) revenues rise or fall. Although they are subject to large swings from the timing of refundable tax credits, when business tax receipts rise, total GFGP revenue tends to rise as well. Preliminary data suggest that fiscal 2017 is no different, with strong growth in total business tax receipts leading to modest growth of 1.8 percent in total GFGP revenue. Another highlight this year has been the return of sales tax revenue to solid growth after several years of disappointing results. This stands in contrast with the contribution from the personal income tax, which has been weaker than expected. Gross use tax revenue has also underperformed, coming in flat relative to fiscal 2016. School Aid Fund (SAF) revenues, however, have provided a bright spot, with a gain of 4.2 percent in fiscal 2017, in part due to the strong performance of the sales tax.

Legislation amending the tax code will continue to influence state revenues over our forecast horizon. We briefly summarize notable provisions and their impacts on our projections before examining our forecast in more detail.

- **Personal Property Tax.** The phase-out of the Personal Property Tax on eligible industrial and commercial property will continue to reduce state education property tax revenue and local school tax revenue. At the state level, statute requires that losses to the SAF associated with the phase-out be offset by reimbursements from the General Fund. Reimbursements are also required at the local level and are distributed by the Local Community Stabilization Authority, which diverts a portion of state use tax revenue to eligible local units. These distributions reduced GFGP revenue from the use tax by \$96.4 million in

fiscal 2016 and \$380.9 million in fiscal 2017; the reductions will grow to \$410.8 million in fiscal 2018 and \$438 million in fiscal 2019.

- **Essential Services Assessment.** The legislation modifying the PPT also established a state Essential Services Assessment (ESA), which generated \$86 million in fiscal 2017. The ESA is expected to rise to \$90.1 million in fiscal 2018 and \$94.2 million in fiscal 2019. Table 3 includes the revenue from the assessment under “Other GFGP taxes.”
- **Road Funding Package—Taxes and Registration Fees.** On January 1, 2017, the gasoline and diesel fuel tax rates both increased to 26.3 cents per gallon as part of the transportation revenue plan. The increases amounted to 7.3 cents per gallon for gasoline and 11.3 cents per gallon for diesel fuel. The tax rates will remain at their current levels until 2022, when both rates will be indexed to inflation. Registration fees for light vehicles also increased by 20 percent at the beginning of 2017, along with the imposition of a surcharge for electric vehicles.
- **Road Funding Package—Homestead Property Tax Credit and Income Taxes.** Starting in fiscal 2019, expansion of the homestead property tax credit, which is included in the transportation revenue plan, will reduce income tax revenue. The legislation also begins to divert GFGP revenue from the individual income tax toward transportation at that time. Combined, these two changes are projected to decrease GFGP personal income tax revenue by \$355.8 million in fiscal 2019.
- **Medical Marijuana Excise Tax.** New regulations adopted in September of 2016 impose a 3 percent excise tax on the gross receipts of medical marijuana dispensaries. It is estimated that the law will boost sales tax revenue by \$13.2 million in fiscal 2018 and \$36.3 million in fiscal 2019.
- **Business Taxes.** The state's Corporate Income Tax (CIT) took effect January 1, 2012, replacing the Michigan Business Tax (MBT) for most businesses. There is an exception, however, for certain businesses that were eligible to claim credits under the MBT. These businesses retain the option to continue paying taxes under that system until the expiration

of the previously awarded credits. Not surprisingly, this has led to large refunds in recent years. The variability in when those refunds are claimed has led to swings in the state's business tax revenue. Separately, some taxpayers have mistakenly remitted payments as MBT when they should be remitting under the CIT. The estimates in Table 3 at the back of this report account for these reclassifications. Although Treasury continues to reclassify payment errors, this has no effect on total GFGP revenue.

- ***Transformational Brownfield Plans.*** In June, Governor Snyder signed a series of bills that allow for the capture of income, sales, and use taxes by developers with a state-approved “Transformational Brownfield Plan” (TBP). We do not currently forecast changes in state revenue resulting from this legislation, largely due to uncertainty over the scale and scope of upcoming projects. Despite the revenue captured by developers, the state coffers should benefit from TBPs that would not have occurred without the incentives.
- ***Policy Uncertainty.*** In addition to the legislative changes that have been adopted, there is policy uncertainty associated with potential state tax reform over the next few years. In 2017, major policy proposals included efforts in the first half of the year to cut the state personal income tax rate, and, more recently, a push to reform auto insurance. While the bills associated with these particular proposals did not pass, efforts could be revived over the forecast horizon. In keeping with our historical practice, our forecast of Michigan revenues reflects the state's current tax code.

Table 3 presents the recent history for state revenues, including preliminary estimates for 2017, as well as our forecast for fiscal years 2018–19. The upper portion details GFGP revenues, and the lower portion summarizes school aid fund revenues.

After strong growth of 3.8 percent in fiscal 2016, GFGP income tax revenues slowed to 1.3 percent growth in fiscal 2017. This was considerably weaker than the 3.5 percent estimate from May's Consensus Revenue Estimating Conference (CREC). With the personal income tax currently providing over two-

thirds of total GFGP revenue, this shortfall amounts to \$149 million less GFGP revenue than previously expected. Weaker than anticipated withholding and higher than expected refunds were primarily to blame. Although annual payments fell in fiscal 2017 for the second year in a row, the decline was largely expected as of the May CREC. The one positive note regarding personal income taxes in fiscal 2017 was double-digit growth of quarterly income tax receipts, most likely due to strong capital gains realizations from the current bull market in equities.

We forecast GFGP income tax revenue to rebound in fiscal 2018 with 6.4 percent growth. As personal income growth accelerates, we expect a recovery in withholding to the tune of 4.4 percent while annual payments increase by 15 percent and refunds decline by 0.3 percent. In fiscal 2019, we forecast a decline of 0.3 percent in GFGP income tax revenue despite a continued acceleration in personal income growth. This discrepancy is entirely due to the \$205.8 million expansion of the homestead property tax credit, which causes refunds to rise by 12.4 percent, as well as the associated \$150 million earmark for the Michigan Transportation Fund. In the absence of these programs, GFGP income tax revenues would be forecast to grow by 4.5 percent in fiscal 2019.

The primary consumption taxes in Michigan are the sales and use taxes. Gross sales and use tax revenues increased at a rapid 6 percent rate in fiscal 2017 after a sluggish 2016. The story in fiscal 2017 has been all about the sales tax as gross use tax revenues increased by only 0.7 percent. Rising gas prices and strong collections from vehicle sales have helped push gross sales tax revenue up by 7.2 percent over the fiscal year. Despite the growth in gross revenues, the share of consumption taxes allocated to the General Fund fell by 6.6 percent in fiscal 2017. This was due to a large increase in the amount of use tax revenue that is diverted to local units of government in exchange for the loss of personal property tax revenue, as outlined in the bullets above. The diversion to local governments continues to increase in both fiscal 2018 and fiscal 2019, albeit by diminishing amounts. Combined with a moderation in gross sales and use tax receipts, we forecast GFGP consumption tax revenue to decline by 1.5 percent in fiscal 2018 before rebounding with 3.9 percent growth in fiscal 2019.

The rollercoaster that is business tax revenue includes collections from the Corporate Income Tax, the Michigan Business Tax, the Single Business Tax, a tax on insurance companies, and a tax on oil and natural gas extraction, all of which feed into the General Fund. These collections have exhibited large swings in recent years with, for instance, receipts rising by 76.8 percent in fiscal 2017 after falling by 50.5 percent in 2016 and growing by 41.8 percent in fiscal 2015. These swings are largely driven by the timing of MBT refunds and volatility in CIT collections. The growth in fiscal 2017 has resulted from improvements in all of the underlying components, but is particularly due to a large increase in CIT revenue and lower than anticipated MBT net refunds. We expect the rollercoaster to continue through 2019, but with a relatively more comfortable ride. Business tax revenue falls by 11.6 percent in fiscal 2018 on a drop in CIT collections before rising by 14.4 percent in fiscal 2019 as MBT net refunds decline.

Taken all together, the acceleration of personal income growth in fiscal 2018 more than offsets the losses in the other GFGP components, leading total GFGP revenue to increase by 2.7 percent in fiscal 2018. The coin flips in fiscal 2019 when growth in consumption and business taxes make up for the small decline in income tax revenue associated with diversions related to the road funding package. We forecast total GFGP revenue to grow by 1.3 percent in that year.

Revenue earmarked for the School Aid Fund grew by 4.3 percent in fiscal 2017 after growing by 3.2 percent the year before. In recent years, SAF revenue growth has been more stable than GFGP revenue growth as distributions to the SAF are generally based on gross receipts. For example, SAF deposits from the personal income tax grew by 2.6 percent in fiscal 2017 and were not affected by rising refunds; increases in refunds are borne by the General Fund. We forecast the growth of personal income contributions to the SAF to remain strong, rising to 5 percent in fiscal 2018 before settling at 4 percent in fiscal 2019. Combined with solid growth of earmarked sales tax receipts and the state education property tax, we forecast earmarked SAF to increase by 3 percent in fiscal 2018 and 3.2 percent in fiscal 2019, in line with the average growth rate of 3.1 percent experienced since fiscal 2013.

**Table 3**  
**State Revenues by Fiscal Year**  
**(Millions of dollars, except as noted)**

	Actual		RSQE Forecast	
	2016	2017 <sup>P</sup>	2018	2019
<u>General Fund General Purpose</u>				
Personal income tax	6706	6791	7227	7202
(% change)	(3.8)	(1.3)	(6.4)	(-0.3)
Consumption taxes	2366	2211	2177	2262
(% change)	(0.2)	(-6.6)	(-1.5)	(3.9)
Sales	1143	1278	1286	1329
Use	932	638	599	644
Other consumption	291	295	292	288
Business taxes	393	695	615	703
(% change)	(-50.5)	(76.8)	(-11.6)	(14.4)
MBT/SBT/Corporate income	45	317	192	277
Other business	348	378	422	426
Other GFGP taxes	87	90	94	98
GFGP tax revenue	9552	9786	10113	10265
(% change)	(-0.9)	(2.4)	(3.3)	(1.5)
Nontax revenue	468	413	362	344
GFGP revenue	10020	10199	10474	10608
(% change)	(-0.1)	(1.8)	(2.7)	(1.3)
<u>School Aid Fund</u>				
SAF taxes	11230	11757	12134	12559
(% change)	(2.4)	(4.7)	(3.2)	(3.5)
Lottery transfer	889	887	888	885
(% change)	(13.4)	(-0.2)	(0.1)	(-0.3)
Earmarked state SAF revenue	12119	12644	13022	13444
(% change)	(3.2)	(4.3)	(3.0)	(3.2)
<u>Addendum</u>				
Gross sales and use taxes	8814	9346	9535	9899
(% change)	(1.5)	(6.0)	(2.0)	(3.8)

<sup>P</sup> Preliminary

RSQE: November 2017

## VI. Risks to the Forecast

As always, there are a number of risks associated with our forecast for the Michigan economy. We see the largest risks this year as coming from the external environment rather than from developments within Michigan. The most prominent risks we see at the moment are uncertainty about the future path of federal monetary and fiscal policy; the outlook for oil prices and the auto industry; and the path of international trade relations, most prominently the future of the North American Free Trade Agreement (NAFTA). We summarize the first two sets of risks briefly before presenting an analysis of the potential effects of NAFTA withdrawal on Michigan's economy in the next section.

***Uncertainty about federal monetary and fiscal policy.*** Although the nomination of Jerome Powell as chair of the Federal Reserve Board of Governors likely signals a good deal of continuity in monetary policymaking, there are currently only four governors serving on the seven-member Board. That total includes current Chair Janet Yellen, whose term as governor technically extends into 2024, but whose term as chair expires in February 2018. A more hawkish makeup on the Board could signal tighter monetary policy and slower economic growth than we currently foresee.

We currently anticipate the passage of a modest tax cut, without much stimulative effect over our forecast horizon. A failure to pass any sort of tax bill could depress asset prices relative to our baseline forecast. We would expect a bit looser monetary policy in that case now, offsetting most of the knock-on effects on real growth. An additional risk for Michigan associated with federal fiscal policy is the possibility that legislative changes to the Affordable Care Act, and particularly to Medicaid expansion, could be inserted into a tax reform bill, threatening the status of the Healthy Michigan Plan.

***Risks associated with oil prices and the auto industry.*** The fate of the auto industry poses a perennial risk to the outlook for Michigan's economy. That risk is elevated this year by the uncertainty related to oil prices stemming from the recent political tumult in Saudi Arabia. The turmoil threatens to affect the Middle East region more broadly, as Saudi crown prince Mohammed bin Sultan has accused



Iran of “direct military aggression” related to a missile attack by Yemeni rebels. If oil prices were to rise substantially above what we forecast, we would expect vehicle sales to shift toward cars and away from light trucks, including sport utility and crossover utility vehicles. That would pose a risk to vehicle manufacturing employment in Michigan, which skews toward larger vehicles.

## **VII. Simulating the Potential Effects of NAFTA Withdrawal on Michigan’s Economy**

Four rounds of talks so far this year among Canada, Mexico, and the United States regarding the future of the North American Free Trade Agreement (NAFTA) have yielded little apparent progress, heightening the possibility that the Trump Administration could withdraw the United States from the agreement. The trilateral statement put forward by negotiators at the conclusion of the fourth round of talks conceded that, “New proposals have created challenges and Ministers discussed the significant conceptual gaps among the Parties.” Canadian Foreign Minister Chrystia Freeland was blunter, saying, “We have seen proposals that would turn back the clock on 23 years of predictability, openness, and collaboration.” U.S. Trade Representative Robert Lighthizer complained, “Frankly, I am surprised and disappointed by the resistance to change from our negotiating partners.” The fifth round of talks is scheduled to begin November 17th, the release date of this report, and talks are currently scheduled to extend into 2018.

We continue to believe that the most likely outcome regarding NAFTA is a successful renegotiation that contains primarily symbolic changes. That view underlies our baseline forecast for the Michigan economy. Nonetheless, the possibility of a more acrimonious outcome has prompted us to analyze what NAFTA withdrawal would look like for Michigan’s economy.

Analyzing such a scenario necessarily involves making many assumptions about the most likely actions each of the three involved nations would take, and withdrawal’s likely effects on our neighbors’ economies. We have chosen to model two scenarios, which we believe span the range of likely outcomes from any withdrawal. The first scenario considers a “soft withdrawal,” in which tariffs between Mexico and

the United States go to their standard levels under Most Favored Nation (MFN) status under World Trade Organization (WTO) rules, and neither nation engages in retaliatory behavior. The second scenario considers a “hard withdrawal,” in which Mexico and the United States enact retaliatory tariffs on each other’s goods. In both scenarios, we would expect minimal disruptions to trade relations between the United States and Canada in light of the Canada-United States Free Trade Agreement, which predated NAFTA. Before describing the results of our analysis, we summarize our key assumptions in the two scenarios.

Our assumptions in the “soft withdrawal” scenario are as follows:

- Tariffs on Mexican imports would go to their MFN levels under WTO rules. The average tariff on imports of Mexican automobiles would be roughly 2.5 percent, a bit lower than the United States’ average tariff of 3.7 percent for all goods under MFN treatment. The tariff on light trucks is a notable exception at 25 percent, although in contrast to standard industry definitions, sport utility and crossover utility vehicles would generally qualify as automobiles, with the higher tariff applying primarily to pickup trucks and cargo vehicles.
- We would not expect a substantial shift in the production of automobiles away from Mexico in this scenario. Instead, producers would likely increase prices and accept lower profit margins to offset the relatively low tariffs.
- We would expect roughly 520,000 light truck assemblies per year to leave Mexico, with approximately 450,000 of those assemblies coming to the United States and most of the remainder moving to Canada. We estimate that the additional light truck assemblies would increase U.S. industrial production by half a percentage point.
- We would expect Mexican tariffs on imports from the United States to average 7.4 percent under MFN treatment. We would anticipate some non-automotive industries, such as agriculture and apparel, to experience disruption in the event of NAFTA withdrawal. Quantitatively, however, the

direct effects on those industries would be much smaller relative to the size of the U.S. economy than the effects on the vehicle manufacturing sector.

- We project that the Mexican peso would depreciate by roughly 4 percent following a soft NAFTA withdrawal. The depreciation of the peso leads to a corresponding appreciation of 0.5 index points (about 0.4 percent) in the Federal Reserve's index of the trade-weighted value of the dollar against a broad range of currencies. We would expect that appreciation to persist throughout our forecast period.
- We estimate that Mexican real GDP growth would be roughly half a percentage point lower in 2018. Overall, U.S. import prices would be roughly unchanged by a "soft withdrawal."
- The share of U.S. light vehicle sales with Detroit Three nameplates that are produced in North America would tick down slightly, by 0.6 percentage points, relative to our baseline forecast.

Our assumptions in the "hard withdrawal" scenario differ in a few key ways:

- We assume that both the United States and Mexico would place 25 percent tariffs on imports of each other's automobiles and parts. Although the imposition of such tariffs would be logistically and legally challenging, such tariffs could certainly remain in place for the duration of our forecast period, even if they were later overturned by the WTO.
- We assume that Mexico would impose a tariff of 15 percent on all other U.S. exports. We estimate that those tariffs would reduce total U.S. non-vehicle exports by a bit more than \$10 billion per year.
- We would expect the imposition of a 25 percent tariff to spark a shift of between 900,000 and 1,000,000 automobile assemblies away from Mexico, primarily to China and elsewhere in Asia. We would not expect any of that production to be moved to the United States.
- We estimate that the assembly of approximately 600,000 light trucks per year would move from Mexico to the United States. We estimate that the added light truck assemblies would increase U.S. industrial production by 0.6 percentage points.

- We project that the Mexican peso would depreciate by roughly 10 percent following NAFTA withdrawal. The depreciation of the peso leads to a corresponding appreciation of the broad trade-weighted value of the dollar of 1.3 index points (about 1.1 percent). We would expect that appreciation to persist throughout our forecast period.
- We estimate that Mexican real GDP growth would be roughly one percentage point lower in 2018. Overall, U.S. import prices would rise by roughly half a percentage point over the forecast horizon.
- The share of U.S. light vehicle sales with Detroit Three nameplates that are produced in North America would fall by 1.8 percentage points relative to our baseline forecast, as small car assemblies left Mexico.

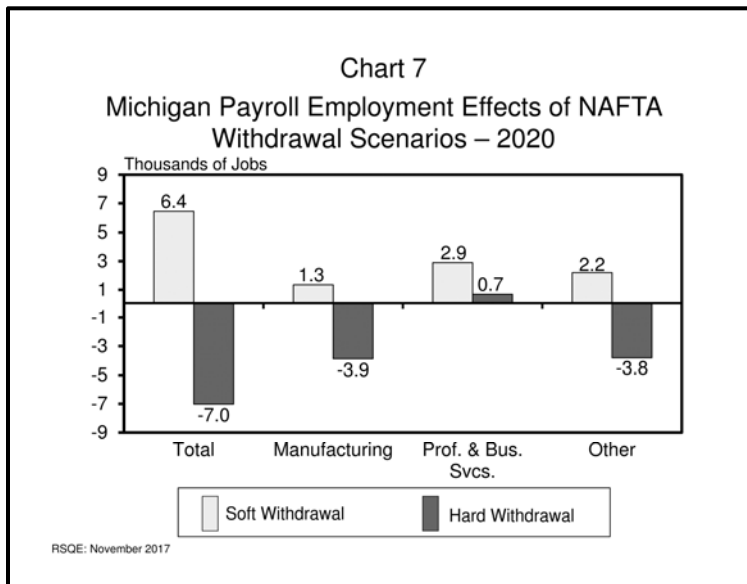


Chart 7 displays NAFTA withdrawal's simulated employment effects on the Michigan economy under the two scenarios. We present the results of our analysis for the year 2020. The exact timing of the adjustments in these scenarios is difficult to predict, but by then many of the transitory dynamics associated with NAFTA withdrawal should be past.<sup>1</sup> The light bars

show the estimates for the “soft withdrawal” scenario, while the dark bars show the estimates for the “hard withdrawal” scenario.

We estimate that a soft NAFTA withdrawal would increase Michigan's payroll employment count by 6,400 jobs in 2020. This result may seem surprising because free trade promotes economic efficiency,

<sup>1</sup> The analysis is based on extended simulations of the Michigan Quarterly Econometric Model and State Quarterly Econometric Model. Our baseline forecast ends in 2019, two years being the forecast horizon over which we believe our forecasting models have substantial predictive accuracy. We believe that the results of the policy analysis conducted in this exercise would be valid over a wide range of future economic situations, however. One transition issue that would likely remain ongoing at that time would be the construction of any new assembly facilities in the United States to accommodate increased production. We abstract from that issue in this analysis.

but free trade also creates winners and losers. In this scenario, the tariff protection given to one of Michigan's key export sectors, combined with the lack of adverse reaction from our trade partners, make Michigan a winner from NAFTA withdrawal. Job gains in the manufacturing sector account directly for around one-fifth of the total job gains in this scenario, or 1,300 jobs, while the professional and business services sector, which includes "white-collar" automotive jobs such as engineering and design, adds another 2,900 jobs. Other sectors of the economy would contribute an additional 2,200 jobs as economic activity in the state expanded.

Conversely, we estimate that a hard NAFTA withdrawal would reduce Michigan's payroll employment count by 7,000 jobs in 2020. Several factors in this scenario combine to overwhelm the employment benefits for Michigan's economy of protective tariffs on light trucks: the retaliatory tariffs imposed by Mexico; the relocation of small car production away from Mexico, where cars are produced using a good deal of U.S. content; and the substantial decline in the share of North-American-produced Detroit Three vehicle sales. We estimate that a hard NAFTA withdrawal would cost Michigan's manufacturing sector 3,900 jobs by 2020, more than half of the total job losses. The professional and business services sector would eke out 700 job gains in this scenario, concentrated in the scientific and technical component, as ramped-up truck production would lead to some additional jobs in design and engineering occupations. The remaining sectors of Michigan's economy would lose an additional 3,800 jobs by 2020 following a hard NAFTA withdrawal, as economic activity in the state contracted and purchasing power fell.<sup>2</sup>

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<sup>2</sup> We focus here on the effects of a potential NAFTA withdrawal on Michigan's economy rather than the United States economy as a whole. It is worth noting briefly, however, that NAFTA exit would reduce real GDP and payroll employment for the country as a whole in both withdrawal scenarios. We estimate that a mild NAFTA withdrawal would reduce real GDP by about 0.03 percent by 2020 and would reduce payroll employment by 24,000 jobs. A hard NAFTA withdrawal would reduce real GDP by about 0.2 percent by 2020 and would reduce payroll employment by 295,000 jobs.

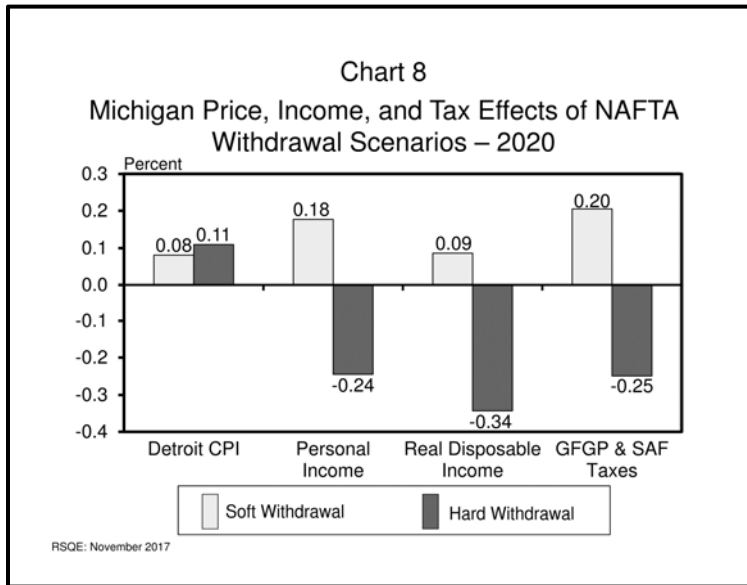


Chart 8 shows the effects of NAFTA withdrawal on Michigan prices, incomes, and tax revenues in 2020 under the two scenarios. We estimate that local prices, as measured by the Detroit CPI, would rise slightly relative to our baseline forecast under both scenarios due to the imposition of tariffs, especially on the auto industry. Nominal personal income in the state would

rise modestly in the soft withdrawal scenario, about two-tenths of a percentage point; real disposable income would rise by only one-tenth of a percentage point due to the increase in local prices. These results illustrate that part of what Michiganders would gain as producers from tariff protection in the form of higher incomes would be lost as consumers in the form of higher prices. Combined GFPG and SAF tax revenues would rise by 0.2 percent relative to the baseline forecast in a soft NAFTA withdrawal scenario.

Those outcomes would be more negative in a hard NAFTA withdrawal scenario. We estimate that nominal personal income would fall by one-quarter of a percentage point relative to our baseline forecast as the state lost jobs. Together with the increase in local prices, this leads to a decline in real disposable income of one-third of a percentage point. Combined GFPG and SAF tax revenues would fall by 0.25 percent relative to the baseline forecast in a hard NAFTA withdrawal scenario.

A particular difficulty in simulating the effects of a potential NAFTA withdrawal on Michigan's economy is that "NAFTA withdrawal" can mean so many different things. Ultimately, no statistical model can tell us exactly what policies would accompany an exit from the agreement. Our view is that although our "hard exit" scenario is probably too extreme, our "soft exit" scenario is likely to be substantially more optimistic than what would actually occur if the United States were to exit NAFTA.

Although economic theory suggests that imposing retaliatory tariffs would hurt Mexico's own citizens through higher prices and reduced consumer choice, political realities would militate for some sort of retaliation. Mexican Foreign Minister Luis Videgaray, who has been relatively restrained in his language, suggested recently that Mexican cooperation with the United States in many areas would be threatened by the termination of NAFTA, stating, "We always have to be ready to get up from the table. This is a logical posture in any negotiation. It's also a principle of dignity and respect. Mexico is much bigger than NAFTA and we have to be ready for any scenario in the negotiations." The front-runner in next year's presidential election, left-wing candidate Andrés Manuel López Obrador, has expressed significant skepticism toward trade, saying, "We are going to produce what we eat. We will no longer buy from outside the country." Although he has since moderated his language, it is hard to imagine that the United States' withdrawal from NAFTA would make López Obrador, or any incoming Mexican president, view relatively free trade with the United States in a more positive light.

Perhaps one encouraging lesson to be drawn from this analysis is that Michigan's economy would be able to withstand a large shock to its major export industry reasonably well. Although the loss of 7,000 jobs would be felt acutely by the affected individuals, it would be much less severe than the loss of 433,000 jobs in Michigan's manufacturing industry from 1999 to 2009. Overall, our estimates suggest that Michigan's economy is likely to be more resilient to a negative shock related to international trade than it has been in the past.

That being said, we would prefer not to find out whether our analysis is correct.

## **VIII. Concluding Thoughts**

Michigan's economy has continued to grow in 2017, and we foresee at least two more years of growth ahead. Our forecast brings Michigan's job count nearly four-fifths of the way back from its trough in 2009 to its peak in 2000. That means that there is plenty of work still to be done in building and sustaining a world-class economy for the 21<sup>st</sup> century, but it should also serve as a point of pride for

Michigan, which has demonstrated impressive resiliency after a very difficult start to the millennium. We believe that the outlook remains favorable for Michigan to continue its comeback story. If our forecast proves correct, Michigan's economic recovery will extend to over ten years—among the longest continuous stretches of job growth in the state since the Great Depression.



### Constant Adjustments in the RSQE Control Forecast for 2018–2019

The following adjustments have been used to correct for level drift and start-up error:

A.AEQGM	Average Earnings per Quarter, Government
A.ECCM	Employment, Construction
A.EFINM	Employment, Financial Activities
A.EINFM	Employment, Information
A.EMFOM	Employment, Manufacturing other than Transportation Equipment
A.EMRESM	Difference between Household and Payroll Survey Employment
A.EMTEQM	Employment, Transportation Equipment Manufacturing
A.ESBHQM	Employment, Management of Companies
A.ESBPRM	Employment; Professional, Scientific, and Technical Services
A.ESHM	Employment, Education and Health Services
A.ESLM	Employment, Leisure and Hospitality
A.ESOM	Employment, Other Services
A.ETRM	Employment, Retail Trade
A.ETWTUM	Employment in Wholesale Trade, Transportation, and Utilities
A.HRSOM	Average Weekly Hours, Other Manufacturing
A.HRSTQM	Average Weekly Hours, Transportation Equipment Manufacturing
A.LFM	Labor Force
A.PCPID	Detroit CPI
A.PDIESEMW	Price of Diesel Fuel
A.PGASD	Retail Price of Gasoline, Detroit Area
A.SEVNR	State Equalized Value for Real Nonresidential Property
A.SEVR	State Equalized Value for Real Residential Property
A.TBWMNS	Beer and Wine Tax Revenue
A.TCIGMNS	Cigarette and Tobacco Tax Revenue
A.TDIESEL	Diesel Fuel Tax Revenue
A.TGASMNS	Gasoline Tax Revenue
A.TLIQMNS	Liquor Specific Tax Revenue
A.TOILMNS	Oil and Gas Severance Tax Revenue
A.TRET	Real Estate Transfer Tax Revenue
A.TRSMNS	Sales Tax Revenue
A.TSEP	State Education Property Tax Revenue
A.TSIBM	Employer Contributions for Government Social Insurance
A.TUSEMNS	Use Tax Revenues
A.TVEHREG	Vehicle Registration Tax Revenues
A.TYAMNS	Michigan Personal Income Tax, Annual Payments
A.TYQMNS	Michigan Personal Income Tax, Quarterly Payments
A.TYWMM	Michigan Personal Income Tax, Withholding
A.WM	Average Hourly Earnings, Manufacturing
A.YPRM	Dividends, Personal Interest Income and Rental Income
A.YUCTRM	Unemployment Benefits



# The Michigan Economic Outlook for 2017-2019

RSQE Forecast, 17 November 2017

The State of Michigan

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Complete Model Output

Non-zero Adjustment Constants

Exogenous Variables

Endogenous Variables

Growth Rates of Endogenous Variables

Forecast Based on

The Econometric Model of the State of Michigan

RSQE

Research Seminar in Quantitative Economics

The University of Michigan

Ann Arbor, Michigan 48109

**Table 1**  
Michigan Personal Income  
(Millions of Current Dollars, SQAR)

	Actual	Forecast							
	2017q3	2017q4	2018q1	2018q2	2018q3	2018q4	2019q1	2019q2	2019q3
Personal Income	113229.05	114812.90	116215.40	117577.20	118811.40	120264.10	121632.50	123137.90	124512.80
Wage and Salary	57668.50	58567.63	59112.44	59768.65	60308.20	61036.55	61568.42	62324.58	62963.54
Private	49845.99	50688.94	51186.78	51763.78	52239.52	52902.22	53371.34	54042.52	54609.21
Government	7822.52	7878.68	7925.66	8004.88	8068.68	8134.34	8197.08	8282.06	8354.33
Other Labor Income	13863.51	14058.72	14173.31	14301.14	14398.89	14543.59	14670.34	14832.78	14967.63
Proprietors' Income	7089.92	7167.37	7275.22	7356.54	7445.34	7529.91	7618.55	7713.16	7810.30
Property Income	19440.61	19676.75	19949.75	20236.02	20513.00	20806.88	21085.52	21372.15	21648.05
Transfer Payments	23980.50	24265.58	24719.13	25001.09	25288.32	25571.73	26031.91	26324.36	26623.15
Residence Adjustment	578.12	583.96	589.86	595.81	601.83	607.90	614.04	620.24	626.50
Less:									
Social Ins Contribution	9392.12	9507.09	9604.27	9682.00	9744.18	9832.48	9956.26	10049.36	10126.36
Less:									
Federal Pers Taxes	11031.68	11200.89	11339.77	11514.93	11621.02	11777.19	11765.65	11931.42	12068.56
Mich Withholding	2346.12	2342.97	2489.18	2478.29	2511.06	2430.92	2582.14	2573.34	2610.36
Equals:									
Disp Personal Income	99851.25	101269.10	102386.50	103584.00	104679.30	106056.00	107284.70	108633.10	109833.90
ADDENDA:									
Consumer Price Index									
Detroit 1982-84=100	226.46	228.02	228.44	229.33	230.28	231.26	232.26	233.34	234.44
Real Disposable Income									
Millions of 1982-84 \$	44092.22	44412.46	44820.58	45168.06	45457.72	45859.73	46190.77	46554.75	46849.42

**Table 1**  
Michigan Personal Income  
(Millions of Current Dollars, SQAR)

	Forecast	Calendar Years				Percent Changes		
	2019q4	2016	2017	2018	2019	2016-17	2017-18	2018-19
Personal Income	126132.60	439361.47	453047.88	472868.10	495415.80	3.12	4.37	4.77
Wage and Salary	63824.20	222822.77	230937.67	240225.84	250680.74	3.64	4.02	4.35
Private	55397.29	192692.63	199901.79	208092.30	217420.36	3.74	4.10	4.48
Government	8426.91	30130.13	31035.88	32133.55	33260.38	3.01	3.54	3.51
Other Labor Income	15153.88	53292.83	55486.41	57416.93	59624.62	4.12	3.48	3.85
Proprietors' Income	7908.41	27427.33	28448.97	29607.00	31050.41	3.72	4.07	4.88
Property Income	21928.17	75892.78	77738.92	81505.65	86033.89	2.43	4.85	5.56
Transfer Payments	26918.91	93520.11	95671.90	100580.27	105898.33	2.30	5.13	5.29
Residence Adjustment	632.83	2232.48	2301.76	2395.39	2493.61	3.10	4.07	4.10
Less:								
Social Ins Contribution	10233.74	35826.83	37537.74	38862.94	40365.72	4.78	3.53	3.87
Less:								
Federal Pers Taxes	12249.14	42363.13	44079.89	46252.91	48014.77	4.05	4.93	3.81
Mich Withholding	2529.99	9347.87	9499.33	9909.44	10295.83	1.62	4.32	3.90
Equals:								
Disp Personal Income	111353.50	387650.46	399468.72	416705.80	437105.20	3.05	4.32	4.90
ADDENDA:								
Consumer Price Index								
Detroit 1982-84=100	235.54	222.26	226.45	229.83	233.90	1.88	1.49	1.77
Real Disposable Income								
Millions of 1982-84 \$	47276.22	174413.69	176403.49	181306.09	186871.16	1.14	2.78	3.07

**Table 2**  
Employment in Michigan  
(Thousands of Persons, Seasonally Adjusted)

	Actual	Forecast							
	2017q3	2017q4	2018q1	2018q2	2018q3	2018q4	2019q1	2019q2	2019q3
Total Employment	4648.10	4634.17	4641.69	4646.98	4654.30	4661.50	4669.63	4678.36	4687.95
Wage and Salary	4395.60	4409.17	4419.59	4428.60	4439.06	4450.10	4462.20	4474.98	4488.43
Private	3779.50	3792.30	3801.95	3810.20	3819.88	3830.14	3841.47	3853.48	3866.15
Nat. Res. & Mining	7.40	7.37	7.36	7.35	7.33	7.31	7.28	7.26	7.24
Construction	161.70	163.54	164.93	166.42	167.86	169.28	170.67	172.08	173.51
Manufacturing	604.70	604.62	602.64	600.01	598.38	597.09	596.27	595.77	595.56
Trans. Equipment	178.30	178.80	177.66	176.61	176.03	175.49	175.18	175.03	175.04
Other Mfg.	426.40	425.82	424.99	423.39	422.35	421.60	421.10	420.74	420.52
Trade, Trans. & Util.	783.40	784.57	785.42	786.39	787.81	789.42	791.46	793.54	795.80
Information	58.00	58.15	58.27	58.36	58.42	58.47	58.52	58.55	58.59
Financial Activities	218.30	219.31	220.32	221.16	221.92	222.64	223.31	223.99	224.66
Prof. & Bus. Serv.	666.20	671.94	677.18	681.49	685.80	690.10	694.59	699.37	704.27
Edu. & Health Serv.	671.40	672.68	673.90	675.15	676.38	677.58	678.72	679.82	680.87
Lesiure & Hospitality	433.50	435.07	436.64	438.25	440.00	441.85	443.82	445.88	448.01
Other Services	174.80	175.03	175.28	175.61	175.97	176.40	176.82	177.23	177.64
Government	616.10	616.87	617.64	618.41	619.18	619.95	620.73	621.50	622.28
Non Wage and Salary	252.50	225.00	222.10	218.38	215.24	211.40	207.43	203.37	199.52
Labor Force	4840.93	4841.00	4846.68	4852.58	4859.44	4866.23	4873.29	4880.68	4888.59
Unemployment	192.84	206.83	204.99	205.60	205.15	204.73	203.66	202.32	200.63
Unemployment Rate (%)	3.98	4.27	4.23	4.24	4.22	4.21	4.18	4.15	4.10
ADDENDA: U.S. DATA (Billions of chained 2009 \$, except where noted)									
Gross Domestic Prod	17156.95	17270.80	17369.15	17467.99	17565.45	17654.78	17749.46	17840.05	17931.83
Business Fixed Invest	2322.70	2354.53	2369.18	2391.48	2414.25	2435.62	2457.98	2480.71	2503.38
Gross Vehicle Product	452.41	483.48	482.89	485.09	490.04	491.89	497.34	502.98	508.71
Personal Cons Expend									
New Autos + Trucks	258.00	264.34	258.26	260.18	262.52	263.01	265.49	268.25	271.20
Light Vehicle Sales (mil)	17.06	17.60	17.08	17.08	17.08	16.96	16.98	17.02	17.06
Unemployment Rate (%)	4.34	4.20	4.24	4.21	4.16	4.13	4.11	4.08	4.06
Personal Consumption									
Deflator, 2009=100	112.69	113.26	113.59	114.04	114.52	115.02	115.53	116.06	116.60
Consumer Price Index									
1982-84=100	245.71	246.10	246.68	249.25	250.08	249.88	251.02	253.79	254.77

**Table 2**  
Employment in Michigan  
(Thousands of Persons, Seasonally Adjusted)

	Forecast	Calendar Years				Percent Changes		
	2019q4	2016	2017	2018	2019	2016-17	2017-18	2018-19
Total Employment	4698.01	4587.80	4653.59	4651.12	4683.49	1.43	-0.05	0.70
Wage and Salary	4502.32	4327.98	4392.27	4434.34	4481.98	1.49	0.96	1.07
Private	3879.27	3726.88	3779.40	3815.54	3860.09	1.41	0.96	1.17
Nat. Res. & Mining	7.22	7.17	7.37	7.34	7.25	2.70	-0.43	-1.18
Construction	174.99	155.35	162.81	167.12	172.81	4.80	2.65	3.41
Manufacturing	595.59	599.88	604.43	599.53	595.80	0.76	-0.81	-0.62
Trans. Equipment	175.17	179.58	180.10	176.45	175.10	0.29	-2.03	-0.76
Other Mfg.	420.43	420.33	424.33	423.08	420.70	0.95	-0.29	-0.56
Trade, Trans. & Util.	798.01	782.58	782.29	787.26	794.70	-0.04	0.64	0.95
Information	58.62	57.40	58.19	58.38	58.57	1.37	0.33	0.32
Financial Activities	225.34	212.83	218.15	221.51	224.32	2.50	1.54	1.27
Prof. & Bus. Serv.	709.26	650.55	665.64	683.64	701.87	2.32	2.71	2.67
Edu. & Health Serv.	681.89	664.88	671.02	675.75	680.33	0.92	0.71	0.68
Lesiure & Hospitality	450.23	426.60	435.59	439.18	446.98	2.11	0.82	1.78
Other Services	178.11	169.65	173.88	175.82	177.45	2.49	1.11	0.93
Government	623.05	601.08	612.87	618.80	621.89	1.96	0.97	0.50
Non Wage and Salary	195.69	259.80	261.33	216.78	201.50	0.59	-17.05	-7.05
Labor Force	4896.96	4826.20	4868.90	4856.23	4884.88	0.88	-0.26	0.59
Unemployment	198.95	238.43	215.31	205.12	201.39	-9.70	-4.73	-1.82
Unemployment Rate (%)	4.06	4.94	4.42	4.22	4.12	NA	NA	NA
ADDENDA: U.S. DATA (Billions of chained 2009 \$, except where noted)								
Gross Domestic Prod	18020.73	16716.16	17090.52	17514.34	17885.52	2.24	2.48	2.12
Business Fixed Invest	2525.04	2210.43	2310.36	2402.63	2491.78	4.52	3.99	3.71
Gross Vehicle Product	514.15	478.92	469.85	487.48	505.80	-1.89	3.75	3.76
Personal Cons Expend								
New Autos + Trucks	274.05	248.03	254.81	260.99	269.75	2.73	2.43	3.35
Light Vehicle Sales (mil)	17.08	17.46	17.14	17.05	17.03	-1.89	-0.49	-0.10
Unemployment Rate (%)	4.05	4.87	4.39	4.19	4.08	NA	NA	NA
Personal Consumption								
Deflator, 2009=100	117.14	110.78	112.60	114.29	116.33	1.64	1.50	1.79
Consumer Price Index								
1982-84=100	254.66	240.01	244.99	248.97	253.56	2.08	1.63	1.84

**Table 3**  
State of Michigan GFGP Revenue by Fiscal Years  
(Millions of Current Dollars, NSA)

	Actual	Forecast							
	2017q3	2017q4	2018q1	2018q2	2018q3	2018q4	2019q1	2019q2	2019q3
NET PERS INCOME TAX	2148.05	2282.25	2418.52	3078.45	2314.57	2317.80	2469.22	3176.45	2369.60
Less: School Aid	617.21	668.79	696.15	844.51	656.60	692.83	723.17	881.69	682.80
Camp Fund	0.80	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.80
MI Trans Fund	0.00	0.00	0.00	0.00	0.00	37.50	37.50	37.50	37.50
GFGP INCOME TAX	1530.04	1613.46	1722.36	2233.94	1657.17	1587.47	1708.56	2257.26	1648.49
CONSUMPTION TAXES									
Sales	322.17	324.25	259.67	363.83	338.38	332.44	269.60	376.07	351.15
Cigarette Excise	48.51	46.51	42.95	47.99	47.17	45.58	42.29	47.42	46.71
Beer and Wine	15.10	12.79	11.14	13.31	14.73	12.91	11.19	13.39	14.82
Liquor Specific	21.40	16.60	11.75	13.65	13.55	15.09	11.60	13.73	13.72
Use	175.36	131.80	131.39	161.31	174.51	144.96	141.55	172.21	185.13
GFGP CONSUM TAXES	582.55	531.95	456.91	600.09	588.34	550.97	476.23	622.83	611.53
BUSINESS TAXES									
Single Business	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Michigan Business	-772.80	0.00	0.00	0.00	-757.90	0.00	0.00	0.00	-639.50
Corporate Income	1078.00	0.00	0.00	0.00	950.20	0.00	0.00	0.00	916.70
Insur Co Premium	354.80	0.00	0.00	0.00	397.90	0.00	0.00	0.00	401.10
Oil + Gas Severance	4.90	6.19	6.23	5.90	5.99	6.23	6.30	6.02	6.10
GFGP BUSINESS TAXES	676.90	6.19	6.23	5.90	596.19	6.23	6.30	6.02	684.40
OTHER GFGP TAXES	89.90	0.00	0.00	0.00	94.10	0.00	0.00	0.00	98.40
TOTAL GFGP TAXES	2879.39	2151.60	2185.50	2839.94	2935.80	2144.67	2191.09	2886.11	3042.82
NONTAX REVENUE	412.70	0.00	0.00	0.00	361.60	0.00	0.00	0.00	343.60
TOTAL GFGP REVENUE	3292.09	2151.60	2185.50	2839.94	3297.40	2144.67	2191.09	2886.11	3386.42
ADDENDA:									
Pers Income Adjusted	98640.66	100054.40	101100.60	102258.20	103267.30	104524.80	105556.90	106862.90	108016.00
Total Employment	4648.10	4634.17	4641.69	4646.98	4654.30	4661.50	4669.63	4678.36	4687.95
Wage + Salary Income	57668.50	58567.63	59112.44	59768.65	60308.20	61036.55	61568.42	62324.58	62963.54



**Table 3**  
State of Michigan GFGP Revenue by Fiscal Years  
(Millions of Current Dollars, NSA)

	Forecast	Fiscal Years				Percent Changes		
	2019q4	2016	2017	2018	2019	2016-17	2017-18	2018-19
NET PERS INCOME TAX	2422.32	9368.91	9522.49	10093.79	10333.07	1.64	6.00	2.37
Less: School Aid	720.91	2662.10	2731.16	2866.05	2980.49	2.59	4.94	3.99
Camp Fund	0.00	0.70	0.80	0.80	0.80	14.29	0.00	0.00
MI Trans Fund	81.25	0.00	0.00	0.00	150.00	--	--	--
GFGP INCOME TAX	1620.16	6706.11	6790.53	7226.93	7201.78	1.26	6.43	-0.35
CONSUMPTION TAXES								
Sales	344.46	1143.30	1278.00	1286.13	1329.27	11.78	0.64	3.35
Cigarette Excise	45.24	186.30	187.28	184.61	181.99	0.52	-1.42	-1.42
Beer and Wine	12.98	51.84	51.38	51.98	52.31	-0.90	1.17	0.64
Liquor Specific	15.28	52.40	56.00	55.56	54.14	6.87	-0.79	-2.56
Use	146.43	931.80	637.92	599.00	643.85	-31.54	-6.10	7.49
GFGP CONSUM TAXES	564.38	2365.64	2210.58	2177.28	2261.56	-6.55	-1.51	3.87
BUSINESS TAXES								
Single Business	0.00	-6.20	12.00	0.00	0.00	-293.55	-100.00	--
Michigan Business	0.00	-890.40	-772.80	-757.90	-639.50	-13.21	-1.93	-15.62
Corporate Income	0.00	941.90	1078.00	950.20	916.70	14.45	-11.86	-3.53
Insur Co Premium	0.00	329.20	354.80	397.90	401.10	7.78	12.15	0.80
Oil + Gas Severance	6.34	18.90	23.40	24.32	24.66	23.81	3.92	1.39
GFGP BUSINESS TAXES	6.34	393.40	695.40	614.52	702.96	76.77	-11.63	14.39
OTHER GFGP TAXES	0.00	87.30	89.90	94.10	98.40	2.98	4.67	4.57
TOTAL GFGP TAXES	2190.89	9552.45	9786.41	10112.83	10264.70	2.45	3.34	1.50
NONTAX REVENUE	0.00	467.80	412.70	361.60	343.60	-11.78	-12.38	-4.98
TOTAL GFGP REVENUE	2190.89	10020.25	10199.11	10474.43	10608.30	1.78	2.70	1.28
ADDENDA:								
Pers Income Adjusted	109447.50	380253.07	391032.19	406680.50	424960.60	2.83	4.00	4.49
Total Employment	4698.01	4568.80	4648.13	4644.28	4674.36	1.74	-0.08	0.65
Wage + Salary Income	63824.20	222033.40	228437.99	237756.92	247893.09	2.88	4.08	4.26

**Table 4**  
State of Michigan SAF and Transportation Tax Revenue by Fiscal Years  
(Millions of Current Dollars, NSA)

	Actual	Forecast							
	2017q3	2017q4	2018q1	2018q2	2018q3	2018q4	2019q1	2019q2	2019q3
<b>SAF TAXES</b>									
Sales	1478.28	1475.89	1297.23	1516.47	1528.51	1517.00	1339.68	1565.80	1581.87
Use	135.29	117.25	117.04	132.00	138.60	127.23	125.53	140.86	147.32
Income	617.21	668.79	696.15	844.51	656.60	692.83	723.17	881.69	682.80
Mich Business	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquor Excise	21.40	16.60	11.75	13.65	13.55	15.09	11.60	13.73	13.72
Tobacco	97.50	87.62	80.92	90.40	94.70	85.50	79.33	88.95	93.44
State Education Property	1945.90	0.00	0.00	0.00	2022.26	0.00	0.00	0.00	2128.22
Real Estate Transfer	108.50	81.38	76.29	83.48	93.36	77.11	70.29	80.68	93.66
Ind and Comm Facilities	38.50	0.00	0.00	0.00	39.50	0.00	0.00	0.00	40.50
Casino	110.50	0.00	0.00	0.00	111.60	0.00	0.00	0.00	113.30
Other SAF Taxes	28.30	0.00	0.00	0.00	28.30	0.00	0.00	0.00	28.30
<b>TOTAL SAF TAXES</b>	<b>4581.38</b>	<b>2447.53</b>	<b>2279.38</b>	<b>2680.51</b>	<b>4726.99</b>	<b>2514.76</b>	<b>2349.59</b>	<b>2771.71</b>	<b>4923.12</b>
Lottery Transfer	887.00	0.00	0.00	0.00	887.70	0.00	0.00	0.00	885.00
<b>EARMARKED STATE SAF REVENUE</b>	<b>5468.38</b>	<b>2447.53</b>	<b>2279.38</b>	<b>2680.51</b>	<b>5614.69</b>	<b>2514.76</b>	<b>2349.59</b>	<b>2771.71</b>	<b>5808.12</b>
<b>TRANSPORTATION TAXES</b>									
Diesel	56.30	55.14	48.09	54.89	59.10	56.39	49.17	56.01	60.19
Gasoline	321.20	295.66	274.54	300.00	309.60	297.57	274.84	299.89	309.32
Motor Vehicle Registrati	1225.20	0.00	0.00	0.00	1322.02	0.00	0.00	0.00	1363.88

**Table 4**  
 State of Michigan SAF and Transportation Tax Revenue by Fiscal Years  
 (Millions of Current Dollars, NSA)

	Forecast	Fiscal Years				Percent Changes		
	2019q4	2016	2017	2018	2019	2016-17	2017-18	2018-19
<b>SAF TAXES</b>								
Sales	1569.29	5308.80	5645.68	5818.10	6004.35	6.35	3.05	3.20
Use	131.45	489.90	509.41	504.90	540.93	3.98	-0.89	7.13
Income	720.91	2662.10	2731.16	2866.05	2980.49	2.59	4.94	3.99
Mich Business	0.00	0.00	0.00	0.00	0.00	--	--	--
Liquor Excise	15.28	52.40	56.00	55.56	54.14	6.87	-0.79	-2.56
Tobacco	84.59	358.40	359.61	353.64	347.21	0.34	-1.66	-1.82
State Education Property	0.00	1897.00	1945.90	2022.26	2128.22	2.58	3.92	5.24
Real Estate Transfer	77.85	289.30	332.00	334.50	321.74	14.76	0.75	-3.82
Ind and Comm Facilities	0.00	32.50	38.50	39.50	40.50	18.46	2.60	2.53
Casino	0.00	112.90	110.50	111.60	113.30	-2.13	1.00	1.52
Other SAF Taxes	0.00	26.90	28.30	28.30	28.30	5.20	0.00	0.00
<b>TOTAL SAF TAXES</b>	<b>2599.37</b>	<b>11230.20</b>	<b>11757.06</b>	<b>12134.42</b>	<b>12559.17</b>	<b>4.69</b>	<b>3.21</b>	<b>3.50</b>
Lottery Transfer	0.00	888.90	887.00	887.70	885.00	-0.21	0.08	-0.30
<b>EARMARKED STATE SAF REVENUE</b>								
	2599.37	12119.10	12644.06	13022.12	13444.17	4.33	2.99	3.24
<b>TRANSPORTATION TAXES</b>								
Diesel	57.38	119.20	192.00	217.23	221.76	61.07	13.14	2.09
Gasoline	297.34	875.80	1152.10	1179.81	1181.61	31.55	2.40	0.15
Motor Vehicle Registrati	0.00	1018.00	1225.20	1322.02	1363.88	20.35	7.90	3.17

**Table 5**  
Selected State of Michigan Tax Revenues by Fiscal Years  
(Millions of Current Dollars, NSA)

	Actual	Forecast							
	2017q3	2017q4	2018q1	2018q2	2018q3	2018q4	2019q1	2019q2	2019q3
NET PERS INCOME TAX	2148.05	2282.25	2418.52	3078.45	2314.57	2317.80	2469.22	3176.45	2369.60
Withheld	2237.42	2577.68	2457.83	2374.69	2394.72	2674.45	2549.63	2465.77	2489.42
Quarterly	305.55	154.21	340.89	406.55	312.65	157.27	356.03	423.65	324.60
Annual	49.06	76.78	124.85	765.35	50.08	77.89	131.36	813.34	53.49
Less: Refunds	443.98	526.42	505.05	468.14	442.89	591.81	567.79	526.30	497.91
Less: School Aid	617.21	668.79	696.15	844.51	656.60	692.83	723.17	881.69	682.80
Camp Fund	0.80	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.80
MI Trans Fund	0.00	0.00	0.00	0.00	0.00	37.50	37.50	37.50	37.50
GFGP INCOME TAX	1530.04	1613.46	1722.36	2233.94	1657.17	1587.47	1708.56	2257.26	1648.49
GROSS SALES TAX	2037.23	2034.06	1790.54	2089.61	2106.14	2090.56	1848.87	2157.32	2179.34
Less: Local Dist	212.82	209.60	209.32	184.99	214.93	216.61	215.08	190.94	221.82
School Aid	1478.28	1475.89	1297.23	1516.47	1528.51	1517.00	1339.68	1565.80	1581.87
Comp Trans	21.70	22.08	22.08	22.08	22.08	22.25	22.25	22.25	22.25
Health Init	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
GFGP SALES TAX	322.17	324.25	259.67	363.83	338.38	332.44	269.60	376.07	351.15
GROSS USE TAX	405.90	351.75	351.13	396.01	415.81	381.68	376.58	422.57	441.95
Less: School Aid	135.29	117.25	117.04	132.00	138.60	127.23	125.53	140.86	147.32
Local Dist	95.23	102.70	102.70	102.70	102.70	109.50	109.50	109.50	109.50
GFGP USE TAX	175.36	131.80	131.39	161.31	174.51	144.96	141.55	172.21	185.13
GROSS CIGARETTE TAX	257.77	232.55	214.75	239.93	251.34	227.88	211.43	237.08	249.04
Less: School Aid	97.50	87.62	80.92	90.40	94.70	85.50	79.33	88.95	93.44
Medicaid Trust Fund	90.67	82.21	75.92	84.82	88.86	81.00	75.15	84.27	88.52
Other Funds	21.09	16.20	14.96	16.72	20.61	15.81	14.67	16.45	20.38
GFGP CIGARETTE TAX	48.51	46.51	42.95	47.99	47.17	45.58	42.29	47.42	46.71

**Table 5**  
Selected State of Michigan Tax Revenues by Fiscal Years  
(Millions of Current Dollars, NSA)

	Forecast	Fiscal Years				Percent Changes		
	2019q4	2016	2017	2018	2019	2016-17	2017-18	2018-19
NET PERS INCOME TAX	2422.32	9368.91	9522.49	10093.79	10333.07	1.64	6.00	2.37
Withheld	2783.44	9264.50	9396.43	9804.93	10179.27	1.42	4.35	3.82
Quarterly	162.30	1065.50	1185.99	1214.31	1261.54	11.31	2.39	3.89
Annual	81.78	911.90	887.36	1017.06	1076.07	-2.69	14.62	5.80
Less: Refunds	605.20	1872.99	1947.30	1942.50	2183.81	3.97	-0.25	12.42
Less: School Aid	720.91	2662.10	2731.16	2866.05	2980.49	2.59	4.94	3.99
Camp Fund	0.00	0.70	0.80	0.80	0.80	14.29	0.00	0.00
MI Trans Fund	81.25	0.00	0.00	0.00	150.00	--	--	--
GFGP INCOME TAX	1620.16	6706.11	6790.53	7226.93	7201.78	1.26	6.43	-0.35
GROSS SALES TAX	2162.30	7295.60	7817.97	8020.37	8276.08	7.16	2.59	3.19
Less: Local Dist	224.05	750.00	798.49	818.84	844.46	6.47	2.55	3.13
School Aid	1569.29	5308.80	5645.68	5818.10	6004.35	6.35	3.05	3.20
Comp Trans	22.25	84.52	86.80	88.30	89.00	2.70	1.73	0.79
Health Init	2.25	9.00	9.00	9.00	9.00	0.00	0.00	0.00
GFGP SALES TAX	344.46	1143.30	1278.00	1286.13	1329.27	11.78	0.64	3.35
GROSS USE TAX	394.36	1518.10	1528.30	1514.70	1622.78	0.67	-0.89	7.13
Less: School Aid	131.45	489.90	509.41	504.90	540.93	3.98	-0.89	7.13
Local Dist	116.48	96.40	380.90	410.80	438.00	295.12	7.85	6.62
GFGP USE TAX	146.43	931.80	637.92	599.00	643.85	-31.54	-6.10	7.49
GROSS CIGARETTE TAX	226.18	946.60	950.77	938.56	925.43	0.44	-1.28	-1.40
Less: School Aid	84.59	358.40	359.61	353.64	347.21	0.34	-1.66	-1.82
Medicaid Trust Fund	80.66	332.10	334.44	331.82	328.93	0.71	-0.78	-0.87
Other Funds	15.69	69.70	69.44	68.49	67.30	-0.37	-1.37	-1.74
GFGP CIGARETTE TAX	45.24	186.30	187.28	184.61	181.99	0.52	-1.42	-1.42

## Non-zero Adjustment Constants: 1 of 2

## The State of Michigan

	<u>A.AEQGM</u>	<u>A.ECCM</u>	<u>A.EFINM</u>	<u>A.EINFM</u>	<u>A.EMFOM</u>	<u>A.EMRESM</u>	<u>A.EMTEQM</u>	<u>A.ESBHQM</u>	<u>A.ESBPRM</u>	<u>A.ESHM</u>
2017Q4	-155.000	-2.900	2.150	0.500	9.600	-12.584	3.197	0.400	0.600	0.600
2018Q1	-160.000	-3.000	2.200	0.500	8.300	3.700	2.600	0.400	0.750	0.600
2018Q2	-160.000	-3.100	2.250	0.500	7.100	3.700	2.600	0.400	0.750	0.600
2018Q3	-160.000	-3.200	2.300	0.500	7.100	3.700	2.600	0.400	0.750	0.600
2018Q4	-160.000	-3.300	2.350	0.500	7.100	3.700	2.600	0.400	0.750	0.600
2019Q1	-165.000	-3.400	2.400	0.500	7.100	3.700	2.600	0.400	0.600	0.600
2019Q2	-165.000	-3.500	2.450	0.500	7.100	3.700	2.600	0.400	0.600	0.600
2019Q3	-165.000	-3.600	2.500	0.500	7.100	3.700	2.600	0.400	0.600	0.600
2019Q4	-165.000	-3.700	2.550	0.500	7.100	3.700	2.600	0.400	0.600	0.600

	<u>A.ESLM</u>	<u>A.ESOM</u>	<u>A.ETRM</u>	<u>A.ETWTUM</u>	<u>A.HRSOM</u>	<u>A.HRSTQM</u>	<u>A.LFM</u>	<u>A.PCPID</u>	<u>A.PDIESEMW</u>	<u>A.PGASD</u>
2017Q4	0.100	-0.150	-8.900	4.300	-0.100	0.310	8.655	-0.100	0.117	0.162
2018Q1	0.100	-0.150	-9.300	4.400	-0.100	0.310	-12.000	-0.100	0.077	0.064
2018Q2	0.100	-0.150	-9.700	4.500	-0.100	0.310	-12.000	-0.100	0.077	0.064
2018Q3	0.100	-0.150	-10.100	4.600	-0.100	0.310	-12.000	-0.100	0.077	0.064
2018Q4	0.100	-0.150	-10.500	4.700	-0.100	0.310	-12.000	-0.100	0.077	0.064
2019Q1	0.100	-0.150	-10.900	4.800	-0.100	0.310	-12.000	-0.100	0.077	0.064
2019Q2	0.100	-0.150	-11.300	4.900	-0.100	0.310	-12.000	-0.100	0.077	0.064
2019Q3	0.100	-0.150	-11.700	5.000	-0.100	0.310	-12.000	-0.100	0.077	0.064
2019Q4	0.100	-0.150	-12.100	5.100	-0.100	0.310	-12.000	-0.100	0.077	0.064

	<u>A.SEVNR</u>	<u>A.SEVR</u>	<u>A.TBWMNS</u>	<u>A.TCIGMNS</u>	<u>A.TDIESEL</u>	<u>A.TGASMNS</u>	<u>A.TLIQMNS</u>	<u>A.TOILMNS</u>	<u>A.TRET</u>	<u>A.TRSMNS</u>
2017Q4	0.000	0.000	1.000	-9.000	0.300	5.700	3.600	-0.400	5.100	-82.700
2018Q1	0.000	0.000	0.300	-0.700	0.300	5.700	2.600	-0.400	5.100	-8.700
2018Q2	-2.100	3.000	-0.200	-0.400	0.300	5.700	3.600	-0.400	5.100	9.300
2018Q3	0.000	0.000	0.000	2.100	0.300	5.700	2.200	-0.400	5.100	-32.700
2018Q4	0.000	0.000	1.000	-9.000	0.300	5.700	3.600	-0.400	5.100	-84.925
2019Q1	0.000	0.000	0.300	-0.700	0.300	5.700	2.600	-0.400	5.100	-10.925
2019Q2	-2.100	3.000	-0.200	-0.400	0.300	5.700	3.600	-0.400	5.100	7.075
2019Q3	0.000	0.000	0.000	2.100	0.300	5.700	2.200	-0.400	5.100	-34.925
2019Q4	0.000	0.000	1.000	-9.000	0.300	5.700	3.600	-0.400	5.100	-92.425

	<u>A.TSEP</u>	<u>A.TSIBM</u>	<u>A.TUSEMNS</u>	<u>A.TVEHREG</u>	<u>A.TYAMNS</u>	<u>A.TYQMNS</u>	<u>A.TYWM</u>	<u>A.WM</u>	<u>A.WUS</u>	<u>A.YPRM</u>
2017Q4	0.000	3.700	-34.750	0.000	13.800	56.500	59.400	-0.048	0.079	5.000
2018Q1	0.000	3.700	-15.750	0.000	12.600	68.500	186.900	-0.048	0.000	5.000
2018Q2	0.000	3.700	-26.750	0.000	-19.300	46.000	153.600	-0.048	0.000	5.000
2018Q3	-98.000	3.700	-15.750	24.000	-4.900	63.100	167.900	-0.048	0.000	5.000
2018Q4	0.000	3.700	-40.750	0.000	13.800	56.800	62.800	-0.048	0.000	5.000
2019Q1	0.000	3.700	-21.750	0.000	12.600	68.800	187.800	-0.048	0.000	5.000
2019Q2	0.000	3.700	-32.750	0.000	-14.200	46.300	153.000	-0.048	0.000	5.000
2019Q3	-98.000	3.700	-21.750	24.000	-4.900	63.400	168.000	-0.048	0.000	5.000
2019Q4	0.000	3.700	-46.750	0.000	13.800	57.100	58.000	-0.048	0.000	5.000

A.YUCTRM

2017Q4	-6.700
2018Q1	-6.700
2018Q2	-6.700
2018Q3	-6.700
2018Q4	-6.700
2019Q1	-6.700
2019Q2	-6.700
2019Q3	-6.700
2019Q4	-6.700

	<u>ADJRS</u>	<u>AF</u>	<u>BIG3SHR</u>	<u>BONUSQ</u>	<u>D00ON</u>	<u>D01Q1</u>	<u>D03Q2</u>	<u>D03Q2ON</u>	<u>D09Q1</u>	<u>D09Q3</u>
2017Q3	578.123	1.424	41.140	138.750	1.000	0.000	0.000	1.000	0.000	0.000
2017Q4	583.960	1.424	42.050	154.750	1.000	0.000	0.000	1.000	0.000	0.000
2018Q1	589.855	1.421	42.100	117.038	1.000	0.000	0.000	1.000	0.000	0.000
2018Q2	595.811	1.417	42.150	188.363	1.000	0.000	0.000	1.000	0.000	0.000
2018Q3	601.826	1.414	42.200	117.038	1.000	0.000	0.000	1.000	0.000	0.000
2018Q4	607.902	1.410	42.250	242.963	1.000	0.000	0.000	1.000	0.000	0.000
2019Q1	614.040	1.407	42.300	117.038	1.000	0.000	0.000	1.000	0.000	0.000
2019Q2	620.239	1.403	42.350	188.363	1.000	0.000	0.000	1.000	0.000	0.000
2019Q3	626.501	1.399	42.400	117.038	1.000	0.000	0.000	1.000	0.000	0.000
2019Q4	632.826	1.396	42.450	242.963	1.000	0.000	0.000	1.000	0.000	0.000

	<u>D1</u>	<u>D2</u>	<u>D3</u>	<u>D4</u>	<u>D6973</u>	<u>D7478.1</u>	<u>D7885.1</u>	<u>D83.1</u>	<u>D84ON</u>	<u>D85Q2ON</u>
2017Q3	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000
2017Q4	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	1.000	1.000
2018Q1	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000
2018Q2	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000
2018Q3	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000
2018Q4	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	1.000	1.000
2019Q1	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000
2019Q2	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000
2019Q3	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000
2019Q4	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	1.000	1.000

	<u>D86Q298Q1</u>	<u>D8790</u>	<u>D89Q3ON</u>	<u>D90ON</u>	<u>D9499</u>	<u>D95ON</u>	<u>D9799</u>	<u>D97ON</u>	<u>D9801</u>	<u>D98Q201Q1</u>
2017Q3	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
2017Q4	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
2018Q1	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
2018Q2	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
2018Q3	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
2018Q4	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
2019Q1	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
2019Q2	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
2019Q3	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
2019Q4	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000

	<u>D98Q3</u>	<u>D99Q3</u>	<u>DAUCON</u>	<u>DEGLM</u>	<u>DESTEMP</u>	<u>DPROPA</u>	<u>DSEAS1</u>	<u>DSEAS2</u>	<u>DSEAS3</u>	<u>DSTKMI</u>
2017Q3	0.000	0.000	7.540	0.596	0.000	1.500	0.000	0.000	1.000	0.000
2017Q4	0.000	0.000	13.730	0.596	0.000	1.500	-1.000	-1.000	-1.000	0.000
2018Q1	0.000	0.000	0.000	0.596	0.000	1.500	1.000	0.000	0.000	0.000
2018Q2	0.000	0.000	0.000	0.596	0.000	1.500	0.000	1.000	0.000	0.000
2018Q3	0.000	0.000	8.120	0.597	0.000	1.500	0.000	0.000	1.000	0.000
2018Q4	0.000	0.000	2.280	0.597	0.000	1.500	-1.000	-1.000	-1.000	0.000
2019Q1	0.000	0.000	0.000	0.597	0.000	1.500	1.000	0.000	0.000	0.000
2019Q2	0.000	0.000	0.000	0.597	0.000	1.500	0.000	1.000	0.000	0.000
2019Q3	0.000	0.000	8.730	0.597	0.000	1.500	0.000	0.000	1.000	0.000
2019Q4	0.000	0.000	14.410	0.597	0.000	1.500	-1.000	-1.000	-1.000	0.000



	<u>DTCASINO</u>	<u>DTCIG</u>	<u>DTIME</u>	<u>DTRSNVNS</u>	<u>DTSIHOL</u>	<u>DTUSEPDC</u>	<u>DYDMADJ</u>	<u>DYOUTH1</u>	<u>EGMX</u>	<u>EGOVCIIV</u>
2017Q3	0.000	3.100	247.000	-58.800	0.000	0.000	0.000	0.000	616.100	22.342
2017Q4	0.000	0.000	248.000	-59.092	0.000	0.000	0.000	0.000	616.869	22.366
2018Q1	0.000	0.000	249.000	-59.385	0.000	0.000	-152.397	0.000	617.638	22.383
2018Q2	0.000	0.000	250.000	-59.680	0.000	0.000	-148.435	0.000	618.409	22.400
2018Q3	0.000	3.100	251.000	-59.976	0.000	0.000	-144.576	0.000	619.181	22.416
2018Q4	0.000	0.000	252.000	-60.274	0.000	0.000	-140.818	0.000	619.953	22.458
2019Q1	0.000	0.000	253.000	-60.573	0.000	0.000	-212.337	0.000	620.727	22.500
2019Q2	0.000	0.000	254.000	-60.873	0.000	0.000	-206.817	0.000	621.501	22.542
2019Q3	0.000	3.100	255.000	-61.176	0.000	0.000	-201.441	0.000	622.276	22.584
2019Q4	0.000	0.000	256.000	-61.479	0.000	0.000	-196.204	0.000	623.053	22.655

	<u>EMP</u>	<u>G09</u>	<u>GAS</u>	<u>GAUTO09</u>	<u>GDP09</u>	<u>GTRMCQ</u>	<u>GTROF</u>	<u>GTRSL</u>	<u>GTRUCK09</u>	<u>HS</u>
2017Q3	146.668	2894.351	23.890	72.764	17156.945	587.610	2049.020	714.582	379.647	1165.000
2017Q4	147.190	2896.806	25.517	82.440	17270.799	591.249	2059.189	720.754	401.044	1228.333
2018Q1	147.730	2897.334	25.603	83.858	17369.146	594.910	2089.901	727.980	399.031	1246.103
2018Q2	148.258	2899.598	22.458	85.342	17467.988	598.594	2100.273	734.268	399.751	1271.528
2018Q3	148.767	2905.120	22.696	85.360	17565.445	602.300	2110.697	740.610	404.679	1277.587
2018Q4	149.236	2910.685	24.241	84.497	17654.777	606.030	2131.494	747.007	407.396	1284.217
2019Q1	149.695	2915.159	24.322	84.472	17749.455	609.783	2171.936	754.459	412.872	1294.108
2019Q2	150.131	2920.148	21.335	84.211	17840.050	613.559	2193.336	760.976	418.767	1303.222
2019Q3	150.554	2924.916	21.561	83.864	17931.832	617.358	2214.948	767.548	424.846	1308.964
2019Q4	150.961	2928.973	23.029	83.438	18020.730	621.181	2236.773	774.178	430.716	1315.898

	<u>IBFID09</u>	<u>IBFNC</u>	<u>IPDIE09</u>	<u>IRC</u>	<u>IRCPD</u>	<u>JCLH</u>	<u>JIPTOT</u>	<u>JQLH</u>	<u>MFRACSIC</u>	<u>MGNOIL09</u>
2017Q3	753.200	561.897	229.079	737.388	10.204	118.625	104.694	108.871	0.295	2136.696
2017Q4	762.400	567.196	231.209	749.546	10.164	119.555	105.637	109.290	0.295	2146.192
2018Q1	772.719	578.613	232.363	773.527	10.149	120.596	106.268	109.593	0.295	2157.162
2018Q2	783.520	590.426	233.294	793.746	10.139	121.635	106.931	109.877	0.295	2176.990
2018Q3	794.092	601.832	233.953	811.048	10.142	122.775	107.674	110.185	0.295	2201.068
2018Q4	804.505	613.005	234.557	826.014	10.143	123.904	108.451	110.479	0.295	2227.455
2019Q1	815.076	623.281	234.946	841.463	10.161	125.130	109.190	110.807	0.295	2253.496
2019Q2	825.827	632.955	235.078	856.047	10.162	126.293	109.950	111.135	0.295	2280.970
2019Q3	836.578	642.448	235.165	870.731	10.170	127.506	110.735	111.482	0.295	2309.702
2019Q4	847.433	651.224	235.413	884.372	10.168	128.734	111.497	111.822	0.295	2338.430

	<u>MICHFRAC</u>	<u>MIVSHR</u>	<u>MPG</u>	<u>MPOP</u>	<u>MPOP16</u>	<u>MPOP18</u>	<u>NTSBMNS</u>	<u>OIL</u>	<u>PBRENT</u>	<u>PC</u>
2017Q3	0.207	3.750	31.300	9946.000	7930.600	7771.000	12.000	1.350	52.110	112.687
2017Q4	0.207	3.750	31.400	9951.000	7936.800	7779.000	0.000	1.400	58.230	113.260
2018Q1	0.208	3.750	31.400	9955.000	7943.000	7787.000	0.000	1.400	57.230	113.585
2018Q2	0.208	3.750	31.400	9960.000	7949.100	7795.000	0.000	1.400	56.230	114.038
2018Q3	0.208	3.750	31.400	9964.000	7955.300	7803.000	0.000	1.400	56.230	114.520
2018Q4	0.208	3.750	31.500	9969.000	7961.500	7811.000	0.000	1.400	56.230	115.019
2019Q1	0.209	3.750	31.500	9974.000	7967.700	7819.000	0.000	1.400	56.480	115.528
2019Q2	0.209	3.750	31.500	9979.000	7974.000	7827.000	0.000	1.400	56.730	116.057
2019Q3	0.209	3.750	31.500	9984.000	7980.400	7834.000	0.000	1.400	56.980	116.599
2019Q4	0.209	3.750	31.600	9990.000	7987.100	7841.000	0.000	1.400	57.230	117.144

	<u>PCIG</u>	<u>PCNGO</u>	<u>PCPISA</u>	<u>PCRUDE</u>	<u>PCSMC</u>	<u>PGAS.C</u>	<u>PHCS</u>	<u>PHOUSEM</u>	<u>PINC</u>	<u>PIRC</u>
2017Q3	1030.750	104.302	245.150	196.367	112.669	1.530	193.770	219.637	119.625	126.059
2017Q4	1038.395	113.600	246.834	199.619	113.050	2.214	196.877	216.202	120.937	127.333
2018Q1	1046.097	110.025	247.391	201.454	113.472	2.236	198.817	219.338	122.251	128.358
2018Q2	1053.856	110.531	248.421	202.638	113.965	2.258	200.776	228.183	123.475	129.339
2018Q3	1061.672	111.153	249.507	204.083	114.460	2.280	202.754	231.364	124.618	130.283
2018Q4	1069.547	111.768	250.620	205.241	114.958	2.303	204.752	226.066	125.708	131.245
2019Q1	1077.480	112.198	251.738	206.157	115.529	2.325	206.769	229.098	126.764	132.237
2019Q2	1085.472	113.277	252.939	208.304	116.102	2.348	208.807	238.132	127.799	133.262
2019Q3	1093.523	114.302	254.172	209.909	116.678	2.371	210.864	241.285	128.825	134.293
2019Q4	1101.633	114.987	255.406	211.121	117.257	2.395	212.942	235.629	129.847	135.321

	<u>PLIQUOR</u>	<u>POIL.C</u>	<u>POP16</u>	<u>PPNF</u>	<u>PVEH</u>	<u>PWTI</u>	<u>RDEPNR</u>	<u>RDEPR</u>	<u>RGAS</u>	<u>RMORT</u>
2017Q3	245.210	44.274	255.357	112.303	35.396	48.207	0.000	0.000	0.050	3.887
2017Q4	246.124	49.096	255.954	112.724	35.396	52.230	3.251	2.950	0.050	3.955
2018Q1	247.042	49.096	256.517	113.163	36.370	52.230	0.000	0.000	0.050	4.091
2018Q2	247.963	49.096	257.081	113.614	36.370	52.230	0.000	0.000	0.050	4.274
2018Q3	248.888	49.566	257.641	114.096	36.370	52.730	0.000	0.000	0.050	4.431
2018Q4	249.816	50.036	258.202	114.599	36.370	53.230	3.270	2.960	0.050	4.535
2019Q1	250.748	50.506	258.765	115.109	37.370	53.730	0.000	0.000	0.050	4.611
2019Q2	251.683	50.976	259.328	115.634	37.370	54.230	0.000	0.000	0.050	4.673
2019Q3	252.621	51.446	259.890	116.171	37.370	54.730	0.000	0.000	0.050	4.722
2019Q4	253.564	51.916	260.453	116.715	37.370	55.230	3.289	2.970	0.050	4.771

	<u>ROIL</u>	<u>RTDIESEL</u>	<u>RTGAS</u>	<u>RTUSE</u>	<u>RTVEH</u>	<u>RTYAM</u>	<u>RTYQM</u>	<u>RTYSANS</u>	<u>RTYWM</u>	<u>RUG</u>
2017Q3	0.066	26.300	26.300	6.000	0.575	4.250	4.250	0.230	4.250	4.337
2017Q4	0.066	26.300	26.300	6.000	0.575	4.250	4.250	0.230	4.250	4.201
2018Q1	0.066	26.300	26.300	6.000	0.600	4.250	4.250	0.230	4.250	4.242
2018Q2	0.066	26.300	26.300	6.000	0.600	4.250	4.250	0.230	4.250	4.213
2018Q3	0.066	26.300	26.300	6.000	0.600	4.250	4.250	0.230	4.250	4.162
2018Q4	0.066	26.300	26.300	6.000	0.600	4.250	4.250	0.230	4.250	4.133
2019Q1	0.066	26.300	26.300	6.000	0.600	4.250	4.250	0.230	4.250	4.106
2019Q2	0.066	26.300	26.300	6.000	0.600	4.250	4.250	0.230	4.250	4.085
2019Q3	0.066	26.300	26.300	6.000	0.600	4.250	4.250	0.230	4.250	4.063
2019Q4	0.066	26.300	26.300	6.000	0.600	4.250	4.250	0.230	4.250	4.047

	<u>RUM</u>	<u>SERVE09</u>	<u>SP500</u>	<u>STKMFAC</u>	<u>STRPFRAC</u>	<u>STRS2013</u>	<u>STRSMNS</u>	<u>TCASINO</u>	<u>TCIGNRT</u>	<u>TCIGRT</u>
2017Q3	3.999	10237.392	2467.720	0.000	0.430	0.000	2.250	110.500	0.200	200.000
2017Q4	3.980	10279.519	2580.000	3.086	0.430	0.000	2.250	0.000	0.200	200.000
2018Q1	3.890	10322.000	2624.011	0.000	0.430	0.000	2.250	0.000	0.200	200.000
2018Q2	3.858	10367.372	2668.773	0.000	0.430	0.000	2.250	0.000	0.200	200.000
2018Q3	3.805	10411.751	2714.298	0.000	0.430	0.000	2.250	111.600	0.200	200.000
2018Q4	3.775	10457.672	2760.600	3.070	0.430	0.000	2.250	0.000	0.200	200.000
2019Q1	3.746	10507.024	2807.692	0.000	0.430	0.000	2.250	0.000	0.200	200.000
2019Q2	3.724	10555.252	2855.587	0.000	0.430	0.000	2.250	0.000	0.200	200.000
2019Q3	3.702	10603.866	2904.299	0.000	0.430	0.000	2.250	113.300	0.200	200.000
2019Q4	3.686	10653.931	2953.842	3.055	0.430	0.000	2.250	0.000	0.200	200.000

	<u>TCIGSART</u>	<u>TCIGSRT</u>	<u>TCPM</u>	<u>TCTF</u>	<u>TEXEMPT</u>	<u>TICF</u>	<u>TINHMNS</u>	<u>TINPMNS</u>	<u>TINTDLM</u>	<u>TINTMNS</u>
2017Q3	0.378	0.070	1078.000	21.700	4000.000	38.500	0.000	354.800	0.000	0.000
2017Q4	0.377	0.070	0.000	22.075	4000.000	0.000	0.000	0.000	0.000	0.000
2018Q1	0.377	0.070	0.000	22.075	4000.000	0.000	0.000	0.000	0.000	0.000
2018Q2	0.377	0.070	0.000	22.075	4000.000	0.000	0.000	0.000	0.000	0.000
2018Q3	0.377	0.070	950.200	22.075	4000.000	39.500	0.000	397.900	0.000	0.000
2018Q4	0.375	0.069	0.000	22.250	4000.000	0.000	0.000	0.000	0.000	0.000
2019Q1	0.375	0.069	0.000	22.250	4100.000	0.000	0.000	0.000	0.000	0.000
2019Q2	0.375	0.069	0.000	22.250	4100.000	0.000	0.000	0.000	0.000	0.000
2019Q3	0.375	0.069	916.700	22.250	4100.000	40.500	0.000	401.100	0.000	0.000
2019Q4	0.374	0.069	0.000	22.250	4100.000	0.000	0.000	0.000	0.000	0.000

	<u>TLOTTERY</u>	<u>TMB</u>	<u>TMBSAF</u>	<u>TNTGFGP</u>	<u>TOTHMNS</u>	<u>TOTHSAF</u>	<u>TP</u>	<u>TPSL</u>	<u>TRKH</u>	<u>TROADS</u>
2017Q3	887.000	-772.800	0.000	412.700	53.300	28.300	2053.011	444.525	0.425	0.000
2017Q4	0.000	0.000	0.000	0.000	0.000	0.000	2078.064	450.509	0.424	0.000
2018Q1	0.000	0.000	0.000	0.000	0.000	0.000	2109.637	458.747	0.424	0.000
2018Q2	0.000	0.000	0.000	0.000	0.000	0.000	2142.901	465.140	0.425	0.000
2018Q3	887.700	-757.900	0.000	361.600	58.100	28.300	2161.342	463.738	0.425	0.000
2018Q4	0.000	0.000	0.000	0.000	0.000	0.000	2193.752	473.038	0.426	37.500
2019Q1	0.000	0.000	0.000	0.000	0.000	0.000	2207.215	482.831	0.425	37.500
2019Q2	0.000	0.000	0.000	0.000	0.000	0.000	2243.065	494.497	0.425	37.500
2019Q3	885.000	-639.500	0.000	343.600	62.400	28.300	2260.409	489.074	0.424	37.500
2019Q4	0.000	0.000	0.000	0.000	0.000	0.000	2295.228	499.061	0.424	81.250

	<u>TSEPFRAC</u>	<u>TSIB</u>	<u>TSID</u>	<u>TSIFR</u>	<u>TUPM</u>	<u>TUPRT</u>	<u>TUSEAJ</u>	<u>TUSEDLNS</u>	<u>TVFAC</u>	<u>TYCFMNS</u>
2017Q3	0.000	614.265	1310.657	0.153	36.600	41.800	0.000	95.225	0.000	0.800
2017Q4	0.000	620.400	1321.803	0.153	0.000	41.800	-12.200	102.700	0.000	0.000
2018Q1	0.000	628.023	1339.835	0.153	0.000	41.900	-12.200	102.700	0.000	0.000
2018Q2	0.979	633.661	1352.924	0.153	0.000	41.900	-12.200	102.700	79.734	0.000
2018Q3	0.000	639.524	1366.554	0.153	36.000	41.900	-12.200	102.700	0.000	0.800
2018Q4	0.000	645.142	1379.555	0.153	0.000	41.900	0.000	109.500	0.000	0.000
2019Q1	0.000	654.562	1402.006	0.153	0.000	42.000	0.000	109.500	0.000	0.000
2019Q2	0.979	660.200	1415.012	0.153	0.000	42.000	0.000	109.500	78.734	0.000
2019Q3	0.000	665.967	1428.321	0.153	36.000	42.000	0.000	109.500	0.000	0.800
2019Q4	0.000	671.689	1441.498	0.153	0.000	42.000	0.000	116.475	0.000	0.000

	<u>TYDLNS</u>	<u>TYRMNS</u>	<u>TYWSF</u>	<u>UIAWBSA</u>	<u>UIEMRFAC</u>	<u>VEHL</u>	<u>WCEIL</u>	<u>YAVAFDC</u>	<u>YFP</u>	<u>YGWS</u>
2017Q3	0.000	443.980	95.367	313.155	1.000	17.059	127.200	1288.697	32.332	1344.676
2017Q4	0.000	526.420	110.018	306.483	1.000	17.599	127.200	1038.850	30.941	1353.852
2018Q1	0.000	505.050	98.741	306.866	1.000	17.082	128.700	1045.990	30.268	1369.484
2018Q2	0.000	468.140	95.820	307.249	1.000	17.079	128.700	1023.980	30.167	1377.887
2018Q3	0.000	442.890	95.367	307.632	1.000	17.083	128.700	1230.000	30.586	1386.342
2018Q4	0.000	591.810	110.018	308.016	1.000	16.963	128.700	1038.850	30.975	1396.320
2019Q1	0.000	567.790	98.741	308.400	1.000	16.984	131.403	1045.990	31.337	1414.555
2019Q2	0.000	526.300	95.820	308.785	1.000	17.016	131.403	1023.980	31.674	1425.608
2019Q3	0.000	497.910	95.367	309.170	1.000	17.055	131.403	1230.000	31.989	1436.750
2019Q4	0.000	605.200	110.018	309.556	1.000	17.085	131.403	1038.850	32.284	1449.669

	<u>YNFP</u>	<u>YOL</u>	<u>YOTRM</u>	<u>YP</u>	<u>YPDIV</u>	<u>YPINT</u>	<u>YPRENT</u>	<u>YPWS</u>	<u>YSSTRM</u>	<u>YUNB</u>
2017Q3	1349.450	1350.367	14876.880	16478.104	974.789	1461.055	745.925	7063.926	8883.544	28.486
2017Q4	1363.900	1359.400	15059.453	16646.813	985.000	1476.700	757.000	7151.289	8971.077	29.783
2018Q1	1378.373	1370.473	15244.267	16852.303	1000.424	1501.003	760.697	7246.984	9238.895	27.601
2018Q2	1393.253	1382.858	15431.348	17042.225	1014.649	1525.770	768.193	7345.101	9329.929	27.615
2018Q3	1408.405	1396.094	15620.725	17237.115	1029.039	1549.896	775.762	7447.221	9421.860	27.508
2018Q4	1423.485	1410.039	15812.426	17443.293	1046.842	1573.491	783.406	7544.588	9514.698	27.539
2019Q1	1439.216	1425.760	16006.480	17677.045	1068.027	1595.896	787.294	7645.359	9779.715	27.590
2019Q2	1455.175	1442.290	16202.915	17888.100	1091.077	1617.872	791.201	7742.414	9876.078	27.684
2019Q3	1471.512	1459.164	16401.762	18101.720	1113.705	1639.096	795.128	7842.305	9973.391	27.774
2019Q4	1488.031	1476.415	16603.047	18318.008	1136.859	1660.590	799.074	7941.329	10071.663	27.907

	<u>AEQGM</u>	<u>AEQPM</u>	<u>AFDC</u>	<u>BLDPERM</u>	<u>ECCM</u>	<u>EFINM</u>	<u>EGM</u>	<u>EINFM</u>	<u>EMFM</u>	<u>EMFOM</u>
2017Q3	12696.827	13188.514	19.460	5.159	161.700	218.300	616.100	58.000	604.700	426.400
2017Q4	12772.060	13366.280	19.072	5.670	163.536	219.314	616.869	58.154	604.624	425.824
2018Q1	12832.200	13463.300	18.652	5.761	164.932	220.319	617.638	58.272	602.643	424.986
2018Q2	12944.310	13585.600	18.057	5.952	166.423	221.160	618.409	58.359	600.008	423.394
2018Q3	13031.220	13675.700	17.593	6.042	167.857	221.924	619.181	58.424	598.382	422.355
2018Q4	13120.890	13812.070	17.285	6.144	169.278	222.639	619.953	58.475	597.090	421.603
2019Q1	13205.630	13893.460	17.105	6.258	170.675	223.313	620.727	58.517	596.272	421.096
2019Q2	13325.890	14024.340	16.634	6.351	172.081	223.985	621.501	58.554	595.768	420.735
2019Q3	13425.440	14124.940	16.185	6.439	173.511	224.662	622.276	58.589	595.562	420.523
2019Q4	13525.190	14280.340	15.879	6.528	174.993	225.340	623.053	58.624	595.595	420.429
	<u>EMICH</u>	<u>EMIM</u>	<u>EMRESM</u>	<u>EMTEQM</u>	<u>EPM</u>	<u>ESBASM</u>	<u>ESBHQM</u>	<u>ESBM</u>	<u>ESBPRM</u>	<u>ESHM</u>
2017Q3	4648.100	7.400	252.500	178.300	3779.500	298.900	62.600	666.200	304.700	671.400
2017Q4	4634.168	7.374	225.000	178.800	3792.299	302.293	63.013	671.942	306.637	672.681
2018Q1	4641.686	7.363	222.098	177.657	3801.950	304.209	63.631	677.181	309.342	673.896
2018Q2	4646.985	7.348	218.381	176.613	3810.195	306.005	64.142	681.494	311.346	675.155
2018Q3	4654.297	7.329	215.237	176.028	3819.879	307.842	64.630	685.799	313.327	676.385
2018Q4	4661.501	7.308	211.404	175.487	3830.144	309.637	65.104	690.104	315.363	677.579
2019Q1	4669.630	7.285	207.431	175.176	3841.473	311.710	65.578	694.595	317.306	678.723
2019Q2	4678.357	7.262	203.374	175.033	3853.482	313.904	66.066	699.371	319.401	679.818
2019Q3	4687.954	7.238	199.524	175.039	3866.154	316.177	66.555	704.270	321.537	680.870
2019Q4	4698.008	7.216	195.687	175.166	3879.268	318.507	67.039	709.259	323.713	681.895
	<u>ESLM</u>	<u>ESM</u>	<u>ESOM</u>	<u>ETRM</u>	<u>ETTUM</u>	<u>ETWTUM</u>	<u>EWSM</u>	<u>HRSM</u>	<u>HRMOM</u>	<u>HRSTQM</u>
2017Q3	433.500	1945.900	174.800	469.500	783.400	313.800	4395.600	43.000	41.200	47.200
2017Q4	435.075	1954.724	175.026	469.803	784.574	314.772	4409.168	43.356	41.732	47.224
2018Q1	436.638	1963.000	175.285	470.135	785.422	315.287	4419.588	43.380	41.975	46.742
2018Q2	438.252	1970.505	175.605	470.631	786.392	315.762	4428.604	43.417	42.149	46.459
2018Q3	439.996	1978.149	175.969	471.387	787.814	316.427	4439.059	43.481	42.283	46.354
2018Q4	441.847	1985.934	176.404	472.188	789.422	317.234	4450.097	43.511	42.367	46.260
2019Q1	443.819	1993.952	176.816	473.278	791.459	318.181	4462.199	43.564	42.441	46.263
2019Q2	445.875	2002.295	177.231	474.344	793.537	319.194	4474.983	43.610	42.495	46.291
2019Q3	448.009	2010.792	177.643	475.523	795.800	320.277	4488.430	43.650	42.533	46.335
2019Q4	450.227	2019.485	178.105	476.632	798.015	321.383	4502.321	43.679	42.553	46.382
	<u>LFM</u>	<u>MVPROD09</u>	<u>MVQLH09</u>	<u>NEWREGM</u>	<u>NEWREGMQ</u>	<u>NTCASINO</u>	<u>NTCIGMNS</u>	<u>NTMB</u>	<u>NTRSMNS</u>	<u>NTUSEMNS</u>
2017Q3	4840.929	93.649	NA	659.363	655.650	0.000	48.514	-772.800	322.175	175.363
2017Q4	4841.000	100.081	11.853	0.000	675.863	0.000	46.510	0.000	324.247	131.800
2018Q1	4846.678	100.441	12.095	0.000	656.475	0.000	42.950	0.000	259.674	131.389
2018Q2	4852.582	100.899	12.297	0.000	656.397	0.000	47.985	0.000	363.827	161.308
2018Q3	4859.442	101.928	12.492	661.324	656.562	0.000	47.168	-757.900	338.377	174.506
2018Q4	4866.232	102.314	12.603	0.000	652.072	0.000	45.576	0.000	332.443	144.955
2019Q1	4873.293	103.945	12.826	0.000	652.824	0.000	42.286	0.000	269.601	141.551
2019Q2	4880.676	105.122	12.974	0.000	654.022	0.000	47.416	0.000	376.074	172.214
2019Q3	4888.588	106.320	13.109	653.602	655.489	0.000	46.708	-639.500	351.152	185.131
2019Q4	4896.955	107.458	13.226	0.000	656.576	0.000	45.237	0.000	344.456	146.433

	<u>NTYMNS</u>	<u>PCPID</u>	<u>PDIESEMW</u>	<u>PGASD</u>	<u>PSTKNR</u>	<u>PSTKR</u>	<u>REGVAL1</u>	<u>REGVAL2</u>	<u>REGVAL3</u>	<u>REGVAL4</u>
2017Q3	1530.040	226.460	2.579	2.584	0.000	0.000	23339.023	20552.357	17316.930	14164.894
2017Q4	1613.459	228.020	2.770	2.690	178.565	197.495	0.000	0.000	0.000	0.000
2018Q1	1722.364	228.436	2.722	2.603	0.000	0.000	0.000	0.000	0.000	0.000
2018Q2	2233.944	229.330	2.741	2.875	0.000	0.000	0.000	0.000	0.000	0.000
2018Q3	1657.167	230.278	2.689	2.714	0.000	0.000	24052.200	20795.070	18127.180	15273.530
2018Q4	1587.470	231.262	2.710	2.526	179.089	198.481	0.000	0.000	0.000	0.000
2019Q1	1708.558	232.264	2.654	2.588	0.000	0.000	0.000	0.000	0.000	0.000
2019Q2	2257.260	233.345	2.708	2.904	0.000	0.000	0.000	0.000	0.000	0.000
2019Q3	1648.493	234.440	2.682	2.769	0.000	0.000	24425.030	21430.510	18341.250	15988.170
2019Q4	1620.163	235.538	2.721	2.587	178.430	199.280	0.000	0.000	0.000	0.000

	<u>REGVALR</u>	<u>RLFPM</u>	<u>RUMICH</u>	<u>SEV</u>	<u>SEVNR</u>	<u>SEVR</u>	<u>SPLONG</u>	<u>STCIGMNS</u>	<u>STKNR</u>	<u>STKNRHC</u>
2017Q3	137705.063	61.041	3.980	0.000	0.000	0.000	0.095	21.087	0.000	0.000
2017Q4	0.000	60.994	4.273	0.000	0.000	0.000	0.125	16.202	14137.430	7917.235
2018Q1	0.000	61.018	4.230	0.000	0.000	0.000	0.134	14.962	0.000	0.000
2018Q2	0.000	61.046	4.237	443.677	130.980	312.698	0.141	16.716	0.000	0.000
2018Q3	142088.400	61.084	4.222	0.000	0.000	0.000	0.127	20.612	0.000	0.000
2018Q4	0.000	61.122	4.207	0.000	0.000	0.000	0.115	15.809	14782.630	8254.334
2019Q1	0.000	61.163	4.179	0.000	0.000	0.000	0.104	14.668	0.000	0.000
2019Q2	0.000	61.207	4.145	471.724	136.673	335.051	0.088	16.448	0.000	0.000
2019Q3	147128.600	61.257	4.104	0.000	0.000	0.000	0.079	20.377	0.000	0.000
2019Q4	0.000	61.311	4.063	0.000	0.000	0.000	0.072	15.692	15381.310	8620.351

	<u>STKR</u>	<u>STKRHC</u>	<u>STKRM</u>	<u>TAXVAL</u>	<u>TBWMNS</u>	<u>TCASSAF</u>	<u>TCIGBSF</u>	<u>TCIGMNS</u>	<u>TCIGSAF</u>	<u>TDIESEL</u>
2017Q3	0.000	0.000	0.000	0.000	15.099	110.500	90.673	257.770	97.496	56.300
2017Q4	21478.410	10875.400	662.729	0.000	12.795	0.000	82.215	232.549	87.622	55.144
2018Q1	0.000	0.000	0.000	0.000	11.138	0.000	75.922	214.750	80.916	48.093
2018Q2	0.000	0.000	0.000	353.761	13.314	0.000	84.823	239.927	90.402	54.894
2018Q3	0.000	0.000	0.000	0.000	14.733	111.600	88.858	251.339	94.702	59.100
2018Q4	22516.500	11344.420	691.279	0.000	12.909	0.000	80.997	227.881	85.498	56.395
2019Q1	0.000	0.000	0.000	0.000	11.191	0.000	75.151	211.432	79.327	49.168
2019Q2	0.000	0.000	0.000	371.407	13.393	0.000	84.267	237.080	88.950	56.006
2019Q3	0.000	0.000	0.000	0.000	14.820	113.300	88.518	249.041	93.437	60.193
2019Q4	23635.490	11860.460	722.138	0.000	12.982	0.000	80.662	226.183	84.593	57.378

	<u>TGASMNS</u>	<u>TGFGP</u>	<u>TGFGPRV</u>	<u>TLIQMNS</u>	<u>TOILMNS</u>	<u>TRESM</u>	<u>TRET</u>	<u>TRSDLNS</u>	<u>TRSMNS</u>	<u>TRSSANS</u>
2017Q3	321.200	2879.391	3292.091	21.400	4.900	11031.681	108.500	212.822	2037.226	1478.279
2017Q4	295.658	2151.603	2151.603	16.600	6.193	11200.890	81.375	209.603	2034.063	1475.888
2018Q1	274.543	2185.500	2185.500	11.754	6.230	11339.770	76.287	209.316	1790.544	1297.230
2018Q2	300.001	2839.935	2839.935	13.653	5.903	11514.930	83.477	184.993	2089.615	1516.470
2018Q3	309.603	2935.795	3297.395	13.552	5.992	11621.020	93.361	214.930	2106.143	1528.511
2018Q4	297.566	2144.670	2144.670	15.085	6.231	11777.190	77.113	216.612	2090.557	1517.002
2019Q1	274.842	2191.093	2191.093	11.602	6.304	11765.650	70.288	215.083	1848.866	1339.682
2019Q2	299.887	2886.108	2886.108	13.735	6.017	11931.420	80.678	190.944	2157.317	1565.799
2019Q3	309.317	3042.824	3386.424	13.715	6.105	12068.560	93.659	221.819	2179.342	1581.871
2019Q4	297.344	2190.889	2190.889	15.277	6.342	12249.140	77.851	224.052	2162.298	1569.291

	<u>TSAF</u>	<u>TSAFCONS</u>	<u>TSEP</u>	<u>TSIBM</u>	<u>TSIM</u>	<u>TUSEMNS</u>	<u>TUSESANS</u>	<u>TVEHREG</u>	<u>TYAMNS</u>	<u>TYMNS</u>
2017Q3	4581.376	5468.376	1945.900	4348.205	9392.123	405.900	135.294	1225.200	49.061	2148.047
2017Q4	2447.530	2447.530	0.000	4400.242	9507.088	351.749	117.250	0.000	76.779	2282.254
2018Q1	2279.384	2279.384	0.000	4443.939	9604.270	351.134	117.045	0.000	124.846	2418.517
2018Q2	2680.511	2680.511	0.000	4478.535	9682.005	396.012	132.004	0.000	765.346	3078.450
2018Q3	4726.991	5614.691	2022.263	4505.853	9744.182	415.809	138.603	1322.018	50.084	2314.566
2018Q4	2514.755	2514.755	0.000	4545.259	9832.481	381.683	127.228	0.000	77.892	2317.799
2019Q1	2349.591	2349.591	0.000	4601.075	9956.259	376.576	125.525	0.000	131.355	2469.224
2019Q2	2771.709	2771.709	0.000	4642.572	10049.360	422.571	140.857	0.000	813.336	3176.450
2019Q3	4923.119	5808.119	2128.217	4676.537	10126.360	441.946	147.315	1363.881	53.491	2369.597
2019Q4	2599.371	2599.371	0.000	4724.539	10233.740	394.362	131.454	0.000	81.776	2422.319

	<u>TYQMNS</u>	<u>TYSANS</u>	<u>TYWM</u>	<u>TYWMNS</u>	<u>UMICH</u>	<u>WM</u>	<u>WSGM</u>	<u>WSM</u>	<u>WSPM</u>	<u>WSUS</u>
2017Q3	305.545	617.207	2346.117	2237.421	192.841	20.720	7822.515	57668.504	49845.990	NA
2017Q4	154.214	668.795	2342.967	2577.682	206.832	20.955	7878.684	58567.630	50688.940	8505.141
2018Q1	340.886	696.153	2489.175	2457.834	204.992	20.998	7925.658	59112.440	51186.780	8616.468
2018Q2	406.554	844.506	2478.286	2374.690	205.596	21.022	8004.878	59768.650	51763.780	8722.988
2018Q3	312.651	656.599	2511.056	2394.721	205.146	21.091	8068.680	60308.200	52239.520	8833.563
2018Q4	157.269	692.829	2430.921	2674.448	204.731	21.128	8134.337	61036.550	52902.220	8940.908
2019Q1	356.030	723.167	2582.140	2549.629	203.663	21.156	8197.082	61568.420	53371.340	9059.914
2019Q2	423.647	881.690	2573.337	2465.768	202.319	21.188	8282.056	62324.580	54042.520	9168.022
2019Q3	324.596	682.804	2610.356	2489.420	200.635	21.275	8354.334	62963.540	54609.210	9279.055
2019Q4	162.300	720.906	2529.992	2783.443	198.948	21.397	8426.909	63824.200	55397.290	9390.998

	<u>WUS</u>	<u>YA</u>	<u>YAFDC</u>	<u>YDM</u>	<u>YDM824</u>	<u>YDM824AJ</u>	<u>YDMADJ</u>	<u>YENTM</u>	<u>YENTUS</u>	<u>YOLM</u>
2017Q3	20.930	3262.872	25.077	99851.250	44092.223	44092.223	99851.250	7089.923	1381.782	9515.303
2017Q4	21.120	3291.905	19.813	101269.100	44412.460	44412.460	101269.100	7167.370	1394.841	9658.475
2018Q1	21.243	3315.903	19.510	102386.500	44820.580	44753.870	102234.100	7275.216	1408.641	9729.369
2018Q2	21.351	3344.670	18.490	103584.000	45168.060	45103.330	103435.600	7356.536	1423.420	9822.604
2018Q3	21.457	3383.862	21.639	104679.300	45457.720	45394.930	104534.700	7445.336	1438.991	9893.040
2018Q4	21.565	3441.489	17.957	106056.000	45859.730	45798.840	105915.100	7529.907	1454.459	9998.328
2019Q1	21.675	3489.784	17.891	107284.700	46190.770	46099.350	107072.400	7618.546	1470.552	10069.260
2019Q2	21.788	3535.553	17.032	108633.100	46554.750	46466.120	108426.300	7713.158	1486.850	10190.210
2019Q3	21.904	3587.050	19.907	109833.900	46849.420	46763.500	109632.500	7810.302	1503.502	10291.090
2019Q4	22.022	3645.769	16.496	111353.500	47276.220	47192.920	111157.300	7908.408	1520.315	10429.340

	<u>YPADJM</u>	<u>YPERM</u>	<u>YPERM824</u>	<u>YPM</u>	<u>YPM824</u>	<u>YPRM</u>	<u>YPRUS</u>	<u>YQ</u>	<u>YTM824</u>	<u>YTRM</u>
2017Q3	98640.660	98766.950	43873.527	113229.047	49999.580	19440.610	3181.769	26530.530	218.696	23980.502
2017Q4	100054.400	99585.060	44039.220	114812.900	50352.240	19676.750	3218.700	26844.120	373.241	24265.580
2018Q1	101100.600	100504.800	44285.180	116215.400	50874.330	19949.750	3262.124	27224.970	535.405	24719.130
2018Q2	102258.200	101531.300	44571.950	117577.200	51269.830	20236.020	3308.612	27592.560	596.104	25001.090
2018Q3	103267.300	102579.200	44866.840	118811.400	51594.670	20513.000	3354.698	27958.340	590.874	25288.320
2018Q4	104524.800	103736.000	45190.440	120264.100	52003.470	20806.880	3403.739	28336.790	669.295	25571.730
2019Q1	105556.900	104973.900	45539.600	121632.500	52368.120	21085.520	3451.217	28704.060	651.168	26031.910
2019Q2	106862.900	106228.700	45894.780	123137.900	52770.770	21372.150	3500.150	29085.300	659.976	26324.360
2019Q3	108016.000	107478.800	46229.840	124512.800	53110.680	21648.050	3547.929	29458.350	619.579	26623.150
2019Q4	109447.500	108805.500	46588.840	126132.600	53550.840	21928.170	3596.524	29836.570	687.385	26918.910

YUCTRM

2017Q3	195.000
2017Q4	215.240
2018Q1	216.458
2018Q2	221.324
2018Q3	224.101
2018Q4	226.648
2019Q1	227.828
2019Q2	228.335
2019Q3	228.087
2019Q4	227.703



	<u>AEQGM</u>	<u>AEQPM</u>	<u>AFDC</u>	<u>BLDPERM</u>	<u>ECCM</u>	<u>EFINM</u>	<u>EGM</u>	<u>EINFM</u>	<u>EMFM</u>	<u>EMFOM</u>
2017Q3	2.200	-1.188	-5.993	-48.230	-2.196	1.107	4.334	-1.368	-1.572	0.188
2017Q4	2.391	5.502	-7.732	45.907	4.620	1.871	0.500	1.066	-0.050	-0.540
2018Q1	1.897	2.935	-8.522	6.594	3.459	1.845	0.500	0.817	-1.304	-0.785
2018Q2	3.541	3.683	-12.161	13.951	3.666	1.536	0.500	0.594	-1.738	-1.489
2018Q3	2.713	2.679	-9.902	6.158	3.490	1.390	0.500	0.449	-1.079	-0.979
2018Q4	2.781	4.049	-6.809	6.892	3.430	1.294	0.500	0.347	-0.861	-0.710
2019Q1	2.608	2.378	-4.115	7.654	3.342	1.217	0.500	0.288	-0.547	-0.480
2019Q2	3.693	3.822	-10.574	6.080	3.336	1.209	0.500	0.255	-0.338	-0.343
2019Q3	3.022	2.900	-10.366	5.637	3.366	1.213	0.500	0.242	-0.138	-0.202
2019Q4	3.005	4.474	-7.331	5.691	3.461	1.214	0.500	0.240	0.022	-0.090

	<u>EMICH</u>	<u>EMIM</u>	<u>EMRESM</u>	<u>EMTEQM</u>	<u>EPM</u>	<u>ESBASM</u>	<u>ESBHQM</u>	<u>ESBM</u>	<u>ESBPRM</u>	<u>ESHM</u>
2017Q3	-2.964	-5.228	-47.476	-5.626	0.265	-1.852	-0.636	0.966	4.037	1.080
2017Q4	-1.194	-1.386	-36.950	1.126	1.361	4.618	2.662	3.492	2.567	0.765
2018Q1	0.650	-0.624	-5.060	-2.532	1.022	2.559	3.986	3.156	3.575	0.725
2018Q2	0.457	-0.780	-6.528	-2.329	0.870	2.384	3.249	2.572	2.618	0.750
2018Q3	0.631	-1.057	-5.636	-1.319	1.021	2.423	3.081	2.551	2.569	0.731
2018Q4	0.621	-1.147	-6.936	-1.225	1.079	2.353	2.966	2.534	2.625	0.708
2019Q1	0.699	-1.241	-7.308	-0.707	1.188	2.705	2.944	2.629	2.488	0.677
2019Q2	0.750	-1.265	-7.596	-0.326	1.256	2.845	3.010	2.779	2.667	0.647
2019Q3	0.823	-1.293	-7.361	0.015	1.322	2.929	2.994	2.831	2.702	0.620
2019Q4	0.861	-1.225	-7.473	0.291	1.364	2.980	2.940	2.864	2.734	0.604

	<u>ESLM</u>	<u>ESM</u>	<u>ESOM</u>	<u>ETRM</u>	<u>ETTUM</u>	<u>ETWTUM</u>	<u>EWSM</u>	<u>HRSM</u>	<u>HRMOM</u>	<u>HRSTQM</u>
2017Q3	-2.004	0.412	1.852	0.599	1.807	3.517	0.823	0.000	-2.860	6.159
2017Q4	1.461	1.826	0.519	0.258	0.601	1.244	1.240	3.353	5.263	0.207
2018Q1	1.445	1.704	0.592	0.283	0.433	0.656	0.949	0.222	2.349	-4.023
2018Q2	1.487	1.538	0.733	0.423	0.495	0.603	0.819	0.345	1.668	-2.397
2018Q3	1.601	1.561	0.832	0.644	0.725	0.846	0.948	0.582	1.282	-0.905
2018Q4	1.694	1.584	0.991	0.682	0.819	1.023	0.998	0.281	0.797	-0.810
2019Q1	1.797	1.625	0.938	0.926	1.036	1.200	1.092	0.485	0.701	0.025
2019Q2	1.866	1.684	0.943	0.904	1.054	1.278	1.151	0.427	0.507	0.249
2019Q3	1.928	1.708	0.933	0.999	1.145	1.364	1.207	0.370	0.360	0.379
2019Q4	1.995	1.741	1.045	0.936	1.118	1.388	1.244	0.265	0.192	0.406

	<u>LFM</u>	<u>MVPROD09</u>	<u>MVQLH09</u>	<u>NEWREGM</u>	<u>NEWREGMQ</u>	<u>NTCASINO</u>	<u>NTCIGMNS</u>	<u>NTMB</u>	<u>NTRSMNS</u>	<u>NTUSEMNS</u>
2017Q3	-4.091	-20.612	NA	NA	7.685	NA	-1.414	NA	-32.176	18.098
2017Q4	0.006	30.435	NA	-100.000	12.913	NA	-15.529	-100.000	2.598	-68.092
2018Q1	0.470	1.447	8.446	NA	-10.990	NA	-27.276	NA	-58.865	-1.240
2018Q2	0.488	1.838	6.828	NA	-0.048	NA	55.805	NA	285.361	127.188
2018Q3	0.567	4.140	6.496	NA	0.101	NA	-6.643	NA	-25.179	36.969
2018Q4	0.560	1.523	3.622	-100.000	-2.708	NA	-12.830	-100.000	-6.833	-52.390
2019Q1	0.582	6.531	7.262	NA	0.462	NA	-25.893	NA	-56.747	-9.070
2019Q2	0.607	4.609	4.691	NA	0.736	NA	58.087	NA	278.623	119.091
2019Q3	0.650	4.637	4.226	NA	0.900	NA	-5.839	NA	-23.986	33.550
2019Q4	0.686	4.350	3.627	-100.000	0.665	NA	-12.019	-100.000	-7.413	-60.858

	<u>NTYMNS</u>	<u>PCPID</u>	<u>PDIESEMW</u>	<u>PGASD</u>	<u>PSTKNR</u>	<u>PSTKR</u>	<u>REGVAL1</u>	<u>REGVAL2</u>	<u>REGVAL3</u>	<u>REGVAL4</u>
2017Q3	-70.557	1.246	16.385	6.439	NA	NA	NA	NA	NA	NA
2017Q4	23.658	2.783	33.080	17.446	NA	NA	-100.000	-100.000	-100.000	-100.000
2018Q1	29.858	0.733	-6.782	-12.283	-100.000	-100.000	NA	NA	NA	NA
2018Q2	183.002	1.575	2.851	48.649	NA	NA	NA	NA	NA	NA
2018Q3	-69.719	1.664	-7.431	-20.479	NA	NA	NA	NA	NA	NA
2018Q4	-15.791	1.719	3.172	-24.965	NA	NA	-100.000	-100.000	-100.000	-100.000
2019Q1	34.183	1.746	-7.904	10.063	-100.000	-100.000	NA	NA	NA	NA
2019Q2	204.654	1.874	8.319	58.660	NA	NA	NA	NA	NA	NA
2019Q3	-71.554	1.891	-3.811	-17.369	NA	NA	NA	NA	NA	NA
2019Q4	-6.699	1.886	5.907	-23.818	NA	NA	-100.000	-100.000	-100.000	-100.000

	<u>REGVALR</u>	<u>RLFPM</u>	<u>RUMICH</u>	<u>SEV</u>	<u>SEVNR</u>	<u>SEVR</u>	<u>SPLONG</u>	<u>STCIGMNS</u>	<u>STKNR</u>	<u>STKNRHC</u>
2017Q3	NA	-4.506	-23.811	-100.000	-100.000	-100.000	403.391	138.583	NA	NA
2017Q4	-100.000	-0.306	32.800	NA	NA	NA	197.755	-65.146	NA	NA
2018Q1	NA	0.157	-3.963	NA	NA	NA	32.718	-27.276	-100.000	-100.000
2018Q2	NA	0.180	0.694	NA	NA	NA	23.452	55.804	NA	NA
2018Q3	NA	0.254	-1.433	-100.000	-100.000	-100.000	-33.265	131.136	NA	NA
2018Q4	-100.000	0.247	-1.358	NA	NA	NA	-34.459	-65.389	NA	NA
2019Q1	NA	0.269	-2.638	NA	NA	NA	-32.886	-25.893	-100.000	-100.000
2019Q2	NA	0.290	-3.200	NA	NA	NA	-49.404	58.087	NA	NA
2019Q3	NA	0.328	-3.914	-100.000	-100.000	-100.000	-34.865	135.605	NA	NA
2019Q4	-100.000	0.349	-3.981	NA	NA	NA	-29.312	-64.838	NA	NA

	<u>STKR</u>	<u>STKRHC</u>	<u>STKRM</u>	<u>TAXVAL</u>	<u>TBWMNS</u>	<u>TCASSAF</u>	<u>TCIGBSF</u>	<u>TCIGMNS</u>	<u>TCIGSAF</u>	<u>TDIESEL</u>
2017Q3	NA	NA	NA	-100.000	104.258	NA	26.304	26.300	26.299	53.261
2017Q4	NA	NA	NA	NA	-48.435	-100.000	-32.410	-33.759	-34.761	-7.963
2018Q1	-100.000	-100.000	-100.000	NA	-42.569	NA	-27.276	-27.276	-27.276	-42.146
2018Q2	NA	NA	NA	NA	104.125	NA	55.805	55.804	55.805	69.732
2018Q3	NA	NA	NA	-100.000	49.946	NA	20.427	20.427	20.427	34.359
2018Q4	NA	NA	NA	NA	-41.053	-100.000	-30.961	-32.424	-33.565	-17.093
2019Q1	-100.000	-100.000	-100.000	NA	-43.521	NA	-25.893	-25.893	-25.893	-42.219
2019Q2	NA	NA	NA	NA	105.156	NA	58.087	58.087	58.086	68.347
2019Q3	NA	NA	NA	-100.000	49.899	NA	21.759	21.759	21.759	33.430
2019Q4	NA	NA	NA	NA	-41.108	-100.000	-31.046	-31.961	-32.819	-17.438

	<u>TGASMNS</u>	<u>TGFGP</u>	<u>TGFGPRV</u>	<u>TLIQMNS</u>	<u>TOILMNS</u>	<u>TRESM</u>	<u>TRET</u>	<u>TRSDLNS</u>	<u>TRSMNS</u>	<u>TRSSANS</u>
2017Q3	13.632	34.017	129.005	4319.191	-60.986	1.566	185.084	62.271	-5.615	-5.502
2017Q4	-28.212	-68.822	-81.754	-63.796	155.126	6.278	-68.359	-5.915	-0.620	-0.645
2018Q1	-25.649	6.452	6.452	-74.865	2.437	5.053	-22.761	-0.547	-39.954	-40.316
2018Q2	42.577	185.122	185.122	82.038	-19.387	6.323	43.368	-38.988	85.492	86.753
2018Q3	13.430	14.201	81.740	-2.920	6.107	3.737	56.455	82.207	3.202	3.214
2018Q4	-14.668	-71.520	-82.104	53.540	16.975	5.485	-53.458	3.168	-2.927	-2.978
2019Q1	-27.221	8.944	8.944	-65.006	4.770	-0.391	-30.974	-2.793	-38.825	-39.178
2019Q2	41.741	201.028	201.028	96.377	-16.993	5.756	73.583	-37.885	85.368	86.611
2019Q3	13.184	23.554	89.546	-0.567	5.945	4.677	81.627	82.126	4.147	4.169
2019Q4	-14.607	-73.123	-82.481	53.930	16.462	6.121	-52.263	4.087	-3.092	-3.143

	<u>TSAF</u>	<u>TSAFCONS</u>	<u>TSEP</u>	<u>TSIBM</u>	<u>TSIM</u>	<u>TUSEMNS</u>	<u>TUSESANS</u>	<u>TVEHREG</u>	<u>TYAMNS</u>	<u>TYMNS</u>
2017Q3	848.350	1824.945	NA	0.294	1.129	11.278	11.296	NA	-99.997	-68.749
2017Q4	-91.854	-95.987	-100.000	4.874	4.987	-43.603	-43.593	-100.000	499.809	27.433
2018Q1	-24.776	-24.776	NA	4.032	4.152	-0.698	-0.698	NA	599.108	26.107
2018Q2	91.250	91.250	NA	3.151	3.277	61.787	61.786	NA	141130.743	162.502
2018Q3	867.094	1825.010	NA	2.462	2.594	21.547	21.547	NA	-99.998	-68.044
2018Q4	-91.990	-95.976	-100.000	3.544	3.674	-29.004	-29.004	-100.000	485.021	0.560
2019Q1	-23.794	-23.794	NA	5.003	5.131	-5.246	-5.246	NA	708.745	28.807
2019Q2	93.652	93.652	NA	3.657	3.793	58.558	58.557	NA	146889.797	173.858
2019Q3	895.339	1828.197	NA	2.959	3.100	19.641	19.641	NA	-99.998	-69.031
2019Q4	-92.228	-95.988	-100.000	4.169	4.310	-36.598	-36.598	-100.000	446.259	9.201

	<u>TYQMNS</u>	<u>TYSANS</u>	<u>TYWM</u>	<u>TYWMNS</u>	<u>UMICH</u>	<u>WM</u>	<u>WSGM</u>	<u>WSM</u>	<u>WSPM</u>	<u>WSUS</u>
2017Q3	-64.714	-63.825	-8.667	-10.382	-26.870	0.776	6.629	0.059	-0.926	NA
2017Q4	-93.511	37.863	-0.536	76.168	32.334	4.610	2.903	6.384	6.938	NA
2018Q1	2287.483	17.394	27.396	-17.340	-3.512	0.833	2.406	3.773	3.987	5.339
2018Q2	102.318	116.567	-1.738	-12.860	1.185	0.460	4.058	4.515	4.586	5.037
2018Q3	-65.024	-63.458	5.395	3.417	-0.874	1.312	3.226	3.660	3.727	5.168
2018Q4	-93.598	23.966	-12.167	55.567	-0.805	0.695	3.295	4.919	5.172	4.950
2019Q1	2526.482	18.700	27.302	-17.402	-2.072	0.538	3.121	3.531	3.595	5.431
2019Q2	100.479	120.958	-1.357	-12.522	-2.612	0.614	4.211	5.004	5.126	4.859
2019Q3	-65.537	-64.032	5.880	3.892	-3.289	1.645	3.537	4.164	4.261	4.933
2019Q4	-93.750	24.260	-11.758	56.292	-3.322	2.322	3.520	5.581	5.899	4.914

	<u>WUS</u>	<u>YA</u>	<u>YAFDC</u>	<u>YDM</u>	<u>YDM824</u>	<u>YDM824AJ</u>	<u>YDMADJ</u>	<u>YENTM</u>	<u>YENTUS</u>	<u>YOLM</u>
2017Q3	2.721	0.536	135.786	1.185	-0.061	-0.061	1.185	0.907	0.916	0.866
2017Q4	3.681	3.607	-61.030	5.802	2.937	2.937	5.802	4.442	3.834	6.156
2018Q1	2.356	2.948	-5.981	4.487	3.727	3.111	3.866	6.156	4.017	2.969
2018Q2	2.045	3.516	-19.324	4.761	3.137	3.160	4.784	4.547	4.263	3.889
2018Q3	2.003	4.770	87.573	4.297	2.590	2.611	4.319	4.916	4.448	2.899
2018Q4	2.025	6.988	-52.579	5.365	3.585	3.607	5.388	4.622	4.370	4.325
2019Q1	2.064	5.733	-1.451	4.715	2.919	2.651	4.443	4.792	4.500	2.868
2019Q2	2.101	5.350	-17.867	5.123	3.189	3.221	5.155	5.061	4.507	4.892
2019Q3	2.138	5.955	86.607	4.495	2.556	2.585	4.525	5.134	4.556	4.019
2019Q4	2.176	6.710	-52.845	5.650	3.694	3.724	5.680	5.120	4.549	5.483

	<u>YPADJM</u>	<u>YPERM</u>	<u>YPERM824</u>	<u>YPM</u>	<u>YPM824</u>	<u>YPRM</u>	<u>YPRUS</u>	<u>YQ</u>	<u>YTM824</u>	<u>YTRM</u>
2017Q3	0.265	2.623	0.867	1.004	-0.239	0.234	0.881	0.413	-78.163	4.168
2017Q4	5.857	3.355	1.519	5.714	2.851	4.948	4.724	4.812	748.391	4.841
2018Q1	4.249	3.746	2.253	4.976	4.212	5.666	5.507	5.797	323.422	7.689
2018Q2	4.659	4.148	2.615	4.770	3.146	5.865	5.823	5.511	53.659	4.641
2018Q3	4.006	4.193	2.673	4.265	2.559	5.588	5.689	5.409	-3.463	4.675
2018Q4	4.961	4.588	2.916	4.981	3.207	5.855	5.977	5.525	64.622	4.559
2019Q1	4.009	4.859	3.127	4.630	2.834	5.465	5.697	5.286	-10.401	7.395
2019Q2	5.042	4.868	3.156	5.043	3.111	5.549	5.793	5.419	5.521	4.570
2019Q3	4.387	4.791	2.952	4.542	2.602	5.265	5.573	5.230	-22.326	4.618
2019Q4	5.407	5.030	3.143	5.306	3.356	5.277	5.592	5.235	51.500	4.518

YUCTRM

2017Q3	-0.109
2017Q4	48.442
2018Q1	2.282
2018Q2	9.300
2018Q3	5.114
2018Q4	4.624
2019Q1	2.099
2019Q2	0.893
2019Q3	-0.433
2019Q4	-0.671