LOUISIANA TECH UNIVERSITY **COLLEGE OF BUSINESS**

CENTER FOR ECONOMIC RESEARCH

REAL

REGIONAL ECONOMIC ANALYSIS OF LOUISIANA

REPORT

FALL 2019

Dean's Message

This issue of the Regional Economic Analysis of Louisiana (REAL) Report is the first installment of an ongoing series of publications designed to provide insight into recent economic developments in Louisiana. It is produced by faculty and students within Louisiana Tech University's College of Business for the state of Louisiana and our region of the South. Economics students from the College of Business specifically provide strong analytical and critical thinking skills to a growing North Louisiana region. Undergraduate economics majors, as they progress through their degree program, not only learn economic intuition and modeling skills, but also data science and statistics which makes them some of the most highly sought after graduates from the University. This report is compiled by undergraduate economics majors in partial fulfillment of their Regional Economic Analysis class.

The REAL Report includes detailed analysis on labor market movements, major state-wide industries, and income and output at the state level. It also provides forecasting of major state-wide economic indicators, and includes summary regional economic impact analyses. It highlights the state of the Louisiana economy as it is today in context with the past. Additionally, it indicates areas of opportunity in the state.

This report and all subsequent issues can be found on the College of Business website at **business.latech.edu/realreport**. For more information on the report or the Regional Economic Analysis class (ECON 425), please contact Dr. Patrick Scott at pscott@latech.edu. Inquiries about specific sections of the report should be referred to the author of each section.

I hope you find this report relevant and beneficial to your efforts.

Sincerely,

CHRISTOPHER L. MARTIN, PH.D.
Dean and Chase Endowed Professor
College of Business
Louisiana Tech University

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Meet the Team

Matt Flynn is a senior economics major and math minor from Homer, LA. He was Student Government President in 2018-2019, an Orientation Student Leader, and a member of Union Board. He is currently an intern at Argent Financial Group. He will graduate in May of 2020.

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Ddon Nguyen is a senior at Louisiana Tech University where he is majoring in economics. He holds the position of Wing Commander for the AFROTC Detachment at the University while also playing for the Tech Rugby team.

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Levi Holder is a senior business economics major from Bossier City, LA. During his time at Tech he has been a refounding member and President of Tau Kappa Epsilon Fraternity, an Orientation Student Leader, Junior Class Senator on SGA, and director of Tech Leadership Council. He plans to attend Law School following this year.

Contact Levi at **ljh024@latech.edu**.

Dr. Patrick Scott is an assistant professor of economics. He teaches macroeconomics, monetary theory, and research methods at Louisiana Tech University. His research interests include optimal monetary policy models, dynamic general equilibrium models, time series forecasting, and Bayesian econometrics.

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Louisiana Economic Indicator Forecasts

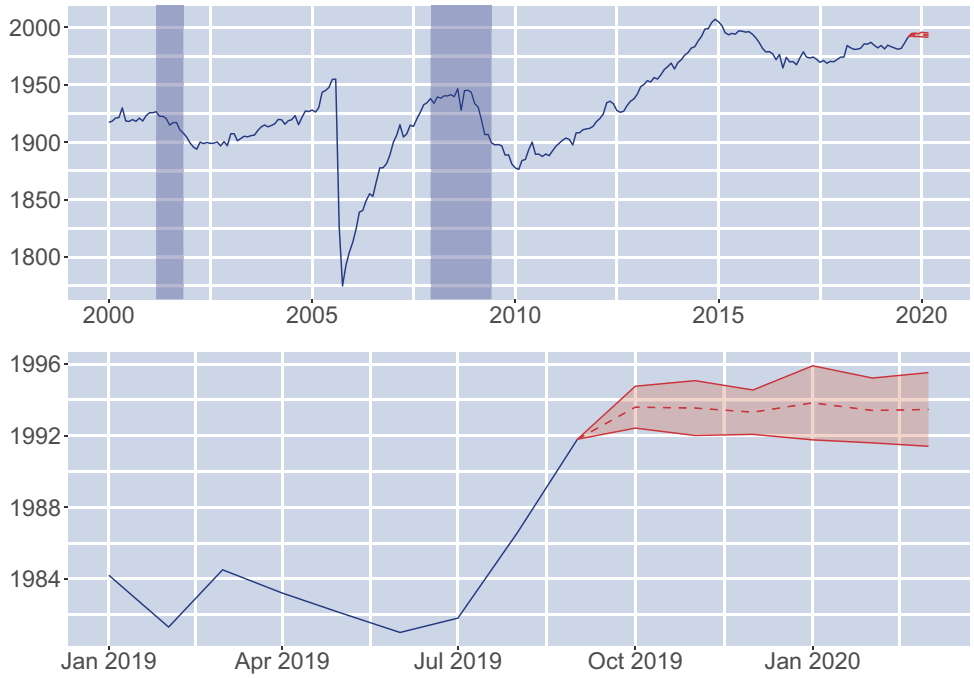
Forecasts are provided using a Bayesian model averaging approach from many statistical models. This method is utilized to capture the relative uncertainty that any individual model is not properly specified and thus accounting for that uncertainty in our analysis. For more information on this process, the specific data used here, and other forecasts for the Louisiana economy, please visit **LADAT.net**.

Total Non-Farm Employment

The year-over-year growth rate for total non-farm employment is 0.31% (approximately 6,000 jobs). There was a state-wide employment contraction from the beginning of 2015 until around the third quarter of 2016. The Louisiana economy shed approximately 35,000 jobs. Total non-farm employment has not recovered since the 2015 state recession. The forecasted growth rate for the fall months is 0.08% on average with 95% of all forecasted growth rates between 0.02% and 0.15% on average. Forecasts for total non-farm employment levels are not expected to rise to pre-2015 levels over the forecast horizon. If this growth rate continues for the rest of the year, total non-farm employment will grow by approximately 8,000 jobs over the next year.

Punchline: Job growth is stable, but not reflecting the gains at the national level.

Figure 1: Forecasted Non-Farm Employment (Thousands)



Economic Coincident Index

The economic coincident index is a metric that represents economic activity for the state. The long-run growth rate for the economic coincident index is approximately 0.08%. Year-over-year growth for the economic coincidence index is 0.11% which represents a roughly 30% increase above the long-run average growth rate. Average forecasted growth for the fall season is expected to remain above the long-run growth rate at 0.17%. 95% of models forecast projected growth rates in the range of 0.13% to 0.20%. Near-term coincident index growth is expected to slowly revert back to its long-run average as uncertainty over trade and foreign policy dominate investment decisions. Over the forecast, horizon growth is expected to remain positive.

Punchline: Economic activity is growing above average, but it will likely start growing at a slower (yet still positive) rate.

Figure 2: Forecasted Economic Coincident Index (Percent Growth)

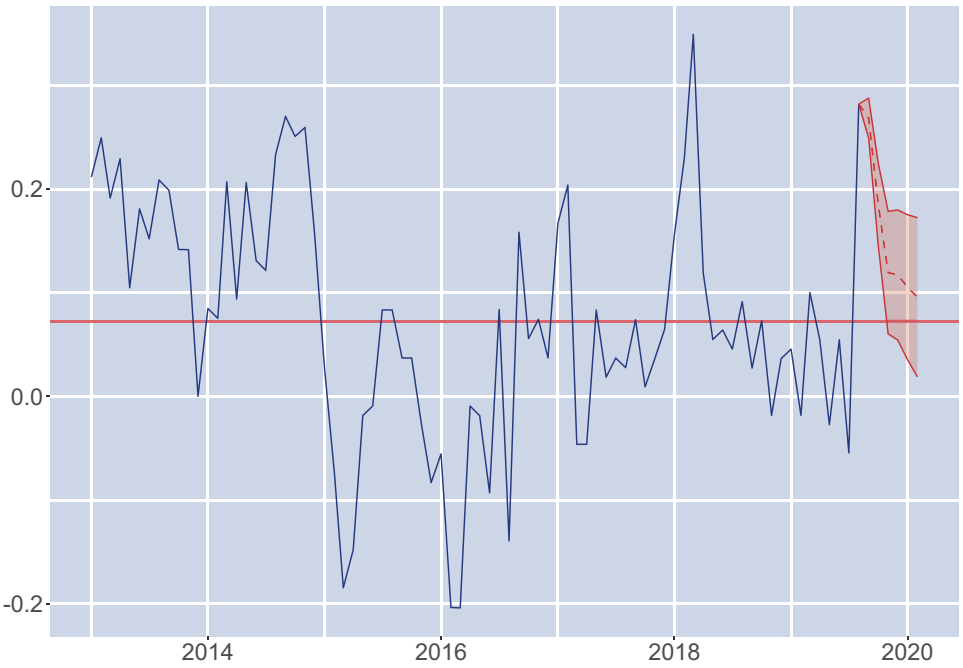
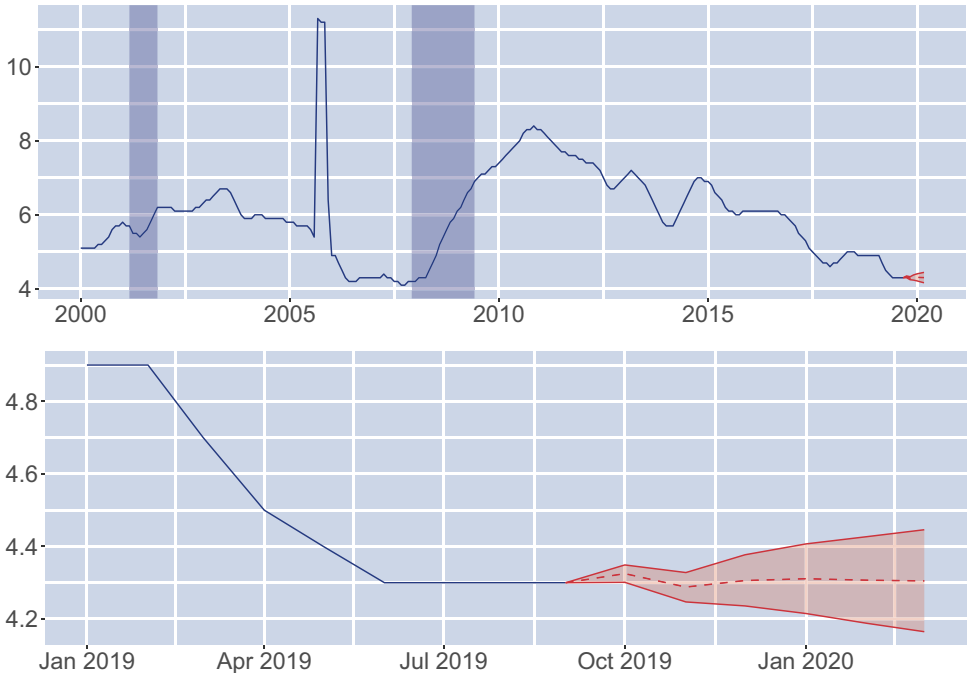


Figure 3: Forecasted Unemployment Rate (Percent)

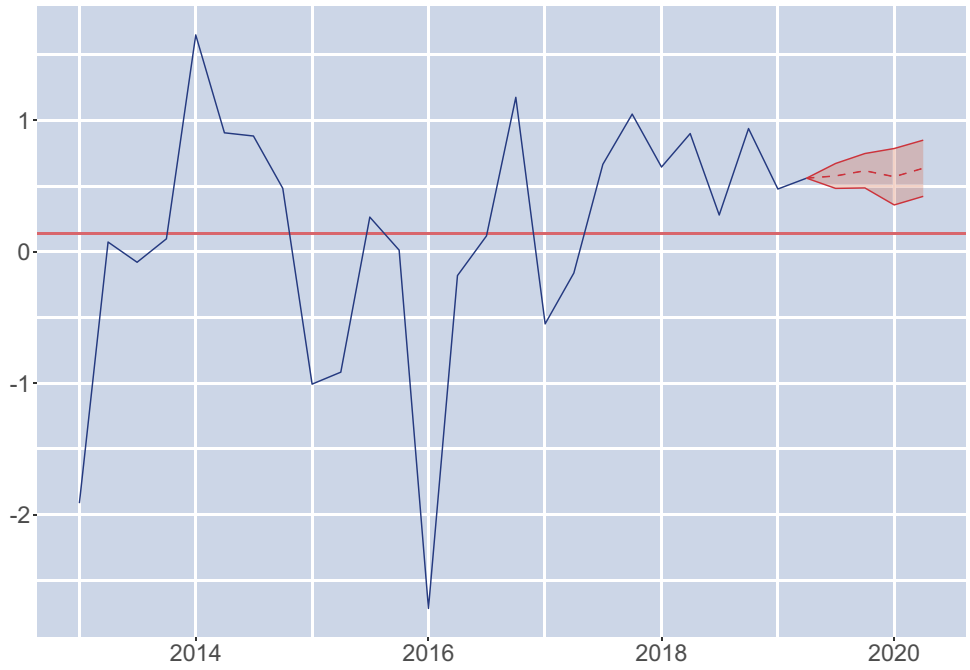


Unemployment Rate

The unemployment rate for Louisiana follows most of the same dynamics as the national unemployment rate but not the same volatility. The one exception to this is the impact of Hurricane Katrina in 2005 on state level employment. The headline unemployment rate for Louisiana decreased just over 0.5% over the last year. Forecast on average for the unemployment rate remains relatively steady for the fall and the immediate forecast horizon. 95% of all forecasts are located in the range between 4.26% on the low end to 4.35% on the high end.

Punchline: The unemployment rate is looking good and holding steady.

Figure 4: Forecasted Real Personal Income (Percent Growth)



Real Personal Income Growth Rates

Real (inflation adjusted) personal incomes have grown at a long-run average of about 0.14% per quarter. Personal incomes have grown at a faster rate than the long-run average for the last 9 consecutive quarters. This growth is expected to continue into the fall season and beyond for the remainder of the forecast horizon. Average fall growth is expected to be 0.59% with 95% of models forecasting growth to be between 0.44% and 0.74%.

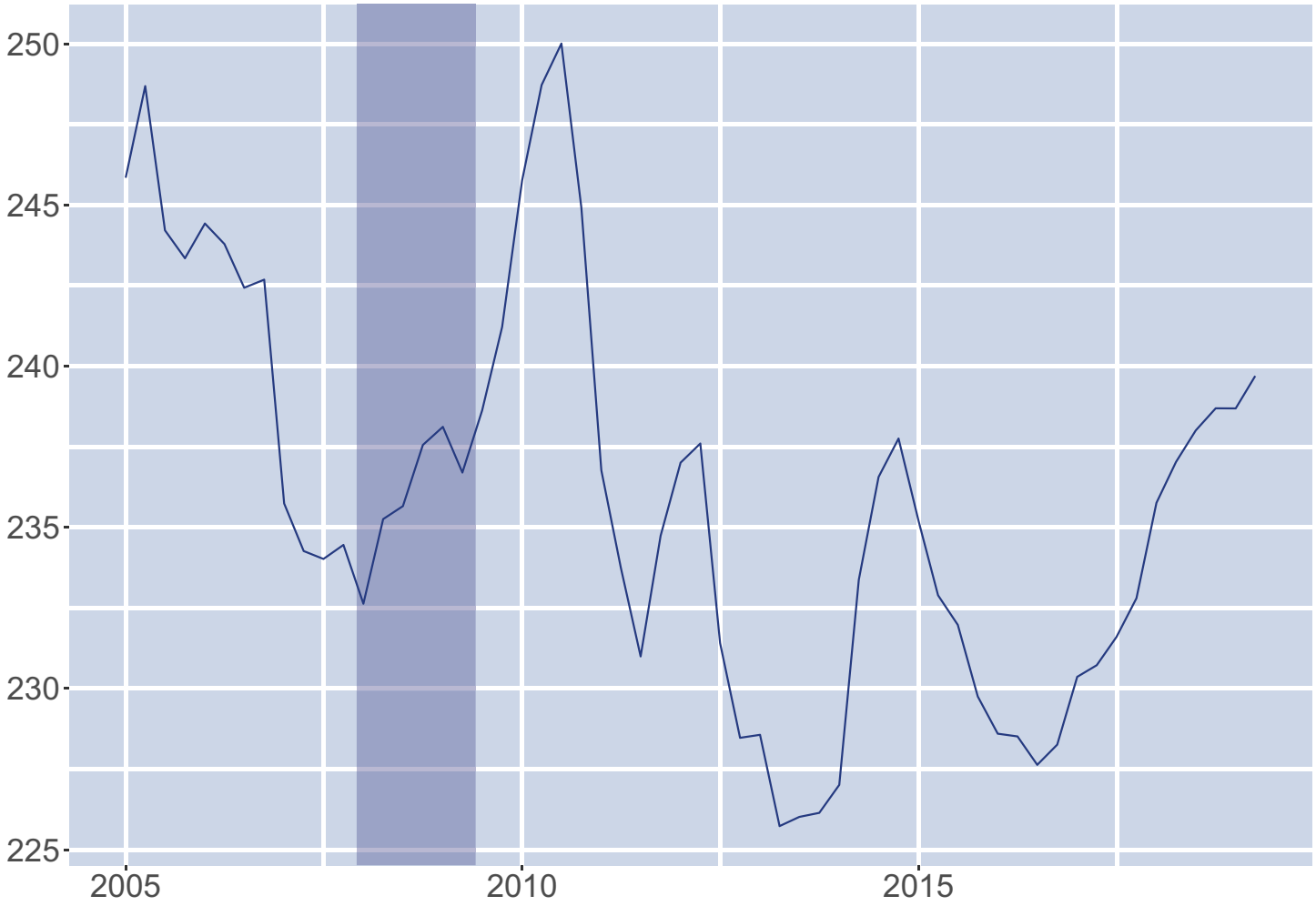
Punchline: Real personal income growth is relatively strong and expected to remain so for the next six months.

Louisiana Output and Income

BY DDON NGUYEN

The real gross domestic product (RGDP), nominal total personal income, and real personal income help measure how the Louisiana economy fares. RGDP is a measure of the health of an economy and is comprised of all finished goods and services in the state. Total personal income is used to measure how much workers in the state make in a year. This measure is used to explain the consumption portion of the RGDP graph. The darker blue regions in the graphs represent periods of recessions in the United States. This allows us to compare how the Louisiana economy evolves with the national economy.

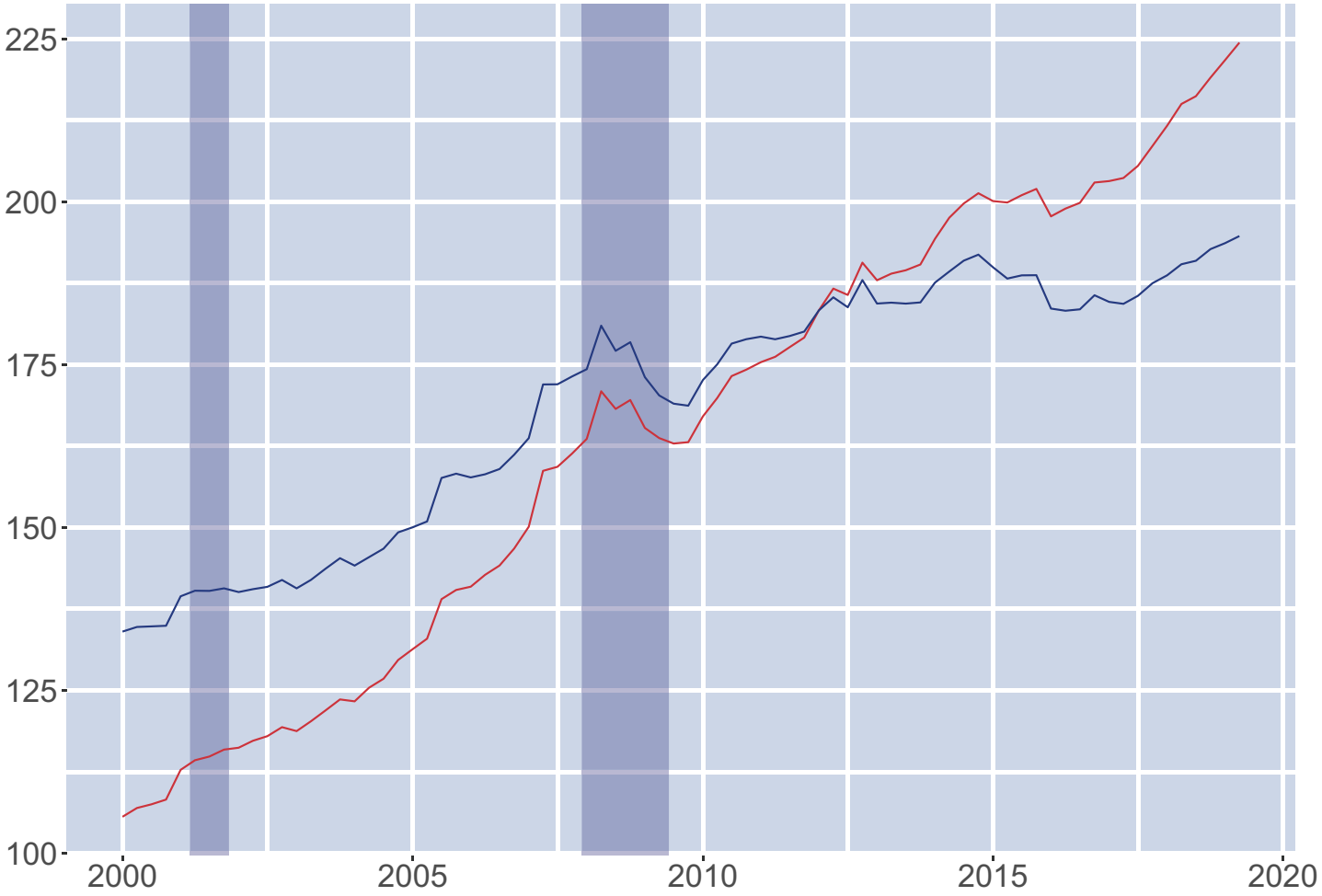
Figure 5: Real Gross Domestic Product (Billions of Chained 2012 Dollars)



Looking at the graph for RGDP for Louisiana, at the end of 2005, RGDP in Louisiana starts to fall and continues to do so for the next couple of years. One of the main causes of this drop would be Hurricane Katrina. The drop starts in the second quarter of 2005 and lasts until the first quarter of 2008. The total drop in millions of chained 2012 dollars, as seen in the graph, is around 6.5%. As soon as the economy starts to recover from the hurricane and gets back to production levels before the hurricane, they drop once again as the effects from the 2008 housing market crash are felt. The full effect is not felt until 2010 when the state has the single highest drop in recent history. The dollar value drops around 7.6 percent in just a span of one year. The economy has not fully recovered from this recession as it still struggles to get back to the levels it was once at.

The total personal income graph below has two lines. The red one shows the nominal value and the blue shows the real value. The values are in millions of chained 2012 dollars. While looking at the real total personal income, you can see the real income line is higher than the nominal values until around 2012. This is due to the adjustment for inflation. The income drops most during the 2008 housing market crash. The total drop is around 4.7%. Over the last five years, the real value increases by less than one percent. The income growth rate is also much smaller compared to neighboring states and the country as a whole, where the average for the most recent quarter is slated at being around 5.4%. A reason for this could be the loss of jobs due to the hurricane and many people in the working population leaving Louisiana for better opportunities in other states (as discussed on pages 10 and 11).

Figure 6: Total Personal Income (Billions of Chained 2012 Dollars)

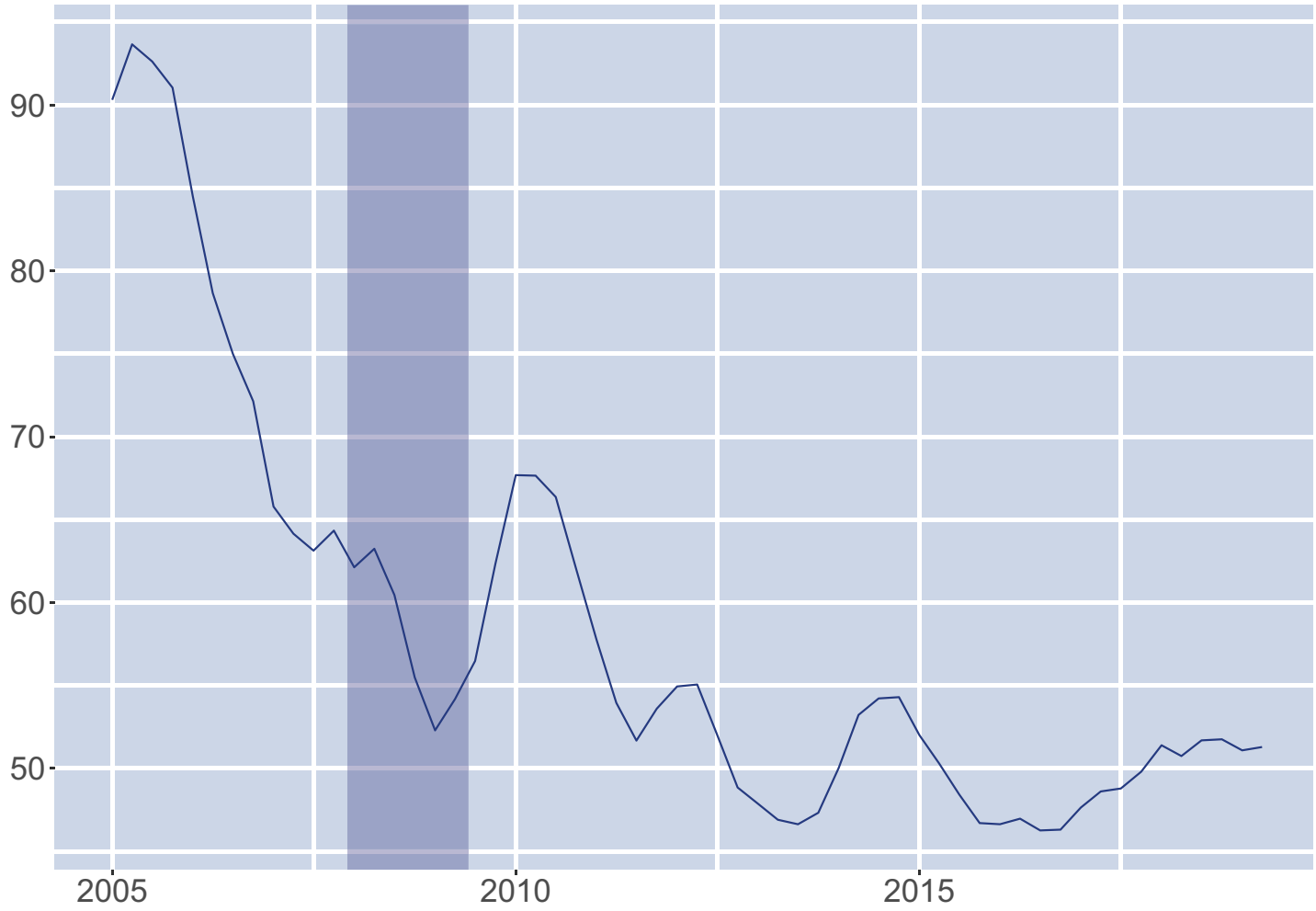


Major Industries: Opportunity and Potential

BY LEVI HOLDER

Industry in Louisiana is still largely down statewide because of the effects from the combination of Hurricane Katrina and the financial crisis of 2008. As seen on Figure 5, total real gross domestic product (RGDP) in the state of Louisiana is 7.1% lower than the peak going into 2005 and 8.1% lower than the peak preceding the effects of the financial crisis. Not only is the total RGDP currently down but it has been relatively unchanging over the past six years with an average percent change per year of -0.205% across that span. In comparison, states in our geographic area have seen times of economic growth during that six-year period in RGDP: Arkansas, Texas and Oklahoma, which experienced average growth rates of 1.145% per year, 3.763% per year, and 2.672% per year respectively.

Figure 7: Manufacturing Industry RGDP (Billions of Chained 2012 Dollars)



Largely this is due to the hit the manufacturing industry in Louisiana took following Hurricane Katrina. Once accounting for roughly 36% of the statewide RGDP, the manufacturing industry saw significant decline every quarter for two years following 2005, the most significant decline coming in the first quarter of 2007 where it dropped 8.8% in RGDP. Currently, this industry resides at merely 51.7% of what it once was in terms of RGDP. Not only has a large portion of the manufacturing industry vanished but it currently shows no signs of coming back. Over the last six years, it peaked at 58.4% of what it was in 2005 in RGDP but has stayed closer to the low 50% mark. The steady decline of this industry is strongly connected to the spikes in unemployment that Louisiana has suffered over the previous decade (as discussed on Page 10).

Figure 8: Private Services-Providing Industry RGDP (Billions of Chained 2012 Dollars)

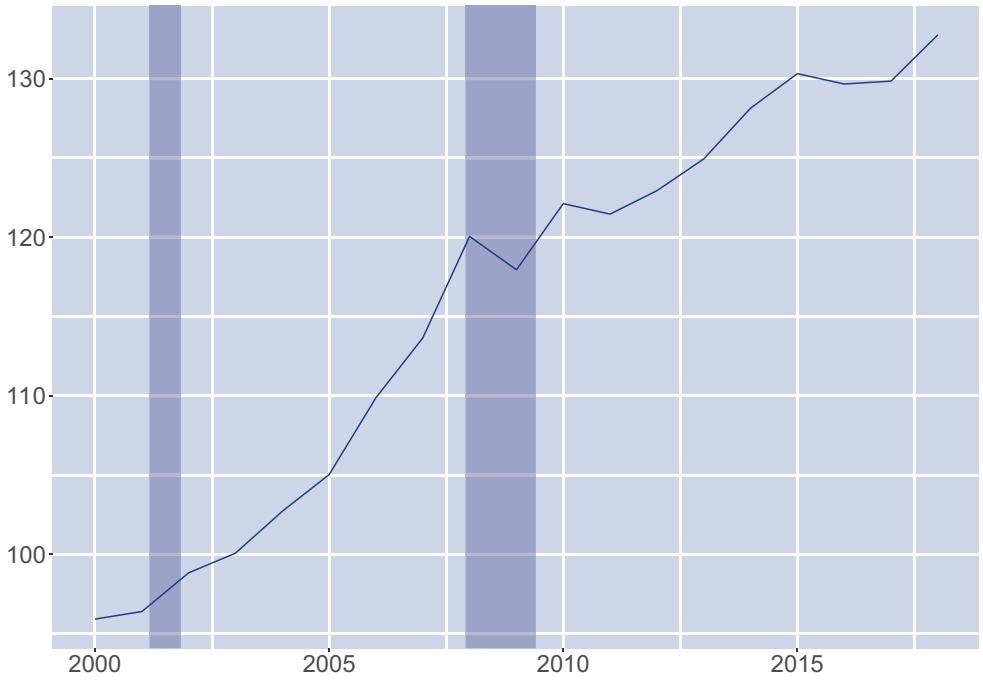
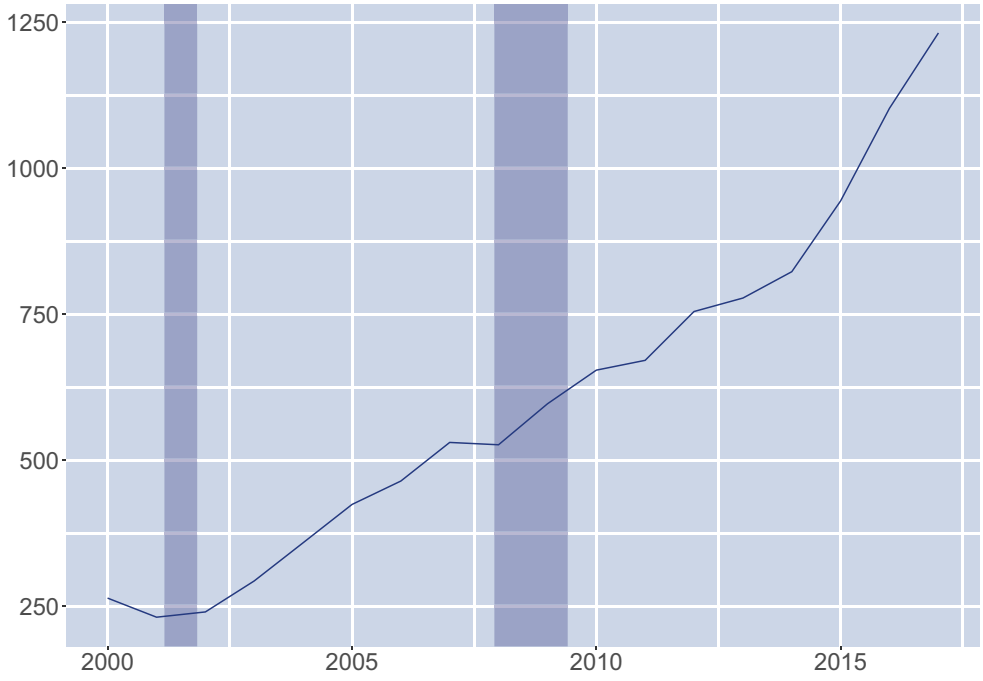


Figure 9: Computer Related Services Industry RGDP (Millions of Chained 2012 Dollars)



One industry, however, has been largely unaffected by the events over the last 15 years. The private services-providing industry has seen consistent growth as a percent of RGDP over the previous two decades, seeing a negative percent change in only three of those years: 2009, 2011, 2016. Each of these periods of decline were insubstantial relative to those of the manufacturing industry as the percent change in RGDP bottomed out at -1.75% in 2009. This industry has grown 29.7% in RGDP since 2005, which is still below the national average of 38.6% over the same time period. Currently, the private services-providing industry accounts for just under 57% of the state RGDP, dwarfing any other industry in the state.

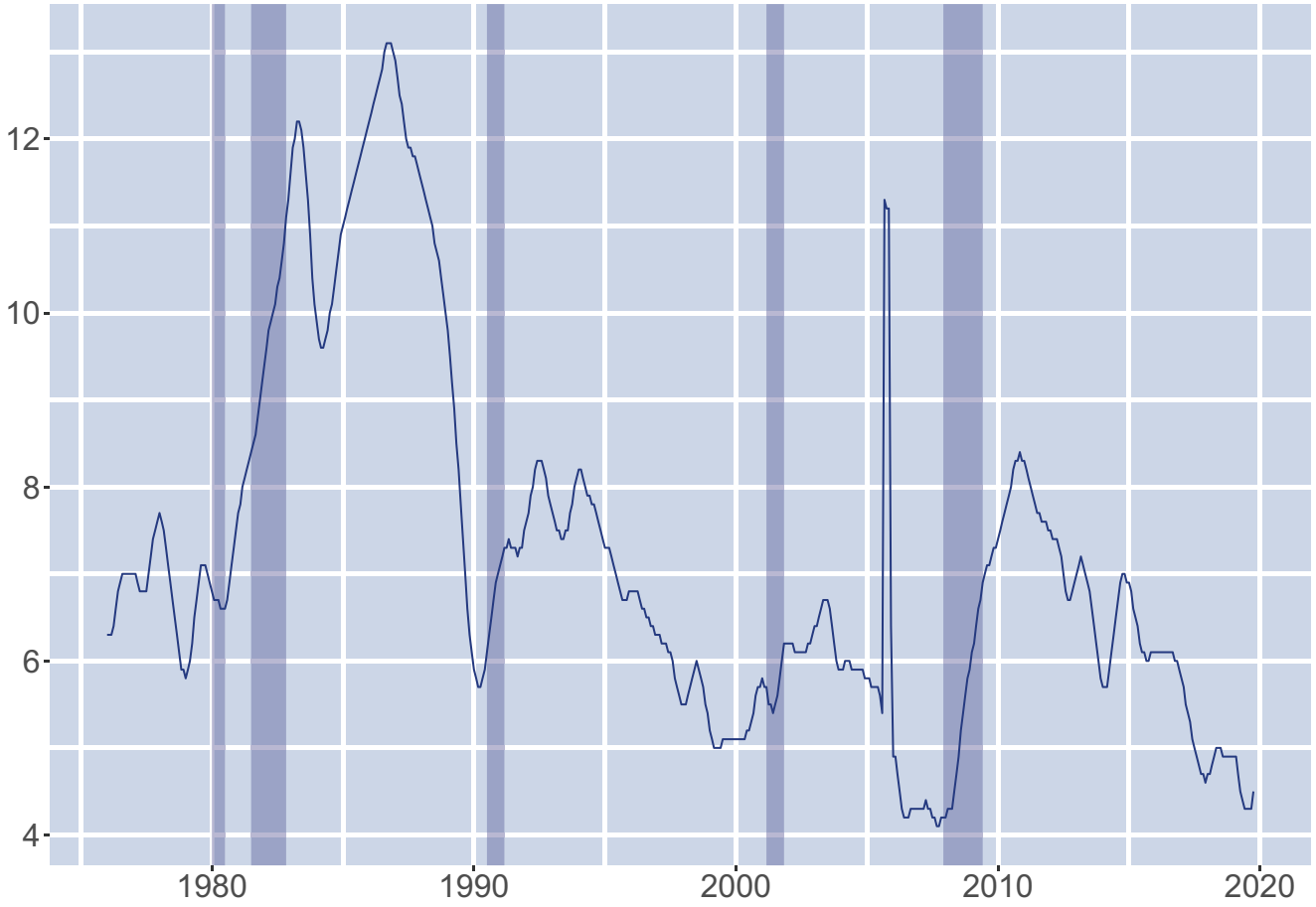
Despite the overall trend in statewide RGDP being rather stagnant, there are multiple industries seeing rapid growth in Louisiana currently, one of these being the computer related services industry. Although this industry is relatively small in terms of RGDP, it has averaged a percent change of 10.49% over the past six years. This industry also is currently up 230.69% from 2008 and 286.24% from 2005 and was seemingly unaffected by both Katrina and the financial crisis. Once the current expected economic impact has settled, this industry is projected to grow far more than any other, just shy of 50% (See Figure 15). Beyond just growth in this industry, it seems to be an attractive field for labor as nearly 70% of value-added income from the expected economic impact is projected to go toward employee compensation (See Figure 13).

Louisiana Labor Market

BY MATT FLYNN

Unemployment has experienced a largely uninterrupted decline since the financial crisis of 2008, which put Louisiana in an economic free fall and brought the unemployment rate all the way from 4.2% in January of 2008 to a peak of 8.4% in November 2010 (see Figure 10). The financial crisis hit the country hard, but Louisiana fared well with respect to the national average. The state, largely because of its oil and gas industry, was able to keep unemployment below the national average, however this relationship changed once the national economy began to stabilize with Louisiana ticking back up to 7% in late 2014. Since then Louisiana has been slowly improving, closing the gap with the national average to less than one point in the most recent estimates.

Figure 10: State Unemployment Rate (Percent)



Hurricane Katrina (2005) had disastrous effects on the state which can be felt even today. Over 180,200 jobs were lost permanently, many of them manufacturing jobs, as Katrina decimated much of the physical capital of the South (see Figure 11). Non-farm employment is once again trending upward, although it has not gained much ground from its pre-Katrina numbers, up only 36,700 jobs from August of 2005 to present day. Compare this to a growth of 341,400 jobs from 1991 to 2005 (same amount of years). Nonetheless, the Louisiana Economic Outlook (LEO) projects that the state will add 23,400 jobs in 2019 (an increase of 1.2%) and 36,100 jobs (+1.8%) in 2020. Another reason for optimism is the upward trend in oil and natural gas prices, an industry which the Louisiana economy is very dependent on.

Figure 11: Non-Farm Employment (Thousands)

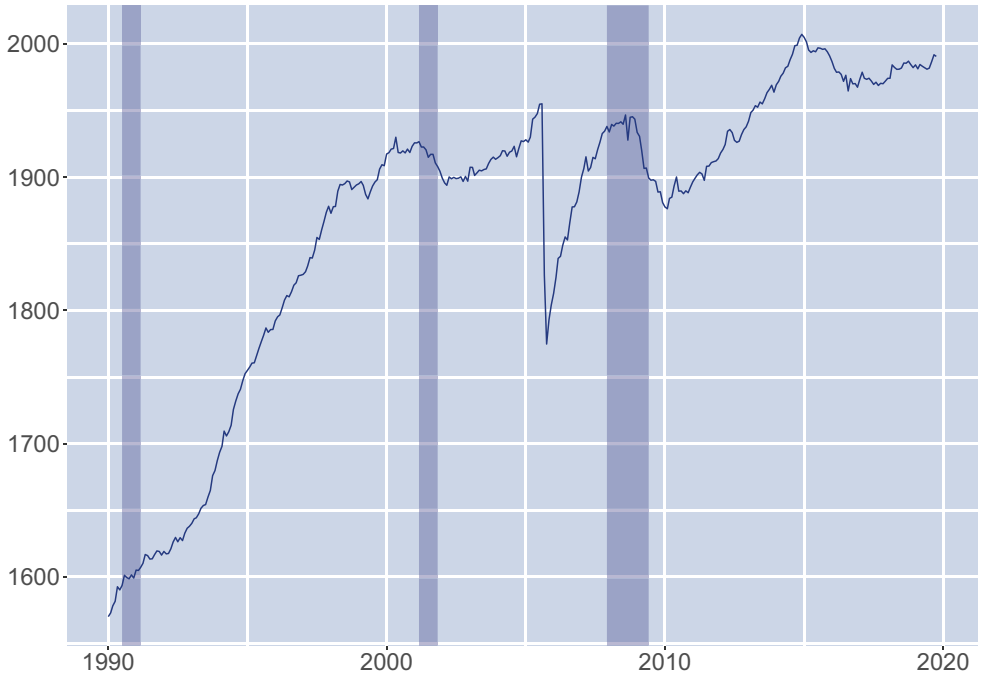
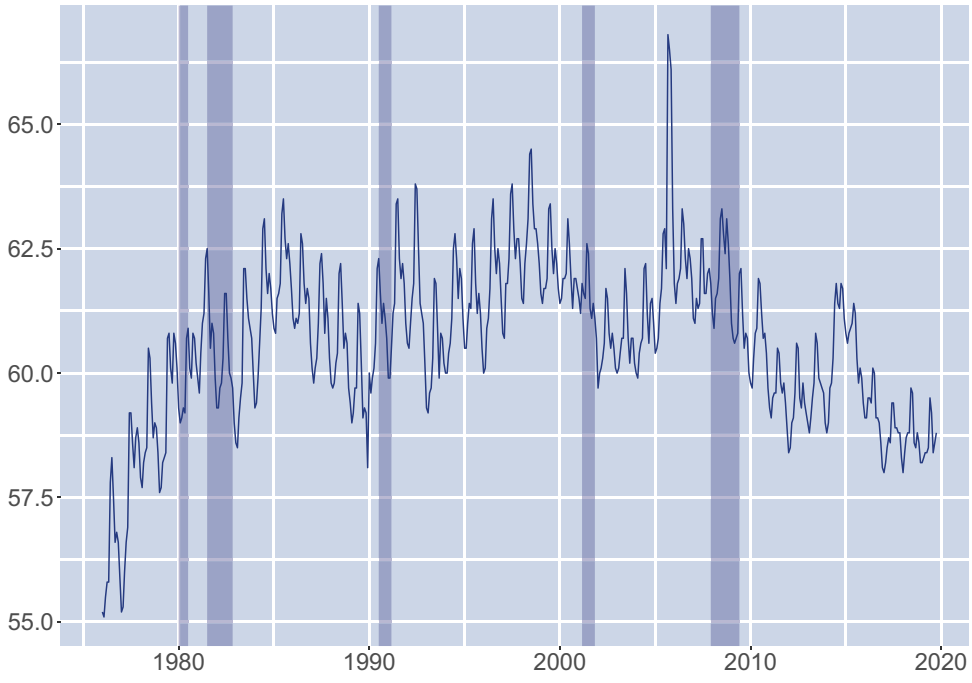


Figure 12: Labor Force Participation Rate (Percent)



Despite these job increases, we do see a declining trend in labor force participation rate, as is evident in Figure 12. The labor force participation rate being the measure of the total population that is working, as compared to the unemployment rate which would be the percent of unemployed within the labor force. The regular spikes in the data indicate a degree of seasonality, most likely because of the state's reliance on oil and gas and seasonal construction employment, but the long-term decline from 2008 – present day is evident. The national trend seems to be that older workers are taking longer to leave the workforce and are in turn forcing out younger workers. Since younger workers are the fastest growing portion of the labor force, the overall rate drops. Hopefully new industries and increases in jobs will afford more opportunities for the younger generation to participate.

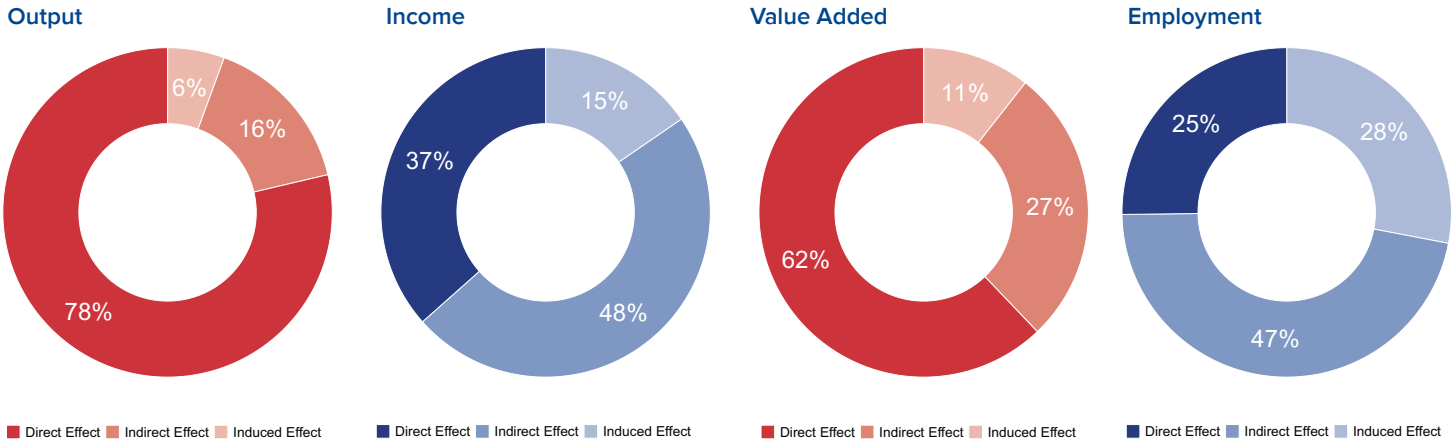
While many industries have committed to creating new jobs for the future, one must still wonder if it will be enough to continue growth. According to the employment impact study on page 13, over 75% of the total economic effect is the direct effect of the first round of hiring, which does not bode well for sustained growth. In line with this, we can see that the forecasts for non-farm employment and the unemployment rate on pages 4 and 5 are relatively flat rather than trending upward. Louisiana certainly has the potential to improve, but policy makers must focus their efforts on long-term growth instead of short-term job gains.

Economic Impact of Projected Growth

Motivation

Loren C. Scott and Associates, Inc. produces the Louisiana Economic Outlook* (LEO) annually to assess the state of hiring and job growth in the Louisiana economy. This report is filled not only with forecasts of job growth in each MSA, but also summary descriptions of labor market movements by the relatively large employers in each region of the state. This quarter's economic impact study will focus on the hypothetical question: **What is the economic impact on if these employers actually grow as they predict they will in the next year?**

Figure 13: Total, Indirect, and Induced Effects (Percent)



Modeling Assumptions

Rather than focusing on the forecasted job growth in each region, we utilize the responses from employers in the report about expected future job growth as an initial impact on each of the local MSA economies. This more accurately represents a true initial shock to each region. It is not possible to completely disentangle a direct effect like this from the total forecasts in the report since they also include hiring which is attributed to the indirect and induced effects as well as the true shocks in each MSA. The specific employer level hiring growth serves as a great first-order approximation of an economic shock.

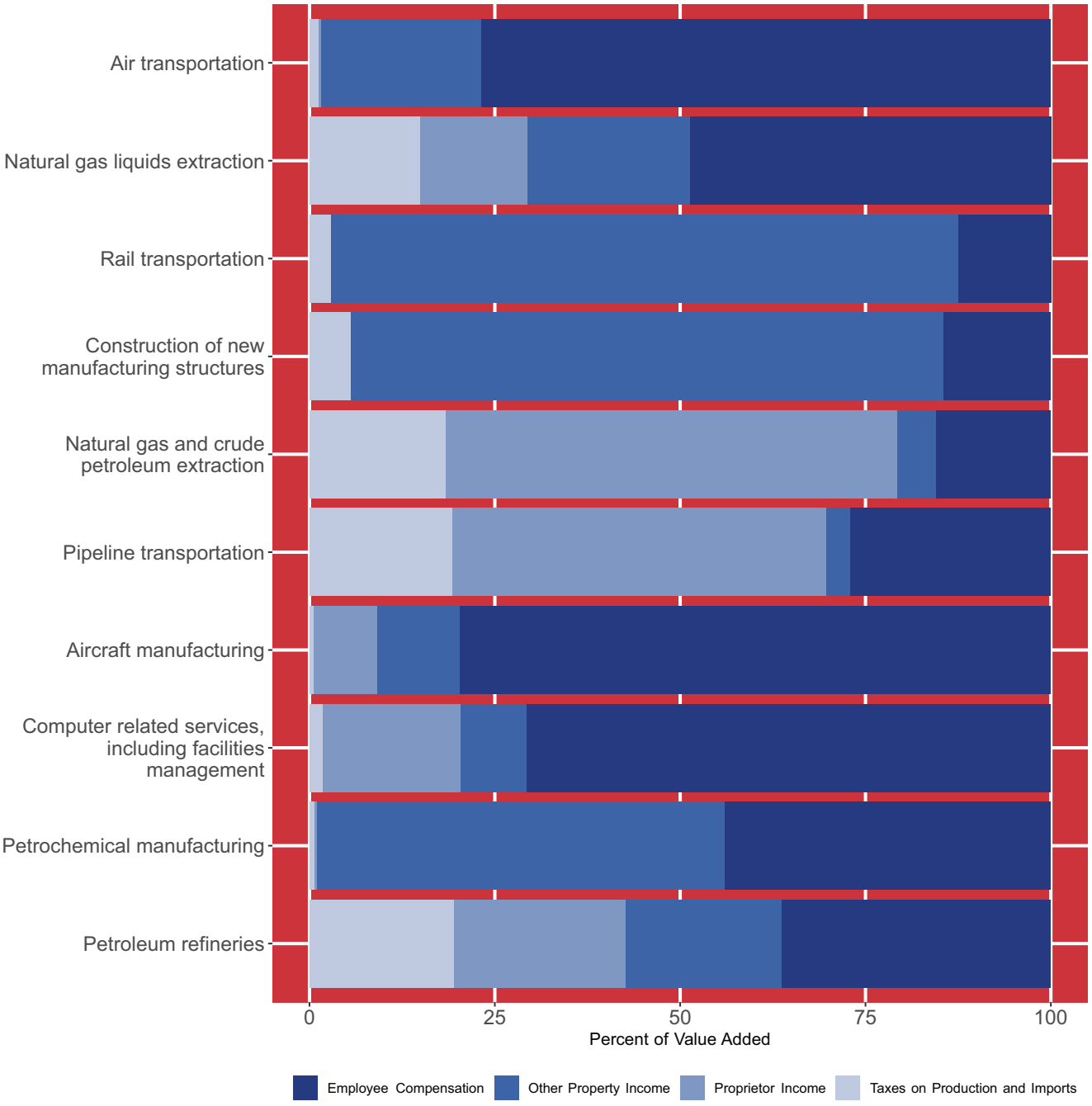
A multi-region input-output analysis is used to measure the direct, indirect, and induced effects at the MSA and state level. The input-output table used for the analysis presented here is constructed with 536 industries aggregated using data from the Bureau of Economic Analysis and the Bureau of Labor Statistics. Each employer listed in the LEO is categorized according to one of these 536 industries. To convert the change in firm level hiring to an industry wide shock, actual average worker productivity in each region is used to determine an estimated aggregate marginal product of the total change. A multi-region analysis is used here in order to account for the backward linkages among the MSAs in the state, though these linkages appear to be relatively small in total. For a complete list of the technical assumptions and details of the calculations summarized below please contact Dr. Patrick Scott at pscott@latech.edu.

Summary Findings

The total economic impact at the state level of the hiring that firms expect in the LEO is approximately $31.5 billion and represents about 4% of gross state product. The total impact estimated for employment is about 47,000 jobs in the state. The approximately 11,900 jobs projected by individual firms are estimated to support an additional 35,000 jobs via indirect and induced rounds of spending. The LEO forecasts approximately 24,700 jobs in 2020 and an additional 28,000 jobs in 2021. The sum of the two-yearly forecast totals is consistent with the analysis presented here. The total labor income that this level of hiring is estimated to generate is about $3.5 billion or a 1.8% increase in personal incomes.

*http://www.lorenscottassociates.com

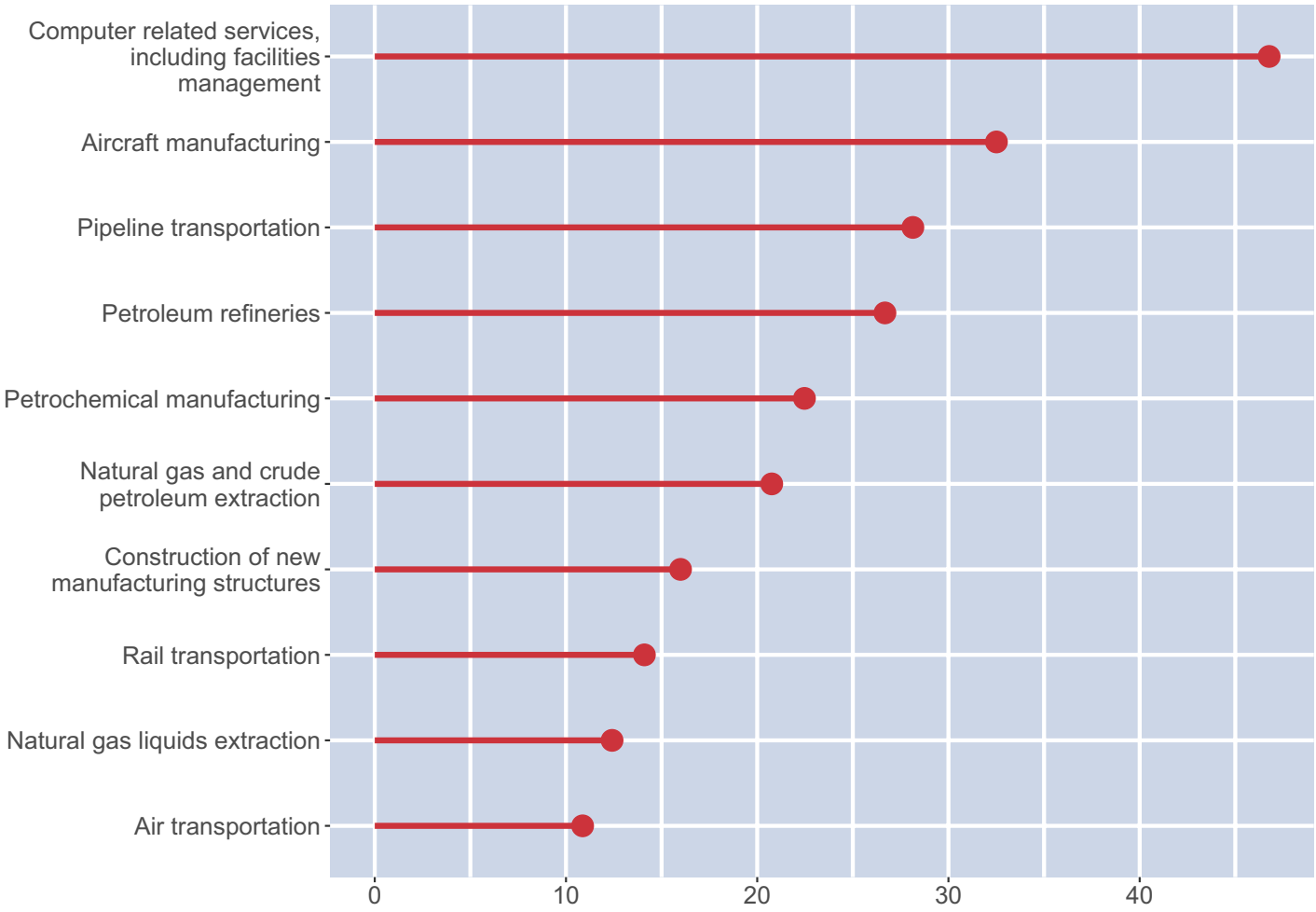
Figure 14: Percent of Industry Value Added by Income Types



The Economic Pie

The majority of the economic impact of LEO-projected job growth at the state level is derived from the direct effect in the first round of hiring. Over 75% of the total effect is direct effect while the remainder is split between the indirect (second-round impacts from producers having to increase capacity further up the supply chain) and the induced effects (the additional effect of growing consumer demand from the shock). This is in contrast to the employment picture. The direct effect on employment is relatively small, 25.2%, while the indirect effect is nearly half of the estimated total employment change. This is for two reasons; the relatively high proportion of intermediate goods production occurring in Louisiana, as well as the sample bias towards the largest employers in each MSA questioned in the LEO. The breakdown in labor income matches the proportions in employment for the indirect effect, but the direct effect take home a relatively larger share of the income than the induced labor hired. This reinforces the sample selection problem in the LEO as well as highlight the income disparity in relatively skilled and unskilled labor between these sectors of the state economy. Value added proportions vary a bit compared to output, but not alarmingly so.

Figure 15: Top Ten Projected Growth Industries



Regional Growth

It is not always the case that the biggest regional economies grow the most when there is a positive shock to output or employment, but in this case the largest MSAs contribute the most to the total change. The Lake Charles MSA grows the most with 49.6% of the total contribution. In second and third places are Lafayette and Baton Rouge MSAs with 19.8% and 17.5% respectively. These three MSAs are also expected to add the most jobs and grow the fastest according to the LEO. The top 10 industries for growth in this study are mostly centered around petroleum and natural gas industries, transportation, and manufacturing.

Tax Implications

At the state level, households are expected to pay an additional $458 million in consumer-based taxes (income, motor vehicle, property, sales, etc.), and firms are expected to pay an additional $194 million in producer-based taxes (property, severance, profit, etc.). Distribution of the income tax burden by household income reflects the progressive nature of the tax code with higher income households responsible for a relatively greater share of the total amount. The sum of the other consumer-based taxes (excluding sales taxes) reflects the relatively large number of households within each income bracket.

Figure 16: Household Income Tax Revenues (2019 Dollars)

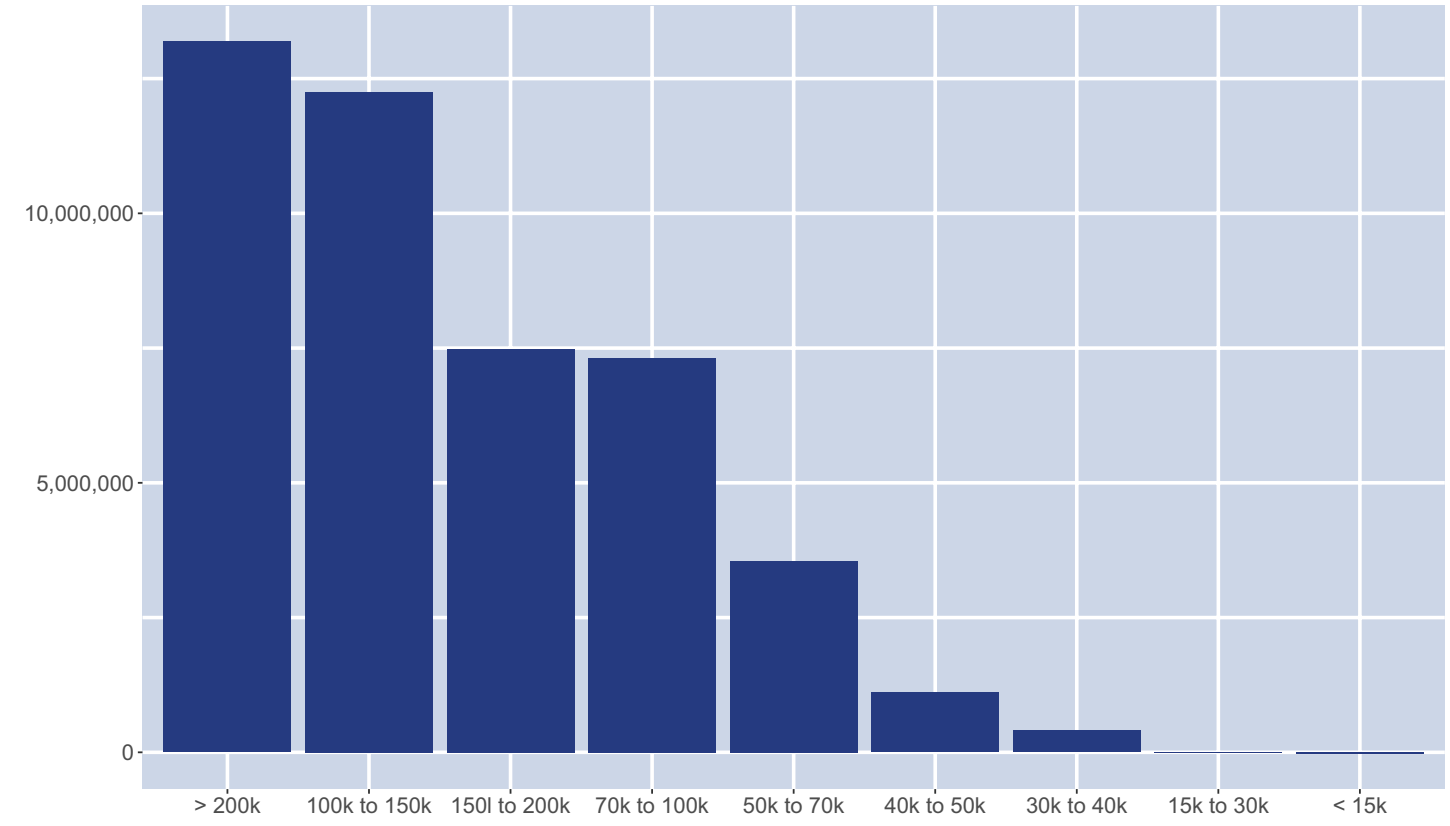
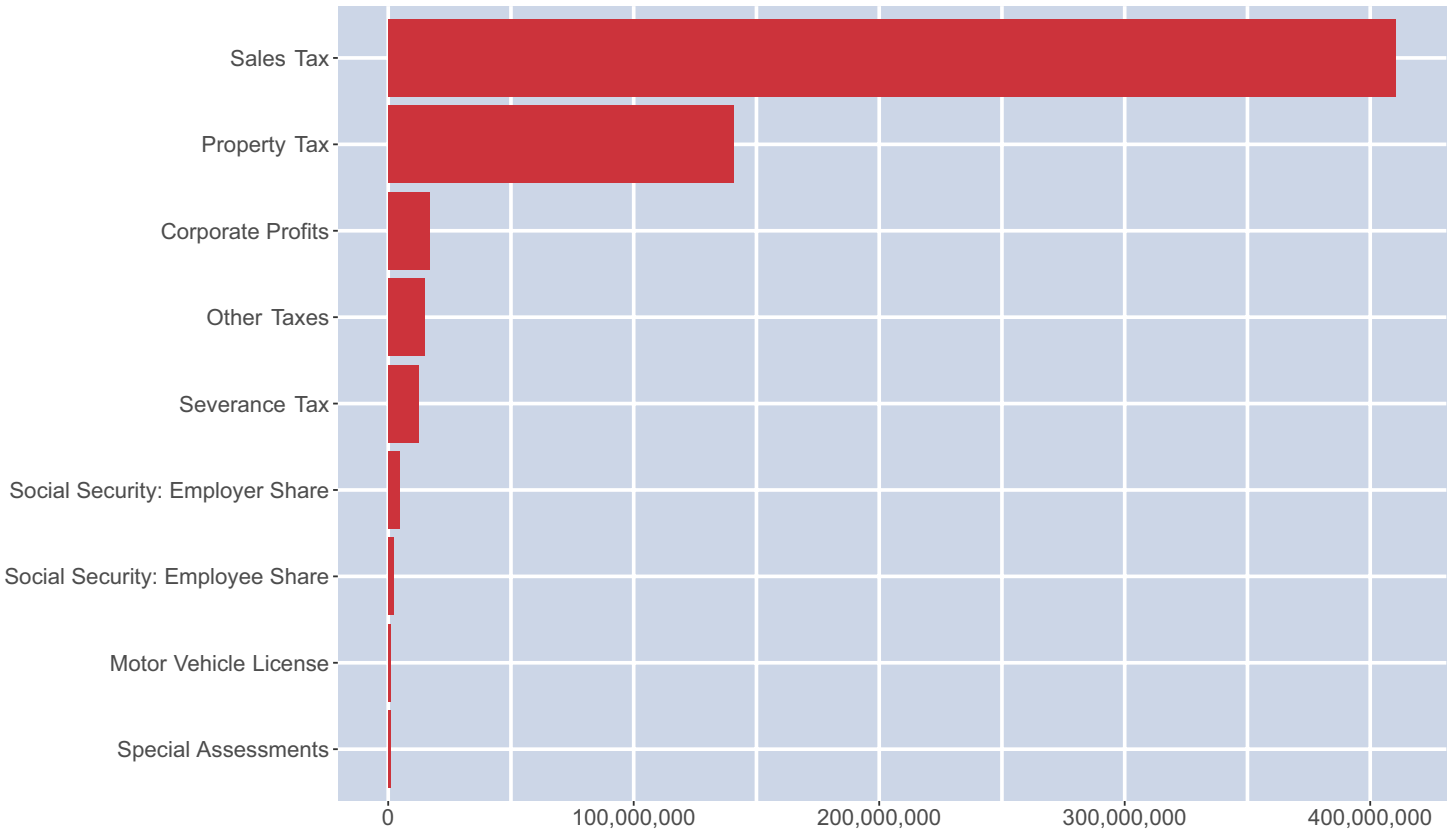


Figure 17: Business Tax Revenues by Type (2019 Dollars)



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