Bryant University

HONORS THESIS

The Discriminatory Effects of Monetary Policy Among Different Labor Market Demographics

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Table of Contents

Abstract 1
Introduction 2
Literature Review 3
Federal Reserve and Monetary Policy 3
Price Stability 4
Labor Market and Monetary Policy 4
Unemployment 5
Labor Force Attachment 6
Underlying Issues 6
Gender 8
Fighting Inflation 9
Literature Review Conclusion 9
Methodology 10
Data Collection 10
Analysis 10
Expected Findings 11
Research Limitations and Ethical Considerations 11
Data Importation and Transformation 12
Data Analysis 13
Results 16
Conclusion and Implications 18
Appendices 19
Appendix A-Output for Total Unemployment 19
Appendix B-Output for Less than HS Diploma 19
Appendix C- Output for Latino Male Unemployment 20
Appendix D- Output for Total Male Unemployment 20
Appendix E- Output for Total Female Unemployment 20
Appendix F- Output for White Unemployment 21
Appendix G- Output for White Male Unemployment 21
Appendix I- Output for Black Unemployment 22
Appendix J- Output for Black Male Unemployment 22
Appendix K- Output for Black Female Unemployment 22
Appendix L- Output for Latino/Hispanic Unemployment 23
Appendix M- Output for Latino/Hispanic Female Unemployment 23
Appendix N- Output for HS Diploma or Equivalent Unemployment 23
Appendix O- Output For Bachelors Degree Unemployment 24
Appendix P- Output for Masters Degree Unemployment 24
Appendix Q- Output for Doctorate Degree Unemployment 24
Appendix R- Scatterplots for White Male and Black Male Unemployment and FFR 25
Appendix S- Summary Statistics Table 25
Appendix T- Stata Lag Output 25
Appendix U- Output for Black Male Unemployment 26
Appendix V- Output for Latino Male Unemployment 26
Works Cited 27

ABSTRACT

While great strides have been made in America's pursuit of racial and gender equality, there is still a clear gap in terms of economic success (Carpenter & Rodgers, 2004). Current research has shown that one factor that could be contributing to this is the adverse effects that contractionary monetary policies designed to achieve a 2% average inflation rate has on these groups in the labor market (Seguino & Heintz, 2012). Existing literature suggests this is because of their lower attachment rate to their jobs, jobs that are more likely to be eliminated when interest rates increase. This research will seek to synthesize existing literature with economic data to better understand what these effects are and what their underlying causes may be.

INTRODUCTION

Monetary policy is an important economic factor in the U.S. economy, but could it be having disparate effects for different groups in the labor market? This research is relevant as rising inequality has recently been an important focus of public discourse. The present study seeks to address some questions regarding inequalities in the labor market, specifically those stemming from monetary policy. Existing research deals directly with understanding the disparate effects of monetary policy on the labor market. Additionally, some research gives a basis for the current economic struggles for different groups, including different races as well as gender. For example, Seguino and Heinz (2012) found that groups such as African-Americans or women were more likely to work in jobs that would be eliminated when demand decreased. This research has important implications for the future of the economy. If certain groups, specifically different genders or races, are more likely to suffer adverse effects from monetary policy, then it will be difficult for those groups to work towards economic equality. Thus, the goal of this research is to determine whether monetary policy can have affects that disproportionately harm racial minority groups as well as women in the work force.

LITERATURE REVIEW

Before discussing the existing literature, I will define monetary policy. Monetary policy is the adjustment of the supply of money flowing in the economy to achieve a combination of price and output stability (Mathai, 2009). The responsibility of implementing monetary policy is typically left up to a nation's central bank (Mathai, 2009). In the United States, where this paper's focus lies, that central bank is known as the Federal Reserve, more commonly referred to as the Fed. The Fed has a dual mandate from Congress, meaning they have two main priorities: price stability and maximum sustainable employment (Federal Reserve Bank of Chicago, 2020). This paper's focus is mainly on monetary policy that is intended to increase interest rates, referred to in this paper as contractionary or disinflationary monetary policy. Increasing rates will help keep inflation low, but that does not mean that increasing rates only bring positive economic effects.

Federal Reserve and Monetary Policy

The Federal Reserve has a few tools it can use that affect the economy, known as monetary policy tools. For this research, I will briefly explain the three main tools per the definitions provided by the Federal Reserve Bank of Chicago (2020): open market operations, the discount rate, and the reserve requirement. Open market operations are the buying and selling of securities such as government bonds to increase or decrease the money supply in the economy. These operations will impact the Federal Funds Rate, which is the rate at which banks lend to each other. The Fed will buy securities to lower the Federal Funds Rate, which increases reserves and promotes economic growth. This is called expansionary monetary policy. If the Fed wants to increase the Federal Funds Rate, they will sell securities to banks for reserves, thus decreasing the quantity of reserves banks have available to lend. This is called contractionary monetary policy. The discount rate is the rate at which banks can borrow from the Federal Reserve to cover their own short-term requirements. Finally, the Reserve Requirement refers to the amount of funds that banks must keep in reserve. Increasing this rate will leave banks with less reserves to loan out, slowing spending and controlling price stability. Of course, the opposite is also true, as they can decrease the reserve requirement to give banks more cash to loan out and stimulate the economy (Federal Reserve Bank of

Chicago, 2020). In the United States the Fed has been primarily using the Federal Funds Rate to influence the economy for many years now.

Price Stability

The Federal Reserve currently has an inflation rate target of two percent average rate, as they believe that goal works best with the Federal Reserve's mandate for maximum employment and price stability (Federal Reserve Bank of Chicago, 2020). However, the Fed's focus on price stability might have negative effects on its other goal of maximum sustainable employment, especially for minority groups (Carpenter & Rodgers, 2004). It has been shown that lower inflation does not necessarily lead to economic growth, and that inflation could be allowed to run substantially higher while still promoting economic growth (Pollin & Zhu, 2006). Allowing inflation to run higher would help reduce unemployment for minority groups in the labor market (Seguino & Heintz, 2012). This allows us to ask two research questions:

RQ1: How do the effects of monetary policy differ among different groups in the labor market?

RQ2: Should the Fed focus less on limiting inflation in order to better achieve maximum sustainable employment for all groups in the labor market?

Labor Market and Monetary Policy

When discussing different groups in the labor market, there are many factors to consider, such as different professions or the geographic region to which the group belongs. For the present study, those groups refer to historically disenfranchised groups in the workforce, specifically different races such as African-Americans and Latinos, as well as women. Ignoring monetary policy, we can focus on the standing of these groups in the U.S. economy and labor market. While income has increased, the relative earnings of African Americans in the work force are close to what they were in 1979 (Rodgers, 2019). However, when factoring in the effects of incarceration, Rodgers (2019) finds that the relative earnings are even worse, being closer to what they were in the 1950's. This shows that while there have been large strides made in racial equality, there is still a lot of work to be done before true equality can be achieved, specifically in terms of economic standings. While unemployment for African Americans is consistently higher than that for whites (Federal Reserve Economic Data, 2021), there is also

a difference in the duration of this unemployment between racial groups. From 1979-2006, the average unemployment length for African Americans was substantially longer than that of whites (Rodgers, 2008). In this time, 14.8% of unemployment for African Americans lasted for 27 weeks or longer, compared with 7.2% for whites (Rodgers, 2008). This was accompanied by findings showing that one-standard-deviation increase in the federal funds rate increases unemployment spell lengths at all durations (Rodgers, 2008) as well as the ratio for unemployment among black men compared to white men being between 1.28-1.33 between 2003 and 2008 (Lang & Lehmann, 2012). Lang and Lehmann (2012) also found that the average duration in unemployment was about 30% longer for black men than for white men. Similarly, DellaVigna and Paserman (2005) estimate that the black exit rate from unemployment is 20% lower than that for whites. The differences in unemployment and wages among black and white men are explained by finding a model that explains discrimination, as this is something that must be factored into any discussion about unequal opportunities for African Americans. They found that no singular model could explain the differences between black and white employment and wages, showing that many factors influence these economic outcomes.

Unemployment

To help better determine whether the effects of monetary policy are unequal in the U.S. labor market, one must compare the effects on those groups with those on white men. African Americans are the most historically disenfranchised racial group in the U.S., as black unemployment rates have maintained a 2:1 ratio of white unemployment since the end of World War Two (Carpenter & Rodgers, 2004). One reason is that contractionary monetary policy has "ladder effects" (Carpenter & Rodgers, 2004, p. 814), which means that while it may help the economy, it hurts those closer to the bottom rungs of the ladder. This means that the costs of fighting inflation are unevenly distributed among the population, with those closer to the bottom rungs losing a disproportionate share of the jobs (Seguino & Heintz, 2012). This may be caused by minorities being more likely to hold jobs that will be eliminated with contractions in demand (Seguino & Heintz, 2012).

Labor Force Attachment

Due to a myriad of problems in our society that lie outside the jurisdiction of monetary policy, Black and Latino Americans are typically less educated or less skilled than white Americans (O'Neil, 1990; Seguino & Heintz, 2012). This plays a large role in why these groups must find work in positions that are more likely to be eliminated due to contractionary monetary policy. One factor that affects minority groups' wages and unemployment rates is their labor force attachment. It has been shown that for groups with lower average labor market attachment, including African Americans and women, expansionary monetary policy will have a larger effect on employment growth in tight labor markets (Bergman et al., 2020), demonstrating a positive effect of monetary policy. Some of the reasons that African Americans have a lower labor force attachment are explained by Loprest et al. (2019), including contact with the criminal justice system, structural racism, and educational attainment differences. These issues are not ones that can be fixed through monetary policy; however, it is important to understand them so we can make decisions that best help relieve some of the pressures from these factors. This prompts our third research question and first hypothesis:

RQ3: How do existing equality issues relate to the lower job attachment and subsequent unemployment of minority groups?

H1: Monetary policy disproportionally affects minority groups in the labor market.

Underlying Issues

As previously discussed, some of these groups are affected by fundamental problems in our society that put them at a disadvantage, including experiences with the criminal justice system, structural racism, and educational attainment differences (Loprest et al, 2019). Educational attainment is important because education level has an impact on income and jobs with higher income levels tend to be safer in the event of a decrease in demand (Seguino & Heintz, 2012; Torpey, 2018). The level of educational attainment a student reaches is often lower than what the students themselves expected to reach when they were younger (Buttaro, et al., 2010). The main factors that lead to this were lack of parental involvement and economic capital, and it has been proposed that increased economic capital would lead to

greater parental involvement (Buttaro, et al., 2010). Similarly, findings from Rowley and Wright (2011) show that family involvement is crucial in test scores and educational attainment. Hemez and Washington (2021) found through their work with Census data that over 50% of black children lived in a house with only one parent, compared to less than 20% of white children. It's also been found that discrimination based on race plays a role in determining test scores, showing again that African-Americans face disadvantages from the start. (Rowley & Wright, 2011).

While education is undoubtedly an important factor in economic growth as well as in closing racial inequalities, one must also consider the effects of increased spending on education. Increased spending on education takes away money that could have gone towards other things, including redistributive purposes. This research does not argue on behalf of redistributive policies, however, research posited by Solga (2014) shows that education and other social policies that look to help solve inequalities in the future are less effective at closing wealth gaps than immediate redistributive policies. However, this would also decrease incentives for other workers and investors as they would see less of their own profits, and this would then in turn create less total tax revenue. Solga (2014) also finds that decreasing economic inequalities in the parents generation will then lead to their children having better education outcomes, which is different than the current philosophy that increasing education will then in turn lead to lower economic inequality.

Finally African-Americans are more likely to come into contact with the criminal justice system, which can make it harder to find employment afterwards. This is shown through research conducted by Carson (2020), who showed that black males were 5.8 times more likely to be imprisoned than white men. This is much better than it was 10 years ago, as the imprisonment rate for black men has dropped 28% since 2008. This shows that while there is a lot of work to be done, the country is moving in the right direction. Now that we have an understanding of the adverse effects minorities face in the labor market we can see that in order to achieve economic equality we have to address these issues.

Gender

It is also important to look at potential effects that monetary policy has had on women. Research has shown that women are still discriminated against in the labor market, and that the reason for that is that men are not willing to give up their positions of power (Braunstein, 2008). Braunstein (2008) concludes that since gender equity comes with a loss in patriarchal power, those in power do not willingly give up their control. Therefore, outside intervention is likely necessary, possibly including any monetary policy changes that could have a positive impact for women. Braunstein and Heintz (2008) determined that gender equality is correlated with economic growth, meaning contractionary policies that slow economic growth could have adverse effects for gender equality. Economic growth and development have been accepted as reducing economic inequality between genders (Eastin & Prakash, 2013), but will that alone be enough to combat gender inequality in the labor market in the future? Eastin and Prakash (2013) believe that policy makers are being lulled into thinking that since economic development reduced inequality in the past that it will only continue doing so in the future. They argue that measures to respond to gender issues are just as important as economic measures in attempting to attain gender equality. Their findings show that social norms and rights are important in reducing this gender inequality (Eastin & Prakash, 2013), and therefore gender inequality in the labor market cannot be attributed entirely to economic policy.

Something else important to consider in examining whether monetary policy affects genders differently is the extent to which women were included in the creation of said monetary policy. Masciandaro et al. (2015) researched this topic by analyzing the gender diversity of monetary policy committees and evaluating how monetary policy and therefore macroeconomic outcomes differed when there were greater levels of gender diversity. To accomplish this, the researchers created the first index of gender diversity in monetary policymaking (Masciandaro et al., 2015). The reason gender diversity is important in monetary policy making is because research shows gender differences to monetary policy making, with men tending to be more overconfident while women tend to be more risk averse (Masciandaro et al., 2015). Using this index, the researchers found that there was an inverse effect between gender diversity in monetary policymaking and inflation rates and money growth. This research did not have any significant conclusions on whether gender diversity

affected outcomes between genders in the labor market, and therefore there is no research question or hypothesis for gender as the existing literature could not form a strong enough link between monetary policy and disparate effects for different genders in the labor market. This could be somewhere that the current research could expand on the existing literature.

Fighting Inflation

Bergman et al. (2020) found that expansionary monetary policy leads to labor markets tightening significantly, meaning there is lower unemployment and employers cannot fill vacancies. This can be contrasted with a slack labor market, where there is high unemployment and competition over few vacancies. This is where the Fed has a decision to make regarding its priorities. Most of the adverse effects that have been discussed thus far stem from contractionary monetary policy, as this discourages growth and therefore leads to job losses, with minorities bearing the brunt of the effects as previously noted (Seguino & Heintz, 2012). The Fed does this to control inflation, as expansionary monetary policy as well as economic growth can lead to higher prices (Federal Reserve Bank of Chicago, 2020). The Fed needs to find the right balance where they can promote growth without letting inflation go wildly unchecked and reduce disparate effects on groups in the labor market. The Fed has seen this and recently modified its mandates from a strict 2% inflation target to an average of 2%, allowing them to focus more on a strong labor market, which will help those with low labor force attachment (Bergman et al., 2020). Additionally, earlier research from Pollin and Zhu (2006) states that low inflation is not always synonymous with economic growth, so the Fed could let inflation run higher than its targets for some time to try and promote economic growth and a stronger labor market, although the possible 15-20% range that Pollin and Zhu (2006) discussed would not be a wise move in the U.S. given our inability to increase wages at a similar level.

Literature Review Conclusion

The available literature has shown that the labor market effects of monetary policy are not equal, and that minority groups, most notably African Americans, bear the brunt of these anti-inflationary measures (Seguino & Heintz, 2012). By focusing on a more direct subject, the research will be able to make more specific findings regarding the effects of monetary policy on different races in the labor market. These unequal labor market outcomes stem from deep

structural issues in our society that have hindered our progress towards equality. While understanding how monetary policy exacerbates these issues is important, it will not bring us closer to equality until we can address some of the larger underlying issues (Loprest et al., 2019). These structural issues put minority groups at an economic disadvantage as they have to work in jobs that are more likely to be eliminated with contractions in demand (Seguino & Heintz, 2012), and there exists an institution in America that regularly contracts demand in order to fight inflation. This kind of economic disparity amongst different groups is what prompts the questions of how monetary policy affects different groups as well as if the cost of fighting inflation is worth it if it slows our progress towards economic equality.

METHODOLOGY

Data Collection

As the present study is predominately focused on large scale macroeconomic questions, it does not make sense to try and answer them with surveys or other human interaction-based research when there is a massive amount of publicly available information that is relevant and useful. Some of the data that will be important in helping to answer these inquiries into monetary policy are statistics on unemployment, implementations of monetary policy, information on different demographics, and information collected by those researching similar or relevant topics. For data on unemployment, I will mainly be using information collected from Federal Reserve Economic Data (FRED). It is an online database maintained by the Federal Reserve Bank of St. Louis. This site has data on a wide variety of economic measures, including detailed unemployment data that can be split up by year, gender, and race (Federal Reserve Bank of St. Louis, 2021).

Analysis

Combining this demographic information with data collected from FRED and the Bureau of Labor Statistics, I hope to gain an understanding of the standing of different racial groups and genders in the labor market, in an effort to accurately assess the economic relationship between these groups and the implementation of monetary policy. In terms of data analysis, a regression will be run in an attempt to analyze whether there is a clear relationship between implementations of monetary policy and minority groups in the labor market. Specifically, the present study draws upon existing work from Carpenter and Rodgers (2004) who created

Vector Auto Regressions to track the relationship between monetary policy and its impact on the labor market. In their research the authors utilized the federal funds rate, nonborrowed reserves, and total reserves as their measure of the Federal Reserve's policy instruments, explaining they were the main instruments for most of the sample (Carpenter & Rodgers, 2004). In their work they used a myriad of variables including industrial production growth, the percentage change in the consumer price index for urban consumers (CPI-U), the Commodity Research Board spot price index, and unemployment rates (Carpenter & Rodgers, 2004). The present study will use their measures of the Fed's policy instruments as well as unemployment and percent change in CPI. I would also like to find a way to factor in educational attainment into my regression as I think the existing literature has supported the idea that education is a determining factor in labor force attachment (Rowley & Wright, 2011).

Expected Findings

I expect that the data will show that there is a significant difference in the labor market outcomes between those in different racial groups, as most of the existing literature has found that to be the case. Specifically, I believe we will be able to conclude that when monetary policy is used to fight inflation there are disparate effects across the labor market for those who are different races, and possibly gender if the data finds it to be significant.

RESEARCH LIMITATIONS AND ETHICAL CONSIDERATIONS

This research is going to take up a large amount of time since there is so much publicly available data that I need to go through to, but all of that data has already been collected for me. This limits any foreseeable problems with gathering the data as it is all very easily obtained online, rather than having to conduct my own surveys or interviews. Using public databases also affords us the ability to not have to make inferences about the population based on a small sample size, as government data including things such as demographics and unemployment are accepted as a good representative of the population. All this data is available for free so there should not be any fiscal concerns with the research.

Since I am not dealing with any human subjects or participants, my research does not require IRB proposal and there are no ethical considerations in terms of participant recruitment. There

could be ethical concerns with using data that is publicly available as it represents individual people's unemployment and economic conditions. However, since the data is aggregated, and there is no way to disclose the identity of any individual person who is represented in the data, this is likely of no major concern.

DATA IMPORTATION AND TRANSFORMATION

The first step that we took towards creating our model was collecting our data. As mentioned previously, all our data was publicly available, and it was easily downloaded to Excel from the Federal Reserve Economic Database. The data that we decided to use included Unemployment Rates for the Total U.S., All Men, All Women, Whites, White Men, White Women, Black, Black Men, Black Women, Latino/Hispanic, Hispanic Men, Hispanic Women, Less than HS Diploma, HS diploma or equivalent, Bachelors Degree, Masters Degree, and Doctorate Degree. The non-unemployment variables that we downloaded were the Labor Force Participation Rate, Consumer Price Index, Oil Prices, and the Federal Funds Rate. The data was collected monthly and extended back to 1980, except for the Unemployment Rates by education level, as this was only first tracked in 2000. The data was downloaded into excel where I was able to prepare the data for analysis.

The first thing that I did was convert the downloaded monthly data to a quarterly average for each variable to make the analysis more manageable and better resemble the previous studies. Using quarterly data better allowed us to see the effect after each lag with lags representing a quarter instead of a month, meaning we would observe a change in unemployment after 4 lags as opposed to twelve. The next thing that I addressed was the Consumer Price Index, which I converted into a percent change from the previous period. This is important as it is a better measure to include in the model, given that the Consumer Price Index has been increasing over time as the average prices in the US have been increasing dating back to 1980 when our data starts. Using percent change gives us a better idea of what price levels were doing relative to that time. Similarly, we took the log of the Oil Prices, as they have also been generally increasing over time and taking the log gives us a more standardized version of the variable while still giving us a good understanding of how it is changing.

DATA ANALYSIS

After we transformed the data, we imported it into Stata, where we would be doing our actual analysis. From here I was able to get summary statistics for each variable.

Figure 1

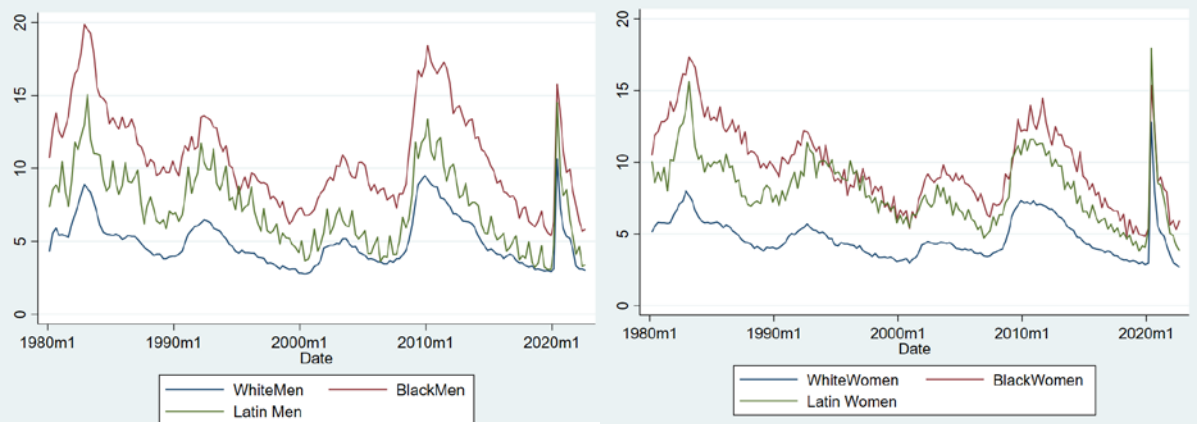
Unemployment Summary Statistics Table

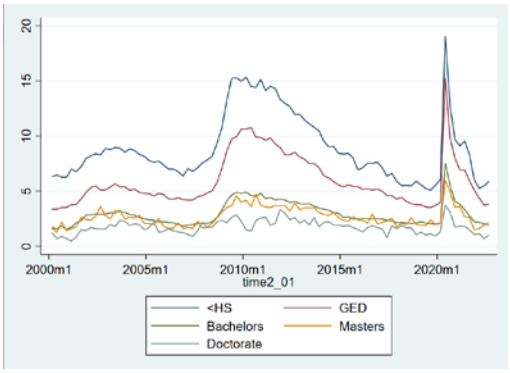
Demographic	Observations	Mean	Standard Deviation	Min	Max
Total	171	6.2	1.8	3.6	13
Men	171	6.3	1.9	3.6	12
Women	171	6	1.7	3.4	14.1
White	171	5.4	1.6	3.1	12.1
White Men	171	5	1.7	2.8	10.6
White Women	171	4.7	1.4	2.7	12.8
Black	171	11.5	3.3	2.7	20.5
Black Men	171	10.8	3.3	5.5	19.9
Black Women	171	9.8	2.8	4.8	17.3
Latino	171	8.5	2.6	4.1	17
Latin Men	171	7.3	2.6	3.1	15.1
Latin Women	171	8.1	2.3	3.8	17.9
<HS	91	8.9	3	5.1	19
GED	91	5.9	2.3	3.4	15
Bachelors	91	2.9	1.1	1.5	7.5
Masters	91	2.7	0.9	1.3	6
Doctorate	91	1.8	0.6	0.5	3.7

Figure 1 shows each unemployment variable's mean, standard deviation, minimum, and maximum. There were some important takeaways from this, namely differences in the average unemployment rates. As our initial basis for research was differences between racial demographics, it was no surprise to see that black unemployment averaged around 11.5%, which was more than double white unemployment (5.4%) over the same period. We also saw that there was not a large difference in unemployment rates between genders, while education level appears to be an important determining factor of unemployment rate.

Figure 2

Graphs of Unemployment Rate





We were also able to create graphs that show the unemployment rates for different demographics over time. From this we could take away that unemployment consistently ran higher for minority demographics, as well as those who were less educated. We can also see that they follow the same general cycles, with all of them increasing during periods of recession. Finally, we can see that the minority demographics have larger variances in unemployment as shown by the larger spikes and drops in unemployment in the average period.

After evaluating our data, we were ready to begin running our VAR model. Our final model included an unemployment rate, the federal funds rate, the percent change in the consumer price index, and the log oil price. The full equation for the model is shown below:

$$UR_{it} = \alpha_0 + \alpha_1 FFR_{t-1} + \alpha_2 FFR_{t-2} + \alpha_3 \%\text{Change CPI-U}_{t-1} + \alpha_4 \%\text{Change CPI-U}_{t-2} + \alpha_5 \text{Log Oil Price}_{t-1} + \alpha_6 \text{Log Oil Price}_{t-2} + \varepsilon_t$$

The model consists of URit, where URi represents a different demographics unemployment rate, and t being the time variable. URi is the only variable that changes when we run different regressions, with the other variables staying constant. α_0 represents a coefficient for the regression, with the other alphas also representing the coefficient for each variable. Each variable on the right side of the equation has either t-1 or t-2 which represent a lag of 1 period or 2 periods respectively. While this example model goes to 2 lags it is important to note that many of the regressions, we ran included 3 or 4 lags, which would be illustrated by each variable having 4 iterations and 4 coefficients and going to t-4 for each. Finally, the model has ε, which represents the error term. Before running the regression, we must determine what the lag is for each model based on what unemployment rate we are evaluating. It is important to determine the appropriate lag because Friedman (1961) concluded that monetary policy affects economic conditions only after a lag that is both long and variable. In Stata we could do this by running a varsoc command, which determines the most appropriate lag.

Figure 3

Stata Ouput for Determining Appropriate Lag

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-1161.73				13.59	13.96	13.99	14.04
1	-323.23	1677	16	0	0.00072	4.11	4.26	4.48*
2	-287.3	71.87	16	0	0.00057	3.87	4.14*	4.54
3	-265.21	44.17	16	0	0.00053	3.79	4.19	4.77
4	-243.53	43.36*	16	0	0.00492*	3.73*	4.25	5

Figure 3 is an example of the table we get that helps us determine what the most appropriate lag is based on the different lag-order selection statistics that are displayed in the table. In this case we were determining the appropriate lag for black male unemployment and as denoted by the asterisk we can see that 4 lags is the most appropriate for this model. Continuing with our example of black male unemployment, we can now run our model with 4 lags, which we do this by running a basic Vector Auto Regression command in Stata.

RESULTS

From running the VAR model, we get an output table which gives us our coefficients as well as telling us whether the Federal Funds Rate is significant in influencing a demographics unemployment rate.

Figure 4

VAR Output for Black Male Unemployment

Effect of Federal Funds Rate on Black Male Unemployment

Black Male Unemployment	Coefficent	Std. err	z	P>|z|
Lag 1	-0.014	0.043	-0.31	Not Significant
Lag 2	-0.052	0.059	-0.87	Not Significant
Lag 3	0.069	0.059	1.17	Not Significant
Lag 4	0.021	0.042	0.49	Not Significant

Figure 4 is the output table where we isolated the effects of the federal funds rate on black male unemployment. The column marked P>|z| gives us our p value, which is what we are testing to determine significance. We are testing at a 95% confidence level, which means for it to be significant the p-value would need to be .05 or lower. We can see that for Black Men the p-value is not lower than .05 in any lag so we cannot say that the Federal Funds Rate is statistically significant in influencing Black Male unemployment. We repeated this process for each of our different unemployment variables, and one that we found to be statistically significant was for Latino Men, which had significant p-values for lags 3 and 4, with one asterisk denoting significance at the 1% level, two asterisks being significance at the 5% level, and one asterisk being significant at the 10% level in Figure 5.

Figure 5

VAR Output for Latino Male Unemployment

Effect of Federal Funds Rate on Latino Male Unemployment

Latino Male Unemployment	Coefficent	Std. err	z	P>|z|
Lag 1	0.024	0.036	0.65	Not Significant
Lag 2	-0.002	0.042	0.97	Not Significant
Lag 3	-0.075	0.042	0.08	*
Lag 4	0.083	0.035	0.02	**

While many were not statistically significant, we can still observe differences in how the FFR affects the unemployment rate for each demographic. We can do this by looking at the impulse response functions for each of our demographics. Impulse response function graphs show the change of the dependent variable (our unemployment rates) in response to a change in the independent variable (Federal Funds Rate).

Figure 6

IRF Graphs for Male Demographics

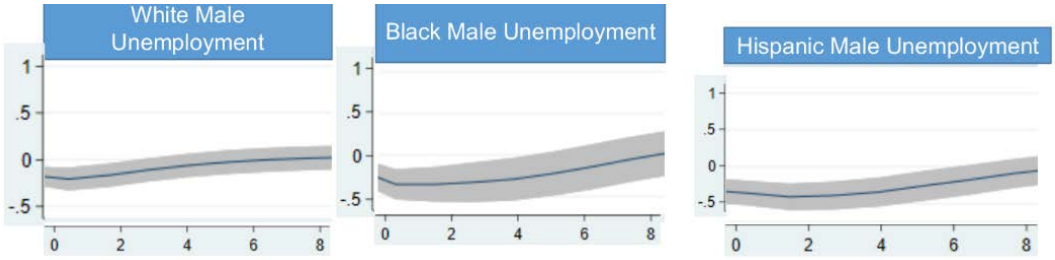


Figure 7

IRF Graphs for Female Demographics

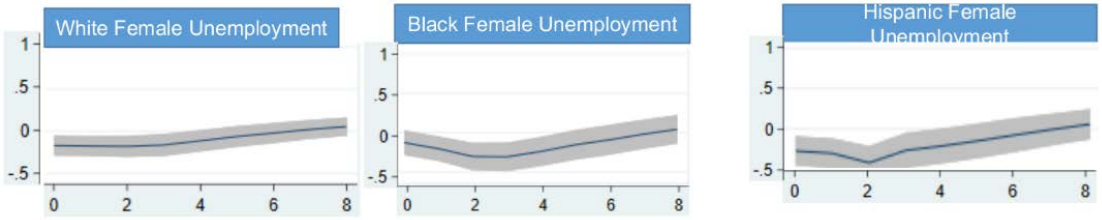
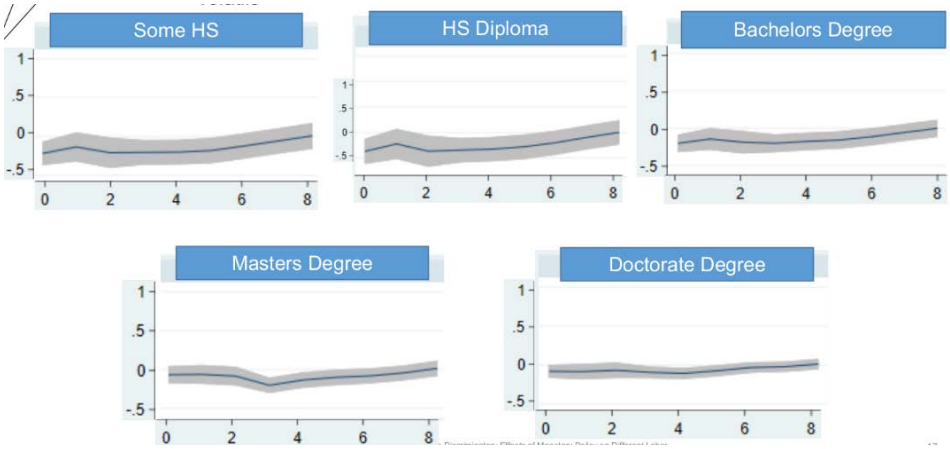


Figure 8

IRF Graphs for Education Levels



Figures 6-8 are our IRF graphs for our male, female, and education demographics respectively, and we can observe differences between the results. In Figure 6 we can see that while all of them respond in some way after a lag to increases in the federal funds rate this increase is more notable and significant for black and latino men than it is for white men over the same period. The same trend continues for the female demographics, as we can see that the curve for white women is far flatter, at least for the first 4 periods, than black and latino women. While we were not able to definitively prove through our p-values that the federal funds rate was more significant in influencing one of the female unemployment rates from looking at the graphs we see a lot more movement for the black and latino demographics for both males and females, suggesting that their unemployment rates are more heavily correlated with changes in the federal funds rate. Finally, looking at the differences between education levels shows us that the unemployment rate of those with lower education are more correlated with changes in the federal funds rate, as the curves for those with masters and especially doctorate degrees are much flatter and closer to 0 than their less educated counterparts.

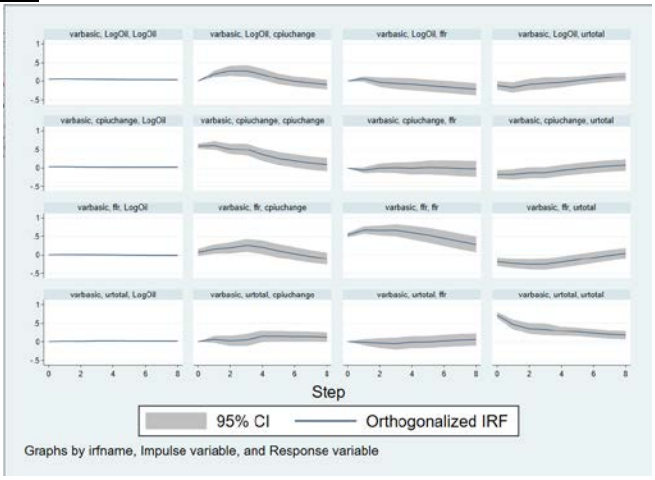
CONCLUSION AND IMPLICATIONS

Our initial research basis was to investigate differences in how black and white male unemployment changed in response to increases in the federal funds rate. Based on existing research, we were able to expand the scope of the study to examine gender and education as well. Based on our results we were able to conclude that the federal funds rate was significant in influencing the unemployment rate for latino men, and close to the p-value for some of the other ones. While the rest of the correlations could not be proved by their p-values, the IRF graphs showed us that there is a correlation between the federal funds rate and the different unemployment rates. This is important as it indicates that there is a need for more current research to be completed on this topic to help inform monetary policy, as the Federal Reserve is increasing rates at the time of this study and the federal funds rate is the highest it's been since the 2008 Financial Crisis. Given the findings of this study we can say that there is a need for more current research to be conducted.

APPENDICES

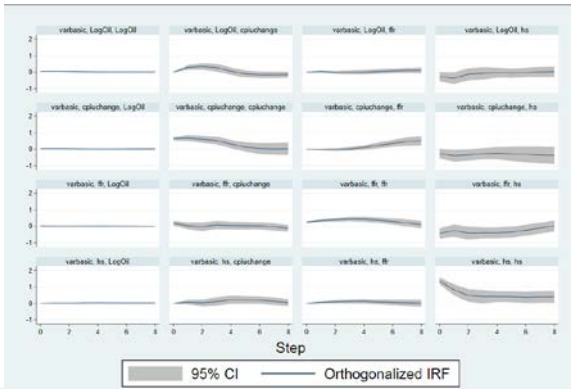
Appendix A-Output for Total Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.236642	.0612898	20.18	0.000	1.116516	1.356768
L2.	-.2988779	.0831995	-3.59	0.000	-.4619459	-.1358098
L3.	.0719297	.0803905	0.89	0.371	-.0856327	.2294922
L4.	-.1028972	.0547366	-1.88	0.060	-.2101791	.0043847
cpiuchange						
L1.	-.1730067	.0769856	-2.25	0.025	-.3238958	-.0221176
L2.	.3912311	.1040267	3.76	0.000	.1873424	.5951197
L3.	-.2368366	.1065874	-2.22	0.026	-.445744	-.0279291
L4.	.0657956	.0728898	0.90	0.367	-.0770657	.2086569
LogOil						
L1.	1.200275	.8145426	1.47	0.141	-.3961987	2.79675
L2.	-3.094433	1.171153	-2.64	0.008	-5.389851	-.7990156
L3.	1.736394	1.186712	1.46	0.143	-.5895184	4.062306
L4.	-.5921638	.8368086	-0.71	0.479	-2.232278	1.047951
urtotal						
L1.	-.0229975	.0573073	-0.40	0.688	-.1353178	.0893227
L2.	-.0182726	.0702258	-0.26	0.795	-.1559126	.1193674
L3.	.0203301	.0713999	0.28	0.776	-.1196112	.1602714
L4.	.0631614	.0566364	1.12	0.265	-.0478439	.1741667
_cons	1.098128	.3715863	2.96	0.003	.3698326	1.826424



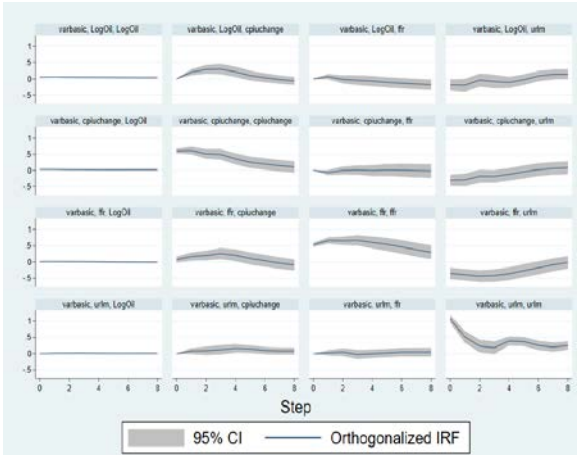
Appendix B-Output for Less than HS Diploma

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.391631	.1181392	11.78	0.000	1.160083	1.62318
L2.	-.2797305	.2060495	-1.36	0.175	-.68358	.124119
L3.	-.0941559	.2113598	-0.45	0.656	-.5084135	.3201016
L4.	-.1754469	.1194535	-1.47	0.142	-.4095714	.0586776
cpiuchange						
L1.	-.058956	.0476967	-1.24	0.216	-.1524398	.0345277
L2.	.1259426	.0620478	2.03	0.042	.0043311	.2475541
L3.	-.0075316	.0620351	-0.12	0.903	-.1291182	.114055
L4.	.0708956	.0477586	1.48	0.138	-.0227095	.1645008
LogOil						
L1.	.9854757	.5637044	1.75	0.080	-.1193647	2.090316
L2.	-1.980135	.7560769	-2.62	0.009	-3.462019	-.4982518
L3.	1.531771	.7765457	1.97	0.049	.0097689	3.053772
L4.	-.9593769	.5613611	-1.71	0.087	-2.059624	.1408707
hs						
L1.	.0438997	.0200436	2.19	0.029	.0046151	.0831844
L2.	-.0275603	.0250474	-1.10	0.271	-.0766522	.0215317
L3.	.013796	.0253067	0.55	0.586	-.0358042	.0633963
L4.	-.0382088	.0215194	-1.78	0.076	-.0803861	.0039684
_cons	.7668554	.3077983	2.49	0.013	.1635819	1.370129



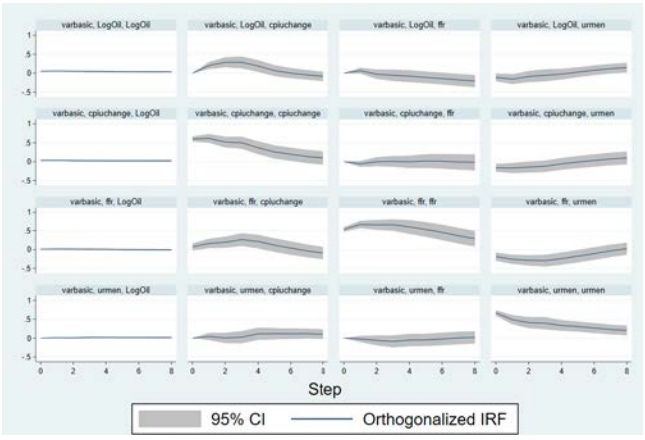
Appendix C- Output for Latino Male Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.267142	.0606553	20.89	0.000	1.14826	1.386024
L2.	-.3118357	.0828122	-3.77	0.000	-.4741446	-.1495269
L3.	.0494007	.0799416	0.62	0.537	-.1072819	.2060833
L4.	-.0925857	.05476	-1.69	0.091	-.1999134	.0147419
cpiuchange						
L1.	-.177682	.0760031	-2.34	0.019	-.3266453	-.0287186
L2.	.4091607	.1028498	3.98	0.000	.2075787	.6107426
L3.	-.2567969	.1053083	-2.44	0.015	-.4631974	-.0503965
L4.	.0645378	.0722879	0.89	0.372	-.0771439	.2062195
LogOil						
L1.	1.432225	.8145902	1.76	0.079	-.1643428	3.028792
L2.	-2.92013	1.175147	-2.48	0.013	-5.223375	-.6168851
L3.	.9638064	1.192127	0.81	0.419	-1.37272	3.300333
L4.	-.1274166	.8420359	-0.15	0.880	-1.777777	1.522943
urlm						
L1.	.0237441	.036301	0.65	0.513	-.0474046	.0948927
L2.	-.0016543	.042081	-0.04	0.969	-.0841315	.0808229
L3.	-.0754352	.0424108	-1.78	0.075	-.1585588	.0076884
L4.	.0831157	.0350338	2.37	0.018	.0144507	.1517806
_cons	.9946073	.3758772	2.65	0.008	.2579016	1.731313



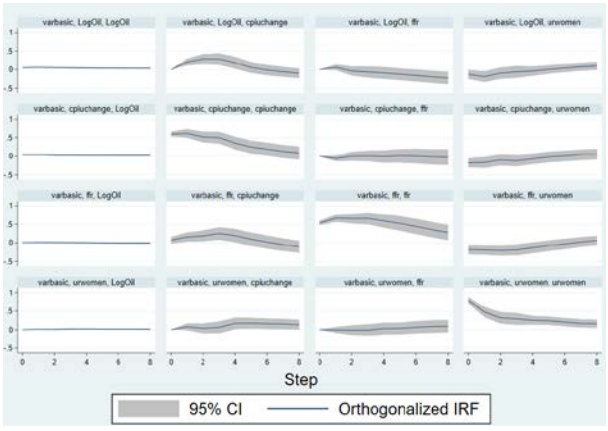
Appendix D- Output for Total Male Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.232146	.0618299	19.93	0.000	1.110962	1.353331
L2.	-.3037198	.0834132	-3.64	0.000	-.4672068	-.1402328
L3.	.075676	.0805711	0.94	0.348	-.0822404	.2335924
L4.	-.0963688	.0552376	-1.74	0.081	-.2046326	.0118949
cpiuchange						
L1.	-.1784777	.0770602	-2.32	0.021	-.329513	-.0274425
L2.	.3881856	.1036545	3.74	0.000	.1850265	.5913448
L3.	-.234416	.1063387	-2.20	0.027	-.4428359	-.025996
L4.	.072764	.0732999	0.99	0.321	-.0709011	.2164292
LogOil						
L1.	1.259089	.8132236	1.55	0.122	-.3347995	2.852978
L2.	-3.171482	1.169026	-2.71	0.007	-5.46273	-.8802343
L3.	1.786972	1.181195	1.51	0.130	-.5281274	4.102071
L4.	-.619329	.8302831	-0.75	0.456	-2.246654	1.007996
urmen						
L1.	-.0318795	.0617959	-0.52	0.606	-.1529972	.0892381
L2.	-.0394144	.0783885	-0.50	0.615	-.193053	.1142242
L3.	.0377599	.0794302	0.48	0.635	-.1179204	.1934403
L4.	.0675022	.0607498	1.11	0.267	-.0515652	.1865695
_cons	1.127719	.369474	3.05	0.002	.4035634	1.851875



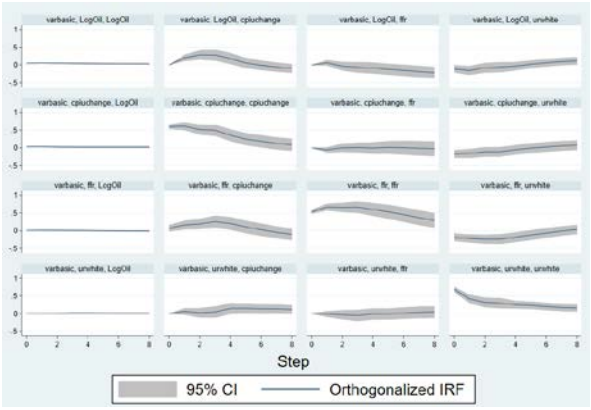
Appendix E- Output for Total Female Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.241053	.0607814	20.42	0.000	1.121924	1.360182
L2.	-.2954925	.0830362	-3.56	0.000	-.4582404	-.1327446
L3.	.0693855	.080314	0.86	0.388	-.0880271	.2267981
L4.	-.1096259	.0542274	-2.02	0.043	-.2159097	-.0033421
cpiuchange						
L1.	-.1690817	.0769967	-2.20	0.028	-.3199925	-.0181709
L2.	.3941332	.1045413	3.77	0.000	.1892361	.5990303
L3.	-.239378	.1068237	-2.24	0.025	-.4487485	-.0300074
L4.	.0600307	.072457	0.83	0.407	-.0819825	.2020438
LogOil						
L1.	1.172411	.8147044	1.44	0.150	-.4243807	2.769202
L2.	-3.032396	1.169142	-2.59	0.009	-5.323872	-.7409212
L3.	1.709014	1.187991	1.44	0.150	-.6194051	4.037432
L4.	-.601458	.8431742	-0.71	0.476	-2.254049	1.051133
urwomen						
L1.	-.0095353	.0519376	-0.18	0.854	-.1113311	.0922606
L2.	-.0023332	.0618994	-0.04	0.970	-.1236538	.1189874
L3.	.00972	.0630286	0.15	0.877	-.1138138	.1332539
L4.	.0539282	.0515532	1.05	0.296	-.0471142	.1549707
_cons	1.062899	.3741376	2.84	0.004	.3296028	1.796195



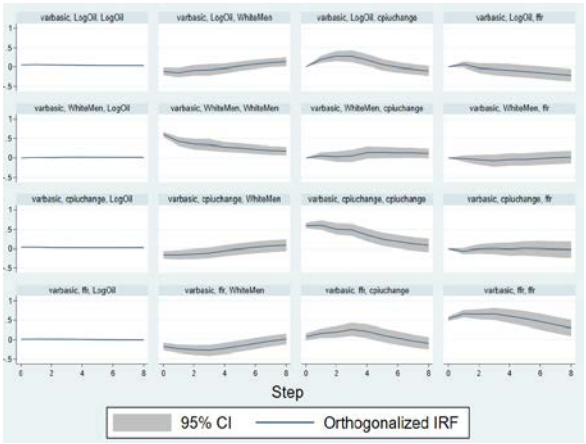
Appendix F- Output for White Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.240786	.0614047	20.21	0.000	1.120435	1.361137
L2.	-.3011516	.0834686	-3.61	0.000	-.464747	-.1375562
L3.	.0714514	.0806801	0.89	0.376	-.0866787	.2295816
L4.	-.1029765	.0548486	-1.88	0.060	-.2104778	.0045248
cpiuchange						
L1.	-.1706512	.0771119	-2.21	0.027	-.3217878	-.0195145
L2.	.3893185	.1042558	3.73	0.000	.184981	.5936561
L3.	-.2380986	.1068404	-2.23	0.026	-.4475019	-.0286953
L4.	.0655199	.0731141	0.90	0.370	-.077781	.2088208
LogOil						
L1.	1.207879	.8165785	1.48	0.139	-.3925857	2.808343
L2.	-3.101312	1.174323	-2.64	0.008	-5.402943	-.7996816
L3.	1.707396	1.190176	1.43	0.151	-.6253064	4.040099
L4.	-.5614132	.8402041	-0.67	0.504	-2.208183	1.085357
urwhite						
L1.	-.0136625	.0601681	-0.23	0.820	-.1315899	.1042649
L2.	-.0268797	.0722699	-0.37	0.710	-.1685262	.1147668
L3.	.0150846	.0733884	0.21	0.837	-.1287541	.1589233
L4.	.069266	.05925	1.17	0.242	-.0468618	.1853938
_cons	1.116193	.3709073	3.01	0.003	.3892281	1.843158



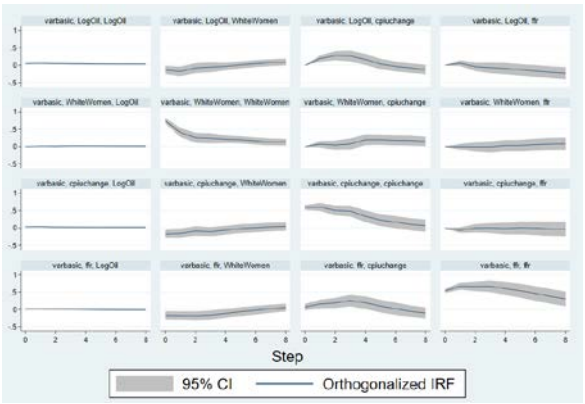
Appendix G- Output for White Male Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.236684	.0621916	19.89	0.000	1.114791	1.358578
L2.	-.3042129	.0839228	-3.62	0.000	-.4686986	-.1397271
L3.	.075856	.0809431	0.94	0.349	-.0827896	.2345016
L4.	-.0980647	.0553762	-1.77	0.077	-.2066001	.0104707
cpiuchange						
L1.	-.1762094	.0772163	-2.28	0.022	-.3275505	-.0248683
L2.	.3850488	.1039923	3.70	0.000	.1812277	.5888699
L3.	-.2369799	.1067128	-2.22	0.026	-.4461332	-.0278267
L4.	.0736192	.0737338	1.00	0.318	-.0708964	.2181349
LogOil						
L1.	1.250882	.8203821	1.52	0.127	-.3570377	2.858801
L2.	-3.155254	1.182886	-2.67	0.008	-5.473667	-.8368409
L3.	1.784324	1.193213	1.50	0.135	-.5543309	4.12298
L4.	-.6207165	.8363256	-0.74	0.458	-2.259885	1.018452
WhiteMen						
L1.	-.0272213	.0679338	-0.40	0.689	-.1603692	.1059266
L2.	-.0395823	.0851375	-0.46	0.642	-.2064487	.1272841
L3.	.0332555	.0862391	0.39	0.700	-.13577	.2022809
L4.	.0701917	.0666766	1.05	0.292	-.0604921	.2008755
_cons	1.152037	.3687705	3.12	0.002	.4292599	1.874814



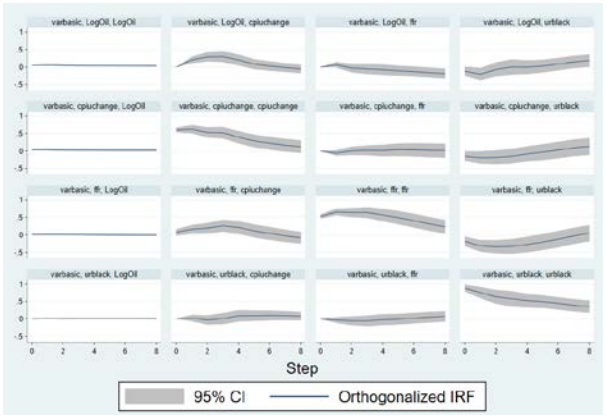
Appendix H- Output for White Women

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.245938	.0607727	20.50	0.000	1.126825	1.36505
L2.	-.2970732	.0832265	-3.57	0.000	-.4601941	-.1339523
L3.	.0688885	.0805505	0.86	0.392	-.0889876	.2267646
L4.	-.1083539	.0543016	-2.00	0.046	-.2147831	-.0019248
cpiuchange						
L1.	-.1679102	.0770853	-2.18	0.029	-.3189946	-.0168257
L2.	.3930982	.1046625	3.76	0.000	.1879635	.5982329
L3.	-.2408692	.1069221	-2.25	0.024	-.4504327	-.0313056
L4.	.0594298	.0724891	0.82	0.412	-.0826462	.2015057
LogOil						
L1.	1.17757	.8206202	1.43	0.151	-.4308162	2.785956
L2.	-3.057916	1.179098	-2.59	0.010	-5.368906	-.7469252
L3.	1.727872	1.198951	1.44	0.150	-.6220292	4.077773
L4.	-.5980866	.850408	-0.70	0.482	-2.264856	1.068683
WhiteWomen						
L1.	-.0035369	.0551871	-0.06	0.949	-.1117016	.1046278
L2.	-.0071896	.0646464	-0.11	0.911	-.1338942	.1195151
L3.	.0115596	.0657161	0.18	0.860	-.1172415	.1403607
L4.	.0535647	.0547768	0.98	0.328	-.0537959	.1609253
_cons	1.105288	.3715579	2.97	0.003	.3770479	1.833528



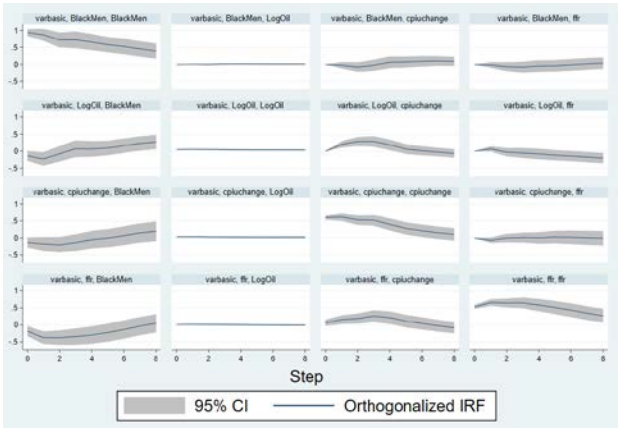
Appendix I- Output for Black Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.223222	.060908	20.08	0.000	1.103844	1.342599
L2.	-.2952177	.0821748	-3.59	0.000	-.4562772	-.1341581
L3.	.0750777	.0796284	0.94	0.346	-.080991	.2311464
L4.	-.1079889	.0545112	-1.98	0.048	-.2148289	-.0011489
cpiuchange						
L1.	-.1742591	.0766812	-2.27	0.023	-.3245515	-.0239667
L2.	.3956122	.1030172	3.84	0.000	.1937023	.5975221
L3.	-.2364728	.1058602	-2.23	0.025	-.4439549	-.0289907
L4.	.0709792	.0726592	0.98	0.329	-.0714302	.2133887
LogOil						
L1.	1.245398	.8028432	1.55	0.121	-.3281459	2.818941
L2.	-3.109936	1.147292	-2.71	0.007	-5.358587	-.8612857
L3.	1.8931	1.166535	1.62	0.105	-.3932667	4.179467
L4.	-.7910943	.8247489	-0.96	0.337	-2.407573	.8253839
urblack						
L1.	-.0369025	.046403	-0.80	0.426	-.1278507	.0540457
L2.	.0067925	.0618719	0.11	0.913	-.1144742	.1280591
L3.	.0299016	.0623947	0.48	0.632	-.0923899	.152193
L4.	.0307432	.0457094	0.67	0.501	-.0588455	.120332
_cons	1.045912	.3693976	2.83	0.005	.3219058	1.769918



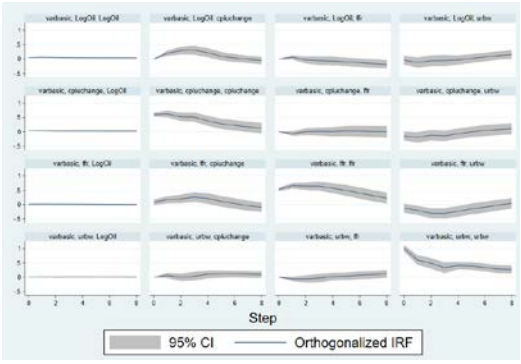
Appendix J- Output for Black Male Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.232921	.0613201	20.11	0.000	1.112736	1.353106
L2.	-.3113064	.0827539	-3.76	0.000	-.4735011	-.1491116
L3.	.082043	.081158	1.01	0.312	-.0770238	.2411098
L4.	-.0998661	.0555791	-1.80	0.072	-.208799	.0090668
cpiuchange						
L1.	-.1806768	.0769471	-2.35	0.019	-.3314903	-.0298633
L2.	.4046375	.1029945	3.93	0.000	.202772	.6065031
L3.	-.2378854	.1061919	-2.24	0.025	-.4460177	-.0297531
L4.	.0649678	.0724876	0.90	0.370	-.0771053	.2070409
LogOil						
L1.	1.352815	.7974772	1.70	0.090	-.2102117	2.915841
L2.	-3.327088	1.131256	-2.94	0.003	-5.54431	-1.109867
L3.	1.907118	1.155896	1.65	0.099	-.3583965	4.172632
L4.	-.6986877	.8211337	-0.85	0.395	-2.30808	.9107048
BlackMen						
L1.	-.0136232	.0433495	-0.31	0.753	-.0985867	.0713403
L2.	-.0515814	.0594916	-0.87	0.386	-.1681829	.06502
L3.	.0691219	.0590024	1.17	0.241	-.0465208	.1847645
L4.	.0206501	.0423504	0.49	0.626	-.0623552	.1036554
_cons	1.115132	.3636127	3.07	0.002	.4024642	1.8278



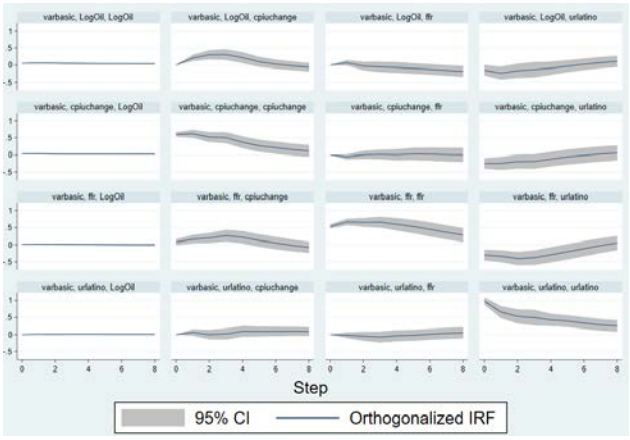
Appendix K- Output for Black Female Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.228001	.0602508	20.38	0.000	1.109912	1.34609
L2.	-.294249	.0824157	-3.57	0.000	-.4557808	-.1327172
L3.	.0682979	.0791849	0.86	0.388	-.0869016	.2234973
L4.	-.106961	.0535047	-2.00	0.046	-.2118284	-.0020936
cpiuchange						
L1.	-.181634	.0759961	-2.39	0.017	-.3305836	-.0326844
L2.	.3974576	.1031904	3.85	0.000	.1952082	.5997071
L3.	-.2337118	.1059613	-2.21	0.027	-.4413921	-.0260315
L4.	.0705525	.0723636	0.97	0.330	-.0712775	.2123825
LogOil						
L1.	1.186117	.7896518	1.50	0.133	-.3615725	2.733806
L2.	-2.923775	1.123959	-2.60	0.009	-5.126694	-.7208557
L3.	1.818787	1.132638	1.61	0.108	-.4011435	4.038717
L4.	-.8357654	.8117638	-1.03	0.303	-2.426793	.7552623
urbw						
L1.	-.0565586	.0390002	-1.45	0.147	-.1329975	.0198803
L2.	.0467302	.0461261	1.01	0.311	-.0436753	.1371356
L3.	.0206201	.0474043	0.43	0.664	-.0722907	.1135309
L4.	.0284549	.0390683	0.73	0.466	-.0481176	.1050274
_cons	1.013053	.3697695	2.74	0.006	.2883179	1.737788



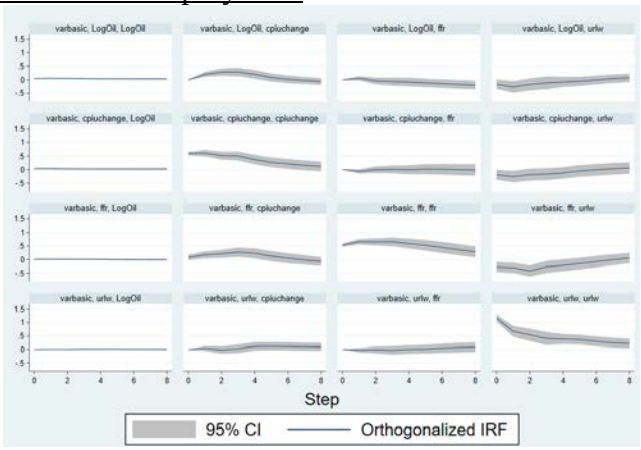
Appendix L- Output for Latino/Hispanic Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.234167	.0618795	19.94	0.000	1.112885	1.355448
L2.	-.3002337	.0838308	-3.58	0.000	-.4645389	-.1359284
L3.	.0705476	.0811912	0.87	0.385	-.0885843	.2296795
L4.	-.0976154	.055518	-1.76	0.079	-.2064287	.0111979
cpiuchange						
L1.	-.1762583	.0770336	-2.29	0.022	-.3272415	-.0252751
L2.	.3900242	.10403	3.75	0.000	.1861291	.5939193
L3.	-.2374612	.1066155	-2.23	0.026	-.4464237	-.0284986
L4.	.0707016	.0728921	0.97	0.332	-.0721643	.2135675
LogOil						
L1.	1.243034	.8104377	1.53	0.125	-.3453943	2.831463
L2.	-3.043406	1.163006	-2.62	0.009	-5.322856	-.7639558
L3.	1.670921	1.175267	1.42	0.155	-.6325609	3.974403
L4.	-.5366588	.8312074	-0.65	0.519	-2.165795	1.092478
urlatino						
L1.	-.0187303	.0418	-0.45	0.654	-.1006568	.0631962
L2.	-.0176858	.0510869	-0.35	0.729	-.1178143	.0824428
L3.	.0079187	.0519647	0.15	0.879	-.0939302	.1097676
L4.	.0552009	.041112	1.34	0.179	-.025377	.1357789
_cons	.9991745	.3897903	2.56	0.010	.2351996	1.763149



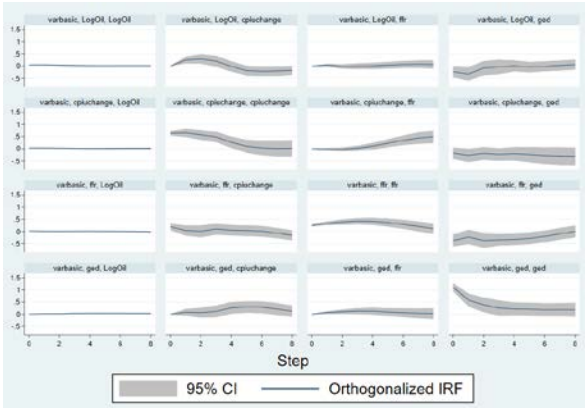
Appendix M- Output for Latino/Hispanic Female Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.2365	.061254	20.19	0.000	1.116444	1.356555
L2.	-.2862908	.0829735	-3.45	0.001	-.4489159	-.1236657
L3.	.0596433	.0803887	0.74	0.458	-.0979157	.2172023
L4.	-.1008829	.0544853	-1.85	0.064	-.207672	.0059063
cpiuchange						
L1.	-.1745133	.0769683	-2.27	0.023	-.3253684	-.0236583
L2.	.3979011	.1038402	3.83	0.000	.1943781	.6014241
L3.	-.2380382	.1060899	-2.24	0.025	-.4459705	-.0301059
L4.	.0590235	.0719222	0.82	0.412	-.0819414	.1999884
LogOil						
L1.	1.064303	.8124554	1.31	0.190	-.5280805	2.656686
L2.	-2.749058	1.157411	-2.38	0.018	-5.017542	-.4805742
L3.	1.45794	1.179547	1.24	0.216	-.8539307	3.769811
L4.	-.4370258	.8383595	-0.52	0.602	-2.08018	1.206129
urlw						
L1.	-.0223321	.0350853	-0.64	0.524	-.091098	.0464338
L2.	.0259232	.0406918	0.64	0.524	-.0538313	.1056777
L3.	-.0254776	.0411244	-0.62	0.536	-.10608	.0551248
L4.	.0549494	.034591	1.59	0.112	-.0128477	.1227466
_cons	.957686	.3979925	2.41	0.016	.1776351	1.737737



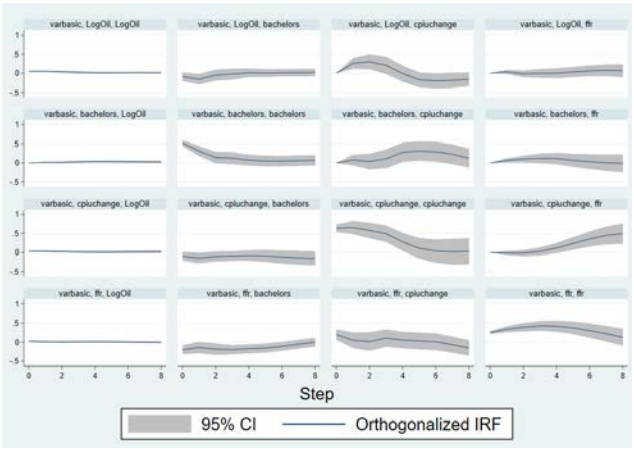
Appendix N- Output for HS Diploma or Equivalent Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.393394	.1184466	11.76	0.000	1.161242	1.625545
L2.	-.2991309	.2066336	-1.45	0.148	-.7041252	.1058634
L3.	-.0618693	.2117937	-0.29	0.770	-.4769772	.3532386
L4.	-.1930961	.1193525	-1.62	0.106	-.4270228	.0408305
cpiuchange						
L1.	-.0630267	.0468529	-1.35	0.179	-.1548567	.0288033
L2.	.1270418	.0613388	2.07	0.038	.0068199	.2472637
L3.	-.0067164	.0613445	-0.11	0.913	-.1269495	.1135166
L4.	.0757127	.0472183	1.60	0.109	-.0168334	.1682587
LogOil						
L1.	1.065298	.5619034	1.90	0.058	-.0360127	2.166608
L2.	-1.94438	.7415494	-2.62	0.009	-3.39779	-.4909702
L3.	1.456447	.7676527	1.90	0.058	-.0481245	2.961019
L4.	-.9955464	.5592374	-1.78	0.075	-2.091632	.1005388
ged						
L1.	.0601926	.0241774	2.49	0.013	.0128057	.1075795
L2.	-.0344647	.0296739	-1.16	0.245	-.0926244	.023695
L3.	.0120478	.0298283	0.40	0.686	-.0464146	.0705102
L4.	-.0490364	.0262033	-1.87	0.061	-.100394	.0023212
_cons	.7503513	.3040237	2.47	0.014	.1544758	1.346227



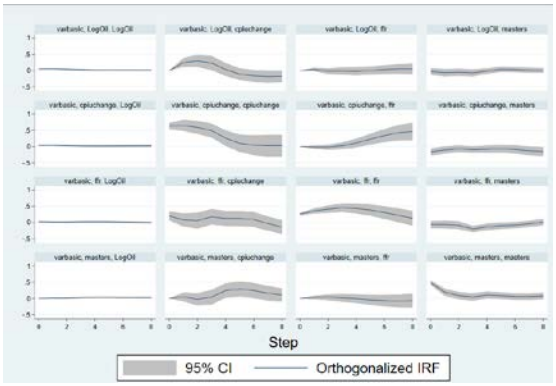
Appendix O- Output For Bachelors Degree Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.411571	.1194924	11.81	0.000	1.17737	1.645772
L2.	-.3207719	.2093841	-1.53	0.126	-.7311571	.0896133
L3.	-.0602553	.2146566	-0.28	0.779	-.4809746	.360464
L4.	-.1892459	.1203914	-1.57	0.116	-.4252088	.0467169
cpiuchange						
L1.	-.0499356	.0471485	-1.06	0.290	-.142345	.0424739
L2.	.1159231	.0614488	1.89	0.059	-.0045143	.2363604
L3.	-.0074567	.0613435	-0.12	0.903	-.1276877	.1127744
L4.	.0703033	.0471251	1.49	0.136	-.0220602	.1626669
LogOil						
L1.	.9378192	.5481221	1.71	0.087	-.1364803	2.012119
L2.	-1.805839	.7293007	-2.48	0.013	-3.235242	-.3764356
L3.	1.366359	.7565475	1.81	0.071	-.116447	2.849165
L4.	-.9256852	.5536742	-1.67	0.095	-2.010867	.1594963
bachelors						
L1.	.1302713	.0518091	2.51	0.012	.0287274	.2318153
L2.	-.0904942	.0648029	-1.40	0.163	-.2175056	.0365171
L3.	.0325483	.0651316	0.50	0.617	-.0951072	.1602038
L4.	-.0988275	.0557732	-1.77	0.076	-.2081409	.0104859
_cons	.7848188	.3159738	2.48	0.013	.1655215	1.404116



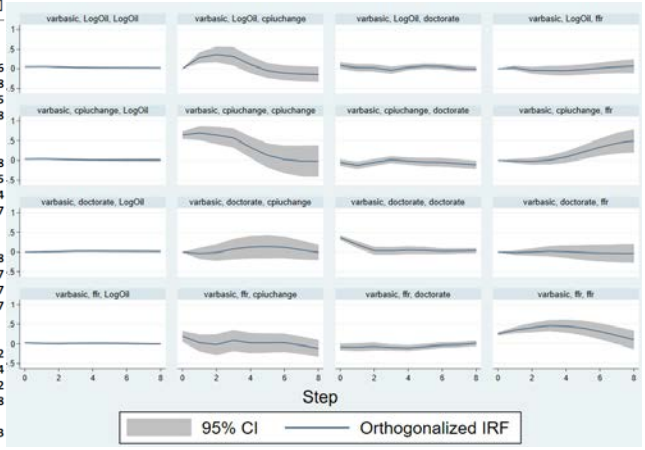
Appendix P- Output for Masters Degree Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.35272	.1192626	11.34	0.000	1.118969	1.58647
L2.	-.2024142	.2034342	-0.99	0.320	-.601138	.1963096
L3.	-.1892067	.2065667	-0.92	0.360	-.5940699	.2156566
L4.	-.1210617	.1182851	-1.02	0.306	-.3528962	.1107727
cpiuchange						
L1.	-.052398	.0506471	-1.03	0.301	-.1516645	.0468685
L2.	.1167906	.0658482	1.77	0.076	-.0122694	.2458507
L3.	-.0175366	.0656148	-0.27	0.789	-.1461392	.1110661
L4.	.0756074	.0494001	1.53	0.126	-.021215	.1724299
LogOil						
L1.	.742429	.5570972	1.33	0.183	-.3494614	1.834319
L2.	-1.805477	.7325689	-2.46	0.014	-3.241286	-.3696689
L3.	1.367758	.7525483	1.82	0.069	-.1072091	2.842726
L4.	-.756257	.5536374	-1.37	0.172	-1.841366	.3288524
masters						
L1.	.0581451	.054736	1.06	0.288	-.0491354	.1654257
L2.	-.0339771	.0583581	-0.58	0.560	-.1483569	.0804028
L3.	-.0517501	.0583847	-0.89	0.375	-.1661821	.0626819
L4.	-.0211669	.0578995	-0.37	0.715	-.1346479	.0923141
_cons	.8970568	.3476612	2.58	0.010	.2156534	1.57846

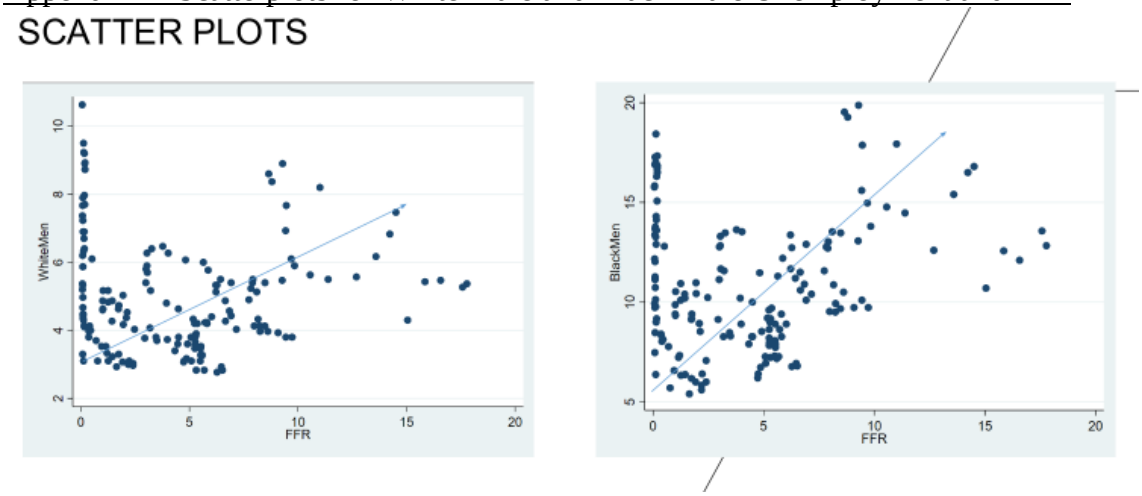


Appendix Q- Output for Doctorate Degree Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.34484	.1224747	10.98	0.000	1.104795	1.584886
L2.	-.1701701	.2075681	-0.82	0.412	-.5769961	.2366558
L3.	-.1969776	.2126381	-0.93	0.354	-.6137407	.2197855
L4.	-.1192251	.1202481	-0.99	0.321	-.3549071	.1164568
cpiuchange						
L1.	-.0537931	.0506718	-1.06	0.288	-.153108	.0455218
L2.	.1194625	.0638032	1.87	0.061	-.0055895	.2445145
L3.	.0009812	.0644135	0.02	0.988	-.125267	.1272294
L4.	.0614798	.0508626	1.21	0.227	-.038209	.1611687
LogOil						
L1.	.5188604	.5571109	0.93	0.352	-.5730569	1.610778
L2.	-1.819509	.7389877	-2.46	0.014	-3.267898	-.3711197
L3.	1.466479	.7701102	1.90	0.057	-.0429096	2.975867
L4.	-.655299	.5859417	-1.12	0.263	-1.803724	.4931257
doctorate						
L1.	-.0370198	.073008	-0.51	0.612	-.1801129	.1060732
L2.	.0615994	.0807691	0.76	0.446	-.0967052	.219904
L3.	.050014	.0800256	0.62	0.532	-.1068332	.2068612
L4.	-.0636461	.0720753	-0.88	0.377	-.2049111	.0776188
_cons	.7732447	.325643	2.37	0.018	.1349961	1.411493



Appendix R- Scatterplots for White Male and Black Male Unemployment and FFR



Appendix S- Summary Statistics Table

Variable	Obs	Mean	Std. dev.	Min	Max
cpiuindex	171	177.7941	55.31876	79.03	295.88
cpiuchange	171	3.304485	2.513577	-1.607	14.427
lfpr	171	65.03134	1.65633	60.8	67.3
ffr	171	4.397953	4.037684	.06	17.78
urtotal	171	6.178889	1.77341	3.57	12.97
urmen	171	6.283567	1.899735	3.6	12.03
urwomen	171	6.062164	1.669484	3.43	14.07
urwhite	171	5.42538	1.618832	3.13	12.13
WhiteMen	171	4.964211	1.654136	2.77	10.63
WhiteWomen	171	4.747427	1.408947	2.67	12.8
urblack	171	11.52994	3.312009	5.53	20.47
BlackMen	171	10.82854	3.320073	5.4	19.87
urbw	171	9.775205	2.791288	4.8	17.33
urlatino	171	8.505439	2.613243	4.07	16.97
urlm	171	7.286316	2.608297	3.07	15.07
urlw	171	8.111287	2.322173	3.8	17.93
hs	91	8.922308	3.049756	5.1	19.03
ged	91	5.935385	2.267511	3.37	15.2
bachelors	91	2.947692	1.05767	1.53	7.53
masters	91	2.672637	.8855944	1.27	5.97
doctorate	91	1.750769	.6108068	.47	3.73

Appendix T- Stata Lag Output

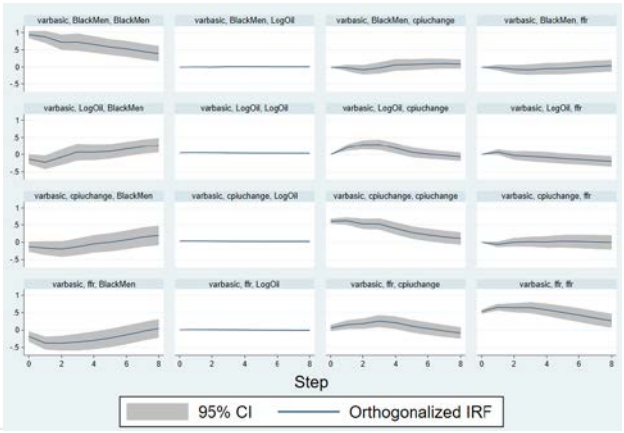
```
. varsoc ffr cpiuchange LogOil BlackMen

Lag-order selection criteria

Sample: 5 thru 171                                  Number of obs = 167
```

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-1161.73				13.5903	13.9609	13.9912	14.0355
1	-323.233	1677	16	0.000	.000717	4.11058	4.26214	4.48399*
2	-287.3	71.867	16	0.000	.000565	3.87185	4.14466*	4.54399
3	-265.213	44.174	16	0.000	.000525	3.79895	4.19301	4.76983
4	-243.531	43.363*	16	0.000	.000492*	3.73091*	4.24621	5.00051

* optimal lag

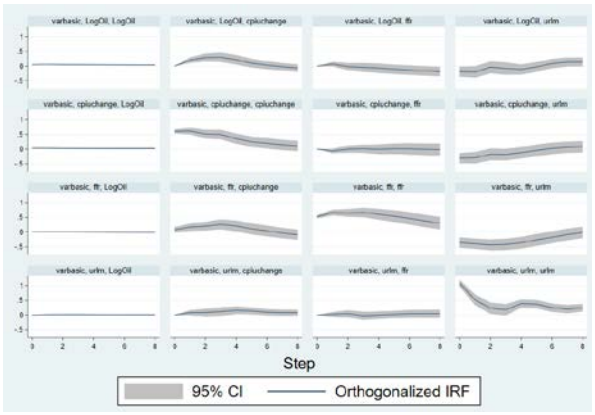
Appendix U- Output for Black Male Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.232921	.0613201	20.11	0.000	1.112736	1.353106
L2.	-.3113064	.0827539	-3.76	0.000	-.4735011	-.1491116
L3.	.082043	.081158	1.01	0.312	-.0770238	.2411098
L4.	-.0998661	.0555791	-1.80	0.072	-.208799	.0090668
cpiuchange						
L1.	-.1806768	.0769471	-2.35	0.019	-.3314903	-.0298633
L2.	.4046375	.1029945	3.93	0.000	.202772	.6065031
L3.	-.2378854	.1061919	-2.24	0.025	-.4460177	-.0297531
L4.	.0649678	.0724876	0.90	0.370	-.0771053	.2070409
LogOil						
L1.	1.352815	.7974772	1.70	0.090	-.2102117	2.915841
L2.	-3.327088	1.131256	-2.94	0.003	-5.54431	-1.109867
L3.	1.907118	1.155896	1.65	0.099	-.3583965	4.172632
L4.	-.6986877	.8211337	-0.85	0.395	-2.30808	.9107048
BlackMen						
L1.	-.0136232	.0433495	-0.31	0.753	-.0985867	.0713403
L2.	-.0515814	.0594916	-0.87	0.386	-.1681829	.06502
L3.	.0691219	.0590024	1.17	0.241	-.0465208	.1847645
L4.	.0206501	.0423504	0.49	0.626	-.0623552	.1036554
_cons	1.115132	.3636127	3.07	0.002	.4024642	1.8278



Appendix V- Output for Latino Male Unemployment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ffr						
ffr						
L1.	1.267142	.0606553	20.89	0.000	1.14826	1.386024
L2.	-.3118357	.0828122	-3.77	0.000	-.4741446	-.1495269
L3.	.0494007	.0799416	0.62	0.537	-.1072819	.2060833
L4.	-.0925857	.05476	-1.69	0.091	-.1999134	.0147419
cpiuchange						
L1.	-.177682	.0760031	-2.34	0.019	-.3266453	-.0287186
L2.	.4091607	.1028498	3.98	0.000	.2075787	.6107426
L3.	-.2567969	.1053083	-2.44	0.015	-.4631974	-.0503965
L4.	.0645378	.0722879	0.89	0.372	-.0771439	.2062195
LogOil						
L1.	1.432225	.8145902	1.76	0.079	-.1643428	3.028792
L2.	-2.92013	1.175147	-2.48	0.013	-5.223375	-.6168851
L3.	.9638064	1.192127	0.81	0.419	-1.37272	3.300333
L4.	-.1274166	.8420359	-0.15	0.880	-1.777777	1.522943
urlm						
L1.	.0237441	.036301	0.65	0.513	-.0474046	.0948927
L2.	-.0016543	.042081	-0.04	0.969	-.0841315	.0808229
L3.	-.0754352	.0424108	-1.78	0.075	-.1585588	.0076884
L4.	.0831157	.0350338	2.37	0.018	.0144507	.1517806
_cons	.9946073	.3758772	2.65	0.008	.2579016	1.731313



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