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Predicting Whether Inflation Will Remain in the U.S. after the Covid-19 Pandemic

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ABSTRACT

This paper focuses on the possibility of inflation occurring in the United States in the foreseeable future. Inflation, the progressive increase in the price of goods and services over time in an economy, is affected by demand and supply. If the demand for goods and services exceeds the supply of those goods and services, prices naturally increase and rise in inflation. While many have attempted to predict inflation through various methods, no one has been able to guarantee a result as demand and supply are unstable variables. However, using the vulnerable, weak covid environment, the relationship between the CPI (Consumer Price Index) and unemployment rates was used to assemble Philips Curves.

Introduction

Money shapes the world. Without money, one cannot survive in our modern-day society. As currency and values become a necessity, economics creates answers to how society operates the way it does. It is the blueprint of the world and how people's lives are shaped on the basis of money. With my fascination about understanding why the world behaves the way it does, economics–specifically macroeconomics–provides explanations that no other field touches on. As natural patterns of production and consumption alter the stability of society, the relevance of economics only intensifies alongside the advancement of our human race. Inflation, the increase in the price of goods and services, is a key component of economics, for the balance between demand and supply must be achieved to create an economically stable environment. Thus, this paper will focus on the possibility of hyperinflation (rapid, uncontrollable surges in price) in the United States within the foreseeable future.

To predict the possibility of inflation, we retrieved data from two main sources: the U.S. Bureau of Labor Statistics and the Federal Reserve System. The Bureau of Labor Statistics and Federal Reserve provided the CPI and unemployment rates. The consumer price index, abbreviated as CPI, is the average price paid by urban consumers for their respective goods and services, and the unemployment rates, as suggested by the title, are the percentages of unemployed people among the labor force–all adults who are eligible to work. This paper will use the data acquired to create analytical graphs and charts and juxtapose the three datasets to support whether inflation will or will not occur. More specifically, Phillips Curves are used with the CPI and unemployment rates data to determine inflation in the U.S.

Literature Review

In the International Journal of Central Banking, Michael Dotsey, Shigeru Fujita, and Tom Stark of the Federal Reserve Bank of Philadelphia reexamine the legitimacy of the flattened Philips Curve. The Philips curve lost its forecasting

ability once low unemployment occurs, yet wages do not budge. With low unemployment, the workers have the leverage to choose jobs, which then should naturally force employees to raise wages. If the employees do raise wages, then demand goes up as more people are able to spend their disposable income, and so does inflation. However, as workers understand the trends too, they begin demanding higher wages once inflation rises which causes unemployment to surge back up while inflation remains high: not representing the inverse relationship of the Philips Curve models. Another way the Philips Curve inaccurately describes the relationship between inflation and unemployment is if the employees lack the responsiveness to raise the wages even when unemployment is exceptionally low. This causes a good deviation from the curve as there is low unemployment and low inflation. The members of the Federal Reserve Bank of Philadelphia reevaluated this phenomenon of the Philips Curve's inaccuracy and found that the Philips Curve does not forecast inflation as accurately as univariate forecasting models. However, the Philips Curve tends to be more accurate if the economy is weak. In a weak economy, the relationship between the labor market performance and inflation will bolster.

This conclusion from the paper prompts the question: "What is considered a weak economy?" Having reached the highest unemployment rate since the Great Depression of 14.70 percent in April 2020 in the United States, the Covid-19 pandemic caused an economic crisis. With tens of millions of people losing jobs initially, unemployment, while having rebounded, is still a major issue with about 1.5 million fewer workers than the pre-pandemic records. Taking advantage of Covid-19's impact, my research contributes to the same concept of attempting to forecast inflation during this vulnerable time period with data before and during the pandemic.

Inflation drives countries into prolonged periods of instability or stability. The rate of increase in prices of goods and services over a period of time, inflation, displays the increase in prices and the cost of living in that country's economy. Inflation can be both beneficial and detrimental: the rate of increase may signify either a weak, struggling economy or a healthy and prosperous economy. For example, as inflation rises, the purchasing power–the value of a currency–weakens with the rise in prices. With time, the purchasing power of a currency decreases as the cost-of-living increases. The rise of inflation is dependent on the rise of prices within the basket of goods and services, measured and tracked through the CPI (consumer price index). However, the change in the price of goods and services is further reliant on the supply and demand of those goods. On paper, prices rise when demand exceeds the supply of that good or service while prices fall if the supply overcomes the demand. Thus, when the demand for a good or service increases and the supply remains the same or decreases, the rise in cost results in demand-pull inflation. Another form of inflation may be cost-push inflation: when the cost of production of a good or service increases naturally. For example, in 1973, the OPEC (Organization of Petroleum Exporting Countries) set restrictions on the production of oil, causing the cost of oil to skyrocket. Similarly, the cost of production for oil-centered companies rose as the cost of oil in the supply chain rose, causing inflation. One method in which inflation can be ameliorated is through the raising of interest rates by the Federal Reserve Bank. Increasing interest rates causes a decrease in the overall demand of the U.S. economy as borrowing money from banks become more expensive.

Amidst the Covid-19 pandemic and the recession brought along with the disease, many people wonder if the inflation is temporary or permanent due to covid. From lockdowns and saving money to surges in demand, many firms could not keep up with the sudden jump in demand and inflation. Many underemployed companies then delayed and disrupted the global supply chain. A clear example is used cars. The typically small portion of the economy suddenly rose 30-48% in price over one year due to the surge in demand. From emergency stimulus checks sent by the government to low interest rates during the pandemic, the demand for cars could only increase. However, during the beginning of the pandemic, the car industry lost its income as traveling was banned during lockdowns. With restrictions alleviating, the short-staffed car supply chain could not keep up with the shortage of semiconductors and engines. Thus, prices sprung up as demand also skyrocketed. Covid made the U.S. economy vulnerable and weak, enough to the point where the relationship between inflation and unemployment may be reinvigorated. The Phillips Curve, best accurate in a weak economic setting, could help predict whether this inflation will permanently remain after the pandemic or was just a temporary fluke.

Data Collection and Analysis

With New York and Illinois/Chicago, both CPI and unemployment rates are used to find and measure their Phillips curves. In figures 1 and 2, the CPI data is from Chicago, the largest city in Illinois while in figures 3 and 4, the CPI is from New York City, the biggest city in New York. The unemployment rates, on the other hand, are data values from the state of New York and Illinois. The following contains the graphs and tables of coordinates for New York and Illinois, both with 2020 and 2021 Phillips Curves each. The last figure is an overall U.S. Phillips Curve found with the total unemployment percentage and the core CPI rates.

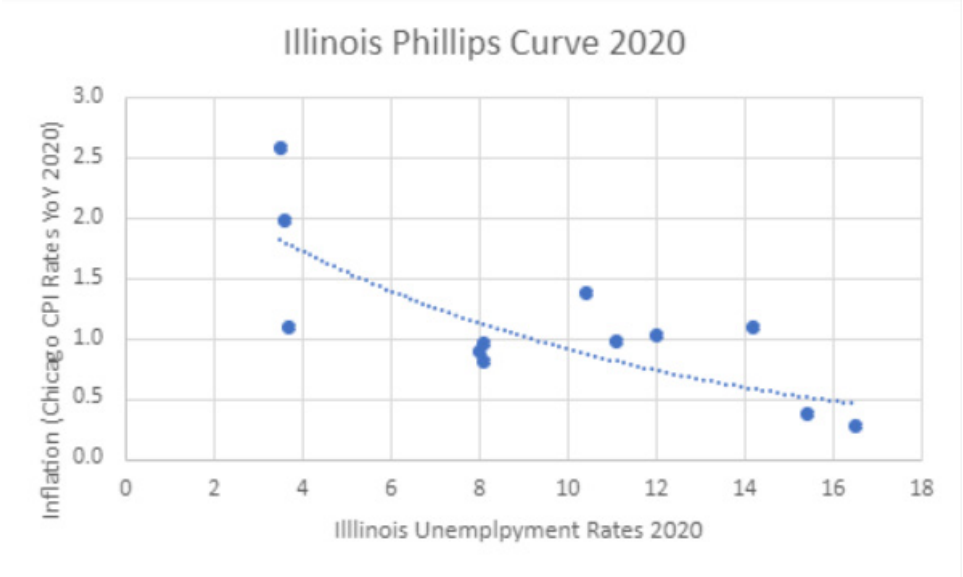

Figure 1: Illinois Phillips Curve 2020

Figure 1	X-Axis (unemployment)	Y-Axis (inflation)
January 2020	3.5	2.579
February 2020	3.6	1.977
March 2020	3.7	1.098
April 2020	16.5	0.266
May 2020	15.4	0.369
June 2020	14.2	1.096
July 2020	12	1.017
August 2020	11.1	0.974
September 2020	10.4	1.383
October 2020	8.1	0.965
November 2020	8.1	0.803
December 2020	8	0.891

Figure 2: Illinois Phillips Curve 2021

Figure 2	X-Axis	Y-Axis
January 2021	7.7	0.674
February 2021	7.4	1.219
March 2021	7.1	2.608
April 2021	7.1	4.629
May 2021	7.1	4.650
June 2021	7.2	4.723
July 2021	7.1	4.869
August 2021	7	4.804
September 2021	6.2	4.532
October 2021	6	5.309
November 2021	5.7	5.987

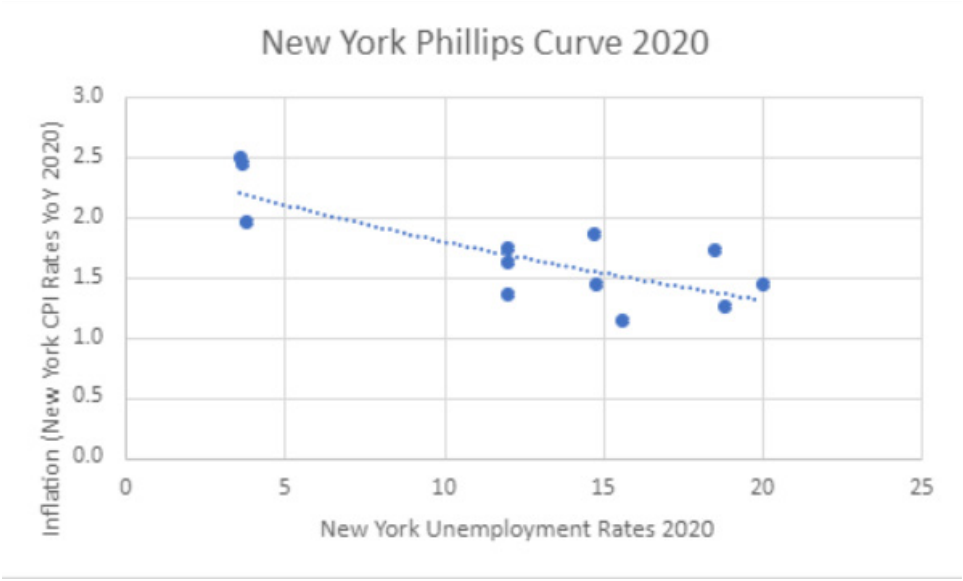

Figure 3: New York Phillips Curve 2020

Figure 3	X-Axis	Y-Axis
January 2020	3.6	2.499
February 2020	3.7	2.449
March 2020	3.8	1.954
April 2020	15.6	1.147
May 2020	20	1.447
June 2020	18.8	1.266
July 2020	18.5	1.724
August 2020	14.8	1.449
September 2020	14.7	1.866
October 2020	12	1.742
November 2020	12	1.368
December 2020	12	1.620

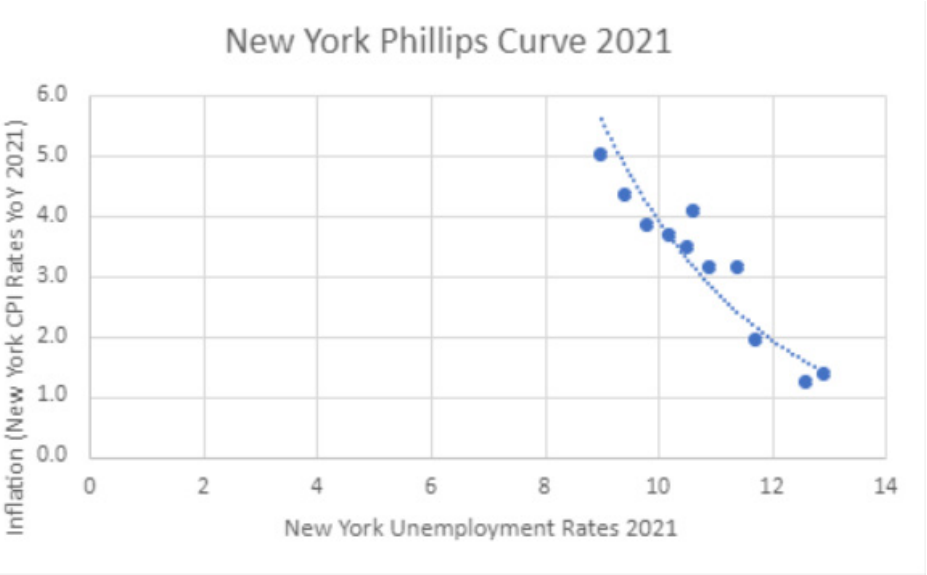

Figure 4: New York Phillips Curve 2021

Figure 4	X-Axis	Y-Axis
January 2021	12.6	1.243
February 2021	12.9	1.379
March 2021	11.7	1.953
April 2021	11.4	3.161
May 2021	10.9	3.155
June 2021	10.6	4.087
July 2021	10.5	3.501
August 2021	10.2	3.686
September 2021	9.8	3.844
October 2021	9.4	4.347
November 2021	9	5.012

As stated earlier, "the Philips Curve tends to be more accurate if the economy is weak." Shown in the Y-axis of these tables above, the data from 2021 from both New York and Illinois had significantly higher rates of inflation (the rate of change in CPI) than in 2020, also proving why the Phillips Curve is more defined in 2021 for both New York and Illinois. Thus, data from 2021 can be used to create a more accurate Phillips Curve than data from 2020 as the economy is weaker in 2021. Figure 5, therefore, takes the overall U.S. Phillips Curve of 2021 data to most accurately forecast inflation through Phillips Curves.

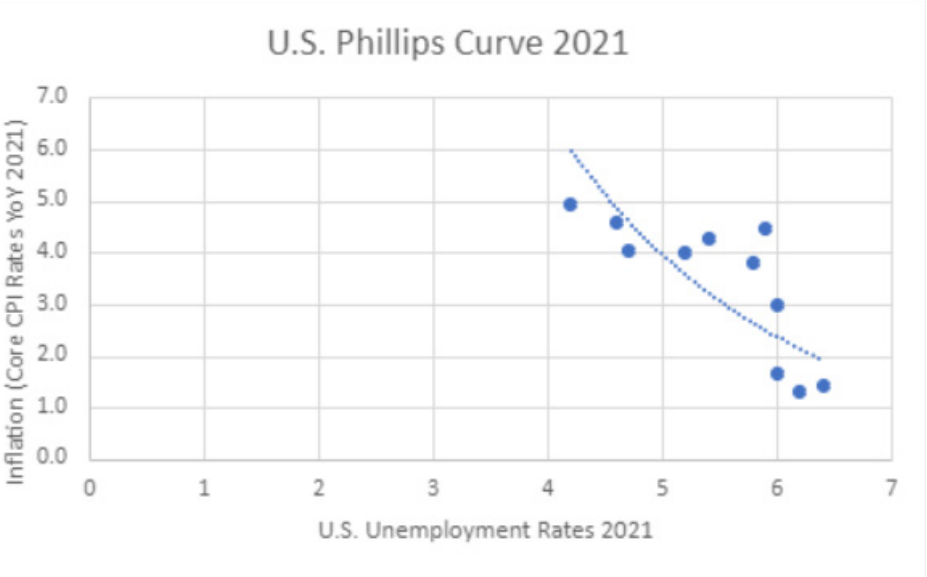

Figure 5: U.S. Phillips Curve 2021

Figure 5	X-Axis	Y-Axis
January 2021	6.4	1.410
February 2021	6.2	1.283
March 2021	6	1.646
April 2021	6	2.961
May 2021	5.8	3.798
June 2021	5.9	4.475
July 2021	5.4	4.275
August 2021	5.2	4.000
September 2021	4.7	4.025
October 2021	4.6	4.563
November 2021	4.2	4.929

Like the New York and Illinois Phillips Curves, the 2021 U.S. Phillips Curve shows a clear correlation between inflation and unemployment.

Conclusion

The Philips curve, the indirect relationship between inflation and unemployment rates, has flattened due to lower wages and compressed wage growth even when unemployment is extremely low. However, during the pandemic, the weak, fragile economy can see a correlation between inflation and unemployment. Consequently, as the covid-19 pandemic is finally nearing its end and unemployment rates only become lower and lower (supported by the data table of plotted coordinates), inflation will subsequently escalate.

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