***Final project:***

*Can we predict the next economic recession by evaluating the price of copper as an indicator?*

I need to look at the price of Copper over the last 50 years and look at trends. See if there is a match between the period of economic downturn and a fall in the price of copper?

What are the economic indicators that show an economic recession?

* Yield curve
* Gross Domestic Product (GDP)
* Housing prices and construction rates
* Consumer Confidence Index
* Level of debts in emerging countries: China!!!
* Look at China level of copper production and usage
* Interest rates
* Level of unemployment

Yield curve:

An inverted yield curve means that long-term debt instruments have lower yields that short -term one. A normal yield curve slopes upward, meaning that short-term interest rates are lower than long term rates. That is a result of increased risk premiums for long-term investments.

When the yield curve inverts, short-term interest rates become higher than long-term rates. This type of yield curve is the rarest of the three main curve types and is considered to be a predictor of economic downturn. Because of the rarity of yield curve inversions, they typically draw attention from all parts of the financial world.

Interest rates:

When investors expect a recession, they also expect falling interest rates.

Ex:

In 2006, the yield curve was inverted during much of the year. Long-term Treasury bonds went on to outperform stocks during 2007. In 2008, long-term Treasuries soared as the stock market crashed. In this case, the recession arrived and turned out to be worse than expected.

GDP:

The fact that GDP growth is the headline number in the World Bank’s report is foolish. A country’s aggregate economic growth is not what matters. What matters is whether the people living in a country are getting wealthier. Reporting that the world’s GDP grew by 3% in 2017 ignores the fact that the world’s population is growing by 1.2% every year.

Better looking at the GDP per Capita.

Housing Prices and Construction Rate:

If the price of housing increases is synonym of healthy economy (up to a certain point).

The consumer confidence index:

The [Consumer Confidence Index](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.conference-2Dboard.org_data_consumerconfidence.cfm&amp;d=DwMF-g&amp;c=LO_8KzsOlAGvgA6hdGI4v02U_XLiES0sR51Zca0yIy4&amp;r=n50216sS5EZ_yE9OgDLQ8xSckJQAeHrtgMCAJXPb5so&amp;m=vlE9SjyXKMfG5TZN2v5jo6oUi0RBEL1j6CbWfSZMhWc&amp;s=oBOrwn21P72GDdnyIy-NXrRqYeDz_Q6k55stYsy1VGg&amp;e=), which details consumer attitudes and buying intentions, is also important to monitor. (By some measures, the consumer makes up approximately 70% of the American economy.) Whether consumers feel confident about spending and the present or future trajectory of the economy tells us a great deal about where our fortunes are headed. At present, this index continues to demonstrate persistently positive consumer attitudes regarding the economy.

The consumer confidence indicator provides an indication of future developments of households’ consumption and saving, based upon answers regarding their expected financial situation, their sentiment about the general economic situation, unemployment and capability of savings. An indicator above 100 signals a boost in the consumers’ confidence towards the future economic situation, as a consequence of which they are less prone to save, and more inclined to spend money on major purchases in the next 12 months. Values below 100 indicate a pessimistic attitude towards future developments in the economy, possibly resulting in a tendency to save more and consume less.

🡺 <https://data.oecd.org/leadind/consumer-confidence-index-cci.htm>

The different recessions since 1960:

== “ https://www.thebalance.com/the-history-of-recessions-in-the-united-states-3306011”

* 1970

This recession was relatively mild, lasting 11 months—from December 1969 to November 1970. GDP was -1.9% in Q4 1969. It was -0.6% in Q1, then rose 0.6% in Q2 and 3.7% in Q3. In Q4, it was -4.2% before rising 11.3% in Q1 1971. Unemployment peaked at 6.1% in December 1970.

* 1973–1975

This recession lasted 16 months, from November 1973 to March 1975. The [Organization of Petroleum Exporting Countries (OPEC)](https://www.thebalance.com/what-is-opec-its-members-and-history-3305872) is blamed for quadrupling oil prices. But the [OPEC oil embargo](https://www.thebalance.com/opec-oil-embargo-causes-and-effects-of-the-crisis-3305806) alone didn't cause such a deep recession. Two other factors contributed.

First, [President Nixon](https://www.thebalance.com/president-richard-m-nixon-s-economic-policies-3305562) instituted wage-price controls. This kept prices too high, reducing [demand](https://www.thebalance.com/what-is-demand-definition-explanation-effect-3305708). Wage controls made salaries too high and forced businesses to lay off workers. Second, Nixon took the United States off the [gold standard](https://www.thebalance.com/what-is-the-gold-standard-3306137) in response to a run on the gold held at Fort Knox, which led to inflation. The [price of gold](https://www.thebalance.com/gold-price-history-3305646) skyrocketed to $120 an ounce while the dollar's value plummeted.

The result was [stagflation](https://www.thebalance.com/what-is-stagflation-3305964) and five quarters of negative [GDP growth](https://www.thebalance.com/what-is-the-gdp-growth-rate-3306016): 1973 Q3, -2.1%; 1974 Q1, -3.4%; Q3, -3.7%; Q4, -1.5%; and 1975 Q1, -4.8%. Unemployment reached a peak of 9% in May 1975, two months after the recession had ended.

* 1980–1982

The economy suffered a double whammy of two recessions in this period. There was one during the first six months of 1980. The second lasted 16 months, from July 1981 to November 1982.

The Fed caused this recession by raising [interest rates](https://www.thebalance.com/how-are-interest-rates-determined-3306110) to [combat inflation](https://www.thebalance.com/what-is-being-done-to-control-inflation-3306095). That reduced business spending. The Iranian oil embargo aggravated economic conditions by reducing U.S. oil supplies, which drove up prices.

GDP was negative for six of the 12 quarters. The worst was Q2 1980 at -8.0%. Until the 2008–2009 recession, that was the worst quarterly decline since the [Great Depression](https://www.thebalance.com/photos-of-the-great-depression-4061803). Unemployment rose to 10.8% in November and December 1982, the highest level in any modern recession. It was above 10% for 10 months. [President Reagan](https://www.thebalance.com/president-ronald-reagan-s-economic-policies-3305568) lowered the tax rate and boosted the defense budget, helping to end the recession.

| GDP Growth | Q1 | Q2 | Q3 | Q4 |
| --- | --- | --- | --- | --- |
| 1980 | 1.3% | -8.0% | -0.5% | 7.7% |
| 1981 | 8.1% | -2.9% | 4.9% | -4.3% |
| 1982 | -6.1% | 1.8% | -1.5% | 0.2% |

* 1990–1991

This recession ran nine months, from July 1990 to March 1991. The 1989 [savings and loan crisis](https://www.thebalance.com/savings-and-loans-crisis-causes-cost-3306035) caused it. GDP was -3.6% in Q4 1990 and -1.9% in Q1 1991. Unemployment peaked at 7.8% in June 1992.

* 2001

The [2001 recession](https://www.thebalance.com/2001-recession-causes-lengths-stats-4147962) lasted eight months, from March to November. It was caused by a [boom and subsequent bust](https://www.thebalance.com/boom-and-bust-cycle-causes-and-history-3305803) in dot-com businesses. The boom was partially created by the Y2K scare in 2000. Companies bought billions of dollars’ worth of new software because they were afraid the old systems weren't designed to transition from the 1900s to the 2000s. But many dot-com businesses were significantly overvalued and failed.

The [9/11 attack](https://www.thebalance.com/how-the-9-11-attacks-still-affect-the-economy-today-3305536) worsened the recession. The economy contracted in two quarters: Q1, -1.1% and Q3, -1.7%. [Unemployment](https://www.thebalance.com/what-is-unemployment-3306222) continued rising until it peaked at 6.3% in June 2003.

* 2008–2009

The [Great Recession](https://www.thebalance.com/the-great-recession-of-2008-explanation-with-dates-4056832) was the worst financial crisis in the United States since the 1929 Depression. It also was the longest-lasting: from December 2007 to June 2009. The [subprime mortgage crisis](https://www.thebalance.com/subprime-mortgage-crisis-effect-and-timeline-3305745) was the trigger. That created a global [bank credit crisis](https://www.thebalance.com/2007-financial-crisis-overview-3306138) in 2007. By 2008, the credit crisis had spread to the general economy through the widespread use of derivatives.

The economy shrank in five quarters, including four quarters in a row. Two quarters contracted more than 5%. In [Q4 2008](https://www.thebalance.com/2008-gdp-growth-updates-by-quarter-3305542), GDP was -8.4%, worse than any other recession since the Great Depression. The recession ended in Q3 2009, when GDP turned positive, [thanks to an economic stimulus package](https://www.thebalance.com/what-was-obama-s-stimulus-package-3305625).

Tutorials Time Series:

<https://pythondata.com/forecasting-time-series-data-with-prophet-part-1/>

<https://mode.com/example-gallery/forecasting_prophet_python_cookbook/#data-preparation-and-exploration>

<https://www.dataquest.io/blog/tutorial-time-series-analysis-with-pandas/>

<https://towardsdatascience.com/forecasting-with-prophet-d50bbfe95f91>

<https://towardsdatascience.com/time-series-analysis-in-python-an-introduction-70d5a5b1d52a>

[simulated historical forecasts (SHFs)](https://www.google.com/search?client=safari&rls=en&q=simulated+historical+forecasts+(SHFs)&ie=UTF-8&oe=UTF-8)

<https://towardsdatascience.com/forecasting-in-python-with-facebook-prophet-29810eb57e66>

<https://facebook.github.io/prophet/docs/quick_start.html>

<https://facebook.github.io/prophet/docs/trend_changepoints.html>