

Understanding Pandemic Inflation

Introduction

Building upon our previous midterm project exploring the impact of the COVID-19 pandemic on global trade, this report delves deeper into the complex relationship between trade disruptions and inflationary pressures. Initially, we hypothesized that the downturn in imports and exports would serve as the primary driver of inflation, stemming from production disruptions due to raw material shortages. However, our investigation led us to the realization that while global trade disruptions indeed play a role, other significant factors, particularly job vacancies and unemployment rates, wield considerable influence over inflationary trends. To substantiate this revised hypothesis, we meticulously analyzed inflation, job vacancy, and unemployment data, focusing primarily on the United States economy while extending our insights to major economies such as Europe and China. This report chronicles our journey of uncovering the multifaceted nature of inflation dynamics amidst global trade turbulence, aiming to provide valuable insights for navigating the pandemic economic landscape.

Dip in Global Trade, Impact on Inflation

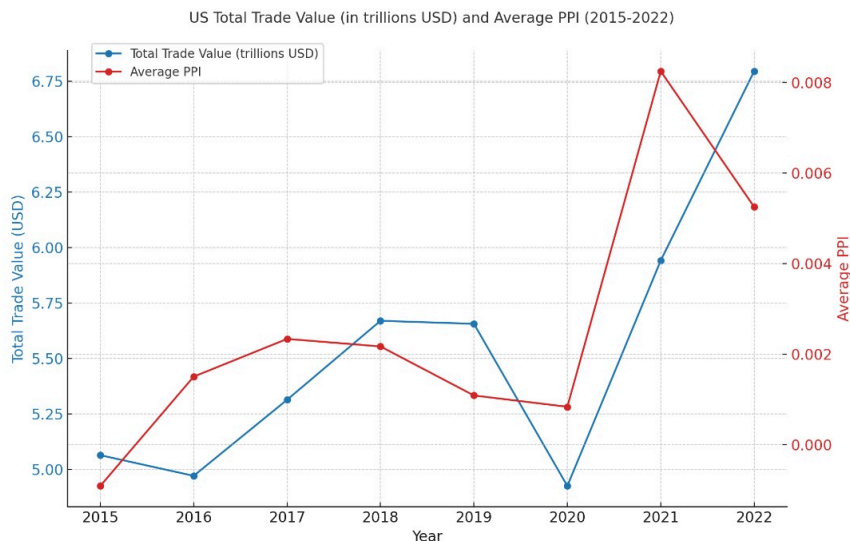
In our midterm project, we investigated the effects of the pandemic on global trade. Our findings indicate a substantial impact on imports and exports during the pandemic period. We traced the journey of trade flows as they fluctuated under the pressure of lockdowns and border closures, uncovering a complex landscape of economic shifts and recovery efforts.

When we considered expanding our project, we analyzed potential major impacts and subsequent consequences of these trade deficits. One significant impact we identified was inflation, stemming from disruptions in the supply chain. Consequently, we developed a hypothesis stating, **"The considerable reduction in imports significantly disrupted manufacturing processes, resulting in a broad escalation of prices"**.

Methodology

Firstly, for global trade we used data from mid term project. For inflation(CPI&PPI) we sourced the data from [US Labour Statistics](#)

To determine whether a causal relationship exists between global trade and inflation, we supplemented our analysis by examining a graph that plots the relationship between global trade and inflation over time.



The graph illustrates that during the pandemic, a downturn in global trade coincided with a notable increase in manufacturing inflation (PPI). Interestingly, even as trade volumes eventually surged to all-time highs post-pandemic, inflation levels did not revert to their pre-COVID levels. This observation led us to conclude that other factors might be significantly influencing inflation. Motivated by this insight, we began to delve deeper into the underlying causes.

So what caused Inflation?

What is Inflation

Before understanding what are the factors that influence inflation, first we will understand what Inflation is?

Inflation refers to the rise in the prices of goods and services over time, typically expressed as an annual percentage increase. Two key measures of inflation are:

CPI (Consumer Price Index): This index tracks the average price change over time for a basket of goods and services purchased by households.

PPI (Producer Price Index): This index measures the average change over time in the selling prices received by domestic producers for their output.

To analyze inflation effectively, it is divided into two key components:

$$\text{Inflation} = \text{Core Inflation} + \text{Headline Inflation}$$

Core Inflation: This measure focuses on the increase in price changes, excluding volatile categories such as food and energy prices. It provides insight into the underlying trend of inflation by smoothing out short-term fluctuations.

Headline Inflation: This includes the increase in price changes across all goods and services, capturing the overall movement in consumer prices that households experience in their day-to-day spending.

General misconception we all have is, increase in food ,energy, housing prices are considered as inflation, but all these are after effects of inflation but not the root causes. Every inflation will have it's own triggering points like demand pull (excessive consumer spending), quantitative easing etc... Which first triggered core inflation, later Headline Inflation follows on.

Pandemic Inflation Story

Let's now dwell deeper into what are the triggering factors for pandemic inflation. As shown earlier impact on global trade was one of the triggering factor but not the major driver.

Our further investigations reveal that, V/U Index is the major triggering and driving factor for pandemic inflation.

What is V/U Index:

$$\text{V/U Index} = \frac{\text{Percentage of Job Vacancies}}{\text{Percentage of Unemployment}}$$

Methodology:

As USA is the major economy of the world, we decided to narrate the findings on US inflation data, later in the below sections we talked about other major economies like Europe and China. We collected job vacancies and unemployment data from [U.S. BUREAU OF LABOR STATISTICS](https://www.bls.gov/).

Later we plotted V/U Index, CPI and PPI Indices over time.

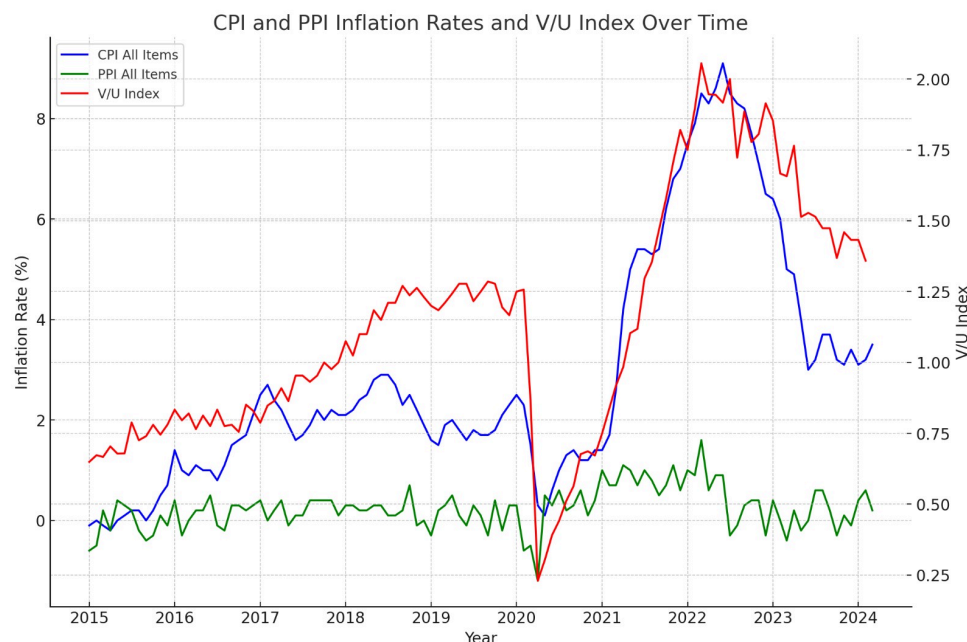


Fig-2

From the graph, it's evident that both the Producer Price Index (PPI) and the V/U Index began increasing simultaneously. Following this, there was a notable rise in the Consumer Price Index (CPI), influenced by escalating Headline inflation. As a result, the CPI saw a significant upsurge. Furthermore, both the CPI and the V/U Index reached their peaks around the same time, suggesting a synchronized response in these indicators. This alignment hints at a strong interconnection among these economic metrics, reflecting how changes in producer prices and vacancy/unemployment rates can influence consumer inflation.

This instance of inflation is particularly unusual because it occurred alongside an availability of jobs, yet high unemployment persisted. This paradox arose because many individuals were unable to work due to various restrictions and fears associated with the pandemic.

Consequently, even though employment opportunities were present, the labor force participation was hindered, contributing to sustained unemployment rates amid inflationary pressures.

How is it different from Prior Inflations

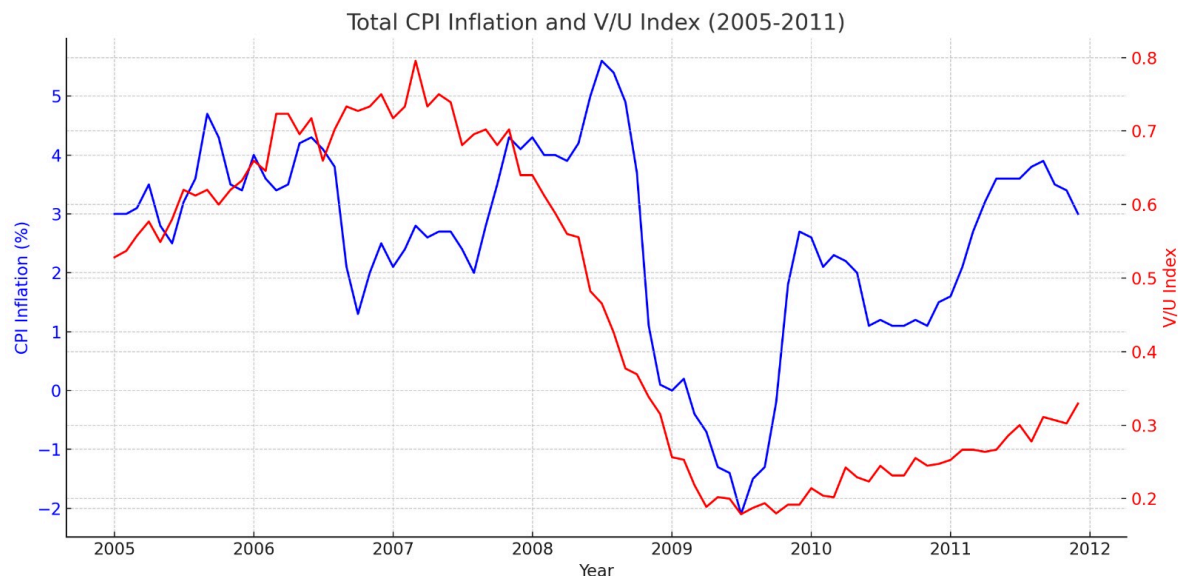


Fig-3

In Figure 2, we observed that inflation mirrored the trends of the V/U Index. However, in Figure 3, covering the inflation from late 2007 to mid-2008, there appears to be no correlation between inflation and the V/U Index. As we noted earlier, each inflationary period has its unique drivers. During the pandemic, the V/U Index was a significant factor influencing inflation, whereas the inflation in 2008 was primarily driven by monetary factors, which fall outside the scope of this project.

Europe's Inflation

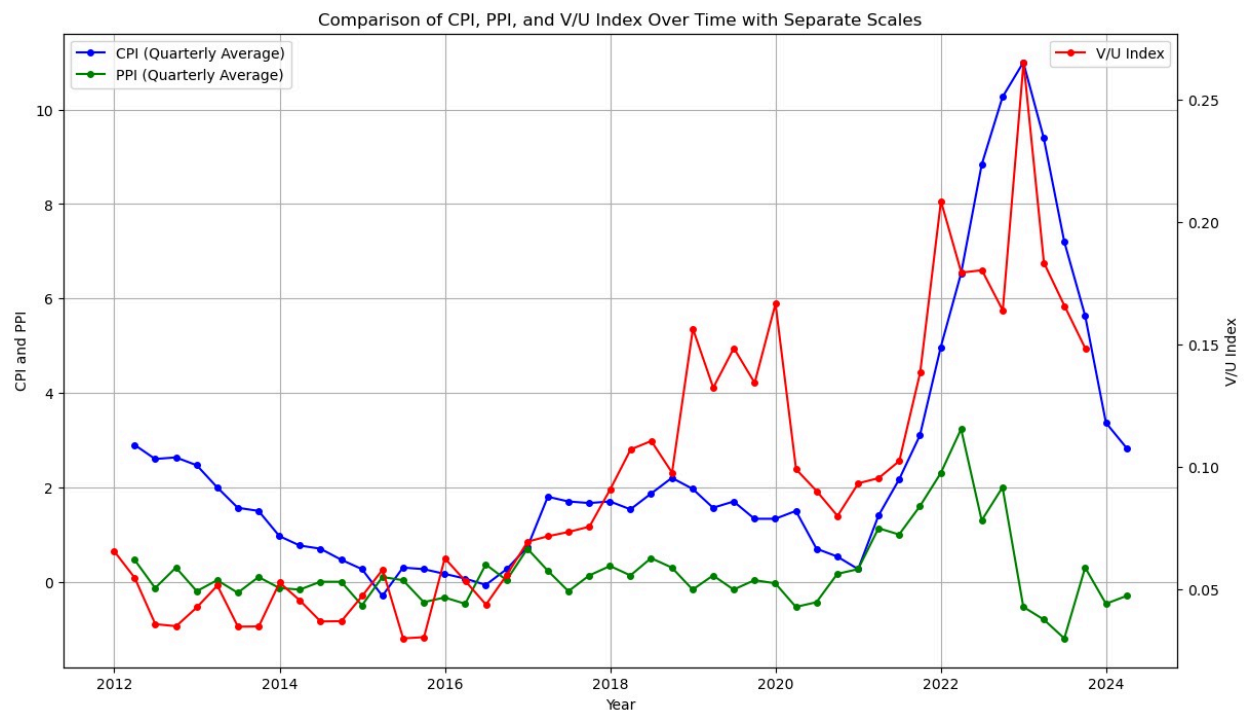
We collected CPI, PPI, Job Vacancies, Unemployment, Energy and Housing inflation data from [Euro Stats](#).

V/U index is calculated as mentioned above.

We have monthly data for CPI and PPI, while data for job vacancies and unemployment are available on a quarterly basis. To synchronize these datasets for analysis, we converted the monthly data for CPI and PPI into quarterly averages. This adjustment allows for a consistent comparison across all indicators.

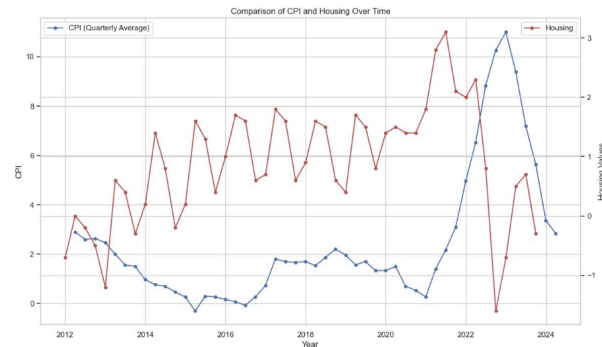
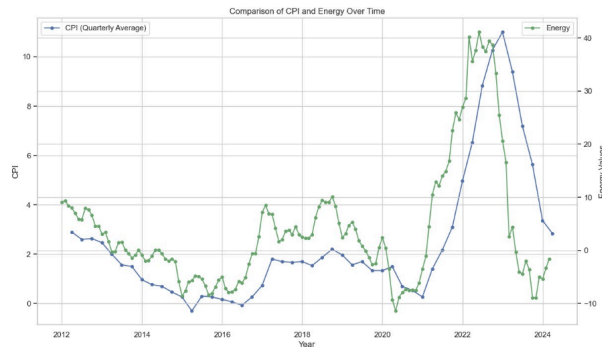
CPI, PPI, V/U indices were plotted over time to analyse the trends of the pandemic inflation in European Union.

Later, graphs were plotted on Energy prices and Inflation over time and also Housing prices and Inflation overtime to analyze the correlation between them.



Turning our attention to inflation trends in Europe, we've plotted both the inflation rates and the V/U Index to further explore their correlation. Similar to US economy, this analysis shows that CPI is influenced by changes in the PPI and V/U Index. An interesting observation from the data is that both CPI and the V/U Index reached their peaks simultaneously, reinforcing the idea that shifts in employment and production costs are closely linked to consumer price movements. This synchronization suggests a strong interconnectedness between labor market conditions and inflationary pressures.

Later in 2022, the decrease in the PPI index might be attributed to companies identifying and addressing the root causes associated with the V/U issue. By implementing various strict operational policies, these companies were able to mitigate the factors contributing to higher production costs, thereby reducing the PPI index which in turn resulted in reduction of CPI.



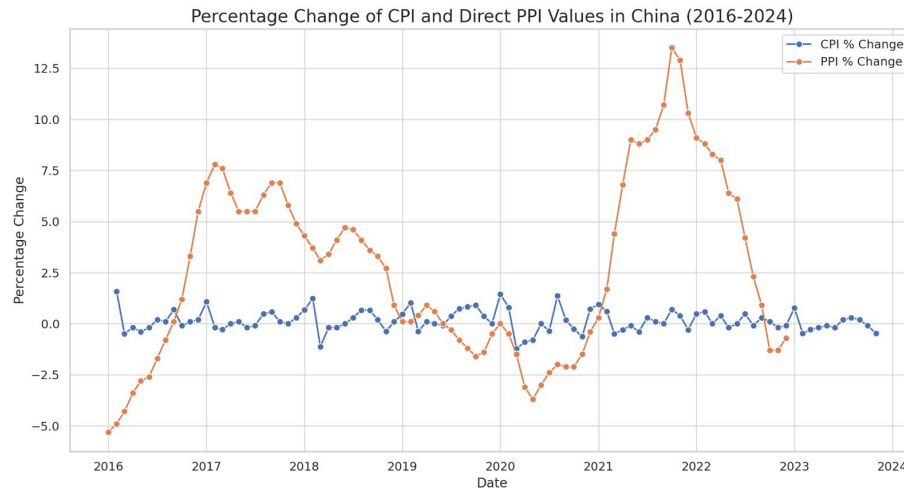
Coming to some headline effects in case of Europe. As we know, due to various factors like global tensions and trade sanctions, energy prices escalated the rippling effect of inflation in Europe. In Europe's case along with the V/U index, energy prices are one of the important contributions in core inflation. In the above graph we can see CPI followed the same trend as Energy prices.

Looking at housing prices, the trend initially aligned with other industries, showing a significant increase, but later saw a decline. This shift is largely attributed to rising interest rates and fiscal policies aimed at curbing inflation, which federal banks globally have implemented. As seen earlier the high unemployment rate during this period further suppressed housing demand. High interest rates and unemployment have made it challenging for people to afford mortgages, leading to a significant drop in housing prices. This pattern underscores the unique nature of the current inflation compared to historical instances.

China's Inflation

We collected CPI, PPI data from [Fred stlouisfed](https://fred.stlouisfed.com/)

Here we found difficulty in fetching China's Job vacancies and Unemployment data.



Coming to inflation in China, It is seen that the PPI inflation trend is in sync with the rest of the economies but it didn't impact consumer prices domestically. China implemented strong fiscal policies and strong price control policies on daily essential goods like agricultural products etc. Which resulted in successfully controlling inflation at the user end.

Forecast on US Inflation

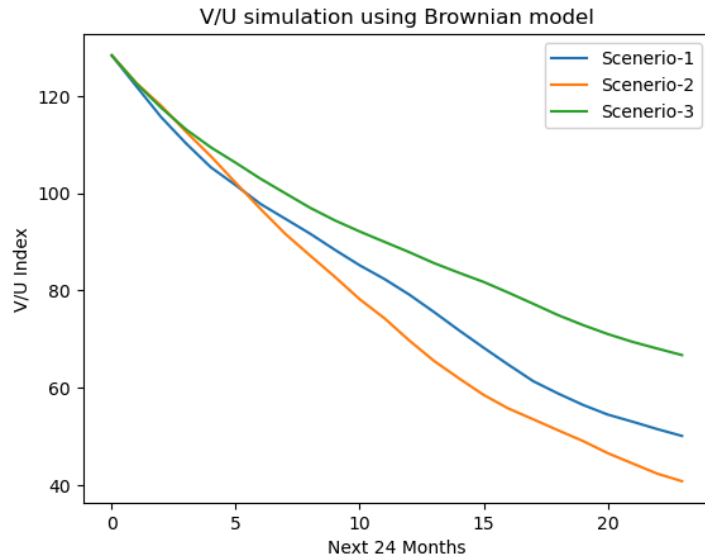
Forecasting Inflation kind of data is neither easy nor straightforward. Because economic and public behavioral factors come into play. These kinds of data will have huge biases and randomness involved in them. Traditional machine learning or TimeSeries techniques do not work. Because any ML based models will try to find linear or complex relationships between covariates and predictor(Inflation). Because in the first place, we don't know what those covariates influence inflation. And even if we try to find some set of covariates, there will be huge correlation and interdependencies between them. Initially we tried PCA based techniques to remove correlation but the outputs are mere lines and did not give any confined conclusions.

So we adopted Brownian motion based techniques because, brownian techniques are widely used given economic and behavioral data(brownian based techniques are widely used in stock market predictions).

In Brownian techniques we chose geometric brownian model. The statistical reason for this is any data which is influenced by the vast majority of users(or public) behaviors assumes normal distribution(according to Central Limit Theorem).

Forecast on USA's V/U Index:

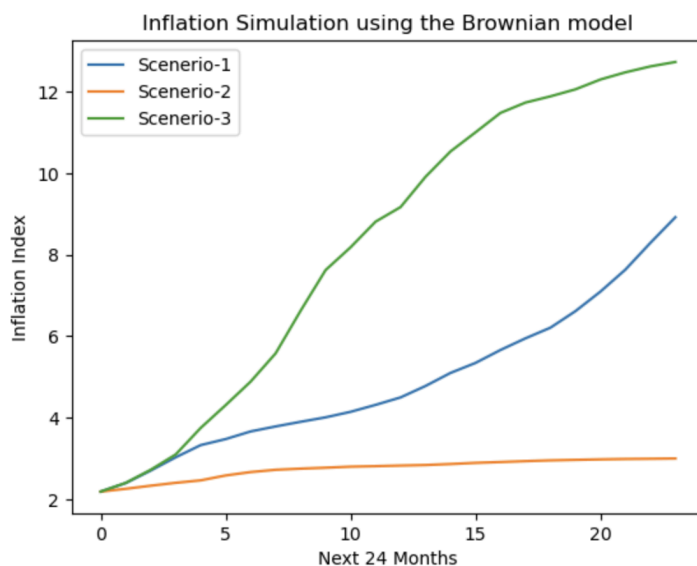
Assumptions & Constraints: Assuming no extreme FED actions. This model's forecasts fails in this case because, that actions will be the major drivers irrespective of past behaviors. Point to be noted is routine interest basis points changes or any monetary policies and their consequences are already factored into the model.



This model outputted 3 highly probable occurring scenarios. All the three scenarios indicate a downtrend in V/U values. This is way practical also because as restrictions are lifted away, job vacancies and unemployment numbers will return to their previous levels.

Forecast on USA's Inflation Index:

Assumptions & Constraints: Assuming no extreme FED actions. And fixing V/U Index as 136(today's value). V/U index was fixed because our project proposes V/U as a major driving factor. Similar to the above model, this model's forecasts also fails in severe FED actions and drastic change in V/U index(practically which does not happen).

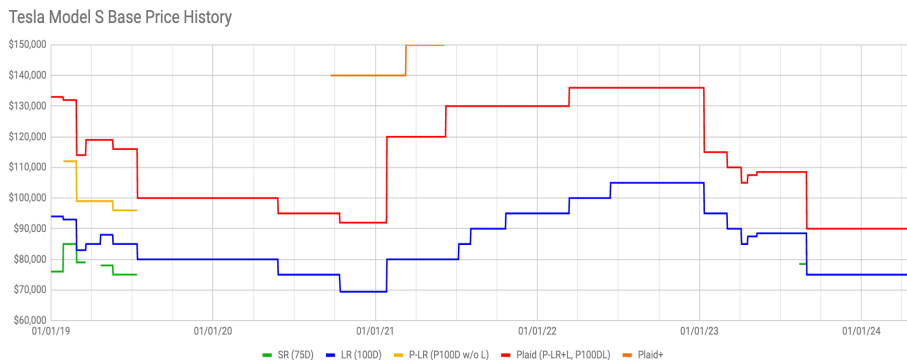


As we can see in two of the 3 high probable scenarios the inflation is exponentially increasing. This is true because, if not strict monetary actions are not taken, inflation increases

exponentially because of the headline inflation and rippling effects inflation tends to increase at this pace.

Case Study

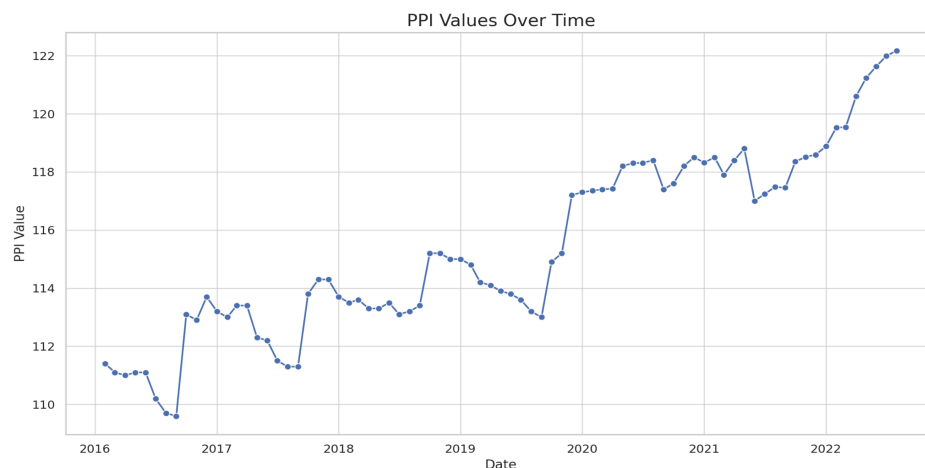
In our study, we wanted to understand how inflation, the general increase in prices over time, affects industries, and we chose to look at the automotive sector. So, we zoomed in on Tesla, a leading player in the automotive industry. We figured, if inflation is hitting Tesla, it's probably hitting other companies too, because inflation doesn't play favorites.



When we look at this graph, it's pretty clear: there's a big jump in the price of the Model S right at the start of 2021. This notable deviation prompts a rigorous inquiry into the underlying factors that precipitated such a pronounced alteration. In response, a comprehensive causal analysis was conducted to elucidate the pivotal determinants influencing this observed phenomenon.

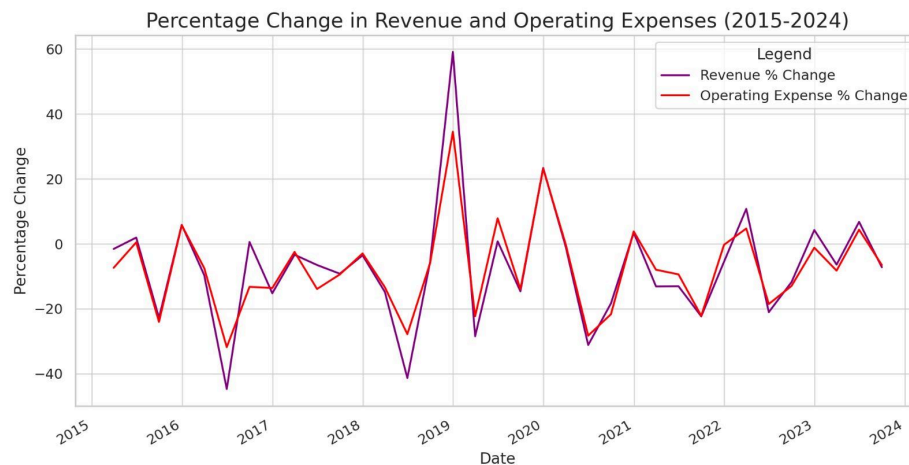
The causal analysis revealed various insights. We identified factors like supply chain issues or product upgrades that contributed to the price increase. However, a closer look showed broader patterns suggesting wider influences at play.

For further analysis we have curated a dataset [PPI for motor vehicle manufacturing](#) to bolster our study.



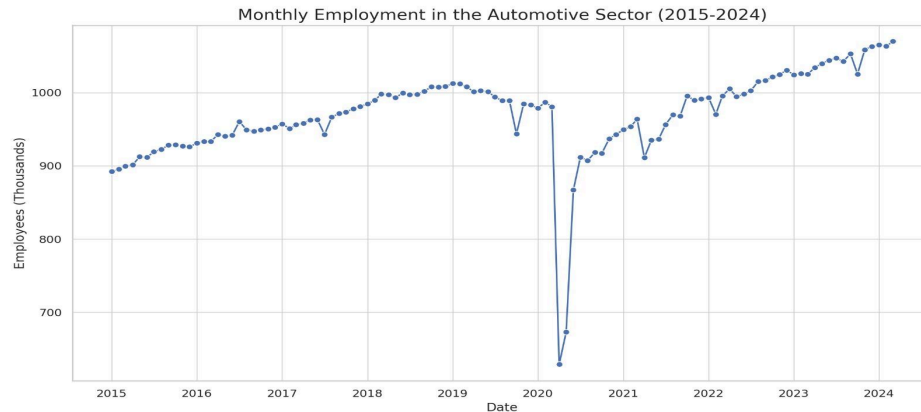
We found a significant surge in the Producer Price Index (PPI) for motor vehicle manufacturing following the onset of the COVID-19 pandemic. This surge was predominantly attributed to disruptions in the supply chain. A higher PPI index from the onset of COVID-19 indicates increased costs of production for motor vehicle manufacturing in Tesla and other companies in the automotive sector.

Next we have taken a dataset from [Tesla's Data](#), to analyze their operational and revenue expenses.



As a result of the high PPI index found earlier it is evident that the operational expenses of Tesla experienced notable increases. Three distinct spikes in percentage change during the COVID-19 period reflect the substantial impact of these heightened expenses. In response to these challenges, Tesla may have implemented strategies to manage their revenue, such as adjusting the pricing of the Model S which is clearly evident from the graph.

We extended our analysis by incorporating additional datasets to investigate unemployment trends within the automotive sector during these challenging times. This comprehensive approach aimed to glean further insights into the broader economic landscape and its implications for the industry. Dataset link- [Automotive sector employment](#).



Our analysis of unemployment data within the automotive sector revealed a notable decline in employee count during the COVID-19 pandemic. Despite potential job vacancies at Tesla, the industry-wide trend reflected increased unemployment due to lockdown measures and other associated factors impacting the automotive sector.

In our case study, we discovered that Tesla implemented adaptive pricing strategies in response to inflationary pressures. This practical approach provided valuable insights into navigating economic volatility within the business context.

Conclusion

Our project set out with the initial hypothesis that the decline in imports and exports, stemming from global trade disruptions induced by the COVID-19 pandemic, would emerge as the primary driver of inflation. We backed our hypothesis with an assumption that the scarcity of raw materials would lead to production disruptions, ultimately fueling inflationary pressures. While our hypothesis held some truth, our analysis revealed a more nuanced reality.

The most significant trigger for inflation was identified as the V/U Index. Additionally, other Headline inflations added up to the inflation as a correlation effect making the situation worse. Through rigorous data analysis, we validated this revised hypothesis. We also forecasted V/U Index and Inflation for next 24 months using Brownian-based models providing insights into potential scenarios.

Our analysis extended beyond the United States to encompass major economies like Europe and China. In Europe, energy prices emerged as one of the core inflation factors, increasing inflationary pressures. Conversely, China's Consumer Price Index remained relatively unaltered, attributed to tight fiscal policies.

To bridge the gap between theoretical analysis and real-world impact, we presented a case study focusing on Tesla. By delving into real-world experiences of inflation, we aimed to provide a tangible understanding of how inflationary pressures manifest in consumer experiences.

In conclusion, our project offers valuable insights into the multifaceted nature of inflation dynamics amidst global trade disruptions. By identifying key triggers and leveraging predictive modeling, we contribute to a deeper understanding of inflationary trends, offering insights for policymakers, businesses, and consumers navigating the post-pandemic economic landscape.

ChatGPT Usage

Prompt:

After pandemic even though when the trade increased significantly, but why did the inflation is still significantly high?

Response:

This scenario, where both trade and inflation rise, can be attributed to several factors:

Supply Chain Issues: The COVID-19 pandemic severely disrupted global supply chains, leading to shortages of goods, raw materials, and intermediate products. Even though trade volumes may have recovered or even increased, the lingering inefficiencies and increased costs associated with these disruptions can drive up prices.

Increased Demand: As economies rebound from the pandemic-induced recessions, demand in various sectors has surged, often outpacing the supply. This imbalance can drive up prices, contributing to inflation. The increased trade value reflects higher volumes of trade but at higher prices.

Monetary Policies: In response to the economic slowdown caused by the pandemic, many countries, including the U.S., implemented expansive monetary policies, increasing money supply in the economy. This, combined with increased demand, can lead to inflationary pressures.

Energy Prices: Increases in energy prices can significantly affect the PPI because energy costs are a substantial input for many industries. The fluctuations in energy prices, especially noticeable increases, can lead to higher production costs that businesses might pass on to consumers.

Global Economic Conditions: Other global factors, such as political instability, changes in trade policies, and fluctuations in foreign exchange rates, can also affect the costs of imports and exports, influencing both trade values and price levels.

In summary, the significant rise in the average PPI despite increased trade volumes post-pandemic suggests that inflationary pressures are not merely a function of trade activity but also influenced by broader economic, policy, and global factors.

Prompt:

Why CPI changes rapidly and PPI doesnot change rapidly, How to explain it in project report
Response:

The difference in behavior between the Consumer Price Index (CPI) and the Producer Price Index (PPI) can often reflect several economic dynamics and supply chain factors. Here's a look at some possible reasons why CPI might increase significantly even if PPI hasn't:

1. ***Different Baskets of Goods***: CPI measures the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services, while PPI measures the average change over time in the selling prices received by domestic producers for their output. The goods and services in the CPI basket can be different from those in the PPI basket, and changes in consumer preferences or shifts in consumer spending can cause discrepancies.
2. ***Supply Chain and Retail Markup***: Changes in the costs associated with the supply chain, such as transportation, warehousing, and retailing, can affect the final prices that consumers pay without necessarily affecting the prices that producers receive for their products. Retailers might increase their markups due to higher operating costs, which would affect CPI but not PPI.
3. ***Import Prices***: CPI includes imported goods, which can be affected by changes in exchange rates, tariffs, and global market conditions. PPI typically focuses more on domestic production. If import prices rise, it could drive up CPI without a corresponding rise in PPI.
4. ***Service Sector Inflation***: CPI includes a significant component of services, which can experience inflation due to factors like wage growth and real estate costs that do not directly affect goods production measured by PPI.
5. ***Time Lags***: Sometimes changes in PPI can predict changes in CPI, but there can be time lags due to the length of supply chains, contracts that fix prices temporarily, and inventory adjustments. If PPI begins to increase, it might be some time before those increases are seen in CPI.
6. ***Economic Policies and Expectations***: Monetary and fiscal policies can influence consumer prices directly and indirectly. Changes in consumer expectations about future inflation can also lead to higher CPI as businesses and consumers adjust their price settings and spending behaviors accordingly.

Understanding the specific causes in any given period would require deeper analysis of the underlying economic conditions, sector-specific data, and possibly global economic impacts affecting supply and demand. If you need a more detailed investigation into these aspects for a specific time period or sector, additional data and analysis would be useful.

Prompt:

How to explain that we used brownian motion based models instead of machine learning based models fpr forecasting inflation

Response:

When explaining the choice of using Brownian motion-based models over machine learning for forecasting inflation, consider the following points:

Theoretical Foundation: Brownian motion models, particularly those like the random walk model, are rooted in stochastic processes and have a well-defined mathematical basis in finance and economics. They are often used in financial modeling due to their simplicity and effectiveness in capturing randomness in asset prices and economic variables like inflation.

Assumptions and Interpretability: Brownian motion models typically rely on fewer assumptions compared to complex machine learning algorithms. This simplicity can lead to greater interpretability of results, making it easier to understand and communicate the factors influencing inflation forecasts.

Data Requirements: Machine learning models often require large amounts of high-quality data for training, especially for complex tasks like forecasting inflation. In contrast, Brownian motion-based models may require less historical data and can be more robust in situations where data availability is limited or when dealing with noisy data.

Computational Efficiency: Brownian motion models can be computationally less demanding compared to some machine learning algorithms, which can be advantageous in real-time forecasting scenarios where speed is crucial.

Model Stability: Brownian motion models can provide stable forecasts over time, especially in relatively stable economic environments. Machine learning models, on the other hand, may be more prone to overfitting or becoming outdated as economic conditions change.

Domain Expertise: Brownian motion models may align more closely with traditional economic theory and frameworks, allowing economists and policymakers to leverage their domain expertise in interpreting and refining the forecasting results.

Risk Management: Brownian motion-based models often have well-understood risk metrics associated with them, allowing for a more comprehensive assessment of uncertainty and risk in inflation forecasts. This can be crucial for effective risk management and policy decision-making.

In summary, the choice of using Brownian motion-based models for forecasting inflation may be justified by their theoretical foundation, simplicity, interpretability, data requirements, computational efficiency, stability, alignment with economic theory, and risk management considerations. However, it's essential to evaluate the specific context and objectives of the forecasting task to determine the most appropriate modeling approach.

Prompt:

In Europe, energy prices are considered as a part of core inflation instead of headline inflation.

Response:

In Europe, energy prices are often considered as part of core inflation rather than headline inflation due to several reasons:

1. **Volatility:** Energy prices tend to be more volatile compared to other components of the consumer basket. Including them in headline inflation could lead to significant fluctuations in the inflation rate, making it harder for policymakers to gauge underlying inflation trends accurately.

2. ****Policy Implications****: Energy prices are influenced by a variety of factors, including global market dynamics, geopolitical events, and government policies. Excluding energy prices from core inflation allows policymakers to focus on the underlying inflationary pressures within the economy, which are more indicative of long-term inflation trends and are less affected by external factors.

3. ****Central Bank Mandates****: Many European central banks have mandates to maintain price stability, typically defined as keeping inflation within a target range over the medium term. By focusing on core inflation, central banks can better assess whether monetary policy adjustments are necessary to achieve their inflation targets.

4. ****Inflation Expectations****: Excluding energy prices from core inflation can help anchor inflation expectations. Since energy prices are often subject to temporary shocks, excluding them from core inflation provides a more stable measure of underlying inflationary pressures, which can influence wage negotiations, investment decisions, and consumer behavior.

5. ****Statistical Considerations****: Core inflation measures are often derived using statistical techniques that exclude volatile components, such as energy and food prices, to provide a more stable and reliable measure of underlying inflation trends.

Overall, by treating energy prices as part of core inflation, European policymakers aim to focus on the underlying inflationary pressures within the economy while mitigating the impact of temporary fluctuations in energy prices on monetary policy decisions and inflation expectations.

Prompt:

How to explain why china CPI is stable where PPI is increased

Response:

The stability of China's Consumer Price Index (CPI) despite an increase in the Producer Price Index (PPI) can be attributed to several factors:

1. ****Different Market Dynamics****: CPI and PPI measure different segments of the economy. CPI reflects the prices paid by urban consumers for a basket of goods and services, while PPI measures the average change over time in the selling prices received by domestic producers for their output. The drivers of price changes in consumer goods may differ from those in producer goods.

2. ****Pass-through Effects****: Changes in producer prices do not always translate directly into changes in consumer prices. While an increase in PPI may eventually lead to higher consumer prices if producers pass on their higher costs to consumers, this process can be gradual and may be influenced by factors such as competition, consumer demand, and government policies.

3. ****Supply Chain Dynamics****: China's economy is deeply integrated into global supply chains. Changes in producer prices may reflect fluctuations in raw material costs, labor costs, or global demand, which may not necessarily impact consumer prices immediately. Manufacturers may absorb some of the increased costs or find ways to offset them through efficiency gains.

4. ****Government Interventions****: The Chinese government actively manages prices through various policies and interventions, such as price controls, subsidies, and strategic stockpiling. These measures can help stabilize consumer prices despite fluctuations in producer prices.

5. ****Structural Factors****: China's economy has undergone significant structural changes in recent years, with a shift towards a more services-oriented economy. Services typically have lower input costs and are less affected by fluctuations in commodity prices compared to manufacturing goods, which can contribute to the stability of CPI relative to PPI.

6. ****Monetary Policy****: The People's Bank of China (PBOC) implements monetary policy to achieve various macroeconomic objectives, including price stability. The PBOC may use tools such as interest rates and reserve requirements to manage inflationary pressures and stabilize consumer prices.

7. ****Demand-Side Factors****: Consumer demand plays a crucial role in determining consumer prices. Even if producer prices increase, subdued consumer demand or increased competition may limit firms' ability to pass on higher costs to consumers, thereby keeping CPI relatively stable.

In summary, the stability of China's CPI despite an increase in PPI can be attributed to the complex interplay of market dynamics, supply chain factors, government interventions, structural changes in the economy, monetary policy, and demand-side factors.

Prompt:

Why 2008 inflation is different from 2020 inflation is job vacancies and unemployment a main reason

Response:

Job vacancies and unemployment rates can indeed be significant factors contributing to the differences in inflation dynamics between 2008 and 2020. Here's how they can affect inflation in each scenario:

1. ****2008 Inflation****:

- During the 2008 financial crisis, widespread job losses led to a surge in unemployment rates. As more people lost their jobs, consumer spending decreased significantly due to reduced incomes and increased uncertainty. This decrease in aggregate demand put downward pressure on prices, contributing to deflationary forces.

- High levels of unemployment meant there was excess labor supply in the economy, leading to downward pressure on wages. With wages stagnant or declining, consumers had less purchasing power, further dampening demand and limiting inflationary pressures.

- Additionally, businesses faced decreased demand for their goods and services, leading to excess capacity and intensified competition. This situation often resulted in firms lowering their prices to attract customers, contributing to overall deflationary pressures.

2. **2020 Inflation**:

- In contrast, the COVID-19 pandemic in 2020 initially led to a sharp rise in unemployment rates as businesses shuttered and economic activity contracted. However, the response from governments and central banks was swift and aggressive, with massive fiscal stimulus packages and monetary policy interventions aimed at supporting households and businesses.

- Despite the rise in unemployment, job vacancies remained relatively high in certain sectors, particularly those related to essential services, healthcare, technology, and e-commerce. This mismatch between available jobs and unemployed workers, often referred to as structural unemployment, can contribute to persistent inflationary pressures in specific sectors.

- Additionally, the fiscal stimulus measures implemented in response to the pandemic led to increased consumer spending and liquidity in financial markets. As economic activity gradually recovered, demand for goods and services rebounded, putting upward pressure on prices.

- Supply chain disruptions and shortages of certain goods and services, coupled with increased demand, further fueled inflationary pressures. For example, disruptions in global supply chains due to lockdown measures and transportation constraints led to shortages of essential goods, contributing to price increases.

In summary, while both 2008 and 2020 experienced significant economic downturns, the differing responses from policymakers and the nature of the crises led to distinct inflationary dynamics. In 2008, high unemployment and decreased demand led to deflationary pressures, while in 2020, despite elevated unemployment rates, fiscal stimulus measures and supply chain disruptions contributed to inflationary pressures in certain sectors.

Prompt:

Draft a conclusion with the below text

Our initial hypothesis was we thought that with the dip in import and exports will be the major reason for inflation because as companies will suffer from unavailability of raw materials, so in turn production disruption happens which causes inflation. Later we found out that our hypothesis was partly true. The most significant trigger for inflation was V/U Index. And other headline inflations added up to inflation as a correlation effect making the situation worse. We did thorough data analysis to prove the latest hypothesis. We also used brownian based models to forecast inflation for next 24 months, predicting best possible scenarios which might play out. We extended our analysis to other major economies like Europe and China. In Europe energy prices also played out as core inflation making things way more worse. In China the CPI was unaltered. Estimated reason for this is tight fiscal policies. In the final sections we presented a

case study because upto now we talked about inflation in theoritical terms, so we want to explain what happend in the real ground and how users expereicend inflation by taking Tesla as a casestudy.

Response:

Our project set out with the initial hypothesis that the decline in imports and exports, stemming from global trade disruptions induced by the COVID-19 pandemic, would emerge as the primary driver of inflation. We posited that the resultant scarcity of raw materials would lead to production disruptions, ultimately fueling inflationary pressures. While our hypothesis held some truth, our analysis revealed a more nuanced reality.

The most significant trigger for inflation was identified as the V/U Index, capturing the shape and pace of economic recovery. Additionally, other headline inflation factors contributed to inflationary pressures, exacerbating the situation through correlation effects. Through rigorous data analysis, we validated this revised hypothesis, leveraging Brownian-based models to forecast inflation for the next 24 months, providing insights into potential scenarios.

Our analysis extended beyond the United States to encompass major economies like Europe and China. In Europe, energy prices emerged as a core inflation factor, exacerbating inflationary pressures. Conversely, China's Consumer Price Index remained relatively unaltered, attributed to tight fiscal policies.

To bridge the gap between theoretical analysis and real-world impact, we presented a case study focusing on Tesla. By delving into real-world experiences of inflation, we aimed to provide a tangible understanding of how inflationary pressures manifest in consumer experiences.

In conclusion, our project offers valuable insights into the multifaceted nature of inflation dynamics amidst global trade disruptions. By identifying key triggers and leveraging predictive modeling, we contribute to a deeper understanding of inflationary trends, offering insights for policymakers, businesses, and consumers navigating the post-pandemic economic landscape.