US Economic Time Series Analysis

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Introduction

This report explores the US economic time series dataset available in the `ggplot2` package. The dataset provides several economic indicators over time, which are crucial for understanding trends in the US economy.

Overview of the Dataset

Here are the main components of the economics dataset:

1. `date` : The date of the observation, recorded monthly.
2. `pce` : Personal consumption expenditures (in billions of dollars). This measures the total amount of spending by individuals in the U.S. on goods and services.
3. `pop` : Total population of the U.S. at the time of the observation.
4. `psavert` : Personal saving rate, which is the percentage of people's income remaining each month after taxes and spending.
5. `uempmed` : Median duration of unemployment, in weeks. This measures the median time that unemployed people have been looking for work.
6. `unemploy` : Number of unemployed individuals, in thousands.

```
# A tibble: 6 x 6
  date          pce     pop psavert uempmed unemploy
  <date>      <dbl>   <dbl>   <dbl>   <dbl>    <dbl>
1 1967-07-01  507. 198712    12.6     4.5     2944
2 1967-08-01  510. 198911    12.6     4.7     2945
3 1967-09-01  516. 199113    11.9     4.6     2958
4 1967-10-01  512. 199311    12.9     4.9     3143
5 1967-11-01  517. 199498    12.8     4.7     3066
6 1967-12-01  525. 199657    11.8     4.8     3018
```

```
# Display a summary of the 'economics' dataset.
# The summary includes statistics like minimum, maximum, median, mean, and quartiles for e
summary(economics)
```

```
     date                    pce                 pop              psavert
 Min.   :1967-07-01   Min.   :  506.7   Min.   :198712   Min.   : 2.200
 1st Qu.:1979-06-08   1st Qu.: 1578.3   1st Qu.:224896   1st Qu.: 6.400
 Median :1991-05-16   Median : 3936.8   Median :253060   Median : 8.400
 Mean   :1991-05-17   Mean   : 4820.1   Mean   :257160   Mean   : 8.567
 3rd Qu.:2003-04-23   3rd Qu.: 7626.3   3rd Qu.:290291   3rd Qu.:11.100
 Max.   :2015-04-01   Max.   :12193.8   Max.   :320402   Max.   :17.300
     uempmed           unemploy
 Min.   : 4.000   Min.   : 2685
 1st Qu.: 6.000   1st Qu.: 6284
 Median : 7.500   Median : 7494
 Mean   : 8.609   Mean   : 7771
 3rd Qu.: 9.100   3rd Qu.: 8686
 Max.   :25.200   Max.   :15352
```

Economic Trends Over Time

Unemployment Rate

The following plot shows the unemployment rate over time, which is a key indicator of economic health.
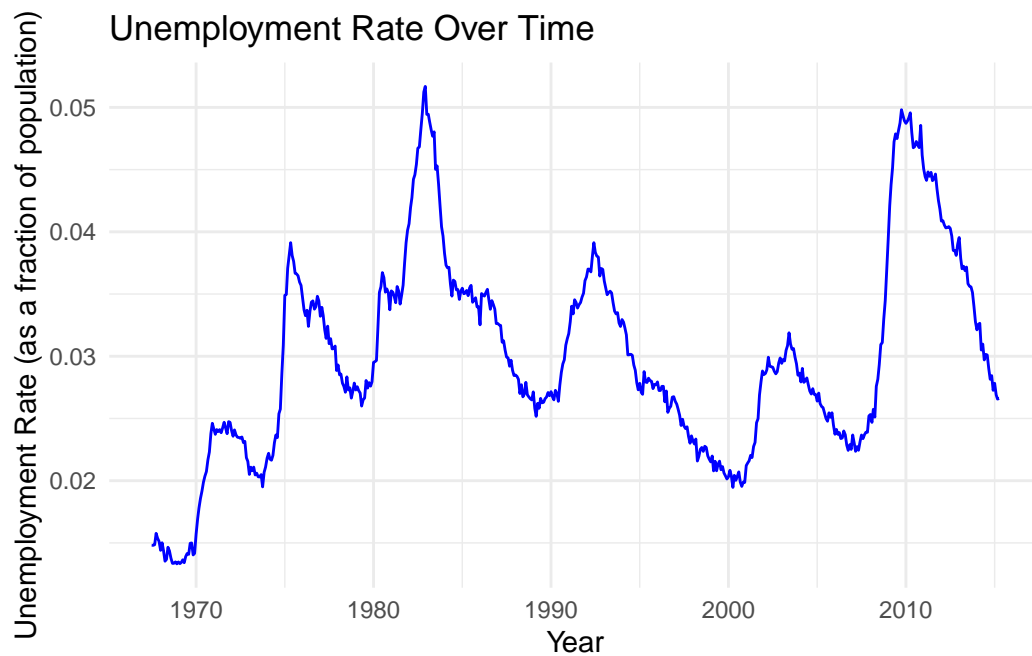

Figure 1: Figure 1: Unemployment Rate Over Time

Analysis:

- This plot illustrates the changes in the unemployment rate over time.

- Understanding these trends is vital for economic planning and policy-making.

- The graph begins with a relatively low unemployment rate, which slowly rises.

- Before the 2000s, there is a period of relative stability with lower unemployment rates, suggesting a healthy economic phase.

- After the peak in 2009, the unemployment rate shows a declining trend, the rate decreases steadily, suggesting economic improvement and job market stabilization.

Conclusion:

- The `economics` dataset comprises monthly records of several key economic indicators such as unemployment rate, personal savings rate, and personal consumption expenditures.

- The unemployment rate is a crucial indicator of economic health, reflecting underlying economic conditions, policy changes, and global economic impacts.

- The fluctuations observed in the graph correspond with historical economic events, demonstrating the sensitivity of employment to economic cycles.

- The overall downward trend in recent years suggests effective economic policies and recovery mechanisms.