



Inflation Trends for the Consumer Price Index (CPI) Less Food and Energy: An Empirical Analysis 1999-2018

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- **Study Purpose:** In this study, I examined inflation trends for the consumer price index (CPI-Less Food and Energy) using Time-Trend Regression Models. I also forecast inflation for the year 2018.

- **Period of Analysis**

1999 – 2017

2009 – 2017

- **Trend Regression Period**

1999 – 2017

2009 – 2017

- **Forecasting Period**

Month by month, 2018

- **Forecast Error Test**

Less than 2%

- **Time Trend Regression Models**

$$CPI_t (M) = A_1 + B_1 (T_m)$$

Where:

CPI = Consumer Price Index – Less Food and Energy

T = 1, 2, 3 ... n

T = time in years

M = specific month e.g. January

- **Forecast Regression Model**

$$CPI_{N+1} (M) = A_1 + B_1 (T_{n+1}(m)) + RMSE$$

Where: RMSE = Root Mean Square Forecasting Error

Findings

- Both time trend inflation models have forecast error < 1.5%
- Post 2008 inflation trend model has a lower average forecast error
- CPI- Less Food and Energy Inflation Index peaked in November 2018 and 1999-2017 forecast model peaked in October (A leading Indicator)
- The 2009-2017 Inflation Model's Index Value peaked in October (A leading Indicator)
- Both inflation trend models appear to be quite stable over time

Table 1
 Inflation Forecasts
 For CPI-Less Food and Energy, 2018
 Trend Regressions 1999 - 2017

| Month | Actual | TF+RMSE | Forecast Error (%) |
|------------------------|--------|---------|--------------------|
| January | 254.64 | 254.91 | 0.92% |
| February | 255.78 | 255.84 | 0.99% |
| March | 256.61 | 256.51 | 1.05% |
| April | 257.03 | 256.99 | 1.02% |
| May | 257.47 | 257.43 | 1.02% |
| June | 257.70 | 257.69 | 1.01% |
| July | 257.87 | 257.68 | 1.08% |
| August | 258.01 | 258.08 | 0.98% |
| September | 258.43 | 258.61 | 0.94% |
| October | 259.06 | 259.10 | 0.99% |
| November | 259.11 | 259.00 | 1.04% |
| December | 259.08 | 258.80 | 1.11% |
| Average Forecast Error | | | 1.01% |

Table 2
 Inflation Forecasts
 For CPI-Less Food and Energy, 2018
 Trend Regressions 2009 - 2017

| Month | Actual | TF+RMSE | Forecast Error (%) |
|------------------------|--------|---------|--------------------|
| January | 254.64 | 254.85 | 0.78% |
| February | 255.78 | 255.89 | 0.82% |
| March | 256.61 | 256.41 | 0.94% |
| April | 257.03 | 257.00 | 0.87% |
| May | 257.47 | 257.49 | 0.85% |
| June | 257.70 | 257.71 | 0.85% |
| July | 257.87 | 257.67 | 0.93% |
| August | 258.01 | 258.11 | 0.82% |
| September | 258.43 | 258.66 | 0.76% |
| October | 259.06 | 259.32 | 0.75% |
| November | 259.11 | 259.32 | 0.77% |
| December | 259.08 | 259.24 | 0.79% |
| Average Forecast Error | | | 0.83% |