

# Forecasting U.S. Inflation

John Harmon and Drew Beverly  
Dr. Robert Dean & Dr. Tony Caporale

- Study Purpose:

The purpose of this study is to develop inflation forecasts for CPI and CPI less food and energy for the years 2017 and 2018. the forecasts are compared to the Fed target rate of 2% for 2018.

- Research Design

- Develop time-trend forecasting models
- Period of analysis: 2009-2018
- Fitted regressions
  - 1) 2009-2016
  - 2) 2009-2017
- Forecast Periods
  - 1) 2017
  - 2) 2018
- Forecast Accuracy
  - 1) Root Mean Square Error (RMSE)
- Regression Models
  - 1)  $CPI-1 = A(1) + B(1)(T(1))$
  - 2)  $CPI-2 = A(2) + B(2)(T(1))$
  - 3)  $CPI-1 = A(3) + B(3)(T(2))$
  - 4)  $CPI-2 = A(4) + B(4)(T(2))$

- Terms:

- CPI-1=Consumer Price Index-All
- CPI-2=CPI-1 Less Food and Energy
- T(1)=Time Period 2009-2016
- T(2)=Time Period 2009-2017
- A=Intercept
- B= Regression Coefficient

Table 1 2017 Forecasts (T(1) Model)				
Month	CPI-1		CPI-2	
	F	A	F	A
Jan.	242.81	242.84	247.54	250.08
Feb.	243.65	243.60	247.54	251.14
Mar.	245.04	243.80	249.30	251.29
Apr.	245.79	244.52	248.49	251.64
May	246.82	244.73	250.59	251.84
Jun.	247.32	244.96	250.83	252.01
Jul.	247.17	244.79	250.84	251.94
Aug.	246.99	245.52	251.20	252.46
Sep.	247.24	246.82	251.80	252.94
Oct.	246.99	246.66	252.37	253.64
Nov.	246.03	246.67	252.46	253.49
Dec.	245.38	246.52	252.24	253.56
	RMSE=1.38		RMSE=1.93	

- Conclusion

- Based on RMSE, CPI-1 2017 forecasts have lower error than CPI-2 2017 forecasts.
- 2018 forecasts for January provide good fit to actual. Upper confidence band interval “right on the money”.
- Upper confidence band interval provides close fit to actual for both CPI indexes in February.
- Growth rate models for CPI all show close fit to actual in January but under-forecast in February.
- Fed target rates were reached in January and February for CPI-1 but not CPI-2.

Table 2 2018 Forecasts								
Model	January				February			
	F	A	CB (U)	CB (L)	F	A	CB (U)	CB (L)
CPI-1(T1)	246.50	247.87	247.88	245.12	247.33	248.99	248.71	245.95
CPI-2(T1)	251.52	254.64	253.45	249.59	251.52	255.78	253.45	249.59
CPI-1(T2)	246.52	247.87	247.90	245.14	247.31	248.99	248.69	245.93
CPI-2(T2)	252.65	254.64	254.58	250.72	253.68	255.78	255.61	251.75
CB=Confidence Band for RMSE	-	-	-	-	-	-	-	-
CPI-1, F+/-1.38	-	-	-	-	-	-	-	-
CPI-2, F+/-1.93	-	-	-	-	-	-	-	-

Table 3 CPI Growth Rate vs. Target Rate									
Model	Jan. YoY GR				Feb. YoY GR				Target Rate
	F	CB (U)	CB (L)	A	F	CB (U)	CB (L)	A	
CPI-1(T1)	1.51%	2.08%	0.94%	2.07%	1.53%	2.10%	0.97%	2.21%	2.00%
CPI-2(T1)	0.57%	1.35%	-0.20%	1.82%	0.15%	0.92%	-0.62%	1.85%	2.00%
CPI-1(T2)	1.51%	2.08%	0.95%	2.07%	1.52%	2.09%	0.96%	2.21%	2.00%
CPI-2(T2)	1.03%	1.80%	0.25%	1.82%	1.01%	1.78%	0.24%	1.85%	2.00%