

Historical Performance of Rule-Like Monetary Policy

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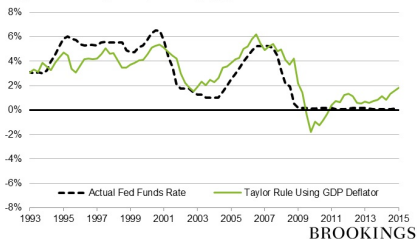
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Deviations From Policy Rules

- Are large deviations from standard policy rule recommendations systematically bad?
 - What is a deviations from a policy rule?

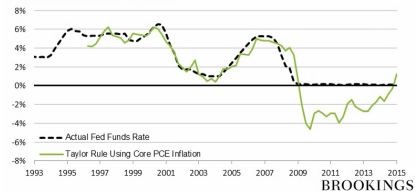
Figure: Bernanke (2015) Taylor Rule Recommendations

Figure 1: The Original Taylor Rule, 1993-Present



(a) Original Taylor rule, GDP deflator

Figure 2: Predictions of a Modified Taylor Rule
(Core PCE inflation, weight of 1.0 on output gap)



(b) Modified Taylor rule, Core PCE

Rule-Like Monetary Policy

- Interest rate policy that is broadly consistent with a variant of the Taylor rule for a protracted period of time
 - Periods of small absolute deviations from policy rule recommendations are rule-like, while periods of large absolute deviations are discretionary
 - Approximately within 200 basis points of policy rule recommendation
 - Relative to a policy rule and the chosen measures of inflation and output gaps

Preview of Results

- Rule-like monetary policy is associated with greater economic stability
 - For both the original and modified Taylor rule
 - Across a variety of countries and alternate modeling assumptions
 - Results are primarily driven by greater inflation stability
- Some evidence for a causal relationship
 - Timing of structural breaks is often associated with changes in monetary policy regimes
 - Granger causality in both directions

Literature

- Empirical evaluation of rule like policy
 - Alex Nikolsko-Rzhevskyy, David Papell, and Ruxandra Prodan (2014, 2017, 2021), Taylor (2012), Meltzer (2012)
- Real-time data
 - Orphanides (2001), Orphanides and van Norden (2002), Fernandez et al. (2011)

Policy Rule Recommendations

- Two policy rules

- ① Original Taylor rule (Taylor (1993))

$$i_t = 1.0 + 1.5 * \pi_t + .5 * y_t \quad (1)$$

- ② Modified Taylor rule (Taylor (1999), Yellen (2012))

$$i_t = 1.0 + 1.5 * \pi_t + y_t \quad (2)$$

- Real time data on inflation and output

- CPI measure of inflation
 - Output gap from detrending real GDP data from a country-specific starting date through the vintage date

Detrending Methods

- Choice of detrending methods results in substantively different output gap measures
- Compare different univariate filters with real-time Federal Reserve estimates
 - Real-time detrended GDP data with quadratic and different HP filters
 - Compared against Fed's own real-time estimates of the output gap

Comparison Between Different HP Filters and Real-Time Federal Reserve and 2014 CBO Estimates of the Output Gap

Filter (λ)	Greenbook - Realtime			CBO - Ex Post		
	Correlation	Average Absolute Difference	Average Difference Squared	Correlation	Average Absolute Difference	Average Difference Squared
100	-0.297	1.572	3.844	0.536	1.982	6.193
400	-0.057	1.591	3.804	0.620	1.890	5.356
800	0.113	1.555	3.558	0.660	1.833	4.916
1200	0.226	1.508	3.310	0.683	1.796	4.652
1600	0.309	1.463	3.089	0.698	1.766	4.464
Quadratic	0.762	2.316	6.643	0.781	1.579	4.861
2500	0.436	1.368	2.690	0.722	1.713	4.176
5000	0.611	1.195	2.043	0.754	1.617	3.757
10000	0.732	1.032	1.532	0.780	1.553	3.417
25000	0.807	0.893	1.234	0.800	1.506	3.160
30000	0.813	0.891	1.223	0.803	1.498	3.135
35000	0.817	0.895	1.223	0.805	1.492	3.119
40000	0.819	0.900	1.228	0.806	1.487	3.110
45000	0.820	0.906	1.236	0.808	1.483	3.106
50000	0.820	0.913	1.246	0.808	1.479	3.104
55000	0.821	0.920	1.255	0.809	1.475	3.105
60000	0.821	0.927	1.264	0.810	1.471	3.107
65000	0.821	0.934	1.273	0.810	1.467	3.111
70000	0.821	0.940	1.281	0.811	1.463	3.116
75000	0.821	0.945	1.289	0.811	1.460	3.122
100000	0.820	0.965	1.315	0.812	1.451	3.162

Detrending Methods

- Choice of detrending methods results in substantively different output gap measures
- Compare different univariate filters with real-time Federal Reserve estimates
 - HP filter with $\lambda \in [25000, 55000]$ performs best
- Main specification uses HP filter with $\lambda = 50,000$
 - Results are robust to using HP filter with $\lambda = 1,600$
 - For U.S. results are similarly robust with quadratic and CBO output gaps

Absolute Deviations from Policy Rule Recommendations

- Compute the absolute deviations from the real-time policy rule recommendation and the observed central bank rate
 - Shadow rates used when the central bank rate is at the effective zero lower bound
- Rule-like policy should be consistent with the policy rule for a protracted period of time
 - Structural break analysis
 - Moving average of deviations

Structural Break Analysis: Rule-Like and Discretionary Eras

- Run the Bai and Perron (1997, 2003) test for structural breaks on the series of absolute deviation from the policy-rule to identify: [Details](#)
 - Number and dates of structural breaks
 - Average absolute deviation in each period
- Classify eras as rule-like, intermediate, or discretionary based on the average absolute deviation in each era
 - Highest deviation period is discretionary
 - Lowest deviation period is rule-like
 - Other periods are qualitatively classified

Structural Break Analysis: Performance Across Rule-Like and Discretionary Eras

- Economic stability and performance comparisons across eras are done via seven loss functions calculated with ex-post data:
 - Modified misery index: $\pi_t - y_t$
 - Linear absolute loss: $|\pi_t - 2| + |y_t|$
 - First quadratic loss: $(\pi - 2)^2 + y^2$
 - Second quadratic loss: $1.5(\pi - 2)^2 + .5y^2$
 - Third quadratic loss: $.5(\pi - 2)^2 + 1.5y^2$
 - Forth quadratic loss: $(\pi - 2)^2$
 - Fifth quadratic loss: y^2
- Ratio of losses in discretionary era to rule-like eras
 - Robustness checks for alternate classifications of intermediate eras

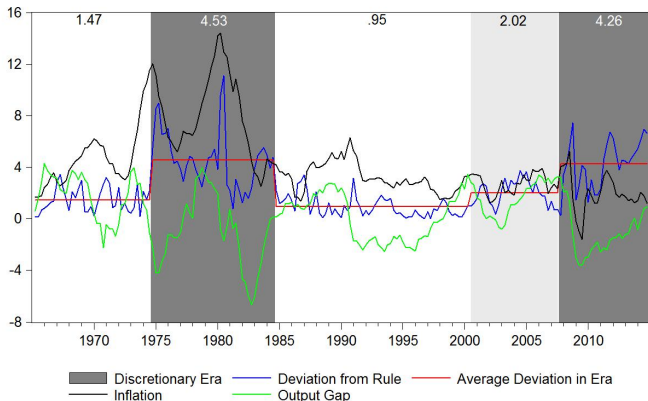
Regression Analysis and Granger Causality

- Deviations from policy rule measured by:
 - Single quarter deviation
 - Three year moving average of deviations
 - Weighted moving average with a .1 smoothing factor
- Estimate relationship between deviations from policy rules and losses via:

$$Losses_i = \beta_0 + \beta_1 Deviation_i + \epsilon_i$$

- Run Granger Causality tests with lags length chosen with Schwartz information criterion

U.S. Structural Break Result with Original Taylor Rule



Note: The numbers indicate the average absolute deviation in each period.

U.S. Structural Break Result for Different Output Measures

Policy Rule	Output Gap Measure	1st Era		2nd Era		3rd Era		4th Era		5th era		6th era	
		Average Deviation	End Date	Average Deviation	End Date	Average Deviation	End Date	Average Deviation	End Date	Average Deviation	End Date	Average Deviation	End Date
Original	Quadratic	1.72	1974Q3	4.52	1984Q3	1.7	1993Q1	1.05	2000Q2	3.16	2014Q4		
	HP $\lambda=1600$	1.34	1973Q3	5.46	1980Q4	1.56	2007Q3	5.16	2014Q4				
	HP $\lambda=50000$	1.47	1974Q3	4.53	1984Q3	0.95	2000Q2	2.02	2007Q3	4.26	2014Q4		
	CBO	2.44	1974Q3	4.48	1987Q2	0.92	2003Q1	2.87	2014Q3				
Modified	Quadratic	2.85	2014Q4										
	HP $\lambda=1600$	1.29	1974Q4	5.24	1981Q4	1.55	2007Q3	5.51	2014Q4				
	HP $\lambda=50000$	1.64	1974Q4	4.3	1984Q3	1.3	1992Q2	0.68	1999Q4	2.05	2007Q3	3.82	2014Q4
	CBO	4.21	1987Q2	0.68	1994Q4	1.4	2004Q2	2.05	2014:Q3				
		Rule Like				Intermediate				Discretionary			

- Some differences though the broad trends are:
 - 1965 though 1974 rule-like
 - 1974 though 1984 discretionary
 - 1984 though 2000 rule-like
 - 2000-2007 intermediary
 - 2007-2014 discretionary

Detailed Figures

Performance across Rules and Discretionary Eras for U.S. with the Original Taylor Rule, Modified HP Filter

Type of Taylor Rule	Average Loss During					Ratio (2)/(1)	Ratio (2)/(4)	Ratio (5)/(1)
	Rules-Based Eras (1)	Discretionary Eras (2)	Intermediary Eras (3)	Rule and Intermediary Eras (4)	Discretionary and Intermediary Eras (5)			
	<u>Misery Index: $L = Inflation - Output\ Gap$</u>							
<i>Original</i>	3.09	6.54	1.10	2.64	4.93	2.12	2.48	1.60
<i>Modified</i>	3.14	6.54	1.05	2.64	4.84	2.08	2.48	1.54
	<u>Linear Absolute Loss Function: $L = Inflation - 2\% + Output\ Gap$</u>							
<i>Original</i>	3.64	6.07	2.59	3.40	5.04	1.67	1.78	1.39
<i>Modified</i>	3.63	6.07	2.69	3.40	5.03	1.67	1.78	1.38
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2 + (Output\ Gap)^2$</u>							
<i>Original</i>	10.55	34.58	5.34	9.39	25.93	3.28	3.68	2.46
<i>Modified</i>	10.56	34.58	5.65	9.39	25.62	3.28	3.68	2.43
	<u>Quadratic Loss Function $L = 1.5 * (Inflation - 2\%)^2 + .5 * (Output\ Gap)^2$</u>							
<i>Original</i>	11.64	44.94	3.74	9.87	32.75	3.86	4.55	2.81
<i>Modified</i>	11.74	44.94	3.93	9.87	32.23	3.83	4.55	2.75
	<u>Quadratic Loss Function: $L = .5 * (Inflation - 2\%)^2 + 1.5 * (Output\ Gap)^2$</u>							
<i>Original</i>	9.47	24.23	6.94	8.90	19.11	2.56	2.72	2.02
<i>Modified</i>	9.38	24.23	7.38	8.90	19.00	2.58	2.72	2.03
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2$</u>							
<i>Original</i>	6.36	27.65	1.07	5.18	19.78	4.35	5.34	3.11
<i>Modified</i>	6.46	27.65	1.10	5.18	19.42	4.28	5.34	3.01
	<u>Quadratic Loss Function: $L = (Output\ Gap)^2$</u>							
<i>Original</i>	4.19	6.93	4.27	4.21	6.15	1.65	1.65	1.47
<i>Modified</i>	4.10	6.93	4.55	4.21	6.19	1.69	1.65	1.51

- Deviations higher in discretionary eras than rule-like ones
- Robust to modified Taylor rule and other output gap measures

[More](#)

Regression Analysis and Granger Causality Results for U.S.

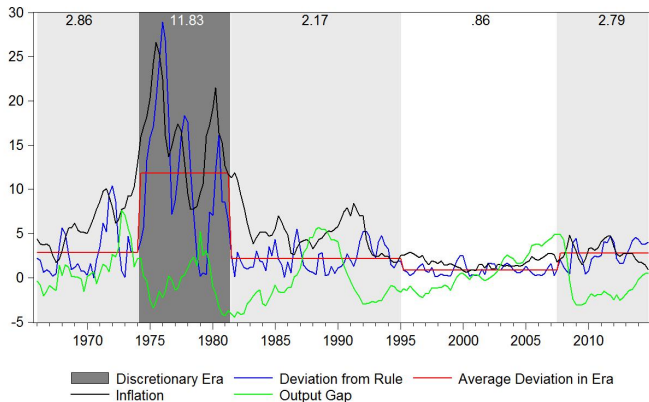
- Regression results confirm that higher deviations are associated with higher losses for most specifications. Results are more limited for:
 - Fifth quadratic loss function
 - Quadratic output gaps

[More \(Tables\)](#)

- Granger causality results
 - Losses Granger-cause deviations for most specifications
 - Deviations from the original Taylor rule:
 - Granger-cause losses from the fifth quadratic loss function (inflation)
 - Do not Granger-cause losses from the fourth quadratic loss function (output gap)
 - Mixed results for the other loss functions
 - Generally deviations from the modified Taylor rule do not Granger cause losses

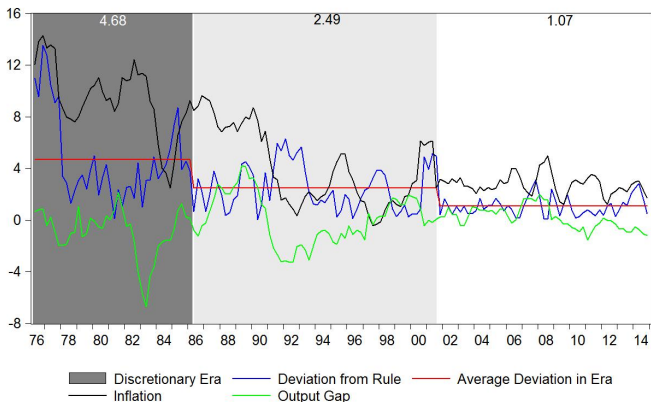
[More \(Tables\)](#)

U.K. Structural Break Result with Original Taylor Rule



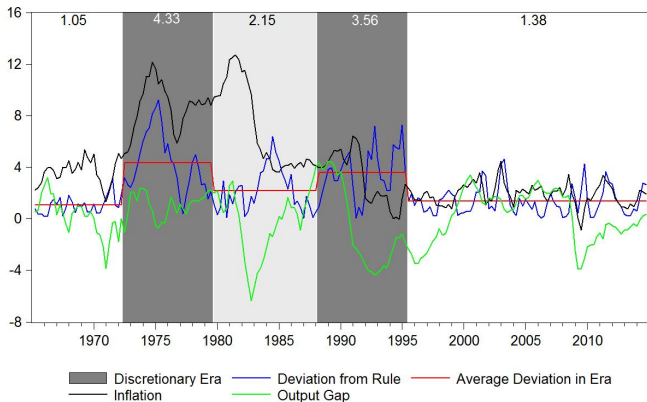
- For most loss function, losses increase from rule-like to intermediate to discretionary
- For the fifth quadratic loss function, losses are highest in the intermediate eras
- Granger causality in both directions [More](#)

Australia Structural Break Result with Original Taylor Rule



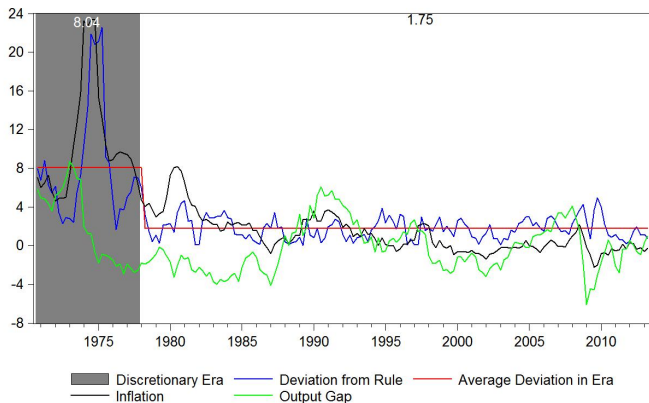
- Average losses are lowest in the rule-like era, two to ten times greater in the intermediate era, and four to 45 times greater in the discretionary era [More](#)
- Limited evidence for Granger causality in either direction

Canada Structural Break Result with Original Taylor Rule



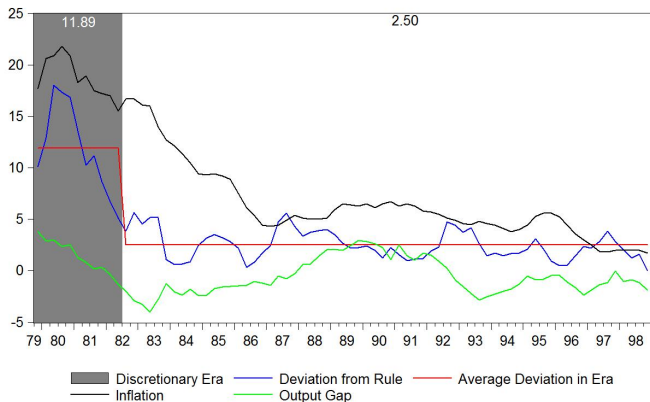
- Losses are lowest in lowest in rule-like periods
 - Regardless of how intermediate period is classified [More](#)
- Granger causality from losses to deviations

Japan Structural Break Result with Original Taylor Rule



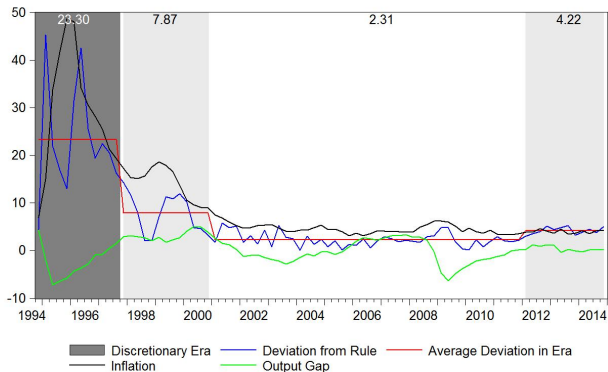
- Losses in discretionary period 3 to 23 times higher than in rule-like period [More](#)
- Evidence of Granger causality in both directions for loss functions that value inflation stability

Italy Structural Break Result with Original Taylor Rule



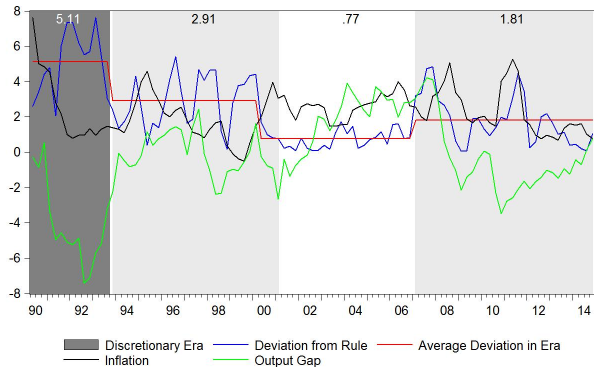
- Losses in discretionary period are between 32% and 762% greater than in the rule-like period [More](#)
- Mixed evidence of Granger causality in both directions

Mexico Structural Break Result with Original Taylor Rule



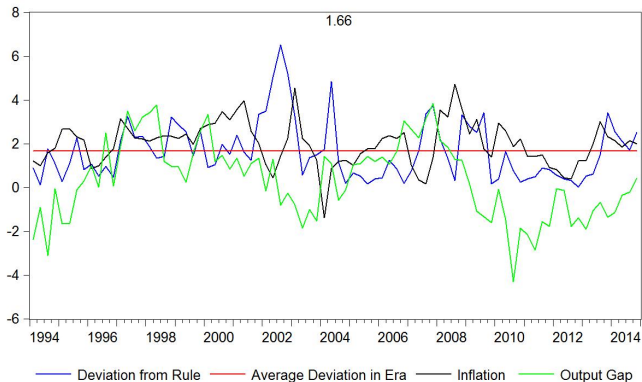
- For most loss function, losses increase from rule-like to intermediate to discretionary
- For the fifth quadratic loss function, losses are similar across rule-like and intermediate periods [More](#)
- Strong evidence of deviations Granger causing losses and mixed evidence for reverse relationship

N.Z. Structural Break Result with Original Taylor Rule



- Losses are lowest in lowest in rule-like periods [More](#)
 - Regardless of how intermediate period is classified
 - But no relationship in the 3-year moving average regressions
- Strong evidence of deviations Granger causing losses and mixed evidence for reverse relationship

Norway Structural Break Result with Original Taylor Rule



- Results differ substantially for other specifications [More](#)
 - Regression analysis generally finds no relationship between deviations and losses
- No evidence of Granger causality

Summary of Country-Specific Results

Country	λ	Taylor Rule	Structural Breaks Analysis*				Correlation between (lagged) monetary policy and economic performance							
			# of loss functions for which average loss is greater in:		In which eras are economic losses smallest?	Is there a low deviation period?	Loss Function							
			discretionary eras	rule based eras			MI	LAL	QLF1	QLF2	QLF3	QLF4	QLF5	Overall
US	50000	Original	7	0	Rule	Yes	+	+	+	+	+	+	+	+
		Modified	7	0	Rule	Yes	+	+	+	+	+	+	+	+
	1600	Original	7	0	Rule	Yes	+	+	+	+	+	+	+	+
		Modified	7	0	Rule	Yes	+	+	+	+	+	+	+	+
UK	50000	Original	7(6)	0	Rule	Yes	+	+	+	+	+	+	+	
		Modified	7(6)	0	Rule	Yes	+	+	+	+	+	+	+	
	1600	Original	7	0	Rule	Yes	+	+	+	+	+	+	+	
		Modified	7	0	Rule	Yes	+	+	+	+	+	+	+	
Australia	50000	Original	7	0	Rule	Yes	+	+	+	+	+	+	+	
		Modified	7	0	Rule	Yes	+	+	+	+	+	+	+	
	1600	Original	7	0	Rule	Yes	+	+	+	+	+	+	+	
		Modified	7	0	Rule	Yes	+	+	+	+	+	+	+	
Canada	50000	Original	7	0	Rule	Yes	+	+	+	+	+	-	+	
		Modified	7	0	Rule	Yes	+	+	+	+	+	-	+	
	1600	Original	7	0	Rule	Yes	+	+	+	+	+	-	+	
		Modified	5	0	Rule	Yes	+	+	+	+	+	+	-	+

*Average loss must be at least 20% greater in one era type to be considered here. When results differ according to the way intermediate eras are jointly classified, the numbers reported are for the preferred classification and in parentheses for the classification leading to the greatest losses in rule like eras.

Summary of Country-Specific Results

Country	λ	Taylor Rule	Structural Breaks Analysis*				Correlation between (lagged) monetary policy and economic performance						
			# of loss functions for which average loss is greater in:		In which eras are economic losses smallest?	Is there a low deviation period?	Loss Function						
			discretionary eras	rule based eras			MI	LAL	QLF1	QLF2	QLF3	QLF4	QLF5
Japan	50000	Original	7	0	Rule	Yes	+	+	+	+	+	+	+
		Modified	7	0	Rule	No	+	+	+	+	+	+	+
	1600	Original	7	0	Rule	Yes	+	+	+	+	+	+	+
		Modified	7	0	Rule	No	+	+	+	+	+	+	+
Italy	50000	Original	7	0	Rule	No	+	+	+	+	+	+	+
		Modified	7	0	Rule	No	+	+	+	+	+	+	+
	1600	Original	7	0	Rule	Yes	+	+	+	+	+	+	+
		Modified	7	0	Rule	Yes	+	+	+	+	+	+	+
Mexico	50000	Original	7	0	Rule	No	+	+	+	+	+	+	+
		Modified	7	0	Rule	No	+	+	+	+	+	+	+
	1600	Original	7	0	Rule	No	+	+	+	+	+	+	+
		Modified	7	0	Rule	No	+	+	+	+	+	+	+
New Zealand	50000	Original	6	0	Rule	Yes	+						
		Modified	7	0	Rule	Yes							
	1600	Original	6(0)	1	Rule (Equivalent)	Yes		+	+		+	+	+
		Modified	6(0)	1	Rule (Equivalent)	Yes		+	+		+	+	+
Norway	50000	Original	N/A	N/A	N/A	N/A				-		-	
		Modified	3	1	Equivalent	Yes				-		-	
	1600	Original	3	1	Equivalent	Yes	+	+		+			
		Modified	1	5	Discretionary	Yes	+						

*Average loss must be at least 20% greater in one era type to be considered here. When results differ according to the way intermediate eras are jointly classified, the numbers reported are for the preferred classification and in parentheses for the classification leading to the greatest losses in rule like eras.

Panel Data Methodology

- Estimate a homogenous relationship between deviations from a policy rule and economic losses in the unbalanced panel:

$$Losses_{i,t} = \beta_0 + \beta_1 Deviation_{i,t} + \alpha_i + \delta_{year} + \epsilon_{i,t}$$

- Dimitrescu and Hurlin (2012) Granger test for homogenous non-causality
 - H_0 : homogenous non-causality between the variables
 - H_A : there exists a subgroup of countries for which there is Granger causality between the variables

Panel Data Regression of Economic Losses on Deviations from Policy Rules

λ	Taylor Rule	Measure of Deviations	Loss Functions						
			MI	LAL	QLF1	QLF2	QLF3	QLF4	QLF5
50000	Original	MA - 3 year	.5372*** (.0490)	.6608*** (.0481)	10.9121*** (.9436)	16.2097*** (1.4151)	5.6145*** (.4810)	10.7537*** (.9444)	.1584** (.0799)
		WMA	.7317*** (.0699)	.8460*** (.0583)	15.5377*** (1.9153)	23.0576*** (2.9108)	8.0178*** (.9291)	15.2887*** (1.9543)	.2490** (.1194)
		Instant	0.6263*** (.0953)	.6581*** (.0952)	19.1795*** (4.2055)	28.5518*** (6.2603)	9.8073*** (2.1522)	18.9620*** (4.1578)	.2275** (.0856)
	Modified	MA - 3 year	.5002*** (.0532)	.6597*** (.0499)	10.9501*** (.9773)	16.2321*** (1.4724)	5.6680*** (.4907)	10.7571*** (.9849)	.1930** (.0796)
		WMA	.7105*** (.0728)	.8690*** (.0587)	15.7697*** (1.8613)	23.3830*** (2.8316)	8.1564*** (.8997)	15.4981*** (1.9020)	.2716** (.1155)
		Instant	.5312*** (.0854)	.5965*** (.0866)	16.5697*** (3.6943)	24.6083*** (5.5027)	8.5311*** (1.8876)	16.3234*** (3.6558)	.2462*** (.0813)
1600	Original	MA - 3 year	.5230*** (.0478)	.5766*** (.0433)	9.5456*** (.8888)	14.3178*** (1.3418)	4.7734*** (.4394)	9.5450*** (.8978)	.0006 (.0494)
		WMA	.7087*** (.0733)	.7391*** (.0639)	14.0776*** (1.9797)	21.1372*** (2.9833)	7.0180*** (.9785)	14.0984*** (1.9937)	-.0208 (.0603)
		Instant	.6576*** (.0998)	.6397*** (.0977)	18.4509*** (4.2307)	27.5123*** (6.2979)	9.3893*** (2.1646)	18.2870*** (4.1827)	.1639** (.0750)
	Modified	MA - 3 year	.5091*** (.0506)	.5815*** (.0443)	9.5654*** (.8903)	14.3422*** (1.3492)	4.7886*** (.4353)	9.5595*** (.9045)	.0059 (.0522)
		WMA	.7098*** (.0779)	.7591*** (.0669)	14.3450*** (2.0264)	21.5363*** (3.0559)	7.1536*** (.9995)	14.3638*** (2.0430)	-.0189 (.0639)
		Instant	.5917*** (.0990)	.5868*** (.0979)	16.3198*** (4.0169)	24.3516*** (5.9796)	8.2881*** (2.0552)	16.1917*** (3.9713)	.1282* (.0735)

Dumitrescu Hurlin Panel Causality Tests P-values: Deviations Homogeneously do Not Cause Losses

λ	Taylor Rule	Measure of Deviations	Loss Functions						
			MI	LAL	QLF1	QLF2	QLF3	QLF4	QLF5
50000	Original	MA - 3 year	.1189	.1042	.0000	.0000	.0001	.0000	.9210
		WMA	.0280	.9120	.0000	.0000	.0000	.0000	.0051
		Instant	.0144	.6239	.0000	.0000	.0000	.0000	.3073
	Modified	MA - 3 year	.0697	.6342	.1098	.0118	.8822	.0034	.4133
		WMA	.0078	.1049	.0474	.0093	.4152	.0009	.8879
		Instant	.0430	.8506	.0000	.0000	.0000	.0000	.4252
1600	Original	MA - 3 year	.0094	.0009	.0000	.0000	.0000	.0000	.0639
		WMA	.0009	.0092	.0000	.0000	.0000	.0000	.0058
		Instant	.0077	.0047	.0000	.0000	.0000	.0000	.0139
	Modified	MA - 3 year	.0017	.0157	.0000	.0000	.0002	.0000	.0629
		WMA	.0000	.0885	.0000	.0000	.0000	.0000	.0376
		Instant	.0000	.0020	.0000	.0000	.0000	.0000	.0515

- Similarly, we generally reject the null of homogenous non-causality in the reverse direction
- Test results for homogenous causality vary based on imposed assumptions

Conclusion

- Rule-like monetary policy is associated with lower economic losses
 - For eight of nine countries studied, rule-like periods have have lower losses than more discretionary periods
 - A 100 basis point deviation from a policy rule recommendation is associated with somewhere between .55% and .85% increase in deviations of inflation and the output gap from their targets
- At least for a subset of countries, deviations Granger cause losses and losses Granger cause deviations
- Results are stonger for loss functions that emphasize inflation stability and weaker for those emphasizing output stability

Bai and Perron Test for Structural Breaks

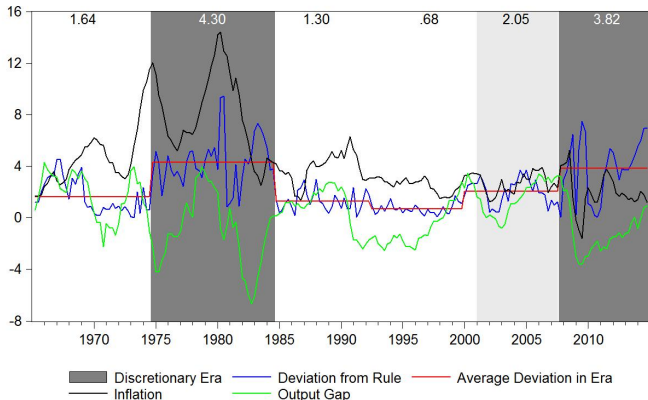
- Begin by estimating the following relation for all possible structural-break dates $k \in T$:

$$y_t = \mu_1 * D_{t \leq k} + \mu_2 * D_{t > k} + \epsilon_t$$

- Estimated first structural break date, \hat{k} , minimizes sum of squared residuals
 - F-test of fit with a break vs no break
- Repeat procedure on the two subsets of the data portioned by \hat{k} and on any further partition by new structural breaks until the null of no break cannot be rejected on any partition
- Additionally, I impose a 15% trimming percentage, a maximum of five breaks, and all results are at 5% significance level

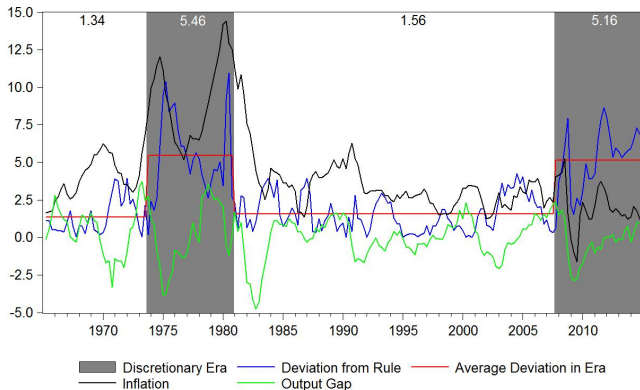
Return

U.S. Structural Break Result with Modified Taylor Rule

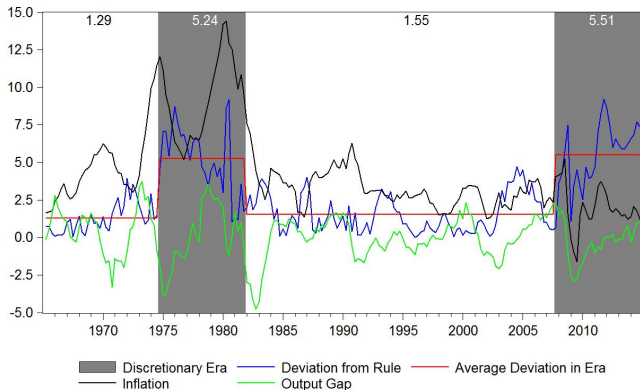


Return

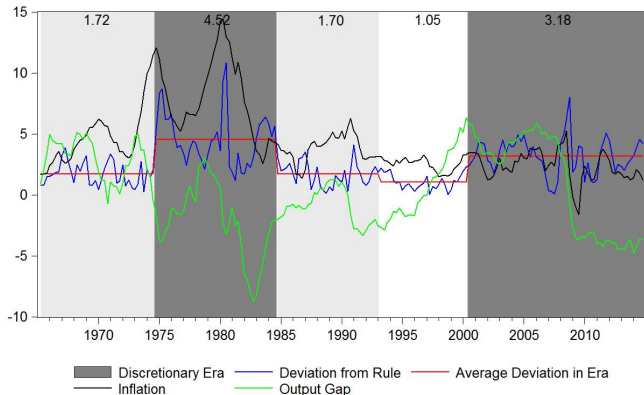
U.S. Structural Break Result with Original Taylor Rule, Standard HP Filter


[Return](#)

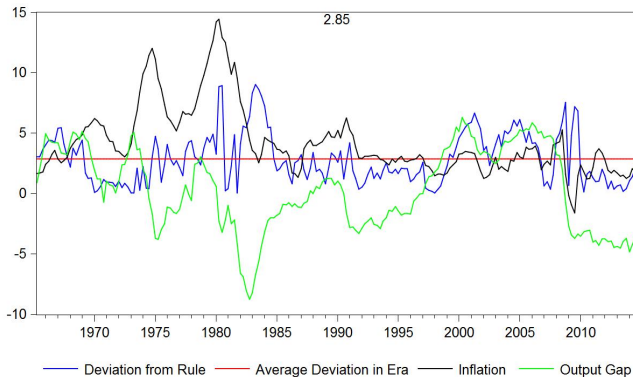
U.S. Structural Break Result with Modified Taylor Rule, Standard HP Filter


[Return](#)

U.S. Structural Break Result with Original Taylor Rule, Quadratic Output Gaps

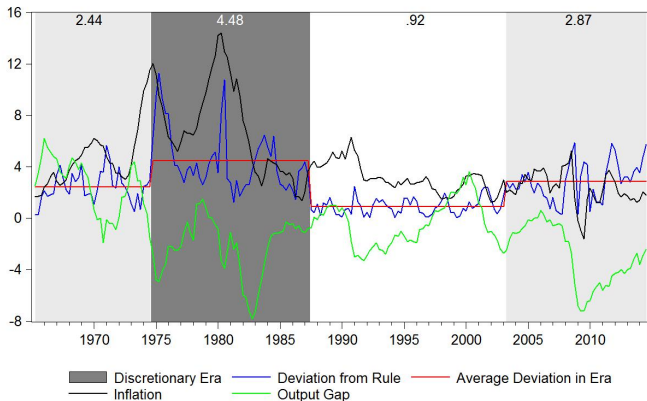


U.S. Structural Break Result with Modified Taylor Rule, Quadratic Output Gaps

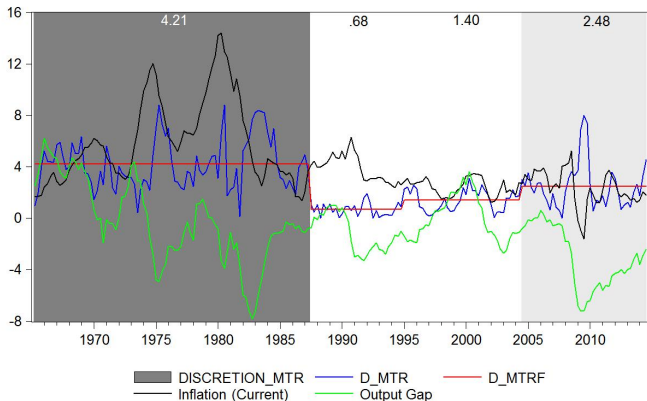


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U.S. Structural Break Result with Original Taylor Rule, CBO Output Gaps



U.S. Structural Break Result with Modified Taylor Rule, CBO Output Gaps



Loss Functions Comparison Across Output Gap Measures for the United States

Loss Function	Type of Taylor Rule	Quadratic Output Gaps			HP($\lambda=1600$) Output Gaps			HP($\lambda=50000$) Output Gaps			CBO Output Gaps		
		D/R	(D+I)/R	D/(R+I)	D/R	(D+I)/R	D/(R+I)	D/R	(D+I)/R	D/(R+I)	D/R	(D+I)/R	D/(R+I)
Misery Index	<i>Original</i>	2.74	2.31	1.80	1.60	-	-	2.12	1.60	2.48	2.55	1.63	2.44
	<i>Modified</i>	-	-	-	1.63	-	-	2.08	1.54	2.48	1.72	1.66	1.44
	<i>Estimated</i>	3.91	2.26	2.91	1.48	-	-	2.01	2.40	1.39	1.75	-	-
Linear Absolute Loss	<i>Original</i>	2.25	1.95	1.62	1.96	-	-	1.67	1.39	1.78	2.60	2.00	1.91
	<i>Modified</i>	-	-	-	1.95	-	-	1.67	1.39	1.78	2.41	2.16	1.99
	<i>Estimated</i>	1.75	1.59	1.38	1.73	-	-	1.32	1.78	0.98	1.39	-	-
Quadratic Loss 1	<i>Original</i>	4.35	3.33	2.60	4.44	-	-	3.28	2.46	3.68	7.93	5.00	3.49
	<i>Modified</i>	-	-	-	4.51	-	-	3.28	2.43	3.68	6.62	5.58	3.69
	<i>Estimated</i>	3.59	2.77	2.07	3.01	-	-	2.75	4.25	1.20	1.79	-	-
Quadratic Loss 2	<i>Original</i>	8.08	6.17	2.85	5.08	-	-	3.86	2.81	4.55	10.83	5.90	5.19
	<i>Modified</i>	-	-	-	5.21	-	-	3.83	2.75	4.55	8.66	6.67	6.18
	<i>Estimated</i>	4.98	3.74	2.32	3.21	-	-	3.64	6.07	1.20	1.44	-	-
Quadratic Loss 3	<i>Original</i>	2.87	2.20	2.38	3.42	-	-	2.56	2.02	2.72	5.35	4.20	2.20
	<i>Modified</i>	-	-	-	3.42	-	-	2.58	2.03	2.72	4.83	4.63	2.26
	<i>Estimated</i>	2.65	2.11	1.82	2.65	-	-	2.00	2.71	1.21	2.33	-	-
Quadratic Loss 4	<i>Original</i>	35.48	27.06	3.11	5.51	-	-	4.35	3.11	5.34	14.10	6.91	7.50
	<i>Modified</i>	-	-	-	5.69	-	-	4.28	3.01	5.34	11.04	7.93	11.65
	<i>Estimated</i>	7.23	5.33	2.57	3.34	-	-	4.72	8.28	1.19	1.18	-	-
Quadratic Loss 5	<i>Original</i>	2.07	1.59	2.16	1.50	-	-	1.65	1.47	1.65	3.04	3.49	1.18
	<i>Modified</i>	-	-	-	1.42	-	-	1.69	1.51	1.65	3.27	3.80	1.34
	<i>Estimated</i>	1.97	1.63	1.57	1.80	-	-	1.35	1.40	1.23	3.20	-	-

[Return](#)

Regression Coefficients on Deviations from the Original Taylor Rule for the United States

Taylor Rule	Output Gap	Measure of Deviations	Loss Functions						
			MI	LAL	QLF1	QLF2	QLF3	QLF4	QLF5
Original	Quadratic	MA - 3 year	1.32***	.88***	7.93***	10.32***	5.55***	6.35***	1.58***
		MA - 5 year	1.70***	1.12***	10.85***	14.62***	7.07***	9.19***	1.65*
		WMA	1.88***	1.04***	9.67***	13.25***	6.09***	8.42***	1.26
		Instant	.91***	.65***	6.32***	8.65***	4.00***	5.49***	.84**
Original	HP ($\lambda=1600$)	MA - 3 year	.44***	.55***	5.31***	7.74***	2.88***	5.08***	.23*
		MA - 5 year	.75***	.98***	9.46***	13.73***	5.18***	9.00***	.45***
		WMA	.64***	.80***	7.68***	11.18***	4.18***	7.34***	.34**
		Instant	.48***	.34***	3.91***	5.81***	2.00***	3.86***	.05
Original	HP ($\lambda=50000$)	MA - 3 year	.88***	.73***	7.31***	10.53***	4.08***	6.87***	.43
		MA - 5 year	1.08***	1.07***	10.47***	14.83***	6.10***	9.60***	.87**
		WMA	1.11***	.94***	9.31***	13.43***	5.19***	8.78***	.53
		Instant	.75***	.47***	5.35***	7.99***	2.72***	5.31***	.04
Original	CBO	MA - 3 year	1.27***	1.03***	8.32***	11.19***	5.45***	7.03***	1.29***
		MA - 5 year	1.59***	1.34***	11.93***	16.66***	7.20***	10.69***	1.24**
		WMA	1.54***	1.28***	10.67***	14.64***	6.70***	9.31***	1.36***
		Instant	1.03***	.79***	6.92***	9.09***	4.75***	5.63***	1.29***

Return

Regression Coefficients on Deviations from the Modified Taylor Rule for the United States

Taylor Rule	Output Gap	Measure of Deviations	Loss Functions						
			MI	LAL	QLF1	QLF2	QLF3	QLF4	QLF5
Original	Quadratic	MA - 3 year	-.20	.35**	2.64*	1.52	3.75***	.21	2.43***
		MA - 5 year	-.34	.07	.39	-2.00	2.78**	-2.20	2.59***
		WMA	-.38	.23	1.14	-1.07	3.35**	-1.64	2.78***
		Instant	.02	.46***	4.09***	3.66*	4.52***	1.62	2.47***
Original	HP ($\lambda=1600$)	MA - 3 year	.39***	.53***	5.44***	7.92***	2.95***	5.20***	.23*
		MA - 5 year	.64***	.86***	8.62***	12.54***	4.70***	8.23***	.39**
		WMA	.54***	.72***	7.28***	10.58***	3.98***	6.94***	.34**
		Instant	.36***	.27***	3.01***	4.44***	1.58***	2.93***	.08
Original	HP ($\lambda=50000$)	MA - 3 year	.81***	.77***	8.00***	11.10***	4.89***	7.10***	.89**
		MA - 5 year	.86***	.72***	7.68***	10.56***	4.82***	6.71***	.98*
		WMA	.86***	.82***	8.27***	11.44***	5.11***	7.30***	.97*
		Instant	.48***	.49***	4.91***	6.52***	3.31***	4.06**	.86***
Original	CBO	MA - 3 year	.81***	.85***	6.45***	8.09***	4.82***	4.86***	1.59***
		MA - 5 year	1.06***	.90***	7.74***	10.58***	4.89***	6.71***	1.03*
		WMA	.88***	.98***	7.48***	9.82***	5.14***	6.08***	1.40***
		Instant	.57***	.82***	6.54***	6.95***	6.12***	3.69***	2.85***

P-values for Granger Causality Tests for the United States: Deviations Cause Losses

Taylor Rule	Output Gap	Measure of Deviations	Loss Functions						
			MI	LAL	QLF1	QLF2	QLF3	QLF4	QLF5
Original	Quadratic	MA - 3 year	0.140	0.357	0.090	0.051	0.409	0.051	0.781
		MA - 5 year	0.104	0.780	0.562	0.521	0.523	0.439	0.929
		WMA	0.028	0.123	0.343	0.088	0.152	0.043	0.602
		Instant	0.091	0.233	0.383	0.027	0.886	0.011	0.854
Original	HP ($\lambda=1600$)	MA - 3 year	0.038	0.069	0.005	0.004	0.007	0.006	0.222
		MA - 5 year	0.092	0.292	0.200	0.156	0.243	0.116	0.368
		WMA	0.009	0.313	0.038	0.021	0.122	0.018	0.139
		Instant	0.056	0.375	0.017	0.010	0.574	0.009	0.854
Original	HP ($\lambda=50000$)	MA - 3 year	0.231	0.118	0.031	0.018	0.084	0.021	0.286
		MA - 5 year	0.224	0.703	0.359	0.360	0.312	0.266	0.266
		WMA	0.045	0.104	0.341	0.036	0.067	0.019	0.107
		Instant	0.123	0.510	0.540	0.016	0.739	0.009	0.915
Original	CBO	MA - 3 year	0.108	0.172	0.014	0.016	0.303	0.015	0.893
		MA - 5 year	0.120	0.251	0.084	0.089	0.186	0.101	0.896
		WMA	0.016	0.007	0.045	0.030	0.066	0.018	0.512
		Instant	0.141	0.093	0.523	0.134	0.802	0.077	0.714
Modified	Quadratic	MA - 3 year	0.749	0.609	0.881	0.257	0.931	0.165	0.815
		MA - 5 year	0.757	0.514	0.869	0.540	0.919	0.368	0.845
		WMA	0.384	0.419	0.600	0.317	0.824	0.152	0.779
		Instant	0.389	0.552	0.668	0.249	0.780	0.118	0.924
Modified	HP ($\lambda=1600$)	MA - 3 year	0.136	0.392	0.011	0.004	0.105	0.003	0.335
		MA - 5 year	0.304	0.119	0.249	0.168	0.307	0.116	0.530
		WMA	0.075	0.568	0.162	0.056	0.304	0.034	0.183
		Instant	0.295	0.132	0.018	0.008	0.283	0.006	0.518
Modified	HP ($\lambda=50000$)	MA - 3 year	0.931	0.731	0.908	0.328	0.902	0.241	0.646
		MA - 5 year	0.745	0.709	0.892	0.611	0.908	0.419	0.553
		WMA	0.458	0.566	0.971	0.161	0.726	0.064	0.525
		Instant	0.535	0.616	0.877	0.100	0.903	0.042	0.855
Modified	CBO	MA - 3 year	0.837	0.216	0.095	0.456	0.235	0.555	0.842
		MA - 5 year	0.752	0.4553	0.441	0.651	0.559	0.667	0.942
		WMA	0.191	0.028	0.200	0.035	0.407	0.097	0.931
		Instant	0.148	0.143	0.558	0.041	0.255	0.124	0.328

P-values for Granger Causality Tests for the United States: Losses Cause Deviations

Taylor Rule	Output Gap	Measure of Deviations	Loss Functions						
			MI	LAL	QLF1	QLF2	QLF3	QLF4	QLF5
Original	Quadratic	MA - 3 year	0.026	0.002	0.000	0.000	0.002	0.000	0.118
		MA - 5 year	0.012	0.001	0.001	0.003	0.004	0.003	0.067
		WMA	0.006	0.000	0.000	0.000	0.000	0.000	0.158
		Instant	0.000	0.000	0.000	0.000	0.000	0.000	0.060
Original	HP ($\lambda=1600$)	MA - 3 year	0.102	0.447	0.002	0.001	0.013	0.000	0.228
		MA - 5 year	0.018	0.490	0.128	0.074	0.088	0.061	0.925
		WMA	0.002	0.008	0.000	0.000	0.005	0.000	0.105
		Instant	0.000	0.033	0.000	0.000	0.000	0.000	0.169
Original	HP ($\lambda=50000$)	MA - 3 year	0.035	0.038	0.000	0.000	0.008	0.000	0.144
		MA - 5 year	0.019	0.030	0.002	0.006	0.036	0.005	0.569
		WMA	0.005	0.002	0.002	0.000	0.001	0.000	0.130
		Instant	0.000	0.000	0.000	0.000	0.000	0.000	0.152
Original	CBO	MA - 3 year	0.001	0.001	0.000	0.000	0.004	0.000	0.526
		MA - 5 year	0.008	0.014	0.016	0.028	0.057	0.056	0.064
		WMA	0.001	0.000	0.000	0.000	0.001	0.000	0.237
		Instant	0.000	0.000	0.000	0.000	0.000	0.000	0.127
Modified	Quadratic	MA - 3 year	0.507	0.003	0.000	0.001	0.000	0.000	0.006
		MA - 5 year	0.431	0.001	0.010	0.009	0.015	0.006	0.106
		WMA	0.320	0.004	0.016	0.000	0.000	0.000	0.003
		Instant	0.385	0.000	0.000	0.000	0.000	0.000	0.001
Modified	HP ($\lambda=1600$)	MA - 3 year	0.449	0.338	0.003	0.001	0.008	0.000	0.018
		MA - 5 year	0.413	0.247	0.224	0.101	0.089	0.072	0.787
		WMA	0.104	0.047	0.001	0.000	0.164	0.001	0.373
		Instant	0.012	0.240	0.002	0.000	0.007	0.000	0.358
Modified	HP ($\lambda=50000$)	MA - 3 year	0.508	0.001	0.000	0.000	0.002	0.000	0.087
		MA - 5 year	0.125	0.002	0.001	0.002	0.002	0.001	0.118
		WMA	0.125	0.003	0.039	0.000	0.002	0.000	0.014
		Instant	0.166	0.000	0.000	0.000	0.000	0.000	0.012
Modified	CBO	MA - 3 year	0.005	0.001	0.001	0.001	0.000	0.005	0.008
		MA - 5 year	0.032	0.027	0.037	0.003	0.006	0.006	0.023
		WMA	0.063	0.000	0.001	0.000	0.000	0.000	0.000
		Instant	0.034	0.000	0.000	0.000	0.000	0.000	0.000

Loss-Function Comparison for the United Kingdom

Type of Taylor Rule	Average Loss During					Ratio (2)/(1)	Ratio (2)/(4)	Ratio (5)/(1)
	Rules-Based Eras (1)	Discretionary Eras (2)	Intermediary Eras (3)	Rule and Intermediary Eras (4)	Discretionary and Intermediary Eras (5)			
	<u>Misery Index: $L = \text{Inflation} - \text{Output Gap}$</u>							
<i>Original</i>	0.96	16.38	5.07	3.84	7.31	17.10	4.27	7.64
<i>Modified</i>	0.96	10.43	5.02	3.50	7.31	10.89	2.98	7.64
	<u>Linear Absolute Loss Function: $L = \text{Inflation} - 2\% + \text{Output Gap}$</u>							
<i>Original</i>	2.29	15.87	5.17	4.31	7.29	6.94	3.68	3.19
<i>Modified</i>	2.29	10.63	4.83	3.88	7.29	4.65	2.74	3.19
	<u>Quadratic Loss Function: $L = (\text{Inflation} - 2\%)^2 + (\text{Output Gap})^2$</u>							
<i>Original</i>	5.19	224.35	22.21	17.11	62.36	43.27	13.11	12.03
<i>Modified</i>	5.19	121.89	18.42	13.48	62.36	23.51	9.04	12.03
	<u>Quadratic Loss Function $L = 1.5 * (\text{Inflation} - 2\%)^2 + .5 * (\text{Output Gap})^2$</u>							
<i>Original</i>	3.04	330.89	25.99	19.12	86.55	108.99	17.31	28.51
<i>Modified</i>	3.04	176.72	20.00	13.67	86.55	58.21	12.93	28.51
	<u>Quadratic Loss Function: $L = .5 * (\text{Inflation} - 2\%)^2 + 1.5 * (\text{Output Gap})^2$</u>							
<i>Original</i>	7.34	117.81	18.43	15.10	38.17	16.06	7.80	5.20
<i>Modified</i>	7.34	67.06	16.84	13.30	38.17	9.14	5.04	5.20
	<u>Quadratic Loss Function: $L = (\text{Inflation} - 2\%)^2$</u>							
<i>Original</i>	0.44	218.72	14.88	10.56	55.37	493.42	20.71	124.92
<i>Modified</i>	0.44	115.78	10.79	6.93	55.37	261.19	16.71	124.92
	<u>Quadratic Loss Function: $L = (\text{Output Gap})^2$</u>							
<i>Original</i>	4.74	5.64	7.32	6.55	6.99	1.19	0.86	1.47
<i>Modified</i>	4.74	6.11	7.63	6.55	6.99	1.29	0.93	1.47

Loss-Function Comparison for Australia

Type of Taylor Rule	Average Loss During					Ratio (2)/(1)	Ratio (2)/(4)	Ratio (5)/(1)
	Rules-Based Eras (1)	Discretionary Eras (2)	Intermediary Eras (3)	Rule and Intermediary Eras (4)	Discretionary and Intermediary Eras (5)			
	<u>Misery Index: $L = \text{Inflation} - \text{Output Gap}$</u>							
<i>Original</i>	2.60	10.28	4.04	3.38	6.49	3.95	3.04	2.49
<i>Modified</i>	2.62	8.25	-	2.62	8.25	3.15	3.15	3.15
	<u>Linear Absolute Loss Function: $L = \text{Inflation} - 2\% + \text{Output Gap}$</u>							
<i>Original</i>	1.57	8.80	4.35	3.07	6.10	5.59	2.87	3.87
<i>Modified</i>	1.92	7.74	-	1.92	7.74	4.03	4.03	4.03
	<u>Quadratic Loss Function: $L = (\text{Inflation} - 2\%)^2 + (\text{Output Gap})^2$</u>							
<i>Original</i>	1.89	65.96	16.78	9.92	36.07	34.87	6.65	19.07
<i>Modified</i>	3.15	50.17	-	3.15	50.17	15.95	15.95	15.95
	<u>Quadratic Loss Function $L = 1.5 * (\text{Inflation} - 2\%)^2 + .5 * (\text{Output Gap})^2$</u>							
<i>Original</i>	2.09	94.67	21.50	12.55	50.20	45.29	7.54	24.01
<i>Modified</i>	3.74	70.18	-	3.74	70.18	18.76	18.76	18.76
	<u>Quadratic Loss Function: $L = .5 * (\text{Inflation} - 2\%)^2 + 1.5 * (\text{Output Gap})^2$</u>							
<i>Original</i>	1.69	37.25	12.07	7.29	21.94	22.00	5.11	12.96
<i>Modified</i>	2.55	30.16	-	2.55	30.16	11.83	11.83	11.83
	<u>Quadratic Loss Function: $L = (\text{Inflation} - 2\%)^2$</u>							
<i>Original</i>	1.14	61.69	13.11	7.59	32.16	53.91	8.12	28.10
<i>Modified</i>	2.17	45.10	-	2.17	45.10	20.79	20.79	20.79
	<u>Quadratic Loss Function: $L = (\text{Output Gap})^2$</u>							
<i>Original</i>	0.75	4.27	3.68	2.33	3.91	5.71	1.84	5.23
<i>Modified</i>	0.98	5.08	-	0.98	5.08	5.20	5.20	5.20

Loss-Function Comparison for Canada

Type of Taylor Rule	Average Loss During					Ratio (2)/(1)	Ratio (2)/(4)	Ratio (5)/(1)
	Rules-Based Eras (1)	Discretionary Eras (2)	Intermediary Eras (3)	Rule and Intermediary Eras (4)	Discretionary and Intermediary Eras (5)			
	<u>Misery Index: $L = Inflation - Output\ Gap$</u>							
<i>Original</i>	2.25	5.69	7.27	3.46	6.27	2.53	1.65	2.79
<i>Modified</i>	2.32	6.32	-	2.32	6.32	2.73	2.73	2.73
	<u>Linear Absolute Loss Function: $L = Inflation - 2\% + Output\ Gap$</u>							
<i>Original</i>	2.46	6.46	7.02	3.56	6.67	2.62	1.81	2.71
<i>Modified</i>	2.52	6.74	-	2.52	6.74	2.68	2.68	2.68
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2 + (Output\ Gap)^2$</u>							
<i>Original</i>	4.82	33.14	42.53	13.91	36.61	6.88	2.38	7.60
<i>Modified</i>	5.04	37.41	-	5.04	37.41	7.43	7.43	7.43
	<u>Quadratic Loss Function $L = 1.5 * (Inflation - 2\%)^2 + .5 * (Output\ Gap)^2$</u>							
<i>Original</i>	3.92	43.27	57.17	16.76	48.40	11.05	2.58	12.36
<i>Modified</i>	4.29	49.44	-	4.29	49.44	11.53	11.53	11.53
	<u>Quadratic Loss Function: $L = .5 * (Inflation - 2\%)^2 + 1.5 * (Output\ Gap)^2$</u>							
<i>Original</i>	5.72	23.02	27.88	11.06	24.82	4.03	2.08	4.34
<i>Modified</i>	5.79	25.37	-	5.79	25.37	4.38	4.38	4.38
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2$</u>							
<i>Original</i>	1.51	26.70	35.90	9.80	30.10	17.71	2.72	19.97
<i>Modified</i>	1.77	30.74	-	1.77	30.74	17.37	17.37	17.37
	<u>Quadratic Loss Function: $L = (Output\ Gap)^2$</u>							
<i>Original</i>	3.31	6.45	6.62	4.11	6.51	1.95	1.57	1.97
<i>Modified</i>	3.27	6.67	-	3.27	6.67	2.04	2.04	2.04

Loss-Function Comparison for Japan

Type of Taylor Rule	Average Loss During					Ratio (2)/(1)	Ratio (2)/(4)	Ratio (5)/(1)
	Rules-Based Eras (1)	Discretionary Eras (2)	Intermediary Eras (3)	Rule and Intermediary Eras (4)	Discretionary and Intermediary Eras (5)			
	<u>Misery Index: $L = Inflation - Output\ Gap$</u>							
<i>Original</i>	1.43	8.55	-	1.43	8.55	5.98	5.98	5.98
<i>Modified</i>	1.71	8.31	-	1.71	8.31	4.85	4.85	4.85
	<u>Linear Absolute Loss Function: $L = Inflation - 2\% + Output\ Gap$</u>							
<i>Original</i>	3.81	12.02	-	3.81	12.02	3.16	3.16	3.16
<i>Modified</i>	3.94	12.88	-	3.94	12.88	3.27	3.27	3.27
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2 + (Output\ Gap)^2$</u>							
<i>Original</i>	10.60	122.75	-	10.60	122.75	11.58	11.58	11.58
<i>Modified</i>	11.55	139.64	-	11.55	139.64	12.09	12.09	12.09
	<u>Quadratic Loss Function $L = 1.5 * (Inflation - 2\%)^2 + .5 * (Output\ Gap)^2$</u>							
<i>Original</i>	9.83	165.80	-	9.83	165.80	16.87	16.87	16.87
<i>Modified</i>	11.28	188.53	-	11.28	188.53	16.72	16.72	16.72
	<u>Quadratic Loss Function: $L = .5 * (Inflation - 2\%)^2 + 1.5 * (Output\ Gap)^2$</u>							
<i>Original</i>	11.37	79.71	-	11.37	79.71	7.01	7.01	7.01
<i>Modified</i>	11.81	90.76	-	11.81	90.76	7.68	7.68	7.68
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2$</u>							
<i>Original</i>	4.53	104.42	-	4.53	104.42	23.05	23.05	23.05
<i>Modified</i>	5.50	118.71	-	5.50	118.71	21.56	21.56	21.56
	<u>Quadratic Loss Function: $L = (Output\ Gap)^2$</u>							
<i>Original</i>	6.07	18.33	-	6.07	18.33	3.02	3.02	3.02
<i>Modified</i>	6.04	20.93	-	6.04	20.93	3.47	3.47	3.47

Loss-Function Comparison for Italy

Type of Taylor Rule	Average Loss During					Ratio (2)/(1)	Ratio (2)/(4)	Ratio (5)/(1)
	Rules-Based Eras (1)	Discretionary Eras (2)	Intermediary Eras (3)	Rule and Intermediary Eras (4)	Discretionary and Intermediary Eras (5)			
	<u>Misery Index: $L = Inflation - Output\ Gap$</u>							
<i>Original</i>	7.01	17.35	-	7.01	17.35	2.47	2.47	2.47
<i>Modified</i>	7.01	17.35	-	7.01	17.35	2.47	2.47	2.47
	<u>Linear Absolute Loss Function: $L = Inflation - 2\% + Output\ Gap$</u>							
<i>Original</i>	6.01	18.48	-	6.01	18.48	3.08	3.08	3.08
<i>Modified</i>	6.01	18.48	-	6.01	18.48	3.08	3.08	3.08
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2 + (Output\ Gap)^2$</u>							
<i>Original</i>	35.42	289.08	-	35.42	289.08	8.16	8.16	8.16
<i>Modified</i>	35.42	289.08	-	35.42	289.08	8.16	8.16	8.16
	<u>Quadratic Loss Function $L = 1.5 * (Inflation - 2\%)^2 + .5 * (Output\ Gap)^2$</u>							
<i>Original</i>	49.81	429.25	-	49.81	429.25	8.62	8.62	8.62
<i>Modified</i>	49.81	429.25	-	49.81	429.25	8.62	8.62	8.62
	<u>Quadratic Loss Function: $L = .5 * (Inflation - 2\%)^2 + 1.5 * (Output\ Gap)^2$</u>							
<i>Original</i>	21.03	148.91	-	21.03	148.91	7.08	7.08	7.08
<i>Modified</i>	21.03	148.91	-	21.03	148.91	7.08	7.08	7.08
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2$</u>							
<i>Original</i>	32.10	284.71	-	32.10	284.71	8.87	8.87	8.87
<i>Modified</i>	32.10	284.71	-	32.10	284.71	8.87	8.87	8.87
	<u>Quadratic Loss Function: $L = (Output\ Gap)^2$</u>							
<i>Original</i>	3.32	4.37	-	3.32	4.37	1.32	1.32	1.32
<i>Modified</i>	3.32	4.37	-	3.32	4.37	1.32	1.32	1.32

Loss-Function Comparison for Mexico

Type of Taylor Rule	Average Loss During					Ratio (2)/(1)	Ratio (2)/(4)	Ratio (5)/(1)
	Rules-Based Eras (1)	Discretionary Eras (2)	Intermediary Eras (3)	Rule and Intermediary Eras (4)	Discretionary and Intermediary Eras (5)			
	<u>Misery Index: $L = Inflation - Output\ Gap$</u>							
<i>Original</i>	4.89	31.73	7.51	5.84	15.36	6.49	5.43	3.14
<i>Modified</i>	4.88	30.38	6.91	5.71	14.35	6.23	5.32	2.94
	<u>Linear Absolute Loss Function: $L = Inflation - 2\% + Output\ Gap$</u>							
<i>Original</i>	4.51	30.76	9.21	6.21	16.20	6.82	4.95	3.59
<i>Modified</i>	4.39	29.79	8.39	6.04	15.18	6.79	4.93	3.46
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2 + (Output\ Gap)^2$</u>							
<i>Original</i>	13.19	918.22	92.19	41.81	360.09	69.59	21.96	27.29
<i>Modified</i>	12.26	866.07	76.95	38.90	327.16	70.64	22.27	26.68
	<u>Quadratic Loss Function: $L = 1.5 * (Inflation - 2\%)^2 + .5 * (Output\ Gap)^2$</u>							
<i>Original</i>	14.17	1361.16	132.41	57.01	530.92	96.03	23.87	37.45
<i>Modified</i>	12.47	1283.52	110.12	52.68	482.17	102.92	24.37	38.66
	<u>Quadratic Loss Function: $L = .5 * (Inflation - 2\%)^2 + 1.5 * (Output\ Gap)^2$</u>							
<i>Original</i>	12.21	475.29	51.96	26.62	189.26	38.91	17.86	15.49
<i>Modified</i>	12.05	448.63	43.78	25.11	172.14	37.23	17.86	14.28
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2$</u>							
<i>Original</i>	7.58	902.04	86.31	36.11	350.88	119.04	24.98	46.30
<i>Modified</i>	6.34	850.48	71.64	33.23	318.59	134.14	25.59	50.25
	<u>Quadratic Loss Function: $L = (Output\ Gap)^2$</u>							
<i>Original</i>	5.62	16.18	5.87	5.71	9.21	2.88	2.83	1.64
<i>Modified</i>	5.92	15.59	5.30	5.67	8.57	2.63	2.75	1.45

Loss-Function Comparison for New Zealand

Type of Taylor Rule	Average Loss During					Ratio (2)/(1)	Ratio (2)/(4)	Ratio (5)/(1)
	Rules-Based Eras (1)	Discretionary Eras (2)	Intermediary Eras (3)	Rule and Intermediary Eras (4)	Discretionary and Intermediary Eras (5)			
	<u>Misery Index: $L = \text{Inflation} - \text{Output Gap}$</u>							
<i>Original</i>	1.27	6.65	2.27	1.95	3.12	5.24	3.41	2.46
<i>Modified</i>	1.27	4.33	2.26	1.87	3.12	3.40	2.31	2.46
	<u>Linear Absolute Loss Function: $L = \text{Inflation} - 2\% + \text{Output Gap}$</u>							
<i>Original</i>	2.79	5.76	2.40	2.53	3.06	2.07	2.28	1.10
<i>Modified</i>	2.79	4.19	2.25	2.46	3.06	1.50	1.70	1.10
	<u>Quadratic Loss Function: $L = (\text{Inflation} - 2\%)^2 + (\text{Output Gap})^2$</u>							
<i>Original</i>	6.03	26.67	4.71	5.13	8.98	4.42	5.20	1.49
<i>Modified</i>	6.03	16.36	3.71	4.62	8.98	2.71	3.54	1.49
	<u>Quadratic Loss Function $L = 1.5 * (\text{Inflation} - 2\%)^2 + .5 * (\text{Output Gap})^2$</u>							
<i>Original</i>	3.93	17.82	4.09	4.04	6.76	4.54	4.41	1.72
<i>Modified</i>	3.93	11.09	3.66	3.77	6.76	2.82	2.95	1.72
	<u>Quadratic Loss Function: $L = .5 * (\text{Inflation} - 2\%)^2 + 1.5 * (\text{Output Gap})^2$</u>							
<i>Original</i>	8.13	35.52	5.33	6.22	11.20	4.37	5.71	1.38
<i>Modified</i>	8.13	21.63	3.76	5.47	11.20	2.66	3.96	1.38
	<u>Quadratic Loss Function: $L = (\text{Inflation} - 2\%)^2$</u>							
<i>Original</i>	0.91	4.48	1.73	1.47	2.27	4.91	3.04	2.48
<i>Modified</i>	0.91	2.91	1.81	1.46	2.27	3.19	2.00	2.48
	<u>Quadratic Loss Function: $L = (\text{Output Gap})^2$</u>							
<i>Original</i>	5.11	22.19	2.98	3.66	6.71	4.34	6.07	1.31
<i>Modified</i>	5.11	13.45	1.90	3.16	6.71	2.63	4.26	1.31

Loss-Function Comparison for Norway

Type of Taylor Rule	Average Loss During					Ratio (2)/(1)	Ratio (2)/(4)	Ratio (5)/(1)
	Rules-Based Eras (1)	Discretionary Eras (2)	Intermediary Eras (3)	Rule and Intermediary Eras (4)	Discretionary and Intermediary Eras (5)			
	<u>Misery Index: $L = Inflation - Output\ Gap$</u>							
<i>Original</i>	1.65	-	-	1.65	-	-	-	-
<i>Modified</i>	1.95	1.14	-	1.95	1.14	0.58	0.58	0.58
	<u>Linear Absolute Loss Function: $L = Inflation - 2\% + Output\ Gap$</u>							
<i>Original</i>	2.22	-	-	2.22	-	-	-	-
<i>Modified</i>	2.13	2.36	-	2.13	2.36	1.11	1.11	1.11
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2 + (Output\ Gap)^2$</u>							
<i>Original</i>	4.12	-	-	4.12	-	-	-	-
<i>Modified</i>	3.83	4.63	-	3.83	4.63	1.21	1.21	1.21
	<u>Quadratic Loss Function $L = 1.5 * (Inflation - 2\%)^2 + .5 * (Output\ Gap)^2$</u>							
<i>Original</i>	3.04	-	-	3.04	-	-	-	-
<i>Modified</i>	2.73	3.57	-	2.73	3.57	1.30	1.30	1.30
	<u>Quadratic Loss Function: $L = .5 * (Inflation - 2\%)^2 + 1.5 * (Output\ Gap)^2$</u>							
<i>Original</i>	5.21	-	-	5.21	-	-	-	-
<i>Modified</i>	4.92	5.69	-	4.92	5.69	1.15	1.15	1.15
	<u>Quadratic Loss Function: $L = (Inflation - 2\%)^2$</u>							
<i>Original</i>	0.98	-	-	0.98	-	-	-	-
<i>Modified</i>	0.82	1.25	-	0.82	1.25	1.53	1.53	1.53
	<u>Quadratic Loss Function: $L = (Output\ Gap)^2$</u>							
<i>Original</i>	3.14	-	-	3.14	-	-	-	-
<i>Modified</i>	3.01	3.37	-	3.01	3.37	1.12	1.12	1.12