Has models' forecasting performance for US output growth and inflation changed over time, and when?

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Bank of Chile, Forecasting Workshop

Main Goal

- Evaluate whether forecasting performance has changed over time
  - Existing tests only focus on average performance
- Main findings:
  - Forecasting inflation is harder than forecasting output
  - Models' forecasting ability for inflation worsened around the time of the Great Moderation, whereas that of output worsened in mid-1970s
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Outline

- Simple example
- General results
- Are the parameters in the Taylor rule identified?
- Conclusion

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  - OLS estimation

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  - Earnings (earn Δ ln);
  - Money growth, either M2 (m2 Δ ln) or M3 (m3 Δ ln).

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  - $\widehat{\sigma}$ is an estimate of the standard deviation of the relative MSFE
  - Giacomini and Rossi (2008) show that

$$F_{t,m}^{OOS} = m^{1/2} \sum_{j=t-m/2}^{t+m/2-1} rMSFE_t \Longrightarrow \left[\mathcal{B}\left(\tau + \mu/2\right) - \mathcal{B}\left(\tau - \mu/2\right)\right] / \sqrt{\mu},$$

where $t = [\tau P]$, $m = [\mu P]$, $\mathcal{B}(\cdot)$ is a std univariate BM

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    where $t = [\tau P]$, $m = [\mu P]$, $\mathcal{B}(\cdot)$ is a std univariate BM
  - They find critical values s.t.

$$\Pr\left\{ \sup_{\tau} \left| F_{t,m}^{OOS} \right| > k_\alpha \right\} = \alpha$$

Forecast comparisons over time: One-time reversal test

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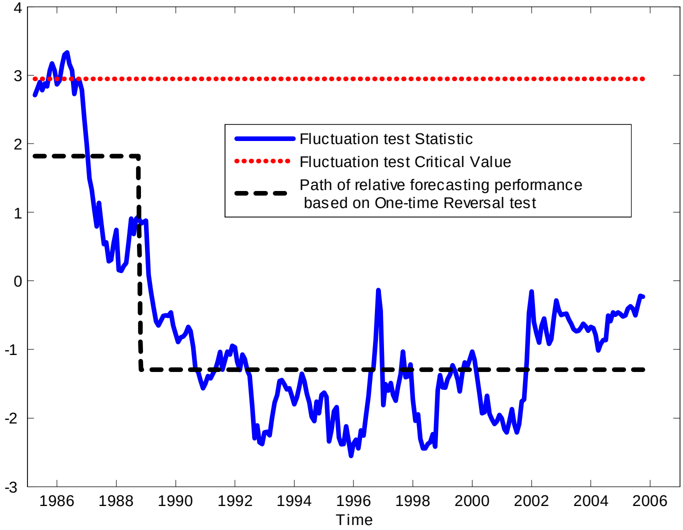
    - Estimate the path of the relative forecasting ability over time

Forecast comparisons over time: example



Empirical results: One-time reversal test I

Table 4. Forecasting Inflation: Tests of Average Equal Predictive Ability

Variable		rMSFE	p-value	Variable		rMSFE	p-value
rovnght	level	0.10	0.92	ip	Δ ln	2.74	0.01
rtbill	level	0.15	0.88	ip	gap	1.39	0.16
rbnds	level	-0.13	0.90	emp	Δ ln	-0.95	0.34
rbndm	level	-0.75	0.45	emp	gap	1.17	0.24
rbndl	level	-0.89	0.37	unemp	level	1.06	0.29
rovnght	Δ	0.19	0.85	unemp	Δ ln	-0.60	0.55
rtbill	Δ	0.17	0.87	unemp	gap	0.66	0.51
rbnds	Δ	0.13	0.90	ppi	Δ ln	0.56	0.58
rbndm	Δ	0.53	0.59	ppi	Δ^2 ln	0.75	0.45
rbndl	Δ	0.69	0.49	earn	Δ ln	-1.47	0.14
rrovnght	level	0.10	0.92	earn	Δ^2 ln	2.72	0.01
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Empirical results: One-time reversal test II

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rrtbill	Δ	-0.71	0.48	m0	Δ^2 ln	2.13	0.03
rrbnds	Δ	-0.94	0.35	m1	Δ ln	0.07	0.94
rrbndm	Δ	-1.20	0.23	m1	Δ^2 ln	3.09	0.00
rrbndl	Δ	-1.35	0.18	m2	Δ ln	2.17	0.03
rspread	level	0.40	0.69	m2	Δ^2 ln	2.79	0.01
exrate	Δ ln	0.65	0.52	m3	Δ ln	-1.94	0.05
stockp	Δ ln	2.03	0.04	m3	Δ^2 ln	4.03	0.00
rstockp	Δ ln	2.03	0.04	rm0	Δ ln	-0.26	0.79
capu	level	-0.53	0.60	rm1	Δ ln	0.07	0.94
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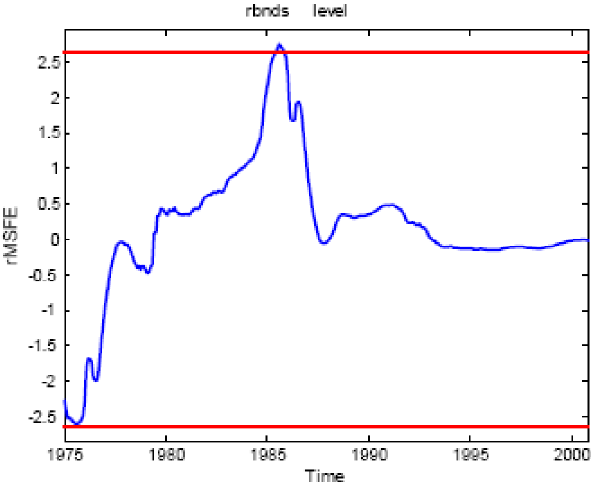
Empirical results: Fluctuation test

One-year Treasury Bond rate



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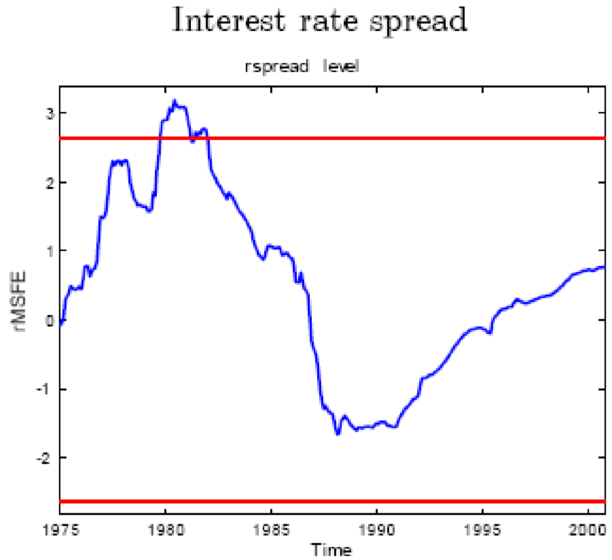

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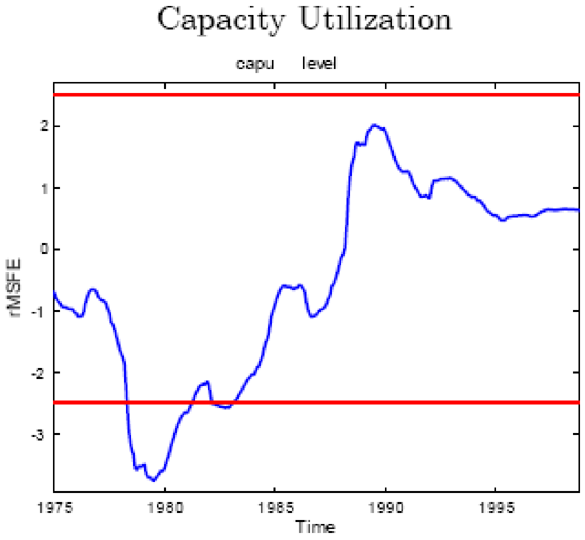

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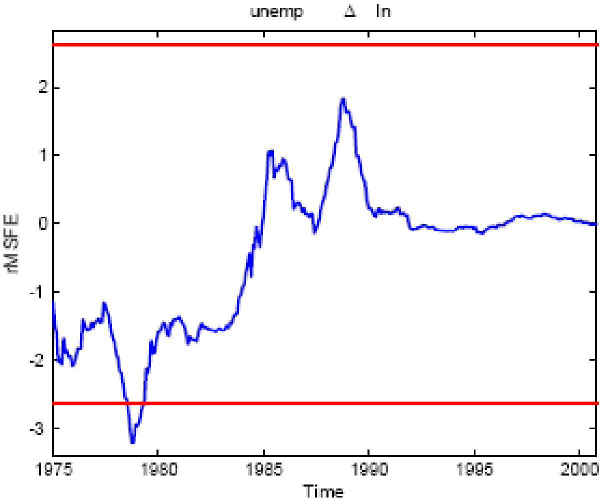
Unemployment



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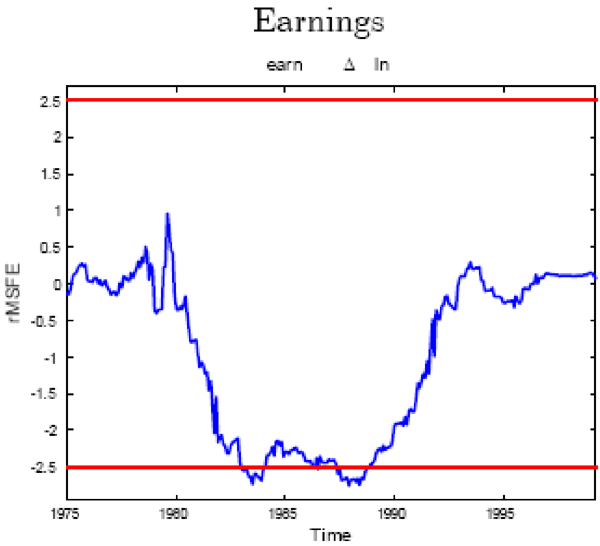

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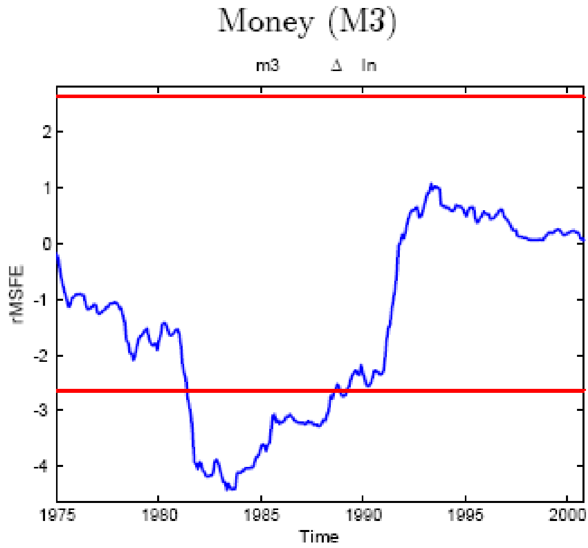

Empirical results: Existing tests (Full sample I)

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  - There is more evidence in favor of predictive ability for output than for inflation
  - The time of the reversal in the predictive ability is around 1983-1984 for inflation (and mid-1970 for output).