

# Fiscal Policy: Ex Ante and Ex Post

Dean Croushore<sup>1</sup>   Simon van Norden<sup>2</sup>

<sup>1</sup>University of Richmond

<sup>2</sup>HEC Montréal & CIRANO

SEM 2014 - U. Chicago

# Overview I

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

We construct and analyse a new data set for  
US Fiscal Policy Forecasts

- ▶ Federal Government
  - ▶ Expenditures
  - ▶ Revenues
  - ▶ Surplus
  - ▶ Structural Surplus (HEB)
- ▶ Real-Time
  - ▶ 2 vintages per quarter
  - ▶ Several quarters of forecasts and backcasts
  - ▶ Last vintage: end 2006
  - ▶ Vintages start around 1970s
- ▶ A real-time perspective over several business cycles.
- ▶ Consistent estimates of Actual and Structural Surpluses.

## Introduction

A New Data Set  
FOMC Greenbooks  
Other Forecasts

Forecast  
Performance  
Forecast Reliability  
Forecast Efficiency

## Conclusions

# Overview II

In this paper, we focus on the performance of these forecasts.

- ▶ How large is the forecast uncertainty?
- ▶ How do Greenbook forecasts compare to other forecasts?
- ▶ Are the Greenbook forecasts biased?
- ▶ Are the Greenbook forecasts efficient?

Outline

Introduction

A New Data Set

FOMC Greenbooks

Other Forecasts

Forecast Performance

Forecast Reliability

Forecast Efficiency

Conclusions

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions

# FOMC Greenbook Forecasts I

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

## Board Staff Projections

- ▶ FOMC meetings from July 1966 to December 2006
- ▶ Use first & last meeting of each quarter

Fiscal forecasts for federal government and macroeconomic variables

- ▶ Receipts
- ▶ Expenditures
- ▶ Surplus/Deficit
- ▶ High-employment budget (HEB)
- ▶ Current (consumption) and capital account surplus (since 1996)
- ▶ Unemployment rate
- ▶ Nominal and Real GDP (GNP before 1992)

Fiscal variables converted to nominal GDP Shares

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions

# FOMC Greenbook Forecasts II

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions

Strictly Confidential (FR)  
Class if FOMC

STAFF PROJECTIONS OF FEDERAL SECTOR ACCOUNTS AND RELATED ITEMS  
(Billions of dollars except as noted)

January 29, 1997

Item UNIFIED BUDGET	Fiscal year <sup>1</sup>				1996				1997				1998			
	1995*	1996*	1997	1998	Q1*	Q2*	Q3*	Q4	Not seasonally adjusted							
Receipts <sup>1</sup>	1355	1453	1525	1575	322	446	362	346	341	459	380	363	351	469	392	382
Outlays <sup>1</sup>	1319	1560	1634	1692	393	392	395	405	412	408	410	426	419	424	422	471
Surplus/deficit <sup>1</sup>	-164	-107	-109	-117	-72	54	-33	-59	-71	51	-31	-63	-68	45	-30	-89
On-budget	-226	-174	-184	-187	-84	14	-36	-76	-83	11	-36	-72	-81	2	-36	-101
Off-budget	62	67	75	69	12	39	2	18	12	40	5	8	12	43	6	11
Surplus excluding deposit insurance <sup>2</sup>	-182	-116	-118	-120	-75	52	-34	-65	-72	51	-32	-64	-69	44	-31	-90
Means of financing																
Borrowing	171	130	118	146	80	-23	39	49	58	-31	43	54	69	-25	48	73
Cash decrease	-2	-6	4	0	-1	-16	-6	11	13	-16	-4	10	10	-15	-5	10
Other <sup>3</sup>	-5	-16	-13	-29	-7	-14	0	-1	1	-5	-8	0	-11	-5	-13	6
Cash operating balance, end of period	38	44	40	40	22	38	44	33	20	36	40	30	20	35	40	30
NIPA FEDERAL SECTOR					Seasonally adjusted, annual rate											
Receipts	1459	1544	1625	1684	1523	1576	1582	1625	1606	1626	1645	1663	1672	1691	1711	1731
Expenditures	1629	1683	1749	1798	1678	1702	1703	1730	1741	1755	1772	1782	1792	1802	1815	1829
Consumption expend	455	457	462	463	454	464	461	463	460	461	464	463	464	462	464	460
Defense	304	303	303	305	299	307	305	306	301	302	304	305	306	303	305	303
Nondefense	151	155	159	158	155	156	157	157	159	160	160	157	158	159	159	157
Other expenditures	1175	1226	1287	1335	1225	1239	1241	1267	1281	1294	1308	1319	1328	1340	1351	1369
Current account surplus	-171	-139	-124	-114	-155	-127	-121	-105	-135	-128	-127	-119	-120	-112	-104	-98
Gross investment	65	63	62	62	65	66	64	64	61	62	62	63	62	61	61	60
Current and capital account surplus	-236	-202	-186	-176	-220	-193	-185	-169	-196	-190	-189	-182	-182	-172	-166	-159
FISCAL INDICATORS <sup>4</sup>																
High-employment (HEB) surplus/deficit	-263	-237	-245	-249	-247	-233	-231	-222	-251	-251	-254	-253	-253	-247	-244	-241
Change in HEB, percent of potential GDP	0	-4	1	1	1	-2	0	-1	4	0	0	0	0	-1	0	0
Fiscal impetus (FI), percent, cal year	-5.6	-1.6	-3.5	-5.5	1.3	1.8	-2	-8	-2.2	-5	1	-2.7	-1.8	-1.3	-3	-2

1 OMB's July 1996 deficit estimates (assuming the enactment of the President's proposals) are \$126 billion in FY97 and \$94 billion in FY98. CBO's January 1997 baseline deficit estimates are \$124 billion in FY97 and \$120 billion in FY98. Budget receipts, outlays, and surplus/deficit include corresponding Social Security (OASDI) categories. The OASDI surplus is excluded from the on-budget deficit and shown separately as off-budget, as classified under current law. The Postal Service deficit is included in off-budget outlays beginning in FY90.

2 OMB's July 1996 deficit estimates (assuming the enactment of the President's proposals), excluding deposit insurance spending, are \$134 billion in FY97 and \$96 billion in FY98. CBO's January 1997 baseline deficit estimates, excluding deposit insurance, are \$136 billion in FY97 and \$124 billion in FY98.

3 Other means of financing are checks issued less checks paid, accrued items, and changes in other financial assets and liabilities.

4 HEB is the MIPA current and capital account surplus in current dollars, with cyclically sensitive receipts and outlays adjusted to the level of potential output generated by 1.8 percent real growth and an associated unemployment rate of 6 percent. Quarterly figures for change in HEB and FI are not at annual rates. Change in HEB, as a percent of nominal potential GDP, is reversed in sign. FI is the weighted difference of discretionary changes in federal spending and taxes (in chained (1992) dollars), scaled by real federal consumption plus investment. For change in HEB and FI, negative values indicate restraint.

5 Fiscal 1995 data for the unified budget come from OMB; fiscal 1996 and quarterly data come from the Monthly Treasury Statement and may not sum to OMB fiscal year totals.

a=Actual

# FOMC Greenbook Forecasts III

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

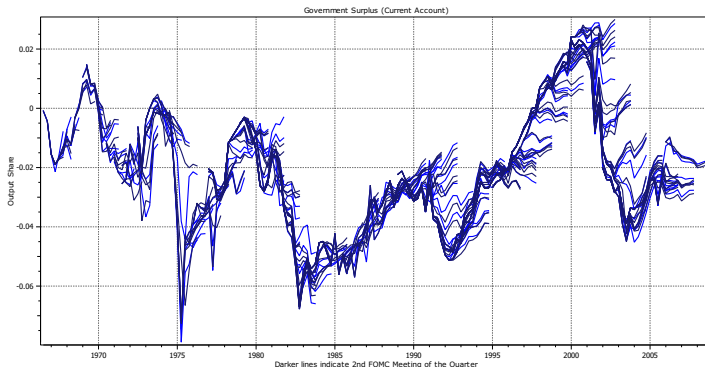
A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions



# FOMC Greenbook Forecasts IV

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

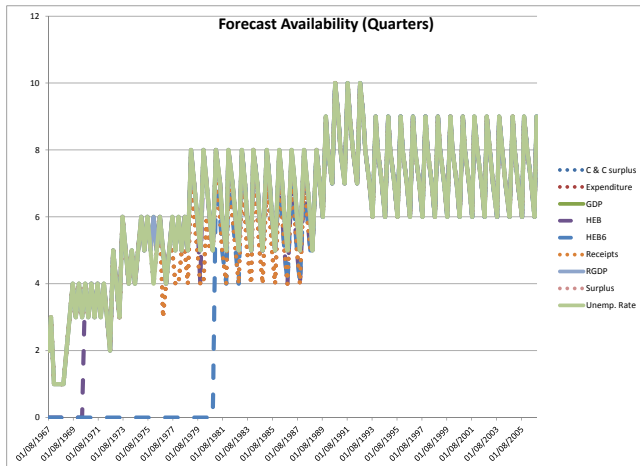
A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions



# FOMC vs Other Fiscal Forecasts

Few standard data sets of US fiscal forecasts

- ▶ CBO forecasts are conditional on current law
- ▶ OMB, ERP are viewed as partisan
- ▶ Documented forecast bias and inefficiency  
e.g. Kleisen-Thornton (2012), Croushore-Hunt (2008),  
Auerbach (1994, 1999), Campbell-Ghysels (1995),  
Plesko (1988); not biased: Belongia (1988)

FOMC Greenbook forecasts offer several differences

- ▶ Expected Fiscal Policy
- ▶ Non-partisan internal forecasts  
5-year embargo
- ▶ Good forecast performance on main macro variables
- ▶ Long time span (many business cycles)
- ▶ Forecast and estimated Structural Deficits

Major Disadvantage: Short Forecast Horizons



# Forecast Reliability

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Table: Forecast Error Variance

Horizon	Expenditures	Receipts	Surplus	C&C Surplus	HEB	HEB6	Unemployment
1974Q4-1990Q4							
0L	0.047	0.075	0.056		0.179	0.141	0.008
0F	0.084	0.129	0.127		0.256	0.146	0.042
1L	0.105	0.189	0.181		0.314	0.152	0.067
1F	0.167	0.194	0.256		0.319	0.139	0.122
2L	0.149	0.330	0.284		0.413	0.117	0.155
2F	0.212	0.328	0.339		0.406	0.111	0.190
3L	0.197	0.173	0.196		0.383	0.143	0.229
3F	0.240	0.214	0.257		0.420	0.144	0.243
4L	0.221	0.207	0.206		0.448	0.093	0.315
4F	0.269	0.250	0.285		0.630	0.137	0.321
1991Q1-2006Q4							
0L	0.049	0.129	0.055	0.091	0.210		0.003
0F	0.059	0.141	0.074	0.114	0.243		0.011
1L	0.067	0.179	0.118	0.161	0.329		0.015
1F	0.069	0.228	0.132	0.159	0.314		0.030
2L	0.101	0.403	0.258	0.273	0.464		0.037
2F	0.118	0.421	0.291	0.288	0.451		0.054
3L	0.169	0.609	0.447	0.415	0.591		0.064
3F	0.195	0.630	0.491	0.450	0.586		0.098
4L	0.260	0.832	0.684	0.605	0.769		0.115
4F	0.304	0.844	0.750	0.667	0.786		0.154

Figures are fractions of the variance of the underlying series 1974Q4-2006Q4.

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions

## Forecast Performance: Greenbook vs. CBO

Dean Croushore,  
Simon van Norden

- A New Data Set
  - FOMC Greenbooks
  - Other Forecasts

## Performance

## Conclusions

- ▶ Very different conditioning assumptions.
- ▶ Use first quarter FOMC meeting closest to CBO forecast.
- ▶ Annual forecasts from 1982 (1989 for 1 Year Receipts Expenditures.)

Variable	SURPLUS		RECEIPTS		EXPENDITURES	
Horizon (Years)	0	1	0	1	0	1
RMSE - Greenbook	0.00901	0.01396	0.00504	0.01026	0.00527	0.00918
RMSE - CBO	0.00873	0.01658	0.00658	0.01008	0.00564	0.00962
H0: Equal Quadratic Loss	0.804	0.108	0.008	0.000	0.431	0.033
H0: Equal Absolute Loss	0.917	0.032	0.004	0.004	0.760	0.374
H0: GB encompasses CBO	0.075	0.225	0.923	0.001	0.200	0.528
H0: CBO encompasses GB	0.306	0.062	0.000	0.000	0.002	0.001

Dean Croushore,  
Simon van Norden

TABLE 1—SUMMARY RESULTS OF BIAS TESTS

Horizon	Concept	Surplus		Expenditures		Receipts	
		First	Last	First	Last	First	Last
0	Last	0.56	0.08	0.02	0.03	0.04	< 0.01
	Initial	0.33	0.94	< 0.01	< 0.01	0.28	0.04
	One Year	0.60	0.71	< 0.01	< 0.01	< 0.01	< 0.01
	Prebenchmark	0.20	0.57	< 0.01	0.01	0.29	0.07
2	Last	0.37	0.40	0.64	0.55	0.18	0.21
	Initial	0.77	0.86	0.77	0.66	0.46	0.54
	One Year	0.63	0.70	0.24	0.17	0.04	0.06
	Prebenchmark	0.84	0.93	0.65	0.55	0.37	0.44
4	Last	0.23	0.22	0.84	0.78	0.03	0.04
	Initial	0.37	0.36	0.75	0.75	0.08	0.09
	One Year	0.31	0.31	0.60	0.51	< 0.01	< 0.01
	Prebenchmark	0.42	0.42	0.89	0.82	0.09	0.10

Horizon	Concept	HEB		HEB6		Unemployment	
		First	Last	First	Last	First	Last
0	Last	< 0.01	< 0.01	0.49	0.39	< 0.01	0.05
	Initial					< 0.01	0.40
	One Year					< 0.01	0.40
2	Last	< 0.01	0.02	0.30	0.50	0.06	0.03
	Initial					0.09	0.06
	One Year					0.09	0.06
4	Last	< 0.01	< 0.01	0.12	0.12	0.13	0.11
	Initial					0.16	0.15
	One Year					0.16	0.15

*Note:* The figures shown are *p*-values for tests of the null hypothesis that the mean forecast error is zero. The sample period is 1974:Q4 to 2006:Q4, except for HEB6, for which the sample begins in 1981:Q1.

## Introduction

## A New Data Set

FOMC Greenbooks  
Other Forecasts

## Forecast Performance

Forecast Reliability  
Forecast Efficiency

## Conclusions

# Forecast Bias? Medians and Outcome Measures

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

## Sign Test

Horizon	Concept	Surplus		Expenditures		Receipts		HEB		HEB6		Unemployment	
		First	Last	First	Last	First	Last	First	Last	First	Last	First	Last
0	Last	60%	72%	72%	3%	11%	11%	1%	5%	11%	22%	0%	0%
	Initial	72%	86%	0%	0%	100%	11%					0%	22%
	1 Year	60%	86%	0%	0%	5%	0%					0%	16%
	PreBenchmark	5%	22%	0%	1%	29%	0%						
2	Last	15%	53%	37%	53%	70%	53%	8%	2%	24%	2%	0%	0%
	Initial	15%	15%	70%	37%	37%	53%					0%	0%
	1 Year	2%	37%	24%	53%	96%	70%					0%	0%
	PreBenchmark	4%	2%	53%	70%	53%	24%						
4	Last	11%	48%	0%	0%	11%	25%	92%	73%	48%	48%	1%	0%
	Initial	11%	25%	0%	0%	4%	11%					4%	1%
	1 Year	11%	4%	0%	0%	48%	25%					4%	1%
	PreBenchmark	25%	11%	0%	0%	11%	25%						

## Introduction

## A New Data Set

FOMC Greenbooks  
Other Forecasts

## Forecast Performance

Forecast Reliability  
Forecast Efficiency

## Conclusions

## Wilcoxon Signed-Rank Test

Horizon	Concept	Signed-Rank Test											
		Surplus		Expenditures		Receipts		HEB		HEB6		Unemployment	
		First	Last	First	Last	First	Last	First	Last	First	Last	First	Last
0	Last	70%	15%	1%	4%	3%	1%	1%	0%	0%	1%	0%	0%
	Initial	34%	79%	0%	1%	18%	7%					0%	22%
	1 Year	60%	84%	0%	0%	1%	0%					0%	23%
	PreBenchmark	12%	23%	0%	1%	17%	4%						
2	Last	10%	9%	23%	30%	59%	56%	44%	47%	1%	0%	1%	1%
	Initial	2%	1%	22%	31%	27%	24%					2%	1%
	1 Year	2%	3%	59%	67%	83%	77%					2%	1%
	PreBenchmark	2%	1%	38%	49%	37%	24%						
4	Last	9%	14%	0%	0%	0%	1%	68%	96%	1%	1%	13%	3%
	Initial	7%	9%	0%	0%	0%	1%					11%	3%
	1 Year	8%	9%	0%	0%	1%	2%					11%	3%
	PreBenchmark	6%	5%	0%	0%	0%	1%						

# Forecast Bias? Medians and More Horizons I

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

p-Values for Median FE = 0

Concept	Horizon	Meeting	Full Sample		First Half		Second Half	
			Sign	Signed-Rank	Sign	Signed-Rank	Sign	Signed-Rank
RECEIPTS	0	L	0%	4%	2%	2%	6%	67%
RECEIPTS	0	F	29%	17%	32%	24%	53%	42%
RECEIPTS	1	L	79%	50%	26%	97%	45%	26%
RECEIPTS	1	F	79%	32%	17%	84%	31%	17%
RECEIPTS	2	L	24%	24%	92%	45%	14%	20%
RECEIPTS	2	F	53%	37%	92%	48%	48%	41%
RECEIPTS	3	L	13%	18%	60%	35%	12%	33%
RECEIPTS	3	F	83%	14%	88%	19%	31%	40%
RECEIPTS	4	L	25%	1%	3%	1%	40%	61%
RECEIPTS	4	F	11%	0%	3%	0%	76%	65%
EXPEND	0	L	1%	1%	0%	0%	53%	88%
EXPEND	0	F	0%	0%	0%	0%	10%	34%
EXPEND	1	L	18%	29%	26%	11%	45%	81%
EXPEND	1	F	9%	26%	38%	22%	13%	87%
EXPEND	2	L	70%	49%	48%	60%	100%	46%
EXPEND	2	F	53%	38%	48%	78%	92%	35%
EXPEND	3	L	95%	35%	88%	100%	88%	40%
EXPEND	3	F	83%	31%	99%	91%	88%	33%
EXPEND	4	L	0%	0%	0%	0%	76%	34%
EXPEND	4	F	0%	0%	0%	0%	76%	45%

- ▶ Using last Pre-Benchmark-Revision estimate.
- ▶ Full Sample is 1974Q4-2006Q4.
- ▶ Split sample is pre-1991 and post-1990

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions

p-Values for Median FE = 0									
			Full Sample		First Half		Second Half		
Concept	Horizon	Meeting	Sign	Signed-Rank	Sign	Signed-Rank	Sign	Signed-Rank	
SURPLUS	0	L	22%	23%	8%	9%		90%	96%
SURPLUS	0	F	5%	12%	5%	4%		53%	97%
SURPLUS	1	L	2%	1%	3%	3%		31%	18%
SURPLUS	1	F	3%	1%	17%	3%		13%	14%
SURPLUS	2	L	2%	1%	6%	2%		14%	24%
SURPLUS	2	F	4%	2%	6%	2%		28%	42%
SURPLUS	3	L	24%	2%	31%	5%		60%	40%
SURPLUS	3	F	6%	5%	4%	5%		60%	31%
SURPLUS	4	L	11%	5%	40%	10%		13%	31%
SURPLUS	4	F	25%	6%	40%	13%		13%	31%
UNEMP	0	L	16%	23%	14%	12%		53%	95%
UNEMP	0	F	0%	0%	1%	2%		0%	0%
UNEMP	1	L	0%	0%	6%	3%		0%	0%
UNEMP	1	F	0%	0%	2%	4%		0%	0%
UNEMP	2	L	0%	1%	1%	6%		1%	3%
UNEMP	2	F	0%	2%	2%	13%		0%	4%
UNEMP	3	L	0%	2%	4%	16%		1%	7%
UNEMP	3	F	0%	6%	4%	8%		4%	8%
UNEMP	4	L	1%	3%	3%	8%		3%	21%
UNEMP	4	F	4%	11%	13%	38%		3%	22%

- ▶ Surplus: Pre-Benchmark-Revision Estimate
- ▶ Unemployment Rate: Current Vintage
- ▶ Full Sample is 1974Q4-2006Q4.
- ▶ Split sample is pre-1991 and post-1990

## Introduction

## A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast

## Performance

## Forecast Efficiency

## Conclusions

### Fiscal Policy: Ex Ante and Ex Post

Dean Croushore,  
Simon van Norden

## Introduction

## A New Data Set

FOMC Greenbooks  
Other Forecasts

## Forecast Performance

Forecast Reliability  
Forecast Efficiency

## Conclusions

- ▶ Using last Greenbook estimate.
- ▶ Full Sample is 1974Q4-2006Q4.
- ▶ Split sample is pre-1991 and post-1990

# Forecast Bias? Summary of results

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

## What did we learn?

- ▶ Results largely insensitive to choice of outcome measure.  
(Bias in data revisions small?)
- ▶ More evidence of nonzero median than nonzero mean  
forecast error.  
(More power? or asymmetry?)
- ▶ Most evidence of bias is pre-1991.  
(except UNEMP)
- ▶ Less bias around 2Q horizons?

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions



# Forecast Efficiency: Error Persistence? I

$H_0$  : Consecutive forecast errors have the same sign 50 % of the time.

Concept	Horizon	Meeting	p-Values for persistence FE sign					
			Full Sample		First Half		Second Half	
			Sign	Signed-Rank	Sign	Signed-Rank	Sign	Signed-Rank
RECEIPTS	0	L	2%	0%	1%	1%	45%	6%
RECEIPTS	0	F	0%	0%	3%	5%	2%	0%
RECEIPTS	1	L	0%	5%	4%	29%	1%	12%
RECEIPTS	1	F	1%	7%	2%	33%	16%	22%
RECEIPTS	2	L	48%	89%	51%	88%	51%	45%
RECEIPTS	2	F	48%	80%	85%	90%	51%	67%
RECEIPTS	3	L	93%	97%	52%	85%	9%	8%
RECEIPTS	3	F	61%	72%	52%	98%	9%	8%
RECEIPTS	4	L	41%	11%	68%	37%	68%	37%
RECEIPTS	4	F	6%	7%	68%	37%	68%	37%
EXPEND	0	L	0%	0%	0%	0%	0%	0%
EXPEND	0	F	0%	0%	0%	0%	0%	0%
EXPEND	1	L	0%	0%	0%	1%	1%	6%
EXPEND	1	F	0%	0%	0%	1%	0%	2%
EXPEND	2	L	1%	9%	7%	56%	7%	71%
EXPEND	2	F	1%	6%	7%	29%	7%	56%
EXPEND	3	L	25%	67%	9%	72%	9%	72%
EXPEND	3	F	25%	97%	52%	72%	9%	72%
EXPEND	4	L	6%	7%	68%	37%	68%	74%
EXPEND	4	F	6%	7%	68%	37%	68%	74%

Full Sample is 1974Q4-2006Q4.

Split sample is pre-1991 and post-1990

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast

Performance

Forecast Reliability

Forecast Efficiency

Conclusions

# Forecast Efficiency: Error Persistence? II

$H_0$  : Consecutive forecast errors have the same sign 50 % of the time.

p-Values for persistence FE sign									
Concept	Horizon	Meeting	Sign	Full Sample		First Half		Second Half	
				Signed-Rank	Sign	Signed-Rank	Sign	Signed-Rank	Sign
SURPLUS	0	L		0%	0%	10%	2%	1%	0%
SURPLUS	0	F		0%	0%	3%	2%	1%	0%
SURPLUS	1	L		0%	1%	0%	3%	10%	10%
SURPLUS	1	F		0%	1%	4%	4%	1%	4%
SURPLUS	2	L		2%	30%	7%	85%	7%	45%
SURPLUS	2	F		1%	5%	1%	45%	1%	21%
SURPLUS	3	L		25%	72%	9%	72%	52%	58%
SURPLUS	3	F		7%	88%	52%	85%	52%	58%
SURPLUS	4	L		91%	54%	68%	74%	68%	74%
SURPLUS	4	F		91%	54%	68%	37%	68%	74%
UNEMP	0	L		0%	2%	53%	88%	0%	0%
UNEMP	0	F		0%	0%	3%	16%	0%	0%
UNEMP	1	L		0%	0%	1%	3%	16%	3%
UNEMP	1	F		0%	0%	0%	0%	0%	0%
UNEMP	2	L		0%	1%	22%	17%	1%	2%
UNEMP	2	F		0%	0%	0%	0%	0%	1%
UNEMP	3	L		0%	0%	0%	8%	0%	8%
UNEMP	3	F		0%	1%	9%	21%	9%	13%
UNEMP	4	L		41%	23%	0%	37%	0%	37%
UNEMP	4	F		41%	23%	0%	37%	0%	37%

Full Sample is 1974Q4-2006Q4.

Split sample is pre-1991 and post-1990

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast

Performance

Forecast Reliability

Forecast Efficiency

Conclusions

# Forecast Efficiency: Error Persistence? III

$H_0$  : Consecutive forecast errors have the same sign 50 % of the time.

Concept	Horizon	Meeting	Sign	p-Values for persistence FE sign					
				Full Sample		First Half		Second Half	
				Signed-Rank	Sign	Signed-Rank	Sign	Signed-Rank	Sign
HEB6	0	L		54%	64%	2%	0%	0%	0%
HEB6	0	F		79%	35%	0%	0%	0%	0%
HEB6	1	L		59%	5%	8%	0%	2%	14%
HEB6	1	F		48%	9%	8%	0%	0%	5%
HEB6	2	L		14%	0%	0%	0%	7%	26%
HEB6	2	F		14%	0%	0%	0%	1%	19%
HEB6	3	L		25%	2%	9%	8%	9%	72%
HEB6	3	F		7%	2%	9%	8%	9%	72%
HEB6	4	L		6%	7%	68%	37%	68%	74%
HEB6	4	F		6%	7%	68%	37%	68%	37%
HEB	0	L		0%	0%	0%	0%	0%	0%
HEB	0	F		0%	0%	2%	0%	0%	0%
HEB	1	L		0%	1%	1%	3%	2%	14%
HEB	1	F		0%	0%	1%	2%	0%	5%
HEB	2	L		48%	56%	51%	82%	7%	26%
HEB	2	F		1%	14%	22%	41%	1%	19%
HEB	3	L		25%	96%	9%	58%	9%	72%
HEB	3	F		7%	53%	9%	72%	9%	72%
HEB	4	L		91%	54%	68%	74%	68%	74%
HEB	4	F		91%	23%	68%	37%	68%	37%

Full Sample is 1974Q4-2006Q4.

Split sample is pre-1991 and post-1990

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast

Performance

Forecast Reliability

Forecast Efficiency

Conclusions

# Forecast Efficiency and Interest Rates

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions

Horizon	Concept	Surplus		Expenditures		Receipts	
		First	Last	First	Last	First	Last
0	Last	0.21	0.14	bias	bias	bias	bias
	Initial	0.21	0.09	bias	bias	0.13	0.08
	One Year	0.60	0.56	bias	bias	bias	bias
	Prebenchmark	0.26	0.16	bias	bias	0.08	0.06
2	Last	0.88	0.99	0.19	0.22	0.19	0.35
	Initial	0.95	0.91	0.30	0.35	0.23	0.42
	One Year	0.88	0.75	0.34	0.38	bias	0.59
	Prebenchmark	0.98	0.84	0.17	0.19	0.08	0.17
4	Last	0.59	0.56	0.10	0.13	bias	bias
	Initial	0.66	0.63	0.09	0.10	0.09	0.11
	One Year	0.53	0.51	0.16	0.20	bias	bias
	Prebenchmark	0.54	0.52	0.09	0.12	0.10	0.15
Horizon	Concept	HEB		HEB6		Unemployment	
		First	Last	First	Last	First	Last
0	Last	bias	bias	0.45	0.92	bias	bias
	Initial					bias	0.20
	One Year					bias	0.20
2	Last	bias	bias	0.26	0.57	0.28	bias
	Initial					0.24	0.28
	One Year					0.24	0.28
4	Last	bias	bias	0.18	0.29	0.08	0.11
	Initial					0.08	0.11
	One Year					0.08	0.11

Full Sample is 1974Q4-2006Q4. The figures shown are *p*-values for tests of the null hypothesis that the coefficient on the lagged 4Q change in the federal funds rate is zero. (Ball and Croushore 2003)

# Conclusions I

New real-time data set on basic fiscal policy variables.

What have we learned so far?

- ▶ Most of the variation in the Surplus and Receipts 4Q ahead is a surprise
  - ▶ Same is true for structural deficit
  - ▶ This was not true before the Great Moderation.
  - ▶ This is despite better performance in forecasting unemployment variations.
  - ▶ Revenue forecasts have been too optimistic on average
- ▶ The Greenbook forecasts generally seem to forecast encompass those of the CBO (except for next year's receipts.)
- ▶ Most evidence of bias is restricted to pre-Great Moderation (except UNEMP)
- ▶ Clear evidence of serial correlation in sign of forecast errors

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

A New Data Set  
FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions

# Conclusions II

Fiscal Policy: Ex  
Ante and Ex Post

Dean Croushore,  
Simon van Norden

Introduction

A New Data Set

FOMC Greenbooks  
Other Forecasts

Forecast  
Performance

Forecast Reliability  
Forecast Efficiency

Conclusions

To come: (see WP FRB Philadelphia)

- ▶ Does the Fed react to expected structural deficits?  
(Yes.)
- ▶ How has Fiscal policy changed over time?  
(More countercyclical.)