

HAWKWATCHERS

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GOALS

FEDERAL RESERVE press release



For release at 2 p.m. EST

January 31, 2018

Information received since the Federal Open Market Committee met in December indicates that the labor market has continued to strengthen and that economic activity has been rising at a solid rate. Gains in employment, household spending, and business fixed investment have been solid, and the unemployment rate has stayed low. On a 12-month basis, both overall inflation and inflation for items other than food and energy have continued to run below 2 percent. Market-based measures of inflation compensation have increased in recent months but remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with further gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market conditions will remain strong. Inflation on a 12-month basis is expected to move up this year and to stabilize around the Committee's 2 percent objective over the medium term. Near-term risks to the economic outlook appear roughly balanced, but the Committee is monitoring inflation developments closely.

In view of realized and expected labor market conditions and inflation, the Committee decided to maintain the target range for the federal funds rate at 1-1/4 to 1-1/2 percent. The stance of monetary policy remains accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and

(more)



FRED



— Effective Federal Funds Rate



Source: Board of Governors of the Federal Reserve System (US)



WHY?



WHY?

A Model for the Federal Funds Rate Target*

Table 3

List of candidate explanatory variables in the specification of the ACH model

Inflation Measures:

- *GDP Deflator* (yearly average of the annualized log-change, in percent)
- *CPI Index*, less food and energy (yearly average of the annualized log-change, in percent)
- *Personal Consumption Expenditures Deflator* (yearly average of the annualized log-change, in percent)
- *Employment Cost Index* (annualized, quarterly log-change, in percent)
- *12-month ahead inflation forecasts* (Consumer Survey, University of Michigan)

Output Measures:

- *Output Gap* (log difference between actual and potential GDP, Congressional Budget Office estimates, in percent)
- *GDP growth* (annualized quarterly growth rate, in percent)
- *Total Capacity Utilization* (in deviations from an 80% norm)
- *12-month ahead consumer expectations on business conditions* (Consumer Survey, University of Michigan)

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Board of Governors of the Federal Reserve System

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Federal Open Market Committee

About the FOMC

Meeting calendars and information

Transcripts and other historical materials

FAQs

Meeting calendars, statements, and minutes (2013-2018)

The FOMC holds eight regularly scheduled meetings during the year and other meetings as needed. Links to policy statements and minutes are in the calendars below. The minutes of regularly scheduled meetings are released three weeks after the date of the policy decision. Committee membership changes at the first regularly scheduled meeting of the year.

FOIA
The FOMC makes an annual report pursuant to the Freedom of Information Act. The FOMC FOIA Service Center provides information about the status of FOIA requests and the FOIA process

2018 | 2017 | 2016 | 2015 | 2014 | 2013

2018 FOMC Meetings

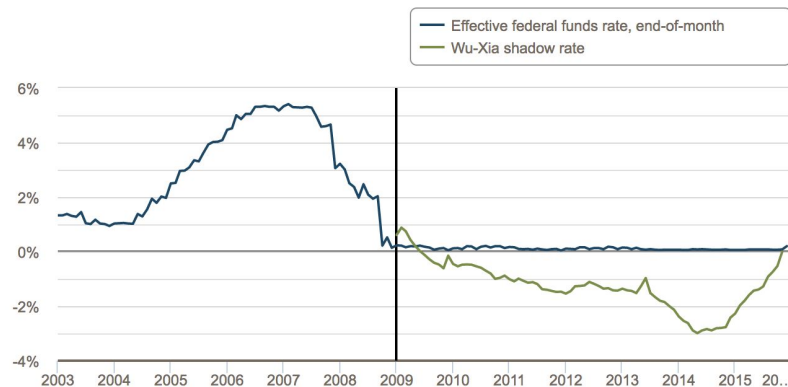
		Statement: PDF HTML	Longer-Run Goals and Policy Strategy	Minutes: PDF HTML
January	30-31	PDF HTML Implementation Note		(Released February 21, 2018)
March	20-21*			
May	1-2			
June	12-13*			
Jul/Aug	31-1			
September	25-26*			
November	7-8			
December	18-19*			

* Meeting associated with a Summary of Economic Projections and a press conference by the Chair.



Wu-Xia Shadow Federal Funds Rate

Export



Sources: Board of Governors of the Federal Reserve System and Wu and Xia (2015)

Wu-Xia Shadow Federal Funds Rate

Note: When the shadow fed funds rate is at least 25 basis points, this model's short-term interest rate is identical to the shadow fed funds rate and has been highly correlated with other short-term market interest rates such as the effective federal funds rate. Consequently, we will not provide regular updates of the shadow federal funds rate as long as the target range for the federal funds rate is at or above 25 to 50 basis points.

Pipeline

January 31, 2018
Federal Reserve issues FOMC statement

For release at 2:00 p.m. EST

Share ➔

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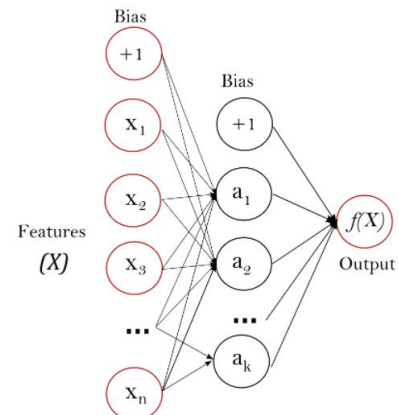
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1	March	1994	0.03	True
2	April	1994	0.07	True
3	May	1994	0.13	True
4	June	1994	0.06	True

TFVects

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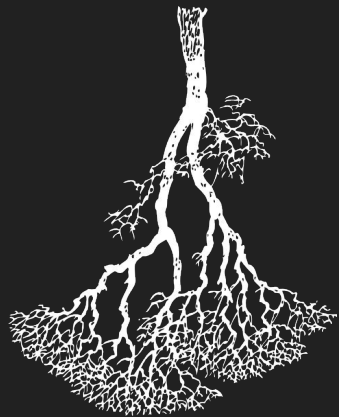
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[0., 0., 0., ..., 0., 0., 0.]])
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nltk

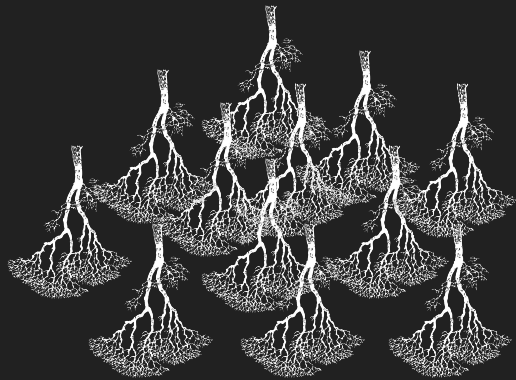


scikit-learn

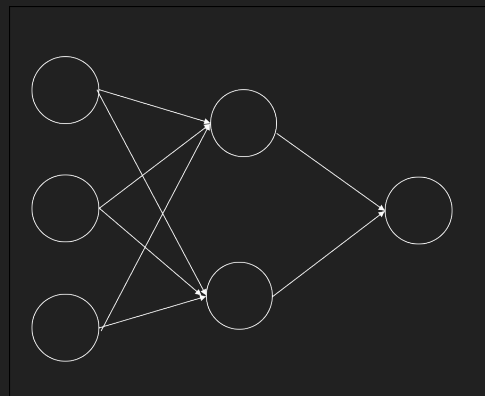
Models



Decision
Tree



Bagging



Neural Net



Testing / Results

Training: Feb. 1994 – Dec. 2015

	precision	recall	f1-score	support
False	0.89	0.85	0.87	137
True	0.85	0.89	0.87	132
avg / total	0.87	0.87	0.87	269

Testing: Jan. 2016 – Jan. 2018

	precision	recall	f1-score	support
False	1.00	0.33	0.50	6
True	0.83	1.00	0.90	19
avg / total	0.87	0.84	0.81	25



Bootstrap Estimate

*Randomly split dataset into train/test sets (70/30), train and test model,
determine performance (using MSE), rinse and repeat to get robust performance estimate*

























	precision	recall	f1-score	support
0	0.66	0.70	0.68	429
1	0.70	0.67	0.68	461
avg / total	0.68	0.68	0.68	890

```
test estimate MSE bootstrap= 0.31910112359550563 test estimate MSE standard err= 0.02420298789723373
```

Test estimate MSE Bootstrap = 0.32

Test estimate MSE SE = 0.02

Labor Market Conditions Indicator

Labor Market Variables	
Unemployment rate (U3)	
Broad unemployment rate (U6)	
Unemployment forecast (Blue Chip)	
Job flows from U to E	
Quits rate	
Employment-population ratio	
Working part time for economic reasons	
Job leavers	
Job availability index (Conference Board)	
Unemployed 27 or more weeks	
Percent of firms with positions not able to fill right now (NFIB)	
Job losers	
Hires rate	
Percent of firms planning to increase employment (NFIB)	
Average hourly earnings	
Initial claims	
Private nonfarm payroll employment	
Aggregate weekly hours	
Temporary help employment	
Expected job availability (U of Michigan)	
Labor force participation rate	
Manufacturing employment index (ISM)	
Announced job cuts (Challenger-Gray-Christmas)	
Expected job availability (Conference Board)	

Source: Federal Reserve Bank of Kansas City

“The LMCI tracks changes in the labor market by finding variations from multiple labor indicators. Indicators range from unemployment rates to wages to layoffs to business surveys. The LMCI plays a critical role in helping the Fed with one of its two mandates: ensuring maximum employment. It's one of the factors that the agency will take into account when it considers raising interest rates later this year. “

- Investopedia, November 30, 2015



Testing / Results - LMCI

Training: Sept. 1994 – Dec. 2015

	precision	recall	f1-score	support
0	0.78	0.05	0.10	131
1	0.50	0.98	0.66	125
avg / total	0.64	0.51	0.37	256

Testing: Jan. 2016 – Jan. 2018

	precision	recall	f1-score	support
0	0.00	0.00	0.00	6
1	0.76	1.00	0.86	19
avg / total	0.58	0.76	0.66	25

Bootstrap Estimate - LMCI

	precision	recall	f1-score	support
0	0.47	0.25	0.32	424
1	0.49	0.72	0.58	426
avg / total	0.48	0.48	0.45	850

test estimate MSE bootstrap= 0.5152941176470588 test estimate MSE standard err= 0.046108042217095115

Test estimate MSE Bootstrap = 0.52

Test estimate MSE SE = 0.046



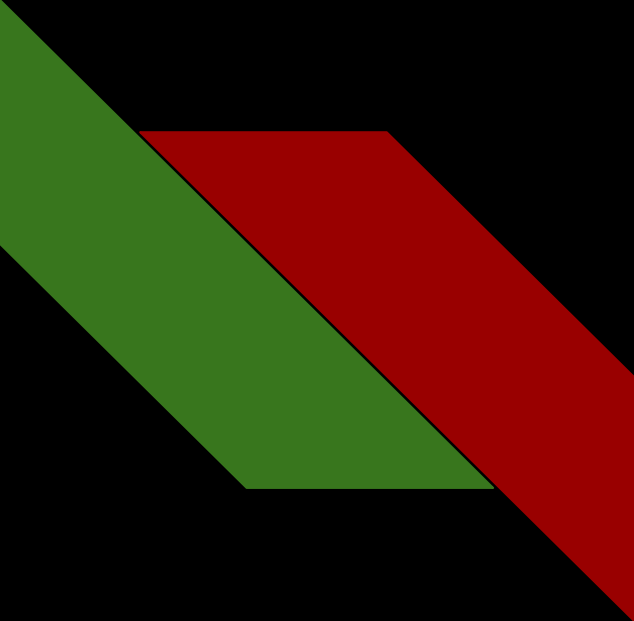
Challenges

- Noise when comparing words to numbers
- Keeping track of temporary functions used
- We had access to plenty of data - what is important?
 - How much does language change? How many years back is beneficial? Do we prioritize models that can predict any year accurately or ones that predict the future?




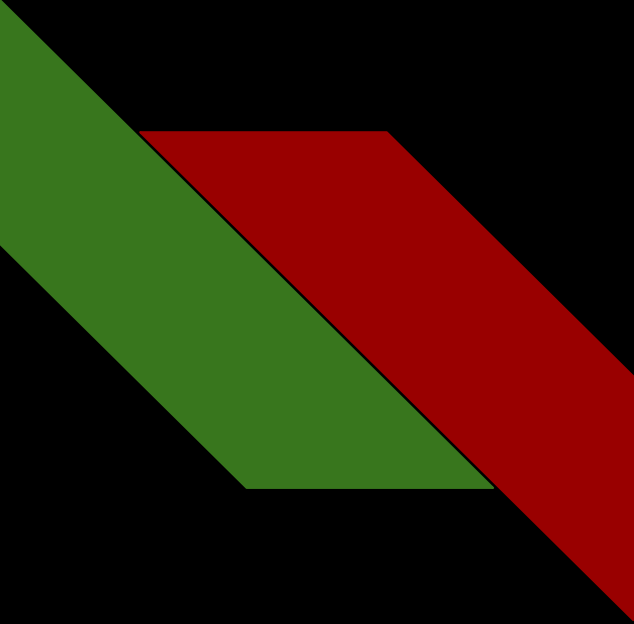
Future Work

- Binary classification is limited - could try to predict numerical change
- Repeat the process with other countries banks
 - Difference in language used even though all are in English
 - Web scrapers need to be customized for each bank and each time period



DEMO

- 
- Latest Release:
 - <https://www.federalreserve.gov/newsevents/pressreleases/monetary20180131a.htm>
 - Release from January 2009 (during the financial crisis)
 - <https://www.federalreserve.gov/newsevents/pressreleases/monetary20090128a.htm>



APPENDIX



REFERENCES

- A Model for the Federal Funds Interest Rate
 - <http://econweb.ucsd.edu/~jhamilto/jordec01.pdf>
- Measuring the Macroeconomic Impact of Monetary Policy at the Zero Lower Bound
 - <https://www.imf.org/external/np/res/seminars/2015/arc/pdf/Xia.pdf>
- Document Classification by Inversion of Distributed Language Representations
 - <http://www.aclweb.org/anthology/P15-2008>



tf-idf Computation

$$tf(t, d) = \frac{f_{t,d}}{\sum_{f' \in d} f'_{t',d}}$$

$$idf(t, D) = \log \frac{N}{|\{d \in D : t \in d\}|}$$