

Online Appendix for: Fed Implied Market Prices and Risk Premia

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June 17, 2022

A1 List of quasi-stop words

The following is our list of quasi-stop words:

year, will, also, go, now, can, regular, continue, well, us, see, quarter, change, look, expect, time, one, think, work, get, first, last, like, need, base, term, just, make, include, focus, provide, use, slide, plan, move, come, take, thing, talk, next, around, start, want, way, program, lot, actual, month, today, second, effect, believe, perform, kind, say, got, right, new, committee, trillion, billion, january, february, march, april, may, june, july, august, september, october, november, december, could, willing, although, therefore, call, boston, new york, philadelphia, cleveland, richmond, atlanta, chicago, louis, st, minneapolis, kansas, dallas, san, francisco, dollar, percent, vote, federal, especially, mainly, one, two, three, four, five, six, seven, eight, nine, ten, rather, alan, greenspan, janet, voting, timothy, yellen, b, c, d, e, f, g, h, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, poole, york, submitted, today, geithner, voted, result, occasion, thereby, chair, agreed, state, slightly, along, proven, foreign, background, bring, brings, president, governor, soon, sooner, occur, mcdonough, analyst, bernanke, ben, william, dudley, lael, brainard, roger, ferguson, jr, jerry, robbery, thomas, alfred, guynn, jack, suggests, indicates,

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director, board, chairman, barkin, broaddus, bies, vice, patrick, mcsteer, susan, raphael, thus, generally, donald, kohn, michael, moskow, jerome, loretta, powell, parry, randall, duke, elizabeth, mcteer, edward, kroszner, gramlich, randal, quarles, mester, kashkari, neel, john, bostic, charles, eric, frederic, mishkin, kevin, warsh, plosser, rosengren, sweden, williams, jordan, information, since, harker, european, swiss, national, sverige, riksbank, hoenig, cathy, richard, fisher, kaplan, evan, anthony, accessibilitylast, monetary, policy, reserve, th, street, constitution, avenu, nw, washington, dc, nevertheless, though, city, period, however, intermeeting, received, nonetheless, mr, mrs, miss, ms, x, monday, tuesday, wednesday, thursday, friday, saturday, sunday, michelle, bowman, clarida, robert, daly, mary, fischer, stanley, esther, george, jeremy, stein

A2 Results

Table [A3](#) presents analogous results to Table [4](#) in Section [4](#) of the main paper, but applied to the *FDIF* variables derived from Fed minutes.

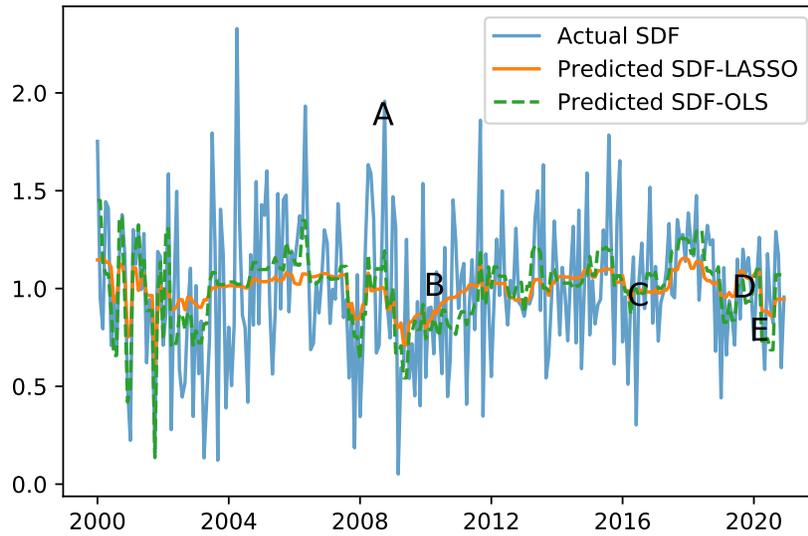


Figure A1: The predicted SDF is the fitted value from a lasso (with penalty parameter 0.02) or an OLS regression of the SDF on the text of the most recent FOMC statement that was available at the start of the month in which the returns are calculated. The markings show important macroeconomic events: A is the Lehman Brothers bankruptcy (September 15, 2008), B is when Fitch downgraded Greece’s credit rating from BBB+ to BBB- (April 9, 2010), C is the Brexit referendum (June 23, 2016), D is the repo market meltdown (September 16, 2019) and E is the first FOMC meeting addressing the coronavirus pandemic (March 3, 2020).

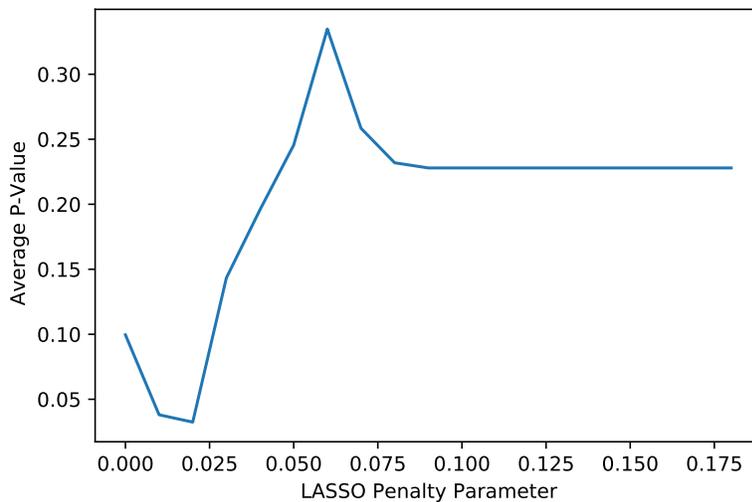


Figure A2: Average p-value from the correlations with the fitted SDF (from the lasso) and each of the seven assets plotted against the lasso penalty parameter. The p-value is calculated using the method in `scipy.stats.pearsonr` from Python’s `scipy` package.

Table A1: New tokens occurring in FOMC statements in 2008

A token is included in the list for an FOMC statement release if it was not present in the FOMC statements used for the training window, which consists of the 20 meetings prior to the current one.

Date	New Words
2008-01-22	appreciable, contraction, deepening, deteriorate, expects, increasing, manner, short, tightened, timely, took, view, weakening
2008-01-30	considerable, stress
2008-03-11	aaa, addition, agency, amounts, announced, announcing, appropriate, arrangements, asked, auction, auctions, authorized, backed, bank, banks, beginning, boost, canada, case, central, closely, collateral, consult, coordinated, cumulate, currency, days, dealers, debt, design, dollars, ecb, end, england, existing, extended, facility, features, financing, following, fomc, japan, kb, label, lend, lending, lines, made, mbs, measures, mortgage, non, overnight, pdf, pledge, primary, private, process, questions, rated, recently, reciprocal, regularly, related, representing, repurchase, residential, respectively, secured, securities, series, size, snb, specific, statements, steps, supplement, sveriges, swap, technical, together, transactions, treasury, tslf, undertake, websites, weekly
2008-03-18	easing, leveling, projected, risen, softened, weakened, weigh
2008-04-30	date, household, subdued, tight, weak
2008-06-25	appear, continues, diminished, later, light
2008-08-05	expanded, exports, highly, significant, spurred, uncertain
2008-09-16	export, significantly
2008-10-08	ability, accordingly, anchored, augmented, believes, consultation, continuous, cooperated, countries, crisis, decline, diminishing, engaged, evidence, exert, expresses, inflationary, interest, joint, marked, markedly, number, obtain, pointing, provision, reduce, reducing, reduction, reductions, restraint, started, statement, strong, support, throughout, turmoil, unprecedented, warranted, weaker
2008-10-29	consistent, cuts, damping, declines, economies, equipment, expenditures, extraordinary, importantly, improve, industrial, levels, many, official, owing, production, return, strengthen, systems
2008-12-16	anticipates, asset, benefits, consider, declined, early, employ, establish, evaluating, exceptionally, extension, implement, indicate, investment, large, loan, longer, low, meanwhile, particular, preserve, previously, purchase, purchases, purchasing, quantities, quite, range, ready, resumption, sheet, small, stands, stimulate, strained, tools, using, warrant, ways
2009-01-28	anticipate, back, begin, best, composition, consumers, cut, demand, duration, effective, efforts, evolving, expansions, extremely, facilities, firms, furthermore, government, gradual, implementing, improving, met, modifications, particularly, persist, quantity, recovery, sees, serve, slack, starts, steeply, whether, would
2009-03-18	abroad, assets, bringing, contract, contribute, declining, difficulties, eligible, equity, fallen, fiscal, fixed, greater, increase, inventories, job, launched, led, losses, maintain, major, obtaining, partners, recession, sales, sentiment, slumped, stabilize, stimulus, total, wealth, weighed
2009-04-29	autumn, buy, constrained, evaluate, facilitating, forces, programs, shown, signs, slower, stabilizing, staffing, supporting, timing
2009-06-24	alignment, better, cost, cutting, dampen, inventory, late, making, progress, stocks
2009-08-12	amount, buying, completed, full, gradually, income, purchased, show, sluggish, smooth, transition
2009-09-23	downturn, executed, higher, order, picked, sector, seems, severe, stable, strengthening, wide
2009-11-04	availability, expanding, less, limited, maximum, path, pick, reflects, trends, unchanged
2009-12-16	abating, add, announcement, anticipated, become, commercial, counterparties, dates, dealer, expiration, expire, fund, improvement, improvements, issue, loans, modest, modify, money, mutual, paper, payrolls, plans, provided, reluctant, scaled, set, special, supportive, types, working

Table A2: New tokens occurring in FOMC statements in 2020

A token is included in the list for an FOMC statement release if it was not present in the FOMC statements used for the training window, which consists of the 20 meetings prior to the current one.

Date	New Words
2020-01-29	returning
2020-03-03	achieving, coronavirus, evolving, fundamentals, percentage, poses, tools
2020-03-15	achieve, businesses, came, central, challenging, communities, confident, countries, credit, disrupted, effects, events, expanded, flow, footing, full, functioning, harmed, health, help, households, increase, many, markets, outbreak, pose, prepared, promote, public, recently, reinvest, sector, show, significantly, smooth, states, stress, track, united, weathered, weigh
2020-03-19	abroad, already, announced, arrangements, australia, authority, banco, banks, brasil, canada, danmarks, de, denmark, designed, domestically, england, established, establishment, facilities, funding, japan, korea, lessen, lines, liquidity, mexico, mitigating, nationalbank, norges, norway, place, provision, singapore, standing, strains, sveriges, temporary, zealand
2020-03-23	addressing, broader, commercial, committed, large, meetings, needed, offer, purchases, scale, security, taking, transmission
2020-03-31	accounts, adds, agreements, allow, alternative, authorities, banking, beginning, consist, currency, denominated, dollars, ease, enter, exchange, facility, fima, holders, institutions, jurisdictions, made, predominant, provides, providing, recognition, repo, role, sales, serve, services, source, temporarily
2020-04-29	across, causing, considerable, consumer, crisis, declines, demand, disruptions, fostering, hardship, heavily, holding, human, impaired, inducing, losses, oil, ongoing, promoting, protect, residential, surge, taken, tremendous, using, virus, weaker, world
2020-06-10	improved, induced, part, reflecting
2020-07-29	course, depend, levels, somewhat
2020-08-27	academic, accountability, adapt, addressed, adopted, always, among, analytical, appreciation, approach, approval, arise, articulates, benefits, brought, challenges, changes, collection, communication, communications, components, conducting, conference, conferences, consecutive, considering, convened, country, decade, decisions, discussions, distinct, document, effectiveness, employee, enhance, essential, every, experts, explored, extensive, fed, files, finally, foundation, framework, gov, groups, hear, hosted, htm, https, included, income, intended, intends, involved, issues, links, listens, meet, members, minutes, must, numerous, others, owners, papers, particularly, past, pdf, perspectives, policymakers, practice, practices, presentations, prominent, provided, publications, put, reflect, reflects, report, reported, research, residents, retirees, review, revised, robust, run, said, series, serves, session, significant, staff, strategy, summarizing, teams, together, topics, transpa...

Table A3: Univariate Regressions of SPF Forecast Changes on FDIF (Minutes)

Univariate regression coefficients of forecast revisions on FDIF from minutes. The fed variables used are those where the meeting occurs between the survey deadline of quarter q 's survey and the BEA advance release that occurs in quarter $q + 1$ (which is the earliest possible date the survey can start). The right hand side variables are the sum of the FDIF variables in this period. The forecast change is the difference between the forecast from quarter $q + 1$ and quarter q . All forecasts are made over a one year horizon except CPI5YR. $FDIF^{PC1}$ is the first principal component of the FDIF series estimated over the full sample. Standard errors are adjusted according to Newey and West (1987) with three lags. P-values are in parentheses and R^2 s are in brackets. The Fama-MacBeth univariate coefficient reports the cross-sectional pricing results for the linear factor model based on Fed measures computed from FOMC statements and minutes, where the test assets are the 49 Fama-French industry portfolios. Factor risk prices are obtained by FMB cross-sectional regressions, and are reported in basis points per unit of standard deviation of the first-stage FMB beta. FMB standard errors are clustered by time. ***, **, * denote significance at the 1, 5, and 10 percent levels, respectively.

Forecast Variable	$FDIF^{VIX}$	$FDIF^{DXY}$	$FDIF^{10Y}$	$FDIF^{2s10s}$	$FDIF^{3M}$	$FDIF^{HY}$	$FDIF^{IG}$	$FDIF^{PC1}$	BK Surprise	2Y Change
CPROF Growth	-0.0237 (0.6624) [-0.0124]	-0.082 (0.4625) [-0.0031]	-0.1783 (0.8293) [-0.0135]	-0.5518 (0.1665) [-0.0082]	0.3599 (0.1105) [-0.0073]	-0.0573 (0.7898) [-0.0131]	-1.509* (0.0666) [0.0084]	0.157 (0.3171) [-0.0062]	11.9196*** (0.0034) [-0.0089]	-26.1442* (0.0984) [0.0601]
EMP_AVG Growth	-1.5703 (0.4763) [0.0297]	-1.0881 (0.3978) [-0.0038]	15.8726 (0.4684) [0.0121]	-3.8579 (0.531) [-0.0134]	7.6285 (0.374) [0.0039]	-1.7804 (0.6613) [-0.0095]	-19.3511 (0.4705) [0.0083]	4.0474 (0.4766) [0.0176]	-219.2218*** (0) [-0.004]	44.6109 (0.4846) [-0.0139]
INDPROD Growth	-0.0175 (0.2937) [0.0468]	-0.0066 (0.5571) [-0.0093]	0.1852 (0.2931) [0.0263]	-0.0948 (0.1328) [-0.0025]	0.1046 (0.1481) [0.0242]	-0.0336 (0.2924) [0.0075]	-0.1791 (0.4002) [0.0071]	0.0501 (0.2561) [0.0394]	-0.0092 (0.9799) [-0.0141]	-0.9233* (0.0799) [-0.0079]
HOUSING Growth	-0.2433*** (0) [0.1958]	-0.1071 (0.3811) [0.0082]	1.2029 (0.1452) [0.0163]	-0.2477 (0.6403) [-0.0127]	0.2744 (0.5152) [-0.0094]	-0.7755*** (0.0001) [0.191]	-4.184*** (0.0006) [0.1918]	0.6782*** (0.0009) [0.1608]	9.9635 (0.3597) [-0.0097]	-21.9611* (0.0609) [0.0482]
RGDP Growth	-0.0092 (0.3982) [0.0355]	-0.0076 (0.2408) [0.0048]	0.1327 (0.2272) [0.0473]	-0.0165 (0.654) [-0.013]	0.0426 (0.3914) [0.0048]	-0.0158 (0.462) [0.0001]	-0.0935 (0.4906) [0.003]	0.0263 (0.3796) [0.0295]	-0.6531 (0.1265) [-0.011]	0.0897 (0.8783) [-0.0139]
RRESINV Growth	-0.0907*** (0.0003) [0.1379]	-0.0206 (0.5478) [-0.0098]	0.6431* (0.0616) [0.0312]	-0.1742 (0.491) [-0.0104]	0.2188 (0.2763) [0.0015]	-0.2323*** (0.0013) [0.0819]	-1.1893*** (0.006) [0.0727]	0.2357*** (0.0036) [0.0961]	7.4854*** (0.0026) [-0.0013]	-2.4038 (0.6388) [-0.0102]
RFEDGOV Growth	-0.0247*** (0.0009) [0.0813]	-0.0165 (0.2067) [0.0093]	0.0997 (0.3354) [-0.0049]	0.0448 (0.5776) [-0.012]	0.009 (0.8657) [-0.0139]	-0.0656*** (0.0069) [0.0506]	-0.2846* (0.0928) [0.028]	0.0552** (0.0179) [0.0371]	4.0771*** (0.0009) [0.018]	0.0605 (0.975) [-0.0141]
CPI5YR	0.0052*** (0.0047) [0.1226]	0.0067 (0.1083) [0.0732]	-0.0638*** (0.0005) [0.1091]	-0.0207 (0.172) [-0.0038]	-0.0105 (0.3338) [-0.0071]	0.0165*** (0.004) [0.1155]	0.084** (0.028) [0.1102]	-0.0165*** (0.0016) [0.1316]	-0.2735*** (0.0032) [-0.0118]	0.5571* (0.0516) [0.0256]
CORECPI	0.0083*** (0.0004) [0.2724]	0.0072 (0.1091) [0.0656]	-0.0565* (0.0781) [0.0546]	0.0188 (0.4135) [-0.0114]	-0.0346* (0.0753) [0.0424]	0.0227*** (0.0043) [0.1942]	0.1081** (0.0254) [0.1588]	-0.0238*** (0.0007) [0.2305]	-1.3976*** (0) [0.0946]	0.9114** (0.0222) [0.0601]
FM Univariate	0.026 (0.994)	1.853 (0.483)	1.945 (0.446)	-0.463 (0.792)	0.189 (0.902)	-0.559 (0.819)	-0.028 (0.989)	0.364 (0.878)	-0.027 (0.993)	-2.579 (0.401)

Table A4: This table shows the $\beta \times \lambda$ measure for each FDIF variable (i.e., the product of the first stage FMB FDIF exposures from eq. 10 and the second stage prices of risk from eq. 11), as well as for BK surprise and two-year change, in the full sample.

Industry	FDIF ^{10Y}	FDIF ^{2s10s}	FDIF ^{3M}	FDIF ^{DXY}	FDIF ^{VIX}	FDIF ^{HY}	FDIF ^{IG}	FDIF ^{PC1}	BK Surprise	2Y Change
Agric	15.75	21.00	23.02	14.64	9.46	31.98	33.79	27.06	-6.76	0.55
Food	-1.76	0.96	-0.61	-6.71	-8.98	-4.07	-0.77	-4.06	-7.74	0.25
Soda	-7.23	0.03	-6.53	-5.80	-11.25	-4.77	-0.62	-6.57	-8.03	0.17
Beer	-4.10	-0.94	-2.50	-4.71	-11.89	-4.75	-3.38	-6.25	-9.90	0.15
Smoke	-15.86	-9.68	-13.49	-1.07	-12.76	-15.35	-9.04	-14.54	-9.42	0.19
Toys	-1.92	20.45	14.63	7.92	-2.93	12.43	8.13	9.42	-2.47	0.24
Fun	10.82	33.46	26.27	34.91	7.24	32.09	37.41	29.88	-2.54	0.12
Books	3.44	14.77	13.59	5.03	-5.67	11.26	15.59	9.65	-3.96	0.32
Hshld	-4.18	6.14	1.60	-5.87	-13.47	-5.83	-1.57	-5.06	-7.67	0.19
Clths	4.19	22.61	13.39	-6.19	-7.96	4.25	4.73	5.21	-0.62	0.13
Hlth	-17.85	1.54	-2.89	7.98	-3.49	3.72	2.20	-1.38	-10.12	0.24
MedEq	-6.98	3.10	-0.44	2.83	-10.95	-0.89	4.91	-2.31	-9.49	0.30
Drugs	-3.23	-1.11	-2.53	-4.85	-12.28	-3.79	0.52	-5.20	-9.04	0.37
Chems	6.17	22.46	17.16	0.48	-4.79	10.08	15.19	11.04	-7.11	0.48
Rubbr	5.16	22.90	16.61	3.87	-3.48	6.94	8.01	9.05	-4.61	0.15
Txtls	9.04	34.47	28.77	19.65	-1.80	23.60	18.77	20.95	4.26	0.16
BldMt	4.95	24.64	18.05	9.29	-8.96	7.30	10.06	8.95	-3.92	0.31
Cnstr	12.82	32.77	22.41	16.25	-3.95	15.82	18.41	17.17	-1.53	0.35
Steel	7.96	21.74	20.60	13.40	-1.51	13.21	17.33	14.64	-9.62	0.30
FabPr	19.83	28.82	31.23	9.84	5.59	19.45	20.91	22.71	-1.49	0.22
Mach	6.15	25.22	17.29	2.41	-6.97	4.74	9.72	8.38	-5.09	0.34
ElcEq	5.07	19.91	14.50	-0.21	-2.66	10.87	14.48	10.69	-2.82	0.20
Autos	-4.20	29.30	17.04	-1.30	-4.89	2.97	3.15	6.08	-7.25	0.31
Aero	-12.08	1.30	-3.71	5.85	-16.35	-2.78	5.08	-5.34	-7.41	0.38
Ships	-3.45	14.28	10.35	9.60	-10.33	-0.66	6.05	2.19	-6.58	0.52
Guns	-16.02	-1.71	-10.51	-8.18	-18.76	-8.27	-1.48	-11.61	-4.57	0.24
Gold	18.88	24.57	28.16	16.55	20.00	28.30	17.07	27.03	12.13	-0.79
Mines	8.67	37.13	32.50	16.56	11.74	25.29	31.79	28.37	-6.75	0.25
Coal	33.43	38.47	38.29	34.25	16.85	31.14	45.68	39.15	-1.09	0.06
Oil	-1.00	14.18	9.30	-0.32	-5.90	6.65	14.66	6.53	-13.74	0.48
Util	-10.23	-1.21	-6.90	-6.29	-17.40	-9.38	-4.08	-10.61	-11.15	0.23
Telcm	-3.10	5.76	4.16	-1.89	-11.35	-1.82	-0.55	-2.49	-8.45	0.19
PerSv	-7.70	20.15	10.10	5.35	-7.85	9.03	12.61	6.58	-13.92	0.66
BusSv	-9.45	9.97	2.75	-2.12	-15.47	-1.75	3.30	-3.22	-9.35	0.36
Hardw	2.79	18.89	14.85	4.22	-9.77	-0.96	2.62	3.27	-13.10	0.37
Softw	-7.52	7.72	3.25	-2.87	-14.12	-1.18	2.70	-2.83	-12.47	0.43
Chips	-0.95	13.39	8.14	1.34	-17.54	-3.24	-2.56	-2.84	-9.84	0.43
LabEq	-0.55	5.93	3.29	-2.33	-9.06	-2.25	4.94	-0.73	-10.49	0.36
Paper	-2.20	11.45	6.63	-7.64	-8.49	-5.39	-3.38	-2.42	-5.76	0.22
Boxes	-0.66	11.42	5.51	-6.37	-6.70	1.64	4.40	1.52	-5.09	0.19
Trans	0.24	20.96	13.27	-0.62	-3.84	7.61	8.10	7.51	-4.95	0.34
Whlsl	-0.67	9.77	6.43	-1.05	-7.72	2.13	2.37	1.25	-7.92	0.32
Rtail	3.16	16.95	10.22	-5.08	-4.55	5.55	5.19	5.23	0.17	0.08
Meals	-1.93	14.30	9.58	7.14	-2.80	10.01	11.21	7.82	-6.44	0.09
Banks	23.92	31.44	30.60	5.28	-13.73	11.66	16.05	15.16	-8.88	0.63
Insur	-2.12	5.43	1.23	1.20	-15.78	-0.98	2.32	-3.09	-10.06	0.29
RIEst	21.18	37.16	29.88	17.16	-1.69	20.60	25.90	23.45	-2.02	0.37
Fin	22.00	35.10	31.43	-3.42	-6.98	15.51	18.43	18.21	-8.60	0.59
Other	3.60	19.20	14.07	-0.94	-7.33	2.25	7.63	5.47	-5.90	0.26