

Online appendix of

“The equity risk premium

and the low frequency of the term spread”

In table 1A are reported the OOS R-squares R_{OS}^2 (in percentage) for the excess returns forecasts at h -month horizon from the model as given by equation (4) in the main text, using alternative predictors. For each predictor is reported the forecasting performance of its original time series and of its low-frequency component, obtained through wavelets decomposition. The set of predictors considered in this Appendix includes: in Panel A, the term spread as reported in the main text (TMS) and computed using the alternative dataset from the New York Federal Reserve Bank (TMS-NYFED),¹ in Panel B predictors from Goyal and Welch (2008) besides the ones reported in Table 4 in the main text, and in Panel C predictors from the McCracken and Ng (2016) monthly macroeconomic database.² In table 2A are reported the annualized certainty equivalent return (CER) gains (in percent) for an investor who allocates her wealth between equities and risk free bills according to the rule (5) in the main text, using stock return forecasts based on each of the alternative predictors under analysis instead of the forecasts based on the historical mean HM.

¹ Data on the 10-year government bond yield and the 3-month T-bill is available for download from New York Federal Reserve Bank at <https://www.newyorkfed.org/data-and-statistics>

² Available for download at <http://research.stlouisfed.org/econ/mccracken/sel/>. A brief description of those predictors is given in table 3A in this Appendix. See McCracken and Ng (2016) for full details on the predictors and their construction.

Table 1A: Out-of-sample R-squares

This table reports the OOS R-squares R_{OS}^2 (in percentage) for the excess returns forecasts at h -month horizon from the model as given by equation (4) in the main text, using different predictors. The h -month ahead OOS forecast of excess return is generated using a sequence of expanding windows. Between columns two and six are reported the results for the original time series of the different predictors. Between columns seven and eleven are reported the results for the low-frequency component, obtained through wavelets decomposition capturing oscillations higher than 128 months, of the different predictors. The sample period is from 1973:01 to 2014:12. The OOS forecasting period is from 1990:01 to 2014:12, monthly frequency. Asterisks denote significance of the OOS *MSFE*-adjusted statistic of Clark and West (2007). ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Predictor	R_{OS}^2 - original time series					R_{OS}^2 - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
PANEL A: Term spread										
TMS	-0.76	-1.72	-1.43	3.35**	14.5***	2.03***	6.08***	11.4***	21.9***	29.4***
TMS-NYFED	-0.68	-1.95	-1.27	3.34**	14.2***	2.14***	6.42***	12.0***	22.9***	30.9***
PANEL B: other predictors from Goyal and Welch (2008) beyond those reported in table 4										
DP	-2.06	-5.80	-11.0	-26.4	-38.4	-0.97	-2.67	-5.50	-15.9	-39.1
DY	-2.20	-5.66	-11.0	-25.8	-37.7	-0.96	-2.69	-5.55	-16.0	-39.2
EP	-1.14	-4.24	-8.85	-16.4	-16.8	-0.92	-2.35	-4.51	-10.4	-21.6
RVOL	-0.56	-1.40	-1.77	-3.40	-4.55	-1.19	-4.06	-9.30	-25.5	-54.8
BM	-0.56	-1.75	-3.55	-9.68	-14.2	-0.71	-1.64	-3.00	-6.77	-15.2
NTIS	-3.23	-8.88	-19.1	-27.8	-11.7	-1.73	-5.19	-9.76	-15.3	-18.1
DFY	-3.07	-7.15	-8.92	-7.35	-4.60	-1.07	-3.04	-5.17	-11.3	-19.8
DRF	-1.75	-1.11	-0.39	-0.78	1.19	-2.46	-9.12	-23.1	-53.3	-64.7
INFL	-0.64	-0.32	1.95*	3.24	1.30	-0.16	-0.14	-0.52	-2.26	-7.81

Predictor	R_{OS}^2 - original time series					R_{OS}^2 - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
PANEL C: alternative predictors from FRED database										
DPCERA3M086SBEA	0.53	-0.56	-0.26	-0.02	2.04	-5.33	-15.0	-28.5	-55.9	-76.7
CMRMTSPLx	-1.09	-1.42	-1.08	-1.40	1.34	-3.90	-12.7	-26.0	-52.7	-86.0
RETAILx	0.00	-1.01	-0.52	0.24	1.97	-1.15	-4.18	-7.56	-8.62	-9.19
INDPRO	-3.23	-4.15	-4.36	-5.25	0.18	-3.65	-12.0	-23.9	-48.3	-83.7
IPFPNSS	-1.85	-3.71	-3.22	-3.38	0.68	-4.64	-15.3	-31.2	-68.3	-123
IPFINAL	-2.29	-3.56	-2.44	-2.57	0.92	-4.39	-14.9	-30.8	-67.4	-118
IPCONGD	-0.26	-1.62	-0.61	-0.65	1.50	-2.01	-7.52	-15.3	-32.2	-66.0
IPDCONGD	-1.09	-1.42	-0.63	-0.64	1.54	-1.61	-6.65	-13.3	-25.5	-44.3
IPNCONGD	0.19	-1.11	-0.52	-0.26	1.64	-1.40	-5.70	-13.6	-33.6	-82.4
IPBUSEQ	-3.34	-5.72	-5.13	-7.79	-0.39	-4.13	-13.1	-27.4	-54.6	-85.5
IPMAT	-3.90	-3.64	-4.55	-5.96	0.02	-2.20	-7.48	-14.5	-26.9	-47.1
IPDMAT	-2.19	-2.88	-2.42	-4.61	-0.03	-2.93	-8.93	-15.8	-27.0	-44.8
IPNMAT	-0.08	-2.48	-1.85	-4.14	0.58	-2.52	-9.03	-19.9	-37.8	-56.3
IPMANSICS	-2.22	-3.78	-3.22	-4.51	0.39	-4.18	-13.7	-27.4	-55.5	-96.6
IPB51222S	-0.26	-0.05	-0.17	0.26	1.96	-2.95	-5.60	-11.0	-22.8	-29.1
IPFUELS	-0.31	-0.05	-0.34	0.15	1.88	0.02	-0.34	-0.37	0.25	3.04
CUMFNS	-1.98	-2.68	-1.88	-3.05	0.63	-1.13	-5.95	-14.5	-28.0	-46.6
HWI	-1.35	-0.90	-3.18	-3.53	0.97	-4.51	-13.5	-26.5	-58.0	-109
HWIURATIO	-0.17	-0.65	-1.87	-3.14	1.15	-6.90	-20.3	-39.3	-82.2	-131
CLF16OV	-0.52	-0.31	0.05	0.57	2.16	-0.07	0.24	1.30*	2.64*	2.23
CE16OV	-0.84	-1.39	-1.42	-1.67	1.72	-1.65	-5.14	-9.08	-13.9	-16.6
UNRATE	0.02	-0.87	-1.49	-2.42	1.45	-4.33	-13.8	-27.4	-56.0	-90.9
UEMPMEAN	-0.90	-1.63	-1.07	-0.44	1.60	-6.84	-19.4	-37.1	-71.6	-107

Predictor	R_{OS}^2 - original time series					R_{OS}^2 - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
UEMPLT5	-0.33	-0.14	0.24	0.41	1.94	0.74*	1.58*	1.60*	1.62*	-4.19
UEMP5TO14	-0.56	-0.02	-0.16	-0.93	1.72	-2.95	-8.78	-16.9	-33.6	-54.1
UEMP15OV	-0.38	-2.22	-2.01	-3.24	1.62	-6.40	-19.3	-37.3	-75.7	-107
UEMP15T26	-0.28	-0.71	-0.55	-2.03	1.70	-5.23	-16.4	-31.8	-66.3	-98.5
UEMP27OV	-0.48	-1.91	-1.63	-1.55	1.76	-6.54	-19.2	-37.3	-74.4	-100
CLAIMSx	-0.99	-0.17	-1.06	-0.72	1.23	-1.54	-6.53	-15.6	-28.7	-42.9
PAYEMS	-1.53	-3.04	-4.15	-5.00	0.89	-2.83	-8.83	-17.7	-35.1	-51.4
USGOOD	-1.31	-4.00	-5.45	-8.21	0.17	-3.36	-11.1	-23.3	-50.7	-92.0
USCONS	-0.16	-1.07	-2.24	-1.99	1.08	-4.85	-14.7	-28.3	-57.2	-91.0
MANEMP	-1.61	-3.99	-4.74	-9.72	-0.42	-2.10	-6.82	-14.1	-31.7	-61.4
DMANEMP	-1.68	-3.70	-4.59	-9.25	-0.05	-2.63	-8.22	-16.6	-35.6	-62.7
NDMANEMP	-0.84	-2.93	-3.00	-6.58	-1.21	-1.87	-5.05	-9.92	-22.5	-48.6
SRVPRD	-1.29	-2.04	-3.06	-2.79	0.66	-1.96	-6.04	-11.7	-21.0	-26.1
USTPU	-1.92	-3.54	-4.99	-4.32	0.50	-1.98	-6.21	-11.8	-21.1	-26.4
USWTRADE	-3.74	-5.99	-8.80	-9.20	-2.16	-1.98	-5.37	-9.18	-14.8	-17.5
USTRADE	-0.90	-1.78	-2.86	-1.80	0.98	-1.57	-5.16	-9.38	-16.1	-19.2
USFIRE	-0.81	-2.63	-4.27	-5.90	-2.88	-1.22	-4.19	-7.17	-12.2	-12.2
USGOVT	-0.31	-0.29	-0.14	0.03	2.83	1.42***	3.61***	6.04***	8.15**	5.11
CES0600000007	-0.57	-1.91	-3.36	-7.04	-5.85	-0.72	-1.42	-2.45	-5.82	-15.8
AWOTMAN	-0.40	-0.73	0.07	-0.14	1.64	0.91*	1.66*	-0.30	2.06*	-2.16
AWHMAN	-0.67	-2.17	-3.77	-8.37	-6.41	-0.53	-1.13	-2.10	-5.68	-15.8
HOUST	-0.71	-1.97	-2.35	0.79	11.6**	-0.26	0.10	2.13**	8.12***	20.9***
HOUSTNE	0.37	1.78*	4.78**	7.11**	10.8*	0.36	1.36*	2.78**	5.33*	3.05
HOUSTMW	-0.66	-2.45	-4.93	-5.47	2.33	-0.63	-1.70	-2.05	0.37	7.39**

Predictor	R_{OS}^2 - original time series					R_{OS}^2 - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
HOUSTS	-0.61	-0.99	-0.41	3.38**	11.9**	-0.24	-0.49	0.30	-0.42	0.87
HOUSTW	-0.39	-2.16	-2.83	0.54	8.87**	-1.76	-4.06	-5.12	-3.11	11.4**
PERMIT	-0.39	-1.03	-0.56	1.98*	10.7**	-2.06	-4.57	-7.03	-11.2	-8.02
PERMITNE	-0.22	0.85	4.42**	7.76**	11.5**	0.18	1.01*	2.52**	5.88**	6.68*
PERMITMW	-0.67	-2.17	-3.64	-4.49	2.44	-0.67	-1.78	-2.47	-3.38	-0.64
PERMITS	-0.09	-0.29	0.46	2.37*	6.43*	-1.84	-4.80	-8.28	-16.6	-19.5
PERMITW	-0.45	-1.42	-2.21	1.65	10.6**	-1.56	-3.13	-3.38	-0.57	14.3***
AMDMNOx	-0.85	-2.31	-1.24	-1.62	1.22	-3.17	-8.03	-14.9	-22.5	-29.4
ANDENOx	-0.32	-0.36	-0.25	-0.22	1.83	-2.86	-8.02	-14.3	-23.0	-30.1
AMDMUOx	-1.94	-2.39	-1.41	1.67*	5.54*	1.14**	3.04**	4.38**	6.60**	10.1*
ISRATIOx	-1.04	-0.62	-0.04	0.20	1.56	-1.53	-5.88	-10.7	-8.23	-5.78
M2SL	-0.50	-0.14	0.05	0.32	1.96	-1.25	-2.95	-8.73	-22.1	-41.5
M2REAL	-0.58	-0.64	0.54	-0.45	0.82	-2.02	-5.85	-10.8	-21.2	-31.5
BUSLOANS	-0.43	0.05	0.20	0.16	1.92	-3.42	-11.4	-23.8	-53.3	-83.3
CONSPI	-0.56	-0.47	-0.24	-1.13	0.30	-0.40	-1.14	-2.82	-10.9	-25.5
S&P 500	-0.56	-0.12	-0.03	-0.02	0.70	-4.65	-13.6	-25.8	-47.7	-61.2
S&P: indust	-0.78	-0.16	-0.11	-0.12	0.40	-4.35	-12.7	-23.8	-43.9	-56.4
S&P div yield	-0.18	0.31	0.15	0.20	1.46	-0.75	-2.57	-4.97	-7.42	-8.45
S&P PE ratio	-0.43	-0.92	-1.91	-0.60	0.85	-1.92	-4.21	-5.40	-9.51	-10.4
GS5	-0.31	-0.07	0.09	-0.74	1.93	-0.16	-0.14	-0.61	0.98	7.51**
GS10	-0.51	0.06	0.23	-0.50	2.02	0.29	1.17**	1.46*	3.46**	8.19**
AAA	-0.56	0.40	0.80*	0.02	2.27	0.92***	3.03***	4.35***	7.49***	10.4***
BAA	0.15	2.23**	2.08***	0.65	2.18	1.26**	3.08**	3.74**	6.33***	8.65**
COMPAPFFx	-1.89	-3.10	-1.51	2.51	2.92	-0.22	-0.72	-1.21	-1.91	-6.83

Predictor	R_{OS}^2 - original time series					R_{OS}^2 - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
TB3SMFFM	0.56*	1.48*	2.23**	5.09**	1.42	0.03	0.41*	0.67*	0.04	-4.19
TB6SMFFM	0.28*	0.99	2.55**	6.64***	2.93	0.25*	0.88*	1.44*	1.21	-3.32
T1YFFM	0.17	0.61	2.85**	9.21***	6.73**	1.71***	4.91***	8.66***	12.4***	8.49
T5YFFM	-0.38	-0.43	1.07	7.22***	10.8***	2.06***	5.98***	10.7***	18.8***	21.6***
T10YFFM	-0.29	-0.21	1.45	7.92***	12.6***	2.06***	6.11***	11.0***	19.6***	22.8***
AAAFFM	-0.69	-1.04	0.09	5.37**	10.9**	1.10***	3.47***	6.42***	12.5***	15.7**
BAAFFM	-1.25	-2.08	-0.77	5.52**	11.6***	1.27***	4.04***	7.87***	16.1***	21.5***
EXSZUSx	-0.31	-0.34	0.14	-0.27	1.47	-1.47	-3.40	-5.30	-14.5	-25.0
EXJPUSx	-0.95	-0.31	-0.28	-0.09	1.09	0.33	1.46*	2.01*	0.17	0.07
EXUSUKx	-0.27	0.05	0.80**	0.45	1.70	-0.43	-2.35	-4.12	-4.47	-1.41
EXCAUSx	-0.60	-1.66	-0.61	0.04	1.49	-0.54	-1.09	-1.48	-4.77	-6.89
WPSFD49207	-0.43	0.04	0.29	0.19	1.91	0.26	-3.67	-12.1	-26.4	-46.8
WPSFD49502	-0.46	0.06	0.27	0.16	1.90	-0.33	-4.64	-14.9	-31.7	-54.4
WPSID61	-0.49	-0.23	0.13	0.17	1.91	-0.87	-3.61	-12.1	-28.6	-62.9
PPICMM	-0.80	-0.31	0.08	0.30	1.92	-4.64	-11.0	-30.1	-69.5	-128
CPIAUCSL	-0.40	-0.47	0.23	0.08	1.89	0.89	0.23	-3.32	-5.33	-8.73
CPIAPPSL	-0.35	0.02	0.19	0.22	1.94	-0.66	-3.37	-9.66	-36.8	-95.3
CPITRNSL	-0.86	-0.57	0.13	-0.11	1.84	-1.33	-7.68	-21.1	-41.7	-91.2
CPIMEDSL	0.51	-0.08	0.28	0.33	2.03	1.59***	1.48**	3.88**	7.55***	10.5**
CUSR0000SAC	-0.54	-0.28	0.17	-0.02	1.87	-0.20	-4.33	-12.5	-24.8	-49.0
CUSR0000SAD	-0.08	-0.18	0.01	0.21	1.97	-3.39	-5.17	-3.81	-9.26	-13.0
CPIULFSL	-0.52	-0.90	0.12	0.02	1.87	0.57	0.45	-3.24	-4.28	-4.91
CUSR0000SA0L2	-0.71	-0.43	0.11	0.05	1.86	0.76	-1.72	-7.56	-15.8	-30.0
CUSR0000SA0L5	-0.34	-0.86	0.23	0.02	1.88	0.92	0.16	-3.75	-6.72	-10.8

Predictor	R_{OS}^2 - original time series					R_{OS}^2 - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
PCEPI	-0.41	-0.23	0.17	0.07	1.88	0.60	1.89**	0.29*	0.10**	-0.68**
DDURRG3M086SBEA	-0.59	-0.29	-0.28	0.23	1.93	-0.52	0.39**	1.41***	-1.77***	-4.36*
DNDGRG3M086SBEA	-0.44	-0.19	0.25	0.00	1.83	-0.08	-3.46	-11.7	-23.3	-46.5
CES0600000008	-0.82	0.23	0.12	0.27	1.98	0.46	1.11**	1.72**	1.21***	1.94**
CES2000000008	-0.01	0.08	0.18	0.27	1.96	-3.29	-11.0	-20.2	-39.3	-49.4
CES3000000008	-1.34	-0.19	-0.02	0.25	1.92	-2.12	-1.49	-1.62*	-3.51**	-2.77*
INVEST	-0.76	-0.34	-0.02	0.40	1.99	-3.49	-10.6	-22.1	-48.2	-80.7
VXOCLSx	-1.84	-3.88	-2.82	-4.89	-6.18	-2.71	-7.89	-15.1	-32.4	-59.3

Table 2A: Annualized CER gains

This table reports the annualized certainty equivalent return (CER) gains (in percent) for an investor who allocates her wealth between equities and risk free bills according to the rule (5) in the main text, using stock return forecasts from model in equation (4) with alternative predictors under analysis instead of the forecasts based on the HM. The sample period is from 1973:01 to 2014:12. The OOS forecasting period is from 1990:01 to 2014:12, monthly frequency

Predictor	CER gains - original time series					CER gains - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
PANEL A: Term spread										
TMS	0.25	0.87	0.60	1.40	1.70	5.85	6.40	6.05	4.97	3.62
TMS-NYFED	0.27	0.64	0.36	1.38	1.70	6.21	6.91	6.60	5.55	4.18
PANEL B: other predictors from Goyal and Welch (2008) beyond those reported in table 4										
DP	-3.19	-2.46	-3.50	-3.48	-2.92	0.15	0.15	-0.11	-1.23	-0.57
DY	-2.96	-2.34	-3.34	-3.36	-1.96	0.09	0.12	-0.18	-1.27	-0.65
EP	-0.34	-0.38	-1.12	-1.37	-1.00	0.14	0.19	0.09	-1.00	0.05
RVOL	-1.82	-1.77	-1.48	-0.30	-0.15	0.23	0.27	-0.34	-2.23	-2.82
BM	-0.78	-0.63	-0.98	-1.32	-0.41	0.23	0.29	0.27	-1.05	0.36
NTIS	-2.57	-2.77	-2.75	-3.62	-2.60	-2.85	-3.61	-3.89	-3.83	-0.78
DFY	-4.90	-4.56	-4.69	-1.86	0.33	-1.63	-1.42	-1.57	-2.04	-0.91
DRF	1.08	0.67	0.89	0.50	0.03	0.00	0.35	-2.49	-4.65	-3.76
INFL	-0.55	-0.48	1.87	1.68	0.54	1.25	1.34	1.07	-0.44	0.75
PANEL C: alternative predictors from FRED database										
DPCERA3M086SBEA	0.96	-0.30	-0.63	-0.19	0.11	-2.88	-2.31	-1.69	-4.41	-4.17
CMRMTSPLx	-0.72	-1.18	-1.13	-0.56	0.27	-0.12	-0.10	-0.75	-4.21	-4.25
RETAILx	0.21	-1.21	0.10	-0.56	0.09	-1.14	-1.32	-1.42	-1.77	-0.35
INDPRO	-3.89	-4.44	-2.46	-0.91	0.12	-0.09	0.03	-0.17	-3.44	-3.84

Predictor	CER gains - original time series					CER gains - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
IPFPNSS	-3.69	-4.10	-1.56	-0.37	0.10	-0.70	0.02	-0.23	-3.33	-5.22
IPFINAL	-4.10	-4.08	-1.11	-0.26	0.06	-0.61	-0.12	-0.27	-3.53	-4.93
IPCONGD	-0.35	-3.71	-0.48	-0.05	0.10	-0.50	0.55	0.57	-0.72	-3.45
IPDCONGD	-0.74	-1.83	-0.31	0.46	-0.01	0.35	0.48	0.88	-0.68	-1.92
IPNCONGD	0.34	-2.13	-0.53	-0.44	0.11	1.27	2.57	2.06	-0.82	-3.17
IPBUSEQ	-3.34	-3.77	-1.55	-1.71	0.10	-1.49	-1.84	-3.08	-4.88	-3.02
IPMAT	-2.88	-4.24	-2.65	-0.86	0.10	0.73	0.85	0.01	-2.17	-2.32
IPDMAT	-3.37	-3.92	-1.71	-0.69	0.27	-0.18	0.03	-0.82	-2.73	-2.20
IPNMAT	-0.68	-1.28	-0.47	-0.17	0.08	-0.81	-0.35	-1.43	-5.15	-3.50
IPMANSICS	-3.78	-4.32	-1.54	-0.40	0.00	-0.84	-0.60	-0.58	-4.02	-4.59
IPB51222S	-0.31	-0.14	-0.34	-0.13	0.36	-0.27	0.53	-0.79	-3.42	-2.63
IPFUELS	-0.59	-0.42	-0.88	-0.15	-0.01	0.38	-0.04	0.46	0.56	0.35
CUMFNS	-2.90	-3.26	-0.72	0.04	-0.24	3.86	4.10	1.69	-2.81	-0.88
HWI	-1.36	-2.25	-3.25	-2.89	0.08	0.83	1.34	1.04	-4.91	-4.43
HWIURATIO	-0.27	-1.18	-1.91	-1.25	-0.12	0.74	1.09	0.02	-6.45	-5.38
CLF16OV	0.65	0.94	0.67	0.64	-0.14	1.07	1.33	1.07	-0.11	0.86
CE16OV	-0.62	0.83	0.13	0.41	-0.34	-1.16	-1.14	-1.35	-1.99	-2.16
UNRATE	0.25	-0.61	-1.52	-0.79	-0.26	0.06	0.20	-0.62	-5.24	-4.38
UEMPMEAN	-0.99	-0.96	-1.45	-0.85	0.03	-5.30	-5.46	-5.60	-6.99	-6.05
UEMPLT5	0.26	0.06	0.52	0.16	-0.04	2.93	3.76	3.45	0.02	0.56
UEMP5TO14	-0.95	-0.32	-0.04	0.20	0.03	0.74	0.85	0.12	-4.52	-2.18
UEMP15OV	-0.54	-2.11	-1.46	-2.93	-0.05	-1.25	-1.02	-2.70	-5.88	-5.95
UEMP15T26	-0.18	-0.47	-0.23	-1.07	-0.15	0.42	-0.11	-1.87	-5.43	-4.50
UEMP27OV	-0.49	-0.90	-1.44	-1.48	0.01	-1.88	-1.42	-3.13	-6.21	-5.99

Predictor	CER gains - original time series					CER gains - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
CLAIMSx	-1.00	-0.18	0.14	0.47	-0.55	3.34	3.19	2.06	-2.02	-1.39
PAYEMS	-2.69	-2.07	-2.16	-0.74	-0.11	-1.28	-0.97	-0.88	-2.56	-3.19
USGOOD	-2.78	-4.81	-2.55	-1.50	-0.04	0.00	0.03	-0.45	-2.50	-2.60
USCONS	0.29	-0.64	-1.35	-0.47	0.02	-1.49	-1.69	-2.05	-5.63	-5.23
MANEMP	-2.82	-4.49	-1.48	-0.69	-0.04	-0.09	-0.28	-0.39	-1.05	-1.54
DMANEMP	-3.29	-4.72	-1.68	-1.15	0.13	-0.50	-0.43	-0.80	-1.69	-1.64
NDMANEMP	-1.17	-1.24	-0.77	0.16	-0.32	-1.70	-1.28	-0.72	-1.80	-2.24
SRVPRD	-2.10	-0.68	-0.88	-0.63	-0.17	-1.73	-1.44	-1.38	-2.97	-3.16
USTPU	-2.04	-1.55	-1.74	-1.01	-0.25	-1.73	-1.51	-1.59	-2.89	-2.78
USWTRADE	-2.85	-3.01	-1.26	-0.65	-0.15	-2.28	-1.85	-1.83	-2.13	-1.13
USTRADE	-1.25	-0.50	-1.11	-0.40	-0.30	-1.72	-1.77	-1.84	-2.68	-2.90
USFIRE	-0.54	-0.93	-0.62	-0.97	0.19	-1.27	-1.28	-1.20	-2.19	-2.54
USGOVT	-0.27	-1.30	-0.77	0.00	0.15	2.98	2.82	2.47	0.87	0.15
CES0600000007	-0.89	-1.26	-1.51	-1.52	-0.42	-0.15	0.08	0.06	-1.10	-0.11
AWOTMAN	-0.60	0.11	-0.02	0.10	-0.03	5.28	6.10	5.63	2.41	0.62
AWHMAN	-1.18	-1.58	-1.72	-1.97	-0.32	0.01	0.12	-0.09	-1.30	-0.04
HOUST	-0.18	-0.16	-0.47	-0.50	0.94	0.32	1.07	1.59	1.95	1.27
HOUSTNE	1.09	0.84	1.02	0.95	0.39	0.61	0.70	0.69	0.65	0.57
HOUSTMW	-0.48	-0.65	-1.05	-1.18	1.42	-0.75	-0.48	-0.85	0.46	1.58
HOUSTS	-0.60	-0.28	-0.91	0.04	1.05	0.23	0.50	0.89	0.09	-1.14
HOUSTW	-0.06	-0.56	-0.96	-0.64	0.31	-2.94	-2.48	-1.26	0.13	0.27
PERMIT	-0.31	-0.39	-0.56	0.74	0.90	-2.47	-2.11	-1.38	-1.26	-0.65
PERMITNE	-0.28	0.42	1.42	0.74	0.34	0.25	0.25	0.54	0.73	0.87
PERMITMW	-0.98	-1.01	-1.35	-0.70	1.07	-0.79	-0.58	-0.44	0.22	1.16

Predictor	CER gains - original time series					CER gains - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
PERMITS	0.02	-0.09	-0.35	0.94	0.53	-1.80	-1.68	-1.36	-2.18	-1.25
PERMITW	0.11	-0.67	-1.01	-0.45	0.72	-2.63	-1.99	-0.77	0.33	0.64
AMDMNOx	-0.96	-0.57	-0.70	-0.46	-0.07	-2.17	-1.82	-1.96	-2.24	-0.08
ANDENOx	-0.56	0.66	0.10	0.53	-0.09	-2.23	-1.64	-1.80	-2.41	0.20
AMDMUOx	-1.30	0.68	-0.64	-0.97	0.41	3.65	4.03	3.98	1.51	1.90
ISRATIOx	-0.96	-0.90	0.21	0.63	0.23	0.60	1.45	-0.50	-2.32	0.15
M2SL	-0.48	0.85	-0.06	-0.27	-0.03	-0.64	4.26	3.73	0.65	-0.52
M2REAL	-1.17	0.15	0.32	-0.47	-0.13	-2.37	-2.63	-2.72	-3.40	-1.59
BUSLOANS	-0.43	-0.11	-0.37	-0.02	-0.04	1.84	3.06	3.37	-1.87	-2.81
CONSPI	-0.75	-0.03	-1.08	-0.55	-0.28	0.58	0.44	0.29	-1.63	-1.96
S&P 500	-1.18	-0.56	-0.09	0.12	0.70	-0.26	-0.28	-0.75	-3.66	-3.22
S&P: indust	-1.68	-0.55	-0.22	0.09	0.80	-0.62	-0.70	-1.17	-3.93	-2.41
S&P div yield	-0.41	-0.18	-0.01	-0.10	0.07	0.68	0.39	0.25	-1.81	-0.06
S&P PE ratio	-0.59	0.20	-1.00	-0.66	0.45	-1.85	-1.46	-0.04	-0.82	-0.13
GS5	-0.86	-0.14	0.71	-0.76	-0.16	-0.31	-0.16	0.14	0.02	0.97
GS10	-0.99	0.05	0.95	-0.55	-0.14	0.51	0.76	0.60	-0.06	0.91
AAA	-0.56	0.34	0.64	-0.49	-0.14	2.39	2.48	1.84	0.43	1.02
BAA	1.06	1.92	1.19	-0.25	0.02	3.22	3.22	2.17	-0.60	1.05
COMPAPFFx	0.14	-1.21	-0.47	-0.16	-0.02	0.14	0.08	-0.33	-0.76	-0.51
TB3SMFFM	2.33	0.98	0.43	0.95	0.23	1.56	1.57	1.15	-0.52	0.23
TB6SMFFM	1.73	0.79	0.63	1.31	0.31	1.56	1.52	1.03	-0.57	0.12
T1YFFM	1.01	0.54	0.80	1.91	0.62	4.16	4.13	3.56	1.41	0.52
T5YFFM	1.06	0.75	0.65	1.43	1.09	5.57	5.54	4.93	3.07	2.01
T10YFFM	1.31	1.06	0.79	1.64	1.24	5.47	5.83	5.19	3.58	2.37

Predictor	CER gains - original time series					CER gains - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
AAAFFM	0.82	0.65	0.64	1.49	1.02	3.01	2.95	2.85	1.49	1.46
BAAFFM	0.42	0.23	0.17	1.52	1.17	3.83	4.04	3.70	2.43	2.28
EXSZUSx	-0.71	-0.26	-0.12	-0.56	-0.07	-0.62	-0.44	0.58	-0.89	0.22
EXJPUSx	-0.85	-0.31	-0.06	-0.14	0.06	1.36	1.49	0.44	-0.41	0.08
EXUSUKx	-0.67	0.19	0.30	-0.85	-0.03	0.60	0.86	-0.68	-1.18	-0.14
EXCAUSx	-1.12	-0.14	-0.11	0.16	-0.28	-0.79	-0.80	-0.47	-0.85	-0.62
WPSFD49207	-0.85	0.11	-0.62	0.54	0.04	1.43	0.99	2.73	-1.69	-0.18
WPSFD49502	-0.88	0.07	-0.55	0.57	0.05	0.64	1.41	2.99	-2.87	0.64
WPSID61	-1.00	-0.61	-0.36	0.76	0.04	1.26	-0.47	2.33	-1.42	0.51
PPICMM	0.16	-0.21	-0.30	-0.01	0.16	-1.16	-0.46	-2.94	-7.50	-4.20
CPIAUCSL	-0.29	-0.64	-0.22	0.87	-0.01	1.40	-0.07	3.57	0.22	0.47
CPIAPPSL	-0.44	0.06	-0.49	-0.16	-0.08	2.67	3.13	0.85	-1.55	-5.02
CPITRNSL	-1.05	-0.22	-0.22	0.83	-0.01	1.64	0.42	2.43	-0.17	-0.17
CPIMEDSL	1.02	-0.36	0.00	-0.09	-0.04	3.43	1.07	1.24	1.22	-0.60
CUSR0000SAC	-0.11	-0.20	-0.28	0.76	-0.03	1.22	0.05	2.94	0.29	-1.32
CUSR0000SAD	-0.16	-0.41	0.12	0.09	0.00	-3.34	-1.67	1.72	4.63	-1.52
CPIULFSL	-0.90	-0.80	-0.06	1.04	-0.03	1.13	0.03	4.30	0.94	1.15
CUSR0000SA0L2	-0.54	-0.64	-0.17	0.93	-0.05	2.01	-0.39	3.61	-0.61	-0.04
CUSR0000SA0L5	-0.17	-0.90	-0.22	1.04	-0.04	1.30	-0.06	3.12	-0.26	0.51
PCEPI	-0.86	-0.49	-0.02	0.27	-0.02	2.11	0.80	4.51	2.28	1.68
DDURRG3M086SBEA	-0.10	-0.34	0.32	-0.14	-0.18	2.43	1.03	2.51	2.37	-1.27
DNDGRG3M086SBEA	0.01	-0.05	-0.33	0.81	-0.05	2.00	1.51	3.82	0.71	0.36
CES0600000008	-0.91	0.76	0.54	0.09	0.05	2.56	4.86	3.43	3.43	1.01
CES2000000008	0.01	0.07	-0.02	-0.02	-0.01	-0.27	0.62	-0.85	-5.38	-2.74

Predictor	CER gains - original time series					CER gains - low-frequency component				
	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$	$h=1$	$h=3$	$h=6$	$h=12$	$h=24$
CES3000000008	-1.59	0.45	0.68	0.16	0.01	-1.71	3.41	3.90	3.88	1.39
INVEST	-0.53	-0.30	-1.31	-0.25	0.00	-1.96	1.13	-4.57	-3.94	-2.75
VXOCLSx	-3.92	-2.59	-1.16	-0.37	1.08	-1.91	-1.51	-1.78	-3.34	-3.86

Table 3A: List of Predictors from McCracken and Ng (2016)

FRED code	Description
AAA	Moody's Seasoned Aaa Corporate Bond Yield
AAAFFM	Moody's Aaa Corporate Bond Minus FEDFUNDS
AMDMNOx	New Orders for Durable Goods
AMDMUOx	Unfilled Orders for Durable Goods
ANDENOx	New Orders for Nondefense Capital Goods
AWHMAN	Avg Weekly Hours : Manufacturing
AWOTMAN	Avg Weekly Overtime Hours : Manufacturing
BAA	Moody's Seasoned Baa Corporate Bond Yield
BAAFFM	Moody's Baa Corporate Bond Minus FEDFUNDS
BUSLOANS	Commercial and Industrial Loans BUSLOANS
CE16OV	Civilian Employment
CES0600000007	Avg Weekly Hours : Goods-Producing
CES0600000008	Avg Hourly Earnings : Goods-Producing
CES2000000008	Avg Hourly Earnings : Construction
CES3000000008	Avg Hourly Earnings : Manufacturing
CLAIMSx	Initial Claims
CLF16OV	Civilian Labor Force
CMRMTSPLx	Real Manu. and Trade Industries Sales
COMPAPFFx	3-Month Commercial Paper Minus FEDFUNDS
CONSPI	Nonrevolving consumer credit to Personal Income
CPIAPPSL	CPI : Apparel
CPIAUCSL	CPI : All Items
CPIMEDSL	CPI : Medical Care

FRED code	Description
CPITRNSL	CPI : Transportation
CPIULFSL	CPI : All Items Less Food
CUMFNS	Capacity Utilization: Manufacturing
CUSR0000SA0L2	CPI : All items less shelter
CUSR0000SA0L5	CPI : All items less medical care
CUSR0000SAC	CPI : Commodities
CUSR0000SAD	CPI : Durables
DDURRG3M086SBEA	Personal Cons. Exp: Durable goods
DMANEMP	All Employees: Durable goods
DNDGRG3M086SBEA	Personal Cons. Exp: Nondurable goods
DPCERA3M086SBEA	Real personal consumption expenditures
EXCAUSx	Canada / U.S. Foreign Exchange Rate
EXJPUSx	Japan / U.S. Foreign Exchange Rate
EXSZUSx	Switzerland / U.S. Foreign Exchange Rate
EXUSUKx	U.S. / U.K. Foreign Exchange Rate
GS10	10-Year Treasury Rate
GS5	5-Year Treasury Rate
HOUST	Housing Starts: Total New Privately Owned
HOUSTMW	Housing Starts, Midwest
HOUSTNE	Housing Starts, Northeast
HOUSTS	Housing Starts, South
HOUSTW	Housing Starts, West
HWI	Help-Wanted Index for United States
HWIURATIO	Ratio of Help Wanted/No. Unemployed
INDPRO	IP Index

FRED code	Description
INVEST	Securities in Bank Credit at All Commercial Banks
IPB51222S	IP: Residential Utilities
IPBUSEQ	IP: Business Equipment
IPCONGD	IP: Consumer Goods
IPDCONGD	IP: Durable Consumer Goods
IPDMAT	IP: Durable Materials
IPFINAL	IP: Final Products (Market Group)
IPFPNSS	IP: Final Products and Nonindustrial Supplies
IPFUELS	IP: Fuels
IPMANSICS	IP: Manufacturing (SIC)
IPMAT	IP: Materials
IPNCONGD	IP: Nondurable Consumer Goods
IPNMAT	IP: Nondurable Materials
ISRATIOx	Total Business: Inventories to Sales Ratio
M2REAL	Real M2 Money Stock
M2SL	M2 Money Stock
MANEMP	All Employees: Manufacturing
NDMANEMP	All Employees: Nondurable goods
PAYEMS	All Employees: Total nonfarm
PCEPI	Personal Cons. Expend.: Chain Index
PERMIT	New Private Housing Permits (SAAR)
PERMITMW	New Private Housing Permits, Midwest (SAAR)
PERMITNE	New Private Housing Permits, Northeast (SAAR)
PERMITS	New Private Housing Permits, South (SAAR)
PERMITW	New Private Housing Permits, West (SAAR)

FRED code	Description
PPICMM	PPI: Metals and metal products
RETAILx	Retail and Food Services Sales
S&P 500	S&P's Common Stock Price Index: Composite
S&P div yield	S&P's Composite Common Stock: Dividend Yield
S&P PE ratio	S&P's Composite Common Stock: Price-Earnings Ratio
S&P: indust	S&P's Common Stock Price Index: Industrials
SRVPRD	All Employees: Service-Providing Industries
T10YFFM	10-Year Treasury C Minus FEDFUNDS
T1YFFM	1-Year Treasury C Minus FEDFUNDS
T5YFFM	5-Year Treasury C Minus FEDFUNDS
TB3SMFFM	3-Month Treasury C Minus FEDFUNDS
TB6SMFFM	6-Month Treasury C Minus FEDFUNDS
UEMP15OV	Civilians Unemployed - 15 Weeks & Over
UEMP15T26	Civilians Unemployed for 15-26 Weeks
UEMP27OV	Civilians Unemployed for 27 Weeks and Over
UEMP5TO14	Civilians Unemployed for 1-14 Weeks
UEMPLT5	Civilians Unemployed - Less Than 5 Weeks
UEMPMEAN	Average Duration of Unemployment (Weeks)
UNRATE	Civilian Unemployment Rate
USCONS	All Employees: Construction
USFIRE	All Employees: Financial Activities
USGOOD	All Employees: Goods-Producing Industries
USGOVT	All Employees: Government
USTPU	All Employees: Trade, Transportation & Utilities
USTRADE	All Employees: Retail Trade

FRED code	Description
USWTRADE	All Employees: Wholesale Trade
VXOCLSx	VXO
WPSFD49207	PPI: Finished Goods
WPSFD49502	PPI: Finished Consumer Goods
WPSID61	PPI: Intermediate Materials

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