

# Online Appendix to "High-Frequency Trading and Market Efficiency: Evidence from the Weekly Natural Gas Storage Report"

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August 17, 2016

## 1 Storage report profits

Table 1: **September 19, 2013 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.7937	0.4475	0.4042	0.3911
30 s	0.3910	0.0462	0.0031	-0.0100
1 m	0.2609	-0.0834	-0.1265	-0.1395
5 m	-0.0857	-0.4289	-0.4718	-0.4848

Table 2: **September 26, 2013 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.6659	0.2030	0.2059	0.0139
30 s	0.4875	0.0253	0.0283	-0.1634
1 m	0.1418	-0.3187	-0.3158	-0.5068
5 m	0.0256	-0.4344	-0.4315	-0.6223

Table 3: **October 3, 2013 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.1966	0.1170	0.1109	0.1077
30 s	-0.0548	-0.1342	-0.1403	-0.1435
1 m	0.2551	0.1754	0.1693	0.1661
5 m	0.1249	0.0454	0.0393	0.0360

Table 4: **October 10, 2013 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.7153	-0.7761	-0.7762	-0.7775
30 s	-0.6897	-0.7506	-0.7506	-0.7520
1 m	-0.9483	-1.0090	-1.0090	-1.0104
5 m	-1.4924	-1.5527	-1.5528	-1.5541

Table 5: **October 17, 2013 Storage Report: Alternate Date/Time** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s				
30 s				
1 m				
5 m				

Table 6: **October 24, 2013 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.4389	-0.4605	-0.5000	-0.4923
30 s	-0.8172	-0.8388	-0.8781	-0.8704
1 m	-0.6595	-0.6811	-0.7205	-0.7128
5 m	-1.3817	-1.4032	-1.4422	-1.4346

Table 7: **October 31, 2013 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.2011	0.0467	0.0252	0.0263
30 s	-0.0473	-0.2013	-0.2228	-0.2217
1 m	-0.3846	-0.5381	-0.5595	-0.5584
5 m	-0.3142	-0.4678	-0.4893	-0.4881

Table 8: **November 7, 2013 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s		0.2836	0.1141	0.1685
30 s		0.1114	-0.0578	-0.0035
1 m		-0.0256	-0.1946	-0.1404
5 m		-0.1674	-0.3361	-0.2820

Table 9: **November 14, 2013 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.1476	-0.1346	-0.1317	-0.1313
30 s	-0.2552	-0.2423	-0.2394	-0.2390
1 m	-0.4500	-0.4371	-0.4342	-0.4338
5 m	0.3434	0.3564	0.3593	0.3597

Table 10: **November 21, 2013 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s		0.2211	0.1179	0.0927
30 s		0.2023	0.0991	0.0739
1 m		0.0285	-0.0745	-0.0996
5 m		0.3244	0.2210	0.1958

Table 11: **December 5, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.2072	-0.1764	-0.2656	-0.3082
30 s	1.0205	0.6337	0.5438	0.5008
1 m	1.2722	0.8845	0.7944	0.7513
5 m	1.3850	0.9968	0.9067	0.8635

Table 12: **December 12, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.1734	-0.1621	-0.1619	-0.1622
30 s	-0.3356	-0.3243	-0.3241	-0.3244
1 m	-0.7748	-0.7636	-0.7634	-0.7637
5 m	0.1533	0.1646	0.1648	0.1645

Table 13: **December 19, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-1.6687	-0.5315	-0.4627	-0.4606
30 s	-2.0225	-0.8894	-0.8210	-0.8188
1 m	-2.2050	-1.0740	-1.0056	-1.0035
5 m	-1.9291	-0.7949	-0.7264	-0.7242

Table 14: **January 3, 2014 Storage Report (on Friday due to New Year's holiday):** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.2242	0.2056	0.1997	0.1987
30 s	0.0341	0.0156	0.0097	0.0086
1 m	-0.0870	-0.1055	-0.1114	-0.1124
5 m	-0.2774	-0.2959	-0.3017	-0.3028

Table 15: **January 9, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.1048	-0.1013	-0.0986	-0.0975
30 s	0.1345	0.1381	0.1407	0.1419
1 m	0.0639	0.0674	0.0700	0.0712
5 m	-0.5478	-0.5443	-0.5417	-0.5405

Table 16: **January 16, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	1.2427	1.2408	1.2361	1.2359
30 s	0.9954	0.9935	0.9888	0.9885
1 m	0.9466	0.9447	0.9400	0.9397
5 m	1.2597	1.2578	1.2531	1.2528

Table 17: **January 23, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.5994	0.5994	0.5883	0.5883
30 s	0.5660	0.5660	0.5549	0.5549
1 m	0.0362	0.0362	0.0251	0.0251
5 m	0.6763	0.6763	0.6652	0.6652

Table 18: **February 6, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	1.7725	1.2124	1.2169	1.2192
30 s	0.8532	0.2982	0.3027	0.3049
1 m	0.8104	0.2556	0.2601	0.2623
5 m	0.0937	-0.4571	-0.4526	-0.4504

Table 19: **February 13, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.7195	0.7171	0.7241	0.7236
30 s	0.5527	0.5504	0.5573	0.5568
1 m	0.7835	0.7811	0.7880	0.7875
5 m	0.9267	0.9244	0.9313	0.9308

Table 20: **February 20, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.5937	0.6091	0.6092	0.6007
30 s	0.4006	0.4159	0.4161	0.4076
1 m	-0.0015	0.0137	0.0139	0.0054
5 m	1.6484	1.6639	1.6641	1.6554



Table 21: **February 27, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.6458	-0.6510	-0.6262	-0.6114
30 s	-0.7166	-0.7217	-0.6970	-0.6822
1 m	-0.6400	-0.6451	-0.6204	-0.6055
5 m	-1.2677	-1.2728	-1.2482	-1.2334

Table 22: **March 6, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	1.2598	1.2474	1.2454	1.2434
30 s	1.2132	1.2008	1.1989	1.1969
1 m	1.1966	1.1842	1.1823	1.1802
5 m	1.4325	1.4200	1.4181	1.4160

Table 23: **March 13, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.2204	-0.3348	-0.3552	-0.3532
30 s	-0.3812	-0.4954	-0.5158	-0.5138
1 m	-0.3595	-0.4738	-0.4941	-0.4921
5 m	-0.3005	-0.4148	-0.4352	-0.4332

Table 24: **March 20, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.5381	0.4340	0.4248	0.4024
30 s	0.4241	0.3200	0.3109	0.2885
1 m	0.4092	0.3051	0.2960	0.2736
5 m	-0.0057	-0.1094	-0.1184	-0.1407

Table 25: **March 27, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.4179	0.3722	0.0893	0.0362
30 s	0.0848	0.0393	-0.2427	-0.2957
1 m	0.1937	0.1482	-0.1341	-0.1871
5 m	0.2305	0.1850	-0.0974	-0.1505

Table 26: **April 3, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.2859	-0.2617	-0.2727	-0.2743
30 s	0.0242	0.0485	0.0374	0.0358
1 m	-0.1592	-0.1350	-0.1461	-0.1477
5 m	0.0358	0.0601	0.0490	0.0474

Table 27: **April 10, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.6146	0.5824	0.5709	0.5640
30 s	0.9525	0.9203	0.9087	0.9017
1 m	1.2716	1.2392	1.2276	1.2206
5 m	1.8790	1.8464	1.8347	1.8277

Table 28: **April 17, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	1.0876	1.0323	1.0129	0.9082
30 s	1.3809	1.3255	1.3060	1.2010
1 m	1.3667	1.3113	1.2918	1.1868
5 m	2.4160	2.3600	2.3403	2.2342

Table 29: **April 24, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.3252	-0.3332	-0.3265	-0.3261
30 s	-0.3154	-0.3233	-0.3167	-0.3162
1 m	-0.5713	-0.5793	-0.5727	-0.5722
5 m	-0.4868	-0.4948	-0.4882	-0.4877

Table 30: **May 1, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.3582	0.2846	0.2670	0.2540
30 s	-0.1977	-0.2708	-0.2884	-0.3013
1 m	-0.0263	-0.0995	-0.1171	-0.1300
5 m	-0.0875	-0.1607	-0.1783	-0.1912

Table 31: **May 8, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.1903	0.1760	0.1220	0.1108
30 s	-0.0661	-0.0805	-0.1343	-0.1455
1 m	0.0822	0.0679	0.0140	0.0027
5 m	-0.0221	-0.0364	-0.0903	-0.1015

Table 32: **May 15, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.5547	-0.8835	-0.8714	-0.8137
30 s	-1.7111	-2.0360	-2.0241	-1.9670
1 m	-1.8191	-2.1436	-2.1317	-2.0748
5 m	-2.7719	-3.0933	-3.0816	-3.0251

Table 33: **May 22, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	1.2755	1.1966	1.1820	1.1201
30 s	0.9797	0.9011	0.8865	0.8247
1 m	1.4260	1.3470	1.3324	1.2703
5 m	1.6207	1.5416	1.5269	1.4647

Table 34: **May 29, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.8048	0.8035	0.8010	0.8010
30 s	1.1787	1.1774	1.1749	1.1749
1 m	1.1905	1.1892	1.1867	1.1867
5 m	1.1167	1.1154	1.1129	1.1129

Table 35: **June 05, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.8973	0.8444	0.8421	0.8193
30 s	1.0109	0.9579	0.9557	0.9328
1 m	0.9560	0.9031	0.9008	0.8780
5 m	0.6346	0.5818	0.5796	0.5568

Table 36: **June 12, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	1.0495	0.9821	0.7238	0.6916
30 s	1.4968	1.4291	1.1696	1.1374
1 m	1.7124	1.6446	1.3846	1.3522
5 m	2.2475	2.1793	1.9179	1.8854

Table 37: **June 19, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	1.4438	1.4438	1.4438	1.4430
30 s	1.3541	1.3541	1.3541	1.3533
1 m	0.9210	0.9210	0.9210	0.9202
5 m	0.6687	0.6687	0.6687	0.6679

Table 38: **June 26, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.7603	0.7265	0.7075	0.7038
30 s	0.7999	0.7662	0.7472	0.7434
1 m	0.6569	0.6232	0.6042	0.6005
5 m	1.6034	1.5694	1.5502	1.5464



Table 39: **July 3, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.0191	0.0176	0.0163	0.0154
30 s	0.6246	0.6231	0.6218	0.6208
1 m	0.4559	0.4544	0.4531	0.4522
5 m	0.8461	0.8446	0.8433	0.8423

Table 40: **July 10, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s		0.4102	0.3670	0.3738
30 s		0.7592	0.7160	0.7228
1 m		0.5538	0.5106	0.5174
5 m		0.3831	0.3400	0.3468

Table 41: **July 17, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.7978	0.7690	0.7464	0.7367
30 s	0.9988	0.9699	0.9473	0.9375
1 m	1.1755	1.1466	1.1240	1.1142
5 m	1.6404	1.6114	1.5886	1.5788

Table 42: **July 24, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	1.0120	0.7119	0.6757	0.6665
30 s	0.6170	0.3180	0.2820	0.2728
1 m	0.1281	-0.1694	-0.2052	-0.2144
5 m	-0.0835	-0.3803	-0.4161	-0.4252

Table 43: **July 31, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.6337	0.6362	0.6278	0.6277
30 s	0.4658	0.4684	0.4599	0.4599
1 m	0.6208	0.6233	0.6149	0.6148
5 m	0.7506	0.7531	0.7447	0.7446

Table 44: **August 14, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.2904	0.2483	0.2307	0.2215
30 s	0.3543	0.3122	0.2945	0.2853
1 m	-0.2112	-0.2531	-0.2706	-0.2798
5 m	-0.3040	-0.3458	-0.3634	-0.3725

Table 45: **August 21, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	2.3474	1.0315	0.9997	0.9704
30 s	2.2168	0.9025	0.8707	0.8415
1 m	1.9028	0.5927	0.5610	0.5318
5 m	2.3819	1.0656	1.0337	1.0044

Table 46: **August 28, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	-0.2375	-0.2475	-0.2320	-0.2043
30 s	-0.5936	-0.6036	-0.5882	-0.5605
1 m	-0.4960	-0.5060	-0.4906	-0.4629
5 m	-0.9819	-0.9919	-0.9765	-0.9490

Table 47: **September 4, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.3033	0.2995	0.3064	0.3171
30 s	0.3914	0.3876	0.3945	0.4053
1 m	0.6706	0.6667	0.6737	0.6845
5 m	0.4776	0.4738	0.4807	0.4915

Table 48: **September 11, 2014 Storage Report:** This table shows the percent return for the HFT entering their trade at the VWAP over the interval from the announcement to the millisecond in the column, and exiting their trade at the VWAP over the second, or minute, listed in the rows.

	50 ms	100 ms	150 ms	200 ms
10 s	0.7643	0.7732	0.7750	0.7752
30 s	0.8643	0.8733	0.8750	0.8752
1 m	0.9902	0.9992	1.0009	1.0011
5 m	0.7825	0.7915	0.7933	0.7934