

Parallel-Shift Sensitivity Analysis for HLB-Option and Knockout Advances

The Federal Home Loan Bank of Boston (Bank) is providing estimated valuations of the specific HLB-Option and Knockout advances set forth below for members' information and convenience only. The estimated valuations are generated by models obtained from external sources which are used for the Bank's own asset/liability management purposes. The models include the use of specific assumptions, for example, market volatility and discount curve adjusted for the Bank's spread, to estimate the value of the advance. The valuations represent theoretical market values only and should not be construed as a liquidation price for the HLB-Option or Knockout advance.

It is expressly understood that in providing this valuation information to members, the Bank is not performing any advisory service. The valuations are being provided without representation or warranty and the member shall be solely responsible for any decision it makes or actions it takes based on the valuations provided. It is recommended that institutions maintain independent capabilities to value their asset/liability positions, including HLB-Option and Knockout advances.

The table depicts valuation estimates resulting from immediate parallel interest-rate movements of plus/minus 400 basis points in 100 basis point increments. In order to rule out negative interest rates, our model applies an effective floor of plus ten basis points to the yield curve for all down-rate scenarios. As a result, large down-rate shocks will reflect valuation at the floor rate of ten basis points in place of any negative interest rates that would otherwise be produced by the indicated basis point shocks. Please note that the valuation estimates are from the Federal Home Loan Bank of Boston's perspective. Since the advance is held by the member as a liability, positive price changes in the table correspond to the advance having a negative impact on the member's estimated market value of portfolio equity (and vice versa). The theoretical argument follows that as interest rates rise, the value of the advance to the Bank falls. In the case of an HLB-Option advance, the Bank would be likely to exercise its option to cancel the advance as the value falls below 100. In the case of a Knockout advance, the Bank would automatically terminate the advance on any specified cancellation date if LIBOR is equal to or greater than a predetermined "strike rate" four London Business days prior to the scheduled cancellation date. In either case, the member's cost to prepay the advance increases as interest rates fall.

To identify your advance, locate the appropriate maturity date and then verify the coupon rate. The report is sorted in ascending order by start date, followed by coupon. Once the appropriate structure is determined, read across to view the sensitivity analysis that has been performed on the advance.

If you have any questions or would like further explanation of this analysis, contact the Money Desk at 1-800-357-3452.

Start Date	Maturity	Next Call	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
	Date	Date									
4/8/1998	4/8/2013	4/8/2013	5.490	100.122	100.122	100.122	100.119	100.096	100.074	100.052	100.029
8/19/1998	8/19/2013	5/20/2013	5.490	102.150	102.150	102.150	102.048	101.661	101.276	100.895	100.518
8/19/1998	8/19/2013	5/20/2013	5.490	102.150	102.150	102.150	102.048	101.661	101.276	100.895	100.518
12/14/1998	12/16/2013	6/14/2013	5.390	103.893	103.893	103.893	103.642	102.925	102.219	101.524	100.866
12/14/1998	12/16/2013	6/14/2013	4.890	103.531	103.531	103.531	103.281	102.566	101.861	101.172	100.541
12/15/1998	12/16/2013	6/17/2013	4.880	103.524	103.524	103.524	103.274	102.559	101.854	101.165	100.534
1/7/2000	1/7/2015	4/8/2013	5.950	110.693	110.693	110.693	109.649	107.823	106.049	104.364	102.839
7/2/2004	4/3/2013	4/3/2013	3.990	105.076	105.076	105.076	104.504	103.234	101.986	100.759	99.552
12/13/2004	12/15/2014	6/13/2013	3.320	105.754	105.754	105.754	104.789	103.098	101.599	100.497	99.925
9/1/2005	6/1/2013	6/1/2013	4.130	110.141	110.141	110.141	108.492	106.024	103.626	101.295	99.028
9/30/2005	6/30/2013	6/30/2013	4.440	111.260	111.260	111.260	109.526	106.965	104.479	102.064	99.718
10/26/2005	4/26/2013	4/26/2013	4.540	111.841	111.841	111.841	110.032	107.395	104.835	102.351	99.939
1/17/2006	1/19/2016	4/17/2013	4.080	111.605	111.605	111.605	109.556	106.761	104.262	102.230	100.789
4/19/2006	4/19/2013	4/19/2013	4.630	100.244	100.244	100.244	100.236	100.183	100.130	100.078	100.025
4/24/2006	4/25/2016	4/24/2013	4.440	113.825	113.825	113.825	111.445	108.359	105.571	103.230	101.459
5/5/2006	5/5/2016	5/6/2013	4.350	113.665	113.665	113.665	111.254	108.156	105.379	103.073	101.358
5/5/2006	5/5/2016	5/6/2013	4.530	114.231	114.231	114.231	111.813	108.695	105.874	103.495	101.678
5/15/2006	5/16/2016	5/15/2013	4.350	113.798	113.798	113.798	111.346	108.219	105.414	103.082	101.346
5/15/2006	5/16/2016	5/15/2013	4.520	114.338	114.338	114.338	111.879	108.732	105.886	103.486	101.652
5/19/2006	5/19/2016	5/20/2013	4.510	114.343	114.343	114.343	111.875	108.720	105.868	103.465	101.631
6/12/2006	6/13/2016	6/12/2013	4.620	115.014	115.014	115.014	112.448	109.218	106.291	103.814	101.895
6/26/2006	6/27/2016	6/26/2013	4.730	115.556	115.556	115.556	112.932	109.650	106.664	104.115	102.107
6/28/2006	6/28/2013	6/28/2013	4.950	101.224	101.224	101.224	101.177	100.931	100.687	100.444	100.202
6/30/2006	7/1/2013	7/1/2013	4.890	101.250	101.250	101.250	101.201	100.947	100.694	100.443	100.193
7/14/2006	7/15/2013	4/15/2013	4.890	101.440	101.440	101.440	101.377	101.085	100.795	100.507	100.220
7/24/2006	7/25/2016	4/24/2013	4.660	115.688	115.688	115.688	112.957	109.612	106.586	104.021	102.021
7/28/2006	7/28/2016	4/29/2013	4.490	115.153	115.153	115.153	112.418	109.087	106.096	103.589	101.682
8/21/2006	8/21/2013	5/21/2013	4.750	101.887	101.887	101.887	101.782	101.390	101.001	100.615	100.232
8/25/2006	8/25/2016	5/28/2013	4.350	115.019	115.019	115.019	112.179	108.799	105.794	103.308	101.458
10/10/2006	10/10/2013	4/10/2013	4.250	102.278	102.278	102.278	102.110	101.581	101.057	100.551	100.122
10/12/2006	10/15/2013	4/12/2013	4.500	102.475	102.475	102.475	102.300	101.757	101.220	100.694	100.228
11/6/2006	11/6/2013	5/6/2013	4.290	102.622	102.622	102.622	102.420	101.817	101.222	100.648	100.165
11/17/2006	11/18/2013	5/17/2013	4.350	102.803	102.803	102.803	102.588	101.951	101.322	100.716	100.210
11/24/2006	11/25/2016	5/24/2013	4.190	115.537	115.537	115.537	112.318	108.749	105.630	103.103	101.274
11/30/2006	12/2/2013	5/28/2013	4.350	102.972	102.972	102.972	102.740	102.064	101.397	100.739	100.090
12/1/2006	12/1/2016	6/3/2013	4.090	115.234	115.234	115.234	112.000	108.443	105.364	102.905	101.164
12/4/2006	12/5/2016	6/4/2013	4.080	115.242	115.242	115.242	111.990	108.426	105.343	102.883	101.145
12/5/2006	12/5/2016	6/5/2013	4.260	115.915	115.915	115.915	112.648	109.048	105.897	103.337	101.470
12/6/2006	12/6/2013	6/6/2013	4.400	103.055	103.055	103.055	102.818	102.131	101.454	100.804	100.267
12/8/2006	12/8/2016	6/10/2013	3.990	114.939	114.939	114.939	111.682	108.129	105.073	102.660	100.983
12/12/2006	12/12/2016	6/12/2013	3.990	114.984	114.984	114.984	111.708	108.144	105.080	102.661	100.978
12/12/2006	12/12/2016	6/12/2013	4.050	115.209	115.209	115.209	111.928	108.352	105.264	102.807	101.079
12/19/2006	12/19/2016	6/19/2013	4.190	115.816	115.816	115.816	112.491	108.869	105.713	103.161	101.322
12/20/2006	12/20/2013	6/20/2013	4.500	103.300	103.300	103.300	103.045	102.320	101.606	100.914	100.328
12/28/2006	12/28/2016	6/28/2013	4.250	116.149	116.149	116.149	112.778	109.121	105.923	103.320	101.421
12/28/2006	12/28/2016	6/28/2013	4.400	116.719	116.719	116.719	113.336	109.650	106.399	103.722	101.714
1/12/2007	1/12/2017	4/12/2013	4.420	116.979	116.979	116.979	113.527	109.807	106.531	103.837	101.816
1/16/2007	1/17/2017	4/16/2013	4.790	118.467	118.467	118.467	114.962	111.164	107.766	104.885	102.623
1/23/2007	1/23/2014	4/23/2013	4.490	103.717	103.717	103.717	103.418	102.601	101.798	101.024	100.369
1/29/2007	1/29/2014	4/29/2013	4.790	104.045	104.045	104.045	103.738	102.903	102.082	101.274	100.479
2/2/2007	2/2/2017	5/2/2013	4.690	118.290	118.290	118.290	114.682	110.705	106.892	103.233	99.723
2/20/2007	2/21/2017	5/20/2013	4.850	119.170	119.170	119.170	115.459	111.411	107.531	103.812	100.245
2/20/2007	2/21/2017	5/20/2013	4.390	117.352	117.352	117.352	113.714	109.904	106.564	103.830	101.783
2/23/2007	2/23/2017	5/23/2013	4.250	116.822	116.822	116.822	113.188	109.402	106.110	103.441	101.489
2/23/2007	2/23/2017	5/23/2013	4.350	117.218	117.218	117.218	113.574	109.767	106.437	103.717	101.692
3/16/2007	3/16/2017	6/17/2013	4.090	116.427	116.427	116.427	112.710	108.919	105.663	103.069	101.231
3/21/2007	3/21/2017	6/21/2013	4.220	117.008	117.008	117.008	113.252	109.418	106.096	103.416	101.470
3/23/2007	3/23/2017	6/24/2013	4.290	117.314	117.314	117.314	113.541	109.686	106.333	103.611	101.607
3/23/2007	3/23/2017	6/24/2013	4.290	117.314	117.314	117.314	113.541	109.686	106.333	103.611	101.607
4/9/2007	4/10/2017	4/9/2013	4.150	116.956	116.956	116.956	113.113	109.256	105.941	103.288	101.390
4/12/2007	4/12/2017	4/12/2013	4.250	117.388	117.388	117.388	113.523	109.638	106.274	103.558	101.575
4/13/2007	4/13/2017	4/15/2013	4.450	118.219	118.219	118.219	114.328	110.392	106.949	104.126	101.999
4/23/2007	4/23/2014	4/23/2013	4.620	104.979	104.979	104.979	104.542	103.466	102.411	101.417	100.576
4/27/2007	4/27/2017	4/29/2013	4.250	117.566	117.566	117.566	113.624	109.701	106.306	103.561	101.552
5/2/2007	5/2/2014	5/2/2013	4.590	105.061	105.061	105.061	104.609	103.506	102.427	101.419	100.582
5/4/2007	5/5/2014	5/6/2013	4.550	105.055	105.055	105.055	104.597	103.486	102.400	101.388	100.554
5/18/2007	5/18/2017	5/20/2013	4.190	117.562	117.562	117.562	113.521	109.572	106.175	103.448	101.474
5/22/2007	5/22/2017	5/22/2013	4.750	119.962	119.962	119.962	115.836	111.747	108.129	105.090	102.718

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
5/29/2007	5/30/2017	5/29/2013	4.250	117.955	117.955	117.955	113.844	109.852	106.408	103.629	101.589
6/1/2007	6/2/2014	6/3/2013	4.500	105.350	105.350	105.350	104.838	103.650	102.492	101.421	100.559
6/7/2007	6/7/2017	6/7/2013	4.820	120.470	120.470	120.470	116.252	112.117	108.456	105.373	102.955
6/8/2007	6/8/2017	6/10/2013	4.490	119.081	119.081	119.081	114.895	110.830	107.282	104.373	102.174
6/11/2007	6/12/2017	6/11/2013	4.490	119.131	119.131	119.131	114.923	110.848	107.292	104.378	102.173
6/18/2007	6/19/2017	6/18/2013	4.500	119.261	119.261	119.261	115.013	110.919	107.344	104.411	102.187
6/19/2007	6/19/2017	6/19/2013	4.650	119.903	119.903	119.903	115.637	111.508	107.878	104.862	102.532
6/22/2007	6/22/2017	6/24/2013	4.500	119.299	119.299	119.299	115.034	110.932	107.350	104.410	102.179
6/28/2007	6/28/2017	6/28/2013	4.500	119.374	119.374	119.374	115.076	110.959	107.364	104.413	102.171
7/13/2007	7/13/2017	4/15/2013	4.290	118.648	118.648	118.645	114.298	110.210	106.689	103.848	101.760
7/20/2007	7/20/2017	4/22/2013	4.290	118.732	118.732	118.726	114.341	110.238	106.702	103.849	101.748
7/27/2007	7/27/2017	4/29/2013	4.250	118.640	118.640	118.632	114.216	110.108	106.574	103.732	101.648
7/30/2007	1/30/2019	4/30/2013	3.990	123.617	123.617	121.446	115.824	110.910	106.870	103.735	101.526
7/31/2007	7/31/2017	4/30/2013	3.990	117.544	117.544	117.535	113.142	109.108	105.695	103.011	101.131
7/31/2007	7/31/2017	4/30/2013	3.990	117.544	117.544	117.535	113.142	109.108	105.695	103.011	101.131
7/31/2007	7/31/2017	4/30/2013	4.060	117.852	117.852	117.843	113.439	109.383	105.935	103.204	101.267
8/2/2007	8/4/2014	5/2/2013	4.490	106.124	106.124	106.124	105.477	104.113	102.794	101.596	100.636
8/2/2007	8/2/2017	5/2/2013	4.150	118.270	118.270	118.255	113.834	109.751	106.271	103.503	101.515
8/2/2007	8/2/2017	5/2/2013	4.050	117.830	117.830	117.815	113.410	109.358	105.925	103.221	101.320
8/9/2007	8/9/2017	5/9/2013	3.990	117.643	117.643	117.606	113.193	109.144	105.728	103.052	101.187
8/16/2007	8/16/2017	5/16/2013	3.990	117.721	117.721	117.661	113.230	109.166	105.735	103.047	101.170
8/17/2007	8/17/2017	5/17/2013	4.000	117.777	117.777	117.714	113.279	109.209	105.771	103.075	101.187
8/20/2007	8/20/2014	8/20/2013	4.250	105.985	105.985	105.985	105.302	103.896	102.518	101.251	100.314
8/28/2007	8/28/2014	5/28/2013	4.350	106.223	106.223	106.223	105.521	104.093	102.717	101.475	100.518
8/30/2007	9/2/2014	5/30/2013	3.890	105.619	105.619	105.619	104.907	103.473	102.113	100.959	100.178
9/4/2007	9/5/2017	6/4/2013	3.890	117.493	117.493	117.370	112.914	108.852	105.455	102.833	101.045
9/10/2007	9/11/2017	6/10/2013	3.690	116.655	116.655	116.513	112.083	108.081	104.784	102.310	100.722
9/11/2007	9/11/2017	6/11/2013	3.590	116.204	116.204	116.061	111.654	107.692	104.455	102.063	100.572
9/12/2007	9/12/2014	6/12/2013	3.690	105.432	105.432	105.432	104.698	103.240	101.879	100.767	100.069
9/13/2007	9/15/2014	6/13/2013	3.990	105.907	105.907	105.907	105.164	103.692	102.298	101.102	100.274
9/13/2007	9/13/2017	6/13/2013	3.990	118.031	118.031	117.882	113.385	109.272	105.807	103.096	101.208
9/27/2007	9/29/2014	9/27/2010	4.490	106.822	106.822	106.822	106.043	104.521	103.029	101.566	100.130
9/27/2007	9/27/2017	6/27/2013	3.650	116.637	116.637	116.445	111.982	107.962	104.658	102.191	100.617
10/11/2007	10/14/2014	4/11/2013	4.180	106.525	106.525	106.525	105.710	104.156	102.678	101.387	100.445
10/11/2007	10/11/2017	4/11/2013	3.990	118.342	118.342	118.104	113.538	109.376	105.877	103.141	101.235
10/15/2007	10/16/2017	4/15/2013	3.990	118.397	118.397	118.143	113.564	109.391	105.884	103.141	101.229
10/25/2007	10/27/2014	4/25/2013	4.360	106.963	106.963	106.963	106.116	104.521	102.997	101.643	100.597
10/26/2007	10/26/2017	4/26/2013	3.390	115.725	115.725	115.447	110.980	107.029	103.867	101.602	100.290
11/2/2007	11/3/2014	5/2/2013	3.990	106.450	106.450	106.450	105.587	103.983	102.476	101.203	100.331
11/2/2007	11/3/2014	5/2/2013	4.190	106.773	106.773	106.773	105.909	104.300	102.775	101.451	100.483
11/5/2007	11/5/2014	5/6/2013	3.990	106.472	106.472	106.472	105.604	103.994	102.482	101.204	100.328
11/5/2007	11/6/2017	5/6/2013	4.390	120.498	120.498	120.172	115.465	111.126	107.397	104.384	102.138
11/6/2007	11/6/2017	5/6/2013	3.480	116.248	116.248	115.934	111.424	107.425	104.203	101.868	100.465
11/9/2007	11/10/2014	5/9/2013	4.330	107.084	107.084	107.084	106.201	104.569	103.015	101.647	100.605
11/13/2007	11/13/2014	5/13/2013	3.350	105.508	105.508	105.508	104.624	103.015	101.571	100.492	99.974
11/19/2007	11/19/2014	5/20/2013	4.270	107.093	107.093	107.093	106.187	104.531	102.958	101.578	100.547
11/19/2007	11/19/2014	5/20/2013	3.750	106.229	106.229	106.229	105.326	103.684	102.163	100.924	100.134
11/19/2007	11/19/2014	5/20/2013	3.750	106.229	106.229	106.229	105.326	103.684	102.163	100.924	100.134
11/19/2007	11/20/2017	5/19/2013	4.290	120.197	120.197	119.808	114.910	110.146	105.611	101.295	97.185
11/20/2007	11/20/2017	5/20/2013	3.740	117.608	117.608	117.240	112.632	108.490	105.075	102.495	100.801
11/23/2007	11/24/2017	5/23/2013	3.990	118.829	118.829	118.426	113.540	108.797	104.284	99.988	95.898
11/23/2007	11/24/2017	5/23/2013	3.990	118.829	118.829	118.426	113.540	108.797	104.284	99.988	95.898
11/29/2007	11/29/2017	5/29/2013	2.950	113.962	113.962	113.580	109.186	105.424	102.575	100.736	99.929
11/30/2007	11/30/2017	5/30/2013	3.190	115.107	115.107	114.715	110.238	106.340	103.302	101.203	100.074
12/10/2007	12/11/2017	6/10/2013	3.450	116.444	116.444	116.007	111.434	107.395	104.155	101.819	100.420
12/24/2007	12/26/2017	3/24/2013	3.990	119.184	119.184	118.659	113.678	108.848	104.256	99.889	95.735
1/3/2008	1/5/2015	4/3/2013	3.650	106.539	106.539	106.539	105.518	103.757	102.155	100.891	100.150
1/4/2008	1/4/2018	4/4/2013	3.360	116.239	116.239	115.723	111.128	107.102	103.909	101.643	100.339
1/7/2008	1/7/2015	4/8/2013	3.490	106.272	106.272	106.272	105.247	103.488	101.911	100.698	100.080
1/7/2008	1/8/2018	4/8/2013	2.590	112.546	112.546	112.049	107.748	104.192	101.682	100.284	99.965
1/8/2008	1/8/2018	4/8/2013	2.570	112.449	112.449	111.954	107.661	104.120	101.631	100.265	99.965
1/8/2008	1/8/2018	4/8/2013	2.640	112.788	112.788	112.289	107.963	104.370	101.804	100.330	99.966
1/11/2008	1/11/2018	4/11/2013	2.720	113.198	113.198	112.685	108.316	104.661	102.008	100.434	99.956
1/14/2008	1/16/2018	4/15/2013	3.240	115.767	115.767	115.213	110.630	106.645	103.526	101.361	100.210
1/16/2008	1/16/2018	4/16/2013	2.380	111.581	111.581	111.075	106.864	103.467	101.182	100.107	99.921
1/17/2008	1/17/2018	4/17/2013	2.250	110.955	110.955	110.457	106.319	103.036	100.906	100.023	99.910
1/18/2008	1/20/2015	4/18/2013	2.350	104.308	104.308	104.308	103.266	101.603	100.406	99.960	99.910
1/18/2008	1/18/2018	4/18/2013	2.290	111.156	111.156	110.652	106.487	103.166	100.985	100.045	99.907

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
2/14/2008	2/14/2018	5/14/2013	3.190	115.780	115.780	115.061	110.004	105.131	100.506	96.114	91.942
2/25/2008	2/26/2018	5/28/2013	2.420	112.052	112.052	111.414	107.114	103.637	101.273	100.067	99.738
3/7/2008	3/9/2015	6/7/2013	2.890	105.683	105.683	105.683	104.510	102.648	101.125	100.183	99.793
3/7/2008	3/7/2018	6/7/2013	3.550	117.768	117.768	117.027	112.241	108.029	104.632	102.145	100.606
3/14/2008	3/14/2018	6/14/2013	2.400	112.059	112.059	111.368	107.066	103.599	101.257	100.069	99.665
3/17/2008	3/19/2018	6/17/2013	3.300	116.627	116.627	115.852	111.124	107.021	103.796	101.531	100.234
4/14/2008	4/14/2015	4/14/2013	2.750	105.683	105.683	105.683	104.415	102.371	100.377	98.432	96.534
4/28/2008	4/28/2015	4/29/2013	3.250	106.843	106.843	106.843	105.537	103.506	101.760	100.516	99.962
4/28/2008	4/30/2018	4/29/2013	2.150	111.083	111.083	110.288	106.064	102.788	100.725	99.941	99.839
4/30/2008	4/30/2018	4/30/2013	3.740	119.280	119.280	118.251	112.917	107.777	102.907	100.068	99.966
5/2/2008	5/4/2015	5/2/2013	3.990	108.467	108.467	108.467	107.136	105.037	103.121	101.547	100.472
5/5/2008	5/5/2015	5/6/2013	3.170	106.736	106.736	106.736	105.414	103.379	101.659	100.471	99.959
5/8/2008	5/8/2015	5/8/2013	2.960	106.314	106.314	106.314	104.990	102.974	101.321	100.278	99.887
5/19/2008	5/19/2015	5/21/2013	4.700	110.170	110.170	110.170	108.790	106.604	104.473	102.396	100.371
5/23/2008	5/23/2013	5/23/2013	4.040	100.595	100.595	100.595	100.570	100.425	100.279	100.135	99.990
5/23/2008	5/23/2018	5/23/2013	3.270	117.066	117.066	116.054	111.208	107.035	103.771	101.488	100.210
5/27/2008	5/28/2013	5/27/2011	3.490	100.562	100.562	100.562	100.535	100.376	100.218	100.060	99.902
6/6/2008	6/6/2013	6/6/2013	3.990	100.743	100.743	100.743	100.710	100.526	100.343	100.160	99.979
6/16/2008	6/17/2013	6/17/2013	4.070	100.882	100.882	100.882	100.842	100.628	100.414	100.201	99.989
6/24/2008	6/24/2015	6/24/2013	3.830	108.670	108.670	108.670	107.210	104.982	102.977	101.372	100.320
6/30/2008	6/30/2015	7/1/2013	3.370	107.685	107.685	107.685	106.217	104.014	102.111	100.723	100.081
6/30/2008	7/2/2018	6/30/2013	3.690	119.668	119.668	118.358	112.843	107.544	102.530	97.786	93.294
7/7/2008	7/8/2013	4/7/2013	4.590	101.262	101.262	101.262	101.207	100.934	100.663	100.393	100.124
7/8/2008	7/8/2013	4/8/2013	4.250	101.169	101.169	101.169	101.113	100.840	100.569	100.300	100.032
7/10/2008	7/10/2014	4/10/2013	4.800	106.213	106.213	106.213	105.621	104.322	103.046	101.791	100.557
7/11/2008	7/11/2018	4/11/2013	3.750	120.082	120.082	118.729	113.181	107.850	102.808	98.037	93.522
7/14/2008	7/14/2015	7/15/2013	4.900	111.365	111.365	111.365	109.836	107.484	105.195	103.013	101.187
7/14/2008	7/16/2018	4/15/2013	2.500	113.422	113.422	112.305	107.760	104.094	101.565	100.223	99.931
7/14/2008	7/16/2018	4/15/2013	3.250	117.449	117.449	116.232	111.296	107.075	103.790	101.505	100.258
7/17/2008	7/17/2018	7/17/2013	3.750	120.144	120.144	118.763	113.198	107.860	103.230	100.782	99.938
7/21/2008	7/22/2013	4/22/2013	3.000	100.942	100.942	100.942	100.872	100.563	100.255	100.009	99.930
8/15/2008	8/15/2018	5/15/2013	3.830	120.883	120.883	119.489	114.270	109.680	105.924	103.062	101.116
9/8/2008	9/9/2013	6/10/2013	2.890	101.300	101.300	101.300	101.172	100.730	100.299	99.977	99.761
5/13/2009	5/13/2014	5/13/2013	4.000	104.533	104.533	104.533	104.061	102.932	101.839	100.873	100.188
9/28/2009	9/30/2013	6/28/2013	2.920	101.484	101.484	101.484	101.329	100.828	100.341	99.969	99.704
5/11/2010	5/11/2015	5/11/2015	3.700	107.924	107.924	107.924	106.576	104.389	101.926	98.781	95.163
5/24/2010	5/26/2015	5/25/2013	2.250	104.912	104.912	104.912	103.544	101.397	99.304	97.266	95.278
6/15/2010	6/15/2015	3/15/2013	2.280	105.104	105.104	105.104	103.685	101.483	99.337	98.631	97.248
10/8/2010	10/8/2015	10/9/2012	2.250	105.756	105.756	105.756	104.038	101.527	99.088	96.721	94.423
12/27/2011	12/27/2021	12/29/2014	3.550	131.484	130.841	121.670	112.643	104.323	91.613	79.333	68.179
4/27/2012	4/27/2016	4/29/2013	-0.160	104.361	104.361	104.361	102.054	99.980	99.969	99.958	99.947
4/30/2012	5/2/2016	4/30/2013	-0.159	104.208	104.208	104.208	101.886	99.972	99.972	99.972	99.972
5/15/2012	5/15/2017	5/15/2014	-0.170	105.936	105.936	105.936	102.483	100.602	99.973	99.828	99.799
5/15/2012	5/15/2017	11/17/2014	-0.170	106.358	106.358	106.358	102.835	100.774	99.833	99.451	99.309
6/20/2012	6/20/2017	6/22/2015	1.630	106.981	106.981	106.981	102.834	97.409	91.713	86.313	81.194
7/16/2012	7/17/2017	7/16/2014	-0.146	105.240	105.240	105.235	101.729	100.253	99.832	99.738	99.726
7/18/2012	7/18/2018	7/20/2015	-0.147	108.287	108.287	106.908	102.513	100.433	99.480	99.055	98.866
7/19/2012	7/19/2017	7/21/2014	-0.148	105.149	105.149	105.143	101.657	100.208	99.808	99.716	99.698
10/1/2012	10/1/2019	4/1/2015	-0.052	110.273	110.273	106.540	101.932	100.048	99.374	99.128	99.063
10/5/2012	10/5/2017	10/6/2014	-0.045	104.980	104.980	104.757	101.256	99.976	99.600	99.502	99.469
10/5/2012	10/5/2017	10/6/2014	-0.045	104.980	104.980	104.757	101.256	99.976	99.600	99.502	99.469
3/8/2013	3/8/2018	3/9/2015	0.010	105.462	105.462	104.659	101.036	99.600	99.003	98.701	98.487