

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 purchase 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 Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
8/19/1998	8/19/2013	5/20/2013	5.490	101.693	101.693	101.693	101.632	101.329	101.028	100.728	100.431
8/19/1998	8/19/2013	5/20/2013	5.490	101.693	101.693	101.693	101.632	101.329	101.028	100.728	100.431
12/14/1998	12/16/2013	6/14/2013	4.890	103.124	103.124	103.124	102.929	102.298	101.675	101.063	100.494
12/14/1998	12/16/2013	6/14/2013	5.390	103.443	103.443	103.443	103.248	102.616	101.992	101.376	100.786
12/15/1998	12/16/2013	6/17/2013	4.880	103.118	103.118	103.118	102.923	102.292	101.668	101.057	100.489
1/7/2000	1/7/2015	7/8/2013	5.950	110.197	110.197	110.197	109.359	107.619	105.922	104.300	102.818
7/2/2004	7/2/2014	7/2/2013	3.990	104.743	104.743	104.743	104.273	103.088	101.922	100.774	99.645
12/13/2004	12/15/2014	6/13/2013	3.320	105.478	105.478	105.478	104.701	103.080	101.614	100.512	99.980
9/1/2005	9/1/2015	6/1/2013	4.130	109.797	109.797	109.797	108.453	106.066	103.744	101.485	99.287
9/30/2005	9/30/2015	6/30/2013	4.440	110.890	110.890	110.890	109.473	106.994	104.584	102.241	99.963
10/26/2005	10/26/2015	7/26/2013	4.540	111.463	111.463	111.463	109.982	107.426	104.944	102.532	100.189
1/17/2006	1/19/2016	7/17/2013	4.080	111.265	111.265	111.265	109.577	106.842	104.367	102.318	100.849
4/24/2006	4/25/2016	7/24/2013	4.440	113.455	113.455	113.455	111.485	108.458	105.695	103.349	101.550
5/5/2006	5/5/2016	5/6/2013	4.350	113.303	113.303	113.303	111.306	108.264	105.506	103.191	101.445
5/5/2006	5/5/2016	5/6/2013	4.530	113.853	113.853	113.853	111.851	108.791	105.996	103.614	101.773
5/15/2006	5/16/2016	5/15/2013	4.350	113.436	113.436	113.436	111.405	108.332	105.545	103.204	101.434
5/15/2006	5/16/2016	5/15/2013	4.520	113.961	113.961	113.961	111.925	108.835	106.012	103.608	101.747
5/19/2006	5/19/2016	5/20/2013	4.510	113.968	113.968	113.968	111.922	108.825	105.997	103.589	101.726
6/12/2006	6/13/2016	6/12/2013	4.620	114.629	114.629	114.629	112.500	109.327	106.426	103.939	101.995
6/26/2006	6/27/2016	6/26/2013	4.730	115.161	115.161	115.161	112.983	109.760	106.802	104.242	102.211
6/28/2006	6/28/2013	6/28/2013	4.950	100.811	100.811	100.811	100.787	100.625	100.464	100.303	100.143
6/30/2006	7/1/2013	7/1/2013	4.890	100.842	100.842	100.842	100.816	100.646	100.477	100.308	100.140
7/14/2006	7/15/2013	7/15/2013	4.890	101.032	101.032	101.032	100.998	100.790	100.583	100.377	100.171
7/24/2006	7/25/2016	7/24/2013	4.660	115.299	115.299	115.299	113.028	109.738	106.734	104.158	102.131
7/28/2006	7/28/2016	7/29/2013	4.490	114.779	114.779	114.779	112.503	109.223	106.248	103.731	101.789
8/21/2006	8/21/2013	5/21/2013	4.750	101.491	101.491	101.491	101.429	101.120	100.814	100.510	100.208
8/25/2006	8/25/2016	5/28/2013	4.350	114.656	114.656	114.656	112.287	108.953	105.956	103.453	101.560
10/10/2006	10/10/2013	7/10/2013	4.250	101.924	101.924	101.924	101.808	101.362	100.920	100.488	100.114
10/12/2006	10/15/2013	7/12/2013	4.500	102.100	102.100	102.100	101.977	101.518	101.063	100.613	100.213
11/6/2006	11/6/2013	5/6/2013	4.290	102.264	102.264	102.264	102.116	101.597	101.083	100.583	100.142
11/17/2006	11/18/2013	5/17/2013	4.350	102.441	102.441	102.441	102.279	101.726	101.179	100.647	100.178
11/24/2006	11/25/2016	5/24/2013	4.190	115.188	115.188	115.188	112.481	108.945	105.820	103.262	101.375
11/30/2006	12/2/2013	5/28/2013	4.350	102.610	102.610	102.610	102.432	101.840	101.255	100.676	100.105
12/1/2006	12/1/2016	6/3/2013	4.090	114.893	114.893	114.893	112.171	108.644	105.554	103.056	101.256
12/4/2006	12/5/2016	6/4/2013	4.080	114.902	114.902	114.902	112.165	108.629	105.534	103.035	101.239
12/5/2006	12/5/2016	6/5/2013	4.260	115.560	115.560	115.560	112.811	109.243	106.088	103.499	101.576
12/6/2006	12/6/2013	6/6/2013	4.400	102.689	102.689	102.689	102.506	101.903	101.308	100.732	100.241
12/8/2006	12/8/2016	6/10/2013	3.990	114.607	114.607	114.607	111.863	108.337	105.267	102.807	101.070
12/12/2006	12/12/2016	6/12/2013	3.990	114.651	114.651	114.651	111.891	108.354	105.276	102.808	101.066
12/12/2006	12/12/2016	6/12/2013	4.050	114.872	114.872	114.872	112.108	108.559	105.459	102.960	101.172
12/19/2006	12/19/2016	6/19/2013	4.190	115.467	115.467	115.467	112.666	109.074	105.909	103.324	101.420
12/20/2006	12/20/2013	6/20/2013	4.500	102.925	102.925	102.925	102.725	102.084	101.452	100.836	100.301
12/28/2006	12/28/2016	6/28/2013	4.250	115.795	115.795	115.795	112.954	109.328	106.122	103.488	101.525
12/28/2006	12/28/2016	6/28/2013	4.400	116.352	116.352	116.352	113.502	109.851	106.598	103.893	101.835
1/12/2007	1/12/2017	7/12/2013	4.420	116.611	116.611	116.611	113.699	110.012	106.734	104.010	101.942
1/16/2007	1/17/2017	7/16/2013	4.790	118.068	118.068	118.068	115.113	111.357	107.967	105.064	102.760
1/23/2007	1/23/2014	7/23/2013	4.490	103.342	103.342	103.342	103.102	102.368	101.646	100.947	100.350
1/29/2007	1/29/2014	7/29/2013	4.790	103.646	103.646	103.646	103.397	102.647	101.907	101.178	100.460
2/2/2007	2/2/2017	5/2/2013	4.690	117.899	117.899	117.899	114.861	110.955	107.207	103.609	100.154
2/20/2007	2/21/2017	5/20/2013	4.850	118.766	118.766	118.766	115.636	111.660	107.846	104.186	100.674
2/20/2007	2/21/2017	5/20/2013	4.390	116.986	116.986	116.986	113.908	110.127	106.780	104.010	101.916
2/23/2007	2/23/2017	5/23/2013	4.250	116.468	116.468	116.468	113.392	109.631	106.325	103.621	101.610
2/23/2007	2/23/2017	5/23/2013	4.350	116.855	116.855	116.855	113.772	109.992	106.652	103.897	101.821
3/16/2007	3/16/2017	6/17/2013	4.090	116.086	116.086	116.086	112.935	109.161	105.882	103.242	101.333
3/21/2007	3/21/2017	6/21/2013	4.220	116.656	116.656	116.656	113.472	109.658	106.318	103.599	101.585
3/23/2007	3/23/2017	6/24/2013	4.290	116.956	116.956	116.956	113.758	109.924	106.556	103.796	101.733
3/23/2007	3/23/2017	6/24/2013	4.290	116.956	116.956	116.956	113.758	109.924	106.556	103.796	101.733
4/9/2007	4/10/2017	7/9/2013	4.150	116.610	116.610	116.610	113.348	109.506	106.167	103.471	101.505
4/12/2007	4/12/2017	7/12/2013	4.250	117.034	117.034	117.034	113.754	109.886	106.503	103.748	101.705
4/13/2007	4/13/2017	7/15/2013	4.450	117.848	117.848	117.848	114.547	110.636	107.182	104.317	102.141
4/23/2007	4/23/2014	7/23/2013	4.620	104.594	104.594	104.594	104.232	103.244	102.277	101.357	100.568
4/27/2007	4/27/2017	7/29/2013	4.250	117.211	117.211	117.211	113.864	109.958	106.542	103.758	101.688
5/2/2007	5/2/2014	5/2/2013	4.590	104.679	104.679	104.679	104.304	103.291	102.301	101.366	100.576
5/4/2007	5/5/2014	5/6/2013	4.550	104.676	104.676	104.676	104.297	103.275	102.276	101.336	100.550
5/18/2007	5/18/2017	5/20/2013	4.190	117.213	117.213	117.213	113.779	109.841	106.416	103.645	101.605
5/22/2007	5/22/2017	5/22/2013	4.750	119.566	119.566	119.566	116.065	112.001	108.378	105.301	102.874
5/29/2007	5/30/2017	5/29/2013	4.250	117.601	117.601	117.601	114.107	110.126	106.657	103.829	101.730
6/1/2007	6/2/2014	6/3/2013	4.500	104.975	104.975	104.975	104.552	103.449	102.370	101.362	100.542

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
6/7/2007	6/7/2017	6/7/2013	4.820	120.069	120.069	120.069	116.489	112.378	108.709	105.592	103.113
6/8/2007	6/8/2017	6/10/2013	4.490	118.707	118.707	118.707	115.151	111.102	107.538	104.578	102.324
6/11/2007	6/12/2017	6/11/2013	4.490	118.757	118.757	118.757	115.182	111.123	107.550	104.583	102.324
6/18/2007	6/19/2017	6/18/2013	4.500	118.886	118.886	118.886	115.277	111.197	107.605	104.619	102.339
6/19/2007	6/19/2017	6/19/2013	4.650	119.516	119.516	119.516	115.893	111.782	108.139	105.075	102.688
6/22/2007	6/22/2017	6/24/2013	4.500	118.924	118.924	118.924	115.300	111.213	107.613	104.620	102.332
6/28/2007	6/28/2017	6/28/2013	4.500	118.999	118.999	118.999	115.347	111.244	107.630	104.625	102.326
7/13/2007	7/13/2017	7/15/2013	4.290	118.291	118.291	118.291	114.591	110.506	106.953	104.061	101.908
7/20/2007	7/20/2017	7/22/2013	4.290	118.374	118.374	118.374	114.640	110.538	106.970	104.065	101.899
7/27/2007	7/27/2017	7/29/2013	4.250	118.286	118.286	118.286	114.522	110.413	106.845	103.951	101.800
7/30/2007	1/30/2019	7/30/2013	3.990	123.284	123.284	122.000	116.399	111.407	107.267	104.033	101.717
7/31/2007	7/31/2017	7/31/2013	3.990	117.211	117.211	117.211	113.462	109.418	105.962	103.216	101.259
7/31/2007	7/31/2017	7/31/2013	3.990	117.211	117.211	117.211	113.462	109.418	105.962	103.216	101.259
7/31/2007	7/31/2017	7/31/2013	4.060	117.513	117.513	117.513	113.755	109.692	106.203	103.413	101.399
8/2/2007	8/4/2014	5/2/2013	4.490	105.749	105.749	105.749	105.221	103.941	102.697	101.553	100.631
8/2/2007	8/2/2017	5/2/2013	4.050	117.493	117.493	117.493	113.728	109.668	106.191	103.425	101.449
8/2/2007	8/2/2017	5/2/2013	4.150	117.925	117.925	117.925	114.148	110.060	106.539	103.714	101.657
8/9/2007	8/9/2017	5/9/2013	3.990	117.311	117.311	117.311	113.520	109.459	105.996	103.253	101.312
8/16/2007	8/16/2017	5/16/2013	3.990	117.389	117.389	117.389	113.563	109.485	106.006	103.250	101.294
8/17/2007	8/17/2017	5/17/2013	4.000	117.443	117.443	117.443	113.611	109.529	106.043	103.278	101.311
8/20/2007	8/20/2014	8/20/2013	4.250	105.631	105.631	105.631	105.074	103.752	102.453	101.234	100.317
8/28/2007	8/28/2014	5/28/2013	4.350	105.860	105.860	105.860	105.289	103.944	102.640	101.448	100.516
8/30/2007	9/2/2014	5/30/2013	3.890	105.294	105.294	105.294	104.715	103.363	102.068	100.951	100.191
9/4/2007	9/5/2017	6/4/2013	3.890	117.169	117.169	117.169	113.263	109.181	105.729	103.029	101.155
9/10/2007	9/11/2017	6/10/2013	3.690	116.348	116.348	116.348	112.444	108.412	105.053	102.490	100.812
9/11/2007	9/11/2017	6/11/2013	3.590	115.905	115.905	115.905	112.017	108.021	104.715	102.235	100.665
9/12/2007	9/12/2014	6/12/2013	3.690	105.125	105.125	105.125	104.528	103.151	101.849	100.765	100.090
9/13/2007	9/15/2014	6/13/2013	3.990	105.575	105.575	105.575	104.971	103.581	102.249	101.092	100.283
9/13/2007	9/13/2017	6/13/2013	3.990	117.699	117.699	117.699	113.738	109.606	106.087	103.305	101.331
9/27/2007	9/29/2014	9/27/2010	4.490	106.448	106.448	106.448	105.817	104.379	102.968	101.583	100.223
9/27/2007	9/27/2017	6/27/2013	3.650	116.333	116.333	116.333	112.356	108.302	104.930	102.372	100.717
10/11/2007	10/14/2014	7/11/2013	4.180	106.177	106.177	106.177	105.518	104.044	102.631	101.381	100.460
10/11/2007	10/11/2017	7/11/2013	3.990	118.009	118.009	118.009	113.911	109.724	106.167	103.357	101.369
10/15/2007	10/16/2017	7/15/2013	3.990	118.065	118.065	118.065	113.941	109.743	106.176	103.359	101.364
10/25/2007	10/27/2014	7/25/2013	4.360	106.600	106.600	106.600	105.916	104.404	102.947	101.634	100.611
10/26/2007	10/26/2017	7/26/2013	3.390	115.442	115.442	115.442	111.378	107.374	104.126	101.773	100.350
11/2/2007	11/3/2014	5/2/2013	3.990	106.118	106.118	106.118	105.421	103.896	102.450	101.208	100.332
11/2/2007	11/3/2014	5/2/2013	4.190	106.424	106.424	106.424	105.727	104.199	102.737	101.451	100.500
11/5/2007	11/5/2014	5/6/2013	3.990	106.140	106.140	106.140	105.439	103.909	102.457	101.210	100.329
11/5/2007	11/6/2017	5/6/2013	4.390	120.132	120.132	120.132	115.844	111.489	107.715	104.630	102.317
11/6/2007	11/6/2017	5/6/2013	3.480	115.958	115.958	115.958	111.827	107.776	104.472	102.047	100.535
11/9/2007	11/10/2014	5/9/2013	4.330	106.723	106.723	106.723	106.011	104.461	102.972	101.643	100.620
11/13/2007	11/13/2014	5/13/2013	3.350	105.229	105.229	105.229	104.516	102.979	101.578	100.512	100.014
11/19/2007	11/19/2014	5/20/2013	3.750	105.916	105.916	105.916	105.189	103.625	102.156	100.937	100.167
11/19/2007	11/19/2014	5/20/2013	3.750	105.916	105.916	105.916	105.189	103.625	102.156	100.937	100.167
11/19/2007	11/19/2014	5/20/2013	4.270	106.737	106.737	106.737	106.007	104.432	102.922	101.579	100.561
11/19/2007	11/20/2017	5/19/2013	4.290	119.840	119.840	119.840	115.371	110.665	106.183	101.913	97.845
11/20/2007	11/20/2017	5/20/2013	3.740	117.296	117.296	117.296	113.040	108.858	105.373	102.695	100.908
11/23/2007	11/24/2017	5/23/2013	3.990	118.497	118.497	118.497	114.026	109.340	104.877	100.627	96.578
11/23/2007	11/24/2017	5/23/2013	3.990	118.497	118.497	118.497	114.026	109.340	104.877	100.627	96.578
11/29/2007	11/29/2017	5/29/2013	2.950	113.716	113.716	113.716	109.605	105.761	102.808	100.849	100.012
11/30/2007	11/30/2017	5/30/2013	3.190	114.841	114.841	114.841	110.658	106.692	103.555	101.358	100.187
12/10/2007	12/11/2017	6/10/2013	3.450	116.156	116.156	116.156	111.859	107.760	104.430	101.999	100.516
12/24/2007	12/26/2017	6/24/2013	3.990	118.851	118.851	118.851	114.195	109.420	104.877	100.554	96.438
1/3/2008	1/5/2015	7/3/2013	3.650	106.235	106.235	106.235	105.414	103.726	102.167	100.915	100.131
1/4/2008	1/4/2018	7/5/2013	3.360	115.959	115.959	115.959	111.568	107.474	104.180	101.818	100.411
1/7/2008	1/7/2015	7/8/2013	3.490	105.981	105.981	105.981	105.157	103.469	101.929	100.726	100.036
1/7/2008	1/8/2018	7/8/2013	2.590	112.330	112.330	112.330	108.176	104.514	101.872	100.365	99.765
1/8/2008	1/8/2018	7/8/2013	2.570	112.235	112.235	112.235	108.088	104.440	101.819	100.336	99.755
1/8/2008	1/8/2018	7/8/2013	2.640	112.568	112.568	112.568	108.392	104.695	102.002	100.435	99.790
1/11/2008	1/11/2018	7/11/2013	2.720	112.972	112.972	112.972	108.750	104.992	102.214	100.546	99.825
1/14/2008	1/16/2018	7/15/2013	3.240	115.497	115.497	115.497	111.076	107.017	103.794	101.524	100.226
1/16/2008	1/16/2018	7/16/2013	2.380	111.383	111.383	111.383	107.285	103.764	101.346	100.087	99.663
1/17/2008	1/17/2018	7/17/2013	2.250	110.768	110.768	110.768	106.734	103.317	101.049	99.988	99.620
1/18/2008	1/20/2015	7/18/2013	2.350	104.112	104.112	104.112	103.272	101.643	100.435	99.875	99.625
1/18/2008	1/18/2018	7/18/2013	2.290	110.965	110.965	110.965	106.905	103.453	101.135	100.014	99.626
2/14/2008	2/14/2018	5/14/2013	3.190	115.515	115.515	115.515	110.620	105.797	101.215	96.860	92.722
2/25/2008	2/26/2018	5/28/2013	2.420	111.850	111.850	111.850	107.554	103.951	101.449	100.160	99.877

Start Date	Maturity Date	Next Call Date	Coupon	-300	-200	-100	Base	+100	+200	+300	+400
3/7/2008	3/9/2015	6/7/2013	2.890	105.442	105.442	105.442	104.498	102.686	101.169	100.212	99.888
3/7/2008	3/7/2018	6/7/2013	3.550	117.473	117.473	117.456	112.715	108.431	104.940	102.344	100.709
3/14/2008	3/14/2018	6/14/2013	2.400	111.859	111.859	111.825	107.510	103.912	101.430	100.135	99.803
3/17/2008	3/19/2018	6/17/2013	3.300	116.352	116.352	116.306	111.602	107.417	104.081	101.708	100.328
4/14/2008	4/14/2015	7/14/2013	2.750	105.454	105.454	105.454	104.432	102.468	100.551	98.679	96.851
4/28/2008	4/28/2015	7/29/2013	3.250	106.572	106.572	106.572	105.518	103.544	101.813	100.557	99.897
4/28/2008	4/30/2018	7/29/2013	2.150	110.904	110.904	110.743	106.502	103.076	100.865	99.892	99.529
4/30/2008	4/30/2018	7/30/2013	3.740	118.969	118.969	118.791	113.554	108.462	103.634	99.054	94.709
5/2/2008	5/4/2015	5/2/2013	3.990	108.135	108.135	108.135	107.060	105.032	103.156	101.590	100.502
5/5/2008	5/5/2015	5/6/2013	3.170	106.472	106.472	106.472	105.404	103.423	101.712	100.511	100.003
5/19/2008	5/19/2015	5/21/2013	4.700	109.778	109.778	109.778	108.664	106.561	104.510	102.509	100.557
5/23/2008	5/23/2013	5/23/2013	4.040	100.258	100.258	100.258	100.250	100.188	100.126	100.064	100.002
5/23/2008	5/23/2018	5/23/2013	3.270	116.794	116.794	116.553	111.712	107.447	104.067	101.672	100.301
5/27/2008	5/28/2013	5/28/2013	3.490	100.271	100.271	100.271	100.261	100.186	100.111	100.035	99.960
6/6/2008	6/6/2013	6/6/2013	3.990	100.410	100.410	100.410	100.396	100.296	100.196	100.096	99.996
6/16/2008	6/17/2013	6/17/2013	4.070	100.543	100.543	100.543	100.523	100.393	100.262	100.132	100.002
6/24/2008	6/24/2015	6/24/2013	3.830	108.351	108.351	108.351	107.167	105.006	103.030	101.423	100.357
6/30/2008	6/30/2015	7/1/2013	3.370	107.404	107.404	107.404	106.213	104.066	102.176	100.766	100.036
6/30/2008	7/2/2018	6/30/2013	3.690	119.361	119.361	118.945	113.523	108.267	103.292	98.580	94.116
7/7/2008	7/8/2013	7/8/2013	4.590	100.880	100.880	100.880	100.850	100.661	100.473	100.285	100.098
7/8/2008	7/8/2013	7/8/2013	4.250	100.815	100.815	100.815	100.785	100.596	100.408	100.220	100.034
7/10/2008	7/10/2014	7/10/2013	4.800	105.813	105.813	105.813	105.327	104.114	102.920	101.746	100.590
7/11/2008	7/11/2018	7/11/2013	3.750	119.769	119.769	119.316	113.861	108.574	103.569	98.831	94.343
7/14/2008	7/14/2015	7/15/2013	4.900	110.956	110.956	110.956	109.715	107.446	105.236	103.090	101.295
7/14/2008	7/16/2018	7/15/2013	2.500	113.214	113.214	112.813	108.243	104.444	101.766	100.278	99.709
7/14/2008	7/16/2018	7/15/2013	3.250	117.178	117.178	116.749	111.818	107.497	104.091	101.692	100.301
7/17/2008	7/17/2018	7/17/2013	3.750	119.832	119.832	119.353	113.881	108.578	103.719	100.838	99.992
7/21/2008	7/22/2013	7/22/2013	3.000	100.692	100.692	100.692	100.653	100.427	100.202	99.978	99.755
8/15/2008	8/15/2018	5/15/2013	3.830	120.564	120.564	120.006	114.810	110.145	106.290	103.316	101.264
9/8/2008	9/9/2013	6/10/2013	2.890	101.060	101.060	101.060	100.979	100.620	100.265	99.998	99.870
5/13/2009	5/13/2014	5/13/2013	4.000	104.200	104.200	104.200	103.809	102.767	101.755	100.847	100.184
9/28/2009	9/30/2013	6/28/2013	2.920	101.241	101.241	101.241	101.136	100.719	100.308	99.994	99.812
5/11/2010	5/11/2015	5/11/2015	3.700	107.615	107.615	107.615	106.527	104.433	102.090	99.163	95.500
5/24/2010	5/26/2015	5/25/2013	2.250	104.724	104.724	104.724	103.618	101.550	99.533	97.567	95.648
6/15/2010	6/15/2015	6/15/2013	2.280	104.914	104.914	104.914	103.765	101.641	99.571	98.813	97.553
10/8/2010	10/8/2015	10/9/2012	2.250	105.568	105.568	105.568	104.164	101.729	99.363	97.064	94.829
12/27/2011	12/27/2021	12/29/2014	3.550	131.188	131.188	122.576	113.572	105.241	93.353	80.958	69.685
4/27/2012	4/27/2016	7/27/2013	1.430	104.365	104.365	104.365	102.457	99.510	96.662	93.911	91.251
4/30/2012	5/2/2016	7/30/2013	1.380	104.208	104.208	104.208	102.287	99.330	96.473	93.713	91.045
5/15/2012	5/15/2017	5/15/2014	-0.170	105.936	105.936	105.936	102.969	100.866	100.100	99.915	99.888
5/15/2012	5/15/2017	11/17/2014	-0.170	106.358	106.358	106.358	103.356	101.145	100.065	99.597	99.438
6/20/2012	6/20/2017	6/22/2015	1.630	106.845	106.845	106.845	103.334	98.314	92.647	87.270	82.168
7/16/2012	7/17/2017	7/16/2014	-0.172	105.313	105.313	105.313	102.213	100.285	99.541	99.205	98.980
7/18/2012	7/18/2018	7/20/2015	-0.173	108.299	108.299	107.818	103.154	100.579	99.274	98.565	98.133
7/19/2012	7/19/2017	7/21/2014	-0.174	105.216	105.216	105.216	102.123	100.231	99.502	99.161	98.923
10/1/2012	10/1/2019	4/1/2015	-0.076	110.278	110.278	107.477	102.542	100.243	99.271	98.808	98.552
10/5/2012	10/5/2017	10/6/2014	-0.069	104.986	104.986	104.986	101.716	100.051	99.416	99.118	98.911
10/5/2012	10/5/2017	10/6/2014	-0.069	104.986	104.986	104.986	101.716	100.051	99.416	99.118	98.911
3/8/2013	3/8/2018	3/9/2015	0.010	105.461	105.461	105.442	101.555	99.978	99.362	99.091	98.949