

# The BondEdge<sup>®</sup> Fixed Rate Prepayment Model Update

Quantitative Research  
Interactive Data Fixed Income Analytics

The BondEdge prepayment model projects prepayment behavior based on four main factors: turnover (prepayments due to sales), refinancing, defaults, and curtailments (prepayments caused by the borrower making larger principal payments than the ones due). Historically refinancing activity has been the main factor in prepayment behavior accounting in some cases for over 80% of prepayments.

Empirical data suggests that the main driver of refinancing activity is the mortgage coupon of a given cohort and the current mortgage rate. When the current mortgage rate dips below the coupon of a given cohort the incentive to refinance – measured as the percent savings obtained by refinancing at the current mortgage rate – increases and refinancing activity picks up. When the opposite happens –the current mortgage rate is above the coupon of a given cohort– the incentive diminishes and refinancing slows down.

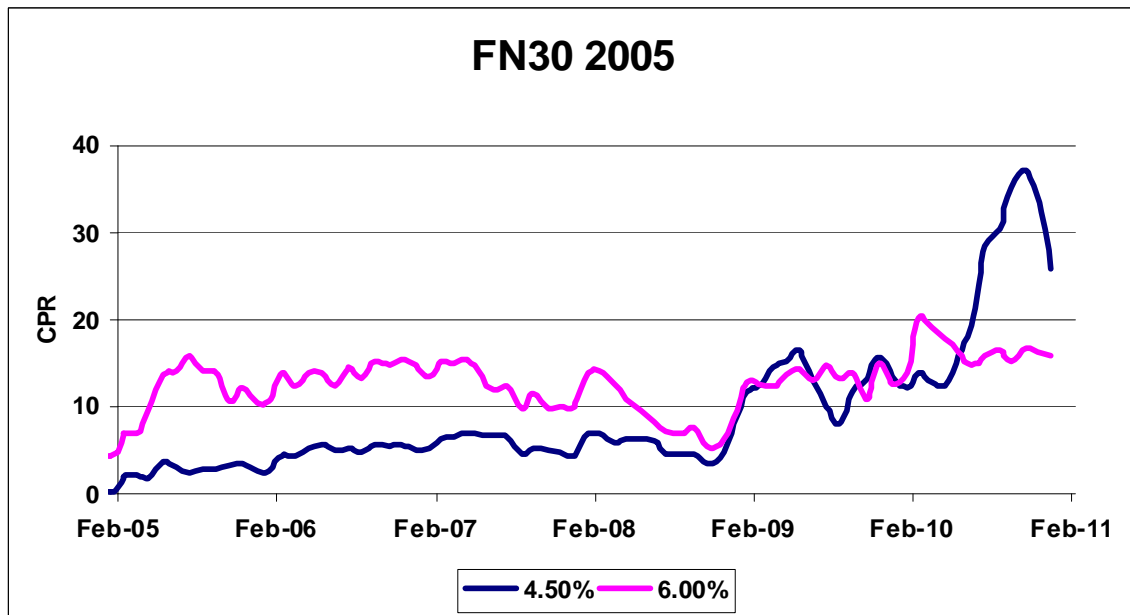


Figure 1.

In the past, the incentive to refinance has been a very good predictor of the prepayment activity. It has been observed that the higher the incentive, the higher the prepayment level. Before the credit crisis of 2008, this relationship mostly held. For example, as Figure 1 illustrates during the pre-crisis years the FN 6% of 2005 showed a higher prepayment than the FN 4.5% of the same year. The creditworthiness of the pool did not seem to affect the prepayment behavior very much. In this case, the average FICO of the 4.5% pool was approximately 740, while that of the 6% cohort was approximately 690. Despite this, the 6% cohort still prepaid at a higher level than the 4.5% cohort.

The credit crisis of 2008 caused a tightening of lending standards. For example, the largest conventional issue of 2005, the FN 5% had an average FICO of about 730, while the largest conventional issue of 2009, the FN 4.5% had an average FICO of 760. As a result, many borrowers with a high incentive to refinance but low creditworthiness have been unable to refinance. In fact, it has been observed that some issues with high incentive but low creditworthiness have experienced less prepayment than some issues with a lower incentive but higher creditworthiness. This behavior can be observed in Figure 1.

Due to the change in prepayment behavior described above, actual prepayment behavior on fixed rate mortgage loans was slower than predicted by the BondEdge prepayment model. This has been more pronounced for premium mortgages than for discounts.

In order to better reflect the current prepayment environment, the BondEdge fixed rate prepayment model was updated on 5/20/2011. The changes affect GNMA mortgages of all maturities, and conventional mortgages with a maturity greater than 15 years. As a result, as of 4/29/2011 the duration of 30-year GNMA and conventional mortgages will extend by 0.91 and 0.81 respectively. GNMA 15-year mortgages will extend by 0.45. Conventional 20-year mortgages will extend by approximately 0.56. Finally, conventional 10- and 15-year mortgages will not be affected.

On an overall basis, the effect of this update will be to extend the duration of the fixed rate mortgage index by approximately 0.72 as of 4/29/2011.

The attached tables present the changes in fixed rate mortgage option adjusted values by vintage, and by coupon.

Please feel free to contact your Analytic Consultant, Client Services if you have any comments, questions or concerns.

## Changes in Fixed Rate Mortgage Option Adjusted Values by Vintage

As of 4/29/2011

Prog	IssYr	New OAD	Old OAD	OAD Difference	New OAS	Old OAS	OAS Difference
<b>FG15</b>	1998	0.99	0.99	0.00	65	65	0
	1999	1.19	1.19	0.00	58	58	0
	2000	1.45	1.45	0.00	92	92	0
	2001	1.75	1.75	0.00	55	55	0
	2002	1.90	1.90	0.00	43	43	0
	2003	2.06	2.06	0.00	37	37	0
	2004	2.08	2.08	0.00	40	40	0
	2005	1.90	1.90	0.00	38	38	0
	2006	1.49	1.49	0.00	50	50	0
	2007	1.42	1.42	0.00	43	43	0
	2008	1.91	1.91	0.00	47	47	0
	2009	2.97	2.97	0.00	46	46	0
	2010	4.04	4.04	0.00	45	45	0
2011	4.64	4.64	0.00	43	43	0	
<b>FG20</b>	1998	2.36	2.07	0.29	28	11	16
	1999	2.46	2.08	0.39	37	17	20
	2000	2.49	1.81	0.68	53	13	40
	2001	2.89	2.28	0.61	70	47	23
	2002	3.01	2.38	0.62	80	61	20
	2003	3.29	2.63	0.66	86	71	15
	2004	3.25	2.45	0.79	82	63	19
	2005	3.00	1.97	1.03	72	43	29
	2006	2.29	1.01	1.28	58	4	55
	2007	2.57	1.43	1.15	69	29	40
	2008	3.28	2.44	0.84	79	59	20
	2009	4.63	4.19	0.44	77	72	5
	2010	5.23	4.92	0.31	76	73	3
2011	5.72	5.47	0.24	77	75	2	
<b>FG30</b>	1998	3.35	2.45	0.90	88	59	29
	1999	3.30	2.38	0.92	90	60	30
	2000	2.59	1.48	1.11	92	33	59
	2001	3.68	2.68	1.00	91	63	28
	2002	3.94	3.08	0.86	85	65	20
	2003	4.50	3.72	0.78	68	55	12
	2004	4.34	3.42	0.92	67	52	15
	2005	4.16	3.11	1.05	57	38	19
	2006	3.18	1.91	1.28	62	27	35
	2007	2.99	1.75	1.24	56	20	36
	2008	3.59	2.59	1.00	59	35	24
	2009	5.43	4.86	0.56	53	46	6
	2010	5.95	5.50	0.45	54	48	5
2011	6.44	6.17	0.27	52	49	3	
<b>FN10</b>	2002	0.66	0.66	0.00	74	74	0
	2003	0.98	0.98	0.00	29	29	0
	2004	1.27	1.27	0.00	41	41	0
	2005	1.43	1.43	0.00	50	50	0
	2006	1.32	1.32	0.00	19	19	0
	2007	1.18	1.18	0.00	10	10	0
	2008	1.53	1.53	0.00	38	38	0
	2009	2.23	2.23	0.00	39	39	0

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Prog	IssYr	New OAD	Old OAD	OAD Difference	New OAS	Old OAS	OAS Difference
<b>FN10</b>	2010	3.03	3.03	0.00	21	21	0
	2011	3.64	3.64	0.00	73	73	0
<b>FN15</b>	1998	1.00	1.00	0.00	32	32	0
	1999	1.21	1.21	0.00	27	27	0
	2000	1.50	1.50	0.00	59	59	0
	2001	1.76	1.76	0.00	33	33	0
	2002	1.92	1.92	0.00	41	41	0
	2003	2.06	2.06	0.00	35	35	0
	2004	2.07	2.07	0.00	37	37	0
	2005	1.82	1.82	0.00	30	30	0
	2006	1.30	1.30	0.00	27	27	0
	2007	1.18	1.18	0.00	21	21	0
	2008	1.98	1.98	0.00	37	37	0
	2009	3.01	3.01	0.00	42	42	0
2010	4.03	4.03	0.00	42	42	0	
2011	4.58	4.58	0.00	40	40	0	
<b>FN20</b>	1998	2.41	2.12	0.29	31	14	16
	1999	2.49	2.10	0.39	41	21	21
	2000	2.48	1.79	0.69	58	17	41
	2001	2.90	2.25	0.65	68	43	25
	2002	3.06	2.37	0.70	78	56	22
	2003	3.26	2.56	0.70	82	65	17
	2004	3.15	2.29	0.86	76	54	22
	2005	3.02	1.99	1.03	68	40	29
	2006	2.25	0.97	1.28	56	0	56
	2007	2.55	1.37	1.18	66	24	42
	2008	3.37	2.49	0.88	76	56	21
	2009	4.68	4.19	0.48	75	69	5
2010	5.37	5.06	0.31	76	73	3	
2011	5.74	5.52	0.23	75	73	2	
<b>FN30</b>	1998	3.37	2.45	0.92	83	53	30
	1999	3.30	2.37	0.93	85	55	31
	2000	2.68	1.56	1.12	101	43	58
	2001	3.71	2.70	1.01	87	59	28
	2002	4.04	3.11	0.93	81	60	21
	2003	4.53	3.70	0.83	66	53	13
	2004	4.28	3.30	0.98	64	47	17
	2005	4.01	2.92	1.09	52	32	21
	2006	2.95	1.63	1.33	54	14	40
	2007	2.89	1.63	1.26	50	12	39
	2008	3.78	2.65	1.13	56	30	26
	2009	5.56	4.99	0.57	50	43	6
2010	6.08	5.63	0.45	50	45	5	
2011	6.49	6.20	0.28	48	45	3	
<b>GN15</b>	1998	0.96	0.97	0.00	62	64	-2
	1999	1.20	1.20	0.00	61	64	-2
	2000	1.56	1.51	0.06	118	115	2
	2001	1.91	1.80	0.11	55	53	2
	2002	2.10	1.92	0.18	49	45	4
2003	2.28	2.10	0.18	20	19	1	

## Changes in Fixed Rate Mortgage Option Adjusted Values by Vintage

As of 4/29/2011

Prog	IssYr	New OAD	Old OAD	OAD Difference	New OAS	Old OAS	OAS Difference
<b>GN15</b>	2004	2.38	2.09	0.29	31	28	3
	2005	2.38	1.80	0.59	36	23	13
	2006	2.31	1.33	0.98	70	36	34
	2007	2.34	1.16	1.18	75	32	43
	2008	2.59	1.53	1.06	50	19	31
	2009	3.26	2.64	0.63	11	-1	12
	2010	3.88	3.48	0.40	11	3	8
	2011	4.51	4.37	0.14	14	8	6
<b>GN30</b>	1998	2.88	1.94	0.95	62	21	41
	1999	2.72	1.81	0.91	60	18	42
	2000	2.15	1.06	1.09	68	-3	71
	2001	3.18	2.07	1.12	62	25	37
	2002	3.62	2.49	1.14	57	30	27
	2003	4.12	3.12	1.01	39	21	17
	2004	3.93	2.76	1.17	38	17	21
	2005	3.73	2.38	1.34	25	0	26
	2006	3.10	1.50	1.60	35	-8	43
	2007	3.07	1.49	1.57	37	-8	44
	2008	3.42	2.01	1.41	34	1	33
	2009	4.71	3.81	0.89	17	5	12
	2010	5.54	4.90	0.64	22	14	8
	2011	6.41	5.99	0.42	21	17	4

## Changes in Fixed Rate Mortgage Option Adjusted Values by Coupon

As of 4/29/2011

Prog	Cpn	New OAD	Old OAD	OAD Difference	New OAS	Old OAS	OAS Difference
<b>FG15</b>	3.0	4.91	4.91	0.00	46	46	0
	3.5	4.33	4.33	0.00	45	45	0
	4.0	2.82	2.82	0.00	39	39	0
	4.5	2.15	2.15	0.00	39	39	0
	5.0	1.95	1.95	0.00	38	38	0
	5.5	1.77	1.77	0.00	46	46	0
	6.0	1.65	1.65	0.00	69	69	0
	6.5	1.54	1.54	0.00	80	80	0
	7.0	1.34	1.34	0.00	116	116	0
	7.5	1.33	1.33	0.00	124	124	0
	8.0	1.31	1.31	0.00	96	96	0
8.5	1.14	1.14	0.00	-34	-34	0	
9.0	1.20	1.20	0.00	-61	-61	0	
<b>FG20</b>	3.0	6.25	6.26	-0.01	120	122	-2
	3.5	6.09	6.04	0.05	101	103	-1
	4.0	5.32	5.15	0.17	74	73	1
	4.5	4.51	3.99	0.52	75	69	7
	5.0	3.37	2.64	0.73	80	64	16
	5.5	2.96	2.05	0.92	76	49	27
	6.0	2.87	1.64	1.23	76	32	44
	6.5	2.86	1.77	1.09	60	16	44
	7.0	2.66	1.71	0.95	64	19	44
	7.5	2.34	1.81	0.53	54	23	31
8.0	2.21	1.64	0.56	25	-13	38	
<b>FG30</b>	3.0	7.69	7.67	0.02	78	79	-1
	3.5	7.31	7.26	0.05	60	60	0
	4.0	6.23	6.13	0.10	51	49	1
	4.5	5.50	5.01	0.50	51	45	5
	5.0	4.54	3.75	0.78	53	41	12
	5.5	3.70	2.69	1.01	60	39	21
	6.0	3.56	2.12	1.44	77	40	37
	6.5	3.60	1.94	1.66	80	31	49
	7.0	3.46	2.03	1.43	93	42	51
	7.5	2.94	1.79	1.15	110	56	54
	8.0	2.53	1.37	1.16	95	26	69
8.5	2.36	1.23	1.13	99	18	81	
9.0	2.16	1.20	0.96	108	21	87	
<b>FN10</b>	3.0	3.68	3.68	0.00	49	49	0
	3.5	3.23	3.23	0.00	28	28	0
	4.0	2.36	2.36	0.00	37	37	0
	4.5	1.64	1.64	0.00	44	44	0
	5.0	1.32	1.32	0.00	48	48	0
	5.5	1.26	1.26	0.00	13	13	0
	6.0	1.22	1.22	0.00	17	17	0
6.5	1.38	1.38	0.00	70	70	0	
<b>FN15</b>	3.0	4.98	4.98	0.00	44	44	0
	3.5	4.49	4.49	0.00	43	43	0
	4.0	3.35	3.35	0.00	39	39	0
	4.5	2.39	2.39	0.00	36	36	0
	5.0	1.92	1.92	0.00	38	38	0

## Changes in Fixed Rate Mortgage Option Adjusted Values by Coupon

As of 4/29/2011

Prog	Cpn	New OAD	Old OAD	OAD Difference	New OAS	Old OAS	OAS Difference
<b>FN15</b>	5.5	1.59	1.59	0.00	30	30	0
	6.0	1.38	1.38	0.00	38	38	0
	6.5	1.38	1.38	0.00	50	50	0
	7.0	1.37	1.37	0.00	83	83	0
	7.5	1.42	1.42	0.00	44	44	0
	8.0	1.44	1.44	0.00	78	78	0
	8.5	1.35	1.35	0.00	147	147	0
	<b>FN20</b>	3.0	6.40	6.41	-0.01	109	112
3.5		6.11	6.06	0.05	102	103	-1
4.0		5.39	5.20	0.19	73	72	1
4.5		4.70	4.16	0.55	71	65	6
5.0		3.41	2.67	0.74	75	59	17
5.5		3.00	2.04	0.96	74	46	28
6.0		2.80	1.53	1.27	73	26	46
6.5		2.74	1.57	1.17	53	3	50
7.0		2.70	1.73	0.96	65	20	45
7.5		2.34	1.75	0.60	46	11	35
8.0		2.27	1.66	0.60	63	22	40
8.5		2.29	1.59	0.71	92	37	55
<b>FN30</b>	3.0	7.78	7.74	0.04	56	56	0
	3.5	7.25	7.19	0.06	57	57	0
	4.0	6.29	6.13	0.16	48	46	1
	4.5	5.59	5.04	0.56	47	42	6
	5.0	4.56	3.75	0.81	50	38	12
	5.5	3.74	2.71	1.03	57	35	21
	6.0	3.46	2.03	1.43	70	32	37
	6.5	3.41	1.68	1.73	70	16	54
	7.0	3.47	1.84	1.63	89	29	60
	7.5	3.12	1.81	1.31	109	48	61
	8.0	2.78	1.66	1.13	130	65	65
	8.5	2.48	1.50	0.98	151	81	70
9.0	2.18	1.47	0.72	156	91	65	
<b>GN15</b>	3.0	5.03	5.00	0.03	38	34	4
	3.5	4.46	4.34	0.12	13	8	5
	4.0	3.64	3.21	0.43	7	-1	8
	4.5	3.02	2.41	0.61	9	-2	11
	5.0	2.44	1.93	0.51	37	25	11
	5.5	2.36	1.65	0.71	53	32	21
	6.0	2.32	1.60	0.72	90	64	26
	6.5	2.16	1.58	0.57	114	92	23
	7.0	1.63	1.39	0.24	123	113	10
	7.5	1.24	1.22	0.02	90	91	0
8.0	1.33	1.29	0.03	154	153	1	
<b>GN30</b>	3.0	7.85	7.83	0.03	37	36	1
	3.5	7.29	7.16	0.13	39	37	2
	4.0	6.39	6.01	0.38	20	17	3
	4.5	5.27	4.56	0.71	16	8	8
	5.0	4.40	3.39	1.00	21	5	16
	5.5	3.64	2.29	1.34	33	5	27
	6.0	3.34	1.93	1.41	49	10	38

## Changes in Fixed Rate Mortgage Option Adjusted Values by Coupon

As of 4/29/2011

Prog	Cpn	New OAD	Old OAD	OAD Difference	New OAS	Old OAS	OAS Difference
GN30	6.5	3.14	1.85	1.30	59	13	45
	7.0	2.94	1.92	1.02	69	23	46
	7.5	2.56	1.67	0.89	82	30	53
	8.0	2.23	1.38	0.85	87	22	64
	8.5	2.02	1.29	0.73	81	13	68
	9.0	1.94	1.51	0.42	141	97	44

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