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ABX Valuation: The Do-It-Yourself Approach

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The Do-It-Yourself (DIY) Approach

- Simple tools which can be implemented in spreadsheets, and use commonly available data
- UBS Mortgage Strategy has run a series of DIY articles from Feb to Aug 2007 (Index at the end of this presentation)
- DIY Tools are Transparent—each is a "Glass Box" in contrast to a "Black Box"
- DIY Tools are Extensible
- DIY Tools can be Combined
- DIY Tools Illustrate Basic Concepts

SECTION 2

DIY ABX Valuation

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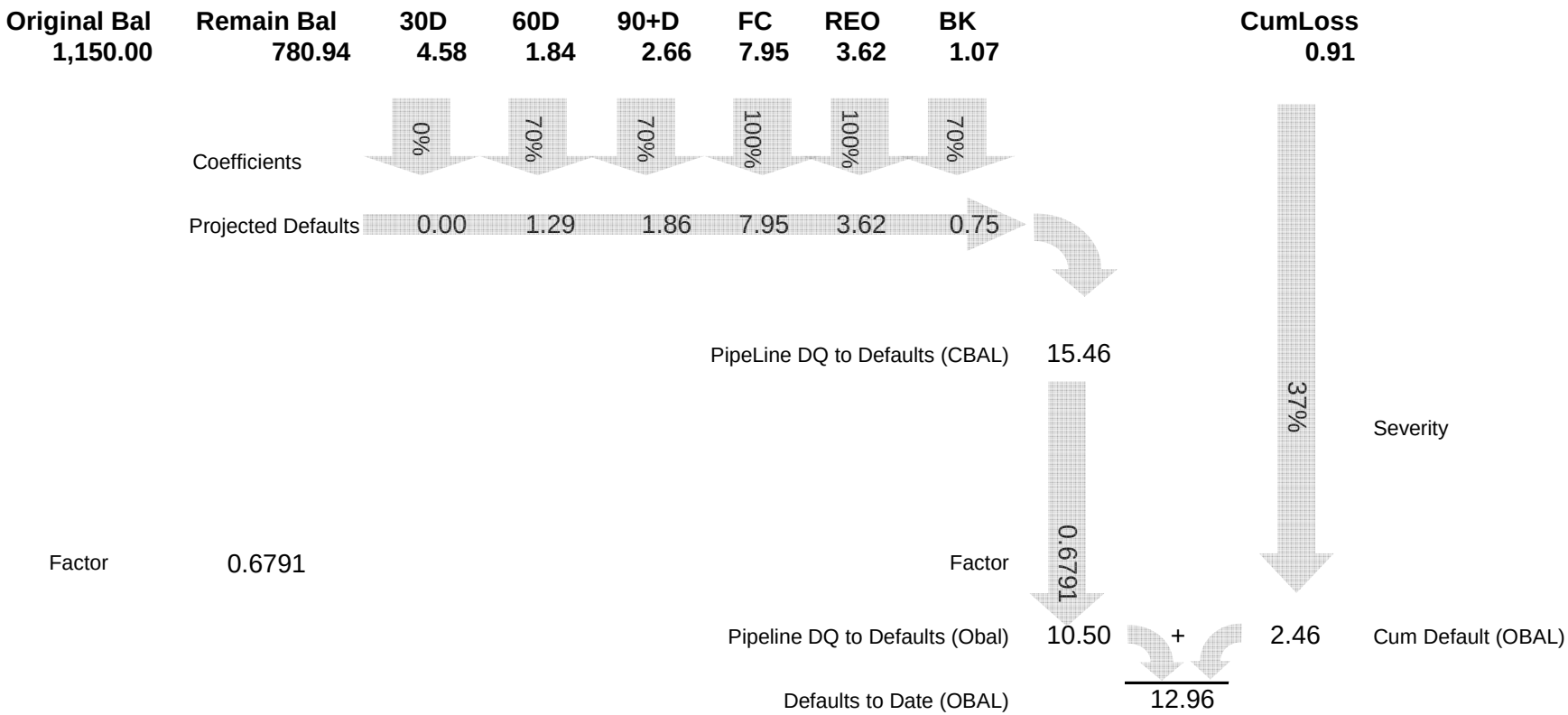
DIY ABX Valuation Model Strategy

- Project Lifetime Deal Cum Losses
- Calculate Bond Breakevens
- Combine losses and breakevens for ABX Indexes

Step 1: Project Losses

- Convert Delinquency / Remittance data into Defaults to Date
- Begin by Estimating Defaults Arising from Delinquency Pipeline
- Add Realized Defaults by Backing Defaults out of Cum Losses

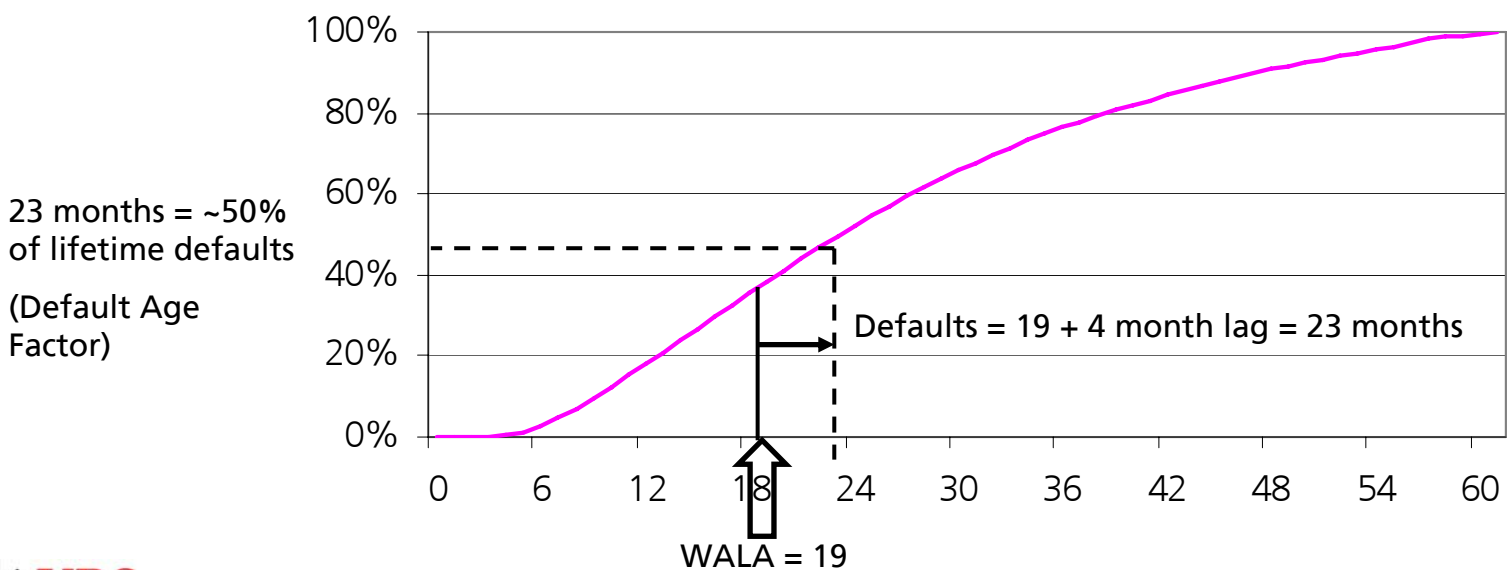


Source: Intex, UBS

Project Losses: Defaults to Date as % of Lifetime

- Cumulative Default Curve: Extracted from 1999-2002 Production <5% HPA
- Cum Defaults to date & WALA used to extrapolate Defaults
- Example: Cum Defaults + Estimated Pipeline defaults at 19 WALA = 12.96%
- Add 4 month Lag for Pipeline Delinquencies to go to default
- 19 + 4 = 23 mos → 49.58% of ultimate defaults should have happened by now
- Default Age Factor: 49.58%

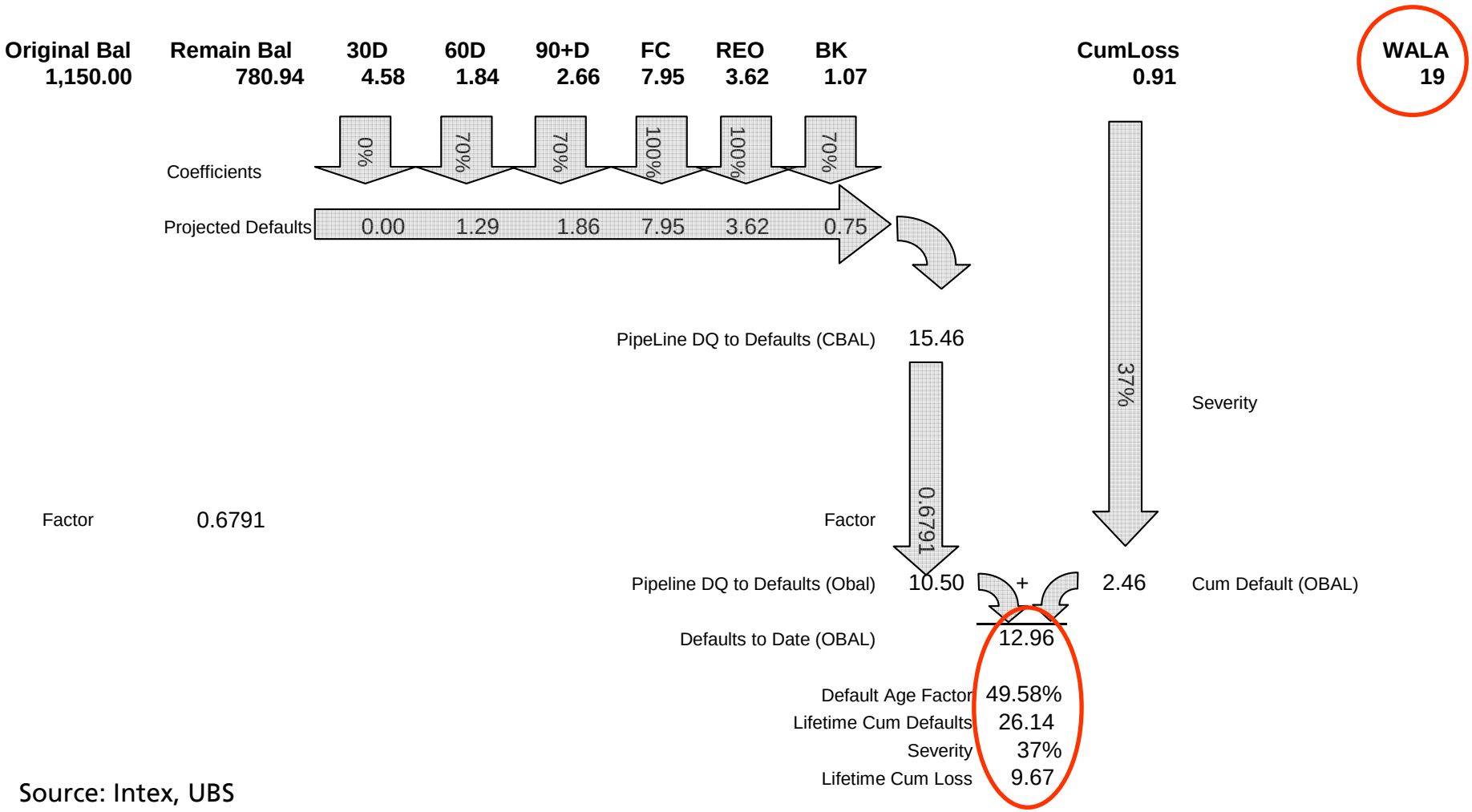
Normalized Cum Default Curve



Source: CPR&CDR, Loan Performance, UBS

Project Lifetime Losses from Defaults-to-Date

- Use Default Age Factor to Extrapolate Defaults-to-Date into Lifetime Defaults
- $\frac{12.96\%}{49.58\%} \rightarrow$ 26.14% Defaults; 26.14% × 37% severity →9.67% cum losses

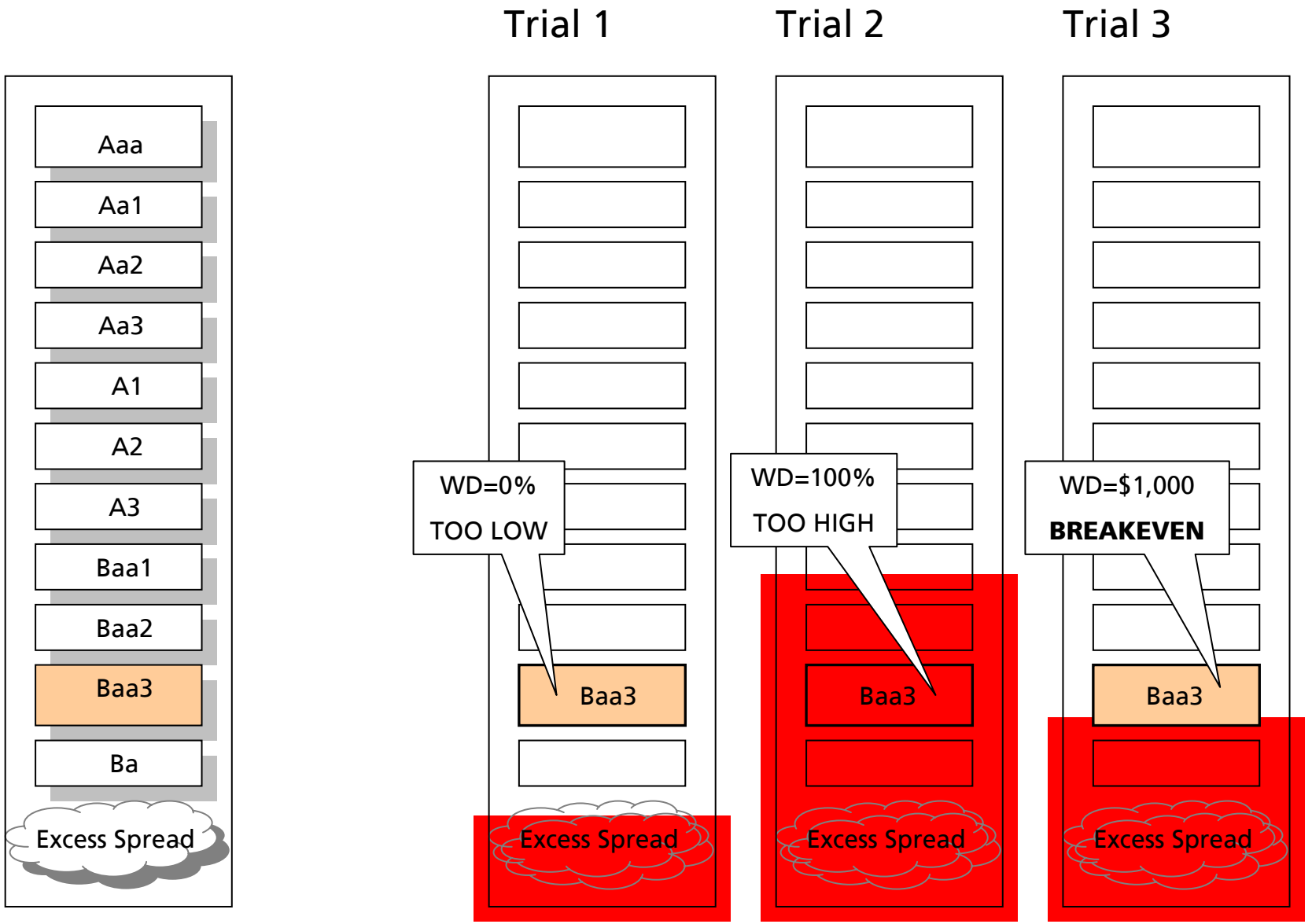


Source: Intex, UBS

Step 2: Calculate Bond Breakeven (BE) Losses

- Break Even Loss = collateral loss at which a given tranche takes its first dollar write down
- Break Even Loss = Bond Subordination + Excess Spread
- Methodology: Generate Bond Cashflows, Raise Defaults by trial-and-error until First Dollar Write Down on Bond occurs
- Requires access to Cash Flow Model (such as INTEX)
- Analysis is sensitive to Cashflow Assumptions (Speed, Default Curve, etc)
- Simplifications:
  - Loss Trigger
  - Prepayments as % of PPC (Prospectus Prepayment Curve)
  - WD at the Break Even point
  - No Yield Curve Shifts

Breakeven: Loss which Results in 1st $ Write Down



Breakeven Assumptions

- Cashflow Assumptions can influence BE values by 100s of bps
- Pricing vs. Seasoned Cashflows
  - Pricing BEs can be 150-200 bp higher than Seasoned BEs
- CDR vs. default curve
  - Using CDR Curve Lowers BE, esp. if run from pricing
  - Flat CDRs are usually produce higher BEs because they generate early losses at the expense of the residual
  - As deals season, Flat versus CDR Curve becomes less critical
- Normal vs. Slow Prepayment Speeds
  - Slow Speeds increase BEs because of greater excess spread generated
- Trigger Pass vs Trigger Fail
  - Passing Triggers generally lower BEs because of released subordination
  - BUT a Failed Trigger can sometimes also lower BE because it can reduce excess spread
- Recovery Lag
  - Lag effectively backloads defaults

06-1 BBB Breakevens: Varying Cashflow Assumptions

- Average BE varies from 10.8% down to 7.94%

			Pricing				Default Curve			Triggers		Lags		Speed	
			Pricing Flat 12 Mo Lag	Pricing Flat 0 Lag	Pricing Historical Default Curve	Pricing Frontloaded Curve	Seasoned Flat	Seasoned Historical Default Curve	Seasoned FrontLoaded Default Curve	Seasoned Trigger Model	Seasoned Trigger Pass	Seasoned Trigger Model 12 Mo Lag	Seasoned Trigger Fail 12 Mo Lag	Seasoned Slow Trigger Model	Seasoned Slow Trigger Fail
		Seasoned	PRICING	PRICING	PRICING	PRICING	SEASONED	SEASONED	SEASONED	SEASONED	SEASONED	SEASONED	SEASONED	SEASONED	SEASONED
		Prepay	100PPC	100PPC	100PPC	100PPC	100PPC	100PPC	100PPC	100PPC	100PPC	100PPC	100PPC	75PPC	75PPC
		Default Curve	FLAT	FLAT	HIST	FRONT	FLAT	HIST	FRONT	FRONT	FRONT	FRONT	FRONT	FRONT	FRONT
		Trigger Override	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	MODEL(Loss)	PASS	MODEL	FAIL	MODEL	FAIL
		Recovery Lag	12	0	0	0	0	0	0	0	0	12	12	0	0
Deal	Tr	CUSIP													
ACE 2005-HE7	M8	004421UK7	11.47%	12.16%	11.12%	11.71%	10.63%	10.60%	10.57%	10.57%	10.75%	11.31%	11.98%	11.97%	11.97%
AMSI 2005-R11	M8	03072SV85	8.71%	10.35%	8.70%	9.52%	7.16%	7.15%	7.10%	6.47%	6.60%	6.38%	7.75%	8.16%	8.16%
ARSI 2005-W2	M8	040104NL1	9.60%	11.69%	9.60%	10.54%	8.36%	8.77%	8.76%	7.61%	7.87%	7.41%	9.32%	9.76%	9.76%
BSABS 2005-HE11	M7	0738793U0	10.96%	11.95%	10.90%	11.48%	10.62%	10.58%	10.53%	10.53%	10.69%	10.36%	11.35%	11.40%	11.40%
CWL 2005-BC5	M8	126670NM6	9.29%	9.67%	9.14%	9.51%	7.28%	7.26%	7.19%	6.43%	6.54%	6.15%	7.57%	7.26%	8.10%
FFML 2005-FF12	B2	32027NYD7	9.82%	9.46%	9.44%	9.45%	8.76%	8.82%	8.74%	8.74%	8.95%	10.00%	10.12%	10.15%	10.15%
GSAMP 2005-HE4	B2	362341KK4	12.66%	13.50%	12.22%	12.92%	10.03%	9.99%	9.95%	9.95%	9.42%	8.72%	10.62%	10.76%	10.76%
HEAT 2005-8	M8	437084QG4	9.34%	10.79%	9.29%	10.05%	8.57%	8.50%	8.52%	8.52%	8.63%	8.06%	9.32%	9.71%	9.71%
JPMAC 2005-OPT1	M8	46626LAM2	10.27%	10.68%	10.15%	10.43%	7.02%	7.00%	6.96%	5.06%	5.06%	4.58%	7.10%	5.56%	7.38%
LBMLT 2005-WL2	M8	542514NJ9	9.39%	9.83%	9.21%	9.46%	7.67%	7.63%	7.63%	7.63%	6.86%	6.13%	8.24%	8.24%	8.24%
MABS 2005-NC2	M8	57643LMX1	8.55%	9.55%	8.41%	9.06%	7.98%	7.96%	7.97%	7.97%	8.14%	8.77%	9.17%	9.40%	9.40%
MLMI 2005-AR1	B2	59020UG58	9.36%	9.18%	9.09%	9.02%	8.04%	8.02%	7.99%	7.99%	7.01%	6.15%	8.66%	8.55%	8.55%
MSAC 2005-HE5	B2	61744CUZ7	11.35%	11.66%	10.95%	11.44%	8.98%	8.99%	8.94%	8.94%	8.69%	8.44%	9.81%	9.87%	9.87%
NCHET 2005-4	M8	64352VNB3	10.08%	10.11%	9.76%	9.95%	8.53%	8.51%	8.47%	7.78%	7.83%	7.11%	9.26%	9.29%	9.29%
RAMP 2005-EFC4	M8	76112BD31	10.31%	12.00%	10.28%	11.15%	9.76%	9.78%	9.72%	9.72%	9.44%	8.36%	9.86%	10.78%	10.78%
RASC 2005-KS11	M8	76110W7L4	9.35%	11.16%	9.38%	10.31%	8.90%	8.93%	8.86%	8.39%	8.56%	8.28%	9.39%	10.16%	10.16%
SABR 2005-HE1	B2	81375WGK6	12.51%	12.69%	12.03%	12.42%	10.44%	10.45%	10.40%	10.40%	10.62%	10.68%	11.58%	11.52%	11.52%
SAIL 2005-HE3	M8	86358EXE1	7.88%	9.00%	7.77%	8.34%	7.07%	6.98%	6.99%	6.99%	6.97%	6.30%	7.66%	7.70%	7.70%
SASC 2005-WF4	M8	863576DN1	8.22%	9.08%	8.24%	8.70%	7.57%	7.54%	7.53%	7.53%	7.57%	6.51%	7.60%	8.19%	8.19%
SVHE 2005-4	M8	83611MKM9	11.45%	11.52%	11.27%	11.33%	10.02%	10.01%	9.97%	9.97%	10.22%	9.11%	10.66%	10.85%	10.85%
Average			10.03%	10.80%	9.85%	10.34%	8.69%	8.67%	8.64%	8.36%	8.32%	7.94%	9.35%	9.46%	9.60%

Source: Intex, UBS

Step 3: Combining Losses and Breakevens

- Compare Loss Projections versus Breakevens
- Projections greater than BE imply writedown
- For each index, can tally the number of writedowns
- $\frac{BE}{CumLoss}$ ratio of broken bonds gives % of Lifetime Loss needed to WD tranche
- $\frac{BE}{CumLoss}$ ratio applied to Cum Loss curve gives the Month of the WD
- Simplifications
  - All Write Downs occur at the same time
- Given number of WDs and time to WD calculate implied price

How Many Write Downs: 07-1 Proj. Losses versus Break Evens

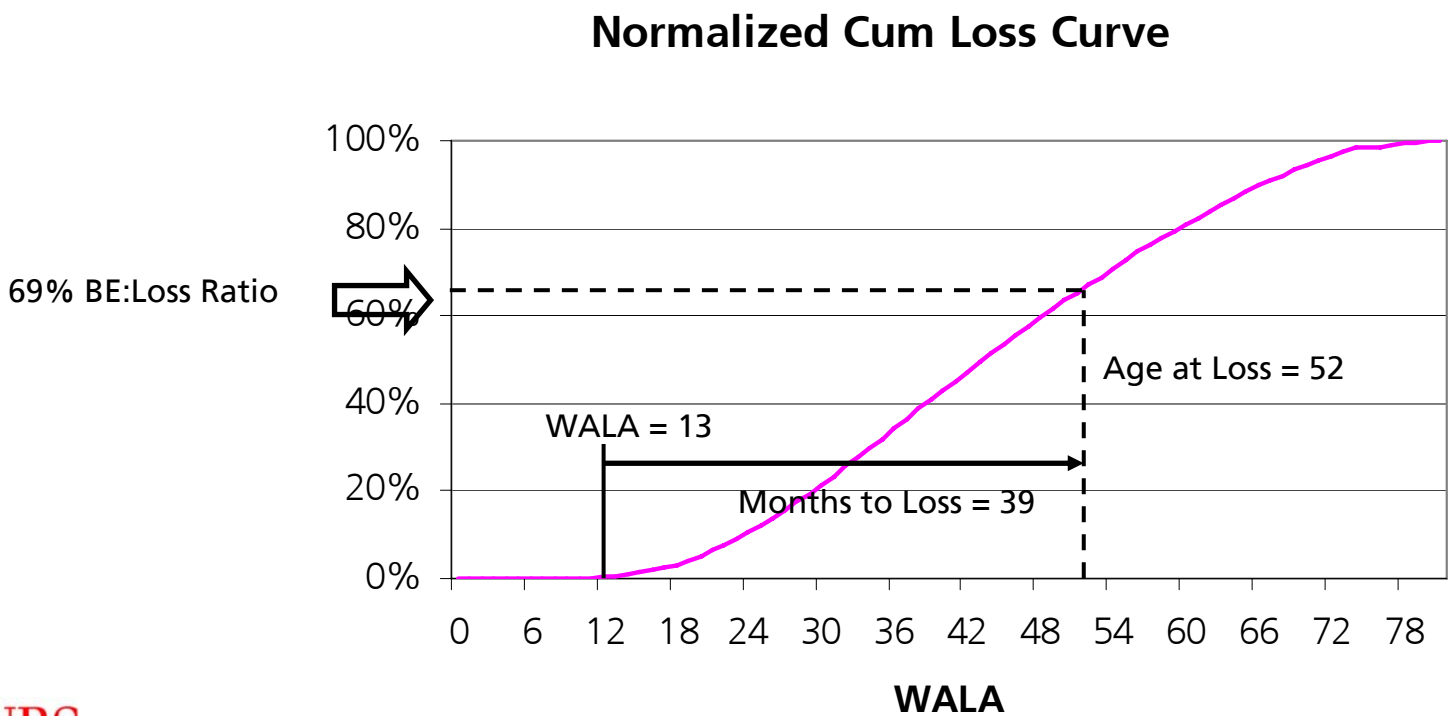
- Identify Broken Bonds (Projected Deal Losses exceed Break Even %)
- Calculate BE/Loss Ratio for Broken Bonds

	Projected Lifetime Cum Loss	Break Even Cum Losses (Bonds Expected to Write Down at Projected Losses Highlighted)											
Name	(%Obal)	Baa3	Diff	BE/Proj	Break?	Baa2	Diff	BE/Proj	Break?	A	Diff	BE/Proj	Break?
ABFC 2006-OPT2	11.78	8.69	(3.09)	0.74	1	9.62	(2.16)	0.82	1	14.14	2.36		0
ACE 2006-NC3	16.54	9.83	(6.71)	0.59	1	11.10	(5.44)	0.67	1	14.35	(2.19)	0.87	1
BSABS 2006-HE10	15.14	10.06	(5.08)	0.66	1	11.64	(3.50)	0.77	1	15.51	0.37		0
CBASS 2006-CB6	7.45	10.17	2.72		0	11.37	3.92		0	14.43	6.98		0
CARR 2006-NC4	12.78	9.68	(3.10)	0.76	1	11.26	(1.52)	0.88	1	14.68	1.90		0
CMLTI 2006-WH3	7.46	9.29	1.83		0	10.90	3.44		0	13.82	6.36		0
CWL 2006-18	12.02	9.52	(2.50)	0.79	1	10.80	(1.22)	0.90	1	14.64	2.62		0
FFML 2006-FF13	11.36	9.00	(2.36)	0.79	1	10.11	(1.25)	0.89	1	13.48	2.12		0
FHLT 2006-3	18.45	8.09	(10.36)	0.44	1	8.76	(9.69)	0.47	1	13.73	(4.72)	0.74	1
GSAMP 2006-HE5	14.03	9.02	(5.01)	0.64	1	10.60	(3.43)	0.76	1	15.29	1.26		0
HEAT 2006-7	15.00	9.25	(5.75)	0.62	1	10.11	(4.89)	0.67	1	13.84	(1.16)	0.92	1
JPMAC 2006-CH2	3.80	8.88	5.08		0	9.55	5.75		0	12.47	8.67		0
LBMLT 2006-6	17.90	10.00	(7.90)	0.56	1	10.84	(7.06)	0.61	1	14.52	(3.38)	0.81	1
MABS 2006-NC3	14.61	11.16	(3.45)	0.76	1	12.36	(2.25)	0.85	1	15.38	0.77		0
MLMI 2006-HE5	13.34	11.49	(1.85)	0.86	1	12.18	(1.16)	0.91	1	15.83	2.49		0
MSAC 2006-HE6	17.21	12.90	(4.31)	0.75	1	13.75	(3.46)	0.80	1	16.71	(0.50)	0.97	1
RASC 2006-KS9	16.67	9.74	(6.93)	0.58	1	10.95	(5.72)	0.66	1	15.22	(1.45)	0.91	1
SABR 2006-HE2	12.07	8.82	(3.25)	0.73	1	10.85	(1.22)	0.90	1	13.33	1.26		0
SASC 2006-BC4	13.07	8.84	(4.23)	0.68	1	10.48	(2.59)	0.80	1	13.26	0.19		0
SVHE 2006-EQ1	8.19	9.57	1.38		0	10.94	2.75		0	15.08	6.89		0
Average	12.94	9.70	(3.24)	0.69	16	10.91	(2.03)	0.77	16	14.49	1.54	0.87	6

Source: Intex, UBS

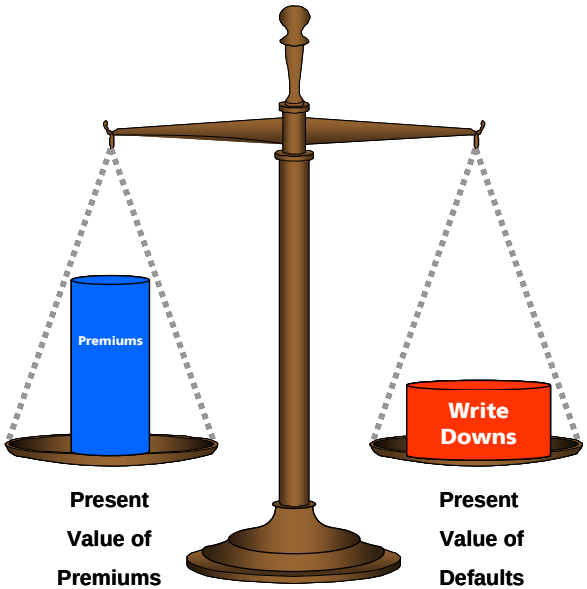
When does the Write Down Happen?

- Loss Curve Extracted from 1998-2002 Production, <5% HPA Loans
- Converts $\frac{BE}{CumLoss}$ Ratio into Age at Write Down
- Subtracting WALA leaves Months to Loss (point at which WD occurs)
- Example: Average BE Loss = 69% of Projected Loss → 52 months old
- 52 months – 13 WALA = 39 Months To Loss

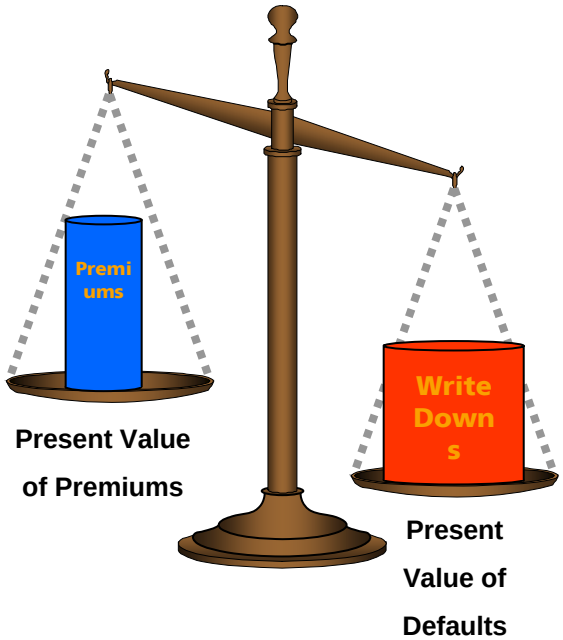


Source: CPR&CDR, Loan Performance, UBS

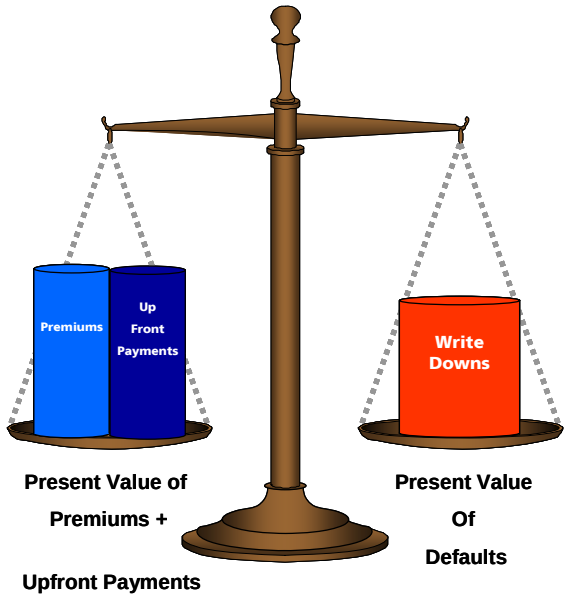
Value of the Premium to the Swap



Original Premium Set to Reflect Expected Losses (ABX06-1 BBB- = 267bp) Price = 100

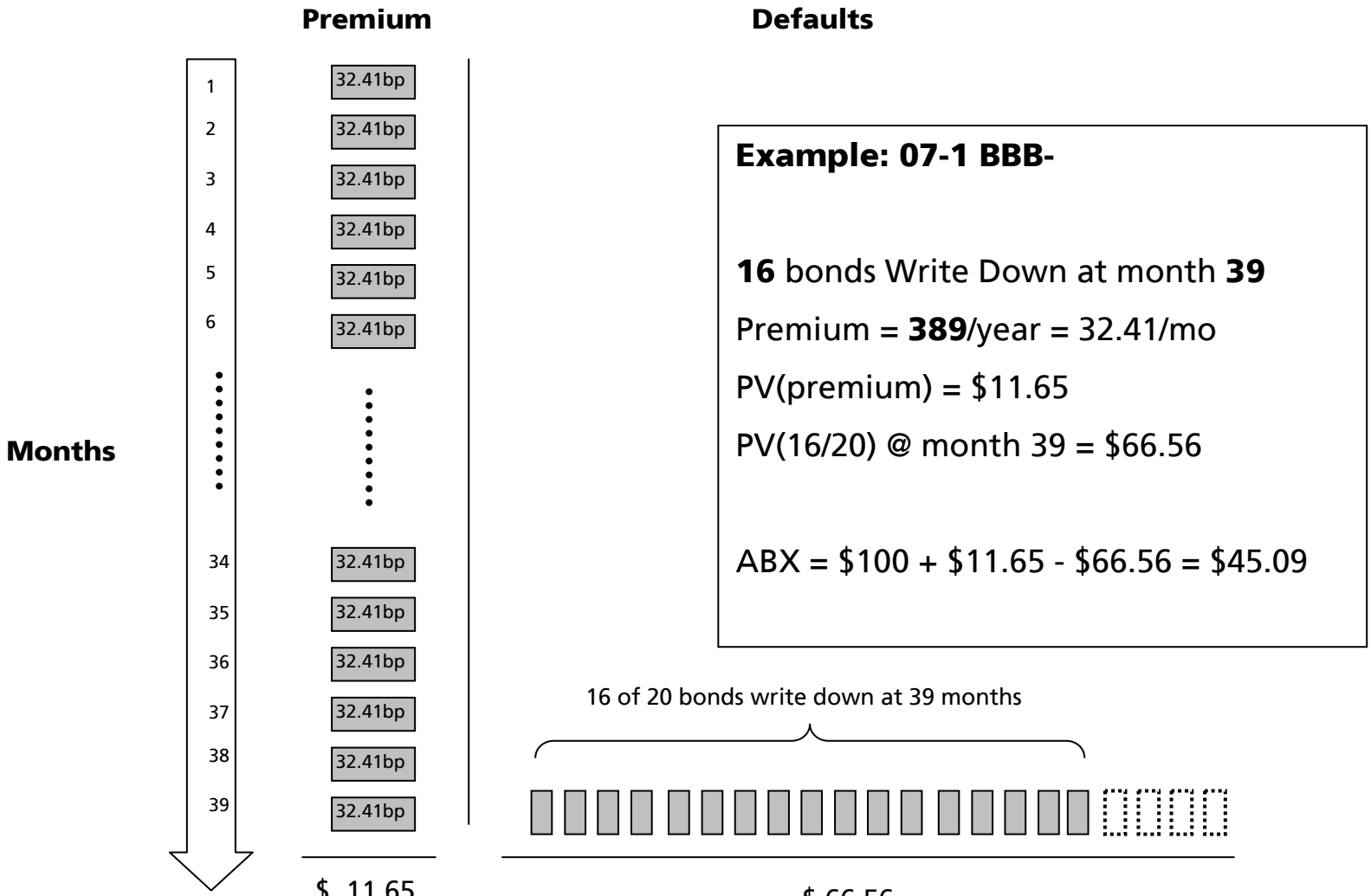


As Loss Expectations Increase, Swap becomes off-market



ABX Price drops; Up-Front Payment Augments Premium

Effect of Timing and Bonds Written Down



Example: 07-1 BBB-

16 bonds Write Down at month **39**

Premium = **389**/year = 32.41/mo

PV(premium) = $11.65

PV(16/20) @ month 39 = $66.56

ABX = $100 + $11.65 - $66.56 = $45.09

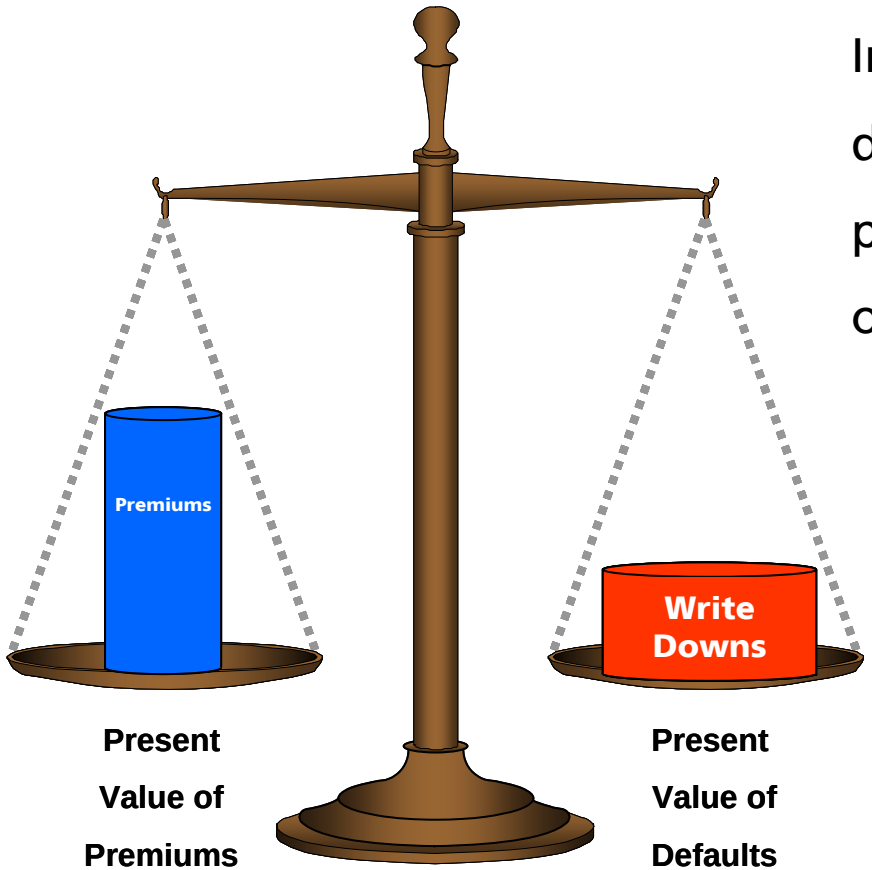
$$PV(prem,t) = 100 \times \frac{prem}{120000} \times \left[\frac{1 - \left(1 + \frac{LIBOR}{12}\right)^{-t}}{\left(\frac{LIBOR}{12}\right)} \right]$$

$$PV(wd,t) = 100 \times \left[\frac{\left(\frac{wd}{20}\right)}{\left(1 + \frac{LIBOR}{12}\right)^{t}} \right]$$

Source: UBS

Effects of Time to Loss (t) and Number of Writedowns (n)

Increasing *t*
Increases the
number of
Premium
cashflows

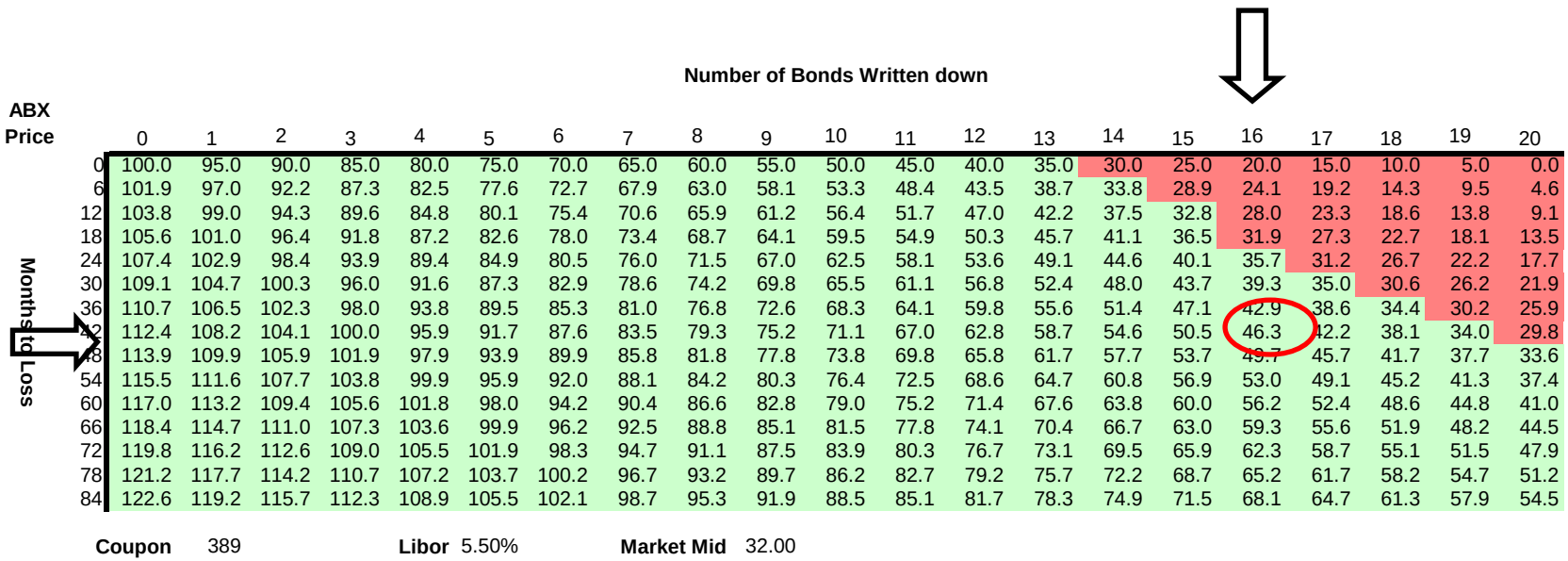


Increasing *t*
decreases the
present value
of the writedown

Increasing *n*
increases the
magnitude
of the
writedown

2-Way Table: Timing & Write Downs → Price

- Extend calculation to vary t and number of bonds written down
- We can translate months-to-loss and number of WDs to price & vice-versa
- Chart color contrasts calculated prices versus market price: bearish scenarios (top right) and bullish (bottom left)
- 16 bonds at 39 months implies $45 price. Market $32 price implies more writedowns or a shorter time to write down.



ABX Price	Number of Bonds Written down																				
Months to Loss	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
0	100.0	95.0	90.0	85.0	80.0	75.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	0.0
6	101.9	97.0	92.2	87.3	82.5	77.6	72.7	67.9	63.0	58.1	53.3	48.4	43.5	38.7	33.8	28.9	24.1	19.2	14.3	9.5	4.6
12	103.8	99.0	94.3	89.6	84.8	80.1	75.4	70.6	65.9	61.2	56.4	51.7	47.0	42.2	37.5	32.8	28.0	23.3	18.6	13.8	9.1
18	105.6	101.0	96.4	91.8	87.2	82.6	78.0	73.4	68.7	64.1	59.5	54.9	50.3	45.7	41.1	36.5	31.9	27.3	22.7	18.1	13.5
24	107.4	102.9	98.4	93.9	89.4	84.9	80.5	76.0	71.5	67.0	62.5	58.1	53.6	49.1	44.6	40.1	35.7	31.2	26.7	22.2	17.7
30	109.1	104.7	100.3	96.0	91.6	87.3	82.9	78.6	74.2	69.8	65.5	61.1	56.8	52.4	48.0	43.7	39.3	35.0	30.6	26.2	21.9
36	110.7	106.5	102.3	98.0	93.8	89.5	85.3	81.0	76.8	72.6	68.3	64.1	59.8	55.6	51.4	47.1	42.9	38.6	34.4	30.2	25.9
42	112.4	108.2	104.1	100.0	95.9	91.7	87.6	83.5	79.3	75.2	71.1	67.0	62.8	58.7	54.6	50.5	46.3	42.2	38.1	34.0	29.8
48	113.9	109.9	105.9	101.9	97.9	93.9	89.9	85.8	81.8	77.8	73.8	69.8	65.8	61.7	57.7	53.7	49.7	45.7	41.7	37.7	33.6
54	115.5	111.6	107.7	103.8	99.9	95.9	92.0	88.1	84.2	80.3	76.4	72.5	68.6	64.7	60.8	56.9	53.0	49.1	45.2	41.3	37.4
60	117.0	113.2	109.4	105.6	101.8	98.0	94.2	90.4	86.6	82.8	79.0	75.2	71.4	67.6	63.8	60.0	56.2	52.4	48.6	44.8	41.0
66	118.4	114.7	111.0	107.3	103.6	99.9	96.2	92.5	88.8	85.1	81.5	77.8	74.1	70.4	66.7	63.0	59.3	55.6	51.9	48.2	44.5
72	119.8	116.2	112.6	109.0	105.5	101.9	98.3	94.7	91.1	87.5	83.9	80.3	76.7	73.1	69.5	65.9	62.3	58.7	55.1	51.5	47.9
78	121.2	117.7	114.2	110.7	107.2	103.7	100.2	96.7	93.2	89.7	86.2	82.7	79.2	75.7	72.2	68.7	65.2	61.7	58.2	54.7	51.2
84	122.6	119.2	115.7	112.3	108.9	105.5	102.1	98.7	95.3	91.9	88.5	85.1	81.7	78.3	74.9	71.5	68.1	64.7	61.3	57.9	54.5

Coupon 389 **Libor** 5.50% **Market Mid** 32.00

Source: UBS

Writedowns: 07-1 Projected Losses versus Break Evens

- Put Losses, Number of Writedowns, Timing, Premiums together to get prices

Name	Projected Lifetime Cum Loss (%Obal)	Break Even Cum Losses (Bonds Expected to Write Down at Projected Losses Highlighted)											
		Baa3	Diff	BE/Proj	Break?	Baa2	Diff	BE/Proj	Break?	A	Diff	BE/Proj	Break?
ABFC 2006-OPT2	11.78	8.69	(3.09)	0.74	1	9.62	(2.16)	0.82	1	14.14	2.36		0
ACE 2006-NC3	16.54	9.83	(6.71)	0.59	1	11.10	(5.44)	0.67	1	14.35	(2.19)	0.87	1
BSABS 2006-HE10	15.14	10.06	(5.08)	0.66	1	11.64	(3.50)	0.77	1	15.51	0.37		0
CBASS 2006-CB6	7.45	10.17	2.72		0	11.37	3.92		0	14.43	6.98		0
CARR 2006-NC4	12.78	9.68	(3.10)	0.76	1	11.26	(1.52)	0.88	1	14.68	1.90		0
CMLTI 2006-WH3	7.46	9.29	1.83		0	10.90	3.44		0	13.82	6.36		0
CWL 2006-18	12.02	9.52	(2.50)	0.79	1	10.80	(1.22)	0.90	1	14.64	2.62		0
FFML 2006-FF13	11.36	9.00	(2.36)	0.79	1	10.11	(1.25)	0.89	1	13.48	2.12		0
FHLT 2006-3	18.45	8.09	(10.36)	0.44	1	8.76	(9.69)	0.47	1	13.73	(4.72)	0.74	1
GSAMP 2006-HE5	14.03	9.02	(5.01)	0.64	1	10.60	(3.43)	0.76	1	15.29	1.26		0
HEAT 2006-7	15.00	9.25	(5.75)	0.62	1	10.11	(4.89)	0.67	1	13.84	(1.16)	0.92	1
JPMAC 2006-CH2	3.80	8.88	5.08		0	9.55	5.75		0	12.47	8.67		0
LBMLT 2006-6	17.90	10.00	(7.90)	0.56	1	10.84	(7.06)	0.61	1	14.52	(3.38)	0.81	1
MABS 2006-NC3	14.61	11.16	(3.45)	0.76	1	12.36	(2.25)	0.85	1	15.38	0.77		0
MLMI 2006-HE5	13.34	11.49	(1.85)	0.86	1	12.18	(1.16)	0.91	1	15.83	2.49		0
MSAC 2006-HE6	17.21	12.90	(4.31)	0.75	1	13.75	(3.46)	0.80	1	16.71	(0.50)	0.97	1
RASC 2006-KS9	16.67	9.74	(6.93)	0.58	1	10.95	(5.72)	0.66	1	15.22	(1.45)	0.91	1
SABR 2006-HE2	12.07	8.82	(3.25)	0.73	1	10.85	(1.22)	0.90	1	13.33	1.26		0
SASC 2006-BC4	13.07	8.84	(4.23)	0.68	1	10.48	(2.59)	0.80	1	13.26	0.19		0
SVHE 2006-EQ1	8.19	9.57	1.38		0	10.94	2.75		0	15.08	6.89		0
Average	12.94	9.70	(3.24)	0.69	16	10.91	(2.03)	0.77	16	14.49	1.54	0.87	6
Original Loss Timing				52.0				57.0				64.0	
Current Age				12.6				12.6				12.5	
Time To Loss				39.4				44.4				51.5	
# Bonds WD				16				16				6	
Implied ABX Price				45.09				42.45				78.84	

Source: Intex, UBS

SECTION 3

Tweaking the Model

UBS

Why Would we want to Tweak the Model?

- Because the assumptions are based on history

- General Concerns
  - Why are our numbers higher than the market?
  - Do our simplifications introduce a systematic bias?

- Specific Concerns
  - Do we incorporate slowing speeds in the analysis?
  - Do we reflect falling HPA?
  - How do we model resets and the subprime shutdown?

General Concerns

- Why are our Model Numbers Higher than the Market?
  - Loss Assumptions even in the steady state may be too low
  - Economic Assumptions may be too Benign (No recession, positive HPA)
  - Losses may be more Back-loaded than our historical curves indicate
  - Single Simulation can't capture Volatility (default probabilities)
  - Our BEs may be too high; not stressing the bond sufficiently
- Do our simplifications introduce systematic Bias to the Results?
  - Higher-rated Indexes (Aaa, Aa) will always be over-valued—they'll always be "out of the money"
  - Older vintages which enjoyed some degree of HPA will be over-valued, since future performance is extrapolated from past performance
  - We define 100% Writedown as happening instantaneously at BE point—a 100% loss would occur somewhat higher than the BE, especially for thicker tranches higher in the capital structure. This under-values the Index.

Specific Concerns

- Do we Incorporate Slowing Speeds in our Models?
  - Prepayment Speeds is a variable to Break Even calculation
  - 75% PPC (Prospectus Prepayment Curve) reflects recent month's performance
  - Slow Speeds generally increase BEs, by increasing Excess Spread
  - We don't model Slowing Speed as a result of Inability to Refinance
- How do we reflect Falling HPA?
  - Cum Default and Cum Loss curves extracted from the lowest HPA samples available
  - BUT we predict lower HPAs for the next 2 years
  - AND 2005 and earlier vintages enjoyed +HPA historically, now entering into a negative HPA environment
- How Do We Model the Subprime Shutdown?
  - Let's see…

The Shutdown Scenario

- Certain Borrowers in existing pool won't qualify for new Loans
- Solution: Use a broad loss multiplier 120%, 150% ?
- Segregate Pool by Loan Categories, Assume Worst-Case Defaults for each Population
- Define Loan Categories by CLTV and Documentation
- In the Sample Deal below, Projected Losses increased > 200%

Loan Characteristic	Original Balance	Remaining Balance	Cum Default To Date	30 day DQ	60 Day DQ	90+ Day DQ	FC	REO	Base Projected Loss	Shutdown Default Assump-tion	Shutdown Scenario Projected Loss
High CLTV LowDoc	367,663,101	275,786,990	2.33%	2.86%	2.94%	1.20%	7.14%	5.57%	9.10%	80%	24.61%
High CLTV FullDoc	702,437,576	547,549,101	1.13%	3.68%	2.11%	2.11%	4.83%	2.55%	5.96%	60%	18.53%
Med CLTV LowDoc	157,929,391	98,158,717	1.14%	1.38%	1.45%	1.74%	6.36%	3.72%	5.70%	40%	10.46%
Med CLTV FullDoc	234,974,057	162,777,643	1.90%	3.35%	2.01%	1.29%	5.31%	2.42%	5.74%		5.74%
Low CLTV LowDoc	209,857,948	120,837,713	0.41%	3.60%	2.69%	1.94%	3.07%	1.20%	3.07%		3.07%
Low CLTV FullDoc	293,678,482	196,364,956	1.03%	3.29%	2.27%	0.98%	1.83%	2.40%	3.48%		3.48%
	1,966,540,555	1,401,475,119	1.17%	3.00%	2.10%	1.91%	4.85%	2.48%	5.52%		13.43%

Source: 1010 Data, LoanPerformance Inc., and UBS

Shutdown Example: ABX 06-1 Base Models

- Cum Losses are Very Low
- Analysis Results in very few projected writedowns

Name	Projected Lifetime Cum Loss (%Obal)	Break Even Cum Losses (Bonds Expected to Write Down at Projected Losses Highlighted)											
		Baa3	Diff	BE / Proj	Break?	Baa2	Diff	BE / Proj	Break?	A	Diff	BE / Proj	Break?
ACE 2005-HE7	8.84	10.48	1.64		0	11.31	2.47		0	15.54	6.70		0
AMSI 2005-R11	3.83	6.02	2.19		0	6.38	2.55		0	9.50	5.67		0
ARSI 2005-W2	6.63	7.09	0.46		0	7.41	0.78		0	10.85	4.22		0
BSABS 2005-HE11	7.82	8.98	1.16		0	10.36	2.54		0	15.36	7.54		0
CWL 2005-BC5	4.36	5.73	1.37		0	6.15	1.79		0	9.31	4.95		0
FFML 2005-FF12	5.53	9.39	3.86		0	10.00	4.47		0	13.53	8.00		0
GSAMP 2005-HE4	6.24	8.14	1.90		0	8.72	2.48		0	11.78	5.54		0
HEAT 2005-8	7.11	7.46	0.35		0	8.06	0.95		0	11.26	4.15		0
JPMAC 2005-OPT1	4.38	4.30	(0.08)	0.98	1	4.58	0.20		0	6.65	2.27		0
LBMLT 2005-WL2	5.81	5.58	(0.23)	0.96	1	6.13	0.32		0	8.53	2.72		0
MABS 2005-NC2	6.70	7.64	0.94		0	8.77	2.07		0	11.98	5.28		0
MLMI 2005-AR1	5.55	5.89	0.34		0	6.15	0.60		0	8.54	2.99		0
MSAC 2005-HE5	6.00	8.14	2.14		0	8.44	2.44		0	11.01	5.01		0
NCHET 2005-4	5.40	6.67	1.27		0	7.11	1.71		0	10.77	5.37		0
RAMP 2005-EFC4	5.28	7.70	2.42		0	8.36	3.08		0	12.56	7.28		0
RASC 2005-KS11	6.97	7.83	0.86		0	8.28	1.31		0	12.16	5.19		0
SABR 2005-HE1	6.35	10.07	3.72		0	10.68	4.33		0	13.81	7.46		0
SAIL 2005-HE3	7.00	5.82	(1.18)	0.83	1	6.30	(0.70)	0.90	1	8.33	1.33		0
SASC 2005-WF4	3.22	5.91	2.69		0	6.51	3.29		0	8.86	5.64		0
SVHE 2005-4	7.11	8.29	1.18		0	9.11	2.00		0	13.47	6.36		0
Average	6.01	7.36	1.35	0.92	3	7.94	1.93	0.90	1	11.19	5.18		0
Original Loss Timing				68.0				66.0					
Current Age				27.3				27.0					
Time To Loss				40.7				39.0					
# Bonds WD				3				1				0	
Implied ABX Price				95.81				100.40				101.93	

Source: Intex, UBS

Shutdown Example: ABX 06-1 Shutdown Model

- Base Average Cum Loss: 6% → Shutdown Cum Loss 9%
- Base BBB-/BBB/A writedowns: 3+1+0 → Shutdown writedowns:15+13+5

Name	Projected Lifetime Cum Loss (%Obal)	Shutdown Projected Lifetime Cum Loss (%Obal)	Break Even Cum Losses (Bonds Expected to Write Down at Projected Losses Highlighted)											
			Baa3	Diff	BE / Proj	Break?	Baa2	Diff	BE / Proj	Break?	A	Diff	BE / Proj	Break?
ACE 2005-HE7	8.84	10.30	10.48	0.18		0	11.31	1.01		0	15.54	5.24		0
AMSI 2005-R11	3.83	4.63	6.02	1.39		0	6.38	1.75		0	9.50	4.87		0
ARSI 2005-W2	6.63	9.49	7.09	(2.40)	0.75	1	7.41	(2.08)	0.78	1	10.85	1.36		0
BSABS 2005-HE11	7.82	9.91	8.98	(0.93)	0.91	1	10.36	0.45		0	15.36	5.45		0
CWL 2005-BC5	4.36	7.86	5.73	(2.13)	0.73	1	6.15	(1.71)	0.78	1	9.31	1.45		0
FFML 2005-FF12	5.53	13.59	9.39	(4.20)	0.69	1	10.00	(3.59)	0.74	1	13.53	(0.06)	1.00	1
GSAMP 2005-HE4	6.24	8.23	8.14	(0.09)	0.99	1	8.72	0.49		0	11.78	3.55		0
HEAT 2005-8	7.11	11.54	7.46	(4.08)	0.65	1	8.06	(3.48)	0.70	1	11.26	(0.28)	0.98	1
JPMAC 2005-OPT1	4.38	5.74	4.30	(1.44)	0.75	1	4.58	(1.16)	0.80	1	6.65	0.91		0
LBMLT 2005-WL2	5.81	9.98	5.58	(4.40)	0.56	1	6.13	(3.85)	0.61	1	8.53	(1.45)	0.85	1
MABS 2005-NC2	6.70	14.85	7.64	(7.21)	0.51	1	8.77	(6.08)	0.59	1	11.98	(2.87)	0.81	1
MLMI 2005-AR1	5.55	6.74	5.89	(0.85)	0.87	1	6.15	(0.59)	0.91	1	8.54	1.80		0
MSAC 2005-HE5	6.00	7.27	8.14	0.87		0	8.44	1.17		0	11.01	3.74		0
NCHET 2005-4	5.40	9.17	6.67	(2.50)	0.73	1	7.11	(2.06)	0.78	1	10.77	1.60		0
RAMP 2005-EFC4	5.28	11.11	7.70	(3.41)	0.69	1	8.36	(2.75)	0.75	1	12.56	1.45		0
RASC 2005-KS11	6.97	10.96	7.83	(3.13)	0.71	1	8.28	(2.68)	0.76	1	12.16	1.20		0
SABR 2005-HE1	6.35	7.70	10.07	2.37		0	10.68	2.98		0	13.81	6.11		0
SAIL 2005-HE3	7.00	8.45	5.82	(2.63)	0.69	1	6.30	(2.15)	0.75	1	8.33	(0.12)	0.99	1
SASC 2005-WF4	3.22	4.55	5.91	1.36		0	6.51	1.96		0	8.86	4.31		0
SVHE 2005-4	7.11	11.06	8.29	(2.77)	0.75	1	9.11	(1.95)	0.82	1	13.47	2.41		0
Average	6.01	9.16	7.36	(1.80)	0.73	15	7.94	(1.22)	0.75	13	11.19	2.03	0.92	5
Original Loss Timing					55.0				56.0				68.0	
Current Age					25.1				24.9				24.6	
Time To Loss					29.9				31.1				43.4	
# Bonds WD					15				13				5	
Implied ABX Price					33.28				40.44				75.80	

Source: Intex, UBS

Shutdown Results

- Capable of producing much higher losses, and can push valuations down to market levels and even below
- BUT Shutdown Model Relies on the Model Driver's discretion: e.g., assume 80% of Loans with CLTV ≥100% and Low Documentation will default
- IN ADDITION, these assumptions will likely vary across vintages
- AND Shutdown Model is straying outside DIY; requires loan-level analysis
- AND Shutdown Model isn't quite consistent with default/loss timing curves (assumes higher defaults going forward)
- NEVERTHELESS Shutdown Model offers an intuitive Methodology to Simulate Greater Losses due to the Subprime Shutdown or other credit stresses

Summary

- The ABX DIY Models Automates Generation of ABX Prices based on Remittance data and Breakeven analysis
- The DIY Models are Transparent and easily Implemented
- The DIY Models can serve as a Common Point of Reference (e.g., comparing ABX valuations by considering number of bonds to Write Down)
- The DIY Model works with Intuitive Values (Cum Losses, Effective Subordination)
- BUT the DIY Models tend to be optimistic compared to the market
- AND the DIY Models by their nature make simplifying assumptions and abstractions at each step along the way
- NEVERTHELESS the DIY Models are a good launching point for more sophisticated analysis, such as the Shutdown model

Mortgage Strategist Do-It-Yourself References

- February 27, 2007 “A Simple ABX Loss Projection Model”
- June 26, 2007 “Subprime Loss Projection—A Do-It-Yourself Kit”
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- August 7, 2007 “VALUE—In ABX 06-1 BBBs/BBB-s”
- August 14, 2007 “VALUE—In ABX AAA”
- August 14, 2007 “Option ARM Loss Projection”
- August 21, 2007 “ABX After Subprime Shutdown”

Companies Mentioned

- 1010data, 65 Broadway, Suite 1010, New York NY 10006, (212) 405-1010 info@1010data.com
- CPR & CDR Technologies, Inc, 6280 San Ignacio Ave, Suite A, San Jose CA, 95119 (408) 578-8635 info@cprcdr.com
- Intex Solutions, Inc., 110 A Street, Needham MA 02494, (781) 449-6222 contact@intex.com
- LoanPerformance, 188 The Embarcadero, 3rd Floor, San Francisco CA 94105 (415) 536-3500 info@loanperformance.com

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