Backtesting: Measuring the Effectiveness of ALLL Methodologies

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About Sageworks

- Financial information company that provides credit and risk management solutions to financial institutions

- Data and applications used by thousands of financial institutions and accounting firms across North America

- Provides resources, including whitepapers, webinars, videos, and templates, for bankers accessible at www.sageworks.com

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Learning Objectives

- Model Risk
- What is Backtesting?
- ALLL Backtesting at the Portfolio Level
- Deeper Investigation of Specific Portfolio Segments
- Examples
- Conclusion

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What is Model Risk?

- DEFINED: The potential for adverse consequences from decisions based on incorrect or misused model outputs and reports.

- Can lead to financial loss, poor business and strategic decision making, or damage to a bank's reputation.

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Primary Reasons for Model Risk Occurrence

1. The model may have fundamental errors and may produce inaccurate outputs when viewed against the design objective and intended business uses.

2. The model may be used incorrectly or inappropriately.

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Combating Model Risk:

- *"Even with skilled modeling and robust validation, model risk cannot be eliminated, so other tools should be used to manage model risk effectively. Among these are establishing limits on model use,* ***monitoring model performance****,* ***adjusting or revising models over time****, and supplementing model results with other analysis and information."*

OCC – Supervisory Guidance on Model Risk Management – April 2011

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What is Backtesting?

- Backtesting is an exercise that compares the actual outcome with model forecasts during a defined period, a period of time that was not used to develop the methodology.

- Backtesting is a form of Outcome Analysis critical to managing Model Risk.

- An exercise that enables us to monitor model performance and adjust or revised the model over time.

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The Backtesting Objective:

- The objective is to ensure the ALLL methodology is accurate in measuring the losses inherent in a bank's portfolio over the subsequent 12-month period.

- *NOTE: This time horizon may shift somewhat as the FASB's CECL model and the life of loan concept takes hold, but regardless of any forthcoming changes, the request for measuring the effectiveness of a methodology, or backtesting ALLL models, will continue in some fashion.*

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ALLL Backtesting at the Portfolio Level

ALLL History Comparison

This page allows the financial institution to back-test the results of their allowance methodology against realized losses in the portfolio.

Period Ending Date	Sageworks Calculated ALLL	Annualized Net Charge-offs	Percent Difference	Net Charge-offs YTD (Actual)	Net Charge-offs for the Quarter
6/30/2013	$10,523,871	$2,568,000	-75.60%	$1,284,000	$1,503,000
3/31/2013	$10,974,183	($876,000)	-107.98%	($219,000)	($219,000)
12/31/2012	$14,449,768	$10,366,000	-28.26%	$10,366,000	$1,525,000
9/30/2012	$16,336,095	$11,788,000	-27.84%	$8,841,000	$2,761,000
6/30/2012	$18,553,832	$12,160,000	-34.46%	$6,080,000	$1,437,000

- Compares ALLL with annualized Net Charge-offs Year to Date.

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Important Analysis Questions

- How many years of losses can be estimated to be covered by any period-end allowance when examining the current period allowance as compared to Net Charge-offs Year to Date (annualized)?

- Does the current period's Net Charge-offs Year to Date (annualized) exceed the prior period's allowance?

- Were there significant changes from one quarter to the next in the net charge-offs? If so, did the allowance increase accordingly?

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Deeper Investigation of Specific Portfolio Segments

Segment	9/30/2013 Loan Balances	6/30/2013 Loan Balances	Variance	9/30/2013 Reserve	9/30/2013 adj. Reserve %	6/30/2013 Reserve	6/30/2013 adj. Reserve %	Variance	Rate Effect on Reserve	Volume Effect on Reserve	Total Change in Reserve
Commercial	$800,000,000	$850,000,000	($50,000,000)	$4,480,000	0.56%	$4,760,000	0.56%	($280,000)	$0	($280,000)	($280,000)
CRE	$1,500,000,000	$1,450,000,000	$50,000,000	$11,250,000	0.75%	$11,165,000	0.77%	$85,000	($300,000)	$385,000	$85,000
Construction	$85,200,000	$90,000,000	($4,800,000)	$451,560	0.53%	$513,000	0.57%	($61,440)	($34,080)	($27,360)	($61,440)
Consumer	$320,000,000	$318,000,000	$2,000,000	$4,576,000	1.43%	$4,611,000	1.45%	($35,000)	($64,000)	$29,000	($35,000)
Residential RE	$325,000,000	$320,000,000	$5,000,000	$2,535,000	0.78%	$3,072,000	0.96%	($537,000)	($585,000)	$48,000	($537,000)

- Questions to ask first:
  - » Which segments had an increase in the FAS 5 reserve?
  - » How much of the increase is due to changes in volume of that portfolio?
  - » How much is due to change in loss rate?

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Historical Loss Rate

Period End Date	Total Loan Balance	Number of Loans	Charge-offs	Recoveries
9/30/2013	$27,910,134	92	$0	$74,720
6/30/2013	$31,444,754	93	$373,582	$19,444
3/31/2013	$33,356,878	97	$121,231	$230,355
12/31/2012	$31,456,980	101	$854,718	$25,274
9/30/2012	$33,694,068	107	$1,137,013	$4,623

- How much of the reserve change is due to a change in the historical loss rate?

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Migration Analysis

Commercial RE

Classification	9/2011 Pool Balance	Recoveries	Net-Charge Offs	Charge-Off Ratio 9/2013	6/2011 Pool Balance	Net Charge-Offs	Charge Off Ratio 6/2013	Variance Ratio	Variance Balance	Variance Net Charge-Offs
Pass	350,000	89	979	0.2798%	335,000	1,730	0.5164%	-0.2366%	15,000	(751)
Special Mention	14,000	0	197	1.4071%	17,000	197	1.1588%	0.2483%	(3,000)	0
Substandard	40,250	632	4,623	11.4858%	37,800	3,878	10.2584%	1.2273%	2,450	745
Doubtful	5,000	0	1,000	20.0000%	4,000	1,000	25.0000%	-5.0000%	1,000	0
TOTALS	**409,250**	**721**	**6,799**	**1.6614%**	**393,800**	**6,804**	**1.7279%**	**-0.0665%**	**15,450**	**(5)**

- It is important to analyze if deterioration of a portfolio led to a higher rate in one sub-segment than in another.

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Qualitative Factors

- A bank should look closely at the change in qualitative factors over time and compare the direction of change to the direction of change of any applicable metrics for that specific factor.

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Qualitative Factors

1a1. 1-4 family residential construction...	11/30/2013	10/31/2013	9/30/2013	8/31/2013	7/31/2013	6/30/2013
Changes in international, national, regional, and ...	0.05	0.05	0.05	0.05	0.05	0.05
Changes in lending policies and procedures, includ...	0.01	0.01	0.01	0.01	0.01	0.01
Changes in the experience, depth, and ability of l...	0.01	0.01	0.01	0.01	0.01	0.01
Changes in the nature and volume of the portfolio ...	0.05	0.05	0.05	0.05	0.05	0.05
Changes in the quality of the organization's loan ...	0.05	0.05	0.05	0.05	0.05	0.05
Changes in the value of underlying collateral for ...	0.09	0.09	0.09	0.09	0.09	0.09
Changes in the volume and severity of past due loa...	0.05	0.05	0.05	0.05	0.05	0.09
The effect of other external factors (ie competiti...	0.00	0.00	0.00	0.00	0.00	0.00
The existence and effect of any concentrations of ...	0.05	0.05	0.05	0.05	0.05	0.09
Totals	**0.36**	**0.36**	**0.36**	**0.36**	**0.36**	**0.44**
1a2. Other construction loans and all la...	**11/30/2013**	**10/31/2013**	**9/30/2013**	**8/31/2013**	**7/31/2013**	**6/30/2013**
Changes in international, national, regional, and ...	0.05	0.05	0.05	0.05	0.05	0.05
Changes in lending policies and procedures, includ...	0.01	0.01	0.01	0.01	0.01	0.01
Changes in the experience, depth, and ability of l...	0.01	0.01	0.01	0.01	0.01	0.01
Changes in the nature and volume of the portfolio ...	0.05	0.05	0.05	0.05	0.05	0.05
Changes in the quality of the organization's loan ...	0.05	0.05	0.05	0.05	0.05	0.05
Changes in the value of underlying collateral for ...	0.09	0.09	0.09	0.09	0.09	0.09
Changes in the volume and severity of past due loa...	0.05	0.05	0.05	0.05	0.05	0.09
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Totals	**0.36**	**0.36**	**0.36**	**0.36**	**0.36**	**0.44**

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Realized Charge-offs vs. Historical Loss Rates

Portfolio Segment	Loss Rate as of 9/2012	Balance as of 9/2012	Reserve as of 9/2012	12 month charge-offs through 9/2013	ALLL coverage
C & I	1.50%	$10,000,000	$150,000	$100,000	1.50
CRE	1.25%	$5,000,000	$62,500	$70,000	0.89
Construction	0.75%	$3,000,000	$22,500	$20,000	1.13
Consumer	0.55%	$7,000,000	$38,500	$30,000	1.28
HELOC	0.45%	$4,000,000	$18,000	$10,000	1.80

- Backtesting of the realized charge-offs as compared to the adjusted historical loss rate should be completed.

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Important Analysis Questions

- To what degree did the ALLL cover the net charge-offs over the subsequent 12 months?

- Did the current period's (annualized) or the subsequent 12 months' charge-offs exceed the ALLL?

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Challenges to Backtesting:

Data!

- Do I have sufficient data stored to backtest?
- Is the archived data easily accessible/malleable?
- FASB's CECL

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Conclusion

- Backtesting is a form of Outcome Analysis critical to managing Model Risk.
- Backtesting enables you to monitor model performance and adjust or revised the model over time.
- Backtesting is growing as a useful way to defend a bank's ALLL methodology.
- Backtesting puts you ahead of your peers in the eyes of examiners.

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Additional Resources & Contact Info

Additional resources:

» Whitepapers, archived webinars and more: sageworks.com

» LinkedIn: ALLL Forum for Bankers

» ALLL.com

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