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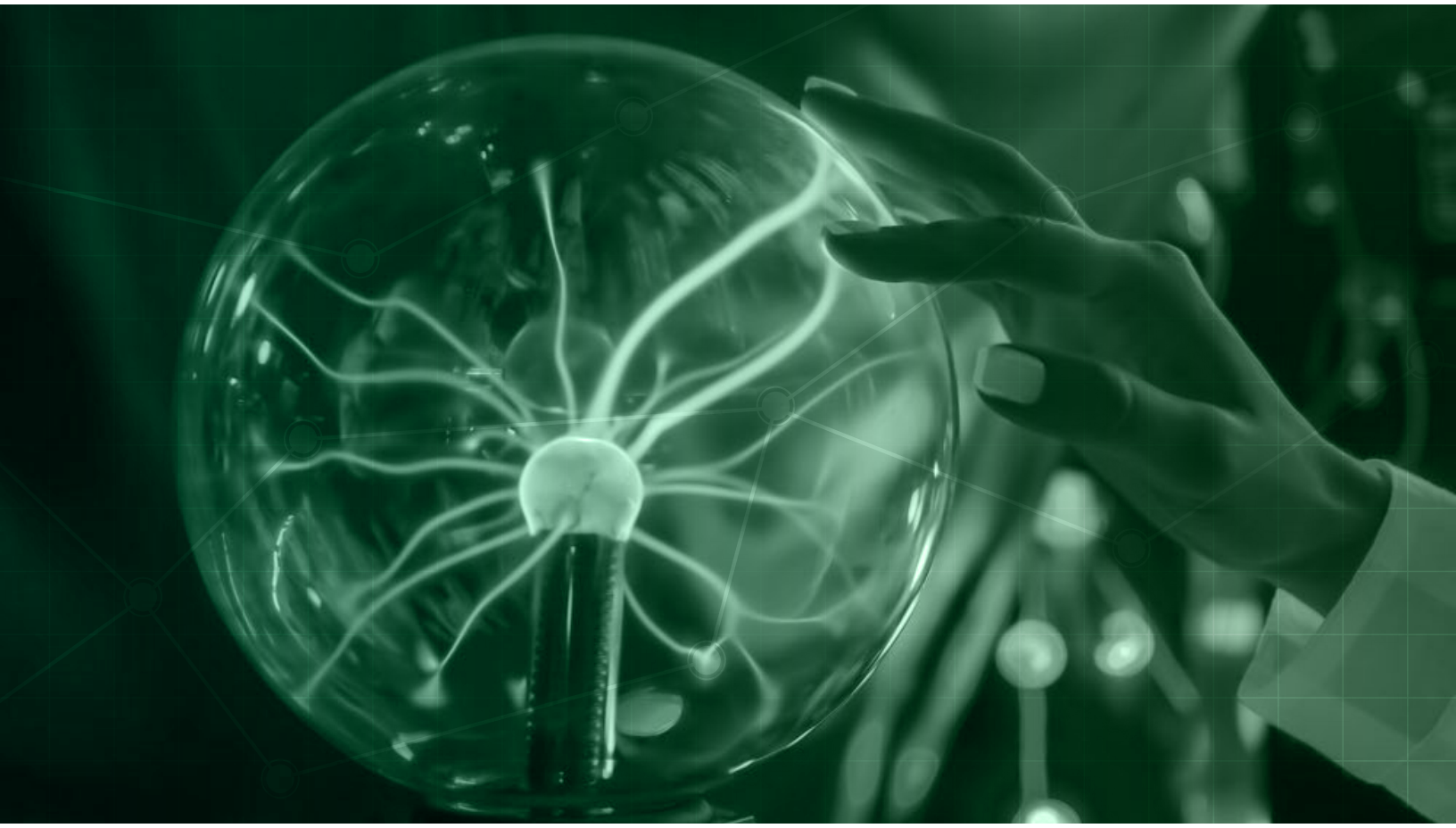


Static Cling:

Use Static Pool Analysis to Avoid Getting Shocked

March 2023

Introduction

When purchasing or selling a loan pool, how should a credit union project the performance of such a pool in order to arrive at the appropriate price or yield? Many credit unions look at loan performance – in particular, losses – at a portfolio level. To do so, they aggregate losses that occur over a period of time and divide the losses by some measure of the balance, often the average balance over that period. This approach can be valuable in determining portfolio returns and profitability over that time period. However, if used in pricing, whether for evaluating a potential participation or in setting loan rates, this portfolio-level approach can create misleading results under many common circumstances. For critical pricing applications, a better approach is static pool analysis, which, while more complicated to implement, gives much more robust results.

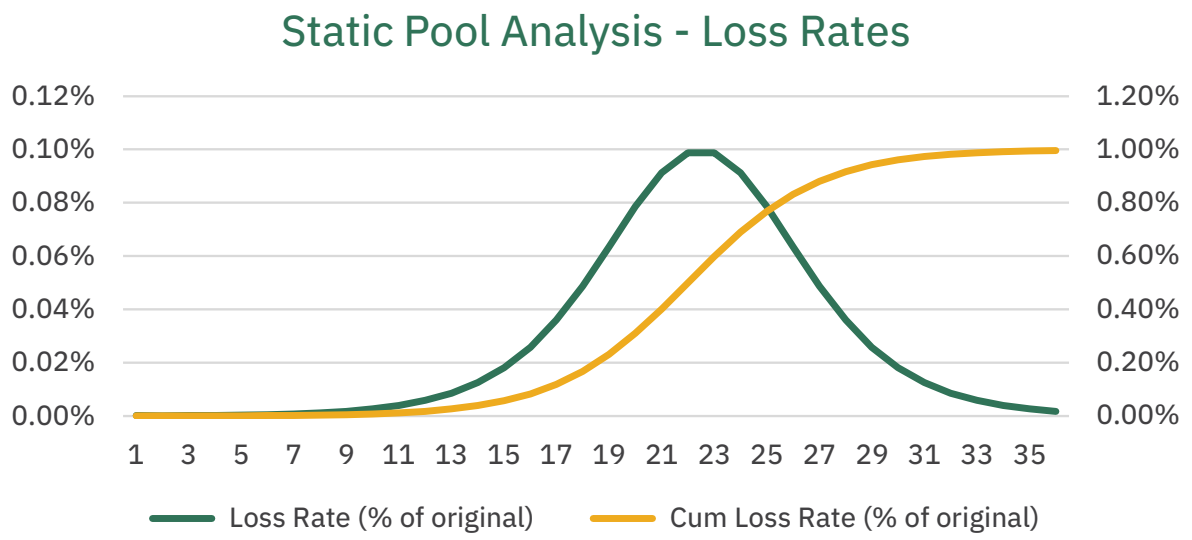
What Is Static Pool Analysis?

In static pool analysis, the performance of a cohort of loans is tracked as they age. The cohort will usually be defined as loans that are similar to each other, with that similarity being as granular as is desired by the user. For instance, one can separate auto loans from other loans, or you can go further and separate new autos from used, direct loans from indirect, etc. The loans will also generally be separated by origination date. This allows for comparisons as underwriting policies change over time and it makes the overall analysis simpler. As an example, consider the following cohort of a large number of 36-month maturity loans.

			Month							
Asset	Origination Date	Original Balance	1	2	3	4	...	34	35	36
1	1/1/2020	90	0	0	0	0	...	0	0	0
2	1/5/2020	17	0	3	0	0	...	0	0	0
3	1/8/2020	64	0	0	8	0	...	0	0	0
	⋮						...			
N	1/28/2020	99	0	0	0	0	...	0	0	0
	Total	1,000,000	2	1	2	2	...	40	27	18
	Running Total		2	3	5	7	...	9,918	9,945	9,963
	Loss Rate (% of original)		0.00%	0.00%	0.00%	0.00%	...	0.00%	0.00%	0.00%
	Cum Loss Rate (% of original)		0.00%	0.00%	0.00%	0.00%	...	0.99%	0.99%	1.00%

All of the example loans were originated in the same month, although the analysis can also be applied to loans originated in different months; however, this results in different numbers of observations, particularly as the cohort becomes more seasoned, which can lead to some "noise" in the results. Here, we are tracking losses for each loan, but this same analysis can be applied to any metric – delinquencies, prepayments, balance, coupon, etc.

As can be seen, the analysis is straightforward – losses are aggregated each month for all loans and are also kept as a running total. This allows us to calculate two values: the periodic loss rate for each month and the cumulative loss rate up to and including each month, both expressed as a percentage of original balance. (The periodic loss rate could also be calculated as a percentage of the current outstanding balance if so desired.)



This analysis provides us two valuable metrics: cumulative losses and loss timing, which can also be shown graphically. These results can be used to evaluate future pools that are similar, including participations, loan originations or anywhere else that an investment should be evaluated on a stand-alone basis. Additionally, they can also be blended together based on past and expectations of future originations to create an estimate of future portfolio-level performance, an important step in the CECL calculation.

Portfolio-Level Analysis

Portfolio-level analysis has several similarities with static pool analysis in that it can be applied to a cohort of loans that can be defined as granularly or as coarsely as the user wishes. Performance is also tracked over time, usually monthly; however, time is defined by calendar month rather than loan age. Furthermore, the denominator is usually the current cohort principal balance, or some average principal balance over the time period being measured, rather than the original cohort principal balance.

Under certain circumstances, portfolio-level analysis and static pool analysis can give very similar results. For instance, using the analysis from above with a 1% cumulative loss and a weighted-average life of 3 years, we would expect annual losses to be 33 bps. If we were to apply the loss-timing curves to a portfolio that is made up of loans originated in the same dollar amount each month, once we reach 36 months of observations, the annual loss rate derived using portfolio-level analysis settles in at 33 bps.

This makes intuitive sense. Once the pool is 36 months seasoned, we have roughly equal amounts of loans in each of the seasoning points on the loss curve, so we are experiencing each point equally. Layering prepayments onto the analysis shifts both loss figures by approximately the same amount. For instance, if we were to assume a 20% Conditional Prepayment Rate (CPR) and that the loss-timing curve remains unchanged, the cumulative losses do not change in the static pool analysis as it is based on the original pool balance which remains the same. However, the weighted average life (WAL) shortens from 3.0 years to 2.2 years, increasing the annual loss figure to 45 bps. The portfolio-level analysis also shows an increase in annual loss, with the 36+ month plateau reaching 45 bps.

So, Where's the Difference?

There's an important requirement for portfolio-level analysis and static pool analysis to arrive at the same results: roughly similar dollar amounts of loans must be at each point of seasoning. However, the principal amount outstanding can vary over time for many reasons, such as variations in origination volume due to seasonal or macroeconomic factors, prepayments and most importantly, growth or a reduction in a credit union's origination volume.

Growth in a credit union's origination volume creates a situation where there are more new loans, which have generally lower loss rates, than older loans, even when measured by original balance. This scenario can lead to loss expectation estimates that are too optimistic and, when applied to participation analysis or loan pricing, can result in too high an estimate of the loss-adjusted yield.

For example, using the loss-timing curve and cumulative loss expectations from above, and assuming a 20% CPR, we would expect 45 bps annual losses for similar loans. If a credit union were to base the loss expectation on a portfolio-level analysis, and that portfolio were growing 10% per year, the estimate for annual losses would be only 43 bps. Higher growth rates skew the portfolio-level analysis even further; at a 20% annual growth rate, portfolio-level annual losses decline to 41 bps, and at a 50% annual growth rate, they decline to 35 bps.

While 50% annual growth may seem like a lot, that's exactly the kind of growth many credit unions have seen in their auto loan origination over the last year. Figures from Callahan & Associates show aggregate auto loans grew 16.7% from June 2021 to June 2022, and 4.1% the prior year. However, that is measured by total loan volume outstanding. If one assumes a 20% paydown rate (including amortization, prepayments and liquidations) to estimate the principal amount of originations necessary to have the aggregate portfolio levels grow by that amount, average loan origination volume increased 13% from 2020 to 2021 and almost 60% from 2021 to 2022. Moreover, those are average rates, and many credit unions experienced even greater growth.

As a note, the same loan origination growth calculation done above cannot be easily applied at the individual credit union level due to purchases and sales of loans and participations. This issue does not arise in the aggregate as those purchases and sales will generally stay within the credit union universe, with the exception of the small number of securitizations and sales to non-credit unions.

The Impact of Declining Originations

The impact of declining origination on the portfolio-level loss figures is another important consideration. Just as increasing origination volume depresses the portfolio-level loss figures below what one would estimate using static-pool analysis, declining origination volume will increase these loss figures. With almost all lending rates at multi-year highs, or nearly so, as well as the specter of a recession with the double-edged sword of reduced consumer demand and tighter underwriting, loan origination volume is almost certain to decline, and likely to do so significantly.

Using the same loss assumptions from earlier, if originations were to decline 25% per annum continuously, portfolio-level annual losses would level off at 51 bps, though it would hit a peak of 60 bps. Note that a 25% decline would return auto loan originations to their 2020 levels over two years. Should they fall more rapidly, declining to 2020 levels in one year, but stop declining at that point, the peak portfolio-level annual loss figure would reach 59 bps, and while they would eventually stabilize at the expected number, that would take three years.

There are an infinite number of ways that origination volumes can increase or decrease, or even both over a given time frame and at different rates of acceleration/deceleration. The important thing to note is that increasing origination volume results in lower portfolio-level annual loss numbers than does a more robust static pool analysis, while decreasing origination volume has the opposite effect.

The Bottom Line

While portfolio-level loss analysis has value when used in estimating portfolio returns, evaluating investments should be done on a standalone basis. For setting loan rates or for analyzing a potential participation, *static pool analysis is the gold standard*.

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