# Six methodologies for CECL implementation

**Discover which CECL methodology option is best for your institution**

## Are you ready for CECL?

### Starting in January 2023, the Current Expected Credit Loss model (CECL) will be effective for financial institutions that haven't already adopted it.

Many institutions delayed implementation to deal with more immediate issues, such as the COVID-19 pandemic. Others believed CECL would be rescinded. But on February 2, 2022, the Financial Accounting Standards Board (FASB) voted not to delay the CECL deadline any further. The window to implement CECL before the deadline is growing shorter.

CECL will be a significant change to the current process each institution uses to estimate its allowance for loan losses. But the real question is: How do you implement a new model that is so different from what you're accustomed to seeing and using?

As is the case with any complex project, the most important step is planning. Even if you can't see the finished product today, you need to begin laying the foundation for moving forward. An effective plan can lead your management team through the process and guide the decisions they will need to make along the way. And working on your CECL methodology now will give your institution time to identify issues and fine tune your model and methodology while you can.

In this white paper, you'll explore six different methodologies your institution can use to implement CECL before the deadline:

- Cumulative loss rate
- Weighted average remaining life to maturity (WARM)
- Vintage loss rate
- Migration analysis
- Probability of default
- Discounted cash flow

You'll also take away best practices around governance and board responsibilities, along with three steps to get started with CECL.

**WIPFLI**

## Getting started

Before diving into the different CECL methodologies you can use, consider these three important steps your institution should take in order to lay the foundation for success.

### 1. Select your team

From the start, it's critical to identify the team members at your institution who will work on CECL. The implementation process should not be left solely to accounting. The team should also include members from loan operations, credit administration, IT and senior management.

Once you've identified your implementation team, make sure they have time and resources set aside. Block time off on calendars for regular meetings and to complete tasks. If team members end up with too much work, train other employees to help them with their other job duties. Asking employees to figure out CECL without giving them the means to do so will only lead to stress and trouble.

### 2. Set milestones

If your institution hasn't done as much on CECL as you had hoped to date, here are a few milestones and some possible deadlines your implementation team members should consider:

- April: Investigate different CECL models and methodologies available (internal and third party).

- May: Segregate your loan portfolio into appropriate pools based on shared risk characteristics.

- June: Select the ideal methodologies to use for each loan pool, and identify data collection requirements for each methodology.

- September: Set up the model/methodology.

- September through December: Complete testing of the model.

With time to implement CECL running low, it may prove beneficial to focus on simpler third-party models or internal models that are easier to use, such as a cumulative loss rate methodology or the WARM methodology. If your institution finds these models are inadequate, you can switch to a more appropriate model at some point in the future.

### 3. Begin collecting data

Regardless of the model you select, certain data elements will be necessary for any methodology, including the following loan-specific information:

- Loan origination date

- Loan origination amount

- Charge-off (recovery) date

- Charge-off (recovery) amount

- Loan principal at each reporting date (quarter-end)

- Loan duration

Right now, your institution can gather as much loan data as possible by looking at system information that is available, including:

- Archived loan trial balance reports

- Saved regulatory downloads of data fields

- Historical loan charge-off schedules

- Risk rating schedules

- Other schedules that include loan quality factors that are not normally included in the loan system

# CECL methodology: Cumulative loss rate

The cumulative loss rate methodology (loss rate method or "snapshot" method) is the one of the simplest CECL methodologies available to financial institutions. It requires the least amount of data and can be completed in a spreadsheet with relative ease, but it will be a significant change from the incurred loss model used by financial institutions today.

The loss rate method measures the amount of loan charge-offs net of recoveries (loan losses) recognized over the life of a pool and compares those loan losses to the outstanding loan balance of that pool as of a specific point in time (pool date). Loans in the pool at the pool date will have been originated at different times. Some loans may have only a few days remaining before they mature, while others may have just been originated and will have virtually the entire loan term to pay off.

Since the loss rate method captures all of the material loan losses over the life of the loans in the pool, the pool date selected must precede the date of the CECL analysis (reporting date) by at least the same amount of time as the maximum loan term of the pool.

For example, if we want to estimate a CECL allowance for loan losses as of December 31, 2021 (2021), and the pool consists of balloon notes with terms ranging 3-5 years, the pool date used would be December 31, 2016 (2016), so that all of the loan losses on loans outstanding as of the pool date can be captured in the analysis.

### How it works

To estimate a CECL loss rate for the pool, you must first identify the loan losses recognized between the pool date and the reporting date for the pool and determine which loan losses were related to loans outstanding at the pool date.

Continuing the previous example, let's assume a financial institution recognized $3.5 million of loan losses on the loan pool between 2016 and 2021.

After looking at the origination date of each loan with a loan loss, you determine only $2.8 million of loan losses were on loans actually outstanding as of 2016. The loss rate method then divides the loan losses recognized on loans outstanding as of the pool date by the outstanding loan balance as of the pool date. Assuming the outstanding loan balance in the example was $120 million as of 2016, the initial CECL loss rate would be $2.8 million / $120 million, or 2.33%.

This loss rate calculated above simply tells you that the loss rate on the 2016 loan pool was 2.33% of the 2016 pool balance. This gives you a starting point for estimating a CECL loss rate for the 2021 pool balance, but the calculated rate will need to be adjusted for qualitative differences in the current pool balance.

Qualitative factors to consider will include many of the same factors currently used in the incurred loss methodology, plus some additional factors that will be used to help forecast changes to the pool in the future.

### Methodology pros and cons

As mentioned, the loss rate method is one of the simplest methodologies to develop an initial CECL loss rate. The only data required to complete a loss rate method includes:

- Pool loan balance as of the pool date.
- The date and amount of loan losses (charge-offs net of recoveries) between the pool date and the reporting date.
- The origination date of loans that had loan losses during the period.

While the loss rate method itself is relatively easy to calculate, typically much more effort must go into analyzing qualitative factors in the loss rate method than in other methodologies because the data used can be rather stale. (In the preceding example, the information used was five years old.)

Changes in credit quality of the pool from the pool date to the reporting date are not captured in the methodology. Imagine using data from 2016, a relatively steady economic environment, to support an estimate of expected future losses in the 2021 loan pool, part of one of the most volatile economic periods in history. The 2.33% loss rate calculated in our example may be too low for the 2021 portfolio and should be adjusted upward through qualitative factors.

## The question is: How much adjustment is needed? A lot of analysis will likely be needed to come up with a reasonable and supportable answer.

Another consequence of the loss rate method is that it will likely result in a higher CECL loss rate than other methodologies because of the imprecision used to come up with appropriate qualitative adjustments. Since it can be difficult to come up with supportable ranges for qualitative adjustments, you will likely have to err on the side of more conservative qualitative estimates, which logically ends up with a more conservative overall CECL estimate for the allowance for loan losses.

| Pros | Cons |
|------|------|
| Relatively easy initial CECL loss rate calculation | More analysis needed for qualitative factors |
| Least amount of data needed | Will likely result in a higher CECL allowance for loan losses balance |

### Who should use the methodology?

Many institutions, especially smaller, less complex institutions, may strongly consider using the loss rate method to estimate their CECL allowance for loan losses because of its relative simplicity. Even larger institutions may consider using this methodology for insignificant loan pools. However, management teams must also weigh the cost of more complex analysis of qualitative factors that comes along with this methodology.

# CECL methodology: Weighted average remaining life to maturity

The weighted average remaining life to maturity (WARM) methodology is a type of loss rate methodology that uses an average loss rate and applies it to future expected outstanding balances of the pool. This methodology may feel a lot like existing credit loss estimation models, but there are some critical differences you must consider before adopting this methodology.

## How it works

To complete a WARM analysis, you must first calculate an average annual loss rate for the loan pool. (Does this sound familiar?) This is basically the same average annual loss rate that most institutions calculate today. You will consider the same factors you currently do to determine the lookback period (e.g., three years, five years, etc.) and the weighting you place on each year when you calculate the average annual loss rate.

The next step is to estimate the outstanding pool balance at each subsequent reporting period. This is going to be more challenging and will likely require new processes. Whatever system or process is used, you will need to consider the following:

- Treat balloon payments as payoffs and not as renewals.
- Consider prepayment estimates.
- Exclude expected future loan originations from the analysis.

The rest of the analysis is fairly straightforward: You multiply the average annual loss rate by the current and each projected report balance of the loan pool and add the results together to come up with the expected lifetime loss estimate of the pool.

For example, assume an auto loan pool has an outstanding balance of $20 million on December 31, 2021. This pool is made up of three-year through five-year term loans. You determine that a three-year lookback period is appropriate to calculate an average loss rate and weight each year equally. Based on loss rates of 0.72%, 0.97% and 0.68% for 2019, 2020 and 2021, respectively, you calculate an average annual loss rate of 0.79%.

You also determine the prepayment rate of the pool is approximately 4%. Using the prepayment factor and contractual payment schedules, you project the following outstanding balances and multiply each projected balance by the average annual loss rate of 0.79%:

**Table 1**.

| Future year end | Estimated pay down (000s) | Projected balance (000s) | Average annual loss rate | CECL loss estimate (000s) |
|---|---|---|---|---|
| 2021 | | $ 20,000 | 0.79% | $ 158 |
| 2022 | $ 9,471 | 10,529 | 0.79% | 83 |
| 2023 | 5,354 | 5,175 | 0.79% | 40 |
| 2024 | 3,206 | 1,969 | 0.79% | 16 |
| 2025 | 1,618 | 351 | 0.79% | 3 |
| 2026 | 351 | 0 | 0.79% | 0 |
| | | | | $ 300 |

The CECL lifetime loss rate before any qualitative adjustments is $300 / $20,000 = 1.50%.

This calculation only tells you what the expected future losses might be based on historical loss rates. Like existing incurred loss methodologies, you'll need additional analysis of qualitative (Q) factors to estimate the impact of current conditions as well as forecasted changes that could impact lifetime losses.

You'll have some flexibility over how you apply these Q factors in the model. For example, you could apply the Q factors to the calculated loss amount, or you could adjust the average annual loss rate for each future reporting period based on the forecasted changes in expected losses. Either way, you will have to support and document the judgments you use to determine the appropriate Q factors.

## Methodology pros and cons

It's true that you'll be able to almost fully leverage existing processes to calculate the average annual loss rate for the pool, but you must carefully consider how much time, effort and cost will be incurred to develop processes necessary to project future outstanding pool balances.

With some tweaking, you may be able to use your asset/liability management (ALM) system to project these balances — after all, that's what ALM systems are designed to do. However, you may need to spend more time validating the calculations to make sure the system is using the correct inputs and assumptions and properly reporting estimated future balances. You may be able to purchase or develop a tool to help you with these calculations, but that will come with a cost, too.

The data needed to perform a WARM analysis should be available to your institution without any additional work. Retrieving that data so it can be used in the analysis may be more challenging.

Q factor adjustments for changes between historical and current conditions and for future expected conditions will be very important. The analysis should result in a lower credit loss estimate than a cumulative loss rate (or snapshot) model, but other CECL methodologies could probably yield even better results.

| Pros | Cons |
|---|---|
| A relatively easy CECL methodology that could be prepared internally | Will need to develop a process or system to project future outstanding balances |
| Conceptually familiar, and current processes can be significantly leveraged | Will likely result in a higher CECL allowance for loan and lease losses (ALLL) balance than more precise methodologies |
| More precise than the cumulative loss rate (or snapshot) methodology | Supporting and documenting Q factors and related adjustments will be critical |

## Who should use the methodology?

The WARM model will look and feel familiar, and many institutions will investigate whether this would be a useful methodology.

However, it will require some work to develop a means to estimate projected outstanding balances. Although this methodology is relatively easy to understand, CECL implementation teams will need to consider the cost of projecting future balances and the impact of higher ALLL estimates than some other methodologies might yield.

Many third-party consultants have developed WARM models that are relatively inexpensive, making this methodology appealing to many institutions.

# CECL methodology: Vintage loss rate

Even before the FASB finalized its new financial instruments credit impairment standard, it seemed the vintage loss rate methodology (vintage analysis) was one of the most talked about CECL models.

The data needed for a simple vintage analysis is already collected by almost all financial institutions — though just because institutions may capture the required data at one point does not necessarily mean it can be easily analyzed using current systems (more on this in a bit).

Vintage analysis measures the amount of loan charge-offs net of recoveries (loan losses) recognized over the life of a pool of loans originated during a specific period of time — a vintage — and compares the loan losses incurred during future periods (vintage loss periods) to the original loan balance of the vintage. The vintage is identified as the actual period of time during which the loans were originated (e.g., 2020 or Q3 2020), and the vintage loss periods are relative to the vintage (e.g., Year 3 or Quarter 9). A vintage loss rate is calculated for each vintage loss period, and the methodology then compares the vintage loss rates for all of the vintages in the pool of loans being evaluated.

## How it works

To complete a vintage analysis, you must segregate loan originations for a loan pool into different vintages. For each vintage, determine when any loan losses occurred and assign them to the appropriate vintage loss period. The vintage loss rate is calculated as the ratio of period loan losses to the original vintage balance for each vintage loss period.

For example, let's assume $10 million of three-year consumer loans were originated in the first quarter of 2018 (Q1 2018). Management has identified all the loan losses for this vintage and calculated a vintage loss rate for each period as noted in Table 2.

**Table 2**.

| Quarter | Vintage loss period | Loan losses ($) | Loss rate (%) |
|---------|--------------------|-----------------| -------------|
| Q2 2018 | Q1 | 0 | 0.00 |
| Q3 2018 | Q2 | 0 | 0.00 |
| Q4 2018 | Q3 | 10,000 | 0.10 |
| Q1 2019 | Q4 | 7,000 | 0.07 |
| Q2 2019 | Q5 | 15,000 | 0.15 |
| Q3 2019 | Q6 | 14,000 | 0.14 |
| Q4 2019 | Q7 | 23,000 | 0.23 |
| Q1 2020 | Q8 | 18,000 | 0.18 |
| Q2 2020 | Q9 | 4,000 | 0.04 |
| Q3 2020 | Q10 | 7,000 | 0.07 |
| Q4 2020 | Q11 | 0 | 0.00 |
| Q1 2021 | Q12 | 0 | 0.00 |

You would complete a similar analysis for all of the different vintages. After accumulating all of this data, you can begin analyzing trends and calculating expected vintage loss rates for future periods. Table 3 is an excerpt of what the final analysis might look like as of June 30, 2021.

**Table 3.**

| Quarter | Vintage loss period | | | | | | | | | | | | Expected future losses |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | |
| Q4 2017 | 0.00 | 0.05 | 0.00 | 0.00 | 0.17 | 0.09 | 0.12 | 0.25 | 0.10 | 0.05 | 0.04 | 0.00 | 0.00 |
| Q1 2018 | 0.00 | 0.00 | 0.10 | 0.07 | 0.15 | 0.14 | 0.23 | 0.18 | 0.04 | 0.07 | 0.00 | 0.00 | 0.00 |
| Q2 2018 | 0.00 | 0.01 | 0.12 | 0.03 | 0.10 | 0.13 | 0.15 | 0.04 | 0.04 | 0.05 | 0.03 | 0.01 | 0.00 |
| Q3 2018 | 0.00 | 0.00 | 0.00 | 0.00 | 0.12 | 0.11 | 0.17 | 0.07 | 0.24 | 0.13 | 0.02 | 0.01 | 0.01 |
| ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ |
| Q4 2020 | 0.00 | 0.00 | 0.06 | 0.05 | 0.14 | 0.15 | 0.17 | 0.14 | 0.11 | 0.08 | 0.03 | 0.01 | 0.94 |
| Q1 2021 | 0.00 | 0.01 | 0.06 | 0.05 | 0.14 | 0.15 | 0.17 | 0.14 | 0.11 | 0.08 | 0.03 | 0.01 | 0.95 |
| Q2 2021 | 0.00 | 0.01 | 0.06 | 0.05 | 0.14 | 0.15 | 0.17 | 0.14 | 0.11 | 0.08 | 0.03 | 0.01 | 0.95 |

The unshaded vintage loss rates in Table 3 represent actual loan loss rates calculated for historical vintage loss periods. The shaded vintage loss rates are estimated losses for future periods that are based on the historical loss rates adjusted for any trends or other qualitative information you believe would alter future loss rates.

Once your institution has calculated the expected future loss rates for each vintage, the estimated CECL ALLL is simply the originated principal balance for each vintage x the expected future loss rate. For example, assuming the originated balance of Q2 2017 loans was $17 million, the related allocation of the ALLL would be $17 million x 0.95% = $161,500.

Like the cumulative loss rate methodology, this calculation only tells you what the expected future losses might be based on historical loss rates. Additional analysis of Q factors will be needed, and adjustments will be made to the expected future vintage loss rates (e.g., the shaded loss rates in Table 3) and/or more broadly to the final estimated ALLL for the loan pool.

## Methodology pros and cons

The vintage analysis has been discussed as a potential CECL methodology for several years because it is a relatively simple methodology that can provide information about when losses are historically incurred after the loans are originated. The analysis uses data already collected by most financial institutions in their loan trial balance systems and/or existing ALLL models, including:

- Loan origination date.
- Originated loan balance.
- The date and amount of loan losses (charge-offs net of recoveries).
- The related loan that incurred each loan loss.

Although the necessary data was collected at one point or another, current systems may not make it easy to gather the data for the vintage analysis. You may need to obtain loan origination dates and balances from multiple fields (e.g., origination date or last renewal date). Loan charge-off information may be stored in a spreadsheet and will need to be merged with loan origination information. Employees may have to manually look up loan account numbers to match loan origination information to the loan losses. As a result, you will likely have to make several changes to current systems to effectively and efficiently gather the needed vintage analysis data.

A vintage analysis will provide more precise information about historical loan rates, but it is still heavily reliant on historical loan losses. Consequently, any changes in current or future expected conditions will need to be adjusted in the analysis through reasonable and supportable Q factor adjustments.

In addition, generating a vintage analysis will require the use of database modeling, which may mean users will have to become familiar with new programs or database functions like pivot tables in spreadsheet programs. Many people are not familiar with these programs and/or functions, so employees will likely need additional training.

Finally, because the vintage analysis provides management with more precise information about historical loss rates when compared to a cumulative loss rate methodology, it will generally result in a lower ALLL estimate, but other methodologies discussed further along in this white paper could reduce the CECL estimate even further.

| Pros | Cons |
| --- | --- |
| Relatively easy initial CECL loss rate calculation | Will require database modeling techniques |
| Needed data should already be captured in existing systems | Analysis of Q factors will still be critical |
| Information may be used by public business entities when completing the required vintage footnote disclosures | Will likely result in a higher CECL ALLL balance than more precise methodologies |

## Who should use the methodology?

Vintage analysis is often discussed by institutions that are considering an internal CECL methodology because it is relatively easy to generate and maintain, it uses data that is already accumulated and it provides some level of precision that can help institutions come up with a reasonable and supportable forecast of future expected losses. However, you should still consider the extent of the qualitative analysis that must accompany a vintage analysis and whether you have people capable of utilizing the required database programs or functions.

# CECL methodology: Migration analysis

Migration analysis has been used for years by many different institutions to evaluate changes in the credit quality of a loan portfolio.

The analysis tracks the changes in a credit quality factor (e.g., risk rating or credit score) of a pool of loans over a period of time to see whether the credit quality of the loan pool has improved or worsened. It also provides information about the ultimate credit losses realized and when they were realized. This information can help you make better decisions when managing the credit risk of the pool.

Under the new accounting standard, you can use the information obtained in a migration analysis to estimate expected loan losses in the loan pool. However, you might need to collect additional data to use this methodology.

## How it works

A migration analysis can be completed a number of different ways. You may use the origination date and balance of a loan pool or the outstanding balance of a loan pool at a point in time. The analysis may track the loans through their maturity or through a cutoff date. You may use the entire population of the pool or just a subset. The complexity of the analysis can vary significantly based on these and other choices.

A fairly simple migration analysis could still provide a great deal of information for a CECL methodology. The simplest migration analysis would track the credit quality factor of a pool of loans from one date to a second date. This is very similar to the cumulative loss rate methodology, except that the analysis disaggregates the loan pool by the credit quality factor.

For example, assume a commercial real estate loan pool had an outstanding balance of $175 million on December 31, 2021. This pool is made up of three-year and five-year balloon notes. Since the term of the loan pool is five years, the migration analysis will start on December 31, 2016. As of December 31, 2016, the pool is $100 million, and you assign risk ratings to each loan as summarized in Table 4.

**Table 4**.

| Risk rating | Balance 12/31/2016 (000s) |
|---|---|
| 1 | $ 0 |
| 2 | 5,000 |
| 3 | 35,000 |
| 4 | 25,000 |
| 5 | 15,000 |
| 6 | 13,000 |
| 7 | 7,000 |
| 8 | 0 |
| **Total** | **$ 100,000** |

**Table 5**.

| Risk rating | Balance 12/31/2016 (000s) | Pool losses (000s) | Loss rate | Balance 12/31/2021 (000s) | Expected losses (000s) |
|---|---|---|---|---|---|
| 1 | $ 0 | $ 0 | 0.00% | $ 0 | $ 0 |
| 2 | 5,000 | 0 | 0.00% | 20,000 | 0 |
| 3 | 35,000 | 25 | 0.07% | 90,000 | 63 |
| 4 | 25,000 | 72 | 0.29% | 35,000 | 102 |
| 5 | 15,000 | 97 | 0.65% | 22,000 | 143 |
| 6 | 13,000 | 889 | 6.84% | 8,000 | 547 |
| 7 | 7,000 | 1,550 | 22.14% | 0 | 0 |
| 8 | 0 | 0 | 0.00% | 0 | 0 |
| **Totals** | **$ 100,000** | **$ 2,633** | **2.63%** | **$ 175,000** | **$ 855** |

You then track all of the losses for this loan pool over the next five years and prepare a simple migration analysis summarized in Table 5.

The CECL loss rate on December 31, 2021, is only 0.49% ($855,000 / $175 million) compared to the December 31, 2016, loss rate of 2.63%. The loss rate decreased because the credit quality of the loan pool improved over the five-year period. Since the analysis is disaggregated by the credit quality factors (in this case, risk rating), changes in the balance of each risk rating category are automatically incorporated into the migration analysis.

Like the previous CECL methodologies discussed, this calculation only tells you what the expected future losses may be based on historical loss rates. It does have the advantage of automatically updating the CECL loss rate for current credit quality conditions; however, additional analysis of Q factors will be needed to estimate the impact of other current and forecasted conditions.

## Methodology pros and cons

Unlike the cumulative loss rate methodology and vintage analysis, migration analysis can provide information about changes in a loan pool's credit quality — a critical factor when trying to estimate future expected credit losses. It can be a fairly simple analysis or a complex model depending on the precision you're looking for.

To use migration analysis, though, you must track changes in the credit quality factor selected. Institutions that do not currently collect this data will have to implement brand-new systems and processes to gather, store, update and analyze the credit quality factor for each loan in the pool. Institutions that already collect this data may nevertheless need to implement certain internal controls to help ensure the data is accurate and updated in a timely manner. These institutions may also consider changes to existing data collection systems to make the analysis more efficient.

A migration analysis will provide information about changes in credit quality of the loan portfolio, but you'll need to consider other changes in current or future expected conditions in the analysis through reasonable and supportable Q factor adjustments. Similar to a vintage analysis, generating a migration analysis will require the use of database modeling. The analysis generally results in a lower ALLL estimate than a cumulative loss rate or vintage loss rate model, yet other methodologies further along in this white paper could reduce the CECL estimate even further.



| Pros | Cons |
|---|---|
| A relatively easy CECL methodology that could be prepared internally | Will require database modeling techniques |
| Level of precision increases over simpler models | May need to implement a new system for tracking the credit quality factor and/or internal controls to help ensure accuracy of the data |
| Specifically incorporates information regarding changes in credit quality, a critical qualitative component of a CECL methodology | Will likely result in a higher CECL ALLL balance than more precise methodologies |

### Who should use the methodology?

A migration analysis can be a relatively simple model that provides more information about changes in the credit quality of the loan pool. However, it may require new systems and internal controls to gather and track changes to the credit quality factor. You must also determine whether you have people capable of using the required database programs or functions necessary to complete a migration analysis.

# CECL methodology: Probability of default

The probability of default methodology is a relatively simple methodology in concept since it only requires three inputs to estimate lifetime losses. The challenging part of the methodology is calculating each of these inputs.

## How it works

In a probability of default methodology, you must calculate these three variables:

**1. Probability of default (PD):** First, you need to define what a default is. Generally, this will be a past-due cutoff (for example, 90 days past due). Then you must calculate the probability a loan in the pool defaults. This will be initially based on historical performance of the pool and may be adjusted for current and/or forecasted changes in the pool.

**2. Loss given default rate (LGD):** Using historical information about loans that defaulted, you must determine the expected loss rate if a loan defaults. Like the probability of default, you may directly adjust the loss given default rate for current and/or forecasted changes.

**3. Exposure (E):** Finally, you must estimate what the principal balance of the loan will be when a loan defaults.

Estimating each of these variables will take the most work and may require some statistical analysis of historical information. Once these variables are determined, the expected lifetime loss is simply the result of multiplying them together: PD x LGD x E. For instance, let's assume the following inputs:

- PD = 5%
- LGD = 30%
- E = $10 million

In this example, the estimated CECL loss is 5% x 30% x $10 million = $150,000.

Ideally, each of these three variables will be adjusted for current and forecasted changes individually. For example, based on historical cycles, you may find that a 1% increase in regional unemployment may result in a 3% increase in the probability of default. If you're forecasting a 0.5% increase in unemployment for the next year, the PD variable in the previous example could be adjusted to 6.5%.

Another example might be that you determine the loss given default rate increases by 3% for every 2% decline in collateral prices. If you expect collateral prices to decline by 10% in the next year, the LGD input would be adjusted to 45%. These qualitative adjustments for current and forecasted changes will have to be supported in the same way the three inputs to the methodology are supported.

## Methodology pros and cons

The key advantage of probability of default over other methodologies is that it is usually more precise since it relies on more quantitative information. Even qualitative factors for current and forecasted changes are typically based on historical data, and these qualitative factors can be reflected directly in the model as previously noted rather than being "added on" to the quantitative part as in other methodologies. All of this reduces reliance on more subjective factors and should result in a smaller CECL allowance for credit losses than other methodologies.

However, with this added precision comes added work. You will need more data to be able to accurately estimate the three inputs to the model. Additional data will be needed to determine whether and how economic factors affect the variables so they can be adjusted for current and forecasted changes. And all of these calculations will probably require some statistical analysis, which will likely require specialized software.

| Pros | Cons |
|---|---|
| Very precise methodology that will usually result in a lower CECL allowance for credit losses | Will require more data to calculate the key variables and the qualitative adjustments |
| Qualitative factors can be directly applied to the methodology's inputs, further "fine tuning" the resulting estimate | These calculations will probably require statistical analysis to accurately determine the key inputs, which will likely require specialized software |

## Who should use the methodology?

The probability of default methodology will generally provide a lower CECL allowance for credit losses over other methodologies because it uses more quantitative information and relies less on subjective analysis. This comes with the cost of having to accumulate more data and using statistical analysis to calculate the key inputs and qualitative adjustments in the methodology. However, the cost of utilizing probability of default may be recouped by being able to utilize additional capital not tied up in a CECL allowance for credit losses.

# CECL methodology: Discounted cash flow

Financial institutions are probably familiar with the discounted cash flow method since it's often used to measure impairment of troubled debt restructurings. Most institutions will continue to use this method for individual impairment calculations that are not collateral dependent. However, applying this methodology to a pool of loans can be easier said than done.

## How it works

In a discounted cash flow calculation, you must project out the cash flows expected to be received over the life of each loan in a pool. This calculation requires several inputs that are based on historical data and/or expected forecasts. Most models will include the following inputs:

- Maturity date or remaining term to maturity
- Payment amount
- Interest rate
- Prepayment speed
- Constant default rate (probability a loan in the pool defaults)
- Loss given default rate (the expected loss rate if a loan defaults)
- Recovery delay (estimated time between the loss confirmation and amounts expected to be recovered; for example, from the sale of underlying collateral)
- Discount rate (the rate at which expected cash flows are discounted back to present value, which is generally the effective yield of the loan)

Some of these variables can be readily obtained from your loan system, but others will require a lot of historical data and analysis. You can adjust applicable inputs directly in the model for current and forecasted changes. For instance, if you forecast a change in interest rates that will affect prepayment speed or a change in collateral values that will affect loss given default rates and/or recovery delay, you can adjust these inputs for the anticipated effects.

Once you determine the variables, some computing power is required to schedule out the estimated cash flows for each loan and discount those cash flows. Because of the needed data, analysis and computations for each loan in a pool, institutions that want to use this methodology will need to obtain specialized software.

## Methodology pros and cons

The discounted cash flow methodology is likely the most precise CECL methodology because it uses a number of quantitative inputs, and each of those variables can be adjusted for current and forecasted conditions, thereby reducing the need for more subjective and less precise factors.

In addition, this is the only methodology that discounts estimated future losses to present value. Consequently, this methodology should result in the smallest estimate of credit losses relative to other CECL methodologies.

However, a lot of work is needed to complete this analysis. Institutions will need to gather historical data and perform significant analysis to determine the key variables in the model. You'll need additional data to adjust the inputs for current and forecasted changes in those inputs. As a result, you will probably need to obtain specialized software to complete the analysis in an efficient manner on a regular basis.

| Pros | Cons |
|---|---|
| The only methodology that discounts estimated losses, resulting in the lowest CECL allowance for credit losses relative to other CECL methodologies | Will require the most data and analysis to calculate the key variables and the qualitative adjustments |
| Qualitative factors can be directly applied to the inputs in the methodology, further "fine tuning" the resulting estimate | These calculations will probably require specialized software to complete the analysis in an efficient manner |

## Who should use the methodology?

The discounted cash flow methodology will result in the lowest possible CECL allowance for credit losses in almost all cases because it uses the most quantitative information (relies less on subjective analysis) and discounts those losses to their present value.

Unfortunately, institutions that use this methodology will have to gather a lot of data, perform a significant amount of analysis and prepare a not-so-simple calculation for each loan in the pool. However, the cost of preparing a discounted cash flow model may be recouped by being able to use additional capital not tied up in a CECL allowance for credit losses.

# CECL governance

No matter the methodology you choose, you will have to spend time and effort supporting more variables, inputs and assumptions to determine the appropriate allowance for loan losses. Because this process will require more significant management estimates, active monitoring and evaluation by your board of directors will be more important than ever.

Given the significance of this transition, the board should actively monitor your institution's progress toward CECL implementation. The board may choose to create a committee just for this purpose. At a minimum, the board should hold management accountable for developing an action plan and working toward each applicable milestone.

## Internal controls

As processes change to produce the new estimate of expected losses, internal controls will also have to change to, at a minimum:

- Verify the completeness and accuracy of the underlying data used.
- Verify the accuracy of the data when it is transferred to the CECL model.
- Verify judgments and estimates are properly supported.
- Verify the accuracy and reasonableness of the reported allowance for loan losses, including appropriate disclosures.

It is the board's responsibility to monitor these and other internal controls to help ensure the allowance for loan losses is accurate, reasonable and supportable. This is especially important for CECL because of the significance of the new estimate.

## Model risk management

The board will have a significant role in overseeing the CECL methodology and model after it's developed and implemented. The new CECL model may be maintained internally or by a third party. It may be relatively simple or fairly complex. Whatever the case, it will be more significant than current ALL models used today.

Consequently, it will be vital for the board to verify policies and procedures are in place to mitigate risks inherent in the model, which might include:

- Inaccurate data.
- Management bias.
- Calculation error.
- Unreasonable and/or unsupportable assumptions.
- Insufficient validation of results.

The Federal Reserve Board and the Office of the Comptroller of the Currency have issued Supervisory Guidance on Model Risk Management (FRB SR 11-7 and OCC 2011-12) that details various model risk management considerations for institutions. The board should address these and other risks that will arise with the new CECL model during and after CECL implementation.

## Concluding thoughts

Although management will be responsible for the design and implementation of CECL methodologies and loan losses estimates, the board should take an active role in monitoring the process and holding management accountable for the transition.

The effective date is coming fast. It will be critical that your institution creates and follows an action plan, dedicates resources to the process, and ensures your management team makes this a priority so the transition can go as smoothly as possible.

## Cross the CECL finish line with Wipfli

Our experienced professionals are ready help you understand CECL's requirements, evaluate models, manage data storage and transfer, implement and test your CECL methodology and stay on track through the whole process. We are here to help you implement CECL before the January 2023 deadline.
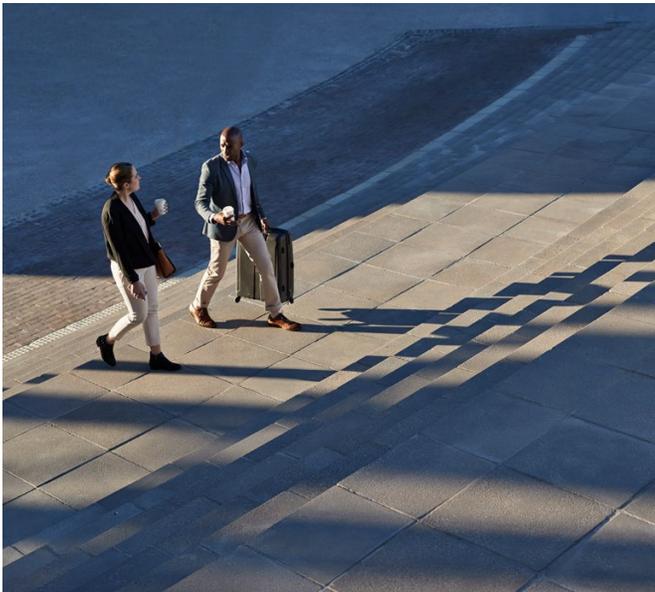
## Let our team assist you with:

- Readiness assessments
- Project management and implementation plans
- CECL modeling
- Data storage and data transfer assessments
- Vendor solution evaluations
- Model validations
- Accounting and financial reporting assistance
- Training and education

Learn more about how we can help your institution implement CECL on our [CECL services page](#).

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