Simple Interest Isn't Simple After All – Part 1

THOUGHT LEADERSHIP

CARLETON, INC. | 1251 N. Eddy, Suite 202, South Bend, IN 46617

Carleton
Consumer Lending Software

Thought Leadership

The Complications of "Simple Interest"

One of the significant evolutions in the consumer credit industry over the last 20 years has been the movement from creditor's offering precomputed contracts to those employing "simple interest." This trend has significantly altered the calculation characteristics on resulting credit disclosures. "Simple interest" is far from simple—resulting in unexpected complications and misunderstandings in consumer lending.

What is simple interest?

For Carleton, the term "simple interest" can be defined by transactions which contain the following characteristics:

- ✓ Interest bearing in nature
- ✓ Incorporates daily interest accrual
- ✓ Discloses an odd final payment amount

Simple interest's biggest impact can be seen when prospective interest charges accrue on the actual calendar days elapsed between scheduled payment dates. This is a departure from the historical "periodic" interest charges that accompanied precomputed transactions. For the purpose of interest accrual, periodic interest considers all months equal and interest accrues at 1/12 the stated annual interest rate. Periodic interest does not recognize that months have differing numbers of days.

Why is that important? Because merely looking at the stated interest rate leaves a skewed picture. The rate is merely one component of the process. The application of the rate to accrue interest is often the overlooked key parameter. Simply put, this is the reason we see such confusion in the credit industry when the contract interest rate and Truth in Lending Act ("TILA") annual percentage rate ("APR") are not the same value.

Key Considerations Regarding Simple Interest

1) **The APR and the Interest Rate involve two separate computations, often based on different parameters.**
2) **The Interest Rate and the APR are implemented at different times—the Interest Rate is an applied rate; the APR is a derived rate.**

Urban Myth #1

MYTH: If there are no fees included in the finance charge, the interest rate and APR are the same.

This misconception is the result of conclusions drawn from an earlier era, passed down within institutions as fact but based on symptoms rather than causes.

The APR is derived using a different time counting and calculation parameters than what is used to compute the payment and interest with the Interest Rate. The APR and the Interest Rate are two separate computations, often based on different parameters.

Before the advent of today's computing capacity, speed, and efficiency, most payment computing routines calculated payments with a derivation of a standard annuity formula. This can be viewed as a rather "simplistic" approach since all months were considered to accrue charges at 1/12 of the annual rate. It didn't matter if the contract was executed in March or November, the resulting disclosures would be the same.

Today, dates matter.

(1) Computing an APR

Regulation Z is very clear in stating, that an accurate and precise APR disclosure is not merely a nominal value. Rather, Regulation Z specifies that "[t]he annual percentage rate *shall be determined…"*[1], meaning it must be determined in a specified manner. For the first 13 years of Truth in Lending, the general concept of the APR was promoted without any guidance on how to compute the value. What the industry and regulators realized sometime after 1969 is what Carleton deals with daily—there are a host of granular details which can provide for distinct yield calculations even on the same set of data. Thus, the Federal Reserve Board and industry experts were assembled to create Appendix J to Regulation Z. Appendix J was the empirical measuring stick to determine the "right APR." By far the most widely used of the two methods for APR disclosure is the actuarial method in Appendix J. There are 15 pages of definitions, variables, and algorithms in Appendix J that provide guidance on the proper way to compute an accurate actuarial method rate.

[1] 12 CFR Part 1026 (Regulation Z), §1026.22(a).

One of the core parameters for computing by the actuarial method is the use of the "Federal Calendar" to measure time periods accruing finance charges.[2]

After 1969, the APR became entrenched as the most visible and critical credit disclosure for consumer credit. Since interest accrual is a business decision made by a creditor, there have always been a wide array of methods in the United States' consumer finance market. The idea behind Regulation Z's use of an APR calculated by the "Federal Calendar" was to "level the playing field" and—regardless of a creditor's choices on interest accrual—present the consumer with a value that allowed for true comparison shopping.

Even though the APR's only true purpose was as a barometer/measuring stick for consumers to comparison shop, over time it evolved into being used as an operational tool utilized in core servicing systems.

The key point in this discussion is that an actuarial method APR is locked into utilizing the Federal Calendar. It is a mandate, not an option.

(2) Applying a Contract Interest Rate

Historically, interest was computed by the same, more or less, "method" that regulations employ in Appendix J. One significant difference is that interest computations avoid compounding and the Appendix J algorithm contains inherent compounding of charge. Like the actuarial method APR, time periods were recognized as 1/12 of a year.[3] Consequently, when interest and APR computations use the same math, the results are very similar, and sometimes identical. Thus, the myth that the APR "should be the same as the interest rate" was born. The industry saw an APR in the "Fed Box" that was the same as the contract rate of interest and now that phenomenon has perpetuated itself through several generations in the credit industry.

When the writers of Regulation Z convened to craft a standard for computing the APR, it is understandable that the committee drew on their experiences computing interest in the industry. Daily charges had their proponents, hence the United States Rule option for the APR, but in the end the periodic 1/12 approach won out.

Before the advent of the PC, things had to be simpler. Most creditors did not have access to a centralized computer system, so they employed the use of "factors" to compute everything from payment amounts to credit insurance premiums to refund amounts. By necessity these factors

[2] Note: you'll not find the term "Federal Calendar" anywhere in Regulation Z. That is a moniker to identify a set of parameters that long existed in industry interest-accrual calendars.

[3] 1/12 of a year is sometimes referred to as a "360-day calendar" because it has the same effect mathematically as applying 1/12 for a calendar month. However, a true 360-day calendar is a mathematical trick to arbitrarily define a year as 12 months containing 30 days each.

are generic and work from the standpoint that all time periods are equal. There were no irregularities in either time periods or dollar amounts for any of the values involved.

When computers started entering the scene to aid in computing credit disclosures, the software that developed used algebraic formulae grounded in the same simplistic view which created factors. The daily interest concept and its complexities simply wasn't feasible.

When "simple interest"[4] began to draw traction in the early 1990's it turned the calculation industry on its head. Gone were all the efficiencies of simple programmed code to arrive at payment amounts for disclosure. A formula will no longer suffice to get truly accurate amortizing payments and disclosure results.

The APR is "derived", rather than "applied".[5]

Once the payment and interest is computed using the stated Interest Rate, the APR is *then* computed to assess the cost of credit as a yearly percentage. It is critical to understand that the APR is a "back end" number that is computed as defined in Appendix J using the disclosure values derived from using the stated Interest Rate.. Even 50 years after the inception of TILA, there is a segment of the industry who falsely believes the payment schedule is a result of the APR and not vice versa.

The contract interest rate is the *applied* rate used in the computation of the TILA disclosure values other than the APR. . The TILA APR is a *derived* rate generated from the computations defined in Reg. Z, Appendix J.[6]

When a credit contract employs simple interest, the interest accrual from May 1st to June 1st is viewed as 31 calendar days. Each day of interest is valued at 1/365 of the annual rate. The interest charge for this period is 31/365 of the annual contract interest rate multiplied with the balance.

The TILA APR then measures that dollar charge for a time period of one month or 1/12 of a year.

$$31/365 = .084931$$

$$1/12 = .083333$$

[4] "Simple interest" also known as "daily interest accrual."
[5] Ralph J. Rohner and Fred H. Miller, "Truth in Lending," ©2000 American Bar Association, p. 187 ("The APR is "derived," rather than "applied.")
[6] With the inclusion of any other charges included in the TILA finance charge—the finance charge is nearly always primarily made up of interest charges.

What is the point of this example? 31/365 is not equivalent to 1/12; so why would one expect the APR to be the same number as the contract interest rate?

That fact simply confirms the original intent of Truth in Lending. To make the APR the empirical measuring stick, it must always be computed using the rules for earning finance charge as defined in Reg Z, Appendix J regardless of how the creditor computes interest charges.

Today's prevalent use of simple interest complicates the comparison of an APR and interest rates. No longer is it safe to assume that when there are no fees, the interest rate and the APR are equal.

The Rest of the Story: Coming Up in Part 2

In Part 2 of this Thought Leadership series, Carleton explains how simple interest transactions have complicated previously held beliefs about consumer credit computations and discuss **Additional Urban Myths** about Simple Interest are uncovered and clarified.