

Simple Interest Isn't Simple After All

Jeff Buysse

Carleton, Inc.

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MATH

Mental Abuse to Humans





The Driving Force of this Issue

Input Information	
Interest rate	10.0000%
Loan term in months	12
Payments per year	12 - Monthly
Closing date	3/17/2019
Interest start date	3/17/2019
First payment date	4/17/2019
Maturity date	3/17/2020
Calendar Days	31
Fed Calendar Mos	1
Fed Calendar Days	0
Actual/365;366 (Per Diem)	
State	Indiana

Truth In Lending Information	
Annual Percentage Rate	10.052%
Amount Financed	\$1,000.00
Finance Charge	\$55.28
Total of Payments	\$1,055.28

Payment Schedule	
12 payments at	\$87.94

Amount Financed Itemization	
Loan Amount	\$1,000.00
Amount Financed	\$1,000.00
Total Principal	\$1,000.00

Finance Charge Itemization	
Interest	\$55.28
Finance Charge	\$55.28



Urban Myths of the Consumer Credit Industry

- If there are no fees, the TILA APR is the same as the interest rate
- There is one “right” payment for a set of loan data
- There are only two accrual calendars; 360 day year and a 365 day year.



Two Basic Calendars to accrue Interest

- A payment is derived/computed according to the rules laid out for interest accrual by the creditor. P&I Payment
 - 1) Interest for a month is $1/12$ of year: (360-day year, sort of....)
 - 2) Interest is recognized on the actual calendar days between scheduled payments: (365-day year)



A 10% interest rate for a \$1,000 loan for 12 months

87.91588723 (Full Precision)

This value represents the “Math” involved in computing the present value to find the payment amount.

- If the payment is truncated (low rounded) to \$87.91, the APR is 9.9873415%
- If the payment is high rounded to \$87.92, the APR is 10.0088428%



The contract interest rate is an “**applied rate**”.

The TILA APR is an “**effective rate**”.

MEANING:

The Annual Percentage Rate is the **result** of the calculations to arrive at a payment.



So, What constitutes “simple interest”?

- ✓ Interest bearing transaction in nature
- ✓ Daily Interest Accrual
- ✓ Odd Last Payment Amount Disclosed

Even with a “Precomputed” loan, we can use an add-on rate, a discount rate, or a simple interest rate to compute the payment.

Takeaway: Daily interest is not confined to interest bearing.



How does interest accrue on a credit transaction?

Historically two models:

1/12 (360-day year)

or

Daily Interest (365-day year)



Common terms used in the industry to describe the maximum charge allowed:

- ✓ Usury Cap
- ✓ Rate Cap
- ✓ APR Cap
- ✓ Max Rate Cap



Just the RATE is not enough.....

- ✓ **Loan Amount: \$5,000**
- ✓ **Rate: 25%**
- ✓ **# of Monthly Payments: 48...which is right?**

- \$165.90*
- **\$165.78**
- \$165.97
- \$165.85
- \$166.87
- \$166.94
- \$165.91



The majority of statutory maximum charge provisions regulate the dollar of charge at the published rate and not merely the rate.

The **APPLICATION** of the published rate becomes a key component in determining compliance.



Indiana Credit Code

Ind. Code 24-4.5-2-201 Credit service charge for consumer credit sales other than revolving charge accounts

Sec. 201. Credit Service Charge for Consumer Credit Sales other than Revolving Charge Accounts —

- (1) With respect to a consumer credit sale, other than a sale pursuant to a revolving charge account, a seller may contract for and receive a credit service charge not exceeding that permitted by this section.
- (2) The credit service charge, calculated according to the actuarial method, may not exceed the equivalent of the greater of:
 - (a) the total of:
 - (i) thirty-six percent (36%) per year on that part of the unpaid balances of the amount financed which is two thousand dollars (\$2,000) or less;
 - (ii) twenty-one percent (21%) per year on that part of the unpaid balances of the amount financed which is more than two thousand dollars (\$2,000) but does not exceed four thousand dollars (\$4,000); and
 - (iii) fifteen percent (15%) per year on that part of the unpaid balances of the amount financed which is more than four thousand dollars (\$4,000); or
 - (b) twenty-five percent (25%) per year on the unpaid balances of the amount financed.

Indiana Credit Code

Differences in the lengths of months are disregarded and a day may be counted as one-thirtieth ($1/30$) of a month.

- ✓ Each month accrues charge as $1/12$ of the annual rate.
- ✓ Day in excess of 1 month accrue charge at $1/360$ of the annual rate.



Periodic vs. Daily Interest Accrual

A) Accrual 1/12

Input Information	
Interest rate	25.0000%
Loan term in months	48
Payments per year	12 - Monthly
Closing date	3/17/2019
Interest start date	3/17/2019
First payment date	4/17/2019
Maturity date	3/17/2023
Whole Mos	1
Odd Days	0
Calendar Days	31
Fed Calendar Mos	1
Fed Calendar Days	0
Month and Days/365	
State	Indiana

Truth In Lending Information	
Annual Percentage Rate	24.998%
Amount Financed	\$5,000.00
Finance Charge	\$2,957.44
Total of Payments	\$7,957.44

Payment Schedule	
48 payments at	\$165.78

Amount Financed Itemization	
Loan Amount	\$5,000.00
Amount Financed	\$5,000.00
Total Principal	\$5,000.00

Finance Charge Itemization	
Interest	\$2,957.44
Finance Charge	\$2,957.44

B) Accrual Actual Days

Input Information	
Interest rate	25.0000%
Loan term in months	48
Payments per year	12 - Monthly
Closing date	3/17/2019
Interest start date	3/17/2019
First payment date	4/17/2019
Maturity date	3/17/2023
Calendar Days	31
Fed Calendar Mos	1
Fed Calendar Days	0
Actual/365;366 (Per Diem)	
State	Indiana

Truth In Lending Information	
Annual Percentage Rate	25.045%
Amount Financed	\$5,000.00
Finance Charge	\$2,963.68
Total of Payments	\$7,963.68

Payment Schedule	
48 payments at	\$165.91

Amount Financed Itemization	
Loan Amount	\$5,000.00
Amount Financed	\$5,000.00
Total Principal	\$5,000.00

Finance Charge Itemization	
Interest	\$2,963.68
Finance Charge	\$2,963.68



Example B

- ✓ The rate applied was 25% but on a **daily** charge basis.
- ✓ The TILA APR (effective rate) measured the \$2,963.68 in finance charge as accruing on a **periodic (1/12)** basis.
- ✓ The result is an effective annual rate of 25.045%.

The only difference is the use of a different accrual calendar!



Contract Rate? APR? Difference?!

- ✓ Nominal contract interest rate of 25%.
- ✓ The effective rate of charge (TILA APR) of 25.045% is due solely to the different “calendars” applied.

Simply comparing rates can be an inadequate measure of compliance.



North Carolina General Statutes

N.C. Gen. Stat. § 25A-15. Finance charge rates for consumer credit installment sale contracts.

(a) With respect to a consumer credit installment sale contract, a seller may contract for and receive a finance charge not exceeding that permitted by this section. For the purposes of this section, the finance charge rates are the rates that are required to be disclosed by the Consumer Credit Protection Act.

N.C. Gen. Stat. § 25A-13. "Consumer Credit Protection Act" defined.

"Consumer Credit Protection Act" means the Consumer Credit Protection Act, an act of Congress of May 29, 1968, as amended (Public Law 90-321; 82 Stat. 146; 15 U.S.C. 1601 et seq.), and regulations and rulings promulgated thereunder. (1971, c. 796, s. 1.)



If the maximum rate is the rate “required” by the Consumer Credit Protection Act (TILA), how many possible solutions exist?

Regulation Z states:

“The annual percentage rate shall be determined in accordance with either the actuarial method or the United States Rule method.”

- Actuarial Method – Mandate for “Federal Calendar” (1/12)
- United States Rule Method - ???

With Daily Interest, Dates Matter



EXHIBIT D

The effect of the "Daily Profile" on the determination of finance charge, monthly regular payment and final payment amount

Amount Financed: \$5,000.00
 Interest Rate: 21% Simple interest
 Number of Payments: 36

High Rounded Regular Monthly Payment

Recognizing the Actual Days¹ between each scheduled payment

Contract Date	1st Pmt Date	Finance Charge	Monthly Payment
06/01/95	07/01/95	\$1782.59	\$188.41
07/01/95	08/01/95	\$1784.18	\$188.46
08/01/95	09/01/95	\$1781.98	\$188.40
09/01/95	10/01/95	\$1779.78	\$188.33
10/01/95	11/01/95	\$1781.31	\$188.38
11/01/95	12/01/95	\$1779.10	\$188.31
12/01/95	01/01/96	\$1780.62	\$188.36
01/01/96	02/01/96	\$1778.41	\$188.29
02/01/96	03/01/96	\$1776.01	\$188.23
03/01/96	04/01/96	\$1785.37	\$188.49
04/01/96	05/01/96	\$1783.12	\$188.43
05/01/96	06/01/96	\$1784.85	\$188.47

¹ The effects of leap year are ignored

Largest Finance Charge: \$1785.37
 Smallest Finance Charge: \$1776.01

Maximum Range of Deviation: \$9.23



Originating Months where Daily exceeds Monthly Accrual ($APR > \text{Interest Rate}$)

March

April

May

June

July

August

Originating Months where Monthly exceeds Daily Accrual ($APR < \text{Interest Rate}$)

January

February

September

October

November

December