

## EXAMPLE 4.2 The Credit Card Offer Case

As described in the introduction to this case, Dave has been offered what is described as a credit card deal that should not be refused—at least that is what the Chase Bank offer letter implies. The balance transfer APR interest rate of 14.24% is an annual rate, with no compounding period mentioned. Therefore, it follows the format of the third entry in Table 4–1, that is, interest rate stated, no CP stated. Therefore, we should conclude that the CP is 1 year, the same as the annual interest period of the APR. However, as Dave and we all know, credit card payments are required monthly.

- (a) First, determine the effective interest rates for *compounding periods of 1 year and 1 month* so Dave knows some effective rates he might be paying when he transfers the \$1000 balance from his current card.
- (b) Second, assume that immediately after he accepts the card and completes the \$1000 transfer, Dave gets a bill that is due 1 month later. What is the amount of the total balance he owes?

Now, Dave looks a little closer at the fine print of the “pricing information” sheet and discovers a small-print statement that Chase Bank uses the daily balance method (including new transactions) to determine the balance used to calculate the interest due at payment time.

- (c) We will reserve the implication of this new finding until later, but for now help Dave by determining the *effective daily interest rate* that may be used to calculate interest due at the end of 1 month, provided the CP is 1 day.

### Solution

- (a) The interest period is 1 year. Apply Equation [4.2] for both CP values of 1 year ( $m = 1$  compounding period per year) and 1 month ( $m = 12$  compounding periods per year).

CP of year:      Effective rate per year =  $14.24/1 = 14.24\%$

CP of month:      Effective rate per month =  $14.24/12 = 1.187\%$

- (b) The interest will be at the monthly effective rate, plus the balance transfer fee of 3%.

$$\begin{aligned}\text{Amount owed after 1 month} &= 1000 + 1000(0.01187) + 0.03(1000) \\ &= 1000 + 11.87 + 30 \\ &= \$1041.87\end{aligned}$$

Including the \$30 fee, this represents an interest rate of  $(41.87/1000)(100\%) = 4.187\%$  for only the 1-month period.

- (c) Again apply Equation [4.2], now with  $m = 365$  compounding periods per year.

CP of day:      Effective rate per day =  $14.24/365 = 0.039\%$