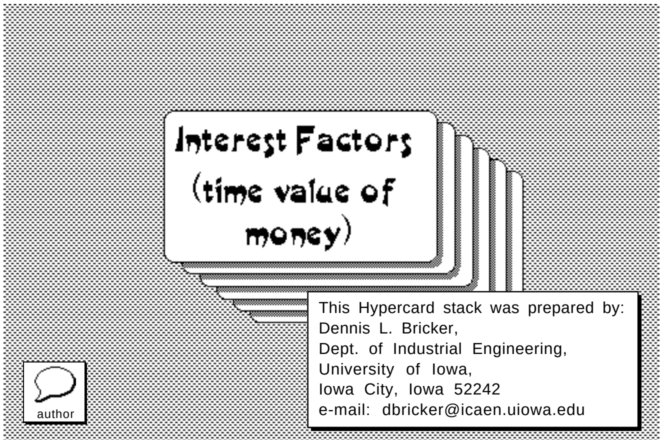

Single-payment factors

Let P = original investment
r = rate of interest per period
n = number of periods
S_n = value of investment after n periods

Then $S_n = (1 + r)^n P$

$$\text{spcaf}(r,n) = (1 + r)^n$$

single-payment compound-amount factor

Conversely, a future payment of S_n has an equivalent present worth P,

$$P = (1 + r)^{-n} S_n$$

$$\text{sppwf}(r,n) = (1 + r)^{-n}$$

single-payment present - worth factor

Uniform Series of Payments

Consider a sequence of n uniform periodic payments, R, earning interest at rate r per period, compounded at the end of each period. Then the accumulated value after n periods is

$$S_n = \frac{(1 + r)^n - 1}{r} R$$

$$\text{uscaf}(r,n) = \frac{(1 + r)^n - 1}{r}$$

uniform - series compound - amount factor

Conversely,
the amount of each payment R required to accumulate a sum S after n periods at interest rate r is

$$R = \frac{r}{(1 + r)^n - 1} S_n$$

$$\text{sfdf}(r,n) = \frac{r}{(1 + r)^n - 1}$$

sinking - fund deposit factor

The sequence of n uniform payments, R, can also be expressed as a present worth P:

$$P = \frac{(1 + r)^n - 1}{r(1 + r)^n} R$$

$$\text{uspwf}(r,n) = \frac{(1 + r)^n - 1}{r(1 + r)^n}$$

uniform - series present - worth factor

Finally, expressing a present amount P as an equivalent sequence of n uniform payments R gives

$$R = \frac{r(1 + r)^n}{(1 + r)^n - 1} P$$

$$\text{crf}(r,n) = \frac{r(1 + r)^n}{(1 + r)^n - 1}$$

capital recovery factor

Summary:

Given	Find	by multiplying with the
P	S_n	single-payment compount-amout factor (spcaf)
S_n	P	single-payment present-worth factor (sppwf)
R	S_n	uniform-series compound-amount factor (uscaf)
S_n	R	sinking-fund deposit factor (sfdf)
R	P	uniform-series present-worth factor (uspwf)
P	R	capital-recovery factor (crf)