



ECONOMIC DATA | ST. LOUIS FED

FRED

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What Formulas are Used to Calculate Growth Rates?

Note that because FRED uses levels and rounded data as published by the source, calculations of percentage changes and/or growth rates in some series may not be identical to those in the original releases.

The following formulas are used:

Change: $x_t - x_{t-1}$

1

Change from Year Ago: $x_t - x_{t-n_obs_per_yr}$

2

Percent Change: $\left(\frac{x_t}{x_{t-1}} - 1\right) * 100$

3

Percent Change from Year Ago: $\left(\left(\frac{x_t}{x_{t-n_obs_per_yr}}\right) - 1\right) * 100$

4

Compounded Annual Rate of Change: $\left(\left(\frac{x_t}{x_{t-1}}\right)^{n_obs_per_yr} - 1\right) * 100$

5

Continuously Compounded Rate of Change: $(\ln(x_t) - \ln(x_{t-1})) * 100$

6

Continuously Compounded Annual Rate of Change:

$\left((\ln(x_t) - \ln(x_{t-1})) * 100\right) * n_obs_per_yr$

7

Natural Log: $\ln(x_t)$

Notes:

' x_t ' is the value of series x at time period t.



'n_obs_per_yr' is the number of observations per year. The number of observations per year differs by frequency:

Daily, 260 (no values on weekends)

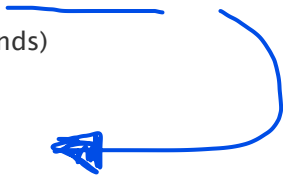
Annual, 1

Monthly, 12

Quarterly, 4

Biweekly, 26

Weekly, 52



'ln' represents the natural logarithm.

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