Real and Nominal Discount Rates (Fisher Equation)

Real discount rate from a nominal rate and inflation (or the reverse) by the Fisher equation, with the present worth of a future amount on both bases.

Method: Fisher relation of nominal and real rates

Input parameters

Unit system: SI

Parameter	Value	Unit
Nominal discount rate	9.0000	%
Inflation rate	4.0000	%
Years ahead	10.000	
Future amount in today's money (real)	1,000.0	

Calculated results

Parameter	Value	Unit
Real discount rate	4.8077	%
Simple approximation	5.0000	%
Future amount in money of the day (nominal)	1,480.2	
Present value (same on both bases)	625.27	

Notes for this case

- Fisher: (1 + i_n) = (1 + i_r)(1 + f). Discount real cash flows (today's prices) at the real rate and nominal cash flows (inflated) at the nominal rate; both give the same present value.

Formula and method

$$1+i_n=(1+i_r)(1+f),\quad PV=\frac{F(1+f)^N}{(1+i_n)^N}=\frac{F}{(1+i_r)^N}$$

Variables

i_n	Nominal discount rate	-
f	Inflation rate	-
N	Years ahead	-
F	Future amount in today's money (real)	-
i_r	Real discount rate	-
i_n-f	Simple approximation	-
F_n	Future amount in money of the day (nominal)	-
PV	Present value (same on both bases)	-

Method and standards

Fisher equation.

Assumptions and limits

- Constant rates.

References

Fisher relation of nominal and real rates

Report details

Report reference	FCC-8CVH-1D6F (the same inputs always give the same reference)
Generated	23 November 2026, 17:51 UTC
Calculator	Real and Nominal Discount Rates (Fisher Equation)
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/general/economics/real-nominal-discount-rate

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.