

From <https://www.wealthenabler.in/knowledge-center/financial-freedom-demystified/annualized-returns-vs-cagr/>

My comments: I do not understand why it introduces term “Annualized Returns” (with s at the end). Very confusing...

Annualized Returns or CAGR – Which one you should consider?

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Returns that our investments generate or have the potential to generate is an important aspect that we all should pay attention to, however, given the varied range of financial instruments or products, not all use the same yardstick to measure and/or project the returns.

Just because a financial product has returned an average of 15% a year over the specified period does not mean that your investments have actually grown by 15% year-over-year.

Correct measure to analyze return on investments having 1 year+ time-horizon is **Compounded Annual Growth Rate (CAGR)** though many a times it's been confused with **Annualized Returns**:

- Majority of Fixed Income products like Fixed deposits highlight and project only **Annualized returns** and not CAGR for 1 year+ duration.
- Different Terminology usage makes this even more confusing as you may find in various publicly available information “Annualized returns” terminology is used to represent actual CAGR returns.

By definition, Annualized Returns and Compounded Annual Growth Rate (CAGR) are not the same and represent two different views of return on investments.

Annualized Return (also referred as **Average Annualized returns**) is the average annual return on investment over a specified period of time and calculated as:

$$\text{Annualized Returns} = \text{Overall \% Gains} / \text{Number of years}$$

whereas, Compounded Annual Growth Rate (CAGR) is year-over-year growth rate of an investment over a specified period of time and calculated as:

$$\text{CAGR} = (\text{Ending Value} / \text{Beginning Value})^{(1 / \text{Number of years})} - 1$$

For example, if you have invested **1,00,000** and over period of 5 years the value of your initial investment has become **1,75,000** with overall % gains of 75% (1,75,000 – 1,00,000)

Annualized Returns = $75\% / 5 = 15\%$, whereas, $CAGR = (1,75,000 / 1,00,000)^{(1/5)} - 1 = 11.84\%$

Annualized returns can skew the truth and can be very misleading

To understand the difference better, let us consider some scenarios:

[Scenario 1]

Consider a situation of fixed Interest (% pa) which is compounded **quarterly** for fixed income products like Fixed Deposits.

<u>Growth of 1,00,000 with fixed Interest (% pa) over different time-horizon</u>				
Investment Duration	Interest	Maturity Value	Annualized Returns Feel good factor	CAGR Reality
1 Year	8.00%	1,08,243	8.24%	8.24%
3 Years	8.75%	1,29,650	9.88%	9.04%
5 Years	9.50%	1,59,911	11.98%	9.84%
10 Years	9.25%	2,49,544	14.95%	9.58%

Above table (without CAGR column) may sound very familiar to most as this is what is being typically projected for Fixed deposits.

[Scenario 2]

Consider a situation of a volatile asset class like equities with variable year-on-year returns

<u>Growth of 1,00,000 with variable year-on-year returns over 5 year investment time-horizon</u>		
Year	Yearly Growth (% pa)	Year-end Value
1 st Year	25%	1,25,000
2 nd Year	-14%	1,07,500
3 rd Year	55%	1,66,625
4 th Year	-42%	96,643
5 th Year	66%	1,60,427
Annualized Returns = 18%		
CAGR = 9.91%		

As you can see in both the above scenarios, **Annualized Returns** can be very misleading.

CAGR is certainly the right measure for considering return on investment and reflects the reality whereas **Annual returns** is more of a sales pitch or sort of a deception.

So next time you analyze return on investment look for CAGR and if returns are mentioned as Annualized Returns/Annualized Yield/Average Annualized Returns check if its just the terminology but are actually CAGR or they are just Annualized Returns as per above definition.