UPS vs NPS Calculator - User Guide

Yogesh Wadadekar

May 13, 2025

1 Introduction

This calculator helps compare the University Pension Scheme (UPS) with the National Pension Scheme (NPS) by estimating retirement benefits under both schemes. It takes into account current salary, growth rates, and existing NPS corpus to provide a comprehensive analysis.

2 Running the Calculator

You can run the calculator in two ways:

2.1 Browser Interface (Recommended)

1. Open the index.html file in a web browser
2. Fill in the values in the form or use the default values
3. Click the "Calculate Results" button to see the analysis

The browser interface provides a user-friendly form with:

- Clear sections for different types of inputs
- Pre-filled default values
- Instant results without needing to install Python
- Formatted output that's easy to read

2.2 Command Line Interface

Alternatively, you can use the Python command line interface:

1. Open a terminal
2. Navigate to the directory containing upsnpscalculator.py
3. Run: python upsnpscalculator.py

3 Input Parameters

The calculator will prompt for various inputs. You can press Enter to use the default values shown in brackets. Here are the parameters with their default values and explanations:

3.1 Basic Information

- Current Age [53]
- Retirement Age [60]
- Age when you joined Government service [28]
  Used to calculate total years of qualifying service.
- Current Annual (Basic + DA) in Lakhs [36.00]
  This is your current Basic Pay plus Dearness Allowance
- Annual Salary Growth Rate [7%]
  Historical average growth rate in government sector
- Current NPS Corpus in Lakhs [120.00]
  Your accumulated NPS amount so far
- Expected Years of Life After Retirement [20]
  Number of years employee is expected to live after retirement
- Additional Years Spouse May Live [10]
  Number of additional years spouse may live after employee's death

3.2 NPS Parameters

- Employee Contribution Rate [10%]
  Standard employee contribution rate as per government rules
- Employer Contribution Rate [14%]
  Current government contribution rate to NPS
- Expected Annual Return on NPS [9.5%]
  Conservative estimate based on historical NPS returns
- Annuity Conversion Rate without return of purchase price [7%]
  Default annuity rate used for pension conversion without return of purchase price

3.3 Post-Retirement Parameters

- Post-retirement UPS Pension Growth [5%]
  Based on historical DA increase patterns
- Return on Remaining NPS Corpus [8%]
  Expected return on the 60% lump sum amount if invested

4 Output Explanation

The calculator provides:

- Final basic salary at retirement
- Monthly pension under UPS scheme for:
  - Employee (Proportional to service, up to 50% of final basic salary if service is 25 years or more)
  - Spouse (60% of employee's pension after employee's death)
- UPS lump sum amount at retirement, calculated as 1/10th of the last drawn monthly basic pay (plus Dearness Allowance) for every completed six months of qualifying service.
- Projected value of the UPS lump sum if invested at the same post-tax rate as the NPS 60% lump sum.

- Yearly UPS return on investment (added to UPS pension for comparison)
- Total NPS corpus at retirement
- Monthly pension from NPS annuity (40% of corpus)
- Lump sum amount available (60% of corpus)
- Year-by-year analysis showing:
  - Separate phases for employee and spouse periods
  - UPS pension amount (reducing to 60% for spouse)
  - UPS lump sum return (added to UPS pension for comparison)
  - NPS annuity amount (remains constant for both phases)
  - **Yearly difference (UPS-NPS):** This is calculated as the difference between total UPS income (UPS pension + UPS lump sum return) and total NPS income (NPS annuity + NPS corpus return) for each year.
  - **Shortfall subtraction timing:** The shortfall (if any) is only subtracted from the NPS corpus at the end of each year, after the corpus has grown by the investment return for that year. This means that even if the NPS return is less than the UPS return, the corpus can increase in the initial years if the investment return is high enough, and the shortfall is not immediately subtracted each month but only once at year-end.
  - Interest earned on remaining corpus (NPS 60% lump sum)
  - Interest earned on UPS lump sum (if invested)
  - Remaining corpus balance
- Analysis of whether the corpus will last through both employee and spouse lifetimes. The corpus is considered perpetual if NPS annuity + NPS corpus return matches or exceeds UPS pension + UPS lump sum return.

5 Important Notes

- All monetary inputs (salary and corpus) are in lakhs for convenience
- Rates should be entered as decimals (e.g., 0.07 for 7%)
- UPS pension calculation:
  - Employee receives a pension proportional to their years of service. If service is 25 years or more, pension is 50% of final basic salary. Otherwise, it is (years of service / 25) * 50% of final basic salary.
  - Spouse receives 60% of employee's pension after employee's death
  - UPS pension grows at specified rate (default 5%) for both phases
- NPS features:
  - Only 40% of NPS corpus is mandatory for annuity purchase
  - Annuity amount remains constant for both employee and spouse
  - The remaining 60% lump sum can be invested to cover UPS-NPS difference
  - The calculator shows if this corpus will last through both lifetimes

6 Browser Interface Features

The browser interface includes several convenient features:

- Input validation to prevent errors
- Clearly organized sections for:
  - Basic Information
  - NPS Contribution Rates
  - Return Rates
  - Life Expectancy
- No need to press Enter for defaults - values are pre-filled
- Immediate recalculation with new inputs
- Results displayed in a clean, formatted layout
- Ability to easily try different scenarios by changing values
- **Reset to Defaults** button to quickly restore all input fields to their original default values