

Investment Software Tools: An Introduction



To accompany *finSage*® online software tools available at
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Introduction: Online Investment Tools

finSage[®] has developed state-of-the-art stock, portfolio, options, risk management, bond, time value and performance analysis tools. These software tools use live and historical data for exchange traded stocks and options. These tools will produce a student with a better understanding of finance and its applications.

In addition, an **Investments Guidebook with over eighty examples and exercises** is also available for a complete teaching and learning solution to instructors who want to use these tools in their finance course.

If you are an instructor and would like to know more about how you can integrate these learning tools into your course for a real world hands-on experience for your students, please email us at **faculty@finsagecollege.com**. We will be happy to set up a demonstration account for you. A brief description of these tools follows.

Brief discussion of tools: *finSage*[®] online software tools can be grouped into eight broad areas:

1. Online portfolio tracker
2. Stock analysis
3. Portfolio analysis
4. Event (performance) analysis
5. Option analysis
6. Loan and lease analysis
7. Bond analysis
8. Time value analysis

These areas have multiple tools for different types of investments and applications. They are described in more detail below.

1. Online Portfolio Tracker

This set of tools consists of:

- Portfolio creation module
- Portfolio valuation module – real time (delayed up to twenty minutes)
- Portfolio performance module – holding period return and benchmarking

2. Stock analysis

This set of tools consists of:

- Stock screener
- Constant growth valuation module

- Super growth valuation module
- Unequal dividends valuation module
- Gain/Loss probability estimator

3. Portfolio analysis

This set of tools consists of:

- Back test analysis
- Life-of-portfolio analysis
- Risk return tradeoff and portfolio efficiency
- Gain/Loss probability estimator
- Risk breakdown by stocks in a portfolio

4. Event (performance) analysis

This set of tools consists of:

- Initial public offerings (IPO) analysis
- Announcement effects of corporate events

5. Option analysis

This set of tools consists of:

- Option valuation modules
- Option implied volatility modules
- Advanced option simulation modules

The above option tools handle the following types of options:

- European options (without dividends)
- European options (with dividends)
- American options
- Binomial options

6. Loan and lease analysis

This set of tools consists of:

- Loan analysis and comparison – payments and loan rates
- Lease analysis – payments and embedded rates

7. Bond analysis

This set of tools consists of:

- Bond price analysis
- Bond yield analysis – yield to maturity
- Holding period yield analysis based on investment horizon
- Yield curve analysis

The first three bond modules can handle the following types of bonds:

- Zero-coupon bonds
- Coupon bonds
- Callable bonds
- Convertible bonds

8. Time value analysis

This set of tools consists of:

- Present and future values of single tools
- Present and future values of annuity and annuity due
- Present and future values of unequal cash flows
- Present value of perpetuities

The time value software tools have dynamic cash flow graphical updating for a visual understanding of time value and discounting concepts.

What is unique about these tools? *finSage*[®] online software tools for Stock, Portfolio and Options analysis are tied to real world trading data (delayed by up to twenty minutes) as well as historical stock price data going back several years. When a user creates a portfolio, its value is tracked continuously as the underlying stocks trade. Users can buy or sell stocks from their portfolio and view the performance of that portfolio. There is no limit on how many portfolios a user can create. The collection of *finSage*[®] software tools provides a complete **portfolio creation, management, monitoring, and evaluation process**.

Portfolio Tracker: The online portfolio tracker enables a user to create a portfolio by adding stock tickers, number of shares and trading costs. The tool keeps a record of purchases and sales as they are entered and enables the user to instantly see the **portfolio value** and changes at any time at recent trade prices (delayed by up to twenty minutes). The user can also compute the **holding period return** on the portfolio, adjusted for purchases and sales, and **benchmark** it against an index of choice.

Stock analysis: The powerful stock analysis tools enable a user to **value a stock** on the basis of the Security Market Line (beta risk). All the user has to do is

enter the ticker symbol and the dividend growth rate, and the software calculates the **beta** of the stock and its associated **discount rate**. The user can even control the period over which beta is calculated and the index against which the stock's systematic risk is to be measured. Beta can be estimated using any of the four indexes: (1) S&P500, (2) S&P100, (3) NASDAQ, and (4) Russell2000.

Portfolio analysis:

The portfolio analysis tools enables a user to **back test** different **portfolio strategies**, such as high P-E, value, small or large cap etc., with the help of the back test tool and validate the performance over the life of the portfolio. **Risk adjusted** and raw returns help the user analyze the effectiveness of a portfolio strategy. The risk return tradeoff tool enables you to assess the **efficiency of a portfolio** with the help of **diversifiable** and beta risk, **Sharpe ratio** ranks portfolios in terms of their attractiveness. Portfolio betas are computed based on inputs specified or selected by the user. The risk analysis tools enables the user to estimate **risk of loss** (probability of loss or gain) and the **impact of each stock** on that loss or gain. This is commonly known as **value-at-risk (VAR)**.

Event analysis:

The event analysis tools enable a user to analyze the performance of a group of **IPOs** that share a common trait, such as, having been brought to the market in a certain time period, managed by the same underwriter, belonging to the same industry etc. so that the user can assess the potential performance of a new IPO with the help of similar IPOs in the past. Effects of **company events** such as stock splits, dividend omissions and initiations, positive and negative earnings surprises, senior executive resignations etc. on the stock price of affected companies can also be analyzed.

Option analysis:

The powerful option analysis tools enable a user to **value options** and also compute **implied volatilities**. Historical volatility computations are also available as inputs for option valuation. All the user has to do is **enter the ticker symbol** and the period of estimation. Exchange traded options can be valued with the help of the **option symbol** and user specified exercise price. The advanced options simulator enables a user to estimate the **future value of an option** and the probability of reaching a target value. This assists in **risk management** with the help of **simulation VAR**.

Loan and lease analysis:

The loan and lease tools enable a user to **compare loans** and review the **amortization schedules**. When payments are known the implicit loan rate can be estimated. The lease software enables users to compute lease payments as well as **estimate the embedded lease rate** for an automobile lease contract.

Bond analysis:

The bond modules enable a user to **value bonds** and estimate their **yields to maturities**. Investors' **holding period yields** based on investment horizons and **yield curves** can also be estimated from a set of user specified bonds.

Time value analysis:

The time value tools handle **single payments, annuities, perpetuities** and **uneven cash flows**. They are designed as a learning tool for the user to see the effect changing input values on results. The emphasis is on **visual presentation in graphs**. Future cash flows and computed values are shown which **update dynamically** as the user changes inputs by moving the cursor along a slider bar. This a powerful **pedagogical tool** as well as a learning and problem solving tool. As a result student understanding of time value relationships such as discounting and compounding is enhanced for easier application.

The focus of *finSage*[®] tools is on giving the user a real world hands-on financial and investment experience with real investment opportunities and real world data. While the user will no doubt learn a great deal about theory and formulas in the classroom, *finSage*[®] tools help the user apply those concepts and learn by doing. By concentrating on the effects of changing inputs or altering stocks in a portfolio, the user can immediately see their effects on the results and learn investment concepts in a much faster way. Extensive help files are available on the web site and the **Guidebook** includes several examples and exercises for the user's guidance. In addition to **stocks** and **options**, users can also invest in **mutual funds**.

Suggested portfolio analysis process: While each individual has his or her own portfolio selection and creation style or approach we suggest an approach that guides the user through a methodical stock selection and analysis process. The five-step process is captured in the following schematic.



While our emphasis is on **portfolio diversification**, other investment styles can be accommodated by the *finSage*[®] portfolio analysis software. Under the suggested approach, the user will typically,

1. Screen stocks with the help of our Stock Screener and user-specified criteria,
2. Value individual stocks with the help of our Stock analysis tools,
3. Back test the portfolio created under steps 1 and 2, and then estimate its performance over the life of the portfolio. In order to make the analysis instantaneous, the user can create a portfolio in the past so that he or she does not

have to wait for new data. Past data can be used for back testing as well as life of portfolio analysis for quick results.

4. Conduct risk return tradeoff analysis to assess the efficiency of the portfolio in the context of mean variance framework, and
5. Estimate the probability of loss or gain form a portfolio in the future as well as the contribution of each stock to that gain or loss.

After analyzing a portfolio according to this five-step process, the user can go back and add or delete stocks until he or she has identified a suitable portfolio that is consistent with their return goals and risk or loss tolerance. This portfolio can then be entered in the *finSage*[®] Online Portfolio Tracker for **monitoring** and **performance evaluation**.

How to access these online tools? The *finSage*[®] online investment tools can be accessed with a valid username and password. The user will also need member privileges for activating these tools. The instructor can help users set up their membership privileges with *finSage*[®]. These software tools are available at <http://www.finsagecollege.com>.