Personal Finance: Another Perspective

Investing 1:
Before you Invest

Updated 2018/08/26
Objectives

A. Know what to do before you invest
B. Understand the principles of successful investing
C. Understand the major asset classes
D. Review the risk and return history of the major asset classes
Where We Are . . . .

• We have completed thus far:
  • Putting Personal Financial Management into perspective.
    • You understand the importance of doctrines, principles and application
    • You are living on a budget and know where your resources go
    • You are managing your cash wisely
    • You have protected yourself through insurance
    • You are making wise big-ticket purchases
  • We now will begin the section on investing for the long-term
Your Personal Financial Plan

• Section XII: Investment Plan
  • Includes your detailed Investment Plan (you can copy an outline from Investment Plan Template (LT5A) and instructions are TT5B. Your Investment Plan includes:
    • I. What are your risk and return objectives?
    • II. What are your investment guidelines and constraints?
    • III. What is your Investment Policy?
    • IV. When will you Evaluate, Modify, and Communicate results?
    • Your current investments and allocations
Your Financial Plan (continued)

- **Action Plan:**
  - What are your proposed investments and allocations?
    - Include copies of your proposed investments from Morningstar on a minimum of 4 financial assets for your:
      - Emergency Fund
      - Core Financial Asset(s)
      - Diversification Asset(s)
      - Opportunistic Asset(s) (only if you want)
  - Include [Expected Return Simulation](#) (LT27) and [Investment Process spreadsheet](#) (LT13)
Investment Assignments for Today

• Investments 1: Before you Invest
  • 1. Copy Investment Plan Example Template (LT5A).
  • 2. Add your information and complete the introduction to each of the four sections
  • 3. Take Risk Tolerance Test (LT16). Determine the type of investor you are: very conservative, conservative, moderate, aggressive, very aggressive
  • 4. Develop your preliminary “asset allocation” targets, i.e., your weights of stocks, bonds, and cash in your portfolio for before retirement and after retirement from your risk tolerance test.
Investment Assignments for Today (continued)

• Investments 4: Bond Basics

  • 1. Bond Volatility. Open Return Simulation for Asset Classes (LT23). Look at the volatility for bonds compared to other asset classes in the tab labeled “Charts” when you push F9 (calculate)

  • 2. Bond Returns. Open Expected Return Simulation and Benchmarks (LT27). Go to the tab labeled “Returns and Risk.” Review the 1, 5, 10, 25, etc. year return for bonds compared to other asset classes. Are they more or less volatile? Higher or lower returns?

  • 3. Think about what percentage of your portfolio should be in bonds from your risk tolerance results
Teaching Investments (continued)

• Teaching Investments is really learning about six key questions:
  
  • 1. What are financial markets?  
      • How do they operate? 
  
  • 2. What are asset classes?  
      • Why are they important? 
  
  • 3. What are financial assets/instruments?  
      • What are the advantages and disadvantages (i.e., their return and risk) of each?
Teaching Investments (continued)

4. What is your asset allocation?
   • How will it change over time?

5. What is your Investment Plan (i.e., your investment objectives, guidelines and constraints)?
   • How will you invest?

6. How will you build and monitor your portfolio?
   • How will you build your portfolio, and how will you monitor it as well?
Teaching Investments

• Please note that my teaching methodology is different from that taught in most classes
  • Most textbooks take a financial assets approach
  • I teach a principles-based approach

• Our framework for teaching - questions answered:
  • Day 1 (14) – Principles and before you invest – 2, 3
  • Day 2 (15) – Creating your Investment Plan – 1, 5
  • Day 3 (16) – Building your portfolio – 4, 6
  • Day 4 (17) – Selecting financial assets - 6
  • Day 5 (18) – Portfolio monitoring and rebalancing - 4
  • Day 6 (19) – Speaker and summary
A. Questions to Ask Before you Invest

• What should you do before you start investing?
  • Is there a priority to paying bills?
    • Who/which bills should we pay first?
  • Are there certain things you should never do without?
    • What about auto, health and life insurance?
  • Are their other bills more important than investing?
    • What about high-interest items such as credit cards and consumer loans?
• Is there a purpose to investing?
  • What are your personal vision, goals and budget?
Before You Invest: The Hourglass Top

1. Are your priorities in order and are you “square” with the Lord?

2. Do you have adequate auto, health and life insurance?

3. Are you out of high-interest rate credit card and consumer debt?

4. Have you written down your personal vision and goals, do you live on a budget, and do you have a well-written investment plan?

If you can answer these affirmatively, you are ready to invest!
Before you Invest (continued)

• What does the top of the hourglass do?
  • It helps you keep your priorities in order

• And what should those priorities be?
  • God
  • Family
  • Personal responsibility
    • Your personal vision, goals, budget, and a well-written Investment Plan
Questions

• Do you know what questions you should ask and what you should do before you invest?
B. Understand the 10 Principles of Successful Investing

• Is there one right way to invest?
  • No. There are multiple ways and multiple methods depending on your personal vision, goals and budget
    • The key is for you to know yourself and what you are trying to accomplish

• Is there one right way to teach investing?
  • No. But while there are many different ways, the principles should be the same.
Principles for Successful Investing (continued)

• How have most equity investors done?
  • Each year, DALBAR puts out an annual book on *Quantitative Analysis of Investor Behavior*. It discusses how average equity fund investors have done versus benchmarks over the past 20 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
<th>Investor Returns*</th>
<th>Index Returns</th>
<th>Difference</th>
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<tr>
<td>2013</td>
<td>1993-2012</td>
<td>4.3%</td>
<td>8.2%</td>
<td>-3.9%</td>
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<td>2018</td>
<td>1998-2017</td>
<td>5.3%</td>
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<td>-1.9%</td>
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• * Dalbar 2013-2018
Principles for Successful Investing (continued)

• How have most bond investors done?
  • According to DALBAR, bond investors have done equally poorly versus the bond benchmark over the past 20 years.

<table>
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<td>4.6%</td>
<td><strong>-4.2%</strong></td>
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* Dalbar QAIB 2013-2018, [www.dalbar.com](http://www.dalbar.com), ** Estimate
Principles for Successful Investing (continued)

• How have most asset allocation investors done?
  
  • According to DALBAR, asset allocation investors have done equally poorly versus the bond benchmark over the past 20 years.

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• * Dalbar QAIB 2013-2018, [www.dalbar.com](http://www.dalbar.com), ** Estimate of 60% S&P 500 and 40% Barclay’s Aggregate
Principles for Successful Investing (continued)

Elder Dallin H. Oaks commented:

We live in a complex society, where even the simplest principle can be exquisitely difficult to apply. I admire investors who are determined not to obtain income or investment profits from transactions that add to the sum total of sin and misery in the world. But they will have difficulty finding investments that meet this high standard. Such complexities make it difficult to prescribe firm rules. *We must rely on teaching correct principles*, which each member should personally apply to govern his or her own circumstances (italics added, Dallin H. Oaks, “Brother’s Keeper,” *Ensign*, Nov. 1986, 20).
Principles for Successful Investing (continued)

1. Know yourself
   • Know your vision, goals and plans
     • Have well-written and thought-out vision, goals, and plans
   • Know your budget
     • Live within your means, and save and invest
   • Know your ability to tolerate risk
     • Know what kind of investor you are
   • Invest accordingly
     • Develop a sleep-well portfolio – based on principles you can depend on for a lifetime so that you can “sleep well” at night
Principles for Successful Investing (continued)

• Watch overconfidence
  • Men trade 45% more than women
    • Their annualized returns were 2.7% less
  • Single men trade 67% more than single women
    • Their annualized returns were 1.4% less
  • Most investors have significantly (> 5% a year) underperformed the market over the last 20 years
    • (DALBAR’s Annual Quantitative Analysis of Investor Behavior 2016)

• Watch on-line trading
  • Before on-line, investors beat the market by 1.9%
    • Afterwards, they underperformed by 3.6%

Carla Fried, “The Problem with your Investment Approach,” Business 2.0, November 2003, p. 146
Principles of Successful Investing (continued)

2. Seek, receive and act on the Spirit’s guidance

- Carlos E. Asay said,
  - When the Spirit is with us, we can think thoughts we’ve never thought before, we can say words we’ve never said before, we can perform beyond our natural abilities. That power is related to truth, to the scriptures, to the stirring of the Spirit within. And the power won’t come unless we’re actively courting the influence of the Holy Ghost (“Scriptures and Sunday Classes,” Ensign, January 1986).
Principles for Successful Investing (continued)

3. Understand Risk

• Risk is inherent in all investing activities
  • There are lots of different types of risk
    • Inflation, business, interest rate, financial, market, political and regulatory, exchange rate, call, and liquidity risk
  • Invest at a risk level you are comfortable with
    • Find that risk level
      • Taking a risk tolerance test may help. Take A Risk Tolerance Test (LT16) to get a sense on how much risk you can tolerate
Principles for Successful Investing (continued)

4. Stay diversified
   • Always invest in different asset classes and assets
     • Diversification is your key defense against risk
       • Make sure you understand the risks of each and every asset class you invest in
     • It’s a risky place out there. Be prepared!
       • Remember that the numbers you see for specific asset class performance are from diversified portfolios, not single assets!
   • Use Return Simulation Worksheet (LT23) to see the effects of diversification
Principles for Successful Investing (continued)

5. Invest low cost and tax-efficiently
   • Control what you can.
     • You cannot control returns, but you can control your costs, fees, and taxes
       • A $1 saved is more than a $1 earned because:
         • You pay taxes, charitable contributions and savings on every new dollar earned, and a dollar saved can earn income and income on income (compound interest)
       • Realize that frequent trading incurs significant costs, both in terms of transactions costs and taxes
Exhibit 2: Total 2001 costs of investing: 4 representative large equity funds

Principles of Successful Investing (continued)

• Minimize costs
  • Markets are unpredictable, costs are forever
  • Costs significantly depress returns over long periods
  • Lower cost mutual funds have tended to perform better than higher cost funds
  • Index investments can be a good tool of cost control
Principles for Successful Investing (continued)

- Defer or eliminate taxes as much as possible
  - Remember, mutual funds distribute 90% of all capital gains and dividends each year that you must pay taxes on
    - Invest tax-efficiently so you don’t have to pay more taxes each April
  - It’s not what you make, but what you keep after taxes and inflation that makes you wealthy
6. Invest long-term
   • Avoid short-term and day trading
     • It's expensive and generates transactions costs and taxes
   • Invest wisely
     • There are no get-rich-quick schemes that work.
   • Stay at least partly in the market
     • Taking money out of the market or not continuing to save and invest stops your progress
Trade More, Make Less

By examining 5 categories of investors, Odean quantified trading’s harmful effects. Transaction costs slammed the net returns of the most active traders.

Barber and Odean, Trading Is Hazardous to Your Wealth, 2000
Principles for Successful Investing (continued)

7. If you must invest in individual assets, know what you invest in and who you invest with
   • When investing in individual assets, do your homework
     • Know what you are investing in
     • Know who you are investing with
     • Be aware of the environment in which the company operates
     • Be very careful and invest wisely
Principles for Successful Investing (continued)

8. Monitor portfolio performance

- Measure performance. President Thomas S. Monson stated:

  When performance is measured, performance improves. Where performance is measured and reported, the rate of improvement accelerates (General Conference reports, 1970).

  - How can you know how you are doing if you don’t check your performance against some benchmark?

- Interestingly, most investors have underperformed the market benchmarks over the last 20 years
  - (DALBAR’s Annual Quantitative Analysis of Investor Behavior 2014)
9. Don’t waste too much time, money, and energy trying to beat the market, unless you have a lot of time, money, and energy

- It is very difficult, expensive, and time consuming to try and beat the market

- If you want to trade, trade tax-efficiently and in tax-deferred accounts

- If your actively managed funds underperform, look to index funds as inexpensive, tax efficient and very viable alternatives to actively managed funds
Principles for Successful Investing (continued)

10. Invest only with high quality, licensed, and reputable people and institutions

• When help is needed, don’t be afraid to get help.
  • But get good help from good people consistent with the principles discussed
  • And compare the performance of that help to your benchmarks after taxes (and to a passive portfolio)

• Use the best resources available
  • Know how those resources are compensated
  • Work only with licensed and registered advisors
  • Get references for any resources
Principles for Successful Investing (continued)

10. Develop a good investment plan consistent with your vision, budget, and these principles, and follow it closely

• Think it through and write it wisely
  • It’s your roadmap to success
• If you write it wisely and invest accordingly, it will save you much heartache in the future
  • And you will likely achieve your personal vision and goals
Principles for Successful Investing (continued)

Principles
1. Know yourself, your goals and vision
2. Seek, receive and act on guidance
3. Understand risk (there is lots of it)
4. Stay diversified
5. Invest low-cost and tax efficiently
6. Invest long-term
7. Know what you invest in
8. Monitor performance vs. benchmarks
9. Don’t waste time
10. Invest with good people and firms
11. Develop a good Plan (IPS) and follow it

Doctrines
Identity
Obedience
Stewardship
Accountability
Stewardship
Stewardship
Accountability
Stewardship
Stewardship
Stewardship
Principles for Successful Investing (continued)

Changing acts of obedience into holy acts of consecration

- I am a child of a Creator (identity), living worth of the Spirit (obedience), striving to understand myself and my risk tolerance (agency), and learning to understand financial markets and instruments (accountability). I am developing my investing talents carefully (stewardship), so I can invest my resources wisely (agency), to accomplish my personal mission and individual and family vision and goals.
C. Understand Asset Classes

• Investing is similar to going to an amusement park.
  • People go (invest) on rides in areas they like:
    • Higher risk investments are like the roller coaster--they require a stronger stomach, but the thrill (and return) is generally much greater
    • Lower risk investments are like the merry-go-round. While they are fun, they may be too sedate for some investors
  • Other rides are in-between
  • The key is to find out what you like to ride on and to ride on that ride!
Asset Classes (continued)

• What are asset classes?
  • Asset classes are broad categories of investments with specific (and similar) risk and return characteristics

• How are they distinguished?
  • Asset classes are distinguished by characteristics specific to particular groups of securities, such as type of financial instrument, market capitalization, maturity, geographic location, etc.

• What are the major asset classes?
  • Cash and cash equivalents, fixed income, and equities
Cash and Cash Equivalents

• Major Goal
  • Liquidity and to preserve capital
    • Cash includes CDs, money market funds, T-bills, and commercial paper, etc.
    • Offers a fixed rate of return
  • Cash includes:
    • Money market funds which seek to preserve the value of your investment and still offer competitive returns
    • Short-term interest-bearing investments includes Treasury bills and Savings Bonds, loans to the U.S. Government, and commercial paper, loans to corporations
Cash and Cash Equivalents (continued)

Advantages

• Liquidity and stability of principal. You can turn these into cash quickly and easily
• Low risk. There is little risk of losing principal since the borrowers have good credit and loans are for short periods
• Good investment for money you plan to use in less than 3-5 years and don’t want to take risks

Disadvantages

• Less attractive as medium-to-long-term investments (> 5 years) as returns on cash and cash equivalents are unlikely to keep up with inflation
Cash and Cash Equivalents (continued)

• Thoughts on Cash:
  • Cash is great for liquidity—especially for your Emergency Fund
    • However, returns on cash are unlikely to keep up with taxes and inflation
      • Use cash for liquidity and some diversification, but realize that this asset class will add little to performance
Fixed Income (or Bonds)

• Major Goal
  • Provide income and to earn returns in excess of inflation
  • There are two different types of fixed income assets:
    • Taxable bonds include U.S. Treasuries, corporate bonds and agency issues (bonds issued by U.S. government agencies, like Ginnie Mae).
    • Tax-free bonds include revenue or general obligation bonds issued by local or state governments and agencies. Such bonds are generally free from federal and state taxes.
Fixed-income (continued)

Types of Fixed-Income Investment Vehicles:

- Short-term bonds/bond funds
  - Bonds that mature in < 5 five years
    - Short-term bonds are less vulnerable to interest rate risk than long-term bonds
    - Generally considered good investments for anyone needing a dependable stream of income (dividends)

- Intermediate-term bonds/bond funds
  - Bonds with a maturity of 3–10 years
    - These are more susceptible to interest rate risk
Fixed-income (continued)

• Long-term bonds/junk bonds/bond funds
  • Bonds with a maturity of 10 or more years
    • These have the highest yields, but are the most vulnerable to interest rate volatility

• Inflation Protected securities
  • Securities whose yield is linked to the rate of inflation as measured by a specific inflation index

• U.S. Government Savings bonds
  • I Bonds: Interest rate linked to inflation
  • EE Bonds: Fixed interest rate
Fixed-income (continued)

• Bond mutual funds
  • Different from buying individual bonds. Mutual funds buy and sell bonds before they mature
  • Investing in a fund means you are buying a share in thousands of different bonds in a changing portfolio.
  • Income from fixed-income fund fluctuates as mutual funds buy and sell bonds
  • The value of your fund changes depending on whether the fund is selling bonds at a loss or gain
  • The longer the maturity of the bonds (see the average maturity) the more dramatically your principal will gain or lose value as interest rates change
Fixed-income (continued)

Advantages

• Offers greater return than cash, but greater risk
• Good diversification tool when holding a long-term stock portfolio, as bonds move differently than stocks

Disadvantages

• Returns have been historically lower than stocks
• Very susceptible to interest rate and other risks
• Generally, fixed income assets alone are not good long-term investments because they don’t provide enough growth to beat inflation over long periods of time. Must be part of an overall portfolio
Fixed-income (continued)

- Thoughts on fixed income
  - You get a fixed interest and the future principle
  - Investment income and capital gains may be subject to federal, state, and local taxes
  - The longer the bond’s maturity, the higher the yield. This "interest rate risk" is because your principal is exposed for a longer period of time
  - The lower the borrower’s credit rating the higher its risk, and the higher the interest you receive
  - The value of your principal is not fixed because the price of bonds fluctuate with changes in interest rates. If interest rates rise, your bond becomes less valuable, unless you hold it till maturity
Equities (or Stocks)

• Major Goal
  • Provide growth and earn returns in excess of inflation. Over long periods of time, the stock market historically has been the only major asset class to consistently outpace inflation
  • A share is ownership in a businesses’ earnings and assets
  • You get a proportionate share of the profits by receiving dividends, and also benefit from increases in the company’s share price
  • Mature companies are a likelier source of dividends (rapidly growing companies often prefer to reinvest profits)
Equities (continued)

• Equity asset classes
  • Asset classes are delineated by market capitalization (which is shares outstanding multiplied by the stock's current market price), type of company (growth versus value), and geographic area.
    • The benchmarks for each asset class tend to change over time, but equity asset classes can be generally defined as follows:
      • Capitalization: Large, mid, and small
      • Type: Growth, blend, and value
      • Geographic area: US, international, global and emerging markets
Equities (continued)

• What is market capitalization?
  • It is one measure of the size of a company.

• How is it calculated?
  • It is calculated by multiplying the market price of the stock by the number of shares (i.e. ownership pieces) outstanding. The greater the capitalization, the larger the company.

• How is it used?
  • It is used to weight companies in various benchmarks.
  • It is used to determine certain classes of companies, i.e. large-cap, mid-cap, small-cap, etc.
Equities (continued)

• Large-cap (capitalization) stocks
  • Large caps are stocks with a market capitalization greater than $10 billion in the US, and smaller capitalizations for international companies
  • These are the generally the largest, most well established companies in the US, with a history of sales and earnings as well as notable market share
  • Traditionally, large cap was synonymous with "dividend-paying company," but this is no longer a standard for classification.
  • These are generally mature corporations with a long track record of steady growth and dividends
Equities (continued)

- **Mid-cap or mid-capitalization stocks**
  - These are stocks with capitalization between roughly $2 billion and $10 billion
  - These stocks tend to grow faster than big cap companies, and are generally less volatile than small cap companies
  - Mid-caps generally perform similar to the small-cap asset class. For asset-allocation purposes, mid-caps are generally not considered a major asset class.
Equities (continued)

- Small-cap or small capitalization stocks
  - Small-cap stocks are companies with a market capitalization less than $2 billion
  - These are smaller, sometimes newer, US and global companies that are still developing and may have a smaller market share than their large-cap counterparts.
  - Small-cap stocks are subject to greater volatility and may fail more frequently than companies in other asset categories, but are generally expected to grow faster than bigger companies
Equities (continued)

• Within the equity stock categories are two separate types of stocks: growth and value
  • Growth stocks
    • These are fast-track companies whose earnings are expected to grow very rapidly. Frequently these are companies developing new technologies or new ways of doing things
  • Value stocks
    • These are inexpensive (in terms of low PE and low P/BV ratios), companies that have potential for good long-term return through both appreciation and dividends
• Blend stocks – part of both value and growth
Equities (continued)

• International/Global/Emerging Market stocks
  • These are stocks of companies based entirely outside the U.S. or throughout the world
  • These can be of any size (small-cap, large-cap), any type (value, growth) and from any part of the world. Funds that contain a mixture of U.S. and foreign holdings are called global funds.
  • International investments involve additional risks, which include differences in financial accounting standards, currency fluctuations, political instability, foreign taxes and regulations, and the potential for illiquid markets.
Equities (continued)

• Stock Mutual Funds
  • These are funds that own stock in specific groups or types of companies
  • You are buying a share in multiple companies which change over time depending on the fund manager
  • You are responsible for paying taxes on all distributions by the mutual fund, which are taxed at your level—not the fund level
  • Mutual funds are delineated by investment objective, which can be any of the equity asset classes discussed
Equities (continued)

Advantages

- Offer highest return of the major asset classes
- Growth and value stocks tend to perform in alternating cycles—it makes sense to own both
- Good investment for long-term investing—they have consistently beat inflation over the long-term

Disadvantages

- Offer less stability of principal than other asset classes, and subject to short-term price fluctuations (so very risky for short-term investments)
- If you’re investing for less than 3-5 years, only a small portion (if any) of your investments should be in stocks
Equities (continued)

- Thoughts on Stocks
  - Stocks have given the highest consistent returns of any asset class, although with the highest risk
  - While volatile in the short-term, over time they have continued to deliver returns far in excess of taxes and inflation
  - To grow your portfolio in excess of taxes and inflation, generally you will need to include some equities in your portfolio
  - Through broad diversification, you can reduce some of the risk of this asset class
Questions

• Any questions on asset classes?
D. Review the Risk and Return History of the Major Asset Classes

• What is risk?
  • Is it the risk of losing all your money?
  • Is it the risk of losing principle?
  • It is the risk of not achieving a specific holding period return?

• How is it measured?
  • Historically, government securities were considered risk-free
  • Later, analysts started using variance (or standard deviation squared) as a better measure of risk.
  • Currently, investors also use Beta, which is a measure of how the stock moves with the market
Risk (continued)

• Key Risk Concepts:
  • Risk
    • Investment risk. The probability of not achieving some specific return objective
  • Risk-free rate
    • The rate of return that can be obtained with certainty
  • Risk premium
    • The difference between the expected return and the risk-free rate
  • Risk aversion
    • The reluctance to accept risk
Investing versus Gambling

Investing

• The odds are in your favor
• There is a favorable risk-return tradeoff
• It is part of a long-term plan
• You have done your homework
• It involves the creation of wealth

Gambling

• The odds are in another’s favor
• There is no favorable risk-return tradeoff
• There is no long-term plan
• There is no homework, only chance
• It is a zero-sum game—no wealth is created
Return

• What is return?
  • Return is the change in the value of a financial asset or portfolio over a specific period, which includes any dividends, distributions, or interest received from the asset or portfolio during that period. It is also called a holding period return

• Why is it important?
  • It is a measure of how much your asset or portfolio has grown over a specific holding period
    • Once you have calculated your return, you can compare your return to benchmarks to see how you have done
Return (continued)

• How is it calculated?
  
  • Your “holding period” return is:
    
    \[
    \text{return} = \frac{\text{ending price} - \text{beginning price} + \text{div./distributions}}{\text{beginning price}}
    \]

  • The dividends and distributions includes all dividends and distributions received, including dividends/distributions that were received but reinvested in the portfolio
    
    • To calculate after-tax returns, you would deduct the taxes to be paid from your dividend and distribution amounts

  • The holding period return can be annualized, depending on the holding period of the asset
Return (continued)

• Why study asset class performance?
  • We know the future will not be like the past?
    • President Gordon B. Hinckley stated:
      • All of us need to be reminded of the past. It is from history that we gain knowledge which can save us from repeating mistakes and on which we can build for the future ("Reach with a Rescuing Hand," *New Era*, July 1997, 4).

• Note: Data are from Ibbottson Associates for 1925-2014 periods, and from Bloomberg for the remainder. Ibbottson stopped supplying the data after 2014.
Asset Class Returns from 1925 to 2017

- Large Cap
- Small Cap
- T-Bonds
- T-Bills
- Inflation

Year: 1925, 1926, 1927, ..., 2015

Initial Investment: $1

End of Period Investment:
- Large Cap: $36,071
- Small Cap: $7,196
- T-Bonds: $135
- T-Bills: $21
- Inflation: $14
Annual Risk versus Return from 1925 to 2017

- S&P500
- SmallCap
- T-bond
- T-bill
- CPI

Returns: Historical Risk and Return
S&P 500 1 Year Annual Returns from 1926 - 2017
S&P 500 5 Year Annual Returns from 1930 - 2017

returns: S&P500 5 Year Returns
S&P 500 10 Year Annual Returns from 1935 - 2017
### Total Returns For the Periods Ending December 31, 2017

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Compound Return</th>
<th>1 Year</th>
<th>5 Years</th>
<th>10 Years</th>
<th>25 Years</th>
<th>50 Years</th>
<th>75 Years</th>
<th>90 Years</th>
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<tr>
<td><strong>S&amp;P500</strong></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Compound Return</td>
<td>19.4%</td>
<td>15.3%</td>
<td>8.3%</td>
<td>9.6%</td>
<td>10.1%</td>
<td>11.6%</td>
<td>9.8%</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>3.8%</td>
<td>9.4%</td>
<td>15.0%</td>
<td>14.1%</td>
<td>15.0%</td>
<td>14.2%</td>
<td>18.8%</td>
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</tr>
<tr>
<td><strong>SmallCap</strong></td>
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<td></td>
</tr>
<tr>
<td>Compound Return</td>
<td>13.1%</td>
<td>14.5%</td>
<td>9.1%</td>
<td>11.7%</td>
<td>12.0%</td>
<td>14.7%</td>
<td>12.1%</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>7.6%</td>
<td>14.0%</td>
<td>20.3%</td>
<td>19.8%</td>
<td>21.3%</td>
<td>20.2%</td>
<td>28.5%</td>
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<td><strong>T-bond</strong></td>
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<tr>
<td>Compound Return</td>
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<td>1.4%</td>
<td>5.6%</td>
<td>7.2%</td>
<td>7.7%</td>
<td>5.7%</td>
<td>5.4%</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>15.2%</td>
<td>12.6%</td>
<td>13.3%</td>
<td>10.9%</td>
<td>11.0%</td>
<td>9.3%</td>
<td>8.7%</td>
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<tr>
<td><strong>T-bill</strong></td>
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<tr>
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<td>0.2%</td>
<td>0.3%</td>
<td>2.4%</td>
<td>4.8%</td>
<td>3.8%</td>
<td>3.4%</td>
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<tr>
<td>Standard Deviation</td>
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<td>0.2%</td>
<td>0.6%</td>
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<td>0.9%</td>
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<td>Compound Return</td>
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<td>2.4%</td>
<td>6.9%</td>
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<td></td>
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<tr>
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<tr>
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<td>2.0%</td>
<td>8.0%</td>
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<tr>
<td>Standard Deviation</td>
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<td>12.3%</td>
<td>22.7%</td>
<td>22.4%</td>
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<td>7.4%</td>
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<tr>
<td>Standard Deviation</td>
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<td>39.1%</td>
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<td><strong>CPI</strong></td>
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</tr>
<tr>
<td>Compound Return</td>
<td>1.9%</td>
<td>1.3%</td>
<td>1.6%</td>
<td>2.2%</td>
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<td>1.3%</td>
<td>1.2%</td>
<td>1.3%</td>
<td>1.5%</td>
<td>1.8%</td>
<td></td>
</tr>
</tbody>
</table>
Lessons Learned

• There is a positive relationship between risk and return
• While equities are volatile on a monthly basis, over longer periods of time the bad periods are offset by good periods
• The longer the time period, the more likely you will have positive returns
Questions

• Any questions on asset class risk and return history?

• See Return Simulation Worksheet (LT23)
Review of Objectives

A. Do you know what to do before you invest?
B. Do you understand the ten principles of successful investing?
C. Do you understand the various asset classes?
D. Have you reviewed the asset class risk and return history?
Case Study #1

Data
• Bill wants to know how much he will need to save at the end of each year to have $1 million in savings when he retires in 30 years.

Calculations
• Assuming Bill can earn an 8.5% return on his investment, how much must he save each year

Application
• What assets would you recommend Bill use to save?
Case Study #1 Answer

• Calculations
  • Set your calculator to 1 payment per year (annual)
    • \( N = 30, \ I = 8.5\%, \ PV = 0, \ FV = \$1,000,000 \)
  • Solve for Bill’s annual payment?
    • Bill would need to save \$8,050.58 annually to reach his goal.

• Recommendations
  • Bill could use any number of investment assets, including stocks, bonds, cash, mutual funds, etc. Because he is just starting out, I would encourage him to consider the use of inexpensive, no-load mutual funds as investment vehicles.
Case Study #2

Data

• Last year you purchased 100 shares of MSAM Corporation for $40 per share. Over the past 12 months MSAM’s price has gone up to $45 per share, and you received a dividend of $1 per share.

Calculations

• What was your total rate of return on your investment in the MSAM stock?
Case Study #2 Answer

Calculations

• This can be solved either on a total portfolio basis or on a per share basis.
  • Total Portfolio
    • \((\frac{($45\times100 - $40\times100) + 1\times100}{$40\times100}) = ?\)
    • Your return is 15.0%
  • Per Share basis
    • \((\frac{($45 - $40) + 1}{$40} = ?\)
    • Your return is 15.0%
Case Study #3

Data

• Your investment in MSAM stock was so successful that you decided to hold it for 5 more years. Remember, you purchased 100 shares for $40 per share. Unfortunately, the price of MSAM stock has not risen; it is back to where you purchased it. The good news is that you earned $1 per share for five years.

Calculations

• What was your annualized total rate of return?

Application

• Compared to a bank account earning 2.25% over this same period, how did your stock do?
Case Study #3 Answer

• Calculations
  • Your annualized rate of return is your return for the total period, annualized, i.e., taking the geometric return.
    • Your total return for the 5 year period is:
      • \[ \frac{($40*100 - $40*100) + 5*100}{($40*100)} = \text{?} \]
        • 12.5%
    • Taking that return and annualizing for 5 years gives the following annual returns:
      • Geometric return = \( (1 + .125)^{(1/5)} = 2.38\% \)
      • Average return = \( 12.5\% / 5 = 2.5\% \)
    • Using either method, it performed better than the bank account
Case Study #4

Data

• Sam recently purchased a bond with a 10 year maturity for $1,000 which pays annual interest of $100.

Calculations

• What interest rate is Sam receiving?
• If interest rates for ten year bonds today are 5%:
  • How much can Sam sell his bond for today?
• How much could he sell the bond for tomorrow if interest rates move up to 12%?

Applications

• Based on your calculations, what is the relationship between interest rates and the value between bonds?
Case Study #4 Answer

• Calculations
  • The bond’s current yield is $100/$1000 = 10%
  • At 5% Sam can sell his bond for:
    • N=10, I=5%, PMT=100, FV=1,000, solve PV?
    • $1,386.07
  • At 12% Sam can sell his bond for:
    • N=10, I=12%, PMT=100, FV=1,000, solve PV?
    • $887.00
  • This implies a negative relationship between bond prices and interest rates. In other words, as interest rates increase bond prices fall, and when interest rates decrease bond prices rise.
Case Study #5

Data

• Ryan is 35 years old, and took the Risk Tolerance test from the teaching tools (Teaching Tool 16). He determined that he was “moderate” in terms of risk.

Application

• Based on the rule of thumb of his age in bonds and the results from the Risk Tolerance test, which of the following most likely represents Ryan’s preferred asset allocation (assume his emergency fund is included in cash and bonds):
  • A. 35% cash, 40% large cap, 25% bonds
  • B. 25% cash, 35% large cap, 25% small cap, 15% international
  • C. 10% cash, 25% bonds, 50% large cap, 15% small cap
  • D. 15% bonds, 30% large cap, 30% small cap, 25% international
Case Study #5 Answer

• Ryan’s preferred allocation would likely be C for the following reasons:
  • Portfolio A has too much exposure to cash and bonds.
  • Portfolio B has too large an allocation to international and small cap (40%), both much more risky.
  • Portfolio C is more consistent with your risk exposure, i.e., 35% in bonds and cash, and has some (limited) exposure to small caps
  • Portfolio D has too little exposure to bonds and cash, and too much small cap and international.
Case Study #6

Data
• Assume the same information from Problem 5, but now Ryan’s result (age 35) from his Risk Tolerance test (Learning Tool 16) was “aggressive” in terms of risk.

Application
• (a) Based on the same rule of thumb, which of the following most likely represents Ryan’s asset allocation:
  • A. 35% cash, 40% large cap, 25% bonds
  • B. 25% cash, 35% large cap, 25% small cap, 15% international
  • C. 10% cash, 25% bonds, 50% large cap, 15% small cap
  • D. 15% bonds, 30% large cap, 30% small cap, 25% international
• (b) What would his allocation be if his results were “very aggressive”?
Case Study #6 Answer

• (a) The preferred allocation for “aggressive” would be B.

  • Portfolio A has too much exposure to cash for his risk level
  • Portfolio B is recommended. It has a larger allocation to international and small cap (40%), a lesser allocation to bonds and cash, and is more consistent with his risk results
  • Portfolio C has too much (35%) in bonds and cash, and likely not enough to the riskier assets
  • Portfolio D has too little exposure to bonds and cash, and likely too much small cap and international.
Case Study #6 Answer

• (b) The preferred allocation for “very aggressive” would be D.
  • Portfolio A has too much exposure to cash for his risk level, but a good allocation to small cap (more risky)
  • Portfolio B has a large allocation to international and small cap (40%), consistent with his risk results, but too much cash
  • Portfolio C has too much (35%) in bonds and cash, and likely not enough to riskier assets
  • Portfolio D has less exposure to bonds and cash, and much more small cap and international (55%), consistent with “very aggressive” risk