American Association of Individual Investors
presents
Financial Planning Workshop

Fundamentals of Investing

Fred Smith
Email: fred@fredsmithfinance.com
Webcast details at www.siliconvalleyaaii.org

Financial Planning Workshops

- **>>> Fundamentals of Investing**
- **Building a Diversified Portfolio**
- **Introduction to Computerized Investing**
- **Active versus Passive Investment Strategies**
- **Retirement Planning**
- **Managing your Cash Flow in Retirement**
- **Safe Withdrawal Rates from your Retirement Portfolio**
- **Social Security and Medicare**
- **Estate Planning**

Topics Covered Today

- Your Personal Investor Profile, PIP
- Measuring the return on investment
- Sources of risk and its measurement
- Techniques to control risk
- Investment vehicles

Personal Investor Profile, PIP

- **First know thyself!**

"If you don't know who you really are,

the stock market is an expensive place to find out"

Adam Smith (1723 – 1790)

PIP: Personal Data

- Age , marital status, spouse's age
- Employment, income
- Retired or planned date to retire
- Children, college education
- Home ownership, mortgage paid off
- Hopes and dreams
- Fears, nightmares, etc.

PIP: Time Horizon

- **Short-term goals**
  - **New car**
  - **Vacation, etc. etc.**
- **Long-term goals**
  - **College education**
  - **Home purchase**
  - **Retirement**
  - **Legacy, etc. etc.**

PIP: Risk Tolerance

- Eat well versus sleep well decision
- Subjective choice
  - No right or wrong answer
- Wrong choice can be disastrous
    - Most people overestimate their tolerance
- Risk tolerance questionnaires
  - Schwab, Vanguard, Fidelity, etc.

PIP: Income Needs

- Do you need to generate income to cover daily expenses?

- Or are you investing for capital gains?

PIP: Tax Status

- **Federal and State Income Tax Brackets**
  How much of your gains will you give up to taxes?
  Or are your investments in tax-sheltered accounts?

- **Alternative Minimum Tax, AMT**
  Can affect even some “tax-free” gains

Typical Life Cycle Investing

	Early Career	Mid Career	Late Career	Early Retrmnt	Late Retrmnt
Time Horizon	Long	Long	Long	Long	Medium
Risk Tolerance	High	High	Medium	Medium	Low
Income Needs	No	No	No	Yes	Yes
Tax Status	Low	Medium	High	Medium	Low

Topics Covered Today

- Your Personal Investor Profile, PIP
- >>> Measuring the return on investment
- Sources of risk and its measurement
- Techniques to control risk
- Investment vehicles

Measurement of Return

- **Total return = Interest or dividend income**

  + capital gain/loss realized on sale.

  Example:

  If you bought a stock for $100 at the beginning of the year, and receive $2 dividend at the end of the year, and then sell the stock for $107,

  Total return = 2% + 7% = 9%

- **Real return = Nominal return - Inflation**

  If inflation for the year was 3%, then

  Real return = 9% - 3% = 6%

Time Value of Money

- **A $ in hand today is worth more than the promise of a $ tomorrow**

$$FV = PV \times (1 + r)^n$$

or

$$PV = FV / (1 + r)^n$$

where

PV = Present value
FV = Future Value
r = Rate of return/period
n = Number of periods

Return over Multiple Years

- Suppose you had an investment with total returns of 9%, -5%, and 14% over three consecutive years.

  How well did you do over the three year period?

- The arithmetic mean gives

  (9% - 5% + 14%)/3 = 6% per annum

- Good approximation for short time periods but it ignores compounding.
- The geometric mean gives a more useful answer.

Geometric Mean

- **Geometric mean**

  = {(1+9%) x (1-5%) x (1+14%)} ^ (1/3) - 1

  = {1.09 x 0.95 x 1.14} ^ 0.333 - 1

  = 1.18 ^ 0.333 - 1

  = 1.0569 -1

  = 5.69% per annum

- **This is the Compound Annual Growth Rate, CAGR**

  Also called the time-weighted return.

What if there are Uneven Cash Flows?

- The Internal Rate of Return, IRR

		Year-end Cash Flow
Year 1	Initial investment	$10,000
Year 2	Additional investment	$2,000
Year 3	Withdrawal	- $1,000
Year 4	Additional investment	$3,000
Year 5	Liquidate account	-$17,000

Excel IRR function =IRR(Am:An) gives IRR = 5.9%

IRR is also known as the $ weighted return

A Quick Approximation

- **Suppose you invest $10,000 at the beginning of the year and $100 every month. If the account is worth $12,000 at the end of the year, what is your return?**

- **Return ~ (FV – CF/2)/(PV + CF/2) -1 where CF = cash flow**

  = ($12,000 - $600) / ($10,000 + $600) - 1

  = $11,400 / $10,600 – 1

  =7.55% pa

- **IRR = 0.61% per month = 7.59% pa**

Arithmetic Mean versus Geometric Mean

- Consider a newsletter which boasts that they turned $10,000 into $25,000 in ten years

  Average gain

  = ($25,000 - $10,000)/$10,000 over 10 years

  = 150%/10yrs = 15% pa

  Geometric mean

  = {($25,000 / $10,000)} ^ (1/10) -1

  = 9.6% cagr

- Moral: Beware arithmetic averages over long time periods.

Rule of 72

- For an investment with an annual rate of return, r, the number of years, n, required to double the investment is given by:

$$n = 72/r$$

i.e. $r \times n = 72$ approximately

- For example, if r = 6% pa

the investment will double every 12 years

- For additional credit

Derive this rule from first principles !

Topics Covered Today

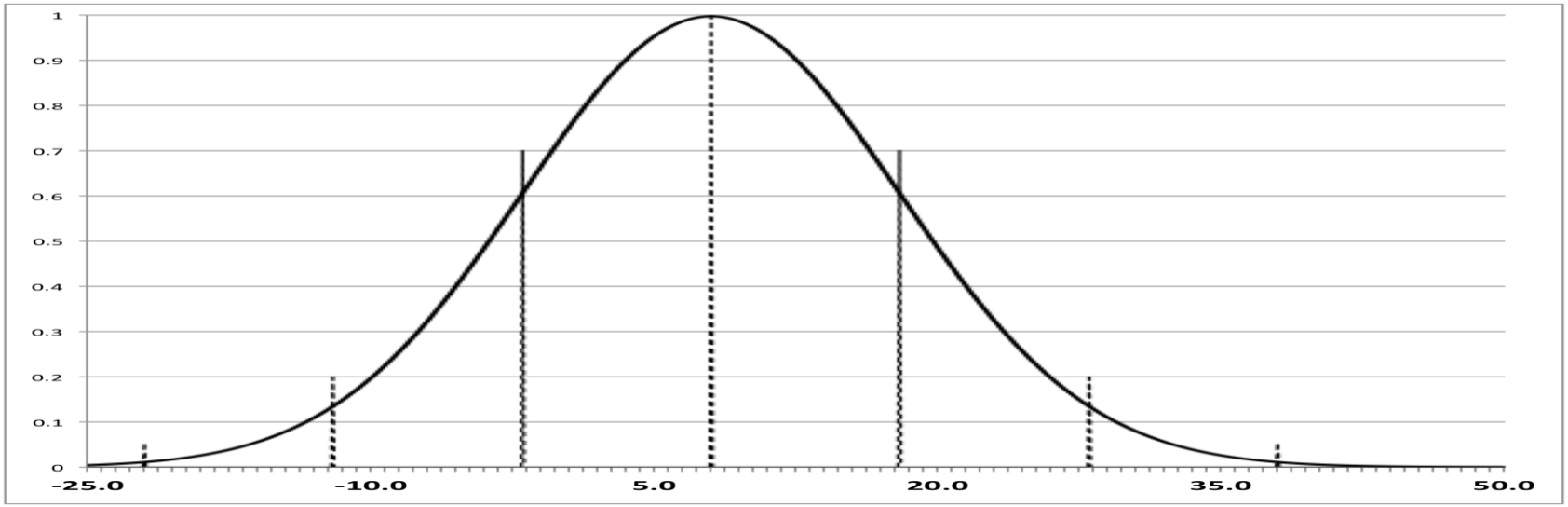
- Your Personal Investor Profile, PIP
- Measuring the return on investment
- >>> Sources of risk and its measurement
- Techniques to control risk
- Investment vehicles

Sources of Risk

- Market risk
  - Industry risk
  - Company risk
  - Currency risk
  - Political risk etc. etc. etc.
- Inflation risk
- Longevity Risk
  - Risk that you will outlive your assets

Standard Deviation

Excel function = STDEV(Am:An)



-22% -12% -2% 8% 18% 28% 38%

<<< 68% >>>

<<<<<<<< 94% >>>>>>>>

<<<<<<<<<<<< 99.7% >>>>>>>>>>>>

Beta

- **Volatility relative to a benchmark**

  e.g. S&P 500 index

For example, if a stock has a Beta of 1.2

then it is 20% more volatile than its benchmark.

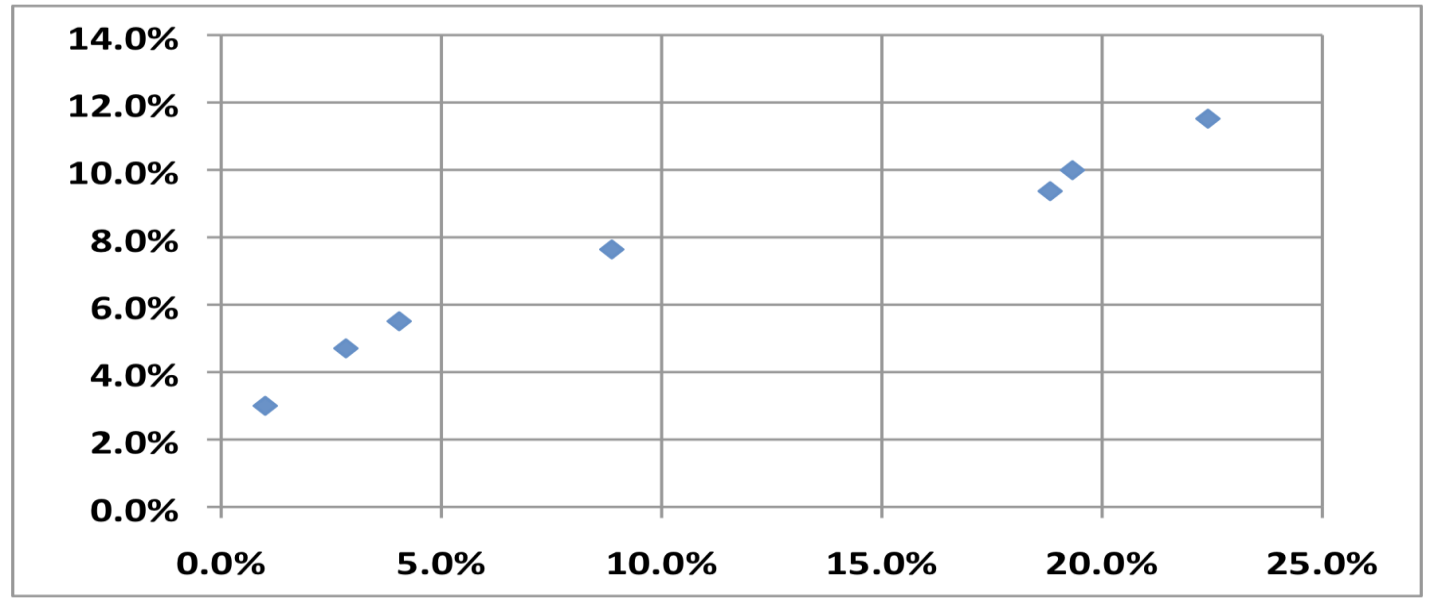
If the S&P 500 loses 10% over a given period

this stock can be expected to lose 12%.

Volatility Matters

	Stable	Investment	Volatile	Investment
	Return pa	Balance	Return pa	Balance
		$10,000		$10,000
Year 1	10.0%	$11,000	15.0%	$11,500
Year 2	10.0%	$12,100	-17.0%	$9,545
Year 3	10.0%	$13,310	25.0%	$11,931
Year 4	10.0%	$14,461	5.0%	$12,528
Year 5	10.0%	$16,105	22.0%	$15,284
Avg. Return	10.0%		10.0%	
Std. Dev.	0.0%		16.9%	
CAGR	10.0%		8.9%	

Risk and Return are Correlated



Moral: There is no investment with high return and low risk!

Risk-Adjusted Returns

- **Sharpe Ratio = (R_P – R_{RF}) / Std. Dev.**

- **Treynor Ratio = (R_P – R_{RF}) / Beta**

  where R_P = Projected return

  R_{RF} = Risk-free return

- **Other risk-adjusted ratios:**

  Sortino Ratio, Ulcer Index

  Focus on downside volatility

Topics Covered Today

- Your Personal Investor Profile, PIP
- Measuring the return on investment
- Sources of risk and its measurement
- >>> Techniques to control risk
- Investment vehicles

Techniques to Control Risk

- Diversification of asset classes
  - Cash / Bonds / Stocks
  - Domestic / International
- Tax diversification
  - Taxable, tax-deferred and tax-free accounts
- Time diversification
  - Dollar cost averaging
  - Value averaging

Dollar Cost Averaging

- Invest a fixed $ amount at equal periods

Month	$Amt	SharePr	#Shares	TotalSh	TotalVal
1	$1000	$10	100	100	$1000
2	$1000	$9	111	211	$1899
3	$1000	$8	125	337	$2696
4	$1000	$10	100	437	$4370
5	$1000	$12	83	520	$6240
6	$1000	$11	91	611	$6721
Total	$6000	$10.00	611		

Average cost of purchased shares = $6000/611 = $9.83

Value Averaging

- Adjust balance each period to target value

Month	$Amt	SharePr	#Shares	TotalSh	TotalVal
1	$1000	$10	100	100	$1000
2	$1100	$9	122	222	$2000
3	$1224	$8	153	375	$3000
4	$250	$10	25	400	$4000
5	$200	$12	17	417	$5000
6	$1413	$11	128	545	$6000
Total	$5187	$10.00	545		

Average cost of purchased shares = $5187 / 545 = $9.52

Topics Covered Today

- Your Personal Investor Profile, PIP
- Measuring the return on investment
- Sources of risk and its measurement
- Techniques to control risk
- >>> Investment vehicles

Investment Vehicles

- Cash and equivalents
- Individual stocks and bonds
- Mutual funds
- Closed-end funds
- Exchange traded funds, ETFs
- Exchange traded notes, ETNs
- Real Estate Investment Trusts, REITs
- Other: Commodities, MLPs, Hedge Funds, etc.

Cash and Cash Equivalents

- Checking and savings accounts
- Money market funds
- Certificate of deposit, CDs
- Treasury bills, etc.
- Characteristics:
  - Stable value
  - Low return
  - May not keep up with inflation after taxes

Individual Bonds

- Investor lends $ to a company or agency

  and receives periodic interest payments
- Traded through a broker
- Need numerous bonds to build a diversified portfolio
- Least principle risk if held to maturity
- Valuation is complex and time-consuming

Attributes of a Bond

- Interest rate; Price moves inversely
- Lending agency
  - Corporation, Local, State or Federal Government
- Quality
  - Rating agencies: S&P, Moody's, Fitch
  - Investment grade, High yield i.e. junk bonds
- Term; 1 year to >30 years
- Callable; Issuer reserves right to call bond early

Individual Stocks

- Investor owns small fraction of a company

  along with its gains/losses, dividends
- Traded through a stock broker

  throughout the day, for a commission
- Need at least 20 stocks in different sectors

  to build a diversified portfolio
- Valuation is complex and time-consuming

Financial Statements

- **Balance Sheet (snapshot for a specific date)**

  Assets – Liabilities = Stockholder's equity

  Tangible assets – Liabilities = Book value

- **Income Statement (reported for prior year)**

  Revenue – Expenses = Net earnings

  Dividends = Net earnings/share x Payout ratio

- **Cash Flow Statement (for the prior year)**

  Operating / Investing / Financing activities

Stock Analysis

- **Price/earnings ratio**
  = Market price / Earnings per share, EPS
- **Dividend Yield**
  = Annual dividends per share / Market price
- **Discounted Cash Flow Model, DCF**
  Intrinsic value
  = PV of expected future net cash flows
  discounted by the required rate of return

Mutual Funds

- Pooled portfolio of stocks and/or bonds
- Traded at NAV at end of the day

  directly with fund family or thru broker
- Shares are generated or liquidated as needed
- Typically distribute all income/capital gains
- Broad range of mutual funds available
  - Passive funds follow an index, e.g. S&P 500
  - Active funds conform to an objective

Mutual Fund Fees

- **Load to purchase or sell shares**
  - **Front-end load, can be as high as 5.75%, (8.5%)**
  - **Back-end load, declines each year; 5% → 0%**
- **No load funds**
- **Expense ratio covers operating expenses**
  - **Management fee; Ranges from <0.1% to >2%**
  - **12b-1 fees for marketing the fund; 0% to 1%**

Tax Trap

- Typically distribute all income, capital gains
- Shareholder is liable for any tax due
- Share price drops by amount of distribution
- Beware buying fund just prior to distribution

Example: $20 share price before distribution

$1 distribution

$19 share price after distribution

Still whole, but ….. must pay tax on $1 distribution

Closed-End Funds

- Similar to open mutual funds except …
  - Shares limited to initial offering
  - Traded only thru a broker (similar to a stock)
  - Can trade at a premium or discount to NAV

    i.e. not valued at end of day
- Relatively low press coverage
  - May provide inefficient market opportunity

Exchange Traded Funds

- Similar to mutual funds except …
  - Traded like a stock throughout the day
  - Wide range of trade orders and options available
  - Shares are created/destroyed as needed by Authorized Participant, AP
  - Tax-efficient due to “in-kind” transactions by AP
  - Wide range of passive index ETF’s available plus a growing selection of “smart beta” ETFs

Expenses for ETFs

- Trade commission for broker
  - Very often waived for broker's own ETFs
- Bid/ask spread
  - Covers the market maker's costs
- Expense ratio
  - Covers the ongoing costs of managing the fund
  - Often slightly lower than equivalent mutual fund
- May not be suitable for dollar cost averaging

Trading Techniques for ETFs

- Can be traded throughout the day
  - Buy, Sell, Sell short
- Variety of trade orders available
  - Market, Limit, Stop loss, etc.
- Beware occasional spikes, flash crashes
  - Caused by price uncertainty, liquidity issues
  - Market and stop loss orders can be dangerous
  - Safer to use limit buy, limit sell, stop-limit orders

Comparison of Mutual Funds and ETFs

	Mutual Fund	ETF
Broad range of Indices	Yes	Yes
Trade	Fund/Broker	Broker
Loads, 12b-1 fees	Maybe	No
Broker commission	No	Probably
Trading hours	Mkt close	Mkt hours
Limit, Stop-Loss orders	No	Yes
Premium/Discount to NAV	No	Yes
Tax efficient	No	Yes

Exchange Traded Notes, ETNs

- **Similar to ETFs except …**
  - **Derivative note that pays return on portfolio**
  - **Does not own securities in portfolio**
  - **Credit risk of issuer is very important**
  - **May get preferential tax treatment for dividends**
  - **May avoid use of K1 for commodities, MLPs, etc.**
- **Due diligence for issuer can be complicated and time-consuming**

Real Estate Investment Trusts

- Mortgage REIT; Interest from pool of mortgages
- Equity REIT
  - Invests in income producing real estate
    apartments, shopping centers, offices, hotels
  - Must distribute at least 90% of taxable income
  - REIT can deduct div pmts from taxable income
  - Relatively low correlation with stock market
- Numerous REIT mutual funds and ETFs

Alternative Investments

- Commodity mutual funds and ETFs available
- Master Limited Partnerships, MLPs
  - General partner, 5% - 10% + share of profits
- Hedge funds
  - Go anywhere, absolute return
  - Usually charge 2% pa exp. ratio + 20% of profit
- Private equity
  - For high net-worth investors

Common Attributes of Alternative Investments

- Complicated
  - Time consuming to analyze
  - Need experience
- Expensive
- Liquidity issues
- Risky
  - Return may not justify risk
- May only be available to Accredited Investors

In Summary

- Today we have covered …
  - Your Personal Investor Profile, PIP
  - Risk and return measurements
  - Techniques to control risk
  - Investment vehicles

Next Month

- We will discuss …

Building a Diversified Portfolio

- Modern Portfolio Theory
- Characteristics of the asset classes
- Building and rebalancing your portfolio
- Your Investment Policy Statement, IPS

Assignment for Next Month

- Open an “All About Me” folder
- Write a 1-page PIP and place in the folder
  - Complete a risk tolerance questionnaire
- Check your retirement accounts
  - 5-year compound annual growth rate
  - 5-year standard deviation
  - Sharpe ratio

To probe further

- *Money Funds and the Regulators*, Mike Krasner, AAII Journal, June 2013
- *Intro to Financial Statement Analysis*, Joe Lan, AAII Journal, Jan 2012
- *16 Financial Ratios for Analyzing a Company's Strengths and Weaknesses*, Joe Lan, AAII Journal, September 2012
- *Quantitative Strategies for Selecting Stocks*, Richard Tortoriello, AAII Journal, May 2010
- *The Problem with Stop Loss Orders*, Michael Kitces blog www.kitces.com
- *The Role of REITS for Long-Term Investors*, Brad Case, AAII Journal, Jan 2012
- *Bogle on Mutual Funds*, John Bogle, Irwin Professional Publishing
- *A Random Walk Down Wall Street*, Burton Malkiel, W.W. Norton & Co.
- *Fire Your Stock Analyst!*, Harry Domash, Prentice Hall
- *Winning The Loser's Game*, Charles D. Ellis, McGraw Hill

Useful Websites

- www.aaii.com Broad selection of investing material
- www.santaclaracountylib.org /Adults/Business & Money/

  Morningstar Investment Research Center } Stocks

  Standard & Poors NetAdvantage } + Mutual funds

  Value Line } + ETFs, etc.

- www.bogleheads.org www.investopedia.com
- www.schwab.com www.tdameritrade.com
- www.vanguard.com www.fidelity.com
- www.etf.com www.troweprice.com
- www.etfdb.com www.etftrends.com
- www.reit.com NAREIT's home for all things REIT !
- www.siliconvalleyaaii.org Previous presentations on various topics

"Are you ready to start investing or do you want to keep throwing your money away on food, clothing and shelter?"