

**American Association of Individual Investors
presents
Financial Planning Workshop**

Fundamentals of Investing

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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

	<u>Early Career</u>	<u>Mid Career</u>	<u>Late Career</u>	<u>Early Retrmnt</u>	<u>Late Retrmnt</u>
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

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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,

$$\text{Total return} = 2\% + 7\% = 9\%$$

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

If inflation for the year was 3%, then

$$\text{Real return} = 9\% - 3\% = 6\%$$

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

$$(9\% - 5\% + 14\%)/3 = 6\% \text{ per annum}$$

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

Geometric Mean

- **Geometric mean**
 - = $\{(1+9\%) \times (1-5\%) \times (1+14\%)\}^{(1/3)} - 1$
 - = $\{1.09 \times 0.95 \times 1.14\}^{0.333} - 1$
 - = $1.18^{0.333} - 1$
 - = $1.0569 - 1$
 - = **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

		<u>Year-end Cash Flow</u>
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 $\sim (FV - CF/2)/(PV + CF/2) - 1$ 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

$$= (\$25,000 - \$10,000) / \$10,000 \text{ over 10 years}$$

$$= 150\% / 10\text{yrs} = 15\% \text{ pa}$$

Geometric mean

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

$$= 9.6\% \text{ cagr}$$

- 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

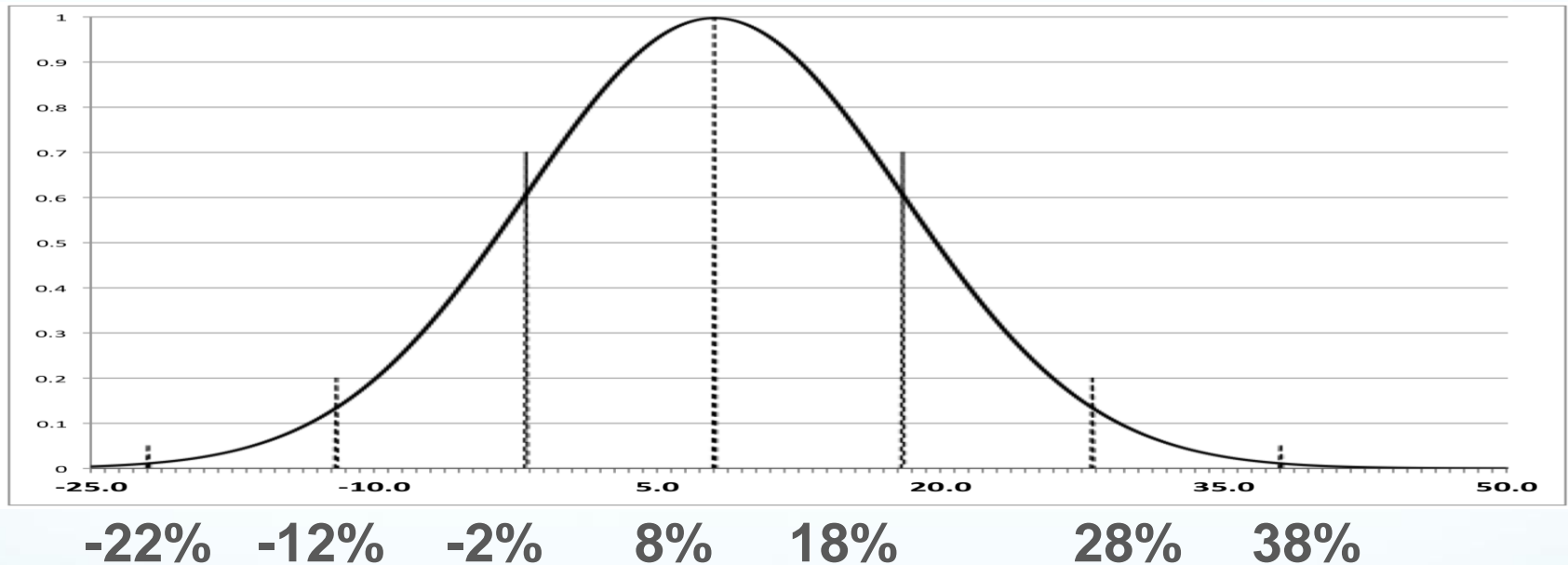
- Your Personal Investor Profile, PIP
- Measuring the return on investment
- >>> Sources of risk and its measurement
- Techniques to control risk
- Investment vehicles

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)



<<< 68% >>>

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

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

Beta

- **Volatility relative to a benchmark**
e.g. S&P 500 index

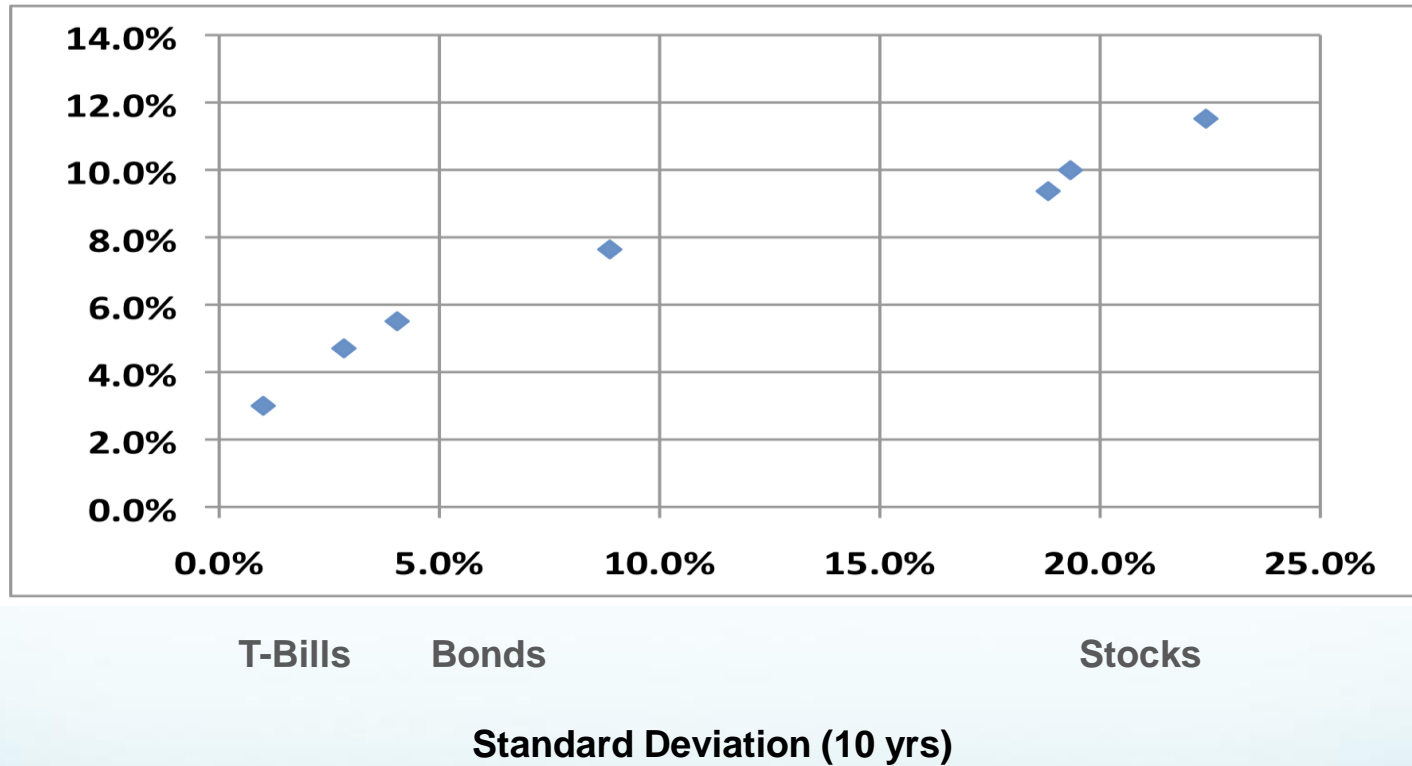
**For example, if a stock has a Beta of 1.2
then it is 20% more volatile than its benchmark.**

**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
	<u>Return pa</u>	<u>Balance</u>	<u>Return pa</u>	<u>Balance</u>
		\$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 = $(R_P - R_{RF}) / \text{Std. Dev.}$
- Treynor Ratio = $(R_P - R_{RF}) / \text{Beta}$
 - where R_P = Projected return
 - R_{RF} = Risk-free return
- Other risk-adjusted ratios:
 - Sortino Ratio, Ulcer Index
 - Focus on downside volatility

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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

<u>Month</u>	<u>\$Amt</u>	<u>SharePr</u>	<u>#Shares</u>	<u>TotalSh</u>	<u>TotalVal</u>
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	<u>\$1000</u>	<u>\$11</u>	<u>91</u>	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

<u>Month</u>	<u>\$Amt</u>	<u>SharePr</u>	<u>#Shares</u>	<u>TotalSh</u>	<u>TotalVal</u>
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	<u>\$1413</u>	<u>\$11</u>	<u>128</u>	545	\$6000
Total	\$5187	\$10.00	545		

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

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- >>> 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

	<u>Mutual Fund</u>	<u>ETF</u>
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, AAll Journal, June 2013
- *Intro to Financial Statement Analysis*, Joe Lan, AAll Journal, Jan 2012
- *16 Financial Ratios for Analyzing a Company's Strengths and Weaknesses*,
Joe Lan, AAll Journal, September 2012
- *Quantitative Strategies for Selecting Stocks*,
Richard Tortoriello, AAll 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, AAll 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?”