A Quick Start Guide to Investing: Part 3-5

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Personal Finance SDG

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1. Personal Financial Planning: Investment Playbook
2. Portfolio Management: Achieving your Plan
3. Fundamental Analysis
4. Technical Analysis

Objective 1: Simplify decision making process

A well-defined financial plan is personal and unique to you. It enables you to construct a portfolio tailored to your needs that, with time and discipline, will realize your objective.

- There are countless ways to combine assets, companies, sectors, risk factors
- Simplifies decision-making by filtering out combinations that do not align with your plan
- Establishes useful subset of financial objects

Objective 2: Assessing your capacity to invest

- It is **essential** to determine **how much capital is available** to you for investing
- Consider:
  - Historic patterns (income, spending)
  - Current situation (rent, bills, immediate cash flow)
  - Possible future situations (emergency expenses, loans/debts, worst case scenarios)
- Understanding the pattern of your cash flow will help you build good habits and a healthy portfolio

Objective 3: Avoiding distractions

- A plan, when **developed properly and executed with discipline**, prevents you from chasing the market
- Rather than pursue movements in particular assets, you let the assets that align with your goal move for you
- Fear-of-missing-out and profit-chasing are mitigated
- Market noise is filtered out
- Risks are managed

1 Personal Financial Planning: Investment Playbook
What is your Financial Reality?
Cash-In
Cash-Out
Opportunity Cost
What is your Reason for Investing?
What is your Portfolio Objective?
What is your Time Horizon?
What is your Time Availability?
What is your Risk Tolerance?
Financial Plan Summary: The 8 Elements

Cash entering your accounts

- **Regular income**: Income you can reliably expect
  - Salary, income tax returns, loans, grants, rental/sublet income
- **Irregular income**: Income you cannot reliably expect
  - Bonuses, commissions, scholarships, awards, gifts, e-transfers, tips

Cash exiting your accounts

- Mandatory Spending: These are your necessary costs of life
  - Rent, loan interest payments, loan principal payments, bills, groceries, regular medication, pet expenses, transportation, etc.
- Discretionary Spending: These are life enhancements that are non-essential
  - Entertainment, luxuries, durable goods, presents, etc
- Spending Categorization: A more granular alternative
  - This requires more time but for the micro-managers among us but there's plenty of room for automation and detailed data insights

What can you do with your capital?

- **Expected Future Capital (EFC)**: Capital available to invest in the future

$$\text{EFC} = \text{Cash-In} - \text{Cash-Out}$$

- Assume your **EFC** is $\$10,000$:
  - **Opportunity Cost (OC)**: The value of the next best alternative
  - **Risk Free Interest Rate (RFIR)**: The current yield of the highest paying government bond. The 2-year Canadian Government Bond returns 4.21% as of March 3rd (15 year high) hence $10,000 would earn $842.00 after 2 years
  - Is the **OC** of investing your **EFC** greater than the $842.00 earned by the **RFIR** after 2 years?

1 Personal Financial Planning: Investment Playbook
What is your Financial Reality?
What is your Reason for Investing?
Financing
Saving
Future Income
Other
What is your Portfolio Objective?
What is your Time Horizon?
What is your Time Availability?
What is your Risk Tolerance?
Financial Plan Summary: The 8 Elements

Means to an end

- Intentions of **withdrawing at a future point** for a **future purchase**
- Investing for a home, car, education, etc.

Flexible safety net

- Intentions of **accumulating wealth** beyond rate of return of a savings account
- Maxing registered accounts, building wealth, etc.

Salary support and retirement

- Intentions of **generating cash flow** either through capital gains or dividends
- Monthly income, annual income, retirement income, job-loss protection, etc.

Many personal reasons

- It's important to identify clearly what your reason is for investing
- If it is not clear, your run the risk of making investing decisions that do not align well with your objectives

1 Personal Financial Planning: Investment Playbook
What is your Financial Reality?
What is your Reason for Investing?
What is your Portfolio Objective?
Growth
Income
Balanced
What is your Time Horizon?
What is your Time Availability?
What is your Risk Tolerance?
Financial Plan Summary: The 8 Elements

Investing for Capital Gains

- Purchase assets that appreciate in value but do not directly affect cash flows
- Growth equities, value equities, ETFs, commodities, real estate, certain bonds, etc

Investing for Cash Flow

- Purchase assets that distribute cash to your account
- Bonds, dividend equities, ETFs, real estate,

A strategic mix of growth and income

- Diversifies across asset classes to reduce exposure to risks
- Divides total allocation across assets such that portfolio aligns with objective

1 Personal Financial Planning: Investment Playbook
- What is your Financial Reality?
- What is your Reason for Investing?
- What is your Portfolio Objective?
- What is your Time Horizon?
  - Short-Term
  - Medium-Term
  - Long-Term
- What is your Time Availability?
- What is your Risk Tolerance?
- Financial Plan Summary: The 8 Elements

Time horizons dictate asset allocation

- Time Horizon: The length of time before investments are sold off and gains/losses are realized
- Shorter time-frames limit the ability to recover from unforeseen risks
- Longer time-frames allow investors to absorb more risk assuming continued economic growth

Less than 3 years

- There is a near-term requirement for this Capital
- Limited runway to recover from economic downturns
- Lower risk assets are preferable
- Bonds, notes, covered calls

3 to 10 years

- Potential longer-term requirement for this capital
- Longer runway to recover from economic downturns
- Higher risk assets become more feasible along with lower risk assets
- Mix of equities and funds, fixed incomes, derivatives

Greater than 10 years

- Long-term goal or no use case for capital
- A runway that can protect against economic downturns
- Lower risk assets appear less desirable since time can buffer against risk allowing room for greater potential growth
- Assets tend toward higher risk options and away from lower risk

1 Personal Financial Planning: Investment Playbook
What is your Financial Reality?
What is your Reason for Investing?
What is your Portfolio Objective?
What is your Time Horizon?
What is your Time Availability?
Limited
Flexible
Unlimited
What is your Risk Tolerance?
Financial Plan Summary: The 8 Elements

Spend only as much time as you need to

- Investing does not need to be a time-consuming task
- If your times is better spent elsewhere, then it probably should be spent elsewhere
- Fewer decisions may yield better results

Little to no time available

- You cannot or do not intend on making decisions or monitoring your account
- You do not enjoy investment research
- Your time is better spent developing employable skills

Some amount of time available

- You can and are willing to make decisions at some frequency
- Monitoring investments and doing research are enjoyable for you
- You prefer to read about markets than do the next best thing

As much time available as you would like

- You can spend all the time you like making decisions at any frequency
- You passively do market research along with your other activities
- Your other commitments leave with you plenty of time

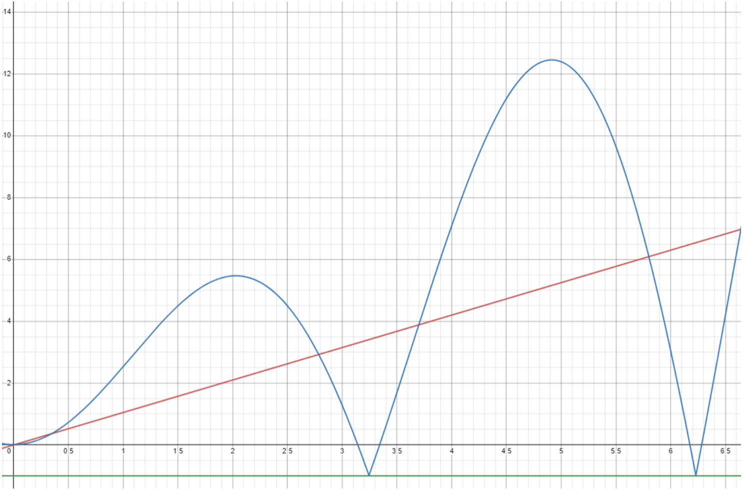
1 Personal Financial Planning: Investment Playbook
What is your Financial Reality?
What is your Reason for Investing?
What is your Portfolio Objective?
What is your Time Horizon?
What is your Time Availability?
What is your Risk Tolerance?
Risk
Low
Medium
High
Asset Risk Summary
Financial Plan Summary: The 8 Elements

Risk as Standard Deviation and price changes

1. Risk: The standard deviation of returns over a period of time
   - Standard Deviation: The scaling of a distribution from the mean of population
2. Risk: Also known as volatility, is potential range of price changes over a period of time
   - Over 1 year, an asset that could likely see price changes of $\pm 20\%$ per day is considered more volatile than an asset that could likely see price changes of $\pm 4\%$ per day

- **Risk and return are highly correlated**. High risk implies high potential return while low risk implies low potential return
- Risks can be managed to various extents

Risk as price changes



There is little to no room for risk

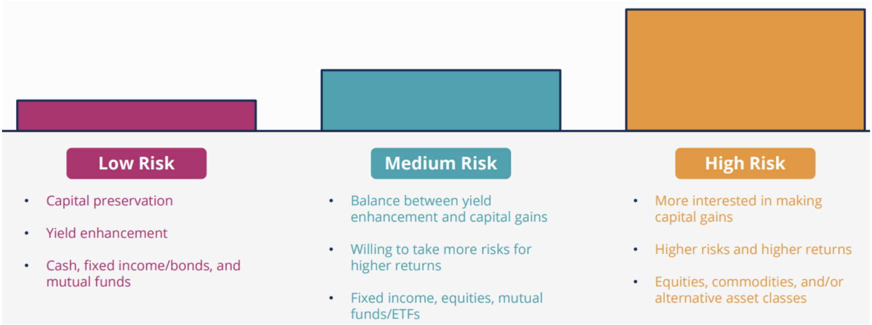
- Minimum growth is acceptable for you
- Seeking risk-free or near risk-free returns
- Require capital back in short or medium term
- Capital is not covered well by future expected cash flow
- You are prone to emotionally driven decisions

You can accept some degree of risk

- Near average growth is desirable for you
- Risks are acceptable for a higher return
- No foreseeable requirements for invested capital
- Capital can be replaced over time
- You can withstand volatility

You are indifferent to risk

- Above average growth is the objective
- Maximum risk tolerance for any return
- Capital invested is negligible to you
- Capital can be easily replaced
- Volatility is your friend


Low Risk
Capital preservation
Yield enhancement
Cash, fixed income/bonds, and mutual funds
Medium Risk
Balance between yield enhancement and capital gains
Willing to take more risks for higher returns
Fixed income, equities, mutual funds/ETFs
High Risk
More interested in making capital gains
Higher risks and higher returns
Equities, commodities, and/or alternative asset classes

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- What is your Risk Tolerance?
- Financial Plan Summary: The 8 Elements
  - Quantitative Variables
  - Qualitative Variables

What you can put a number on

1. Expected Future Capital (EFC, dollars)
   - Money available to invest over some time
2. Opportunity Cost of EFC (OC, dollars)
   - The benchmark return for your EFC
3. Risk Free Interest Rate (percent)
   - The yield of the 10-year Gov. of Canada Bond
4. Time Horizon (years, months, etc)
   1. Time until you withdraw your returns or losses
5. Risk Tolerance (percent)
   1. The percent change you are comfortable with

Expected Future Capital

- The expected dollar amount available to invest over some period of time
- Add all expected income (regular and irregular) and subtract all expected expenses (mandatory and discretionary)

$$Income = (salary) + (grants) + (OSAP) + (IncTaxRef) + \dots$$

$$AnnualExpenses = (Rent) + (Groceries) + (Pet) + (Takeout) + \dots$$

$$ExpectedFutureCapital = AnnualExpenses - Income$$

Opportunity Cost

- Once you identify your EFC, you can compare options
  - Opportunity cost is the benchmark for comparing investment options.
  - This should be the easiest and most risk-free option for your capital
    - Pay off OSAP loans (3.5%)?
    - Government bonds (RFIR, 4%)?
    - Loan to a friend (10%)?
  - How much risk must you take on to achieve a greater return than this?

Time Horizon 1

- Time horizon is the amount of time you will hold onto your investments
- Shorter horizons are exposed to greater economic risks than longer horizons
  - If an economic downturn happens, you have a longer runway to recover from potential losses or to grow a barrier that will absorb loss in value

Time Horizon 2

1. Less than 3 years
   - Short horizon, requires at least principal on withdrawal, little resilience to economic risk and natural market fluctuation
2. Between 3 and 10 years:
   - Medium horizon, potential use case for capital, more resilience to economic risk and can absorb negative market fluctuations
3. Greater than 10 years:
   - Long horizon, no clear use case for capital, high potential protection from economic risk and benefits from market fluctuations

Risk Tolerance 1

- Risk is the standard deviation of the percent changes of an asset over time
- Your **tolerance** should be **relative to** the your **opportunity cost**
- Steps to calculating risk:
    1. Find a sample of historical asset price for a period of time
    2. Calculate standard deviation
    3. Annualize according to interval of sample and time horizon
    4. This will be your volatility (risk) for 1 year

Risk Tolerance 2

Annual volatility from daily standard deviation over 5 years

```
In [1]: import yfinance as yf

In [2]: import math

In [3]: apple = yf.download('AAPL', '2017-11-18')
[*********************100%***********************]  1 of 1 completed

In [4]: print(apple.pct_change().multiply(100).describe().to_string())
              Open         High          Low        Close    Adj Close       Volume
count  1258.000000  1258.000000  1258.000000  1258.000000  1258.000000  1258.000000
mean      0.122553     0.116436     0.117778     0.122511     0.126504     4.430566
std       2.056536     1.736115     1.857762     2.092621     2.091965    33.442189
min      -8.660205    -9.264187    -8.776571   -12.864696   -12.864702   -71.226650
25%      -0.891987    -0.727495    -0.804699    -0.859080    -0.852025   -16.387026
50%       0.199326     0.140811     0.242321     0.099464     0.104877    -1.896950
75%       1.161976     0.989706     1.087308     1.236632     1.236628    18.716171
max       9.725565    10.506504    10.201779    11.980827    11.980818   262.830335

In [5]: risk = 2.092621 * math.sqrt(256)

In [6]: risk
Out[6]: 33.481936

In [7]:
```

Risk Tolerance 3

- Assume Apple has an annual risk (volatility) of 33%
- Assume your opportunity cost is (Gov. bond) is 4%
- In one year, you are risking a 33% greater loss for a 29% greater gain
- Is that acceptable to you?

Risk Tolerance 4

1. Low risk
   - Potential loss greater than the OC (RFIR) of EFC is not feasible
2. Medium risk
   - Potential loss less than ___ times the OC (RFIR) of EFC is acceptable
3. High risk
   - Any potential loss is acceptable for ___ times the OC (RFIR) of EFC

Things that don't need a number

1. Reason for investing
   - i. Motivation for building a portfolio
2. Portfolio objective
   - i. Portfolio development style

Reason for investing

1. Financing:
    - Investing to fund a future capital requirement (home, education, etc)
2. Saving:
    - Investing to accumulate wealth or protect value with no clear future requirements for funds
3. Income:
    - Generating cash flow for income replacement, retirement, etc

Portfolio objective

1. Growth:
   - Focused on **capital appreciation** (return on investment) with no interest in cash flow
   - **Does not align well with income-oriented** investment reasons as volatility is unpredictable (risk cannot be decoupled from return)
2. Income:
   - Focused on generating **predictable cash income** (yield on cost) and income growth
   - Can satisfy all investment reasons, however, dividends reduce the value of shares
3. Balanced:
   - Combines capital appreciation and cash income
   - Exposes portfolio to a **broader subset of the market**

Time availability

- Hands off: You prefer to limit the time spent thinking about investing
- Hands on: You enjoy planning and monitoring your portfolio but
- Micromanager: You love interacting with financial markets

2 Portfolio Management: Achieving your Plan
Elements of Portfolio Construction
Diversification
Correlation
Risk Exposure
Investing Expense
Cash Flow
Integrating Financial Plan Into Portfolio
Portfolio Analysis

Definitions

Diversification: Refers to the number of holdings and the weight each holding has in your portfolio.

- The greater number of holdings and the more equal weightings, then the more diversified the portfolio is.
- Some common areas to diversify across are:
  - Asset Classes
  - Sectors and/or Industries
  - Geographies

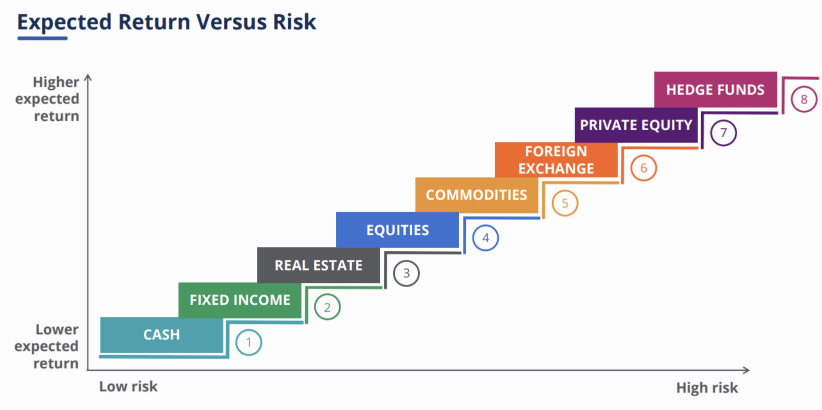
Asset Class Diversification

The 7 Common Asset Classes:

1. Cash and Cash Equivalents
2. Equities
3. Fixed Incomes
4. Real Estate
5. Commodities
6. Derivatives
7. Currencies

The 2 uncommon assets:

1. Private Equity
2. Hedge Funds


Expected Return Versus Risk
Higher expected return
Lower expected return
Low risk
High risk
CASH
1
FIXED INCOME
2
REAL ESTATE
3
EQUITIES
4
COMMODITIES
5
FOREIGN EXCHANGE
6
PRIVATE EQUITY
7
HEDGE FUNDS
8

Sector diversification 1

1. Healthcare
2. Material
3. Real Estate
4. Consumer Staple
5. Consumer Discretionary
6. Utility
7. Energy
8. Industrial
9. Communication Services
10. Financial
11. Technology

Global Industry Classification Standard: Business categorization

Sector Diversification 2

- Each sector behaves differently
- Sector diversification manages exposure to these risks types
  - **Common risks**: Risks common to companies within a sector
    - E.g., Tech - semiconductor supply, cyber security
    - E.g., Energy - regulations, environmental destruction
  - **Shared risks**: Risks common between sectors but not necessarily all companies
    - Interest rates, unemployment, geopolitical instability

Industry diversification

- Many companies have risk intersections with other sectors
- As categories become more granular, risk intersections reduce
- Hence, diversifying across industries may better mitigate risks
  - GICS' classification breaks down into:
    - 24 industry groups
    - 69 industries
    - 158 sub-industries

Global Industry Classification Standard: Business categorization

Geographic Diversification 1

- Morgan Stanley Capital International (MSCI) classifies countries into 3 markets:
  1. Frontier
  2. Emerging
  3. Developed
- MSCI bases this on 3 criterias:
  1. Economic Development
  2. Size and Liquidity of Companies
  3. Market Accessibility

Geographic Diversification 2

- Each criteria is measured as follows:
  1. Economic Development
     - Sustainability of economic development
  2. Size and Liquidity
     - Full market cap
     - Float market cap
     - Security liquidity
  3. Market Accessibility Criteria
     - Openness to foreign ownership
     - Ease of capital inflow/outflow
     - Efficiency of operational framework
     - Availability of Investment instrument
     - Stability of institutional framework

Geographic Diversification 3

Criteria			Frontier	Emerging	Developed
A	Economic Development				
	A.1	Sustainability of economic development	No requirement	No requirement	Country GNI per capita 25% above the World Bank high income threshold* for 3 consecutive years
B	Size and Liquidity Requirements				
	B.1	Number of companies meeting the following Standard Index criteria	2	3	5
		Company size (full market cap) **	USD 1,070 mm	USD 2,139 mm	USD 4,278 mm
		Security size (float market cap) **	USD 91 mm	USD 1,070 mm	USD 2,139 mm
		Security liquidity	2.5% ATVR	15% ATVR	20% ATVR
C	Market Accessibility Criteria				
	C.1	Openness to foreign ownership	At least some	Significant	Very high
	C.2	Ease of capital inflows / outflows	At least partial	Significant	Very high
	C.3	Efficiency of operational framework	Modest	Good and tested	Very high
	C.4	Availability of Investment Instrument	High	High	Unrestricted
	C.5	Stability of the institutional framework	Modest	Modest	Very high

* High income threshold: 2020 GNI per capita of USD 12,695 (World Bank, Atlas method)
** Minimum in use for the May 2022 Semi-Annual Index Review, updated on a semi-annual basis

Geographic Diversification 4

MSCI WORLD INDEX

DEVELOPED MARKETS

Americas	Europe & Middle East	Pacific
Canada United States	Austria Belgium Denmark Finland France Germany Ireland Israel Italy Netherlands Norway Portugal Spain Sweden Switzerland United Kingdom	Australia Hong Kong Japan New Zealand Singapore

MSCI EMERGING MARKETS INDEX

EMERGING MARKETS

Americas	Europe, Middle East & Africa	Asia
Brazil Chile Colombia Mexico Peru	Czech Republic Egypt Greece Hungary Kuwait Poland Qatar Saudi Arabia South Africa Turkey United Arab Emirates	China India Indonesia Korea Malaysia Philippines Taiwan Thailand

MSCI FRONTIER MARKETS INDEX

FRONTIER MARKETS

Europe	Africa	Middle East	Asia
Croatia Estonia Iceland Lithuania Kazakhstan Romania Serbia Slovenia	Kenya Mauritius Morocco Nigeria Tunisia WAEMU[2]	Bahrain Jordan Oman	Bangladesh Pakistan Sri Lanka Vietnam

MSCI STANDALONE MARKET INDEXES[1]

Americas	Europe	Africa	Middle East
Argentina Jamaica Panama Trinidad & Tobago	Bosnia Herzegovina Bulgaria Malta Ukraine	Botswana Zimbabwe	Lebanon Palestine

Geographic Diversification 5

Political Structure - The degree of political freedom/democracy affects business risk, but the effects can cut both ways (good and bad). - Democracies expose businesses to more continuous risk, as laws and regulations can change, when elections create government changes. - Authoritarian regimes often offer the promise of predictability, and less risk on a period-to-period basis, but face more discontinous risk, since regime change is often violent and significantly disruptive.	**Corruption** - Corruption operates as a hidden tax, reducing profitability and value for private businesses - Businesses operating in corrupt locales face a choice of either accepting corruption as part of the cost of doing business or operating at a disadvantage to competitors who are less scruplous.
War & Violence - Operating a business in a country that is more exposed to violence, from war, terrorism or internal strife, is more difficult than operating that business in a more peaceful environment. - Businesses will face higher costs in operations and/ or from trying to insure themselves against violence.	**Legal & Property Rights** - The value of a private business is dependent on a legal system that respects property rights and enforces those rights. - In a country where there are no or weak property rights or that has a legal system that does not enforce those rights, businesses face more risks and have less value. - Timeliness in enforcing legal rights matters as much as the due process, since rights not enforced in a timely manner provide weak protection.

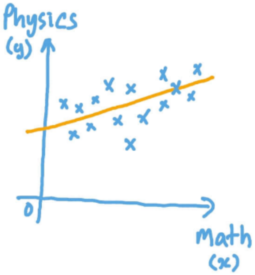
Country Risk

Correlation 1

- Diversification, in itself, does not guarantee risk mitigation
- Hence, measuring risk exposure becomes important to avoid accidental over exposure
- **Goal**: Assess effectiveness of diversification by quantifying relationship between assets

Correlation 2

PEARSON'S PRODUCT MOMENT CORRELATION COEFFICIENT



$$S_{xx} = \sum x^2 - \frac{(\sum x)^2}{n}$$

$$S_{yy} = \sum y^2 - \frac{(\sum y)^2}{n}$$

$$S_{xy} = \sum xy - \frac{\sum x \sum y}{n}$$

$$\boxed{r = \frac{S_{xy}}{\sqrt{S_{xx} S_{yy}}}}$$

Correlation 3

- Correlation: The strength of a relationship between the changes in value of assets.
  - Expressed as a number between -1.0 and 1.0
    - -1.0 implies no relationship
    - 1.0 implies exact relationship (Direct or Inverse)
- Calculated via Pearson product-moment correlation coefficient
- Requires historic **percent** price changes for assets
- Can be done easily on excel or python

Correlation 4

Download this template from our GitHub

PEARSON PRODUCT MOMENT CORRELATION COEFFICIENT TEMPLATE

PPMCC	NUMERATOR	DENOMINATOR
0.24	1757.52	7192.45

Date	$ CLOSE TSM	% DELTA TSM	% SQUARE TSM	$ CLOSE AAPL	% DELTA AAPL	% SQUARE AAPL	% PRODUCT TSM x AAPL
2022-03-07	99.290	-	-	159.300	-	-	-
2022-03-08	100.000	0.715	0.511	157.440	-1.168	1.363	-0.835
2022-03-09	104.950	0.049	0.002	162.950	3.500	12.248	0.173
2022-03-10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Risk Exposure 1

- The market price of an asset is a forward-looking assessment of risk
- Countless types of future risks are factored into the market price of assets
- As the perception of future risks change, market prices change
- Hence, to understand how an asset prices changes, it is important to understand how it's risk could change

Risk Exposure 2

Some common risk categories include:

1. Business Risk: Affect sales or profit margins
2. Financial Risk: Affect debt repayment and financial leverage
3. Liquidity Risk: Affect spread between bid and ask
4. Exchange Rate Risk: Affect international transactions
5. Market Risk: Derived from political or economic change

Risk Exposure 3

- A high-level understanding of your risk exposure will help build out your portfolio
- It is not necessary to analyze all risks for each asset you own
  - Uncovering each risk takes time
  - Change can occur drastically over short time periods

Investing Expense 1

- Diversification may or may not be costly
- Before investing, understand the fee structure of your brokerage
- Consider setting a benchmark risk-free return based on lowest cost brokerage
  - Compare the cost of your portfolio against this benchmark
  - The Portfolio Cost plus Benchmark Risk-Free Return is the minimum return on invested capital required to make the portfolio profitable

Investing Expense 2

Brokerage A, Benchmark

1. $0.0 F.I. Commission
2. 4.2% 1-year Gov't Bond
3. 0% Risk

Brokerage B, Alternative

1. $6.0 Stock Commission
2. 10% Potential Return
3. 10% Risk

Comparing alternative to benchmark after 1 year, we find:

- $6.00 greater cost for
- 5.8% greater potential return and
- 14.2% greater potential loss
- 4.2% + $6.00 is minimum return for profit for Brokerage B
    - Bonus: Consider equity discount. See Equity Risk Premium

Investing Expense 3

- **Management Fees**: Managing capital (funds, advisors)
- **Commission Fees**:Executing trades
- **Exchange Rate Fees**: Converting currency (to and from)
- **Account Fees**: Annual/Monthly for account existence
- **Maintenance Fees**: Balance less than minimum
- **Admin Fees**: Documents, transfers/withdrawals, etc.

Fees will eat away at compounding returns over time

Cash Flow 1

- Cash flow comes in two forms:
  1. **Interest payments**: Come from fixed-incomes (FIs)
  2. **Dividends**: Come from equities
  3. **Covered Calls**: Come from writing and closing derivatives
- Previous payment does not guarantee future payment
- Payments may increase, decrease, be constant, or cease

Cash Flow 2

- Since **Fixed Incomes** are debts, interest payments represent the cost of debt for issuers
- They can be paid on any periodic interval (monthly, quarterly, etc.)
- **Coupon**: Dollar payments, fixed at issuance
- **Yield**: Annualized return, based on market value
- Bond ETFs are a great way to reduce complexity and avoid navigating hidden brokerage bond fees
  - Downside is that you must account for volatility

Cash Flow 3

CORPORATE BONDS

Today: 7-Mar-23

Settlement: 9-Mar-23

*Prices and quantity are subject to change without notice

Corporate Bonds may be purchased from 9:00AM to 3:30PM EST through the Trade Desk

CUSIP	INVENTORY	ISSUER	COUPON	MATURITY	PRICE	YIELD	DBRS RA
70632ZAP6	100000	PEMBINA PIPELINE INCOME	2.56	2023-06-01	99.722	3.768	BBB(high)
13607GKV5	498000	CANADIAN IMPERIAL BANK O	2.43	2023-06-09	99.678	3.71	AA(low)
290876AC5	250000	EMERA INC.	2.9	2023-06-16	99.677	4.092	-
06368BJ90	500000	BANK OF MONTREAL	2.89	2023-06-20	99.774	3.69	AA

Cash Flow 4

- Dividends are cash distributions that companies/funds pass off to shareholders
- They are paid from "Net Income attributable to Shareholders"
  - If from a fund, dividends are collected and distributed according to prospectus
- Brokerages offer Dividend Re-Investment Plans where dividends can be reinvested into equity at no cost
  - This means dividends will generate dividends – compounding dividends!

Cash Flow 5

Some important Dividend terms include:

- **Announcement date**: Company announces dividend amount and payment date
- **Record date**: Cutoff for receiving upcoming dividend
- **Ex-dividend date**: Day after Record date, no rights to upcoming dividend
  - Note that shares trade at a discount on the Ex-dividend date
- **Payment date**: Dividend issued to eligible shareholders
- **Yield**: 1 year worth of dividends divided by share price
- **Payout Ratio**: All dividends divided by after-tax earnings

2 Portfolio Management: Achieving your Plan
Elements of Portfolio Construction
Integrating Financial Plan Into Portfolio
Mapping 8 Plan Elements to Assets
Portfolio Analysis

The 8 plan Elements

1. Expected Future Capital (EFC, dollars)
2. Opportunity Cost of EFC (OC, dollars)
3. Risk Free Interest Rate (percent)
4. Time Horizon (years, months, etc)
5. Risk Tolerance (percent)
6. Reason for Investing
7. Portfolio Objective
8. Time Availability

How does your plan relate to the different asset classes?

Many assets will not align with your financial plan

- Each asset has a unique risk profile that dictates valuations (Apple versus Enbridge)
- Not all assets provide cash flow (commodities, FX, equities)
- Some assets have limited lifespans (derivatives, bonds)
- Some assets are not risky enough for your investing reason (some bonds)
- Certain high-risk assets may require monitoring while some low-risk assets do not

Filtering out irrelevant assets 1

- The goal is to reduce the number of assets to a small subset that aligns with your plan the best
- First, create a watch-list of different assets
- Once you have an idea of all the different things you would like to invest in, compare those relative to the 8 elements of your financial plan

Filtering out irrelevant assets 2

1. Calculate the standard deviation of the asset and compare that with your opportunity cost
2. Does that outcome align with your risk tolerance?
   - If you are only comfortable with potential losses of twice the OC (RFIR) of EFC, then perhaps the asset doesn't align with you
3. Is it risky enough to meet your financial objective?
   - If you desire returns of 10% a year, then a low-volatility stock like a utility company with 6% annualized volatility may not allow you to achieve that
4. Repeat this process for each of the 8 elements of your plan

Measuring the relevant assets 1

1. Once you have filtered out the assets that do not align with your plan, you can use what remains to construct a portfolio
2. Evaluate the remaining assets relative to the 5 portfolio construction metrics
    i. Diversification (Sector, Geographic, Industrial)
    ii. Correlation (Change of assets relative to each other)
    iii. Risk Exposures (Business, Financial, Country, etc.)
    iv. Cost (asset price, commission, etc.)
    v. Cash Flow (dividends, coupons)

Measuring the relevant assets 2

1. The more concentrated you are in one particular industry, the more impactful industrial risks are
   i. measure the correlation of assets–sometimes very different industry share common risks that aren't always apparent
2. Managing risks is crucial to reducing portfolio volatility
   i. Understand how the underlying investment creates value–APPL purchases chips from Taiwan Semiconductor Manufacturing (TWD)
   ii. A negative impact to TWD will impact Apple valuations
3. Certain assets have higher commission fees than others or are simply expensive
4. Dividends can increase or decrease and coupon payments become more appealing as bond prices fall

2 Portfolio Management: Achieving your Plan
- Elements of Portfolio Construction
- Integrating Financial Plan Into Portfolio
- Portfolio Analysis
  - Book Value and Market Value
  - Annualized Return
  - Yield on Cost
  - Income Growth
  - Price-to-Earnings
  - Average Volatility
  - Sharpe Ratio

Book Value and Market Value

- Book value is the initial price you paid for your investment(s).
- When you buy the same asset multiple times, the book value will change
- Market Value is the current price of your assets on the market

Annualized Return

- Annualized return is the geometric average amount of money earned by an investment each year over a given time period
- Formula for Annualized Return:

$$((1 + r_1) \times (1 + r_2) \times \ldots \times (1 + r_n))^{\frac{1}{n}} - 1,$$

- where n = number of years and r_i = return in year i
- Formula for annualized return for non-yearly returns:

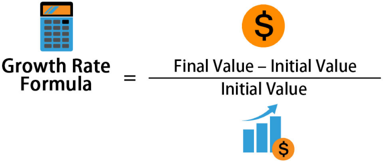
$$(1 + CumulativeReturn)^{\frac{365}{DaysHeld}} - 1$$

Yield on Cost (YOC)

- Yield on Cost is a measure of dividend yield calculated by dividing the current dividend by the initial price paid (book value)
- Stocks that consistently grow their dividends over time can deliver very high YOCs especially if the investor holds the stock for many years
- To determine the YOC of your entire portfolio, take the total current dividend and divide it by the portfolio's book value

Income Growth

- Tailored towards income generating assets such as real estate, fixed incomes, and dividend earning equities
- Income growth is calculated using the simple growth rate formula:



Price-to-Earnings

- The Price-to-Earnings (P/E) ratio is calculated by dividing a stock's current price by its latest earnings per share
- P/E ratio shows what the market is willing to pay today for a stock based on its past or future earnings
- You can determine the P/E ratio of your portfolio by taking a weighted average of the P/E ratio of all your portfolio's equities

Average Volatility

- Standard deviation: The average amount a portfolio's value has differed from the mean over a period of time

$$\text{Standard Deviation} = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}}$$

where:

x_i = Value of the i^{th} point in the data set

$\bar{x}$ = The mean value of the data set

n = The number of data points in the data set

Sharpe Ratio

- The Sharpe Ratio compares the return of an investment with its risk
- The ratio is useful in determining to what degree excess returns are accompanied by excess volatility
- Generally the higher the Sharpe Ratio, the more attractive the risk-adjusted return

$$\textit{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p}$$

where:

R_p = return of portfolio

R_f = risk-free rate

σ_p = standard deviation of the portfolio's excess return

3 Fundamental Analysis
What is Fundamental Analysis?
Definitions
Objective of Fundamental Analysis
Problems with Fundamental Analysis
Approaches
Company
Sector and Industry
Economy

Expected Future Cash Flow

Expected Future Cash Flow: The forecast of various cash flows available to equity holders

- Determined by various elements of public financial statements including: EBIT, depreciation, working capital, capital expenditures, etc.

Discount Rate

Discount Rate: The rate used to scale future value down to present value

- Calculated based on risk, **Weighted Average Cost of Capital (WACC)**, opportunity cost, and other factors
  - WACC: Sum of Cost of Equity and Cost of Debt

Intrinsic Value I

Intrinsic Value: The net present value of all expected future cash flows after applying a **discount rate**.

- How much cash flow will be produced in the future and what is that worth to me today?

Intrinsic Value II

1. Let n be the final period of investment.
2. Let C_i be the cash flow for period i where $i \leq n$.
3. Let r be the discount rate.
4. Let X_0 be the purchase price.
5. Let NPV be the net present value. Then,

$$\text{Intrinsic Value} = NPV = -X_0 + \sum_{i=1}^{n} \frac{C_i}{(1+r)^i}$$

Valuation

- The goal is to **value** a given investment at a certain moment in time
- Without assigning a future value to a potential investment, it is impossible to know whether you are paying a fair price
- Hence, fundamental analysis will aid in making a rigorous, informed decision

How it works

- Derive intrinsic value of an investment and **compare** it to market value
- The discrepancy between intrinsic and market value will inform investment decisions
  - If intrinsic value is greater than market value, then a buying opportunity could exist
  - If intrinsic value is less than market market value, then a selling opportunity could exist

Assumptions

1. Assumes relation between value and finances is measurable
2. Assumes relation is stable over some period
3. Assumes deviations from intrinsic value will be corrected

Interpretations

1. GAAP principles may or may not introduce inaccuracy
   - i.e., depreciation expenses for REITs
2. Determining discount rates are subjective
   - i;.e., opportunity costs may be questionable
3. Some assumptions exist on a range that may skew outcomes
   - i.e., high growth firms have decreasing capital spending to depreciation ratios as they mature
   - i.e., EBIT growth assumptions on the higher-end of guidance

Bottom-Top versus Top-Bottom I

Bottom-Top

1. Company
2. Industry/Sector
3. Economy

Top-Bottom

1. Economy
2. Industry/Sector
3. Company

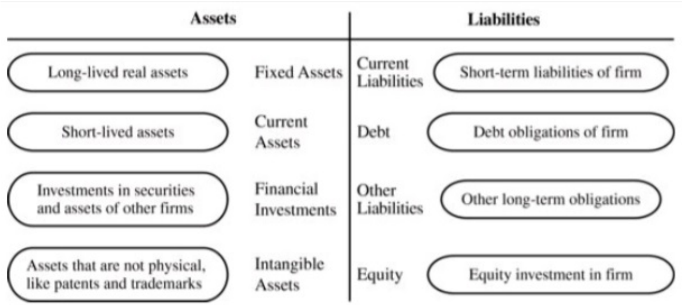
Bottom-Top versus Top-Bottom II

- **Bottom-Top** seeks use economic analysis to drive valuations. Economic changes are inherited by industries and companies to a relative degree
- **Top-Bottom** seeks to use company analysis to drive valuations. Company risks are influenced by industries and economic changes
- In both approaches, the objective is to find the net present value of future cash flows

3 Fundamental Analysis
- What is Fundamental Analysis?
- Company
  - Tools
  - Metrics
- Sector and Industry
- Economy

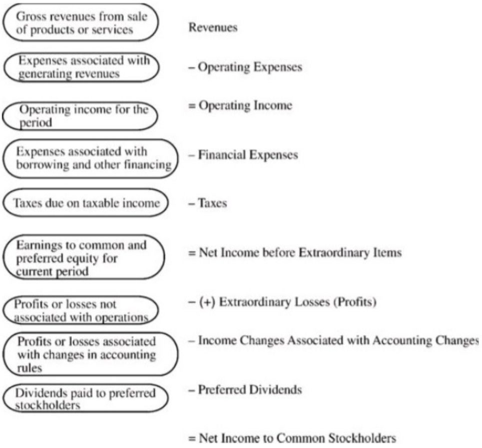
Balance Sheet

- Balance Sheet: Contains all assets and their values, the financing categories of liabilities and shareholder equities



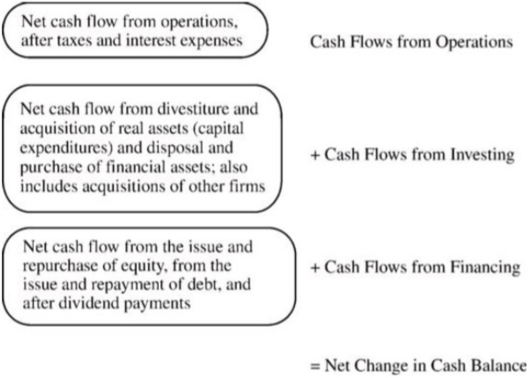
Income Statement

- **Income Statement**: Contains all revenues, expenses, and income for a business



Cash Flow statement

- Cash Flow Statement: Sources and uses of cash from operating, investing, and financing activities



Management Proxy Circular

- Management Proxy Circular: Contains annual general shareholder meeting information, corporate governance practices, share structure, executive compensations, and all MA activity
- Useful for understanding how a business is managed and associated risks

Balance Sheet: Current and Quick Ratio

Current Ratio: measures short term ability to cover debt. Larger number implies better coverage of short term liabilities from short term assets. Quick ratio reduces assets to only the most liquid.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Quick Ratio} = \frac{\text{Cash} + \text{Cash Equivs} + \text{Mkt Scts} + \text{Receiv.}}{\text{Current Liabilities}}$$

Balance Sheet: Debt-to-Equity

Debt-to-Equity measures debt reliance relative to equity and is a risk indicator. More positive implies greater reliance on debt while negative implies more liabilities than assets

$$\text{Debt-to-Equity} = \frac{\text{Total Liabilities}}{\text{Total Shareholders Equity}}$$

Balance Sheet: Debt-Service Coverage

Debt-Service Coverage measures ability to pay debt obligations. A greater number implies a higher ability to pay debt obligations

$$\text{Debt-Service Coverage} = \frac{\text{Net Operating Income}}{\text{Total Debt Service}}$$

Income Statement: Gross Profit Margin

Gross Profit margin: Measures the cost of generating revenue. A number closer to 1 (or 100%) implies greater revenue retention

$$\text{Gross Profit Margin} = \frac{\text{Net Sales} - \text{Cost of Goods Sold}}{\text{Net Sales}}$$

Income Statement: Net Profit Margin

Net Profit Margin measures all costs of revenue. A number closer to 1 (or 100%) implies greater revenue retention

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Revenue}}$$

Income Statement: Price-to-Earnings

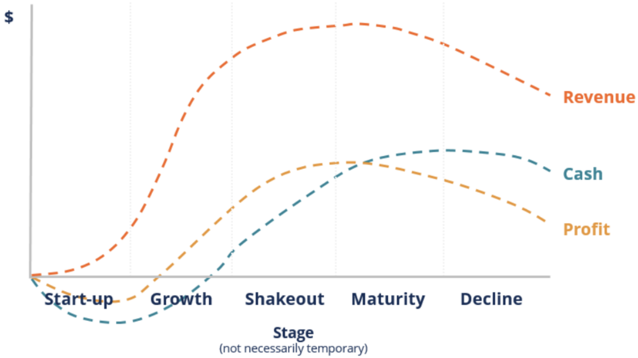
Price-to-Earnings measures the value of 1$ of profit according to the market. Widely used as a comparative valuation metric.

$$\text{P/E} = \frac{\text{Market Value per Share}}{\text{Earnings per Share}}$$

$$\text{Earnings per Share} = \frac{\text{Net Income Available} - \text{Preferred Dividends}}{\text{Common Shares Outstanding}}$$

3 Fundamental Analysis
What is Fundamental Analysis?
Company
Sector and Industry
Industry Dynamics
Competitive Dynamics
External Changes
Economy

Industry Life-Cycle I



Industry Life-Cycle II

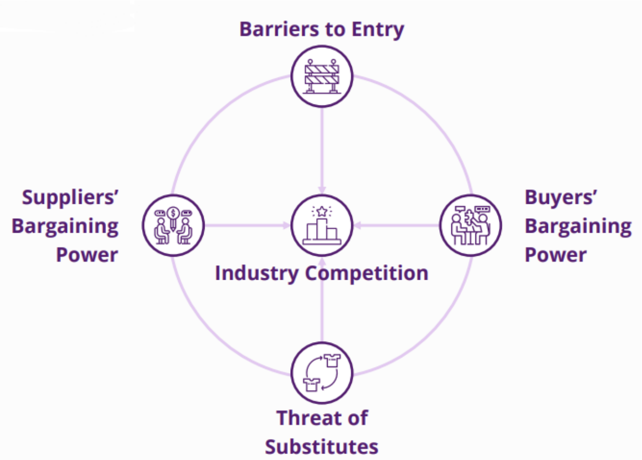
Supply and Demand

- Certain industries have "peak-seasons" or experience conditional trends known as "Growth", "Cyclical", "Defensive"
- Seasons and trends are directly related to demand for products and thus value creation
- Certain industries are prone triggers that may spike demand for their products

Comparative Peer Group

- Peer groups are a set of companies engaged in similar business activities or share similar properties
- Often used comparatively–company metrics are averaged and weighted then compared to determine discrepancies
- An understanding of similar companies gives a frame of reference for a particular company

Porters 5 Forces I



Porters 5 Forces II

1. **Barriers to Entry**: Include capital costs, regulation, and other preventative/protective variables
2. **Buyers' Bargaining Power**: Included consumer alternatives and variables that leverage buyers against an industry
3. **Threat of Substitutes**: If more substitutes become available, then pricing power for industry erodes
4. **Supplier Bargaining Power**: The more options there are for raw materials, the more bargaining power an industry has to reduce marginal costs
5. **Industry Competition**: Concentration of market share can create economies of scale that are prohibitive

Technology

- Technological changes may dramatically enhance or obsolesce productivity
- Has a direct impact on valuations via operating costs, margins, and other efficiency factors

Government

- Regulatory changes such as taxation, sanctions, subsidies, etc.,
- International relations may strengthen or decrease trade and have impacts on globalization risks
- i.e., Inflation Reduction Act on renewable energy, Russia sanctions on petroleum

Social

- Public opinion drives demand
- Consider Beyond Meat products and increasing adoption of veganism/vegetarianism

Demographics

- Certain industries are geared toward certain subsets of people
- If there are changes to those subsets of people, then this will be reflected within the industry

3 Fundamental Analysis
- What is Fundamental Analysis?
- Company
- Sector and Industry
- Economy
  - Demand
  - Supply

Interest rates

- Increasing interest rates raises the cost of debt
- Higher cost of debt reduces lending activity
- Reduced lending activity means reduced consumption
- Ultimately, discretionary spending and consumption decreases

Consumer price index

- Measures the price of a basket of goods that reflect average household spending patterns
- Compared on a period-to-period basis for change
- Higher changes imply greater demand and/or reduced supply

Manufacturing payrolls

- Manufacturing payrolls are the number of people employed in manufacturing
- Manufacturers increase payrolls as retailers increase manufacturing orders
- Retailers increase orders on expected increase in demand
- Hence, reflective of demand

Purchasing managers index

- Survey that measures of upstream and downstream activity from supply chain manager perspectives
- indicative of expansion or contraction of supply chains
- Factored into production decision process

Exchange rates and global trade

- The USD is the global trade currency
- If the exchange rate of USD/XYZ rises, then the cost of trade for country XYZ rises
- This means international trade activity may increase or decrease

Supply shocks

- Certain global/environmental/economic events may suddenly affect supply
- If there is a reduction in supply, then prices will be driven upwards
- Certain companies are exposed to supply shock risks more than others

4 Technical Analysis

What is technical analysis?

Basic assumptions of technical analysis

Trends, Support, and Resistance

What is technical Analysis?

- Technical Analysis deals with price movements in the market
- The root of technical analysis is the idea of supply and demand in the market
    - Buyers represent demand
    - Sellers represent supply
- Technical analysis uses assumptions to predict future prices

4 Technical Analysis

What is technical analysis?
Basic assumptions of technical analysis
Trends, Support, and Resistance

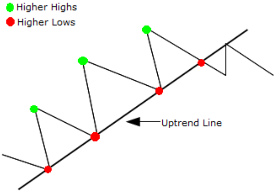
Basic assumptions of technical analysis?

1. The Market Discount Everything. At any given time a stock's price reflects everything that has or could affect the company
2. Price moves in trends. After a trend has established, the future price movement is more likely to be in the same direction as the tend than against it
3. History Tends to Repeat Itself. Based on the psychology of market supply and demand, market participants tend to provide a consistent reaction to market stimuli over time

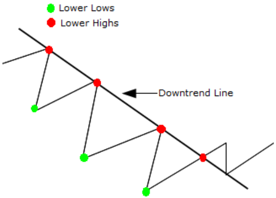
4 Technical Analysis
What is technical analysis?
Basic assumptions of technical analysis
Trends, Support, and Resistance

Trends

- A trend in technical analysis is the movement of the highs and lows
  - An uptrend is a series of higher highs and lower lows
  - A downtrend is a series of lower lows and lower highs
  - A sideways trend has little movement up/down in the peaks and troughs



Trend Line Showing Uptrend



Trend Line Showing Downtrend

Support and Resistance

- Support is the level through which the price seldom falls
- Resistance is the level that the price seldom surpasses
- Once a support or resistance level is broken, the supply and demand psychology of the market has shifted and support and resistance levels must be re-established

Using Support and Resistance

- Used them to make trading decisions and identify trend reversals
- For example: When you have identified a tested level of resistance, you cash out on your profits as the price moves towards the resistance level since it is unlikely it breaks past the resistance
- Be aware:
  - A break beyond a level does not guarantee a role reversal
  - There is lots of volatility around the support and resistance levels

Volume

- Volume is the number of shares that are traded over a given period
- It is important because it allows you to determine the strength of a trend
- Volume should move with the trend. If the volume deteriorates, it is usually a sign of weakness in the trend.