

# A Quick Start Guide to Investing: Part 3-5

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Personal Finance SDG

Friday, March 17<sup>th</sup>, 2022

- 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, you 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 time 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

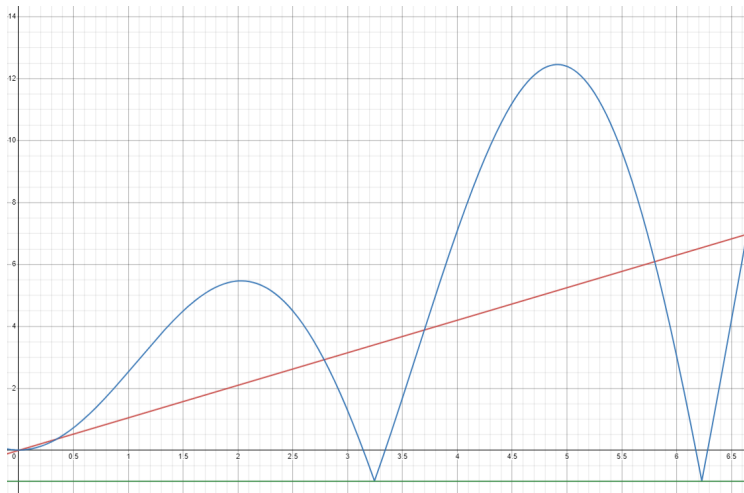
## Risk as Standard Deviation and price changes

- 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

└ What is your Risk Tolerance?

└ Risk

## 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



## 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?

### Financial Plan Summary: The 8 Elements

Quantitative Variables

Qualitative Variables

- 1 Expected Future Capital (EFC, dollars)
  - i Money available to invest over some time
- 2 Opportunity Cost of EFC (OC, dollars)
  - i The benchmark return for your EFC
- 3 Risk Free Interest Rate (percent)
  - i 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

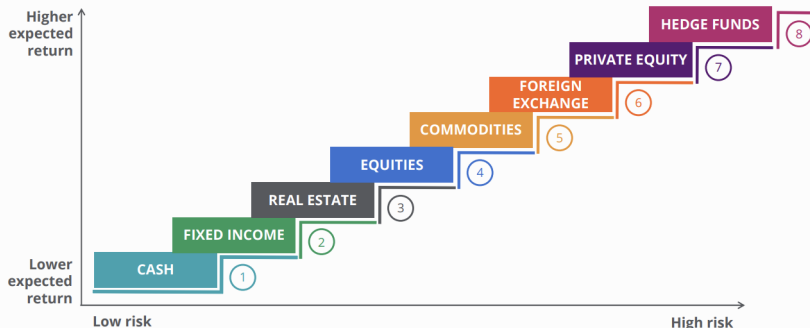
### The 7 Common Asset Classes:

- 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



## Sector diversification 1

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

Global Industry Classification Standard: Business categorization

## Sector Diversification 2

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

## 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 Company size (full market cap) ** Security size (float market cap) ** Security liquidity	2 USD 1,070 mm USD 91 mm 2.5% ATVR	3 USD 2,139 mm USD 1,070 mm 15% ATVR	5 USD 4,278 mm USD 2,139 mm 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			MSCI EMERGING MARKETS INDEX			MSCI FRONTIER MARKETS INDEX			
DEVELOPED MARKETS			EMERGING MARKETS			FRONTIER MARKETS			
Americas	Europe & Middle East	Pacific	Americas	Europe, Middle East & Africa	Asia	Europe	Africa	Middle East	Asia
Canada	Austria	Australia	Brazil	Czech Republic	China	Croatia	Kenya	Bahrain	Bangladesh
United States	Belgium	Hong Kong	Chile	Egypt	India	Estonia	Mauritius	Jordan	Pakistan
	Denmark	Japan	Colombia	Greece	Indonesia	Iceland	Morocco	Oman	Sri Lanka
	Finland	New Zealand	Mexico	Hungary	Korea	Lithuania	Nigeria		Vietnam
	France	Singapore	Peru	Kuwait	Malaysia	Kazakhstan	Tunisia		
	Germany			Poland	Philippines	Romania	WAEMU <sup>2</sup>		
	Ireland			Qatar	Taiwan	Serbia			
	Israel			Saudi Arabia	Thailand	Slovenia			
	Italy			South Africa					
	Netherlands			Turkey					
	Norway			United Arab Emirates					
	Portugal								
	Spain								
	Sweden								
	Switzerland								
	United Kingdom								
MSCI STANDALONE MARKET INDEXES <sup>1</sup>									
						Americas	Europe	Africa	Middle East
						Argentina	Bosnia Herzegovina	Botswana	Lebanon
						Jamaica	Bulgaria	Zimbabwe	Palestine
						Panama	Malta		
						Trinidad & Tobago	Ukraine		

## Geographic Diversification 5

<p><b>Political Structure</b></p> <ul style="list-style-type: none"> <li>- The degree of political freedom/democracy affects business risk, but the <u>effects can cut both ways</u> (good and bad).</li> <li>- Democracies expose businesses to <u>more continuous risk</u>, as laws and regulations can change, when elections create government changes.</li> <li>- Authoritarian regimes often offer the promise of predictability, and less risk on a period-to-period basis, but face <u>more discontinuous risk</u>, since regime change is often violent and significantly disruptive.</li> </ul>	<p><b>Corruption</b></p> <ul style="list-style-type: none"> <li>- Corruption operates as a <u>hidden tax</u>, reducing profitability and value for private businesses</li> <li>- 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 scrupulous.</li> </ul>
<p><b>War &amp; Violence</b></p> <ul style="list-style-type: none"> <li>- Operating a business in a country that is more <u>exposed to violence</u>, from war, terrorism or internal strife, is more difficult than operating that business in a more peaceful environment.</li> <li>- Businesses will face higher costs in operations and/or from trying to insure themselves against violence.</li> </ul>	<p><b>Legal &amp; Property Rights</b></p> <ul style="list-style-type: none"> <li>- The value of a private business is dependent on a legal system that <u>respects property rights and enforces those rights</u>.</li> <li>- In a country where there are no or weak property rights or that has a <u>legal system that does not enforce those rights</u>, businesses face more risks and have less value.</li> <li>- <u>Timeliness</u> in enforcing legal rights matters as much as the due process, since rights not enforced in a timely manner provide weak protection.</li> </ul>

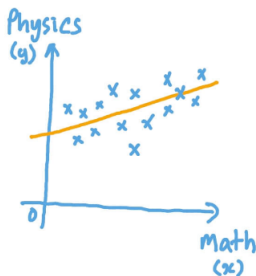
### Country Risk

## Correlation 1

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

## Correlation 2

# PEARSON'S PRODUCT MOMENT CORRELATION COEFFICIENT



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

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

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

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

## 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	103.050	0.000	0.000	158.530	3.710	7.384	0.000

## 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

- **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
- Previous payment of either does not guarantee future payment
- Payments may increase, decrease, or stay the same over time

## 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



# 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

## 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
- **Payment date:** Dividend issued
- **Yield:** 1 year worth of dividends divided by share price
- **Payout Ratio:** All dividends divided by earnings after tax

Note that **shares trade at a discount** on the Ex-dividend date

## 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:

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

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


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

## 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:



**Growth Rate Formula**

$$= \frac{\text{Final Value} - \text{Initial Value}}{\text{Initial Value}}$$


## 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

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

**where:**

$R_p$  = return of portfolio

$R_f$  = risk-free rate

$\sigma_p$  = 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

Assets		Liabilities	
Long-lived real assets	Fixed Assets	Current Liabilities	Short-term liabilities of firm
Short-lived assets	Current Assets	Debt	Debt obligations of firm
Investments in securities and assets of other firms	Financial Investments	Other Liabilities	Other long-term obligations
Assets that are not physical, like patents and trademarks	Intangible Assets	Equity	Equity investment in firm

# Income Statement

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

Gross revenues from sale of products or services	Revenues
Expenses associated with generating revenues	– Operating Expenses
Operating income for the period	= Operating Income
Expenses associated with borrowing and other financing	– Financial Expenses
Taxes due on taxable income	– Taxes
Earnings to common and preferred equity for current period	= Net Income before Extraordinary Items
Profits or losses not associated with operations	– (+) Extraordinary Losses (Profits)
Profits or losses associated with changes in accounting rules	– Income Changes Associated with Accounting Changes
Dividends paid to preferred stockholders	– Preferred Dividends
	= Net Income to Common Stockholders



## Cash Flow statement

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

Net cash flow from operations,  
after taxes and interest expenses

Cash Flows from Operations

Net cash flow from divestiture and  
acquisition of real assets (capital  
expenditures) and disposal and  
purchase of financial assets; also  
includes acquisitions of other firms

+ Cash Flows from Investing

Net cash flow from the issue and  
repurchase of equity, from the  
issue and repayment of debt, and  
after dividend payments

+ Cash Flows from Financing

= Net Change in Cash Balance

## 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.

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

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



### 3 Fundamental Analysis

What is Fundamental Analysis?

Company

Sector and Industry

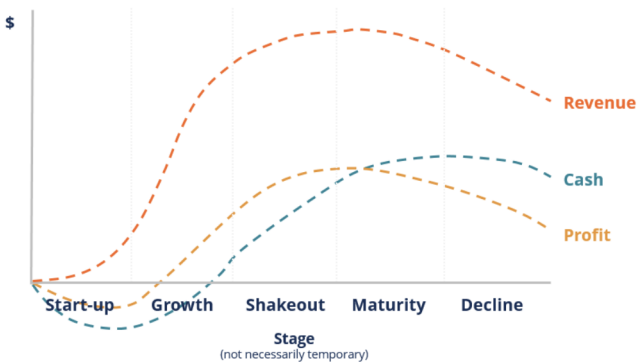
Industry Dynamics

Competitive Dynamics

External Changes

Economy

## Industry Life-Cycle I



## Industry Life-Cycle II

### Competitive forces in an industry life-cycle



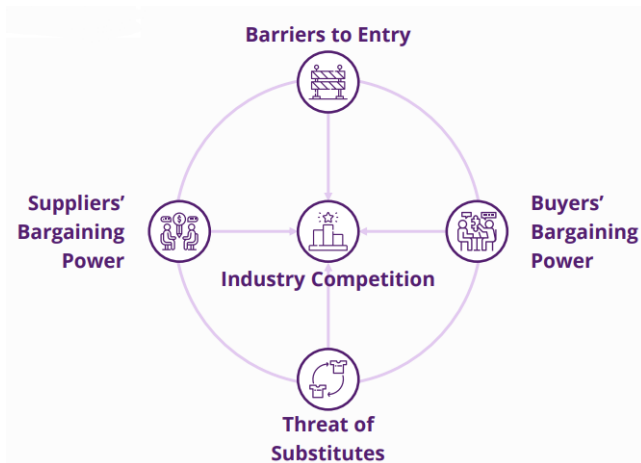
## Supply and Demand

- 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 trend 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

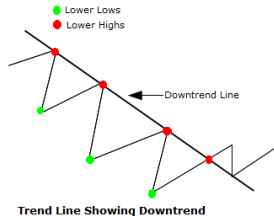
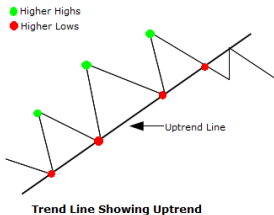
What is technical analysis?

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





## 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.