

BASICS OF MARKET FINANCE

A beginner's guide to financial markets

 **ARIOVISTUS**



Who's who?

Financial markets: who's who?

Financial markets are composed by all the transactions through which a financial asset is exchanged between parties.

These parties are a buyer and a seller, sometimes with an intermediary:



Buyers and sellers

SELLERS

- **Individual investors:** individuals who own financial instruments as part of a portfolio may want to liquidate (ie. Sell) some of their position, and therefore be sellers.
- **Corporates:** corporates also hold portfolio of financial assets as part of their treasury management, and may sell some of them. In particular, corporates tend to hold short-term instruments to make the most of their cash, and use derivative to hedge their business against various risks.
- **Banks:** Banks are the typical « sell-side » agent. They create financial assets for their clients, and sell them. For example, they help firms perform their IPO (initial public offering, which allows a firm to be publicly listed) and will sell the shares of these companies to their other clients.

BUYERS

- **Individual investors** and corporates: individuals and corporates can hold portfolios, composed of many assets as part of their capital or treasury management. When they want to acquire assets, they become buyers.
- **Investment funds:** Investment funds are the typical « Buy-side » agents. Indeed, they buy many assets on financial markets, and they have sometimes have access to primary markets and other specific ways to acquire new financial instruments.

Intermediaries

Stock Exchanges

Stock Exchanges are intermediaries which list publicly some securities (usually stocks, options, futures and bonds). A stock exchange collects the « bids » (offers to buy an asset) and the « asks » (offers to sell an asset) to form a « book ». Investors can then buy or sell shares at the offered prices:

Bid	Ask
	\$120: 500 shares
	\$110: 300 shares
	\$105: 100 shares
\$95: 100 shares	
\$90: 350 shares	
\$85: 700 shares	

If an investor wants to buy 200 shares in the example above, he will « hit the ask », and buy 100 shares at \$105, and 100 shares at \$110, which as the best prices offered for him. An investor who would want to sell 200 shares would sell 100 at \$95, and 100 at \$90.

Dark pools

Dark pools are similar to stock exchanges in the way they work. However, they are less transparent: it is not always possible to access the full book of bids and asks, and other specific rules may be implemented by the operator of the market.

Brokers

Brokers help clients sell or buy securities, by accessing public and less public markets (stock exchanges, dark pools), and also by finding counterparties that could take the other side of the transaction.

Clearing houses

Clearing houses are specific intermediaries for trading derivative instruments. They help mitigate counterparty risk by forcing the parties of a transaction to post some collateral assets.

Trading assets: Primary and secondary markets

A **primary market** is composed by the initial transactions. The transactions that immediately follows the creation of an assets occur in this primary market.



A **secondary market** is a second-hand market, through which the financial assets change hands without intervention of the issuer of those assets.



Stocks

When a firm does an IPO, the initial sale is a primary market sale, as the company issues new shares to shareholders. The public markets (stock exchanges) are secondary markets, as the issuer is not involved: it is a second-hand market

Bonds

When a bond is issued, the sale occurs in the primary market. The latest bonds issued by an entity are called “on the run”, while previous issues are called “off the run”, and typically trade at a slight discount (due to the lack of liquidity of those instruments).

Funds

Funds: for most funds (UCITS, Hedge funds, etc.) there is only a primary market, as investors deal directly with the fund: every new sale of shares is either a subscription which increases the size of the fund, or a redemption which decreases it. ETFs are a special case: there is a primary market reserved to approved counterparties, and a wide secondary market on a stock exchange.

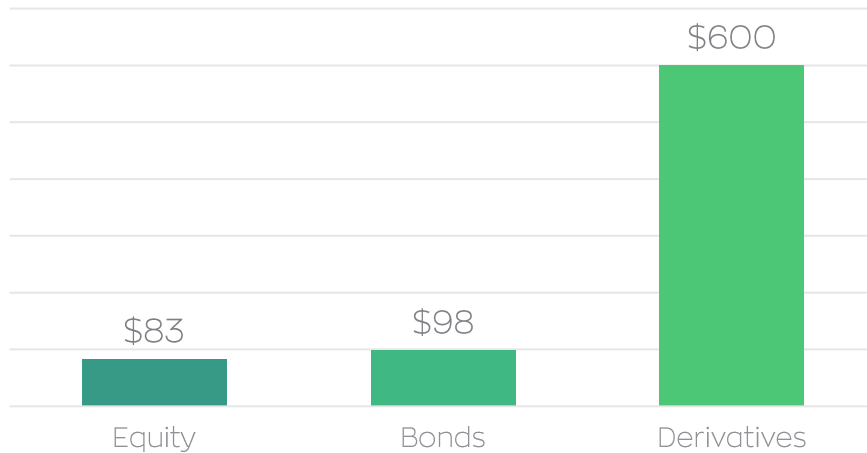


**What are
financial assets?**

Financial markets overview

- The size of financial markets is considerable. Here are a few key figures:

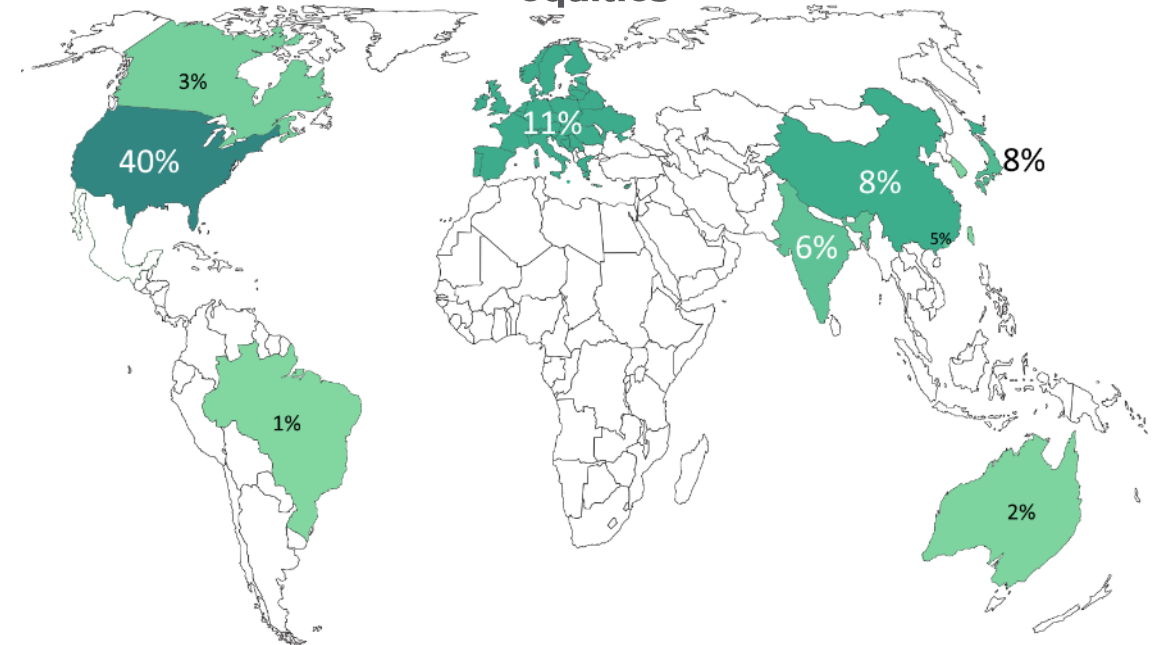
**Total nominal value of financial instruments
(in trillion dollars)**



- The nominal amount of derivatives is considerably higher than the value of equities and bonds, but that is mainly caused by leverage and the features of those derivatives, as we will see later. The actual market capitalization of these derivatives is somewhere around \$40tn to \$50tn

- Financial markets are more developed in the US, which concentrate around 40% of all assets. The distribution of equities illustrate this well:

Distribution of the world market capitalization of equities



Financial assets taxonomy

We can differentiate financial assets based on their **nature**:

Cash instruments	Derivative instruments
Cash instruments are the basic instruments of finance.	Derivative instruments 'derive' their value from an underlying asset or index.
<ul style="list-style-type: none"> – Cash at bank – Money-market instrument – Bonds – Equities (stocks) – Funds – Physical commodities 	<ul style="list-style-type: none"> – Options – Forwards – Futures – Swaps

We can also differentiate them based on **how they are traded**

Publicly traded	« OTC » (over the counter)
Publicly traded are quoted on a stock exchange. Their prices are public, and usually they are easy and quick to buy and sell	OTC instruments are traded peer-to-peer, usually through certain dark pools who allow it, or thanks to the help of brokers and banks.
<ul style="list-style-type: none"> – Options – Funds – currencies – Equities (stocks) 	<ul style="list-style-type: none"> – Bonds – Options – Funds – Forwards – Swaps

	Cash instruments	Derivative instruments
Publicly traded	Equities Funds	Futures Options
OTC	Bonds Real Estate Commodities	Forwards Swaps

Cash instruments

	Asset description	Trading details
Equities	Equities are title of ownership of a share of the capital of a firm. The shareholder is entitled to receive dividends, if dividends are distributed. The shareholders typically have voting rights to vote on big decisions on the firm's strategy.	Stocks (or equities) are typically publicly listed. However, many firms are also 'private', and there is no public market for their shares.
Bonds	Bonds are debt securities issued by corporates, governments or international organizations. The issuer of the bond is committed to pay back the principal (or nominal) amount of the bond at maturity, as well as a 'coupon', calculated on the basis of the principal amount.	Bonds are mostly traded over-the-counter.
Funds	Funds enable investors to pool their money and entrust its management to a professional. Funds provide a cheap, diversified, professional and liquid investment to build a portfolio.	Funds usually have publicly available prices but can also trade OTC.
Cash and Cash equivalents	Cash and cash equivalents comprises all cash assets with a time-to-maturity of less than one year. For example, a short-term bond with a 3 month maturity are cash equivalents, as they behave very similarly to cash: they simply pay a short term interest rate that is very near 0.	Cash and foreign currencies can be traded publicly: the Foreign exchange market is opened 24/7. Cash equivalents such as short term bonds are traded OTC.

Derivative instruments

Options

Options give their buyer the right, but not the obligation, to buy ('call options') or sell ('put options') an underlying asset at the maturity date, for a pre-determined price called the "strike".

A call (resp. a put) option should be exercised when the current price of the underlying asset, the "spot price" is below (resp. above) the strike price. Indeed, the owner of the option will be able to buy (resp. sell) an asset at a price below (resp. above) market price, thus making a profit.

Forwards and Futures

Forwards and futures are contracts which set up a transaction at a future date (maturity date) at an agreed-upon price.

While futures are standardized contract traded on public stock exchanges, forwards are custom contracts in terms of size, assets, maturity date, price, etc.

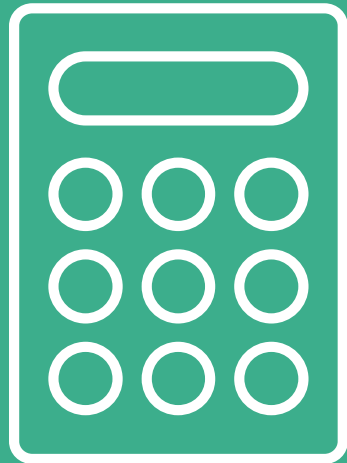
There exist futures or forwards on any possible underlying asset or index, such as commodities (from gold to orange juice), inflation rates, stock prices, etc.

Swaps

Swaps set up a series of transactions in the future, at pre-determined prices.

Common swaps include interest-rate swaps (IRS), in which one party pays the other a fixed interest rate and receives a floating interest rate.

CDS are another form of popular swaps, in which one party pays a monthly premium to the other. The second party pays the first in case of default of a firm on its debt.



Valuation

Price and Value

PRICE

The price is the amount of money at which an asset is traded.. By order of preference, here are the best ways to find a price for an asset:

1. **Use the last price** at which a transaction occurred, if the transaction is recent and no significant event occurred since then
2. **Infer the price from the order book** of a stock exchange: you may use the bid, the ask, or the midpoint between them ('mid'). If you hold a security, choose the bid as it represents the price at which you could sell the asset.
3. **Determine a fair value**, that is a reasonable price at which the security could be traded if there was a market for it. Only use this method if the methods above are not relevant (eg. There is no active market). This method may require you to make strong assumptions and obtain unreliable prices.

VALUE

The value of an asset is a subjective notion which represents how much an agent is willing to pay for an asset. Assets derive their value from their expected future cash flows, adjusted for risk and time value of money:

- **Cash flows:** The highest the expected cash flow, the highest the value of the asset
- **Risk:** The more risky the cash flow, ie. The higher the probability that it will not occur or not in full, the lower its value to us.
- **Time-value of money:** Getting paid the cash flows today is better than tomorrow: today's cash flows are more valuable (useful) to us than cash flows far in the future

Of course, investors can also care about other things: religion, ethics, sustainable development, etc. which will affect the value that they attribute to the asset.

Liquidity

A liquid asset is **frequently** traded with a high **volume**. Illiquid assets are either rarely exchanged, or in a low volume

Why does it matter for valuation?

Liquidity is a major concern when valuing an asset. Indeed, it poses important questions such as:

- **How quickly** can a position be unwind? That is, how long does the investor need to get rid of his position? If it takes long, he may face issues and struggle to face liabilities.
- Can the position actually be **sold at the market price**? If a position is very large, selling it may cause a crash: as the investor gets rid of his position he goes through the order book and gets worst and worst prices. Other investors will react and try to benefit from the fact that someone is unwinding a large position, reinforcing the trend in the price.

Therefore, assessing liquidity is key when valuing an asset in order to determine whether the price is fair.

Real-life case

Jeff Bezos, founder and CEO of Amazon, is said to be worth \$120bn. This is based on the current market price of Amazon's shares, of which he owns a significant amount. However, if Jeff Bezos were to sell his shares, the market value of them would plummet and he would end up with much less than \$120bn (he'd still be ok though!)





Fixed Income

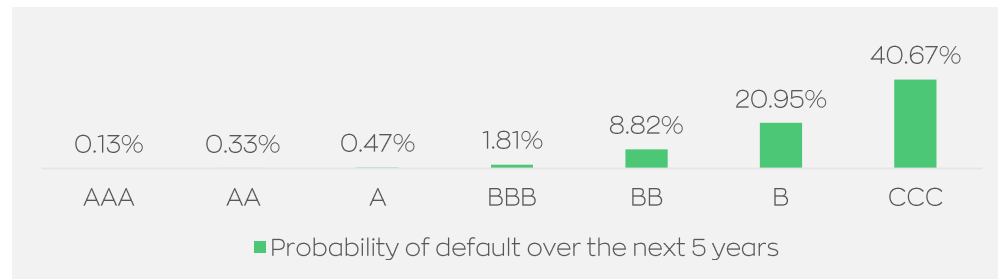
Fixed income

A debt security is a financial claim paying a periodic interest calculated on the basis of a principal amount which is paid back at the end of a given period of time.

Most bonds are issued by governments, but they can also be issued by firms. Bonds are less costly than equity. However, they can cause financial distress. This is due to several features of bonds:

- Bonds require **regular fixed payments** (even if the firm does no profits it still need to pay the bonholders)
- Bonds are **senior claims** compared to equity: in case of default, bonholders are paid back before shareholders

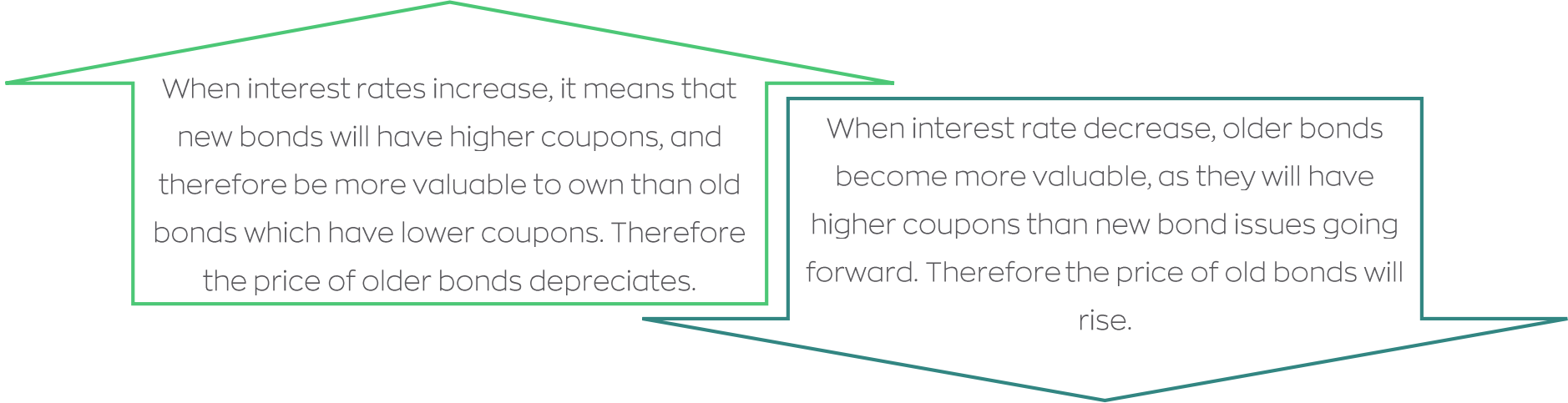
Bonds ratings give an indication of the risk of default of the bond issue analyzed. They are assigned by rating agencies paid by the bonds issuers



- **Maturity:** date at which the principal (or nominal) amount of the bond is repaid
- **Coupon:** amount of money paid by the issuer to the bondholder, expressed as an interest rate applied on the principal amount
- **Par value:** nominal amount of each single bond
- **Accrued interests:** coupons that would have been received since the last coupon payment, if the payments were to occur on a continuous (or daily) basis.
- **Clean price and dirty price:** bonds are usually quoted “clean”. This means, in opposite to “dirty price”, that the accrued interests are not taken into account.
- **High yield bond or junk bond:** bond issued by a risky entity, with a relatively high risk of default. This corresponds to ratings below BBB.
- **Investment grade:** bond with a low probability of default, and therefore a high rating (above BBB).

Interest rates and bond prices

- **Interest rates and bond prices are inversely correlated:** an increase in interest rates leads to a decrease in the prices of outstanding bonds.



When interest rates increase, it means that new bonds will have higher coupons, and therefore be more valuable to own than old bonds which have lower coupons. Therefore the price of older bonds depreciates.

When interest rate decrease, older bonds become more valuable, as they will have higher coupons than new bond issues going forward. Therefore the price of old bonds will rise.

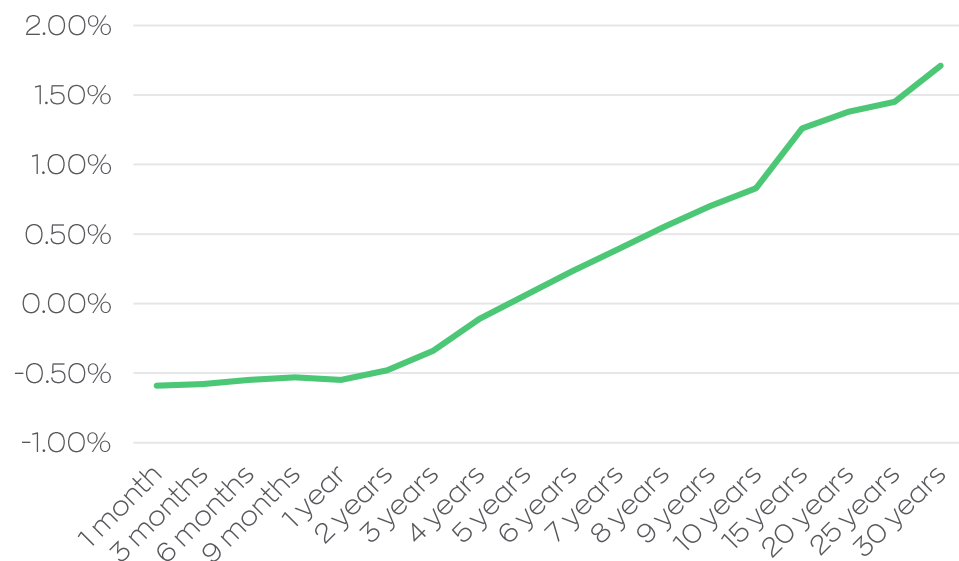
All bonds with the same maturity and risk must provide the same return to the bondholder. Therefore they must have an identical yield to maturity. If the prevalent yield (interest rate) increases, then the prices of old bonds MUST fall in order to maintain the principle above between new and old issues.

Interest rates

The yield curve

- Bonds prices and yields are inversely correlated, meaning we can find the price from the yield
- And it is possible to compute the yield of all existing bonds.
- Therefore we can plot these yields for a given set of issuers: it is called the yield curve, and shows how much each of the bonds should pay for each maturity:

French government yield curve (2018-05-18)



Yield curves are usually upward sloping: the further the maturity, the higher the reward required by the bondholders, hence the issuers must pay a higher yield (either by offering lower prices or by increasing coupons).

Negative interest rates

As shown in the yield curve on the left, yields can be negative.

The way this is made possible is not through negative interest rates, which would require the holder of a bond to pay the coupon, but through “zero-coupon” bonds, which do not involve coupons. If the issuer sells them at a premium, then the yield is negative. Otherwise it is negative. For example, a zero-coupon bond issued at 100.5 with a maturity in one year has a yield of -0.5%, as the issuer pays more for the bond today than he will be paid back in a year.

For more information about negative interest rates, head over to :

<http://fin.businesscycles.eu/markets/who-buys-negative-interest-rate-bonds/>



Portfolio Management

Portfolio management

- The goal of portfolio management is to create **efficient portfolios**. An efficient portfolio offers the best possible risk/return combination. There are many efficient portfolios with different risk profiles.
- To create a portfolio, one must first establish the views and preferences of the investor, the assets, regions, etc. that can be used to build the portfolio, and then run analysis to select the best assets that fit the investor's constraints.
- A key concept of portfolio management is diversification: indeed, when building a portfolio, diversification enables the manager to improve the performance.

A note on performance

Performance is measures the efficiency of the process by which financial assets transform risk into return.

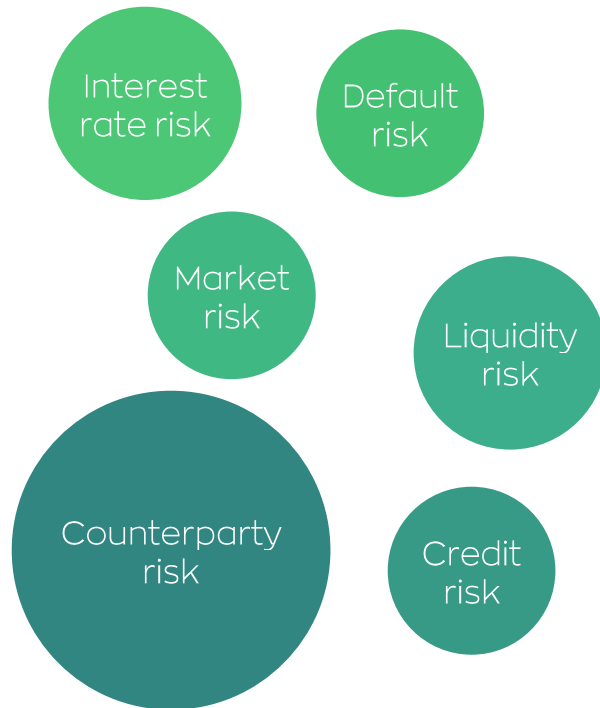


When assessing whether a portfolio or an asset is “good”, one should care only about performance and not return. A high return may come at the cost of a very high risk, which could not be desirable.

Risk Management

It is very important to identify the risks to which a portfolio is exposed, in order to address them: we may want to keep our exposure to certain risks, but mitigate our exposure to others to be consistent with our view on financial markets.

There are many kinds of risk



There are two basic methods to decrease risk

Diversification

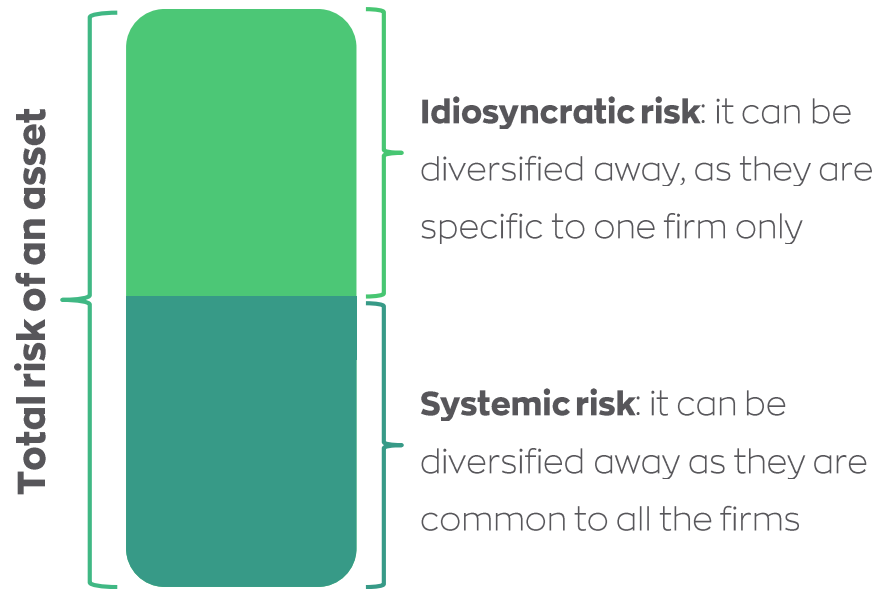
Use the fact that various instruments are not 100% correlated to decrease the total risk of your portfolio.

Hedging

Investing in instruments which cancel some of the risks which you wish to mitigate. For example, a seller of copper may want to buy forward contracts to lock in today the price of the sale in 3 months. Hedging is typically done with derivative instruments.

Diversification

Decomposition of the risk of an asset



Examples of idiosyncratic and systemic risks

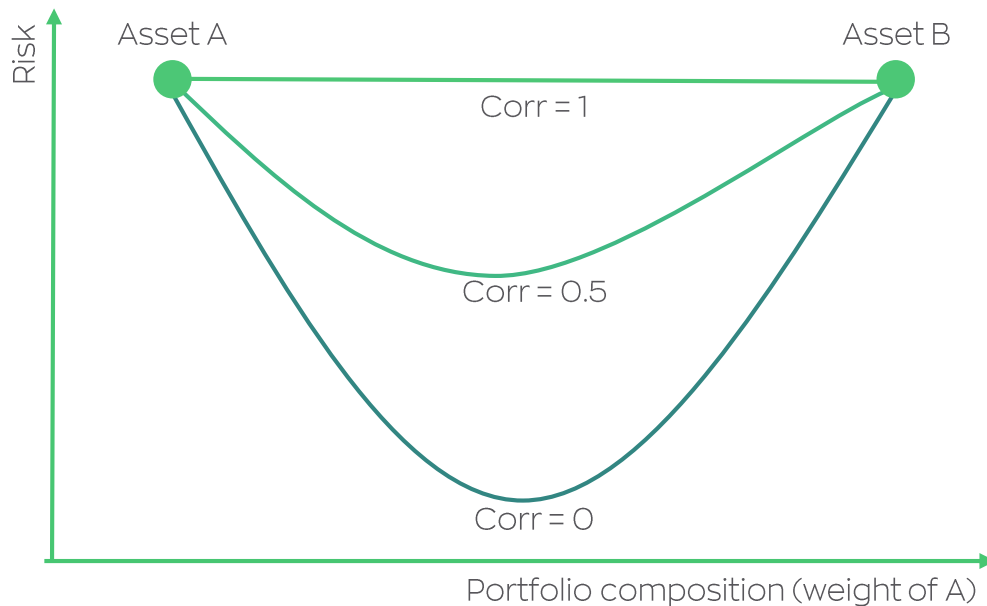
- If Atlassian forces users to use cloud-based versions of its softwares and therefore see its sales drop, its stock price will drop. This is an idiosyncratic risk, linked only to Atlassian's strategy and operations.
- If Donald Trump tweets that he wants to prevent Chinese manufacturers to sell electronic parts in the US or to US companies, the stock price of these US firms will drop as their supply might be compromised. This will hit all of them, and is therefore a systemic risk which will have a widespread effect throughout the sector.

Diversification consist in combining several assets in a portfolio to reduce the risks while maintaining the return profile.

Diversification

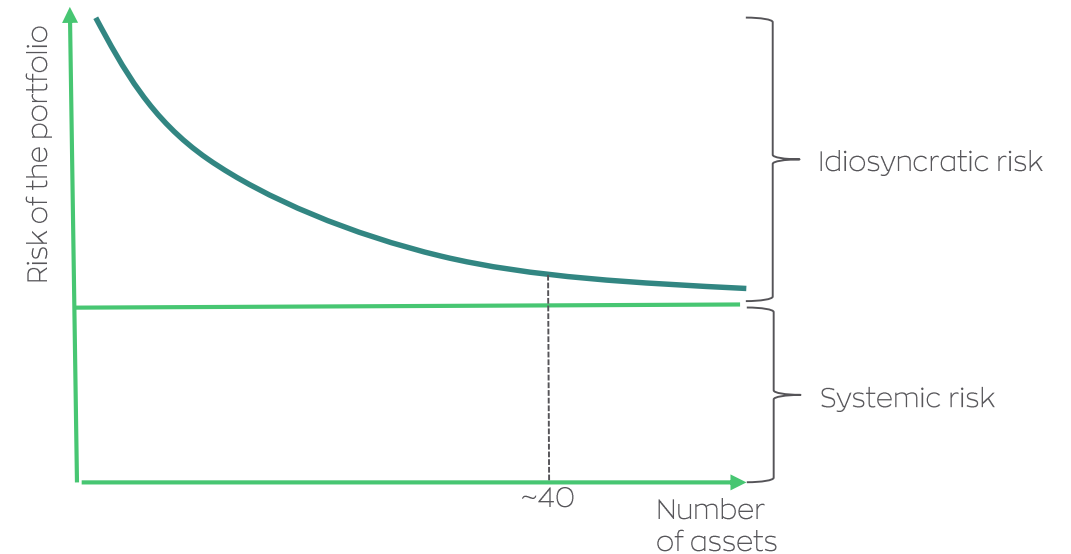
The impact of correlation

Diversification is possible thanks to the fact that assets are not 100% correlated. The lower the correlation, the better the diversification:




Adding more assets

The more assets we add to our portfolio, the more the risks are diversified away. The idiosyncratic risks are more quickly diversified away when correlation is the lowest between the assets of our portfolio.



Hedging

When building a portfolio, one should make sure that the portfolio only gives an exposure to risks or factors on which we have a view. Therefore it is important to cancel out all the factors on which we do not have any opinion. Canceling some risks is called hedging. Hedging often makes use of derivative instruments, which can lead to tricky outcomes.



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Main Page

Introduction

Hedge.lu is a resource website aimed at providing relevant finance cases & academic articles to professionals, academics, and students. Using the insights provided by past finance cases and key academic articles is a great strength that may enable one to win an argument about a financial topic, make a convincing case about a strategy, or enrich a finance training with captivating examples.

The name "Hedge.lu" comes from two independent reasons and motives: the first one is that this domain was unused, whereas it looks and sounds great. The other half of the explanation is that most of the finance cases which have had a large impact on how we run a firm today from a financial standpoint involved huge failures in hedging programs. That makes [Hedge.lu](#) the perfect place to talk about such things!

Find out more in the [About](#) page.

Finance Cases

Title	Firm Involved	Year	Keywords
When a lack of hedging leads to ruin	Slite	1992	SEK, DEM, Currency, Hedging
Disguised speculation	American Barrick	1993	Hedging, Derivatives, Oil
Matching cash flows and the importance of accounting	Metallgesellschaft	1993	Hedging, Derivatives, Oil
The appropriateness of hedging instruments	PacifiCorp	1997	Hedging, Currency, Forwards, Options
The dangers of leverage	LTCM	1998	Convergence, Crisis, Volatility, Hedge fund

Real-life case

An investor who thinks that Apple will fail to innovate and market new products in the future, thus losing market share, should not only bet against Apple's stock: we should also take a "long" position (ie. Bet on the increase) on the tech sector: the view here is indeed that Apple will underperform, but not that the tech market will depreciate. If the tech sector's stock prices go up, Apple will likely go up too, going against our view that it will go down.

<http://hedge.lu> for real-life cases of hedging going wrong.

Beating the markets

- When investing in a fund, or building a portfolio, an important question is to know whether we want to achieve a higher performance than the market, or if we are satisfied with the performance of the market.
 - Outperforming the market calls for **active management**
 - Tracking the performance of the market calls for **passive management**

Active management

There are two sources of outperformance which can allow an asset manager to beat the market:

- Timing the market: by investing in certain asset classes at the appropriate moments, an asset manager may beat the market. The investments can be fully diversified as we are focusing on trends and systemic risks, and not specific risks
- Asset picking: it is the opposite: regardless of the trends, the goal is here to find specific assets that deliver a better performance than the market.

Having identified those qualities in an asset manager, the investors should also assess the ability of the asset manager to reproduce these results in the future.

Passive management

A significant part of the finance theory considers that the performance of markets cannot be beaten consistently. In fact, empirical evidence shows that after fees, active funds managers do not beat the market.

Therefore it may make sense to adopt a passive management, in which one only tries to follow a diversified index.

This has the advantage of being much cheaper than active management as less “skills”, research and time are needed to implement this solution. It also generates low turnover, allowing to save on transaction costs.

What is the Efficient Market Hypothesis (EMH)?

The Efficient Market Hypothesis is a framework developed by **Eugene Fama** to explain prices in financial markets. It states that **prices reflect all available information**. It also makes the hypothesis that there is a pricing model used (consciously or otherwise) by investors to integrate information into the prices. There are two main approaches to the EMH:

The Risk Approach

The risk approach states that all returns are a compensation for exposure to a factor (or risk). Prices and returns are thus rational, therefore the EMH is true. Consequently, it is not possible to beat the market consistently and earn abnormal return.

The Behavioral Approach

The behavioral approach considers that prices are not only a reflection of exposure to risks, but also encompass biases such as overreaction to new information. In this approach, the EMH doesn't hold: irrational prices are unpredictable, so there are no pricing model that can produce prices only from the information available.

In general, it is a good approximation to take the risk approach and consider that **financial markets are rational** and the EMH is valid. However, one must also recognize that **there are biases** and situations in which prices do not behave following a pricing model. Bubbles are a good example of that.

Read more: <https://www.institutionalinvestor.com/article/b14zbgrj5pflsc/the-great-divide-over-market-efficiency>



Investment funds

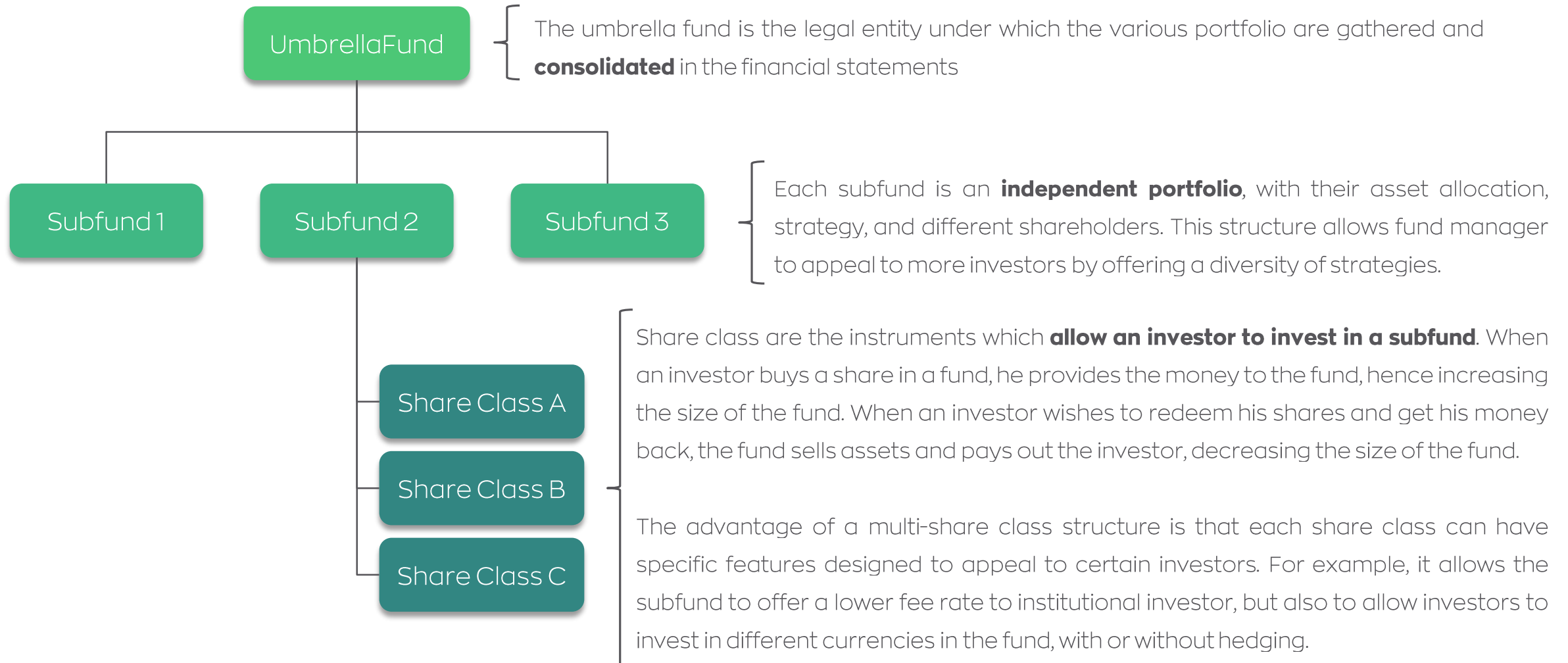
What's an investment fund?

An investment fund is an entity in which allowx investors to pool their money and mandate an asset manager to make investment decisions for them.

- Investment funds have several advantages:
 - They are **cheap**: they typically cost less than 1% per year, and sometimes much less.
 - They are hold **diversified portfolios**, and hence a single investment in a fund is « diversified »
 - They are **managed by professionals** & well regulated to **protect investors**
 - They may have **access to asset classes** that not available to retail investors, due to their size and nature.



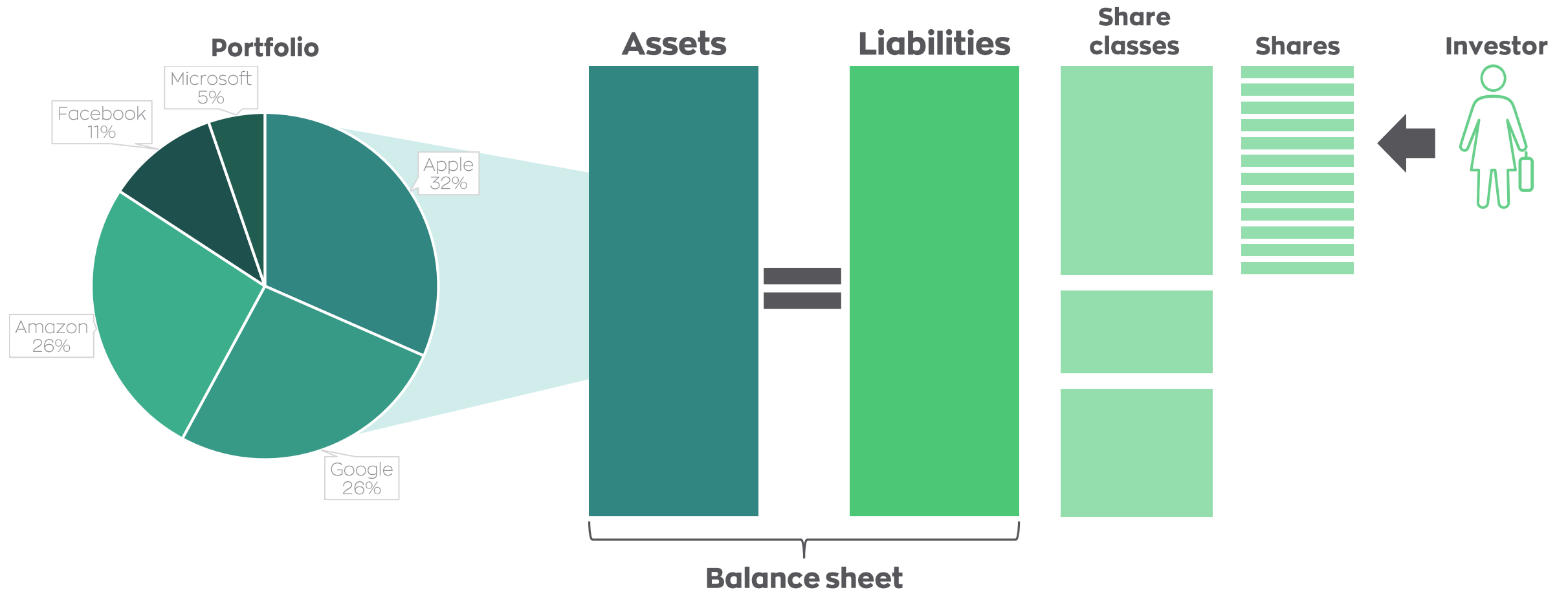
Structure of a fund



Decomposition of the fund

From the assets point of view, the fund is a portfolio of financial instruments. From the liabilities point of view, it is a collection of liabilities to shareholders through the shares of the fund they hold.

Investors in the fund gain access to the full portfolio, and not to a subset of it!



Exploring several sorts of funds

Mutual Funds & UCITS

These are the most common form of funds. They are available to all investors, and are therefore heavily regulated: they have restrictions as to the assets they can hold, and must maintain a high diversification of the portfolio to limit the risk of the fund.

UCITS and mutual funds are open-ended, meaning that it is possible to subscribe or redeem one's shares anytime.

Hedge Funds

Hedge funds, and more generally "Specialized investment funds" (SIF) are not available to the general public but only to "qualified investors", which demonstrate thorough knowledge of finance, or are wealthy individuals.

Hedge funds have a lot of liberty regarding their strategy, assets, leverage, etc. and can thus be quite risky investments.

Hedge funds are close-ended; to withdraw one's investment, the shareholders need the approval of the fund manager.

ETFs

ETFs are exchange traded funds. This is a special kind of funds, for which there exists a secondary market.

Basically, a few approved counterparties can subscribe and redeem shares just like with any standard fund, and they then make those shares available on a stock exchange. This is called "market making", as the players who do this "make the market" by offering prices for the shares (both for buying and selling).

In terms of strategy, ETFs are mostly index-trackers.

Any questions?



Let's keep in touch!

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