

Topic 1: Features	3
Underlying indices	3
Accurate price tracking	3
Trades at NAV	3
Open-ended.....	4
Exchange traded.....	4
Topic 2: How ETFs are created	5
Primary and secondary market	5
How are ETFs created?	5
What happens to the underlying securities?.....	5
ETF redemption process.....	5
ETFs are open-ended.....	6
Topic 3: Understanding Net Asset Value (NAV).....	7
Market price vs. NAV	7
How is the NAV calculated?.....	7
Where can I find the NAV?.....	7
What keeps the market price in line with the NAV?.....	7
Arbitrage.....	8
Market price vs. index level.....	8
Topic 4: Physically-backed ETFs.....	10
ETF variations.....	10
Physically-backed/synthetic	10
Physically-backed ETFs.....	10
Topic 5: Synthetic ETFs	12
Swap replication - synthetic ETFs.....	12
Swap agreement.....	12
Why is a swap used?	12
Counterparty risk	13
Counterparty risk management.....	13
How can I tell if an ETF is synthetic?	13
Summary.....	14

Information provided is for educational purposes and does not constitute financial product advice. You should obtain independent advice from an Australian financial services licensee before making any financial decisions. Although ASX Limited ABN 98 008 624 691 and its related bodies corporate ("ASX") has made every effort to ensure the accuracy of the information as at the date of publication, ASX does not give any warranty or representation as to the accuracy, reliability or completeness of the information. To the extent permitted by law, ASX and its employees, officers and contractors shall not be liable for any loss or damage arising in any way (including by way of negligence) from or in connection with any information provided or omitted or from any one acting or refraining to act in reliance on this information.

© Copyright 2013 ASX Limited ABN 98 008 624 691. All rights reserved 2013.

All Ordinaries®, All Ords®, AllOrds®, ASX®, ASX100®, CHESS® are registered trademarks of ASX Operations Pty Limited ABN 42 004 523 782 ("ASXO").

ASX20™, ASX50™, ASX200™, ASX300™ are trade marks of ASXO.

S&P™ is a trademark of Standard and Poor's, a division of The McGraw-Hill Companies Inc.

Topic 1: Features

An Exchange Traded Fund (ETF) is a type of open-ended fund traded on market.

It typically tracks an index, however some ETFs track specific assets such as a currency or commodity.

An ETF should trade at or very close to its underlying net asset value (NAV).

Underlying indices

ETFs are available over Australian sharemarket indices, fixed income indices, international indices, commodities, cash and other assets. In this course we use the term 'securities' as a catch all term when making general descriptions of ETFs.

The underlying index could be a broad market index such as the S&P/ASX 200 index in Australia, or the S&P500 index in the U.S.

It could be a sector index such as the S&P/ASX 200 Resource Index, which reflects the performance of listed resource companies.

Or it could be an index created specifically for an ETF with an aim such as achieving an income yield.



Accurate price tracking

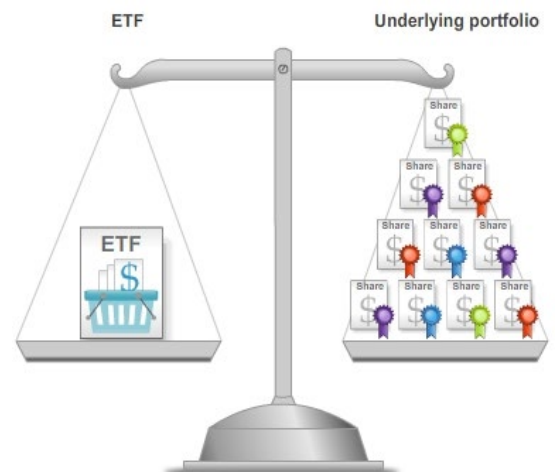
An ETF's price tracks the underlying index.

ETFs are 'passively managed'. Their aim is to replicate the performance of the specified index or asset. The ETF manager's job is to ensure the fund's holdings generally match or track the composition of the index.

In contrast, actively managed funds aim to outperform a specified benchmark. The fund manager constructs a portfolio that varies from the composition of the index in an attempt to achieve outperformance.

Trades at NAV

The price of an ETF should be at or very close to its net asset value (NAV).



The NAV reflects the market value of the underlying portfolio, adjusted for the fund's fees and expenses and expressed on a per unit basis.

It is possible for tracking error to occur - it is wise to check the NAV and the ETF's price before trading.

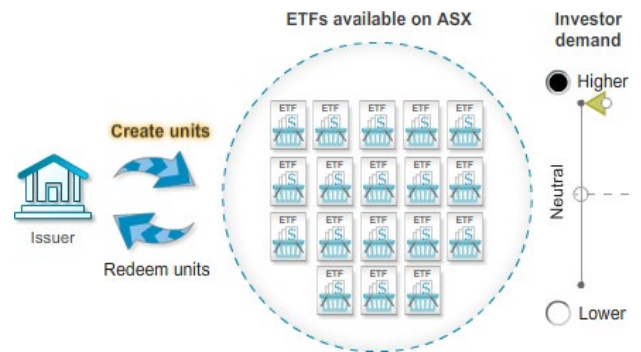
Open-ended

ETFs are open-ended.

The number of units in the fund is not fixed. The ETF issuer can create or buy back (redeem) units in response to demand from investors.

The open-ended structure is one reason why ETFs track the NAV. (This is discussed further in Topic 3.)

In contrast the number of units on issue in a closed-ended fund is fixed. Investor demand can result in the unit price trading at a significant premium or discount to NAV.



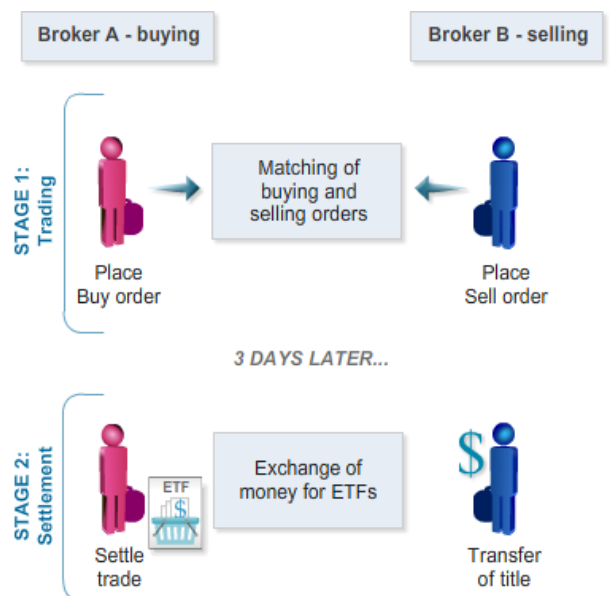
Exchange traded

ETFs are traded on market.

You buy and sell through your stockbroker during ASX trading hours, just as you buy and sell ordinary shares. ETFs are best traded between 10:30am and 3:30pm - this is covered further in Module 3 - 'Buying, holding and selling ETFs'.

You cannot buy ETFs directly from the issuer.

Settlement of the trade takes place three business days after the transaction (T+3). You receive a holding statement, just as you do when you buy shares.



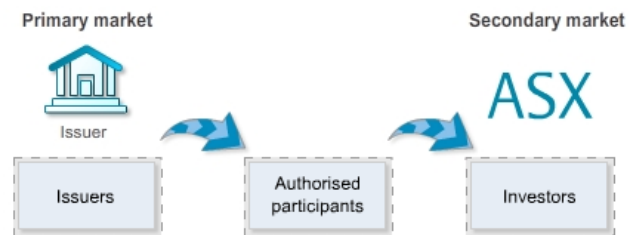
Topic 2: How ETFs are created

Primary and secondary market

You can only buy ETFs on the secondary market such as ASX.

You cannot apply for ETFs in a float.

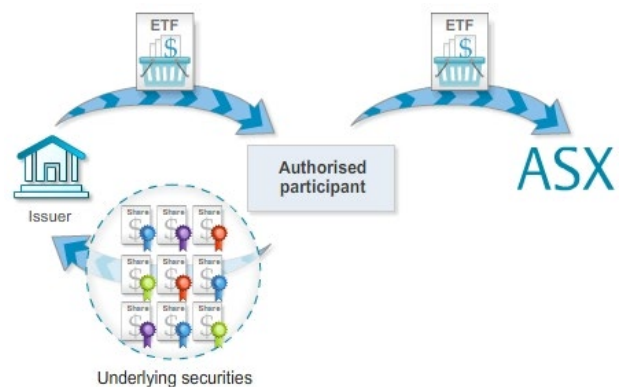
ETFs are issued on the primary market to authorised participants. These are special organisations who can create and redeem units in an ETF. It is through the activities of the authorised participants that ETFs are available for you to trade on the secondary market.



How are ETFs created?

The authorised participant applies to the issuer for units in the ETF.

In the majority of cases, instead of paying cash for these units, the authorised participant delivers a basket of securities equal to the value of the ETFs.

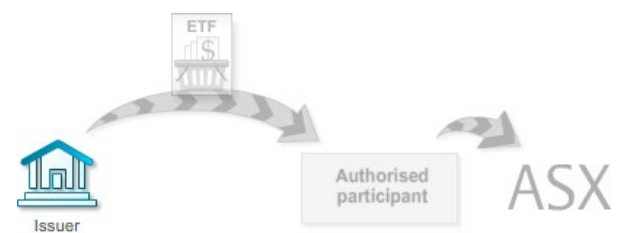


The basket of securities to be delivered reflects the composition of the index underlying the ETF.

Once the issuer creates the new units, the authorised participant is able to sell them to buyers on ASX.

What happens to the underlying securities?

When ETFs are created, the underlying securities are transferred to a custodian, who is responsible for holding them.



The custodian is appointed by the issuer of the ETF, but is independent from the issuer.

ETF redemption process

Authorised participants can also apply to the issuer to redeem ETFs.

The redemption process works in the opposite way to the creation process.



The authorised participant transfers ETFs to the issuer, which in return delivers a basket of the underlying securities to the authorised participant. The issuer then cancels the ETFs.

The process of creating and redeeming ETFs in exchange for the underlying securities is called an 'in-specie' or 'in-kind' process.

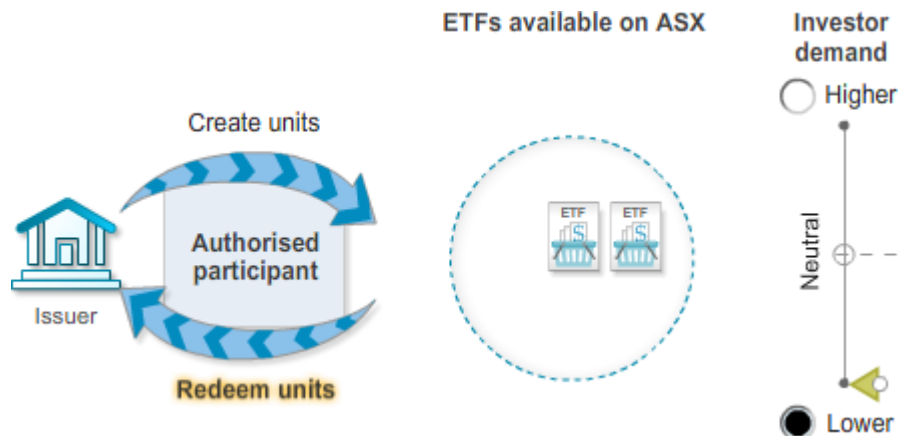
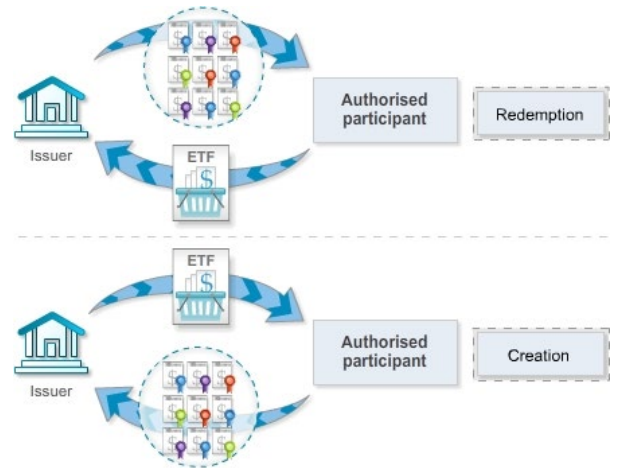
ETFs are open-ended

In Topic 1 we said that ETFs are open-ended, meaning the number of units on issue can be increased or decreased in response to demand from investors.

If the existing supply of ETFs is insufficient to meet investor demand, authorised participants can apply to the issuer for new units to be created, and then sell those units on ASX.

If the supply of ETFs is more than is needed to meet investor demand, authorised participants can redeem units, reducing the number on issue.

The open-ended structure of an ETF helps ensure that its market price stays at, or very close to the NAV. This is explained fully in Topic 3.



Topic 3: Understanding Net Asset Value (NAV)

Market price vs. NAV

The market price of an ETF and its net asset value (NAV) are two different things.

The market price is the price the ETF trades at on market.

The NAV is the total value of the assets in the ETF (adjusted for fees and expenses), divided by the number of issued units.

However, an ETF's market price should be at or very close to the NAV. This ability to closely track the NAV is a fundamental feature of ETFs. We explain how this works in the following screens.



How is the NAV calculated?

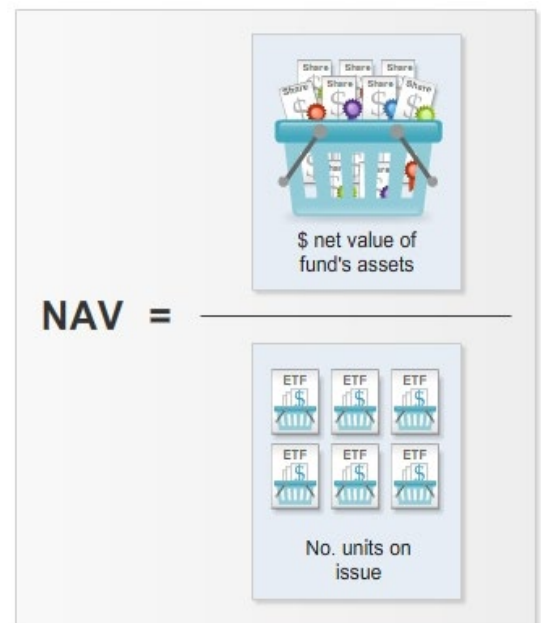
The NAV is the total value of the assets in the ETF (adjusted for fees and expenses), divided by the number of issued units.

Where can I find the NAV?

The NAV of most ETFs is published daily.

Issuers generally publish the NAV of their fund on their own website, or via Market Announcements on the ASX website.

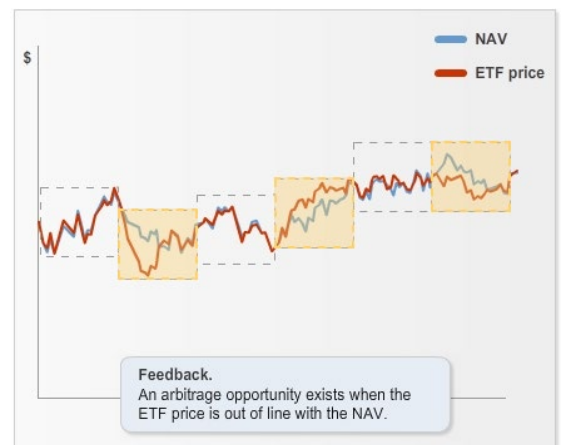
A limited range of ETFs over Australian indices provide an indicative NAV (iNAV) that is continually updated during the trading day. You can find this on your broker's website by typing the letter 'Y' in front of the ASX code for the ETF. For example, YSTW will return the iNAV for the ETF with the code STW.



What keeps the market price in line with the NAV?

The price of an ETF rarely deviates much from its NAV.

If the price of an ETF moves out of line with the NAV, this presents an arbitrage opportunity to authorised participants and professional traders.



Arbitrage is a technique used by professional traders to take advantage of perceived mispricing and earn profits.

Let's look at how this works.

Arbitrage

Assume the price of an ETF drops below the NAV. This is because demand has dropped relative to current supply.

An authorised participant can:

- buy ETFs on market
- deliver them to the issuer in exchange for the underlying securities, then
- sell the securities on market.

The difference between the price paid for the ETFs and the amount received for selling the securities on market is the arbitrageur's profit.

Buying the ETF will push up the price of the ETF until it is again in line with the NAV.

What if the price of an ETF is significantly higher than the NAV?

An authorised participant can:

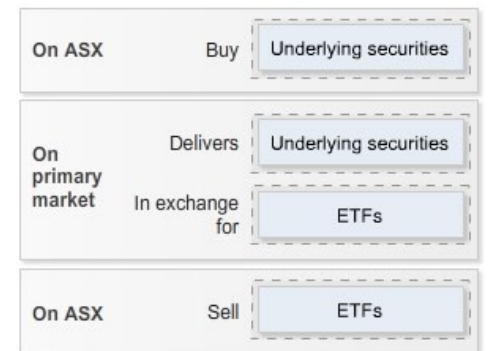
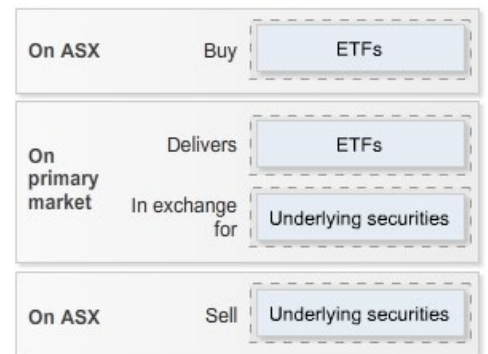
- buy the underlying securities on market
- deliver them to the issuer in exchange for new ETFs, then
- sell the ETFs on market.

In this case the difference between the price paid for the securities and the amount received for selling the ETFs on market is the arbitrageur's profit.

Selling pressure will push down the price of the ETF until it is again in line with the NAV.

Market price vs. index level

It's important to understand that an ETF's price is not necessarily 'equal to' the level of the underlying index.



For example, the S&P/ASX 200 index closed at 4462 points. The SPDR 200 ETF (ASX code: STW), an ETF that tracks the S&P/ASX 200, closed at \$42.65.

What matters is that in percentage terms, a change in the level of the index will result in a similar percentage change in the price of the ETF.

S&P/ASX 200 Index		SPDR 200 ETF	
Closing level	% change	% change	Closing price
4,686.6			\$44.52
4,691.3	0.10%	0.09%	\$44.56
4,681.4	-0.21%	-0.27%	\$44.44
4,697.5	0.34%	0.32%	\$44.58
4,618.2	-1.69%	-1.53%	\$43.90
4,619.9	0.04%	0.00%	\$43.90
4,699.1	1.71%	1.69%	\$44.64

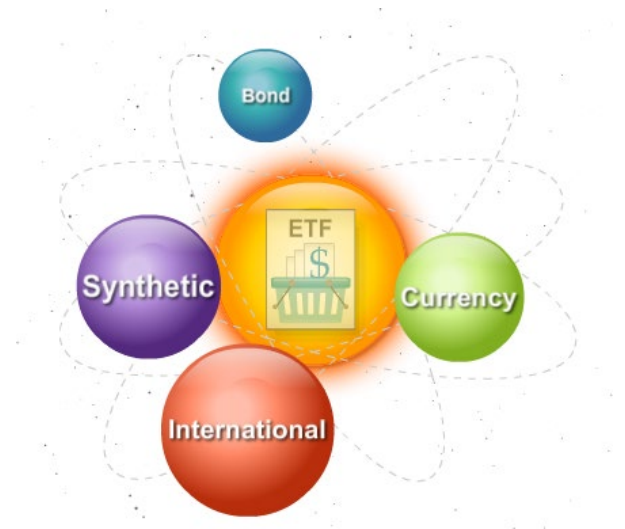
Topic 4: Physically-backed ETFs

ETF variations

The ETF landscape is always evolving. As the market has developed, the range of ETF types has grown, offering investors a broad choice of investment outcomes.

Issuers both here and overseas have developed different product structures. While all ETFs have certain features in common, there are some important variations in the way different ETFs achieve their investment goals.

You should be aware of the risks and benefits of the different ETF types. Reading an ETF's PDS is an important step in understanding the risks and benefits unique to that ETF.



Physically-backed/synthetic

ETFs can broadly be categorised as either physically-backed or synthetic.

Physically-backed ETFs hold the physical assets that the ETF is designed to track. They use either:

- physical replication, or
- representative sampling.

These structures will be discussed in this topic.

Synthetic ETFs use a derivative known as a 'swap' to achieve their investment goal. Synthetic ETFs are covered in Topic 5.

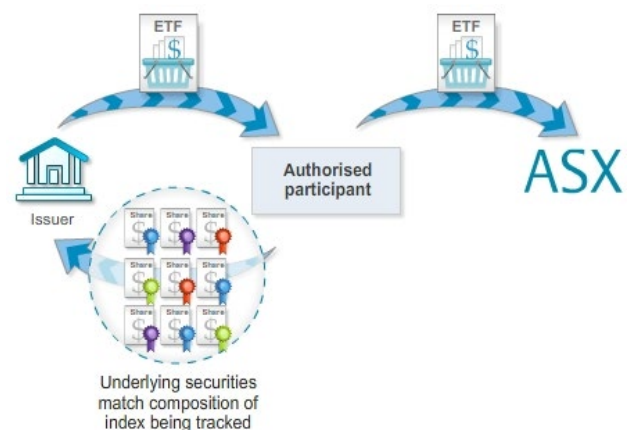
ETF type	Approach
Physically backed	Hold underlying assets
Synthetic	Use swap

Physically-backed ETFs

On creation of units in a physically-backed ETF, an authorised participant (AP) must provide the issuer with a basket of the underlying assets. The fund retains title to those assets.

Physical replication

In the physical replication approach, the basket of assets exactly matches the composition of the index being tracked.



For example, if the ETF tracks the S&P/ASX 200 index, the basket of stocks would consist of all 200 securities in the index, and in the same proportion as they are represented in the index.

This approach is most common for share index ETFs. It is more challenging for commodity ETFs due to the difficulties in holding physical commodities.

If physical replication is used, tracking should be accurate. However, there are disadvantages, including that:

- it may not be cost-effective, as many transactions may be required
- it may be difficult to achieve if some of the assets in the index are illiquid.

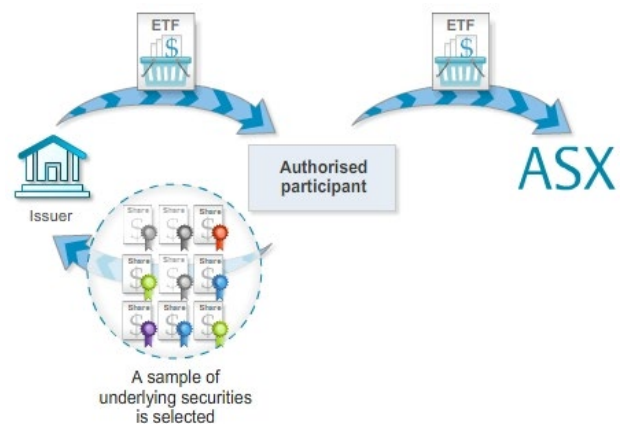
If this is the case, representative sampling may be preferred.

Representative sampling

In a representative sampling approach, the fund holds assets in the index it is tracking, however it may not hold all the assets in the index, or not in the same proportion as the index.

The assets are selected to achieve a similar outcome to physical replication, but without some of the disadvantages outlined above.

Derivatives may also be used in limited circumstances for reasons of speed and cost.



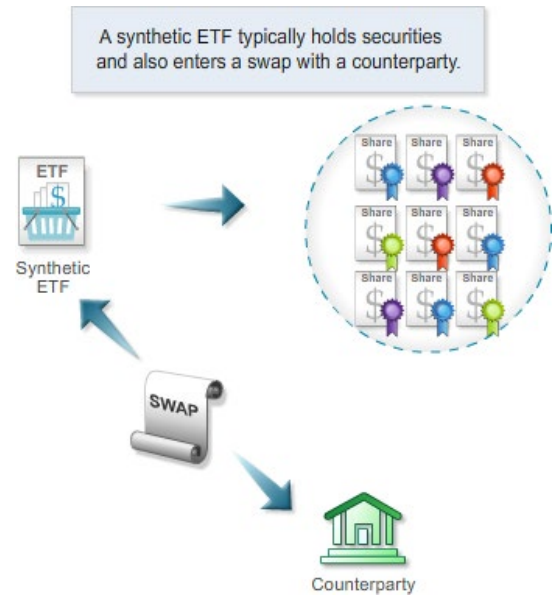
Topic 5: Synthetic ETFs

Swap replication - synthetic ETFs

Like physically-backed ETFs, synthetic ETFs aim to replicate the performance of an index or asset. The difference is in the tools and strategies used to achieve the investment objective.

A physically-backed ETF invests in all the securities in the index, or a representative sample.

A synthetic ETF typically invests in a portfolio of securities, and also enters into a swap agreement to optimise its tracking of the index. The synthetic structure is also referred to as 'swap replication'.



Swap agreement

Under the swap agreement, the counterparty must make a payment to the fund if the portfolio underperforms the index.

Conversely, the fund must make a payment to the counterparty if the portfolio outperforms the index.

This calculation is performed daily by the fund's administrator and is settled regularly between the fund and the counterparty.



The net effect is that the returns from the portfolio and the payment to or from the counterparty together replicate the performance of the index.

Why is a swap used?

There are three main reasons that ETFs use synthetic structures.

Minimises tracking error

The swap replication approach tends to minimise any divergence between the return from the ETF and the performance of the underlying index.



Easier to implement

A synthetic structure may be less transaction-intensive and more cost-effective than physical replication.

Access to difficult markets

In some cases, access to the underlying physical assets is difficult. For example, physically holding commodities such as oil or wheat is not practical. Achieving exposure via swaps can be simpler and cheaper.

Counterparty risk

As well as the risks common to all ETFs, synthetic ETFs involve the additional risk that the counterparty to the swap will not meet its obligations to the fund.

If the counterparty defaults on its obligations, the ETF and your investment would have full recourse to the physical assets held by the custodian, and the synthetic ETF's NAV would fall by the amount owed from the counterparty.

You should take this risk into account if you are considering investing in a synthetic ETF.

Counterparty risk management

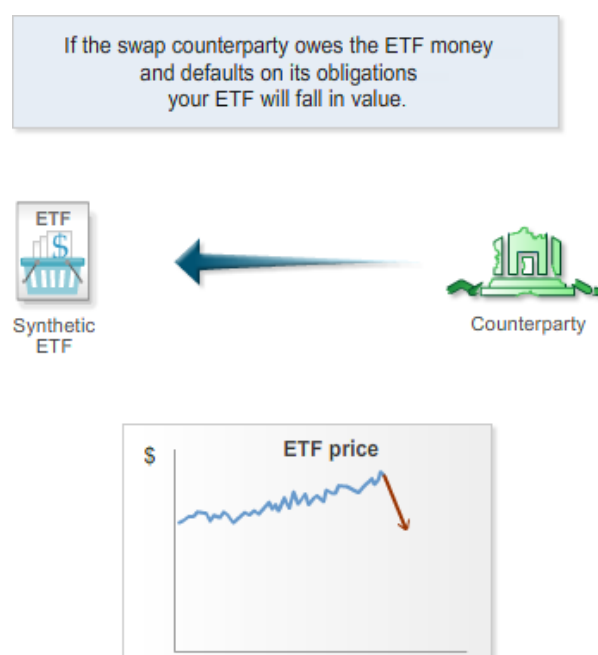
ASX has in place requirements designed to minimise counterparty risk.

There is a limit on the exposure an ETF can have to counterparties. Under ASX Rules, counterparties can owe an ETF no more than 10% of the fund's net asset value (NAV). If that limit is breached, the ETF must take action immediately to reduce the exposure.

There are also restrictions on the types of counterparties who can enter into derivatives contracts with ETF issuers. For example, Australian banks and certain authorised foreign banks are eligible.

How can I tell if an ETF is synthetic?

You can tell from its name if an ETF traded on ASX is a synthetic ETF. The name of a synthetic ETF must include the word '(synthetic)'.



Summary

- ETFs typically track an index. Some ETFs track a commodity or currency.
- They are created by the issuer, and then can be traded on market.
- ETFs are open-ended funds. The issuer can create or redeem units in response to investor demand.
- An ETF generally trades at or close to the net asset value, which is the value of the securities underlying the ETF. Arbitrage activity ensures that the ETF price remains in line with the NAV.
- Physically-backed ETFs hold the physical assets that the ETF is designed to track. They use either:
 - physical replication, or
 - representative sampling. the ETF's price may diverge from the value of the underlying index or assets.
- Synthetic ETFs use swaps to achieve their investment goal.
- The swap replication approach tends to minimise tracking error, and can enable access to markets where holding the underlying assets is impractical. It can also be easier to implement.
- However synthetic ETFs involve the risk that the counterparty to the swap will not meet its obligations to the fund.
- Under ASX Rules, counterparties can owe an ETF no more than 10% of the fund's net asset value.