

ETF 101: How do ETFs replicate index performance? 12/07/2023

ETFs are exchange-traded funds that have become increasingly popular in Hong Kong. How do they replicate index performance?

ETF strategies for replicating index performance can be divided into "Physical Replication" and "Synthetic Replication". The first strategy is "Physical Replication", which is more common in Hong Kong. "Physical Replication Strategy" can be subdivided into "Full Replication" and "Representative Sampling".

"Full Replication Strategy" is to invest in the index constituents by making a complete replication. On the other hand, "Representative Sampling Strategy" is adopted by fund managers due to certain investment limitations. Investment optimization models would be adopted to select individual representative index constituents for investment.

The second strategy is "Synthetic Replication". ETFs that adopt a "Synthetic Replication Strategy" do not directly invest in the index constituents, but use financial derivatives instruments to track the index performance. It is appropriate for those markets which are not suitable to adopt the physical replication strategy, such as emerging markets, commodities, cryptocurrency, etc. For example, ETF fund managers will enter into a contract with investment banks and provide them with margins or collaterals in return of delivering index returns. Investment banks will provide the ETFs' returns or losses based on the performance of the index.

To conclude, "Full Replication Strategy" will completely replicate the index constituents, and the tracking error is relatively low. However, transaction costs may be higher given that there are many index constituents. "Representative Sampling Strategy" only invests in representative index constituents, which can reduce transaction costs, but tracking error might be higher.



Lastly, "Synthetic Replication Strategy" tracks the index performance through derivatives instruments, and the tracking error may be relatively lower. However, it may face additional risks due to the involvement of derivatives instruments and collaterals.

After learning about how ETFs replicate index performance, we will walk through more details about ETFs next time. Please stay tuned!



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