

Understanding the liquidity of ETFs, how creation and redemption keeps price and NAV aligned, and the important role played by the Market Maker (DB) in that regard

Intra-day liquidity is a significant advantage Exchange Traded Funds (ETFs) have over mutual funds. Whereas mutual funds can only be redeemed or purchased at NAV (Net Asset Value) at the end of the trading day, ETFs trade on the Exchange like stocks and can be bought and sold at any time during market hours.

But how exactly is the liquidity of an ETF measured? Do volumes traded on the exchange for any ETF tell the whole story, as far as liquidity? How is the difference between the market price of an ETF and its NAV a potential indicator of liquidity? Finally, how do Designated Brokers (DBs) play a key role in providing liquidity, and ensuring as tight a relationship as possible between Market Price and Net Asset Value? Answering these questions will help clarify this important issue and assist investors in better understanding the dynamics affecting the liquidity of ETFs overall.

Liquidity of a Stock

As we can see below, the measure of liquidity for individual stocks is fairly straightforward – higher trading volume and tighter bid-ask spread reflect greater liquidity. All else equal, the overall costs associated with a highly liquid stock are lower than that of a less liquid stock – as the cost of getting in or out (as reflected in the bid/ask spread) are minimal. In the example below, it is critical to note that in addition to an inferior bid/ask spread, a market impact can be expected for any sizeable order for IPT.V – which in all likelihood would further affect the bid/ask price, and again alter the overall costs associated with dealing in IPT.V shares.

Ticker	Name	Daily Volume	Bid Price	Ask Price	Bid/Ask Spread
AAPL	Apple Inc.	24,948,203	598.04	598.12	0.01%
IPT.V	Impact Silver Corp.	108,738	1.64	1.72	4.65%

Exchange Traded Fund liquidity: Primary and Secondary liquidity

Understanding the liquidity of an ETF is slightly more complex. Unlike stocks, ETFs have two layers of liquidity:

1. The ETF's own trading volume on the exchange, which we'll call "primary liquidity";
2. The liquidity of the underlying basket of securities comprising the ETF in question, which we'll call "secondary liquidity".

Primary Liquidity: The **first layer of liquidity** for any ETF is its own trading volumes. The bid/ask for that ETF are the market prices an investors will pay/receive for buying/selling the ETF in question if entering a market order. A great many ETFs in Canada have low primary liquidity, and indeed low overall Assets Under Management.

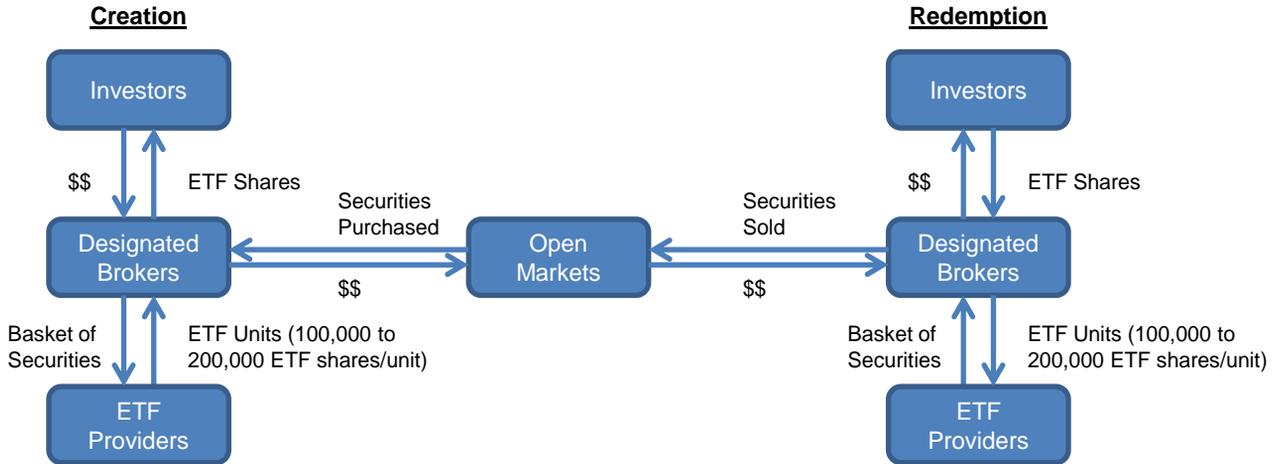
Secondary Liquidity: The **second layer of liquidity** is that of the underlying baskets of securities comprising the ETF in question. The aggregate value of all the securities held by the ETF (incl. any cash), divided by the number of units outstanding for that particular ETF equals the Net Asset Value (NAV) for each unit of that ETF at any point in time throughout the trading day. It is this layer of liquidity that investors need to pay greater attention to when making investment decisions – while otherwise opting to use a limit order for the ETF itself, to protect themselves from any negative surprise in terms of order execution.

Why is the secondary liquidity more important? Simply because of the unit creation and redemption process, which is the critical ingredient that holds ETFs prices in close alignment with their underlying NAVs.

Why is the liquidity of ETFs' underlying basket of securities more important than the ETFs' own trading liquidity? To understand this point, it is important to understand the mechanics of ETFs.

How Are ETFs Formed?

The following chart highlights the basic structure of an ETF. Market Makers in ETFs, known as Designated Brokers (DBs) play an important role in maintaining a tight fit between NAV and market prices. They achieve this goal by posting bid and ask prices, and participating in the creation or redemption of ETF shares/units.



Unit Creation and Redemption

Ultimately, the most critical element keeping Market Prices and Net Asset Value in line is the ability of the DB to “arbitrage” (realize a quasi instantaneous riskless profit by selling in one market and buying in an other to lock in the profit) any difference by either shorting the underlying securities comprising the ETF while redeeming the ETF itself with the ETF provider (in exchange for the underlying securities, thus “covering his/her short”) or selling short the ETF itself, while at the other end tendering into the provider the required basket of securities needed to obtain the issuance of new ETF units (following which he/she again will have covered his/her short, this time in the ETF).

The most liquid the underlying securities involved are, the better this process works. Evidently, if either the buying or selling of the securities comprising the ETF has a market impact, this will negatively impact the otherwise tight relationship that should ideally always prevail between market price and Net Asset Value. In the United States, an Intra-day Indicative Net Asset Value is provided throughout the day, which updates the Net Asset Value every fifteen seconds.

Let's look at the iShares S&P/TSX Capped Information Technology Index ETF ([XIT](#)). XIT currently tracks the six most liquid Information Technology stocks trading on the Toronto Stock Exchange. The underlying securities are: Research In Motion Ltd. (RIM), CGI Group Inc. (GIB.A), Open Text Corp. (OTC), Celestica Inc. (CLS), MacDonald Dettwiler & Associates (MDA), and Wi-Lan Inc. (WIN). XIT's own volume represents the first layer of liquidity, while the volumes traded on the six stocks making up XIT represent the second layer of liquidity.



As you can see from the table below, while XIT itself has relatively low trading volume, its underlying basket of securities much more liquid (with the exception perhaps of MDA, whose % bid/ask spread interestingly is higher than that of XIT). In any event, in XIT's case, as the underlying securities are generally quite liquid, creating additional units should be easy. Interestingly, there are situations where it is more economical to trade in the ETF itself than it would be in all of its underlying components – in such an instance, the primary liquidity of the ETF itself is so ample that the secondary liquidity is never called into action, if you will.

Ticker	Name	Daily Volume	Bid Price	Ask Price	Bid/Ask Spread
XIT	iShares S&P/TSX Capped Information Technology Index ETF	9,541	6.26	6.29	0.48%
RIM	Research In Motion Ltd.	2,665,310	13.96	13.98	0.14%
GIB.A	CGI Group Inc.	631,897	21.60	21.63	0.14%
OTC	Open Text Corp.	196,974	57.86	57.99	0.22%
CLS	Celestica Inc.	723,820	9.66	9.67	0.10%
MDA	MacDonald Dettwiler & Associates	48,887	43.30	43.68	0.87%
WIN	Wi-Lan Inc.	528,216	5.18	5.19	0.19%

A few final points:

- To protect yourself against any negative surprise in terms of order execution, always consider the NAV, but then place a limit order, just in case.
- In particular, do not forget to use a limit order when primary liquidity is at its worst, which is in the first 10-15 minutes of the trading day, as well as towards the end of the trading day.
- Appreciate that in some instances (commodities related) – market hours may not coincide across markets (equity markets open, commodities trading closed) – this can result in less satisfactory execution, in that the market maker would take greater risk (for which he/she would seek compensation) when providing liquidity.
- Similarly, when dealing in ETFs whose underlying exposure is overseas, appreciate that the market maker, in providing the liquidity, will seek to hedge him/herself, and that this could be more costly then if he/she were able to transact simultaneously across markets.
- Despite the soundness of the process described as far as keeping Market Prices and Net Asset values in line, markets can at times be subject to very unusual circumstances, such as the Flash Crash of May 6, 2010. Again to protect yourself against such situations, using limit orders is a worthwhile consideration.
- With regard to this last point, High Frequency Traders also played a role that day, removing their bids from the market, and as a result, possibly contributing to some securities falling more freely. HFT have in recent years negatively impacted the profitability of DBs, by inserting themselves into the market and competing aggressively on price, at times uneconomically, while otherwise overall looking to come out ahead on aggregate volumes – in part by being compensated by Exchanges competing for volumes of trades overall.