

BMO Innovation ETFs

Q1 Report

- BMO MSCI Innovation Index ETF (ZINN)
- BMO MSCI Fintech Innovation Index ETF (ZFIN)
- BMO MSCI Genomic Innovation Index ETF (ZGEN)
- BMO MSCI Tech & Industrial Innovation Index ETF (ZAUT)
- BMO MSCI Next Gen Internet Innovation Index ETF (ZINT)



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With investors becoming concerned about commencing interest rate hikes across the globe, growth names have pulled back from their highs in 2021.

Historically growth names are sensitive to interest rates which have been rallying quite strongly throughout 2022 primarily due to high inflation results. Market expectations then call for tighter monetary conditions in the coming years.

While higher interest rates can be short term headwinds for growth stocks, it is worth noting that innovation is immensely needed in the world across the spectrum of themes that we capture with our thematic suite. Progress made by companies across fintech, autonomous technology, next gen internet and genomics has not been hindered and will continue to change the way the world works.

Short-term pull backs in companies that are focused on innovation for the future create present day buying opportunities for investors with a long-term growth objective.

A Note On Investing in Innovation:

Investing in innovations is thematic investing, not sector investing, and it is important for investors to understand the difference. For example, an information technology sector ETF could miss out on innovative growers such as Tesla and Amazon which are classified as Consumer Discretionary stocks, or Alphabet, Facebook and Netflix which are classified as a Communication Services stocks. Therefore, we need to look across sectors to truly identify the most innovative companies. In terms of portfolio construction, investors can use thematic ETFs such as ZGEN, ZFIN, ZAUT and ZINT in the same way as a sector ETF. It can be added to tilt a portfolio to a targeted exposure, in this case one of the four innovations. ZINN has exposure to all the innovation platforms and holds over 330 names across the globe, this ETF can be used as a larger core component of a growth portfolio because of its diversification and broader access to all four of the most relevant megatrends. **All five BMO Innovation ETFs are rated medium risk and maximize exposure to innovation while minimizing stock specific risk.**



BMO MSCI Innovation Index ETF (ZINN)

In Q1 2022, performance in ZINN was affected by the recent consolidation in growth stocks largely due to rising interest rates. The greatest amount of positive performance attribution came from larger cap names in the portfolio from different innovation themes. As Q1 was a quarter of consolidation there was not a clear megatrend outlier. This is exactly why ZINN can be used as a core growth solution.

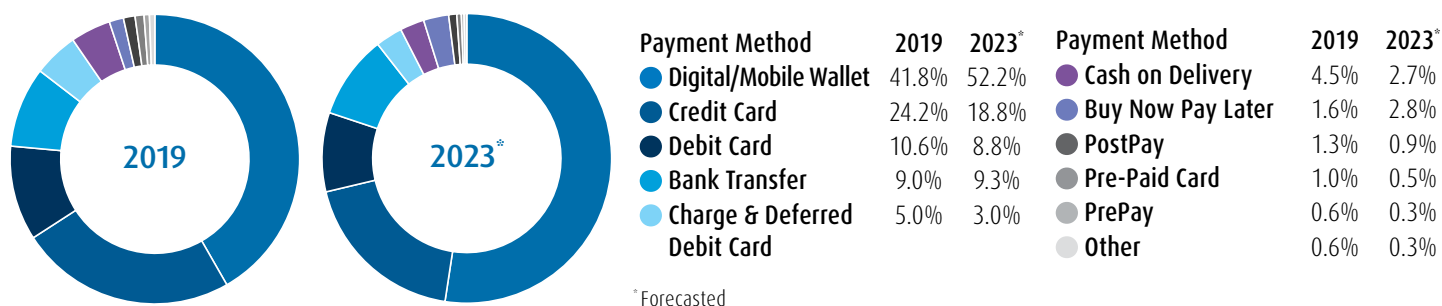
In Q1 there were some standout companies that performed exceptionally well relative to the market. These names include **Vertex Pharmaceuticals (VRTX)**, returning 18.8% and had the largest amount of positive contribution to ZINN, **Visa Inc (V)** and **Tesla Inc (TSLA)** all of which will be covered in detail in the sections below.



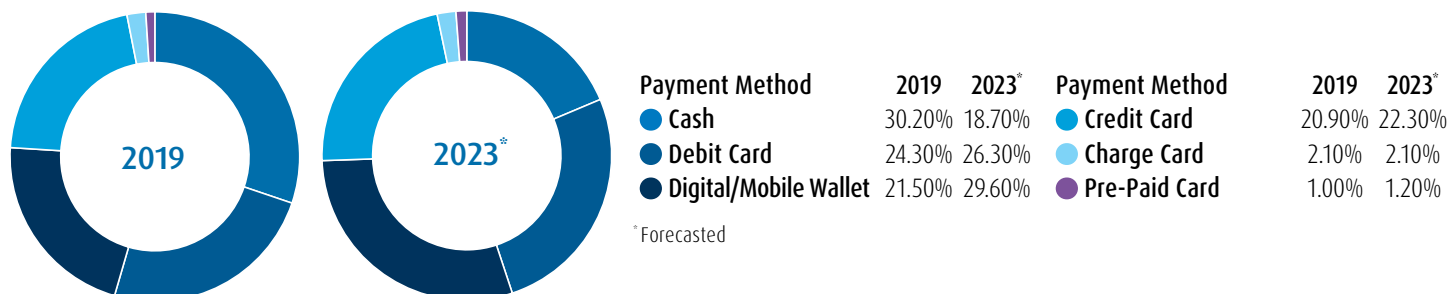
BMO MSCI Fintech Innovation Index ETF (ZFIN)

A major component of fintech innovation across the globe is coming from payment processors, this quarter we will highlight 2 of the largest positions in ZFIN. Transaction volumes across the globe have been increasing for many years and customers and business are looking for ease of access and processors that can keep up with new technologies. Online and in person point of sale payment methods are forecasted to change significantly with digital/mobile methods to significantly overtake traditional methods.

Global eCom payment methods¹



Global POS payment methods¹



Visa Inc (V) returned 2.5% in the quarter and is coming off a very strong 2021 with net revenues up 24%, net income up 27% and earnings per share up 29% from 2020 year-end results.² Payment volumes, cross-border volumes and processed transaction growth gave all accelerated through their network versus previous fiscal quarters. The company has also recently announced on March 10, 2022 that it has completed its 2-billion-dollar acquisition of Tink. The acquired firm is a leading European based open banking platform that works with banks and fintech companies in 18 different markets in Europe. As the transaction is now completed Visa will be able to provide more access to services and tools to allow personal and business customers to operate more digitally and securely.³

With this acquisition Visa is demonstrating its ability to innovate and adapt to a very fast changing digital economy, the acquisition will provide greater quality and access of digital money services. Visa has also recently voiced ambitions to be a payment option on non fungible token marketplaces around the world. The company has stated that it is working on several initiatives to make the buying process of NFTs simpler and more secure. They have not provided specific timelines but are on the way to tackle the NFT markets, another excellent example of innovation from this mega cap company.⁴

Another innovative payment processor in ZFIN is **PayPal Holdings Inc. (PYPL)**, however the stock has faced significant consolidation returning -38.7% in the quarter based on weaker revenue and profit forecasts due to inflation impacting consumer spending. Volatility like this also speaks to the importance of a diversified portfolio with thematic investing, as individual names can be volatile. In the latest quarterly earnings release they announced that their total payment volume through their payment systems hit 1.25 trillion dollars in 2021 an increase of 33% from 2020 and have added nearly 50 million net new accounts bring their total to 426 million accounts up 13% from 2020. PayPal has been largely successful at increasing the number of transactions they facilitate by working with companies to provide an alternative secure easy payment option.⁵ They have also dabbled into cryptocurrency; they offer their users the ability to buy and sell a variety of currencies in their platform and where available allow the use of crypto for checking out at online stores.⁶ They continue to innovate and offer more options and flexibility for business merchants and customers all over the world, PayPal has the potential to change the way the world uses digital payment systems going forward.



BMO MSCI Genomic Innovation Index ETF (ZGEN)

The story for the last few years for genomic innovation has been mRNA technology, and it makes sense since it has been the single most important innovation in combatting Covid 19. As the world slowly progresses out of the global pandemic it is worth shedding some light on other innovations and results in the genomic space.

Vertex Pharmaceuticals Inc (VRTX) is the largest holding in ZGEN and had strong quarterly performance with their shares increasing by 18.8% in the first quarter of 2022. The company increased their product revenues to 7.57 billion dollars representing a 22% increase over 2020 and announced various progress update to their clinical pipeline of disease areas for drug development.⁷


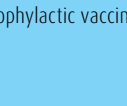
Vertex main source of revenue comes from Cystic Fibrosis treatment drugs; (TRIKAFTA/KAFTRIO). In Q4 2021 the company was able to expand its footprint for drug use and national cost reimbursement in Spain and the Netherlands. Additionally, in January 2022 the company was able to obtain approval from the European Commission and the United Kingdom's healthcare product regulator for the use of KAFTRIO to treat Cystic Fibrosis in children ages through 6 to 11, both CF drugs are now approved for use in more than 20 countries worldwide including the USA and Canada. The company also announced that it is in collaboration with Moderna to evaluate mRNA therapeutics to treat the underlying causes of CF they are aiming to progress to phase 1 regulatory filings in 2022.⁸

Beyond Cystic Fibrosis treatment approval milestones, the company also recently announced promising results for Type 1 diabetes drug VX-880. They have started dosing patients in clinical trials and have impressive results that show insulin use by day 150 after treatment was reduced by a staggering 92%. In 2022 the company intends to continue dosing patients and file Investigational New Drug Applications to drug regulatory authorities. Another large holding in ZGEN is Moderna Inc (MRNA), which declined 32.2% in the quarter as the covid 19 run up in mRNA companies has stalled and names have been consolidating lately after an unprecedented run up in stock prices.







Beyond their obvious success with their Covid 19 Spikevax vaccine the company has over 40 other vaccines/therapeutics in development and 25 are in active clinical trials.⁹

A look at some of Moderna's programs:

Moderna's Latent & Public Health Vaccines

Modality	Program	ID #	Preclinical development	Phase 1	Phase 2	Phase 3	Commercial	Moderna rights
 Latent vaccines	Autoimmune disorders	mRNA-1647						Worldwide
	EBV vaccine (to prevent infectious mononucleosis)	mRNA-1189						Worldwide
	EBV vaccine (to prevent EBV sequelae)	mRNA-1195						Worldwide
	HSV vaccine	mRNA-1608						Worldwide
	VZV vaccine	mRNA-1468						Worldwide
 Prophylactic vaccines	HIV vaccines	mRNA-1644						Worldwide <i>IAVI/others funded</i>
		mRNA-1574						Worldwide <i>BMGF/NIAD/others funded</i>
	Zika vaccine	mRNA-1893						Worldwide <i>BARDA funded</i>
Public health vaccines	Nipah vaccine	mRNA-1215						Worldwide <i>NIH funded</i>

Moderna's Therapeutics

Modality	Program	ID #	Preclinical development	Phase 1	Phase 2	Phase 3	Commercial	Moderna rights
 Systemic secreted & cell surface therapeutics	IL-2 <i>Autoimmune disorders</i>	mRNA-6231						Worldwide
	Relaxin <i>Heart failure</i>	mRNA-0184						Worldwide
	PD-L1 <i>Autoimmune hepatitis</i>	mRNA-6981						Worldwide
 Cancer Vaccines	Personalized cancer vaccine (PCV)	mRNA-4157						50-50 global profit sharing with Merck
	KRAS vaccine	mRNA-4671						Worldwide
	Checkpoint vaccine	mRNA-4359						Worldwide
 Intratumoral immunooncology	OX40L/IL-23/IL-36v (Triplet) <i>Solid tumors/lymphoma</i>	mRNA-2752						Worldwide
	IL-12 <i>Solid tumors</i>	MEDI1191						50-50 U.S. profit sharing: AZ to pay royalties on ex U.S. sales
 Localized Regenerative Therapeutics	VEGF-A <i>Myocardial ischemia</i>	AZD8601						AZ to pay milestones and royalties
 Systemic Intracellular Therapeutics	Propionic acidemia (PA)	mRNA-3927						Worldwide
	Methylmalonic acidemia (MMA)	mRNA-3705						Worldwide
	Glycogen storage disease type Ia (GSD1a)	mRNA-3745	Open IND					Worldwide
	Phenylketonuria (PKU)	mRNA-3283						Worldwide
	Crigler-Najjar syndrome type 1 (CN-1)	mRNA-3351						Provided to ILCM free of charge
 Inhaled Pulmonary Therapeutics	Cystic fibrosis (CF)	VXc-522						Vertex to pay milestones and royalties

Source: Moderna Q4 2021 Earnings Release presentation

In their latest year end earnings release they have highlighted a few achievements; they have moved into phase 3 study for their mRNA respiratory syncytial virus (RSV) vaccine with strong findings and are close to moving into commercial distribution with worldwide rights. They have also progressed to phase 2 for their mRNA Personalized cancer vaccine (PCV). They are testing their vaccine in combination with Merck's pembrolizumab drug (KEYTRUDA), for treatment of high-risk resected melanoma. Moderna expects the Phase 2 results to be available in the fourth quarter of 2022. Moderna shares worldwide commercial rights 50- 50 with Merck.¹⁰

Looking forward Moderna has many opportunities to innovate the genomic landscape and with many projects under way it serves as an ideal candidate for inclusion in ZGEN with excellent long term growth potential.

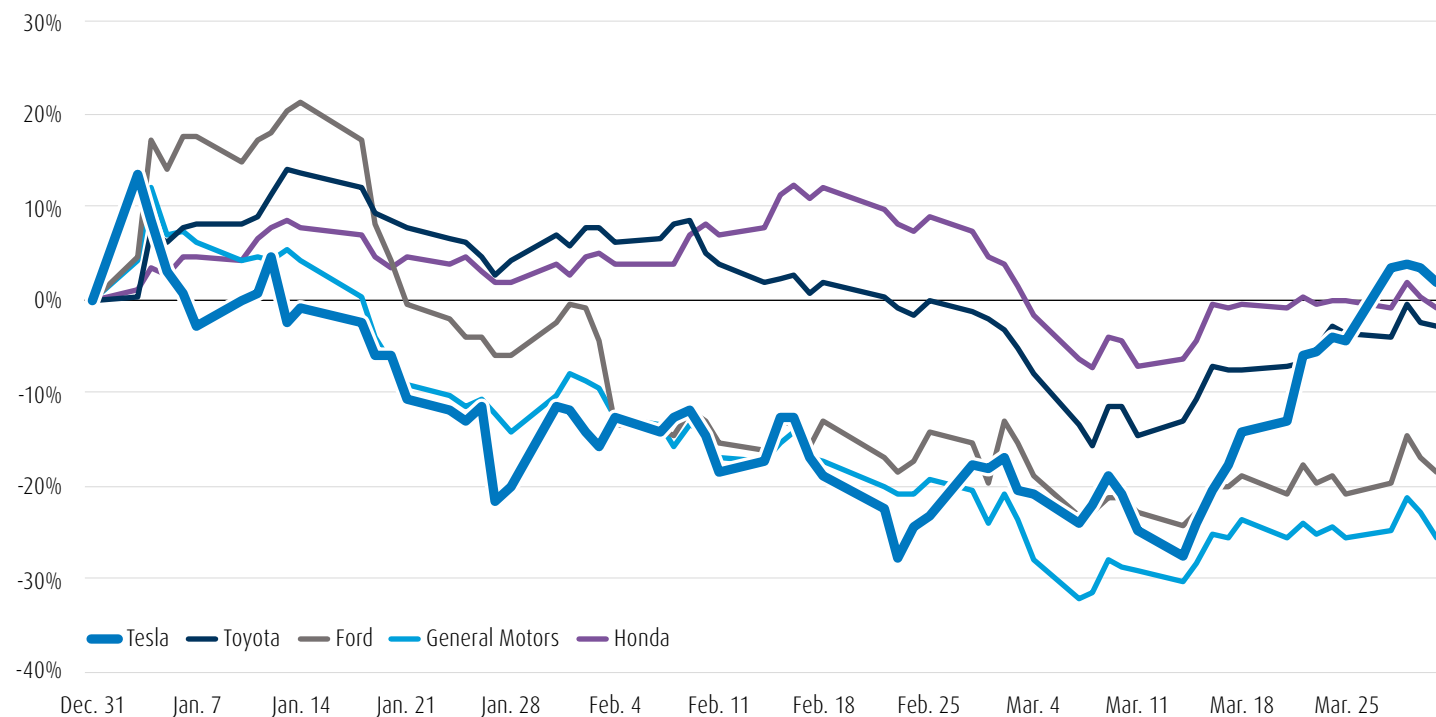


BMO MSCI Tech & Industrial Innovation Index ETF (ZAUT)

One of the biggest innovations occurring in the Autonomous technology & innovation theme is electronic vehicles and the race to autonomous driving. ZAUT has exposure to several auto manufactures which we cover in this update.

Tesla (TSLA), returning 2.0% in the quarter, is one of the global leaders in autonomous technology and industrial innovations. It was also one of the only large holdings and auto makers in ZAUT that delivered positive rate of return in Q1 2022.

Q1 Share performance of Large Automakers

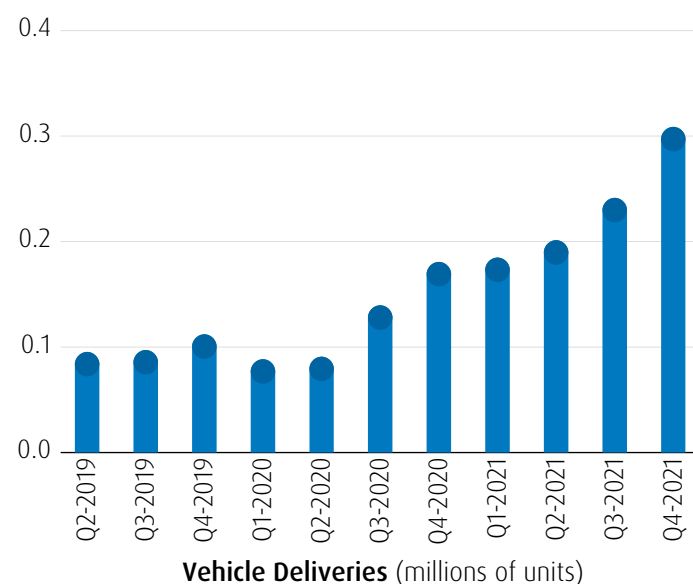


Source: Bloomberg

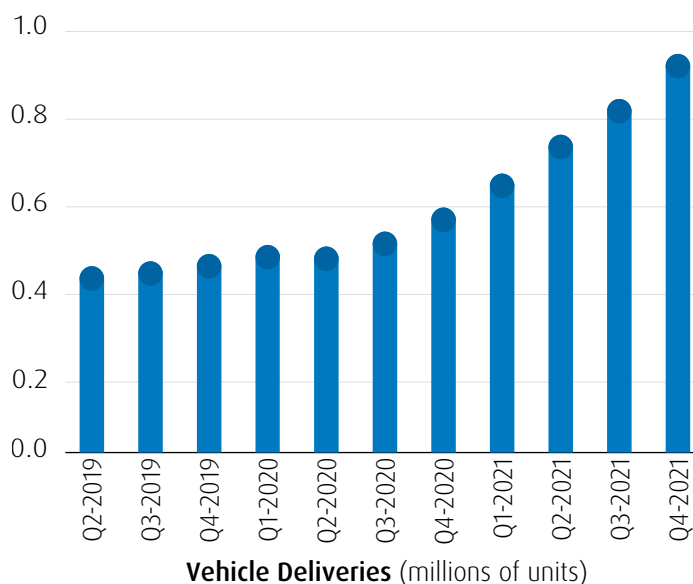
Tesla has been disrupting the traditional auto industry for many years and has forced a race to innovation in the industry. They are coming off a record year and quarter in terms of vehicle deliveries, with over 308,000 in Q4 2021 and over 936,000 for the full year.¹¹ They also had record financial results for year over year numbers in q4 with revenues rising 65% and net income rising a staggering 760%.¹²

Key Metrics¹³

Quarterly (Unaudited)



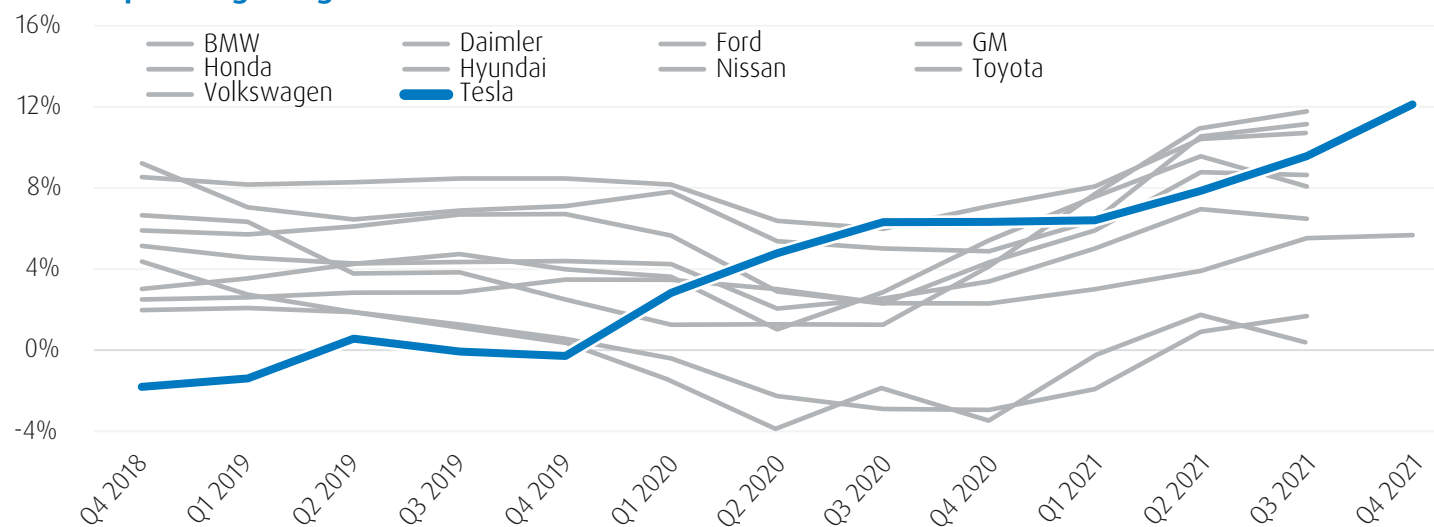
12 Months (TTM) (Unaudited)



Source: Tesla Q4 Shareholder deck

In the last quarter the so called “old school” auto manufactures did not have positive quarterly performance and are now lagging Tesla in terms of profitability. Tesla now has the highest percentage of profit on its sales after paying for costs of production., north of 12% and accelerating over the last few quarters:

GAAP Operating Margin¹⁴



Source: Tesla, OEM reports
TTM = Trailing twelve months

With Q1 in the books and Tesla emerging as a winner, the traditional auto manufacturers have their work cut out of them, For the first time one of their key profitability metrics are now below Tesla and are not manufacturing anywhere near the amount of EV vehicles.

With most manufacturers now squarely focused on EV vehicles, ZAUT is well positioned to capture growth from one of the biggest changes in automobiles since the industrial revolution.



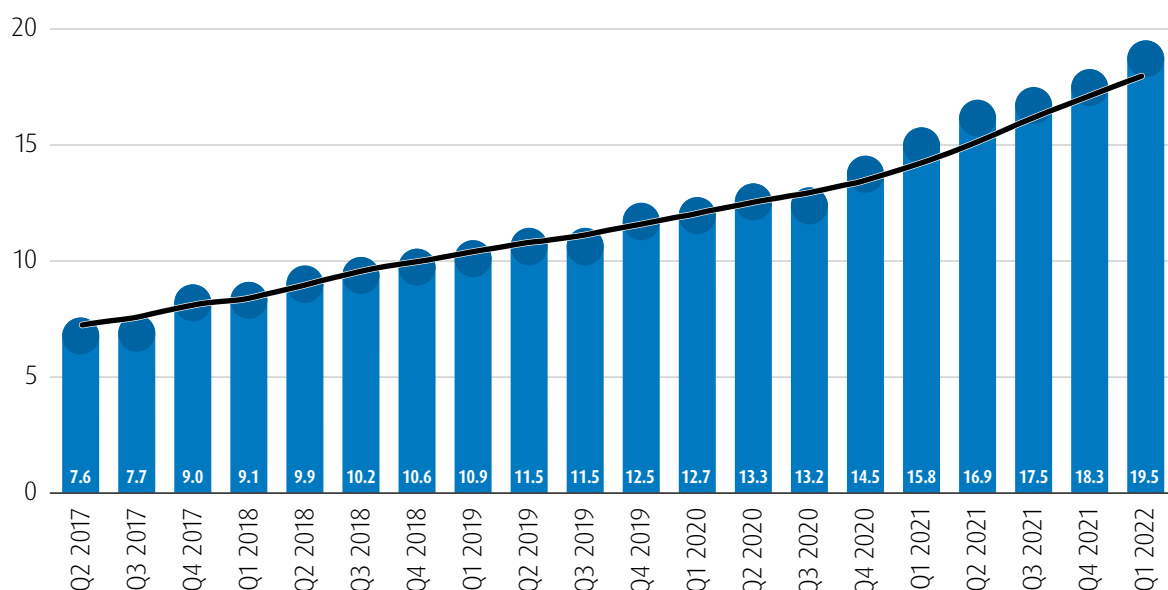
BMO MSCI Next Gen Internet Innovation Index ETF (ZINT)

In this quarter notable announcements came out from top holdings of ZINT, Apple Inc (AAPL) and Meta Platforms Inc (FB) on innovative ambitious plans for the near future.

Apple, which returned 2.5% in the quarter, has recently announced a record breaking quarter with revenue up 12% year over year, revenue from iPhones, Macs, Wearables and services all reached all time highs.¹⁵ Apple has had done a tremendous job of diversifying their revenues away from primarily iPhone sales, they now have 785 million paid monthly subscribers up 27% year over year as of end of 2021. Subscriptions are across several different services including Apple TV, Music, books, podcasts, arcade, and fitness and this is the fastest growing revenue category for the company.¹⁶

A closer look at services revenue amounts per quarter over the last few years, service revenues continue to increase, and their last quarterly earnings release showed that it represents over 16% of overall revenue.¹⁷

Services Revenue



In billions. Black line shows four-quarter average. Source: Apple disclosures. January 27, 2022.

Facebook, which returned 2.0% in the quarter, earns significant revenue from advertising across their family apps (Facebook, Messenger, Instagram, and WhatsApp) that made up over 97% of revenue and less than 3% from their new augmented reality segment; Reality Labs.¹⁸ The company has ambitious plans for the metaverse and how people will engage in a virtual environment. There are a lot of unknowns as the transformation into this environment is still at its infancy, but the general goal is for the company to enable consumers the ability to use augmented and virtual reality hardware in a 3D social interactable environment.¹⁹ Meta offers investors a way to capture upside in the next evolution of social technology and a huge component of the Next Generation Innovation trend for the future.

Final considerations

Innovation indexes are a unique way to capture mega trends that will likely last well into the future. As the world continues to evolve at a rapid pace many technological advancements will be needed to keep up with our behaviours and needs. MSCI Innovation indexes are built to capture growth and should be an integral part in investors long term portfolio. To help investors gain a broad exposure to innovation; ZINN can be used as a core holding, to align with a specific area in the market consider utilizing ZGEN, ZFIN, ZAUT and ZINT as strategic satellites.

MSCI Innovation Indexes Returns

Index	1 month	3 month	YTD	1 Year	3 Year	5 Year	S.I.
MSCI ACWI IMI Innovation Index	3.0%	-16.2%	-16.2%	-9.3%	15.6%	17.4%	19.9%
MSCI ACWI IMI Next Generation Internet Innovation Index	-0.2%	-14.6%	-14.6%	-2.7%	18.0%	20.5%	22.7%
MSCI ACWI IMI Fintech Innovation Index	-2.3%	-15.9%	-15.9%	-15.8%	13.5%	18.0%	21.0%
IMSCI ACWI IMI Genomic Innovation Index	1.5%	-17.2%	-17.2%	-12.7%	8.7%	10.0%	13.6%
MSCI ACWI IMI Autonomous Technology & Industrial Innovation Index	-0.01%	-11.9%	-11.9%	6.8%	23.9%	20.4%	21.1%

Source: MSCI, Returns as of March 31 2022 Returns in CAD. MSCI Innovation Indexes inception date Mar 31 2013. 1, 3, 5 year and since inception returns are annualized. You cannot invest directly in an index. Past performance should not be seen as an indication of future performance.

Megatrends & Thematic ETFs

BMO MSCI Innovation Index ETF ZINN Distribution Yield: 0.0% A Mgmt. Fee: 0.40% Risk Rating: Medium	BMO MSCI Genomic Innovation Index ETF ZGEN Distribution Yield: 0.1% A Mgmt. Fee: 0.40% Risk Rating: Medium	BMO MSCI Fintech Innovation Index ETF ZFIN Distribution Yield: 0.1% A Mgmt. Fee: 0.40% Risk Rating: Medium	BMO MSCI Tech & Industrial Innovation Index ETF ZAUT Distribution Yield: 0.3% A Mgmt. Fee: 0.40% Risk Rating: Medium	BMO MSCI Next Gen Internet Innovation Index ETF ZINT Distribution Yield: 0.2% A Mgmt. Fee: 0.40% Risk Rating: Medium
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¹ <https://seekingalpha.com/article/4369989-paypal-digital-payments-are-future> ² <https://investor.visa.com/financial-information/quarterly-earnings/>

³ <https://investor.visa.com/financial-information/quarterly-earnings/>

⁴ <https://techcrunch.com/2022/03/30/visa-launches-nft-program-as-it-considers-the-digital-art-a-new-form-of-ecommerce/>

⁵ https://s1.q4cdn.com/633035571/files/doc_financials/2021/q4/Q4-FY-21-PayPal-Earnings-Release.pdf

⁶ <https://www.cnn.com/2021/05/05/investing-in-bitcoin-with-paypal-what-you-should-know.html>

⁷ <https://investors.vrtx.com/news-releases/news-release-details/vertex-reports-fourth-quarter-2021-and-full-year-financial>

⁸ <https://investors.vrtx.com/static-files/649904c4-41cb-4876-b17d-64f5c83b9e32> ⁹ <https://www.modernatx.com/research/product-pipeline>

¹⁰ https://s29.q4cdn.com/435878511/files/doc_financials/2021/q4/Moderna-Reports-Fourth-Quarter-and-Fiscal-Year-2021-Financial-Results-and-Provides-Business-Updates-2022.pdf

¹¹ <https://ir.tesla.com/press-release/tesla-q4-2021-vehicle-production-deliveries> ¹² <https://www.cnn.com/2022/01/26/tesla-tesla-earnings-q4-2021.html>

¹³ <https://tesla-cdn.thron.com/delivery/public/document/tesla/99573663-409d-442d-b1f6-50bfc75cb41c/S1dbei4/WEB/tesla-q4-and-fy-2021-update>

¹⁴ <https://tesla-cdn.thron.com/delivery/public/document/tesla/99573663-409d-442d-b1f6-50bfc75cb41c/S1dbei4/WEB/tesla-q4-and-fy-2021-update>

¹⁵ <https://www.apple.com/newsroom/2022/01/apple-reports-first-quarter-results/>

¹⁶ <https://www.macworld.com/article/609454/apple-first-quarter-2022-earnings-record-subscriptions-installed-base.html>

¹⁷ <https://sixcolors.com/post/2022/01/apple-results-the-biggest-ever-123-9b/>

¹⁸ https://s21.q4cdn.com/399680738/files/doc_financials/2021/q4/FB-12.31.2021-Exhibit-99.1-Final.pdf

¹⁹ <https://investor.fb.com/investor-news/press-release-details/2022/Meta-Reports-Fourth-Quarter-and-Full-Year-2021-Results/default.aspx>

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