TD Wealth

Crypto-Mesmerism

Brad Simpson, Chief Wealth Strategist

Monthly Perspectives // March 2021

15 minutes


We live in an age of wonder. Don't be mesmerized by it. Think critically and invest in it.

Waiting for the Glass Harmonica

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Mesmerized. The word comes from an 18th-century German doctor, Franz Anton Mesmer, who is credited with developing the first techniques for what would come to be known as hypnotherapy — except that Mesmer himself never truly understood what he was doing to his patients. He believed (or claimed to believe) that good health depended on the free flow of invisible energies, and that these energies could be manipulated by a physician trained in the art of "animal magnetism."

In Paris, Mesmer became very popular among the upper classes and members of the French court. He held salons with dim lighting and soft music and would move around the room, using his hands to channel invisible energies to his followers. Sometimes he would use something called a "magnetizer" to amplify his powers. This would send his patients into fits of convulsion that could only be broken by the playing of a glass harmonica.

What does any of this have to do with what's happening in the financial markets? Well, when investment professionals talk about periods of extreme volatility, they often still refer to the "animal spirits" roiling the markets — the paranoia, the irrational exuberance. The same can be said for any peculiar investments that suddenly go stratospheric, delivering triple-digit returns overnight for apparently no reason at all.

Take Bitcoin, for example. Over the past six months, the cryptocurrency has risen approximately 500% (Figure 1), minting a fortune for anyone who was lucky enough to get in and out at precisely the right moments ("luck" being the operative word). The way these moon shots go is this: As the hype intensifies, advisors become inundated with questions from their clients, who are curious at first but soon become frustrated as they are advised, over and over again, to steer clear of what appears to be a once-in-a-lifetime opportunity.

If anything demonstrates the capability of markets to behave irrationally, it's the kind of parabolic hype seen in Bitcoin; the higher the price, the more interested investors seem to be. And the more interest from investors, the more opinions and forecasts you're likely to get from all kinds of professional prognosticators who suddenly claim to be experts on cryptocurrency. Bulls will talk about the enormous market potential; bears will insist it's a scam or that there's nothing there at all.

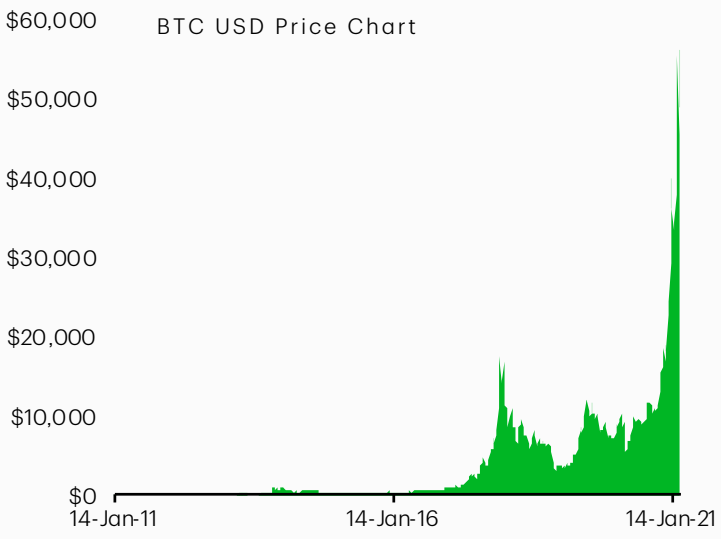
The great strength of Bitcoin, as you'll discover in the pages that follow, is not its technology or potential to revolutionize the financial market; the strength of Bitcoin — and its weakness — is that, almost 13 years after its invention, nobody seems to know what it is. Or how it works. Or who uses them. Or what the risks are. With no reference points and no historical examples, investors just don't seem to know what to make of Bitcoin, and as a result, they project their grandest hopes and worst fears on to it. What you end up with is a lot of hype, and nobody knows how long it will last. For decades, followers of Mesmer, including Marie Antoinette and Mozart, were convinced that people could be cured of all kinds of illnesses by using animal magnetism to cleanse their energies.

In the high-level FAQ that follows, you will not find any recommendation or prognostication on Bitcoin's potential. Fact is, cryptocurrency is not an investible asset — it's a theoretical store of value in an unregulated market with all kinds of risks. Nobody knows how it will play out. What you will find in this report is a plain-language explanation of how cryptocurrency works and whether there's any potential for Bitcoin to someday *become* an investible asset.

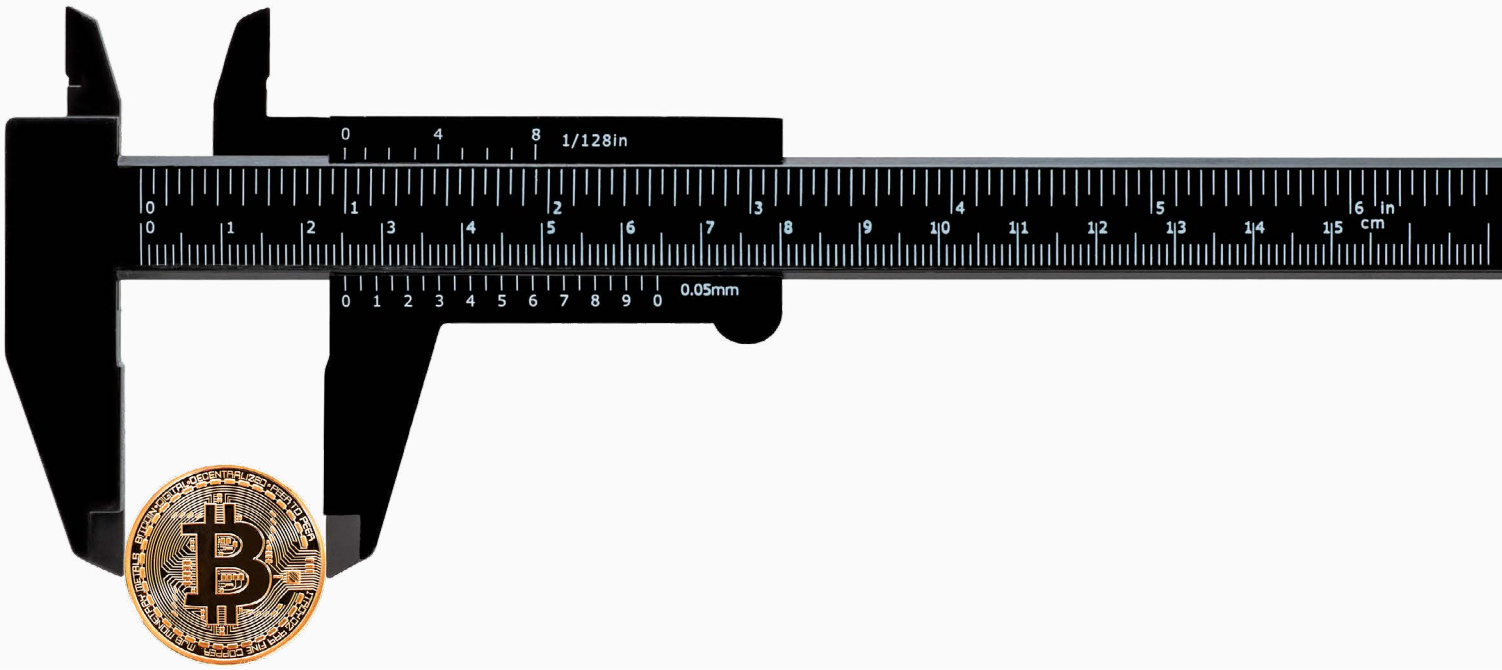
As for the grandfather of hypnotherapy, it didn't turn out so well for Mesmer. In 1784, Louis XVI struck a nine-member commission of medical and scientific elites — including the American ambassador, Benjamin Franklin — to investigate Mesmer's hypotheses. The commission concluded that there was no evidence that "animal magnetism" existed, and that any benefit the treatment produced was purely a result of the patients' "imagination." Mesmer was discredited and exiled to Switzerland, although further study of his techniques did lead to valid hypno-treatments.

All that is required to break free of Mesmer's spell is a bit of knowledge. Let's get some. □

Figure 1: All aboard!



Source: Bloomberg as of March 12, 2001



How much is a bit worth?

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Bitcoin was invented soon after the global financial crisis of 2008. Thirteen years later, the cryptocurrency has captured the imagination of investors — and yet, few of us truly understand what it is, how it works, or whether it can be considered an investment. Herewith, the answers to your most burning questions on Bitcoin and crypto.

1. What is a cryptocurrency?

Before you ask that question, you have to ask yourself what a currency is *in general*.

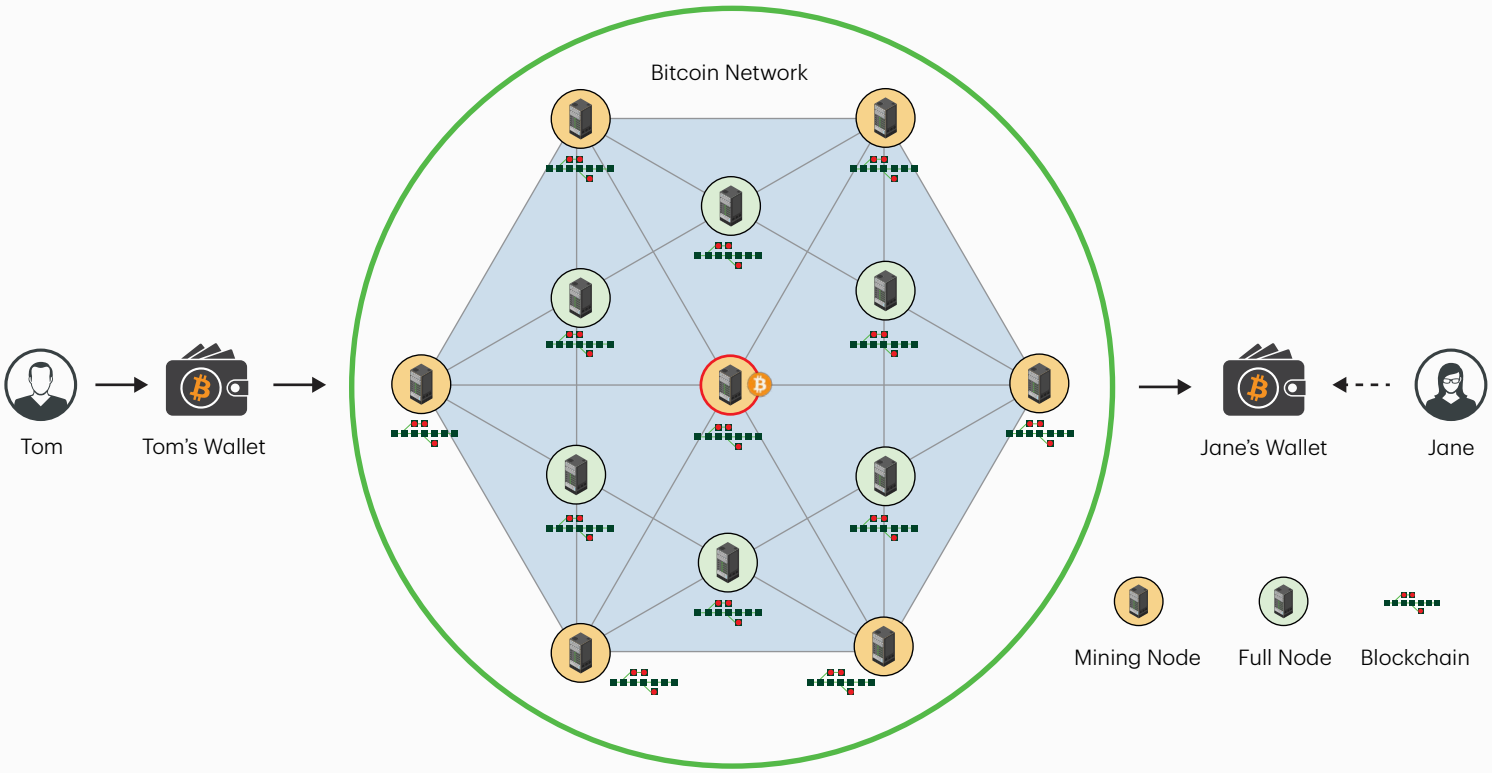
Any currency — whether we're talking about a euro or a dollar or a bitcoin — is a commodified and easily exchangeable unit of value. They are "commodified" in the sense that there are a great many of them in circulation. And they are "exchangeable" in the sense that there a great many vendors willing to trade goods and services for them. The value that is afforded any of these "coins" is based on: (1) their scarcity (supply vs. demand); and (2) the trustworthiness of their underlying systems.

Let's deal with trustworthiness first. Imagine you're a millionaire and you need to prove it. When it comes to traditional currencies, you can go to your bank, which maintains a record (or "ledger") of your assets. Or, if something nefarious is afoot and the bank denies your claim, you can go to the regulator or even the courts. All these institutional middlemen are there to safeguard to your claim. With government-backed, or "fiat," currencies, trust is engendered by the nation's institutional safeguards. Scarcity, meanwhile, is created by the exclusive right of central banks to mint coins.

Cryptocurrency turns all of that on its head by doing away with the middlemen. Crypto platforms still need to provide trust and scarcity, but in order to do so, they rely on an autonomous program — secured by robust cryptography (hence the name) — that's run across a decentralized network of computer nodes. No central banker determines the amount of coins produced. No financial institution records the amount of assets held. The program does all of that on its own, by limiting the amount of coins that can be minted and by maintaining a secure public ledger that's distributed across the network. This shared ledger is known as the "blockchain."

Because cryptocurrency only exists within the confines of the autonomous program, it is entirely virtual (so no paper or physical analogues). Because it operates without any administrators, people can transfer coins directly, making them hugely popular with parties that want to transact anonymously.

Figure 2: Bitcoin Transaction



For Illustrative Purposes Only

2. How does the system work?

Okay, here comes the technical part. The kinds of programs that maintain ledgers and enable crypto transactions require powerful, stable networks. The computers that provide the basis for these networks are known as "miners." Miners provide processing and storage capacity. In exchange for each transaction they enable, they earn: (1) a fraction of a newly minted coin; and (2) a transaction fee from the person initiating the transfer. This is how new units of a cryptocurrency are minted. With the right software, anyone with a powerful enough computer can become a miner and start earning coins.

Which raises an interesting question: If anyone can mint coins, what's to prevent a bunch of supercomputers from minting a fortune, saturating the market and sinking the currency? Aside from the prohibitive costs of such a venture, most cryptocurrency programs are written to prevent that kind of monetary expansion by limiting the number of coins that can ever be created. Bitcoin, for example, tops out at 21 million coins. The more coins in circulation, the less any miner can mint (and the higher the transaction fee). Once the final coin is created, miners will be unable to earn new coins, although they can continue to earn transaction fees.

Buyers and sellers, meanwhile, access the system through private and public "keys," which are essentially complex passwords: long series of digits that identify the account and enable encrypted transactions. The public keys can be thought of as account numbers, which are recorded in the public ledger; the private keys enable the cryptography and are known only to the account holder.

The keys are contained within a simple piece of software known as a "wallet," although the term is a misnomer. Contrary to popular belief, individual computers do not store a user's cryptocurrencies. The wallet, rather, holds the keys that enable a user to enter the system and conduct transactions (figure 2). Users can dispose of their computer hard drives while keeping a record of their keys. But if they lose their keys, they lose access to their coins.

It should also be noted that, while the public ledger of transactions can be seen by anyone in the system — providing a record of all transactions in history — the transactions themselves are not attributed to individuals, but rather to the public keys (i.e., account numbers). The individuals who own the keys remain completely anonymous.

3. What about "Bitcoin" specifically?

Bitcoin is just one of approximately 4,000 cryptocurrencies in the world, 79 of which have achieved billion-dollar market caps (Figure 3). Bitcoin, however, was the first to achieve widespread use and is by far the most popular. Other big names include Ethereum, Litecoin and Monero. Because each cryptocurrency runs on code written by a programmer, each one may be customized to provide unique features or differing levels of anonymity, speed and cost.

Bitcoin itself was invented in 2008, supposedly by a mysterious Japanese cryptographer called Satoshi Nakamoto, which is presumed to be a pseudonym. There is no proof that such a person ever existed, aside from posts on internet forums dating back to 2011. However, the Bitcoin ledger indicates that Nakamoto still holds approximately 1.1 million bitcoins, which today would be worth around US$35 billion.

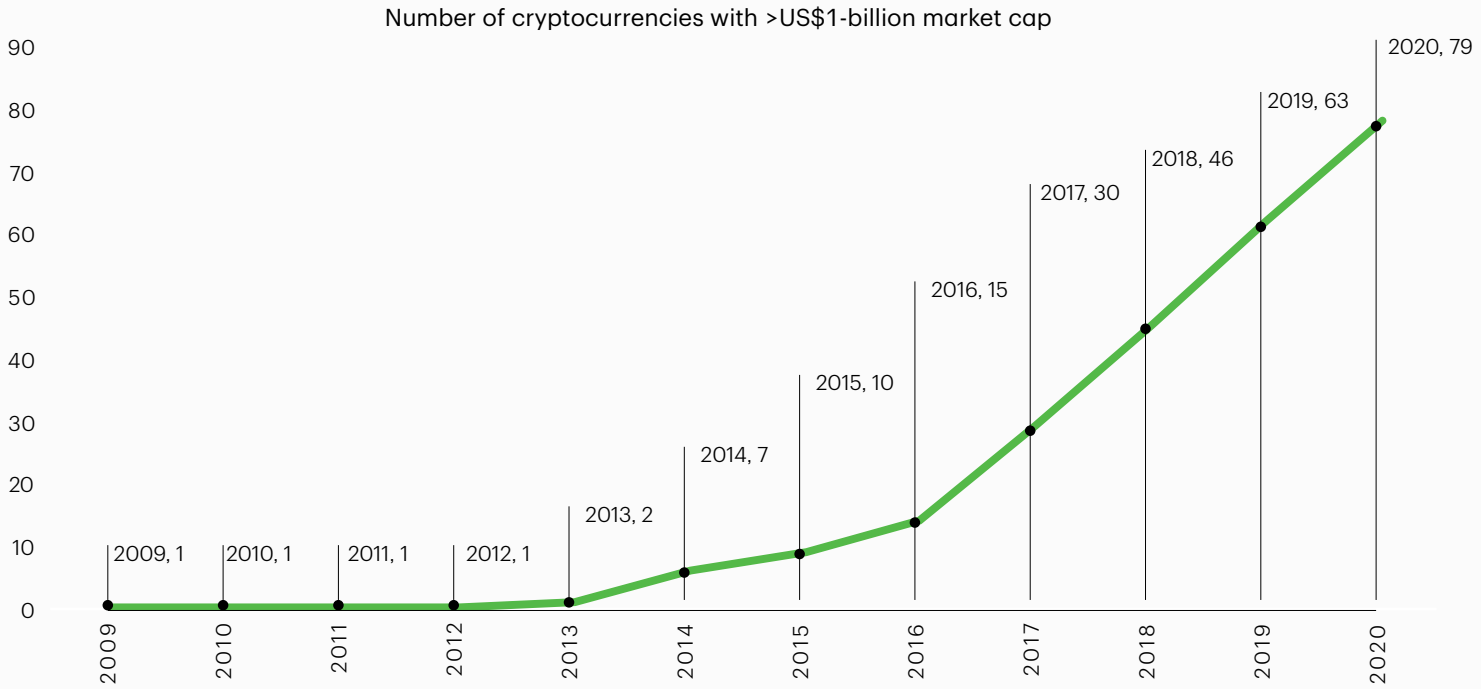
In the same way that a dollar can be divided into 100 cents, a bitcoin can be divided into 100 million units called "satoshis." Currently, around 18.6 million bitcoins are in circulation. The number of new bitcoins created every year will continue to decrease until total supply reaches 21 million, forecast to happen around 2140.

4. What are the advantages of using bitcoins versus traditional currencies?

Traditional payment systems already enable electronic transactions that are faster, cheaper and safer than Bitcoin, so what's the appeal? While we may be critized for boiling this down too much, the appeal — for both the well-meaning and unscrupulous — ultimately comes down to anononimity. Bitcoins can be transferred directly between users (peer-to-peer) without the need for any clearinghouse or intermediary. Of course, anonymous transactions can also be conducted simply enough with cash, but even a cash transaction requires a physical interaction that may leave a trail of evidence or expose the parties to risk. For Bitcoin, anonymity is almost perfect. While the public ledger makes every transaction visible, the parties involved in these transactions are identified only by their public keys and the date of the transaction.

While Bitcoin's central appeal may be its anonymity, it's important to note that many Bitcoin enthusiasts rely on third-party facilitators, such as exchanges or custodial services, in order to avoid the high cost of small, discrete transactions. As a result, Bitcoin is much less decentralized and anonymous in practice than most people believe.

Figure 3: Crypto competition on the rise



Source: Coinmarketcap.com as of March 16, 2021

5. What's behind the recent volatility and appreciation?

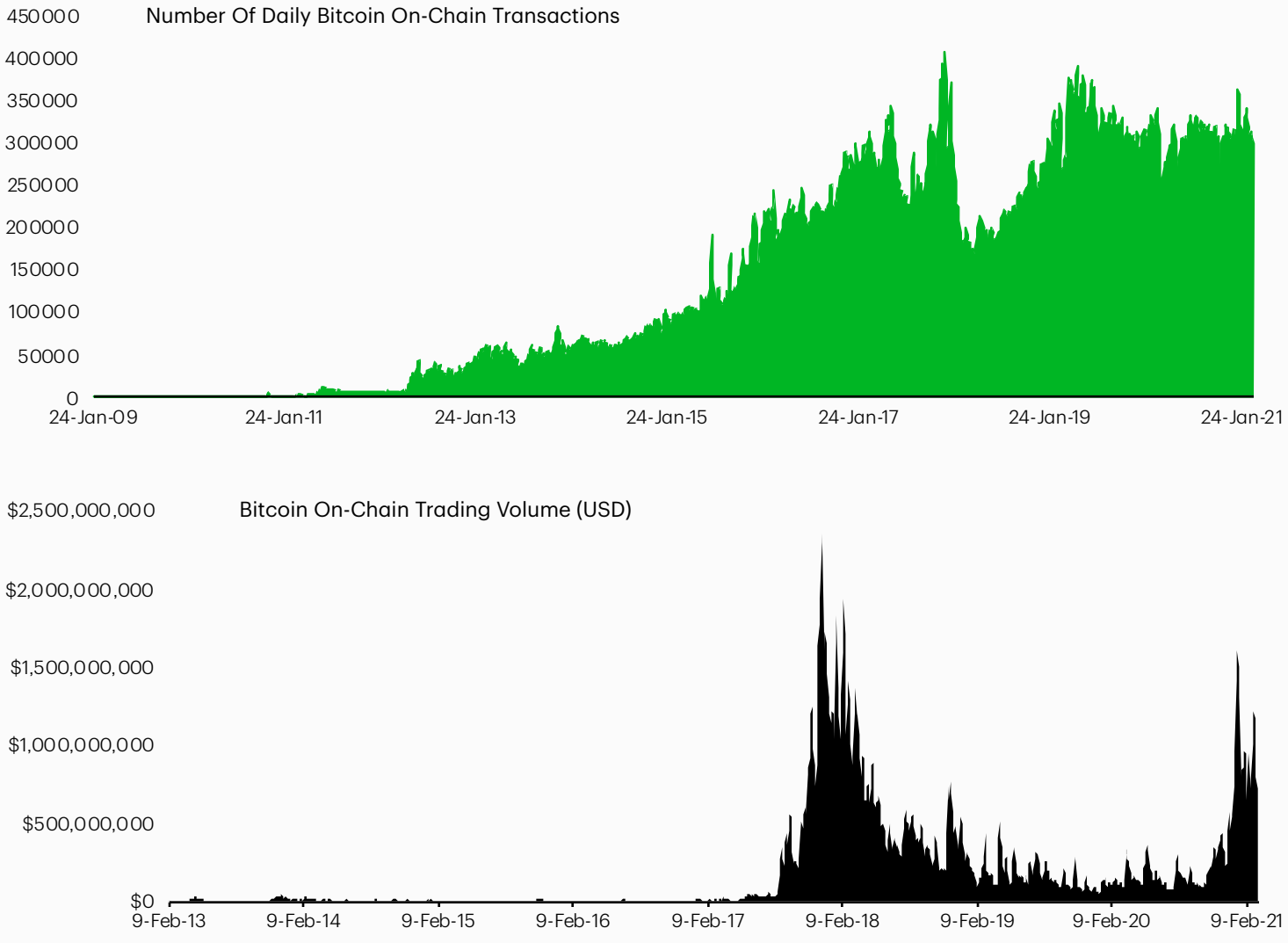
Near the end of 2017, Bitcoin achieved a peak of $20,000 (all USD). Then, within a year, it tumbled 80% to around $3,300, before rebounding into a parabolic spike — rising over 1,600% in two and a half years. With Bitcoin, extreme volatility is to be expected. Its price rises and falls on three main drivers: (1) adoption as a currency; (2) demand as an investment; and (3) market manipulation.

Let's tackle adoption first. The number of Bitcoin transactions recorded on the blockchain grew steadily until early 2019, at which point they started to plateau, at around 300,000 transactions per day (Figure 4). These transactions, it should be noted, do not include the immense number of trades that happen on third-party exchanges, but these lack anonymity and are therefore more likely driven by investment purposes.

The fact that the number of anonymous Bitcoin transactions hasn't risen alongside its price may seem odd, but remember that Bitcoin is just one of many, many cryptocurrencies now available. So, while there may still be growing demand for anonymous transactions, it's likely that Bitcoin's market share among the anony mous segment of the crypto market has fallen. In any event, it's clear that adoption as a currency on its own cannot explain Bitcoin's meteoric rise.

Speculation from investors is a much more likely candidate. Bitcoin's status as the world's most popular cryptocurrency may be leading short-term traders to pile into what they perceive as a one-of-its-kind asset. For long-term investors, meanwhile, the rise of Bitcoin may be a side effect of accommodative monetary policy. Central bankers have created trillions of dollars (in a variety of currencies) to support their pandemic-stricken economies, which has raised the spectre of near-term inflation.

Figure 4: Adoption as currency stalls, while investor demand grows



Source: Blockchain.com as of March 12, 2021

By contrast, the creation of new bitcoins is strictly limited by the program, in the same way that gold — another inflationary hedge — is limited by the amount of the yellow metal that can be dug out of the earth. Both of these stores of value are considered hedges against inflation, but the case for Bitcoin remains highly speculative and theoretical.

Last but not least is market manipulation. Bitcoin operates in an unregulated market where just 2% of the owners are thought to control 95% of the supply, which makes it exceptionally vulnerable to manipulation. Cryptocurrencies like Bitcoin are particularly vulnerable to "wash trading" — where an investor essentially sells an asset to himself at an inflated price in order to create the false perception that demand is rising. A *Forbes* article from 2019 suggests that up to 95% of Bitcoin trading volume could be fake, but there's no way to know for sure.

6. Can Bitcoin be considered a long-term investment?

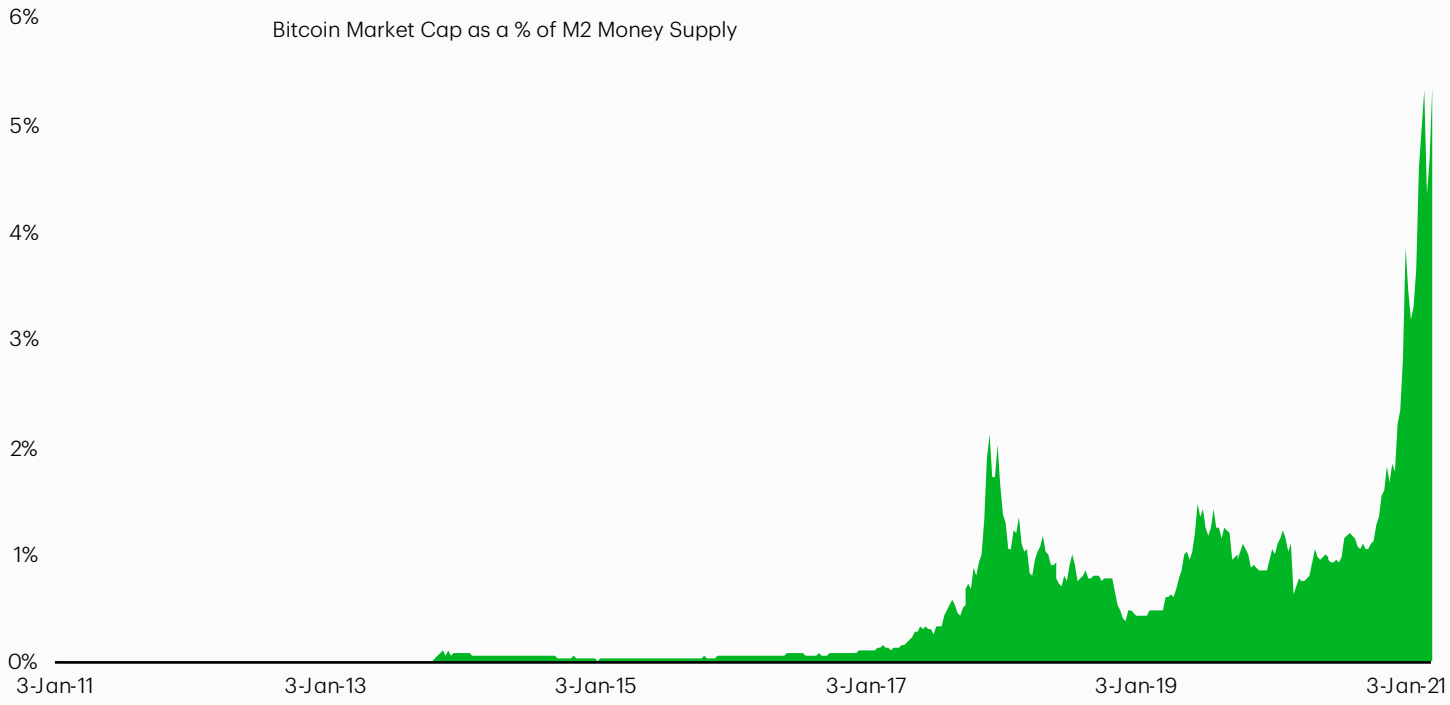
Using any conventional sense of the word, the answer is simply no. The investment case for Bitcoin is theoretical at best and, because the market is wholly unregulated, there's just no way of knowing how it will all play out. That being said, speculative demand from investors has led analysts to explore bullish and bearish cases and scenarios, and we'll go over some of those here.

Bitcoin bulls believe that it is destined to overtake cash as the standard way to conduct anonymous transactions. Because bitcoins still make up a small proportion of overall monetary supply, and because of the supposedly enormous demand for anonymity, enthusiasts believe that Bitcoin is just scratching the surface of its potential and has a long way to run. Moreover, Bitcoin bulls believe that the minting limits imposed by the program creates a powerful inflationary hedge that's highly appealing as we enter a presumed rising-rate environment.

Let's examine some of these claims before moving on to the bearish case. If we compare the total value of all bitcoins to the total value of U.S. dollars (including notes and coins, demand deposits, money market funds, etc.), we find that, even after its stratospheric run-up, Bitcoin's market capitalization amounts to just 5.4% of the 21.713 trillion U.S. dollars in circulation (Figure 5).

So, it's true that Bitcoin is still a bit player in the world of global currencies, but any speculative long-term investor should then ask, what percentage of transactions want to be anonymous? One percent? Ten percent? And what share of that market would be owned by Bitcoin, as opposed to any of the other cryptocurrencies out there. Any slide in popularity, after all, could create doubt in the minds of investors and, consequently, cause the price to fall.

Figure 5: Room to grow as a global currency



Source: Bloomberg, Blockchain.com, Federal Reserve of St. Louis as of March 12, 2021

The same concern arises when we analyze Bitcoin's potential as an inflationary hedge. While it's true that the scarcity of bitcoins is assured by the underlying program, the scarcity of cryptocurrencies *in general* is not. New kinds of cryptocurrencies are popping up every day, all offering anonymity. If Bitcoin's status as a store of value is at all dependent on its status as the most popular cryptocurrency in the world, it is vulnerable to any newcomer that manages to steal its thunder.

The question is this: Can Bitcoin's first-mover advantage hold off competitors vying for attention? Cheaper, faster and more secure cryptocurrencies already exist, and the competitive disadvantages for Bitcoin will only grow as it approaches the threshold of 21 million coins. That's because, as the number of newly minted coins shrinks, the transaction fees paid to "miners" will grow. Higher costs may very well drive users to competing platforms, thereby diminishing Bitcoin's popularity. In short, the program that ensures the scarcity of Bitcoins may also, over the long term, render them obsolete.

Long-term investors should also consider the risk of regulation. Because of Bitcoin's growing prominence as an investment — as well as its prevalence in illegal activity — there's a strong possibility that national regulators could start to take a closer look. Should the Securities and Exchange Commission or other regulators choose to take a firmer hand with the cryptocurrency, the price of bitcoins could take a hit.

Finally, there's the threat of a quantum hack. Bitcoin's anonymity relies on cryptography that cannot be broken with today's technology. Theoretically, however, Bitcoin's security could be compromised by a stable quantum computer. These do not yet exist, but companies like Alphabet and IBM have made large strides in recent years. A significant breakthrough in the field of quantum computing could open Bitcoin up to all kinds of hacks: private keys could be decrypted to steal bitcoins or unmask transactional parties. Again, this sort of attack is theoretical, but for an investor thinking 10 or 20 years down the road, it certainly offers pause for thought.

7. Is Bitcoin just speculation?

Yes.

On the surface, investing and speculating may seem like similar activities. People buy an asset in the hopes that they will get a return, either through regular income payments or capital appreciation, or both. When we buy a government bond or shares in a mature company, however, it's clear that we are investing. It's also apparent (at least in retrospect) that buying the Nasdaq Composite Index in March 2000 — at the height of the dot-com bubble — was pure speculation. But where and how do we draw the line that distinguishes one activity from another?

The easiest way to know the difference is to ask ourselves how well educated we are on the underlying asset, and to what extent our expectations for the underlying performance of the asset fit into the classic models of finance. Mathematically, the fair value of an asset is equal to the net present value of the stream of expected future cash flows. Easy to say, more difficult to put into practice — particularly when there's uncertainty around those cash flows.

So, what is a bitcoin worth? Currently, cryptocurrencies are not widely used as a medium of exchange, nor are they generally accepted as such. We submit that there are no reasonable expectations of future cash flow, given that Bitcoin has: (1) no business model; (2) no proprietary technology; and (3) no widespread adoption, other than as an investment. The only reason people are buying bitcoins is because they expect them to increase in value. They anticipate finding some greater fool who will buy it from them — after, of course, they have made enough profit. But nobody knows when the aforementioned "glass harmonica" will start playing and who will lose most when mesmerized investors snap back to reality.

Remember that investing involves having at least some knowledge about future cash flows in order to assess value. With Bitcoin, we can guess, of course, but guessing does not equal investing — it equals speculation. It's incredibly important to understand the difference and make financial decisions accordingly.

To be clear, there's nothing wrong with speculation, but it simply belongs on the speculation side of the ledger. Bitcoin operates in a market where fraud and manipulation are rampant, and no protections exist for those who decide to put their investment dollars in such a vehicle. The long-term investment case is shaky at best, and the short-term case is frightening as the price rises higher and higher along its parabolic curve. Betting on bitcoin is fine; investing in it, when we have no information about its prospects for the future, is not an option.

8. Is there any way of getting bitcoin exposure within a traditional portfolio?

A handful of exchanges allow for direct purchase of bitcoins via credit card or bank transfer (Binance, Coinbase, Netcoins). Investors can purchase bitcoin options and futures on the Chicago Mercantile Exchange, although the contracts start at five bitcoins (currently worth ~US$280,000), which would be a large investment for most. For Canadian investors, Bitcoin Fund on the Toronto Stock Exchange tracks bitcoin directly, but it comes with a management fee of 1.95%. Alternatives include Grayscale Bitcoin Trust (2.0%); Purpose Bitcoin ETF (1.00%); Evolve Bitcoin ETF (0.75%); Ninepoint Bitcoin Trust (0.70%); and CI Galaxy Bitcoin Fund (0.40%). Anyone wishing to speculate on bitcoin should carefully review each fund's mandate.

Conclusion: The Investible Future

The idea of a cryptocurrency is enthralling to many of us. It absolutely oozes newness and technology. What could be better, in the age of Martian probes, artificial intelligence and genetic engineering, than something that combines money and technology. Add to that the sheer incomprehensibility, and Bitcoin has everything it needs to bring out the animal spirits. There is little doubt that Franz Anton Mesmer would approve.

We live in an era of incredible opportunity. In the winter edition of our *Portfolio Strategy Quarterly*, entitled "Conundrum," we outlined 10 long-term trends. Many of these offer considerable opportunities in real investible assets, including ways to profit from the evolution of monetary policy, currencies and blockchain technology — the very foundation of Bitcoin and cryptocurrencies. What follows is a list to whet your appetite.

- Divided earth.

We see a reversal of the trend toward unrestricted flow of goods, people and capital. Investors may well shift their attention to more local assets and markets, such as real assets and small-caps, at the expense of global financial assets.

- Retrogression.

We see a global economy bogged down by slower growth as monetary accommodation fails to stimulate, and deleveraging activities set in. Certain asset classes stand to benefit from this trend, including gold and non-cyclicals, as well as monopolistic sectors such as utilities.

- Doing well and good.

We see the continued rise of environmental awareness and climate action not only from regulators, but also from corporations and consumers. Beneficiaries include the planet and its inhabitants, as well as higher-yielding securities, infrastructure and real assets.

- Piece of the pie.

We see a dramatic shift in consumer behaviour as the population ages and the middle class in emerging markets becomes more prominent. Beneficiaries include health care and businesses that appeal to new middle-class households, millennials and youth.

- Smart.

We see the rapid adoption and ubiquity of connected technologies, and the rise of smart cities. Opportunities include services, artificial intelligence, cybersecurity, and infrastructure assets to house all the technology.

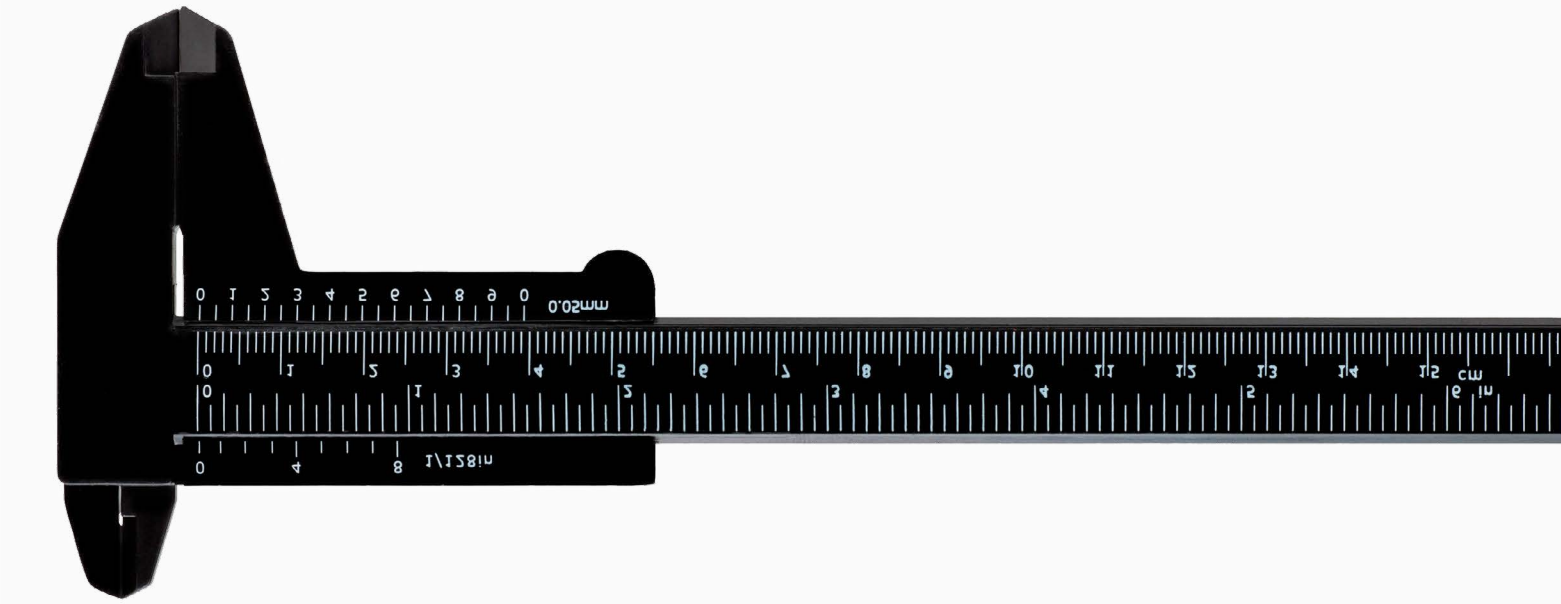
- Fiscal future.

We see monetary policy challenged, even with unconventional tools, to sufficiently stimulate economic growth and lift inflation. Beneficiaries may include higher-yielding securities and real assets.

- Tech tensions.

We see an inevitable conflict between the U.S. and China for technological supremacy in rising fields such as AI, quantum computing, 5G, robotics, cybersecurity, etc. Emerging markets are expected to benefit at the expense of developed markets.

We live in an age of wonder, but let's not be mesmerized by it. Instead, let's think critically and invest in it. — *with files from Kareem Sayed, Investment Analyst* □



Market Performance

Canadian Indices ($CA) Return	Index	(%) 1 Month	(%) 3 Months	(%) YTD	(%) 1 Year	(%) 3 Years	(%) 5 Years	(%) 10 Years	(%) 20 Years
S&P/TSX Composite (TR)	66,418	4.36	5.82	4.03	14.74	8.75	10.35	5.61	6.90
S&P/TSX Composite (PR)	18,060	4.17	5.06	3.60	11.05	5.36	7.03	2.48	4.10
S&P/TSX 60 (TR)	3,206	4.77	5.67	4.21	14.30	9.05	10.73	6.02	6.97
S&P/TSX SmallCap (TR)	1,218	9.48	16.33	9.97	41.80	7.99	10.63	1.92	0.05
U.S. Indices ($US) Return									
S&P 500 (TR)	7,893	2.76	5.63	1.72	31.29	14.14	16.82	13.43	7.89
S&P 500 (PR)	3,811	2.61	5.23	1.47	29.01	11.98	14.55	11.12	5.77
Dow Jones Industrial (PR)	30,932	3.17	4.37	1.06	21.74	7.31	13.37	9.73	5.55
NASDAQ Composite (PR)	13,192	0.93	8.15	2.36	53.98	21.96	23.68	16.84	9.49
Russell 2000 (TR)	11,294	6.23	21.23	11.58	51.00	14.87	17.92	11.86	9.43
U.S. Indices ($CA) Return									
S&P 500 (TR)	10,012	2.00	3.35	1.35	24.03	13.77	15.34	16.47	6.88
S&P 500 (PR)	4,835	1.85	2.96	1.09	21.87	11.62	13.10	14.10	4.78
Dow Jones Industrial (PR)	39,239	2.41	2.11	0.69	15.00	6.97	11.93	12.67	4.56
NASDAQ Composite (PR)	16,735	0.19	5.81	1.98	45.47	21.56	22.11	19.97	8.46
Russell 2000 (TR)	14,327	5.45	18.62	11.17	42.65	14.50	16.42	14.85	8.41
MSCI Indices ($US) Total Return									
World	11,811	2.60	5.94	1.60	29.98	11.37	14.73	10.02	7.03
EAFE (Europe, Australasia, Far East)	9,471	2.26	5.90	1.18	22.98	5.10	10.26	5.53	5.44
EM (Emerging Markets)	3,170	0.77	11.57	3.89	36.51	6.74	15.66	4.78	9.89
MSCI Indices ($CA) Total Return									
World	14,983	1.84	3.66	1.23	22.79	11.01	13.28	12.97	6.03
EAFE (Europe, Australasia, Far East)	12,014	1.50	3.61	0.80	16.18	4.76	8.86	8.36	4.45
EM (Emerging Markets)	4,022	0.03	9.17	3.50	28.96	6.40	14.19	7.58	8.86
Currency									
Canadian Dollar ($US/$CA)	78.83	0.74	2.20	0.37	5.85	0.32	1.29	0.95	0.95
Regional Indices (Native Currency, PR)									
London FTSE 100 (UK)	6,483	1.19	3.47	0.35	-1.48	-3.58	1.24	0.79	0.46
Hang Seng (Hong Kong)	28,980	2.46	10.02	6.42	10.91	-2.06	8.68	2.19	3.42
Nikkei 225 (Japan)	30,168	9.05	14.13	9.93	42.69	10.98	13.49	11.00	4.35

Benchmark Bond Yields	3 Months	5 Yrs	10 Yrs	30 Yrs
Government of Canada Yields	0.12	0.88	1.36	1.76
U.S. Treasury Yields	0.04	0.73	1.41	2.16

Canadian Bond Indices ($CA) Total Return	Index	1 Mo (%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
FTSE TMX Canada Universe Bond Index	1,177	-2.52	-3.25	-3.60	1.09	4.55	3.30	4.13
FTSE TMX Canadian Short Term Bond Index (1-5 Years)	766	-0.80	-0.45	-0.68	2.83	3.17	2.11	2.45
FTSE TMX Canadian Mid Term Bond Index (5-10)	1,281	-3.11	-3.00	-3.58	2.30	4.81	3.11	4.47
FTSE TMX Long Term Bond Index (10+ Years)	2,002	-4.19	-6.77	-7.11	-1.93	6.11	4.94	6.35
HFRI Indices ($US) Total Return								
HFRI Fund Weighted Composite Index	17,422	3.99	10.15	5.31	21.06	7.24	7.82	4.57
HFRI Fund of Funds Composite Index	7,233	3.07	6.02	2.24	14.78	5.38	5.84	3.45
HFRI Event-Driven (Total) Index	19,764	4.07	11.19	6.52	19.87	6.77	8.63	5.02
HFRI Equity Hedge Index	28,176	4.99	12.60	6.46	30.92	9.49	10.76	5.84
HFRI Equity Market Neutral Index	5,716	1.94	3.12	1.57	2.40	0.77	2.09	2.30
HFRI Macro (Total) Index	16,582	2.77	7.04	2.93	9.71	3.84	2.22	1.24
HFRI Relative Value (Total) Index	13,570	2.20	5.69	3.54	7.64	4.40	5.78	4.56
HFRI Indices ($CA) Total Return								
HFRI Fund Weighted Composite Index	22,147	3.25	7.90	4.84	14.57	6.96	6.48	7.40
HFRI Fund of Funds Composite Index	9,195	2.34	3.85	1.79	8.62	5.10	4.52	6.25
HFRI Event-Driven (Total) Index	25,125	3.33	8.92	6.06	13.44	6.50	7.28	7.87
HFRI Equity Hedge Index	35,817	4.25	10.30	5.99	23.90	9.21	9.38	8.71
HFRI Equity Market Neutral Index	7,266	1.21	1.01	1.13	-3.09	0.51	0.82	5.07
HFRI Macro (Total) Index	21,079	2.04	4.86	2.48	3.83	3.57	0.95	3.98
HFRI Relative Value (Total) Index	17,251	1.47	3.53	3.08	1.87	4.13	4.47	7.39

Sources: TD Securities Inc., Bloomberg Finance L.P. TR: total return, PR: price return,. As of February 28, 2021.

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