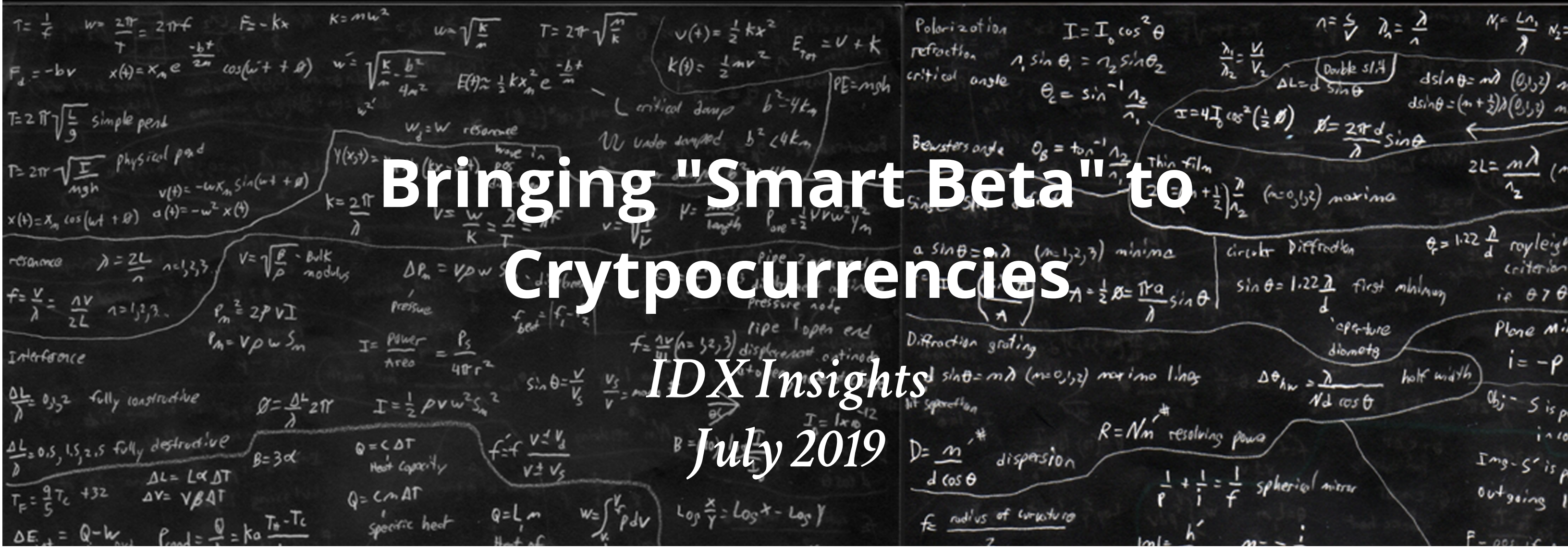


Bringing "Smart Beta" to Crytpocurrencies

IDX Insights

July 2019

Summary:

- Despite being met with warranted skepticism, cryptocurrencies are here to stay.
- As investors start to increasingly consider investment options regarding cryptocurrencies, incorporating standard

---

Growth of a New Asset Class

To date the conversation regarding crypto currencies has been dominated by “true believers” willing to defend the assets (and blockchain infrastructure) at all costs and skeptics unwilling to accept that any digital asset could have a legitimate use case.

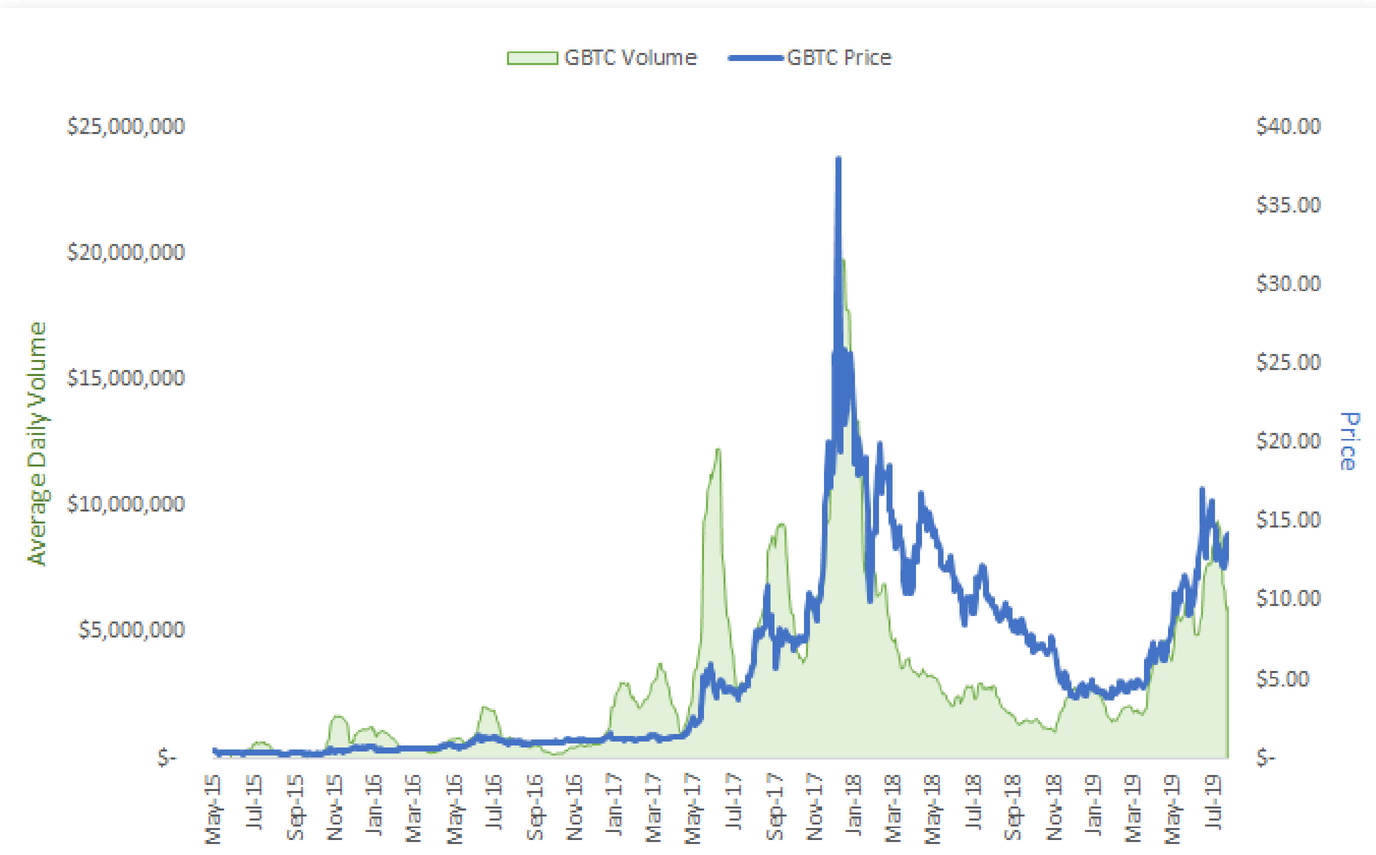
While unformulated at first, the real-world use cases of blockchain technology have demonstrated the potential to be truly disruptive in a number of industries (not the least of which is global finance). Meanwhile, investors who care more about attractive risk-adjusted returns than “taking a side” have been waiting on the sidelines. And as crypto currencies evolve into an institutional asset class we believe prudent investors should look to quantitative finance when considering how to participate.

The Institutionalization of Cryptocurrencies

With the prospect of economic and political uncertainty as well as historically- low forward-looking returns, investors are seeking strategies that can provide attractive returns - on an absolute and risk-adjusted basis – that are uncorrelated to global equity markets. It comes as no surprise then, that cryptocurrencies as an asset class within portfolios has moved from the realm of academic thought-exercise to one of practical consideration. As improvements continue to be made in the funding and cost of storage[1] and assurance[2] of crypto currencies, investors are now deciding *how* rather than *if* to make bets on the asset class.

The creation of exchange-traded vehicles such as the Grayscale Bitcoin Trust (OTC: GBTC) have significantly opened the available audience that can trade bitcoin and as more of these products become available, the adoption (by both retail and institutional investors) would be expected to increase (just as daily trading volume has):

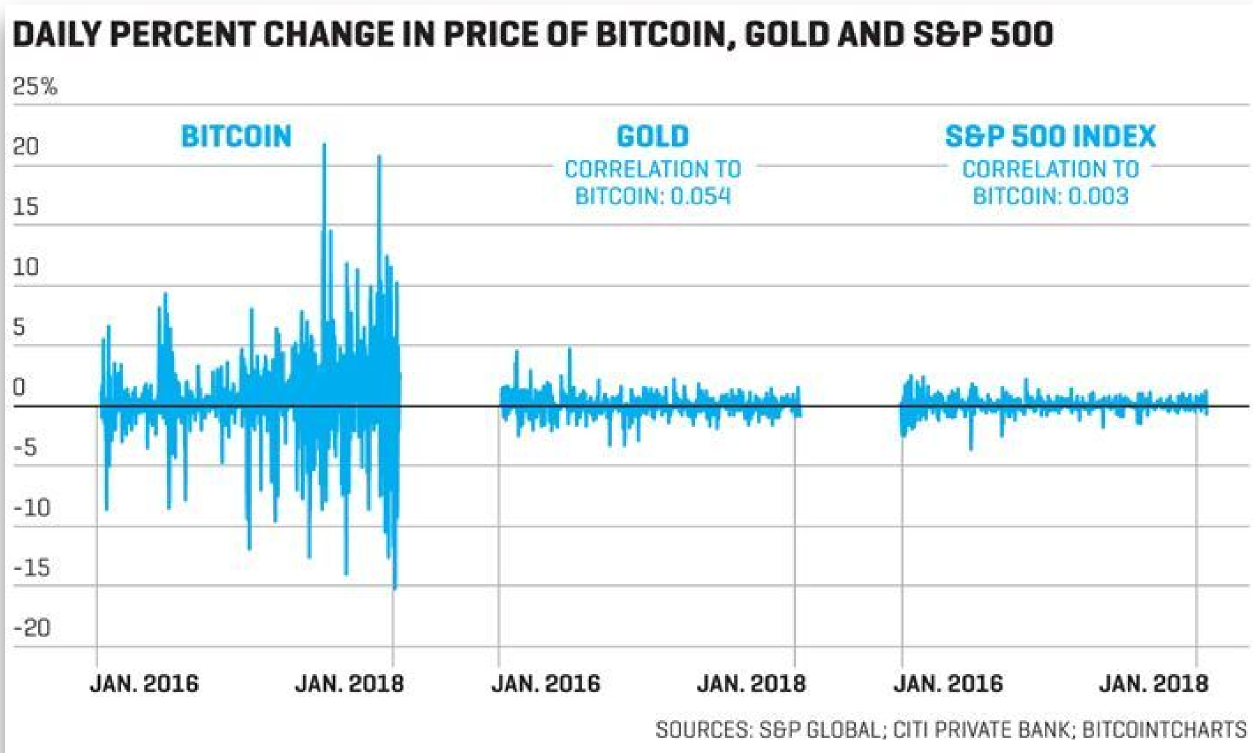
Grayscale Bitcoin Trust Price and Volume

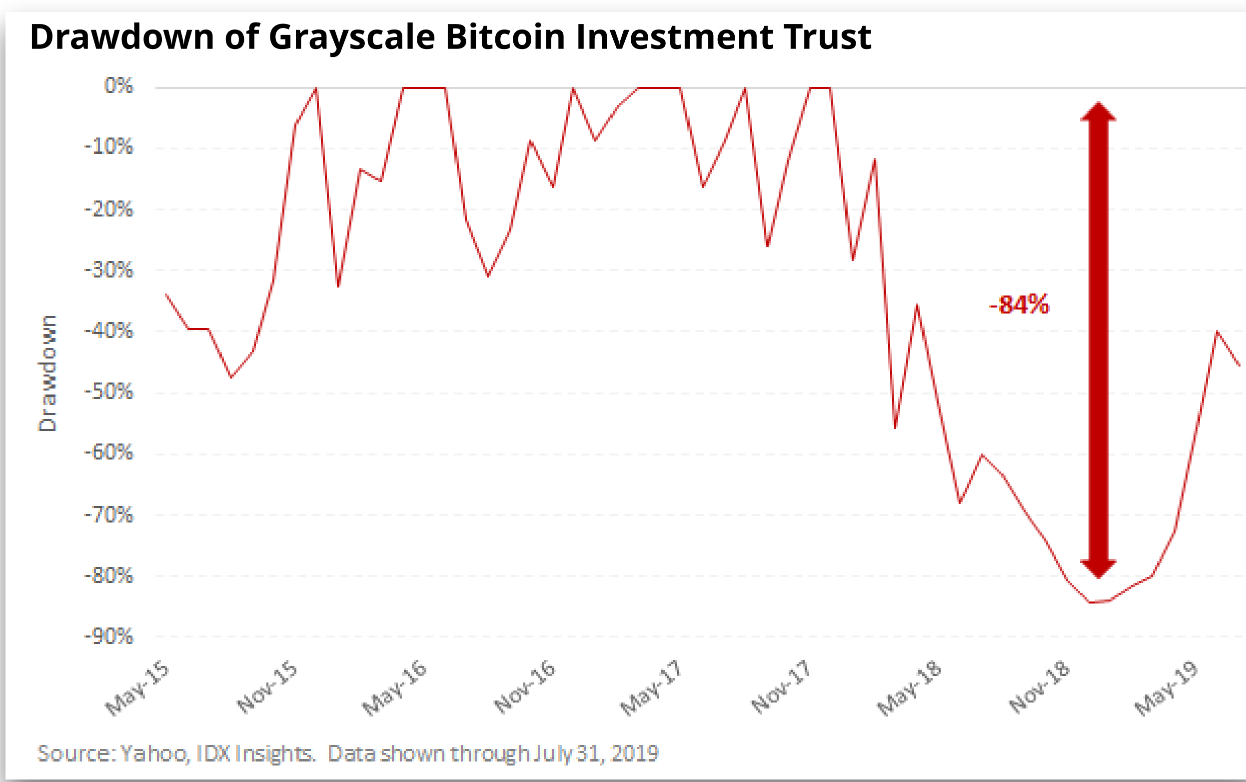


[1] https://www.theblockcrypto.com/2019/07/10/visa-blockchain-capital-back-40-million-round-for-crypto-custodian-anchorage/

[2] https://www.theblockcrypto.com/2019/06/19/pwc-rolls-out-new-auditing-tool-for-cryptocurrencies-as-big-4-race-to-fill-demand/

While both volume and participation in bitcoin (and crypto currencies in general) continue to increase, the fact remains that long-only allocations to bitcoin have demonstrated realized volatility levels (and drawdowns) that are simply untenable for many investors.





The question then, is what avenues exist to provide a more “risk-controlled” exposure to bitcoin? We believe the answer lies in applying traditional quantitative finance methods to address the issue. In an evolving asset class – such as crypto currencies - where fundamental drivers of returns are hard to decipher, behavioral forces often drive returns. By applying established quantitative factor techniques, namely momentum, to regulate exposure, investors are able to harvest attractive risk-adjusted returns.

Taking a "Smart Beta" Approach

Rather than mine the data for an optimal set of momentum parameters and rules, we opted to implement an established approach from the managed futures industry. The goal being to codify a robust process for attempting to signal asymmetric participation to bitcoin going forward ***not*** to optimize for what the best allocations would have been historically. In this case, momentum is evaluated over 4 different short-term timeframes and then weighted according to the length of the time-span. The longer the span, the greater the weight (20 day lookbacks get more weight than 10 day lookbacks).

In order to signal a long allocation in the index, 2 conditions must be met:

(i) Momentum must be positive

AND

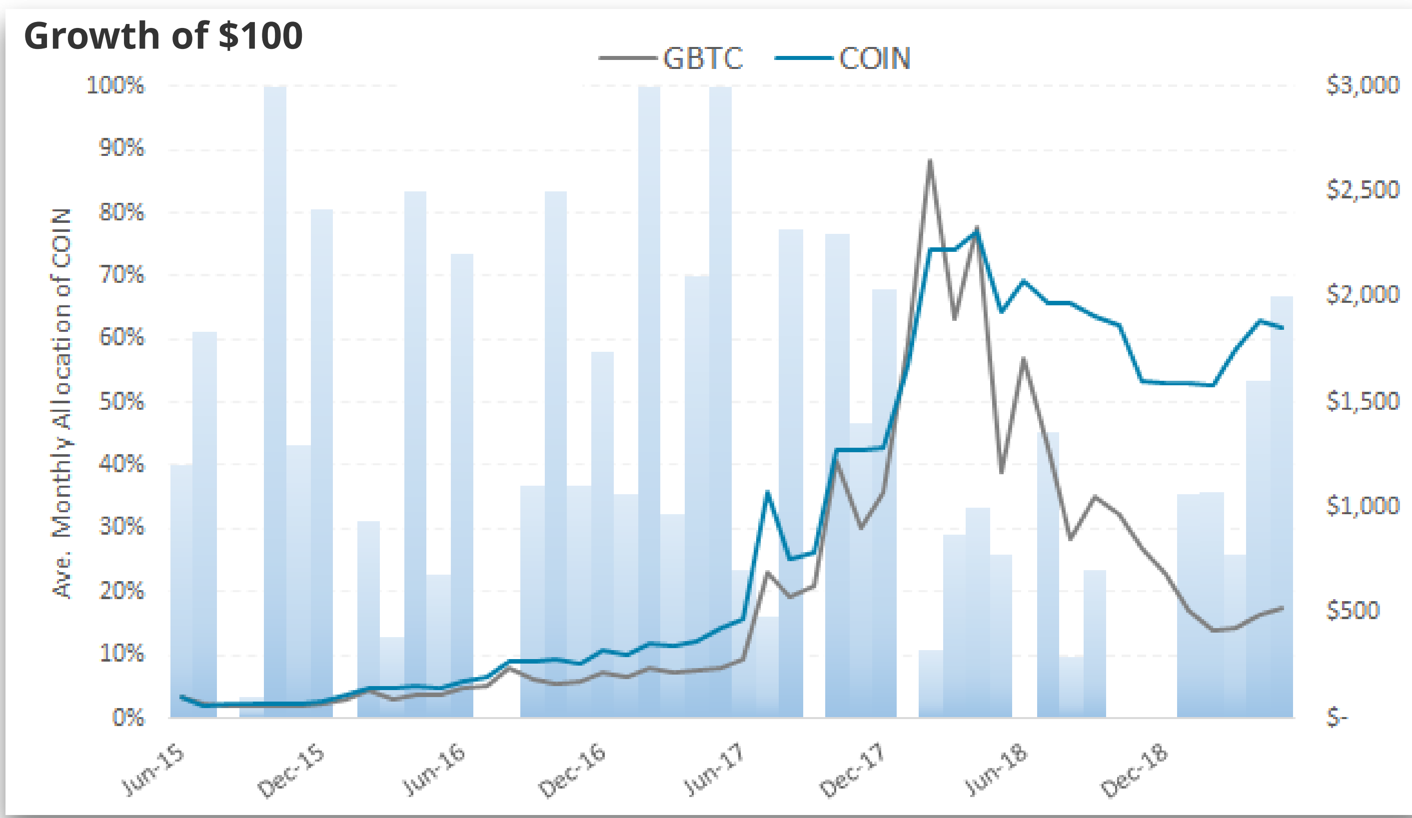
(ii) Momentum must be increasing

The idea is that long exposure to crypto is limited to those times when the risk/return profile is disproportionately skewed to the upside. It's not enought that bitcoin is simply "going up"...it must be going up at an increasing rate. This presents a relatively high bar for participating in the bitcoin market (by design). Similarly, a relatively ***low*** bar is set for taking risk OFF the table. As soon as either of these conditions is no longer met, the index allocates 100% to a diversified basket of fixed income ETFs (like the IDX Tactical Fixed Income Index).

The IDX Cryptocurrency Oppotuntiy INdex (COIN)

By being very judicious with how capital is allocated to bitcoin (in this case the Grayscale Bitcoin Investment Trust (OTC: GBTC)), the IDX Cryptocurrency Opportunity Index has historically only been long about 36% of the time, but has captured 49% of the total upside of GBTC while only 39% of the downside.

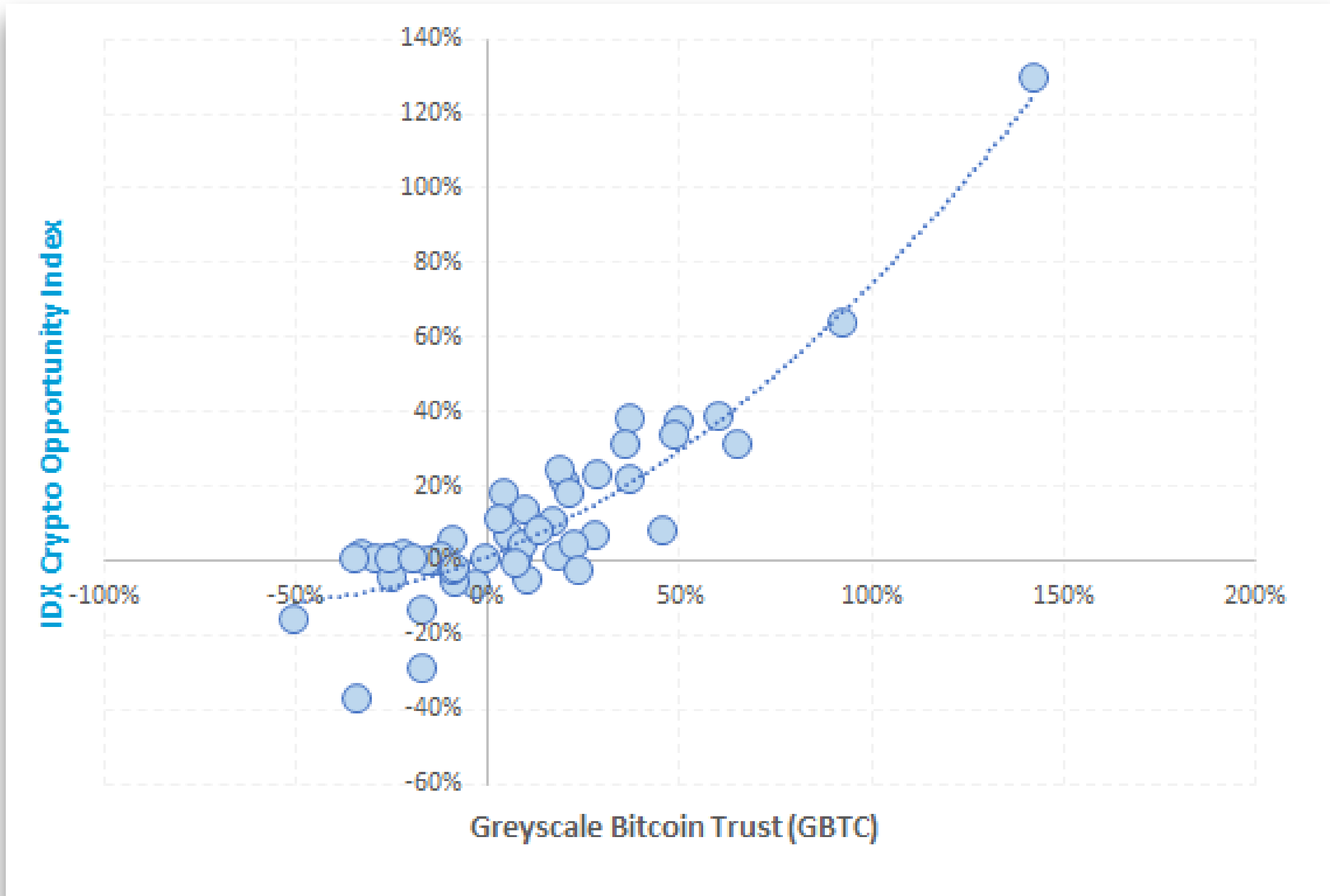
Perhaps, ***most*** importantly, the index has demonstrated a maximum drawdown of 36% as compared to 84% for GBTC over the same time. The mathematics of avoiding large drawdowns is crucially important as a 37% drawdown requires a 56% increase to get back above the "high water mark" while an 84% drawdown requires a 525% increase to do the same.



Unless otherwise noted, performance information is hypothetical and GROSS of all associated fees and sales and trading expenses that an investor might incur. You cannot invest directly in an index. Hypothetical or model performance results have certain limitations including, but not limited to: hypothetical results do not take into account actual trading and market factors (such as liquidity disruptions, etc.). Simulated performance assumes frictionless transaction costs and no lag between signal generation and implementation. Simulated performance is designed with the benefit of hindsight and there can be no assurance that the strategy presented would have been able to achieve the results shown. There are frequently large differences between hypothetical performance results and actual results from any investment strategy. While data was obtained from sources believed to be reliable, IDX Insights, LLC ("IDX") and its affiliates provide no assurances as to its accuracy or completeness.

By utilizing established principles to evaluate and regulate exposure to the Grayscale Bitcoin Trust, one can manufacture an asymmetric return profile:

Scatterplot of Monthly Returns



Unless otherwise noted, performance information is hypothetical and GROSS of all associated fees and sales and trading expenses that an investor might incur. You cannot invest directly in an index. Hypothetical or model performance results have certain limitations including, but not limited to: hypothetical results do not take into account actual trading and market factors (such as liquidity disruptions, etc.). Simulated performance assumes frictionless transaction costs and no lag between signal generation and implementation. Simulated performance is designed with the benefit of hindsight and there can be no assurance that the strategy presented would have been able to achieve the results shown. There are frequently large differences between hypothetical performance results and actual results from any investment strategy. While data was obtained from sources believed to be reliable, IDX Insights, LLC ("IDX") and its affiliates provide no assurances as to its accuracy or completeness.

Conclusion

As crypto currency markets continue to grow in both size and investor participation, investors may be tempted to either (i) justify enduring the extreme volatility associated long-only exposure or (ii) try and mitigate this volatility by timing their “bets” in these markets in an effort to access potential outsized and un-correlated returns without undue risk.

We firmly believe in rigorously evaluating and seeking out market risks that are ***compensated*** over time and the behavioral forces driving crypto asset prices are no exception. We believe a rules-based, risk-focused framework (like the IDX Cryptocurrency Opportunity Index) that seeks to avoid uncompensated volatility in the crypto markets represents a prudent method of participation for most investors over time.

The IDX COIN Index is currently available on SMArtX. For more information on the rules and assumptions in the IDX Crypto Opportunity Index (including access to the full history of signals), please visit www.idxinsights.com/Crypto

Disclosures: This document has been provided to you solely for information purposes and does not constitute an offer or solicitation of an offer or any advice or recommendation to purchase any securities or other financial instruments and may not be construed as such. The factual information set forth herein has been obtained or derived from sources believed by the author and IDX Insights, LLC (“IDX”) to be reliable but it is not necessarily all–inclusive and is not guaranteed as to its accuracy and is not to be regarded as a representation or warranty, express or implied, as to the information’s accuracy or completeness, nor should the attached information serve as the basis of any investment decision. This document is intended exclusively for the use of the person to whom it has been delivered by IDX, and it is not to be reproduced or redistributed to any other person. The information set forth herein has been provided to you as secondary information and should not be the primary source for any investment or allocation decision. Information contained herein has been obtained from sources believed to be reliable, but not guaranteed. Forward-looking statements are not guarantees of future results. They involve risks, uncertainties and assumptions, there can be no assurance that actual results will not differ materially from expectations. Past performance is no guarantee of future results. No part of this material may be reproduced in any form, or referred to in any other publication, without express written permission from IDX. The information contained herein is only as current as of the date indicated, and may be superseded by subsequent market events or for other reasons. Charts and graphs provided herein are for illustrative purposes only. The information in this document has been developed internally and/or obtained from sources believed to be reliable; however, neither IDX nor the author guarantees the accuracy, adequacy or completeness of such information. Nothing contained herein constitutes investment, legal, tax or other advice nor is it to be relied on in making an investment or other decision. There can be no assurance that an investment strategy will be successful. Historic market trends are not reliable indicators of actual future market behavior or future performance of any particular investment which may differ materially, and should not be relied upon as such. This document should not be viewed as a current or past recommendation or a solicitation of an offer to buy or sell any securities or to adopt any investment strategy. The investment strategy and themes discussed herein may be unsuitable for investors depending on their specific investment objectives and financial situation. IDX provide links to third-party websites contained herein only as a convenience and the inclusion of such links does not imply any endorsement, approval, investigation, verification or monitoring by us of any content or information contained within or accessible from the linked sites. If you choose to visit the linked sites you do so at your own risk, and you will be subject to such sites’ terms of use and privacy policies, over which IDX.com has no control. In no event will IDX be responsible for any information or content within the linked sites or your use of the linked sites. Information contained on third-party websites that IDX may link to is not reviewed in its entirety for accuracy and IDX assumes no liability for the information contained on these websites. It is not possible to invest directly in an index. Exposure to an asset class represented by an index may be available through investable instruments derived from that index. Wilshire makes no representations regarding the advisability of investing in investment products based on the Index, which is not sponsored, endorsed, sold or promoted by Wilshire. Index returns do not reflect payment of certain sales charges or fees an investor may pay to purchase the securities underlying the Index or investment vehicles intended to track the performance of the Index. The imposition of these fees and charges would cause actual performance of the securities/vehicles to be lower than the Index performance shown. IDX gives no representations or warranties as to the accuracy of such information, and accepts no responsibility or liability (including for indirect, consequential or incidental damages) for any error, omission or inaccuracy in such information and for results obtained from its use. Information is as of the date indicated, and is subject to change without notice. This material is intended for informational purposes only and should not be construed as legal, accounting, tax, investment, or other professional advice.