A NEW FRONTIER: HOW DIGITAL ASSETS ARE RESHAPING ASSET ALLOCATION

MATTHEW BECK, CFA

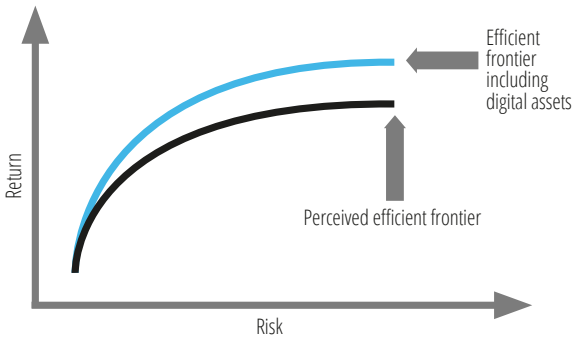
Grayscale Investments

It is not every day, or even every decade, that an entirely new asset class is born. Yet, through a combination of computer science, cryptography, economics and network theory, digital assets have arrived and are proving an asset class unlike any other. As they transform our global financial infrastructure and challenge modern monetary theory[1], we believe digital assets are one of the most exciting investment opportunities of the 21st century. In this piece, we will demonstrate why we view digital assets as a new asset class that can enhance strategic asset allocation and help investors build portfolios with higher risk-adjusted returns.

New asset classes are rare and powerful because they offer a unique return stream that can diversify a portfolio. This might seem like a simple concept, but few investors truly appreciate the impact this can have on the return/risk profile of a portfolio, and subsequent wealth creation. As Cliff Asness, Managing Principal and CIO at AQR Capital Management said: "Diversification is the one free lunch of investing, and when you see a free lunch, the only rational thing to do is eat."[2]

Consistent with Modern Portfolio Theory, we generally subscribe to the notion that the optimal return/risk ratio for a portfolio can be found on the efficient frontier. But contrary to conventional wisdom, we think many of today's asset allocators are missing out on a "free lunch." That's because (i) digital assets represent a brand-new investment opportunity that is uncorrelated to other asset classes and (ii) investors are generally under-allocated to this sector. It is our view that the optimal beta portfolio[3] lies somewhere higher than what was previously believed to be the efficient frontier, and digital assets are the proverbial "missing piece of the puzzle."

Fig. 1: The New Efficient Frontier



[1]Source: Economic Research: Federal Reserve Bank of St. Louis. The Case for Central Bank Electronic Money and the Non-case for Central Bank Cryptocurrencies. Vol. 100, No.2, April 16, 2018. Aleksander Berentsen and Fabian Schar. https://research.stlouisfed.org/publications/review/2018/02/13/the-case-for-central-bank-electronic-money-and-the-non-case-for-central-bank-cryptocurrencies.

[2]Source: AQR Perspective: Efficient Frontier "Theory for the Long Run." Cliff Asness, December 10, 2014. https://www.aqr.com/Insights/Perspectives/Efficient-Frontier-Theory-for-the-Long-Run.

[3]A "beta portfolio" is a theoretical portfolio of investments that includes every type of asset available in the global financial market, with each asset weighted in proportion to its total presence in the market. The "optimal beta portfolio" is the portfolio that includes every type of asset available in the global financial market, with each asset weighted in order to maximize the return of the portfolio per unit of risk. Source: Investopedia.

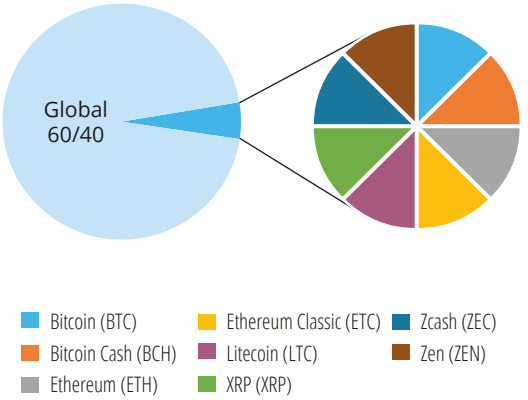
Digital currencies, like Bitcoin, seek to fulfill the role of a decentralized global currency and store-of-value. Others, like Zcash (ZEC) and Monero (XMR), build upon Bitcoin's role by offering privacy-enhancing features. Digital commodities, like Ethereum (ETH), fuel decentralized applications (DApps) which can execute condition-based transactions through the use of smart contracts, while assets like Ethereum Classic (ETC) are a hybrid currency and commodity, combining the monetary attributes that have made Bitcoin a digital store-of-value with the smart contract capabilities of Ethereum. These are just a few examples of how digital assets are functioning today.

Moreover, digital assets are at the intersection of some of the most significant trends reshaping the global economy[4], including:

- Advancements in financial technologies and payment infrastructure.
- Regulatory shifts, altering financial industry economics and significantly increasing the cost of compliance.
- Demographic shifts, driven by (i) the next generation of investors entering their prime earning years (i.e. millennials) and (ii) baby boomers entering retirement and tapping underfunded pension plans.

Combining the growth opportunities that digital assets offer as a revolutionary technology and the store-of-value characteristics that many of them possess as alternative currencies, digital assets may have the potential to provide both inflation protection and growth exposure, concurrently.

Fig. 2: Digital Asset Allocation in Hypothetical Simulated Portfolio



Source: Bloomberg, CoinMarketCap.com

In Fig. 3, we examine the relationship that some established digital assets have to traditional assets and each other through a correlation matrix constructed from rolling one-month returns over the past 1.5+ years.

In the following tables, we can see that the correlations of rolling one-month returns range from negative to slightly positive, with an average of zero. This provides evidence that digital assets can be considered a diversifying component in multi-asset portfolios. Moreover, many digital assets are imperfectly correlated to one another, which indicates there may be diversification benefits within the asset class itself.

[4]*Source: BlackRock: Built for Change. Geraldine Buckingham, Global Head of Corporate Strategy. June 2016. http://ir.blackrock.com/Cache/1500088361.PDF?O=PDF&T=&Y=&D=&FID=1500088361&iid=4048287.*

Fig. 3: Multi-Asset Correlation Matrix[5] – 31 December 2016 to 30 September 2018 (Based on Rolling One-Month Returns)

	Asset	Bitcoin (BTC)	Ethereum (ETH)	XRP (XRP)	Bitcoin Cash (BCH)	Litecoin (LTC)	Ethereum Classic (ETC)	Zcash (ZEC)	Zen (ZEN)
	S&P 500 Index	0.23	0.16	0.01	0.03	0.08	0.10	0.10	0.08
	Nasdaq Composite	0.12	0.14	0.04	0.10	0.03	0.15	0.07	0.03
	MSCI World Index	0.22	0.28	0.12	0.07	0.11	0.17	0.18	0.14
	MSCI EAFE Index	0.19	0.43	0.28	0.10	0.15	0.27	0.27	0.22
	MSCI Emerging Markets Index	0.06	0.31	0.23	0.19	0.04	0.14	0.16	0.17
	Bloomberg Commodity Index	(0.14)	(0.16)	0.18	0.21	(0.12)	(0.21)	(0.14)	0.25
	Barclays Capital Bond Index	0.05	0.22	0.12	0.01	0.04	0.24	0.11	0.00
Maximum: 0.43 Minimum: -0.25 Average: 0.07	COMEX Gold Index	(0.05)	0.16	0.12	0.15	(0.07)	0.04	0.09	0.21
	DJCME Spot FX Index	(0.10)	0.19	0.10	(0.06)	(0.02)	0.17	0.06	(0.12)
	Swiss Franc (CHF)	(0.19)	0.14	0.06	(0.17)	(0.08)	0.17	0.08	(0.25)
	Canadian Dollar (CAD)	(0.19)	(0.03)	0.07	0.04	(0.07)	(0.09)	(0.01)	(0.09)
	British Pound (GBP)	(0.18)	(0.05)	0.09	(0.16)	0.06	0.03	(0.16)	(0.15)
	Euro (EUR)	0.01	0.26	0.15	0.02	0.03	0.26	0.13	(0.05)
	Japanese Yen (JPY)	(0.08)	0.10	(0.06)	(0.03)	(0.12)	0.07	0.02	(0.09)
	Chinese Renminbi (RMB)	(0.03)	0.17	0.12	0.06	0.06	0.03	0.07	0.06
	Russian Ruble (RUB)	0.05	0.22	0.18	(0.03)	0.08	0.10	0.11	0.07
	Argentine Peso (ARS)	0.28	0.23	0.05	0.20	0.21	0.20	0.14	0.31
	Thai Bhat (THB)	0.00	0.15	0.01	(0.03)	(0.03)	0.07	0.05	(0.00)
	Singapore Dollar (SGD)	(0.01)	0.22	0.10	0.07	(0.01)	0.13	0.10	(0.00)
	Brazilian Real (BRL)	(0.01)	0.03	0.01	0.03	(0.01)	(0.04)	(0.11)	(0.05)

	Asset	Bitcoin (BTC)	Ethereum (ETH)	XRP (XRP)	Bitcoin Cash (BCH)	Litecoin (LTC)	Ethereum Classic (ETC)	Zcash (ZEC)	Zen (ZEN)
	Bitcoin (BTC)	1.00	0.41	0.23	0.44	0.60	0.53	0.48	0.49
	Ethereum (ETH)	0.41	1.00	0.35	0.57	0.36	0.74	0.84	0.45
Maximum: 0.84 Minimum: 0.21 Average: 0.46	XRP (XRP)	0.23	0.35	1.00	0.31	0.54	0.31	0.36	0.26
	Bitcoin Cash (BCH)	0.44	0.57	0.31	1.00	0.40	0.64	0.65	0.39
	Litecoin (LTC)	0.60	0.36	0.54	0.40	1.00	0.48	0.41	0.21
	Ethereum Classic (ETC)	0.53	0.74	0.31	0.64	0.48	1.00	0.77	0.29
	Zcash (ZEC)	0.48	0.84	0.36	0.65	0.41	0.77	1.00	0.44
	Zen (ZEN)	0.49	0.45	0.26	0.39	0.21	0.29	0.44	1.00

Source: Bloomberg, CoinMarketCap.com

[5]*Source: Bloomberg, CoinMarketCap.com. Based on one-month rolling returns from December 31, 2016 to 30 September 2018. We selected the timeframe for our analysis because we believe it broadly constitutes the most complete historical dataset for the digital assets that we have chosen to analyze. For the sake of consistency and for comparison purposes, we will use this timeframe throughout the paper. The digital assets shown above have historically experienced significant intraday and long-term price swings. As the period during which these digital assets have been available for trading is limited, the correlations may not be meaningful when considering longer periods. Past performance is not indicative of future results.*

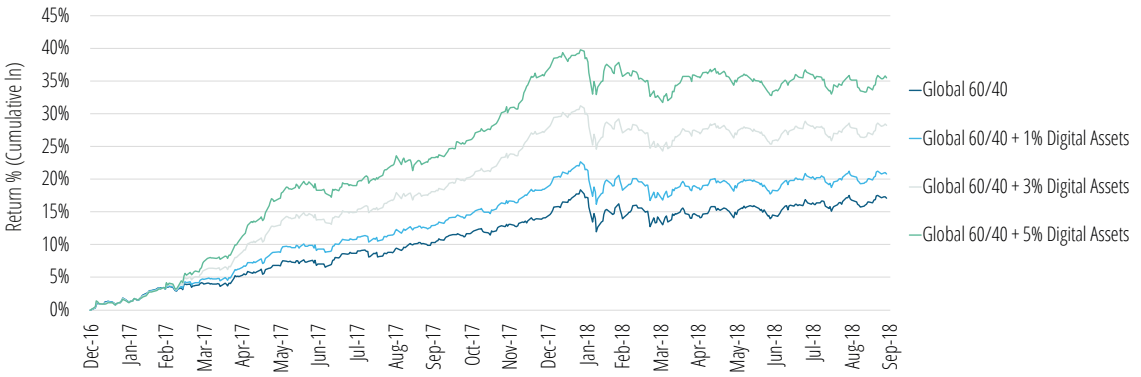
To gain a deeper understanding of these benefits, we conducted a series of portfolio simulations to assess how an allocation to an equal-weighted mix of select digital assets might have impacted the return/risk profile of a portfolio comprised of global equities and bonds (the "Global 60/40").[6]

Looking at the results, it appears that portfolios containing an allocation to digital assets performed even better than the Global 60/40, on both an absolute and risk-adjusted basis. For example:

- Adding a 1% digital asset allocation increased the hypothetical simulated cumulative return by 449 bps, without materially increasing volatility to improve risk-adjusted returns by 23%.
- Adding a 3% digital asset allocation increased the hypothetical simulated cumulative return by 1,391 bps, without materially increasing volatility to improve risk-adjusted returns by 57%.
- Adding a 5% digital asset allocation increased the hypothetical simulated cumulative return by 2,397 bps, without materially increasing volatility to improve risk-adjusted returns by 125%.

Given what we know about Modern Portfolio Theory, this is not all that surprising. Since digital assets are uncorrelated with traditional assets and imperfectly correlated with one another, they can be combined to build portfolios with higher risk-adjusted returns.

Fig. 4: Hypothetical Simulated Portfolio Performance[7] – 31 December 2016 to 30 September 2018



Source: Bloomberg, CoinMarketCap.com

[6]"Global 60/40" consists of a 60% allocation to the iShares MSCI ACWI and a 40% allocation to the Vanguard Total International Bond ETF.
[7]Source: Bloomberg, CoinMarketCap.com. Performance is shown from December 31, 2016 to September 30, 2018. We selected the timeframe for our analysis because we believe it broadly constitutes the most complete historical dataset for the digital assets that we have chosen to analyze. For the sake of consistency and for comparison purposes, we will use this timeframe throughout the paper. Annualized figures are based on 252 trading days. "Global 60/40" consists of a 60% allocation to the iShares MSCI ACWI and a 40% allocation to the Vanguard Total International Bond ETF. "Digital Assets" consists of an equal-weighted mix of Bitcoin (BTC), Bitcoin Cash (BCH), Ethereum (ETH), Ethereum Classic (ETC), Litecoin (LTC), XRP (XRP), Zcash (ZEC), and Zen (ZEN). THE GLOBAL 60/40 + 1%/3%/5% DIGITAL ASSETS RESULTS ARE HYPOTHETICAL AND ARE NOT BASED ON ACTUAL RETURNS OR HISTORICAL PERFORMANCE. DIGITAL ASSETS HAVE HISTORICALLY EXPERIENCED SIGNIFICANT INTRADAY AND LONG-TERM PRICE SWINGS AND PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. Component asset weights are held constant over the period. The Sharpe Ratio is calculated as the annualized excess return of the portfolio over the 3-month US T-Bill divided by the standard deviation of excess returns. Ratio improvement is calculated by taking the Sharpe Ratio of the Global 60/40 + 1%/3%/5% Digital Assets Portfolios and dividing each by the Sharpe Ratio of the Global 60/40 Portfolio.

CONCLUSION

Early investors in digital assets have long believed in their potential to capture a share of some of the largest markets in the world (e.g. store-of-value), improve the efficiency of our global financial system, and create business models that democratize information and value in incredible new ways. Investors also recognize that because of their highly unique set of properties, digital assets offer a distinct return stream, allowing them to play a diversifying role in their portfolios.

It is still early in the lifecycle of digital assets, but we believe there is a compelling case for investors to allocate some portion of their portfolio to this new asset class. A lot can happen over the next few years, but remember: diversification is a "free lunch" and asset allocation is all about the long game.

GRAYSCALE INVESTMENTS

Grayscale is the world's largest digital currency asset manager, with a proven track record and unrivalled experience. We give investors the tools to make informed investing decisions in a burgeoning asset class. As part of Digital Currency Group, Grayscale accesses the world's biggest network of digital currency intelligence to build better investment products. We have removed the barrier to entry so that institutions and investors can benefit from exposure to digital currencies. Now, forward-thinking investors can embrace a digital future within an institutional-grade investment.

Preqin customers can view our profile **here**. For more information on Grayscale, please visit **www.grayscale.co** or direct any queries to **Ray@grayscale.co**. You can follow us on Twitter **@GrayscaleInvest**

Disclaimer: HYPOTHETICAL SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. There is no guarantee that the market conditions during the past period will be present in the future. Rather, it is most likely that the future market conditions will differ significantly from those of this past period, which could have a materially adverse impact on future returns. Unlike an actual performance record, simulated results do not represent actual trading or the costs of managing the portfolio. Also, since the trades have not actually been executed, the results may have under or over compensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS.