TIMONIER

Wealth Beyond Financial™

From the Engine Room

2017 Annual Market Review & Letter

2017 Annual Market Review

This report features Timonier's quarterly client letter, a timeline of events for this past year, and charts of world capital market performance. It begins with a global overview, then features the returns of stock and bond asset classes in the US and international markets.

The report also illustrates the impact of globally diversified portfolios and features a year end article.

"The best way to predict the future....
is to create it!'

Overview:

A New Year: Enlighten *with* Your Money

"The voyage to well-being is an interior journey propelled by the imagination and the child's sense of wonder."

Jean Pierre Weill, author & artist

The goal of integrated financial planning is to help clients build and maintain a balanced and comfortable relationship with money. Building a nest egg suited to fulfill all a family's hopes and dreams is far broader a task than managing a portfolio of stocks, bonds, and real estate. The process of helping clients achieve this financial health requires an exterior understanding of how global financial systems and related disciplines work; and an interior understanding of what clients believe about money and the way they emotionally relate to it. Both elements come with ginormous hurdles.

Since the founding of the Stock Exchange under a Buttonwood tree on Wall Street in 1792, our society has been subjected to the manipulations and myths of what I coin, **Financial Terrorism**. These ideas about how money systems work have been handed down through the generations at the expense of our citizens and for the profits of the story tellers. Financial institutions need money in motion to earn profits and they tailor their manufactured products and stories to take advantage of our psychological makeup that yearns for survival. As in the movie, ***Trading Place*****s** with Dan Aykroyd and Eddie Murphy, when the commodity firm, Duke & Duke make trades, they make money whether the investor does or not. Our society's understanding of how the financial systems work, needs to go through a thorough process of unlearning… and relearning a way that serves the consumer and not the institutions of prey.

Our subconscious mind is mostly responsible for the relationship between stress and money. It was formed prenatal and up to the age of around seven. It is the software that we live the rest of our lives with until we change it. It's responsible for making 95% of every decision we make including financial ones. The problem is that it's not programmed to save. It's programmed for short term gratification; to get something good *now* or avoid something perceived as bad *right now*. And to actually have people save and invest for the future we must overcome that basic programming. The big lie essentially is that all we have to do is tell people the right thing to do and they'll be able to do it. **This discounts and disregards how human beings are built.**

None of our ancestors did anything that we are asking people to do today. Our ancestors did not save. In fact, if they tried to save they were viewed as hoarders and kicked out of the tribe. If they did manage to save they got sick in the next day or two from the spoiled food. Saving and investing is a recent requirement in the timeline of human history. It's only in the last 50 or 60 years that we actually told people they needed to save. Because before then, the majority of people died before they needed any help financially. OR, they had great pensions funded and managed by their employer. Investors must learn that their instinctive impulses are typically not their friends. And that if they can get themselves a cooling off person to *reason* with or a period of time to contemplate when the fight or flight gland is kicking in....they can make better choices. ***That pause button has embedded invaluable intelligence.***

Research and experience shows that the best means of creating lasting wealth is to understand yourself, and then tailor a financial strategy suited to your natural and awakened personality. It is our mission to provide professional advice for wealth management of your outer securities and a safe haven supporting the development of your inner securities when the time is right.

* * * * * * * *

A year of global growth. The year 2017 was noteworthy to me in that for the first time in this century, all the major economic basins of the world were growing simultaneously, albeit at different rates. Before this at different times, Europe or Japan or the emerging markets dealt with significant headwinds, and growth here at home was plodding and sluggish. Earnings continue to rise and unemployment rates continue to fall across Europe, Japan, and the emerging country economies. The Purchasing Managers Index for both manufacturing and services sectors which indicate the economic strength in each country are ALL scoring at 50.0 or higher indicating that citizens around the globe are producing at high levels and conducting commerce with each other. Central banks of all major economies continue to provide liquid capital at near historically low levels of interest costs. I regard the synchronization of global growth as a somewhat underappreciated positive that is continuing. Capitalism exists because it works! If it didn't work, we wouldn't have it.

The U.S. accelerates---and feels better about it. Steady if unspectacular hiring has driven the unemployment rate down to 4.1% for two months at this writing, putting the economy on track for a potential third straight quarter of 3% growth---a breakout of sorts. The consumer, by all important measures, is feeling better about things than he has since before the Great Financial Collapse, and retail sales are quite robust. Household net worth in the fourth quarter may have reached $100 trillion, and consumer affordability ratios for both housing and revolving debt continue at historically low levels. Auto sales while falling back from levels of 2016, are still above long-term averages. Housing while continuing to accelerate, is still shy of producing the number of new homes each year needed to keep pace of our population growth. It is still sad to see that consumers have $12.6 trillion in cash deposits and cash equivalents and still increasing while earning zero interest! This phenomenon is reflective of the psychological damage done to the investor during the Financial Collapse of 2008 and 2009. As with the Great Depression, decades pass before investor confidence is restored and emotional scars are healed.

More than a third of these deposits would normally have been returned to invest in global stocks. Not only is the US consumer financially healthy but so is corporate America. Corporations are using their huge cash positions to spend on big ticket items like plant expansions and equipment. Perhaps the individual investor will soon follow in putting their cash assets to work as well.

The Federal Reserve begins normalizing. I've expressed my opinion to many of you that the Federal Reserve has been behind the curve of this recovery, and that it should be unwinding its bloated balance sheet and letting interest rates follow their normal course in an expanding economy. It began to do this in 2017, so far without ill effect. I've said to you that the economy was accelerating not because of the Fed but in spite of it, and I persist in this thought. It's smartphones, tablets, apps, the cloud, 3-D printing, drones, productivity gains in oil and natural gas, innovations in providing food, water, medicine, architecture, and electricity to those previously lacking that has been and will continue fueling this plow horse expansion.

A genuinely great year for stocks---with muted volatility. With a total return of 21.83% for the S&P 500 US stock index, and the deepest intra-year decline a mere three percent (that normally averages a 14% selloff), our philosophy of staying the course was well rewarded in 2017, with a bare minimum of volatility. We are, as you know, buy and hold (and vigilant to rebalance to target weightings) long-term strategic in our philosophy of global stock allocations who know that markets cannot be timed. While we have no need to forecast short-term economics or geopolitical events to be successful investors, with the weighty evidence of positive global commerce, low inflation, low interest rates and improving unemployment around the world, we remain positive on the stock market for the coming year. All of that said, I can't imagine returns in 2018 will match this past year, or that volatility will remain this quiescent. Stock investing is rarely as smooth as it was this past year.

Hysteria about valuations remains overdone. We don't buy the idea that stocks in the US are importantly "overvalued." Valuation alone, isn't a tool for timing the market (nor is anything else), so as a proponent for allocating assets to stocks to pay for long-term liabilities (ie…retirement distributions and legacy goals), we tend to tune it out. An infinite number of factors play a role into the valuation of a stock and plurally the stock market. Stocks in general have been rising in price because EARNINGS have been rising. And, now that we have a new tax code which reduces the top corporate tax rate from 35% to 21%, along with further signs of business deregulation, there should be continued winds at the backs of corporate profitability that will support us all. As Brian Wesbury, economist at First Trust in Chicago recently said, "From an economic perspective, this is a revolution."

Indeed, compared to the yields on competing fixed income investments, stock valuations appear to us pretty reasonable, a view shared on more than one occasion this past year by Warren Buffett. 2017 ended with the 10-year US treasury bond yielding 2.46%, which equates to a 40.7 price to earnings multiple. If the stock market had a PE ratio anywhere near that, you would be putting on your snorkel and rubber ducky floaty threatening to jump out of the basement window at high tide! We use short and intermediate high-quality bonds for our fixed income positions (with maturities under 5 years). They have their role. They are to support short to intermediate time horizon events (ie…college payments, vacation home purchases, charitable gifting, etc.) and to dampen the overall volatility of a portfolio when the global stock markets go thru their temporary declines to correct underlying economic supply/demand imbalances. They play a role to compliment and support the growth oriented results of the stock and real estate allocations.

"I've had to evict some thoughts a hundred times before they would stay out. I have never been successful until I have put something edifying in their place."

Boyd K. Packer, religious leader

With short to intermediate economic news supporting a period of continued healing from the Financial Collapse there is also longer-term demographics beginning to show light. We have all been given the warning that the baby boomers are now retiring and will continue to do so until such time there are more retirees than working population that support the entitlement systems of social security and Medicare. While this is true, the period of this population imbalance will be short lived. Beginning in 2028 the population of the Echo Boomers will be replacing the population of the Baby Boomers in the United States. One hundred and fifty-three million Echos will be replacing 114 million Babys! There is a lot of life that happens in the meantime, but this provides a little peak ahead ***without forecasting***.

This will be an extra busy winter/spring with the recent tax law changes and tax filing upon us. Our tax advisors will not only have their usual seasonal workload, but will also be digesting the changes of the newly minted tax code as it becomes incorporated into our planning systems for 2018. We see the changes as a net positive for our clients and the economy at large.

In closing, I want to thank all who were able to attend Timonier's 20th Anniversary Event at SECCA with Dr. Joe Dispenza as our special guest and lecturer. The response I received from those two days has been nothing short of amazing. With the American Psychological Association surveys showing 73 percent of our society reporting money as their number one stressor ahead of issues such as work, physical health, and children…meditation techniques as presented by Dr. Joe are much needed. They are voluntary, they do no harm, have no costs, but with practice and dedication just may awaken you to a life you have always envisioned with ease and grace. I had a videographer tape a conversation I had with Dr. Joe before our event. We will be posting an appropriate segment to our website for viewing in the weeks ahead.

I AM in gratitude each day of you allowing Timonier to be a part of your journey. Know that we are accountable as your fiduciaries. We sell no products. And our collaborative team of advisors look forward to assisting you in making conscious choices for this one great life you deserve to live. Contact us any time, if we haven't contacted you first.

Namaste'

Tim L. Baker, CIMA, GFS

"The main purpose of meditation is to remove your attention from the environment, your body, and the passage of time so that what you intend, what you think, becomes your focus instead of these externals. You can then change your internal state independent of the outside world."

Dr. Joe Dispenza, Neuroscientist-Author-Teacher

Market Summary

Index Returns

2017	US Stock Market	International Developed Stocks	Emerging Markets Stocks	Global Real Estate	US Bond Market	Global Bond Market ex US
	STOCKS				BONDS	
	21.13%	**24.21%**	**37.28%**	**7.41%**	**3.54%**	**2.06%**

Since Jan. 2001	US Stock Market	International Developed Stocks	Emerging Markets Stocks	Global Real Estate	US Bond Market	Global Bond Market ex US
Avg. Annual Return	8.4%	7.0%	14.8%	11.0%	4.8%	4.5%
Best Year	33.6% **2013**	39.4% **2003**	78.5% **2009**	37.4% **2006**	10.3% **2002**	9.8% **2014**
Worst Year	-37.3% **2008**	-43.6% **2008**	-53.3% **2008**	-45.7% **2008**	-2.0% **2013**	1.4% **2013**

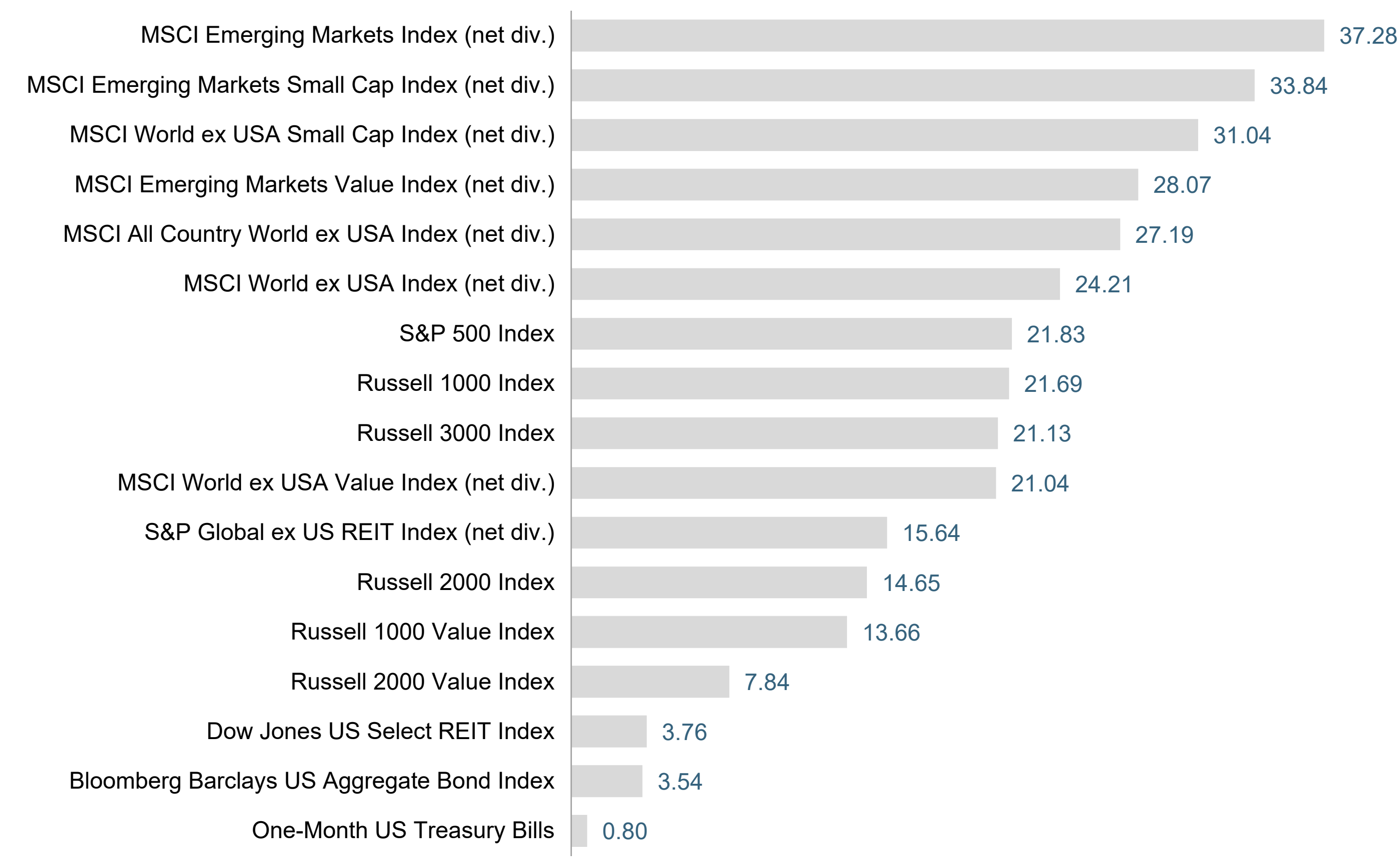
Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: US Stock Market (Russell 3000 Index), International Developed Stocks (MSCI World ex USA Index [net div.]), Emerging Markets (MSCI Emerging Markets Index [net div.]), Global Real Estate (S&P Global REIT Index [net div.]), US Bond Market (Bloomberg Barclays US Aggregate Bond Index), and Global Bond ex US Market (Citi WGBI ex USA 1−30 Years [Hedged to USD]). The S&P data are provided by Standard & Poor's Index Services Group. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. Bloomberg Barclays data provided by Bloomberg.

World Asset Classes

2017 Index Returns (%)

Looking at broad market indices, emerging markets outperformed US and non-US developed markets in 2017.

The value effect was negative in the US, non-US developed markets, and emerging markets. Small caps outperformed large caps in non-US developed markets but underperformed in the US and emerging markets.



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US Stocks

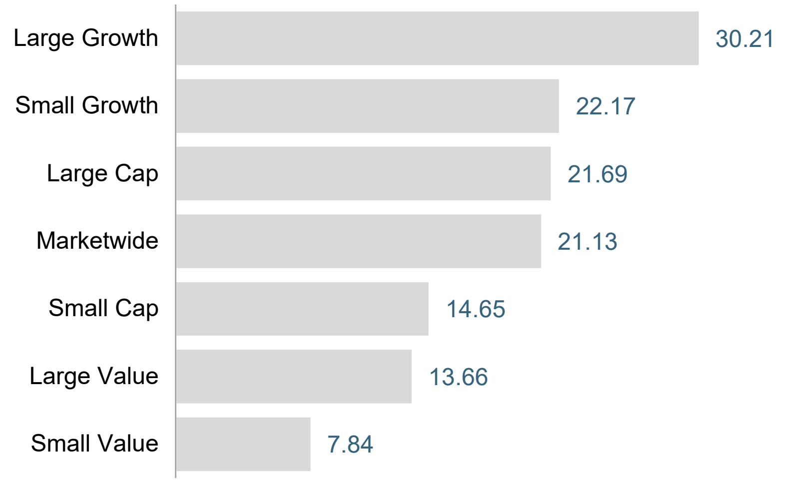
2017 Index Returns

The US equity market posted positive returns for 2017 but underperformed non-US developed and emerging markets.

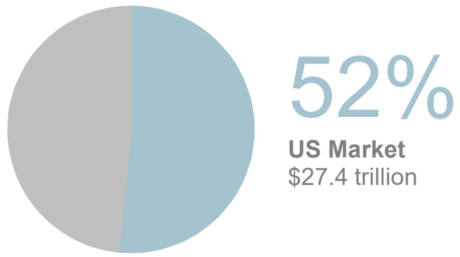
Value underperformed growth in the US across large and small cap indices.

Small caps underperformed large caps in the US.

Ranked Returns for 2017 (%)



World Market Capitalization—US



Period Returns (%)

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Large Growth	30.21	13.79	17.33	10.00
Small Growth	22.17	10.28	15.21	9.19
Large Cap	21.69	11.23	15.71	8.59
Marketwide	21.13	11.12	15.58	8.60
Small Cap	14.65	9.96	14.12	8.71
Large Value	13.66	8.65	14.04	7.10
Small Value	7.84	9.55	13.01	8.17

** Annualized*

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: Marketwide (Russell 3000 Index), Large Cap (Russell 1000 Index), Large Cap Value (Russell 1000 Value Index), Large Cap Growth (Russell 1000 Growth Index), Small Cap (Russell 2000 Index), Small Cap Value (Russell 2000 Value Index), and Small Cap Growth (Russell 2000 Growth Index). World Market Cap represented by Russell 3000 Index, MSCI World ex USA IMI Index, and MSCI Emerging Markets IMI Index. Russell 3000 Index is used as the proxy for the US market. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes.

International Developed Stocks

2017 Index Returns

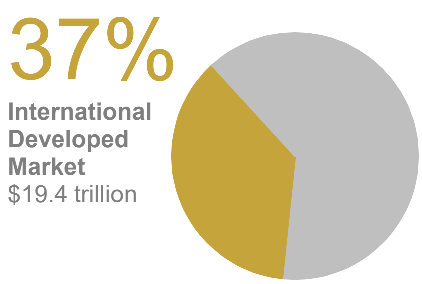
In US dollar terms, non-US developed markets outperformed the US market but underperformed emerging markets during 2017.

Looking at broad market indices, the value effect was negative.

Small caps outperformed large caps in non-US developed markets.

Ranked Returns for 2017 (%)

World Market Capitalization—International Developed



Period Returns (%)

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Small Cap	31.04	12.96	11.37	5.16
Growth	27.61	8.38	8.22	2.36
Large Cap	24.21	7.36	7.46	1.87
Value	21.04	6.26	6.64	1.32

** Annualized*

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Emerging Markets Stocks

2017 Index Returns

In US dollar terms, emerging markets outperformed the US and non-US developed markets for the year.

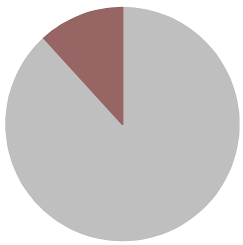
Across the large cap and mid cap space, the value effect was negative; however, in the small cap space, the effect was positive.

Overall, small caps underperformed large caps in emerging markets.

Ranked Returns for 2017 (%)

World Market Capitalization—Emerging Markets

12%
Emerging Markets
$6.2 trillion



Period Returns (%)

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Growth	46.80	11.88	6.85	2.35
Large Cap	37.28	9.10	4.35	1.68
Small Cap	33.84	8.44	5.41	2.78
Value	28.07	6.21	1.75	0.91

** Annualized*

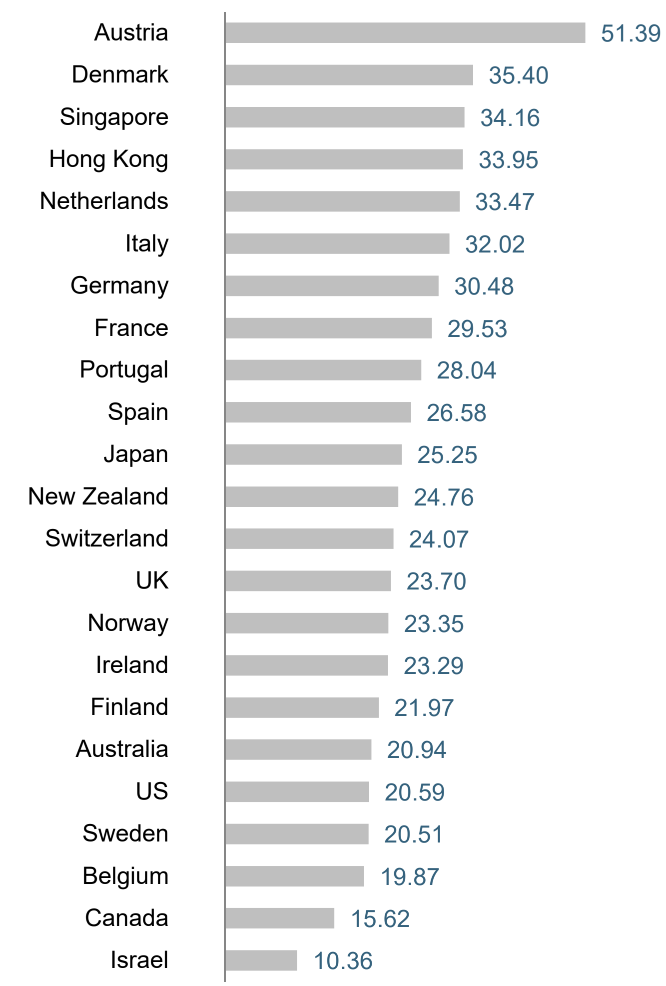
Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: Large Cap (MSCI Emerging Markets Index), Small Cap (MSCI Emerging Markets Small Cap Index), Value (MSCI Emerging Markets Value Index), and Growth (MSCI Emerging Markets Growth Index). All index returns are net of withholding tax on dividends. World Market Cap represented by Russell 3000 Index, MSCI World ex USA IMI Index, and MSCI Emerging Markets IMI Index. MSCI Emerging Markets IMI Index used as the proxy for the emerging market portion of the market. MSCI data © MSCI 2018, all rights reserved.

Select Country Performance

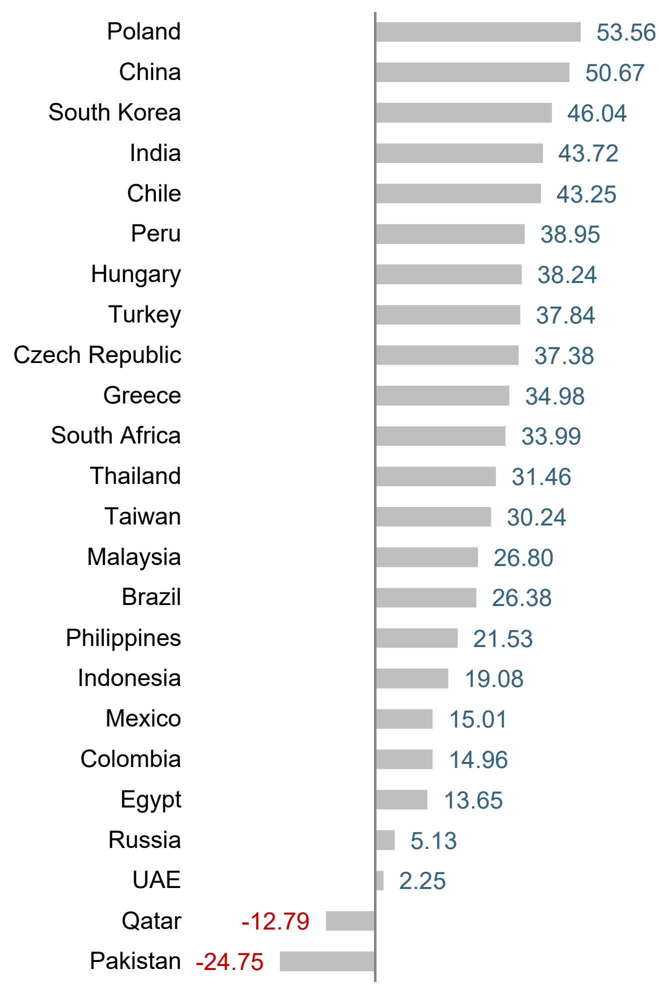
2017 Index Returns

In US dollar terms, Austria recorded the highest country performance in developed markets with a gain of more than 50%, while Israel posted the lowest return for the year. In emerging markets, Poland and China posted the highest country returns, each returning over 50%, while Pakistan and Qatar had the lowest performance.

Ranked Developed Markets Returns (%)



Ranked Emerging Markets Returns (%)



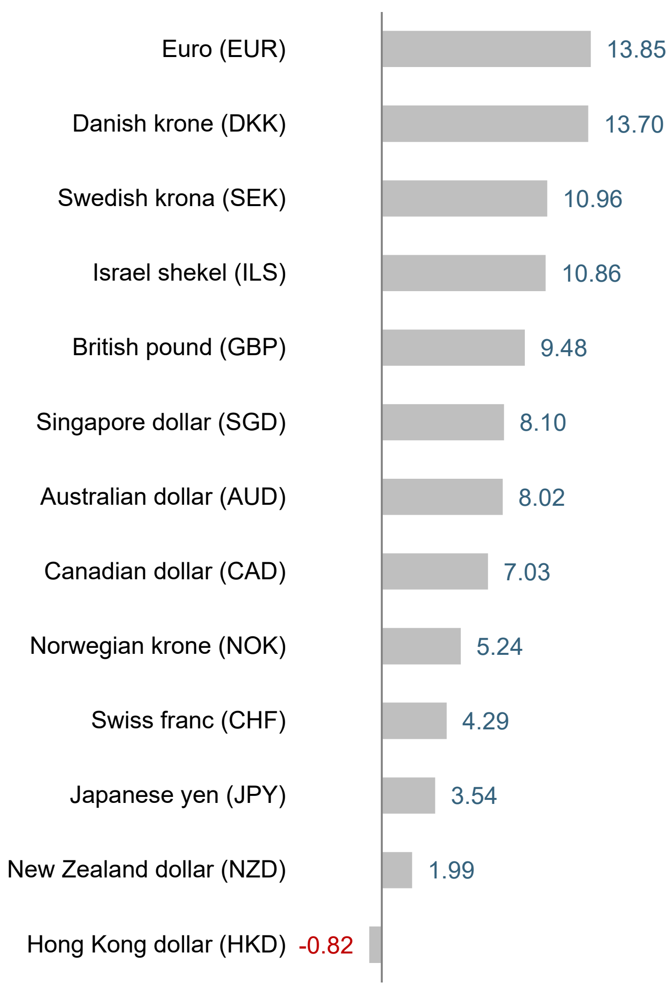
Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Country performance based on respective indices in the MSCI World ex US IMI Index (for developed markets), MSCI USA IMI Index (for US), and MSCI Emerging Markets IMI Index. All returns in USD and net of withholding tax on dividends. MSCI data © MSCI 2018, all rights reserved. UAE and Qatar have been reclassified as emerging markets by MSCI, effective May 2014.

Select Currency Performance vs. US Dollar

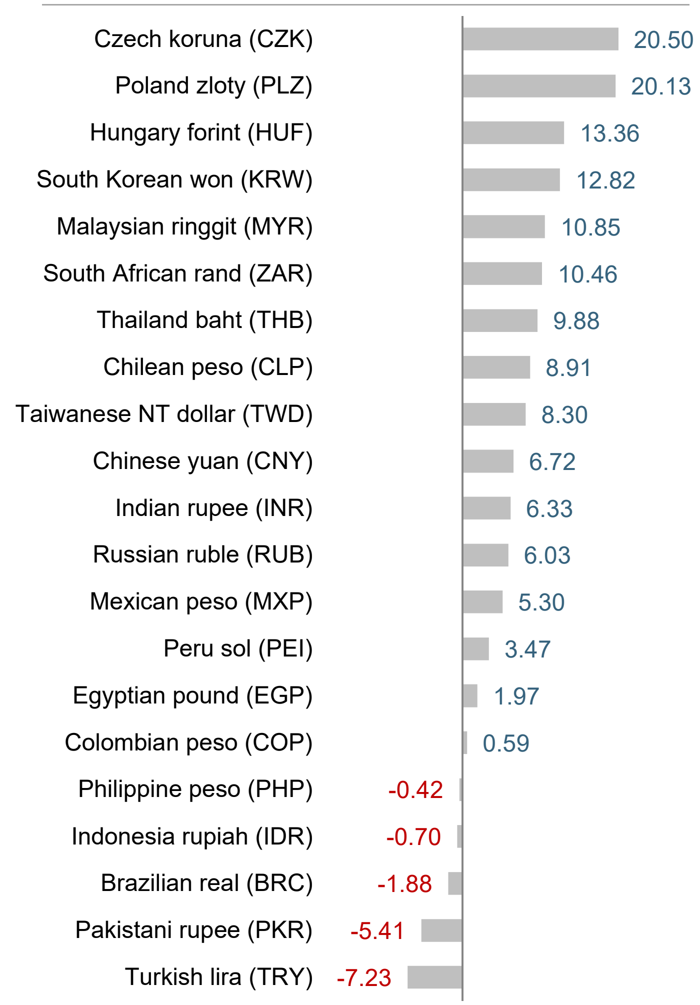
2017 Index Returns

Most developed market currencies appreciated against the US dollar in 2017. The euro and Danish krone appreciated the most with gains of almost 14%, while the Hong Kong dollar depreciated. In emerging markets, the Polish zloty and the Czech koruna appreciated more than 20%, while the Turkish lira depreciated over 7%.

Ranked Developed Markets Returns (%)



Ranked Emerging Markets Returns (%)



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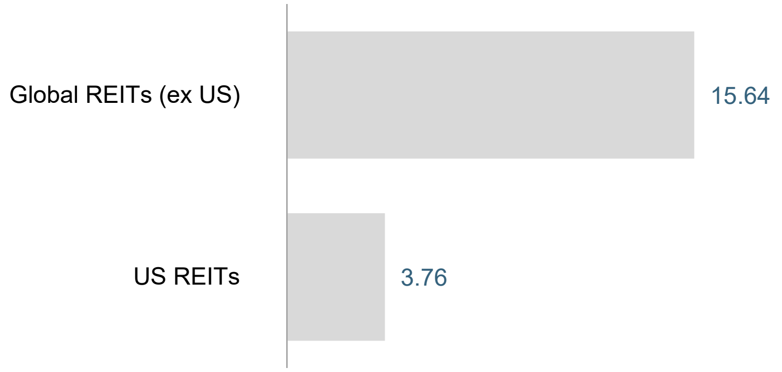
Real Estate Investment Trusts (REITs)

2017 Index Returns

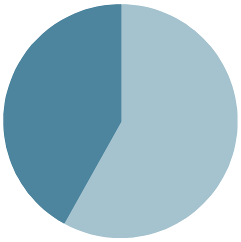
Non-US real estate investment trusts outperformed US REITs in 2017.

Ranked Returns for 2017 (%)



Total Value of REIT Stocks

42%
World ex US
$485 billion
251 REITs
(23 other countries)



58%
US
$672 billion
101 REITs

Period Returns (%)

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Global REITs (ex US)	15.64	4.78	5.49	2.05
US REITs	3.76	4.97	9.09	7.07

** Annualized*

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Number of REIT stocks and total value based on the two indices. All index returns are net of withholding tax on dividends. Total value of REIT stocks represented by Dow Jones US Select REIT Index and the S&P Global ex US REIT Index. Dow Jones US Select REIT Index used as proxy for the US market, and S&P Global ex US REIT Index used as proxy for the World ex US market. Dow Jones US Select REIT Index data provided by Dow Jones ©. S&P Global ex US REIT Index data provided by Standard and Poor's Index Services Group © 2018.

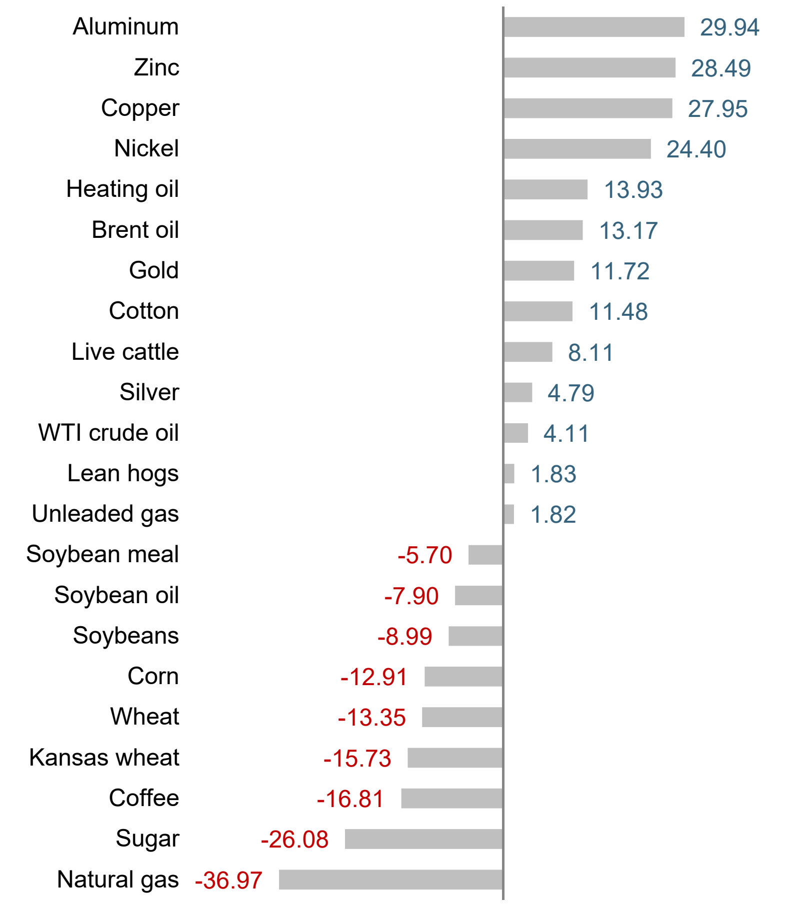
Commodities

2017 Index Returns

The Bloomberg Commodity Index Total Return advanced 1.70% in 2017.

Aluminum was the strongest performer, posting a return of 29.94%. Zinc and copper followed with respective returns of 28.49% and 27.95%. Natural gas was the weakest performer, falling 36.97%.

Ranked Returns for Individual Commodities (%)



Period Returns (%)

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Commodities	1.70	-5.03	-8.45	-6.83

** Annualized*

Past performance is not a guarantee of future results. Index is not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. All index returns are net of withholding tax on dividends. Securities and commodities data provided by Bloomberg.

Fixed Income

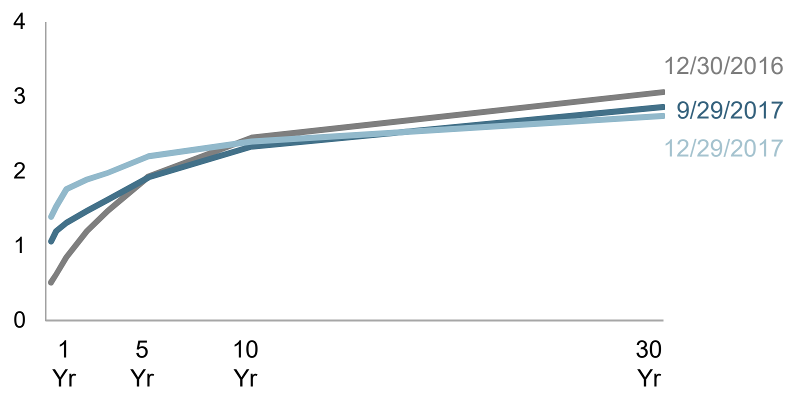
2017 Index Returns

Interest rate changes across the US fixed income market were mixed during the fourth quarter. The yield on the 5-year Treasury note rose 28 basis points (bps), ending at 2.20%. The yield on the 10-year Treasury note increased 7 bps to 2.40%. The 30-year Treasury bond yield decreased 12 bps to finish at 2.74%.

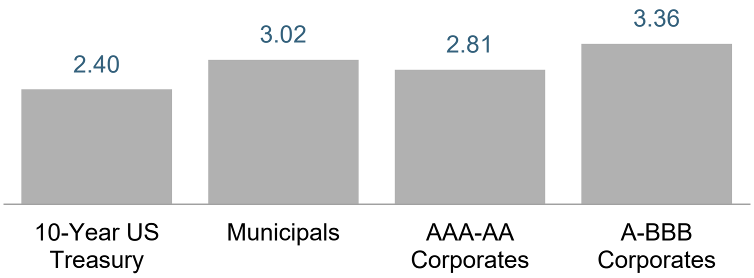
In terms of total returns, short-term corporate bonds declined 0.04% during the quarter but increased 1.85% for the year. Intermediate-term corporate bonds gained 0.17% for the quarter and 3.92% for the year.

The total returns for short-term municipal bonds were –0.65% for the quarter and 1.61% for the year. Intermediate-term municipal bonds fell 0.09% for the quarter but gained 4.70% for the year. Revenue bonds outperformed general obligation bonds for the year.

US Treasury Yield Curve (%)



Bond Yields across Issuers (%)



Period Returns (%)

* Annualized

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Bloomberg Barclays Long US Government Bond Index	8.53	2.85	3.49	6.49
Bloomberg Barclays Municipal Bond Index	5.45	2.98	3.02	4.46
Bloomberg Barclays US Aggregate Bond Index	3.54	2.24	2.10	4.01
Bloomberg Barclays US TIPS Index	3.01	2.05	0.13	3.53
Citi World Government Bond Index 1-5 Years (hedged to USD)	1.13	1.21	1.23	2.13
ICE BofAML 3-Month US Treasury Bill Index	0.86	0.41	0.27	0.39
ICE BofAML 1-Year US Treasury Note Index	0.57	0.49	0.38	0.90

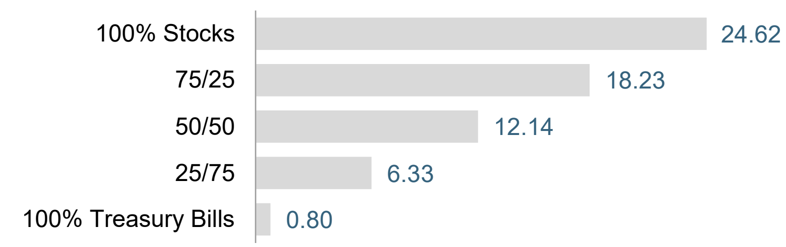
Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Yield curve data from Federal Reserve. State and local bonds are from the S&P National AMT-Free Municipal Bond Index. AAA-AA Corporates represent the Bank of America Merrill Lynch US Corporates, AA-AAA rated. A-BBB Corporates represent the Bank of America Merrill Lynch US Corporates, BBB-A rated. Bloomberg Barclays data provided by Bloomberg. US long-term bonds, bills, inflation, and fixed income factor data © Stocks, Bonds, Bills, and Inflation (SBBI) Yearbook™, Ibbotson Associates, Chicago (annually updated work by Roger G. Ibbotson and Rex A. Sinquefield). Citi fixed income indices © 2018 by Citigroup. ICE BofAML index data © 2018 ICE Data Indices, LLC. The S&P data are provided by Standard & Poor's Index Services Group.

Impact of Diversification

2017 Index Returns

These portfolios illustrate the performance of different global stock/bond mixes and highlight the benefits of diversification. Mixes with larger allocations to stocks are considered riskier but have higher expected returns over time.

Ranked Returns for 2017 (%)

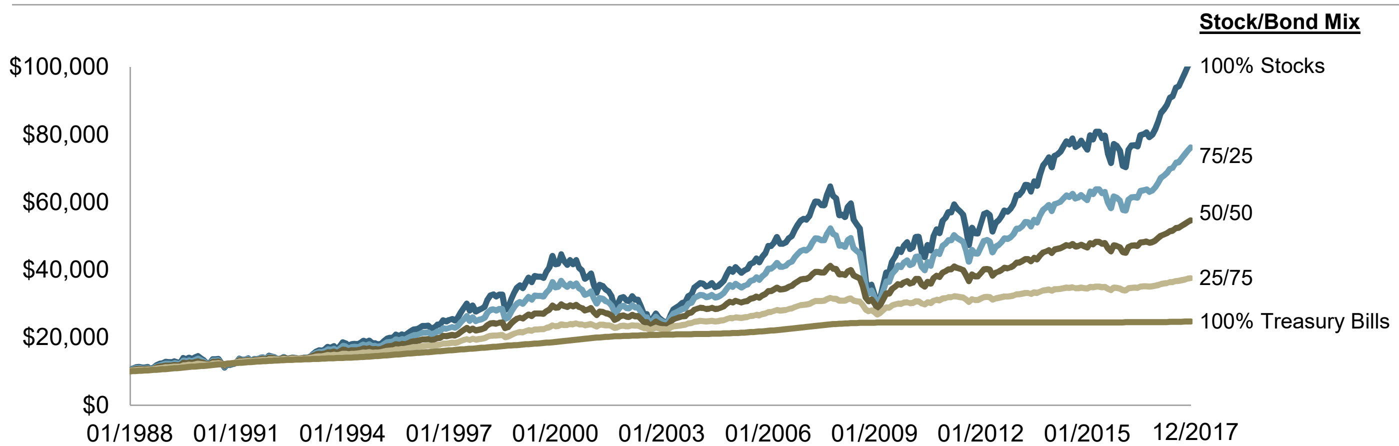


Period Returns (%)

** Annualized*

Asset Class	1 Year	3 Years*	5 Years*	10 Years*	10-Year STDEV[1]
100% Stocks	24.62	9.89	11.40	5.22	16.80
75/25	18.23	7.54	8.59	4.26	12.59
50/50	12.14	5.15	5.79	3.11	8.38
25/75	6.33	2.75	3.00	1.78	4.18
100% Treasury Bills	0.80	0.34	0.21	0.30	0.16

Growth of Wealth: The Relationship between Risk and Return



1. STDEV (standard deviation) is a measure of the variation or dispersion of a set of data points. Standard deviations are often used to quantify the historical return volatility of a security or portfolio.

Diversification does not eliminate the risk of market loss. **Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect expenses associated with the management of an actual portfolio.** Asset allocations and the hypothetical index portfolio returns are for illustrative purposes only and do not represent actual performance. Global Stocks represented by MSCI All Country World Index (gross div.) and Treasury Bills represented by US One-Month Treasury Bills. Globally diversified allocations rebalanced monthly, no withdrawals. Data © MSCI 2018, all rights reserved. Treasury bills © Stocks, Bonds, Bills, and Inflation Yearbook™, Ibbotson Associates, Chicago (annually updated work by Roger G. Ibbotson and Rex A. Sinquefield).

To Bit or Not to Bit:

What Should Investors Make of Bitcoin Mania?

Fourth Quarter 2017

Bitcoin and other cryptocurrencies are receiving intense media coverage, prompting many investors to wonder whether these new types of electronic money deserve a place in their portfolios.

Cryptocurrencies such as bitcoin emerged only in the past decade. Unlike traditional money, no paper notes or metal coins are involved. No central bank issues the currency, and no regulator or nation state stands behind it.

Instead, cryptocurrencies are a form of code made by computers and stored in a digital wallet. In the case of bitcoin, there is a finite supply of 21 million,[1] of which more than 16 million are in circulation.[2] Transactions are recorded on a public ledger called blockchain.

People can earn bitcoins in several ways, including buying them using traditional fiat currencies[3] or by "mining" them—receiving newly created bitcoins for the service of using powerful computers to compile recent transactions into new blocks of the transaction chain through solving a highly complex mathematical puzzle.

For much of the past decade, cryptocurrencies were the preserve of digital enthusiasts and people who believe the age of fiat currencies is coming to an end. This niche appeal is reflected in their market value. For example, at a market value of $16,000 per bitcoin,[4] the total value of bitcoin in circulation is less than one tenth of 1% of the aggregate value of global stocks and bonds. Despite this, the sharp rise in the market value of bitcoins over the past weeks and months have contributed to intense media attention.

What are investors to make of all this media attention? What place, if any, should bitcoin play in a diversified portfolio? Recently, the value of bitcoin has risen sharply, but that is the past. What about its future value?

You can approach these questions in several ways. A good place to begin is by examining the roles that stocks, bonds, and cash play in your portfolio.

EXPECTED RETURNS

Companies often seek external sources of capital to finance projects they believe will generate profits in the future. When a company issues stock, it offers investors a residual claim on its future profits. When a company issues a bond, it offers investors a promised stream of future cash flows, including the repayment of principal when the bond matures. The price of a stock or bond reflects the return investors demand to exchange their cash today for an uncertain but greater amount of expected cash in the future. One important role these securities play in a portfolio is to provide positive expected returns by allowing investors to share in the future profits earned by corporations globally. By investing in stocks and bonds today, you expect to grow your wealth and enable greater consumption tomorrow.

Government bonds often provide a more certain repayment of promised cash flows than corporate bonds. Thus, besides the potential for providing positive expected returns, another reason to hold government bonds is to reduce the uncertainty of future wealth. And inflation-linked government bonds reduce the uncertainty of future inflation-adjusted wealth.

1. Source: Bitcoin.org.
2. As of December 14, 2017. Source: Coinmarketcap.com.
3. A currency declared by a government to be legal tender.
4. Per Bloomberg, the end-of-day market value of a bitcoin exceeded $16,000 USD for the first time on December 7, 2017.

"You have power over your mind---not outside events.
Realize this, and you will find strength."
Marcus Aurelius

To Bit or Not to Bit

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Holding cash does not provide an expected stream of future cash flow. One US dollar in your wallet today does not entitle you to more dollars in the future. The same logic applies to holding other fiat currencies — and holding bitcoins in a digital wallet. So we should not expect a positive return from holding cash in one or more currencies unless we can predict when one currency will appreciate or depreciate relative to others.

The academic literature overwhelmingly suggests that short-term currency movements are unpredictable, implying there is no reliable and systematic way to earn a positive return just by holding cash, regardless of its currency. So why should investors hold cash in one or more currencies? One reason is because it provides a store of value that can be used to manage near-term known expenditures in those currencies.

With this framework in mind, it might be argued that holding bitcoins is like holding cash; it can be used to pay for some goods and services. However, most goods and services are not priced in bitcoins.

A lot of volatility has occurred in the exchange rates between bitcoins and traditional currencies. That volatility implies uncertainty, even in the near term, in the amount of future goods and services your bitcoins can purchase. This uncertainty, combined with possibly high transaction costs to convert bitcoins into usable currency, suggests that the cryptocurrency currently falls short as a store of value to manage near-term known expenses. Of course, that may change in the future if it becomes common practice to pay for all goods and services using bitcoins.

If bitcoin is not currently practical as a substitute for cash, should we expect its value to appreciate?

SUPPLY AND DEMAND

The price of a bitcoin is tied to supply and demand. Although the supply of bitcoins is slowly rising, it may reach an upper limit, which might imply limited future supply. The future supply of cryptocurrencies, however, may be very flexible as new types are developed and innovation in technology makes many cryptocurrencies close substitutes for one another, implying the quantity of future supply might be unlimited.

Regarding future demand for bitcoins, there is a non-zero probability[5] that nothing will come of it (no future demand) and a non-zero probability that it will be widely adopted (high future demand).

Future regulation adds to this uncertainty. While recent media attention has ensured bitcoin is more widely discussed today than in years past, it is still largely unused by most financial institutions. It has also been the subject of scrutiny by regulators. For example, in a note to investors in 2014, the US Securities and Exchange Commission warned that any new investment appearing to be exciting and cutting-edge has the potential to give rise to fraud and false "guarantees" of high investment returns.[6] Other entities around the world have issued similar warnings. It is unclear what impact future laws and regulations may have on bitcoin's future supply and demand (or even its existence). This uncertainty is common with young investments.

All of these factors suggest that future supply and demand are highly uncertain. But the probabilities of high or low future supply or demand are an input in the price of bitcoins today. That price is fair, in that investors willingly transact at that price. One investor does not have an unfair advantage over another in determining if the true probability of future demand will be different from what is reflected in bitcoin's price today.

5. Describes an outcome that is possible (or not impossible) to occur.
6. "Investor Alert: Bitcoin and Other Virtual Currency-Related Investments," SEC, 7 May 2014.

"Life is the sum of all your choices."
Albert Camus

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WHAT TO EXPECT

So, should we expect the value of bitcoins to appreciate? Maybe. But just as with traditional currencies, there is no reliable way to predict by how much and when that appreciation will occur. We know, however, that we should not expect to receive more bitcoins in the future just by holding one bitcoin today. They don't entitle holders to an expected stream of future bitcoins, and they don't entitle the holder to a residual claim on the future profits of global corporations.

None of this is to deny the exciting potential of the underlying blockchain technology that enables the trading of bitcoins. It is an open, distributed ledger that can record transactions efficiently and in a verifiable and permanent way, which has significant implications for banking and other industries, although these effects may take some years to emerge.

When it comes to designing a portfolio, a good place to begin is with one's goals. This approach, combined with an understanding of the characteristics of each eligible security type, provides a good framework to decide which securities deserve a place in a portfolio. For the securities that make the cut, their weight in the total market of all investable securities provides a baseline for deciding how much of a portfolio should be allocated to that security.

Unlike stocks or corporate bonds, it is not clear that bitcoins offer investors positive expected returns. Unlike government bonds, they don't provide clarity about future wealth. And, unlike holding cash in fiat currencies, they don't provide the means to plan for a wide range of near-term known expenditures. Because bitcoin does not help achieve these investment goals, we believe that it does not warrant a place in a portfolio designed to meet one or more of such goals.

If, however, one has a goal not contemplated herein, and you believe bitcoin is well suited to meet that goal, keep in mind the final piece of our asset allocation framework: What percentage of all eligible investments do the value of all bitcoins represent? When compared to global stocks, bonds, and traditional currency, their market value is tiny. So, if for some reason an investor decides bitcoins are a good investment, we believe their weight in a well-diversified portfolio should generally be tiny.[7]

Because bitcoin is being sold in some quarters as a paradigm shift in financial markets, this does not mean investors should rush to include it in their portfolios. When digesting the latest article on bitcoin, keep in mind that a goals-based approach based on stocks, bonds, and traditional currencies, as well as sensible and robust dimensions of expected returns, has been helping investors effectively pursue their goals for decades.

7. Investors should discuss the risks and other attributes of any security or currency with their advisor prior to making any investment.