THE GLOBAL SPIN-OFF REPORT COMPENDIUM
June 2016

THE RISE OF THE ARTIFICIAL ASSET CLASS

The Limits of Idiosyncratic Risk Avoidance in Indexation

Modern asset allocation is practiced as if it were a science. The objective is to balance risk and reward in accordance with individual risk tolerance. Careful attention is paid to individual goals and time horizon. This is accomplished by investing in different genres of equity and fixed income, and even cash equivalents. Thus, the risk of U.S. large capitalization versus emerging market equities is considered. The system considers the risk/reward ratio of high yield versus U.S. Treasuries. One now commonly finds foreign currencies invested alongside U.S. dollar cash equivalents.

One result of this systematized approach to portfolio construction is the Robo-advisor, which makes these allocations via computer algorithms. Hence, in practice, Wall Street has achieved a self-driving portfolio before Google has achieved a self-driving car. In fact, Wall Street has achieved a self-driving portfolio before scientists at the MIT Artificial Intelligence Laboratory have invented a robot that will properly clean your home.

Is the "rule set" of portfolio construction far simpler than the "rule set" for driving an automobile? This is a good question, actually. In each case, the obvious problem is to map all possible idiosyncratic circumstances and program a proper response. In the case of driving an automobile, this is quite difficult, but there are definable conditions that precede accidents so that a sufficiently fast computer could undertake avoidance strategies. In contrast, in accordance with Modern Portfolio Theory, news of idiosyncratic circumstances such as earnings misstatements, corruption, terrorist attacks, oil spills, and many other calamities are assumed to be instantaneously reflected in stock prices. How can asset allocation programs react, since individual securities change the character of the asset class?

For instance, if Exxon had spilled oil into the Gulf of Mexico rather than British Petroleum, one could argue that the risk of holding the S&P 500 would be higher, given that Exxon is the third-largest position in the S&P 500. However, the S&P 500 portfolio beta would remain 1, by definition. Upon what basis, if any, could an asset allocation program react?

Indexation itself is designed to mitigate the idiosyncratic security risk problem by owning so many securities that no individual security, however idiosyncratic, can alter the volatility characteristics of the index. Indeed, at the moment, Exxon is only 2% of the S&P 500 Index.

Yet, as asset allocation becomes more specialized, there is a corresponding increase in specialized indexes used to craft just the right risk/reward balance. An example is the iShares U.S. Energy ETF (IYE), which holds in excess of $1.2 billion in assets under management. Exxon is a 25.84% position in the index. Surely no one would care to defend the proposition that this index would be

immune to the idiosyncratic aspects of Exxon if it were to become involved in a disaster similar to that which befell British Petroleum.

It is extraordinarily difficult to create an index that is sufficiently liquid to accommodate trillions of dollars of investment without being dominated by the weight of a relatively small number of huge global multinational companies. The paradox is that the scope of operations of such firms is so vast across the globe that most idiosyncratic developments on the international stage have some bearing upon the potential profits of these giant enterprises.

The Rise of Artificial Asset Classes

Consequently, parallel to the development of indexation, there has been a movement to devise artificial cash-settled investment vehicles in which the outcome, positive or negative, rests upon the calculation of a completely transparent number. This is made possible in real time by enormous advances in computers, telecommunications, and semiconductor design.

An example of such an artificial index is the VIX Index. The VIX is merely a weighted average of near-term options on the S&P 500. VIX futures were first listed on March 26, 2004. The open interest is now 479,510 contracts with a contract multiplier of 1,000. This is no doubt a considerable sum of money. In any case, considered within the context of contemporary indexation, which accommodates trillions of dollars, VIX is a mere rounding error. Moreover, it is ultimately a derivative of the S&P 500 and, therefore, intrinsically contains individual security risk.

Given the direction of advances in computational power and the need for new asset classes, it was inevitable that a wholly artificial asset class would be created. In the case of the Satoshi white paper in 2008, that artificial asset class was Bitcoin. It is perhaps coincidental that all equity asset classes, all commodity classes, and many classes of fixed income securities simultaneously collapsed in value in 2008.

The basic idea of Bitcoin as an asset class, leaving aside the questions of Blockchain technology, is that it would be accepted as a store of value like money, with the singular difference that the units of money would be fixed so as not to exceed 21 million units. The rate of issuance until the maximum is reached is expressed by the following geometric series.

$$\sum_{n=0}^{\infty} \frac{210{,}000 \times 50}{2^n} = 210{,}000 \times 50 \times \frac{1}{1-\frac{1}{2}} = 21{,}000{,}000$$

The 210,000 in the formula is the number of starting coins; the 50 quantity in the formula is the starting Bitcoin proof of work reward. This figure is halved every four years. It will be 12.5 Bitcoin on or about July 11, 2016 insofar as can be calculated. Ultimately, an issuance of 21 million will be attained.

This is structurally different from all other currencies, which are so-called fiat currencies. In the latter instance, the central banks, not infrequently under great pressure from the central government, expand the amount of currency to the degree considered necessary.

The consequence is that money as a store of value—or even in many instances bank deposits, government bonds, and corporate bonds—generate negative real rates of return. This has not been true in the United States and most industrial developed nations since 1981 because interest rates declined. However, it may well become true in the foreseeable future due to the low level of bond rates as well as taxation of whatever little interest income is generated. In most nations of the world, fixed income securities or cash deposits have experienced negative rates of return in the past. As of April 30th, Tradeweb has reported that there are $7.85 trillion of negative yielding sovereign debt in the world, including the majority of the debt of Switzerland, Japan, Germany, the Netherlands, Austria, France and Denmark.

In essence, Bitcoin is a permissionless instrument. In other words, it can function as money or a store of value if a sufficient number of people accept it as such. In principle, anything can be accepted as money. For example, in the Roman Republic, 20 sestertii, or 5 denarii, was legally equal to 18.22916 and two-third grains of gold. In the time of Nero, the denarius contained 99% silver. Under Trajan and the Antonines, the denarius first contained 5% copper, and eventually it contained 25% copper. Under the Emperor Severus, the denarius was 50% copper.[1]

In history, accepted instruments of exchange and store of value have included barley in Mesopotamia, cowry shells in Aboriginal Australia, tobacco leaves, and other commodities. In post-World War II Germany, cigarettes assumed this function for several years. Of course, gold and silver have been used as money and stores of value.

The common feature of every medium of exchange or store of value used thus far throughout history has been that the supply would generally increase. Sometimes, this was within the ability of the government to control; sometimes, it was left to circumstance. For example, historians believe that the impact of the California Gold Rush of 1849 was such that, in effect, the supply of money was suddenly increased and this stimulated economies all over the world, not just in the United States. Some would argue that the Transcontinental Railroad was built, in part, by demand for transportation services stimulated by the Gold Rush.

On the other hand, the inflationary pressures of the 1970s were certainly responsible for the increase in the price of gold during that decade. This, in turn, stimulated exploration, which then enhanced supply. Eventually, the price of gold declined precipitously.

Bitcoin, in contradistinction, is fixed in supply. If it were accepted as an asset class and, therefore, as a store of value, why should not this store of value be equivalent in capitalization to other stores of value? *In other words, if supply is fixed, the only rationing mechanism remaining is price.*

It should be recognized that almost all serious students of central banking and national monetary policy consider Bitcoin to be something akin to a Ponzi scheme. However, as an instrument, Bitcoin offers no promise of profit, which is the animating element of a Ponzi scheme.

Bitcoin has a market capitalization of roughly $9 billion as of this writing. On its World Debt Clock, *The Economist Magazine* calculates that the total global government debt that trades has a

[1]Norman Angell, *The Story of Money* (New York: Frederick A. Stokes, 1929) 110-112

U.S. dollar value of $58.891 trillion.[2] This is just government debt. What if Bitcoin were worth an amount equal to this ever-increasing sum? This would represent a coefficient expansion of 6,654x, or 665,400%.

It is perhaps worthy of note that in March of 2006, the Federal Reserve ceased publishing M3, the broadest money supply measure. It still publishes M2, which was about $12.652 trillion in April 2016. In the first four months of 2016, U.S. M2 expanded by 2.61%, or an annualized rate of 8.04%. Should one add the value of M2 to world government debt as a somewhat better measure of store of value? If one were to do this, it would still be hopelessly inadequate as a calculation, since it does not account for all the other national M2 calculations.

In any event, if one merely added U.S. M2 and global government debt, the total is $71.54 trillion, or 7,949x the current market value of Bitcoin. Euro M2 is another €10 trillion. Yen M2 is ¥934.765 trillion, or about $8.5 trillion. No one has ever needed to calculate the worth of every instrumentality with a store of value function. It would surely be a huge number.

If the various stores of value in the world are engineered in such a manner as to generate negative real rates of return, surely the holders of such instruments would find this objectionable. Historically, if all central banks simultaneously enacted similar real purchasing power destruction policies, the investors had no recourse other than the political process.

Now there is an alternative that is accepted by very few and rejected by most investors. If the predilection of the majority of investors changes to be favorable to Bitcoin, a market capitalization of $9 billion would hardly be adequate to express those preferences. Indeed, a market capitalization of $1.227 trillion might not be adequate. After all, this figure is merely the aggregate market capitalization of the four "FANG" stocks: Facebook, Amazon, Netflix, and Google. If an artificial asset class such as a crypto-currency, of which Bitcoin is only one example, is accepted generally, this is a once-in-a-century event in terms of rate of return.

[2]www.economist.com/content/global_debt_