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SPECIAL REPORT

Bitcoin's Macro Impact

- > Bitcoin and other virtual currencies have sold off sharply in recent days. However, as the turn of the millennium dotcom boom and bust illustrates, wild swings in asset prices can sometimes mask important structural changes that new technologies have unleashed on the global economy.
- > If the proliferation of virtual currencies continues, it will have real macroeconomic effects.
- > Globally, the volume of currency in circulation – the largest component of base money – has grown by 5.5% year-over-year. However, the growth rate would be 7% if virtual currencies were included in the tally.
- > The indirect increase in global liquidity coming from virtual currencies should provide a modest boost to spending. This is somewhat bearish for bonds but bullish for equities.
- > The implications for gold and the dollar are mixed.
- > Governments derive significant “seigniorage revenue” from their ability to issue *fiat* currency. This is likely to impede the widespread adoption of virtual currencies, ultimately capping their prices.

Bitcoin And Beyond

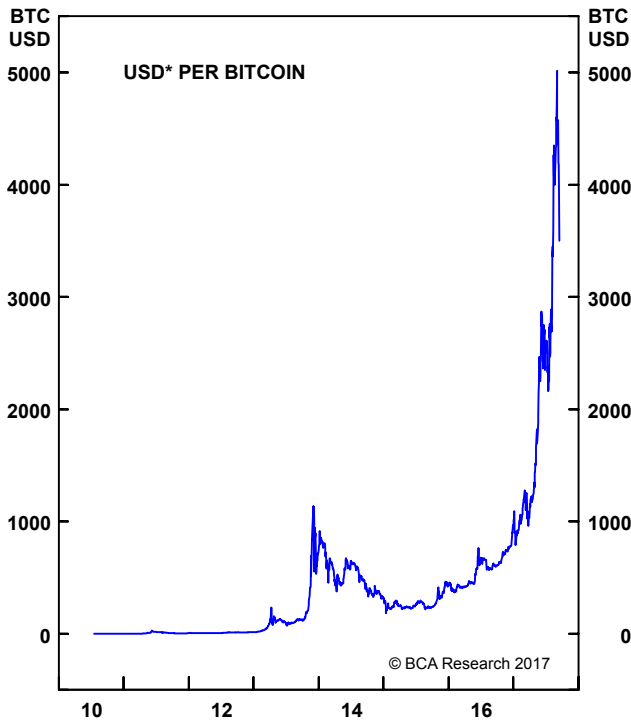
The price of bitcoin has been extremely volatile lately, falling by more than 10% last week after the Chinese government announced a ban on so-called Initial Coin Offerings. The downdraft continued into this week, spurred on by JPMorgan CEO Jamie Dimon's description of bitcoin as a “fraud.”

The recent selloff followed a dizzying ascent which saw the price of the upstart currency surpass \$5000 earlier this month (**Chart 1**). Despite the pullback, one thousand dollars of bitcoin purchased in July 2010 would still be worth \$58 million today.

Such mind-boggling returns have caught the public's attention. There were more Google searches for “bitcoin” in August and September than for “Donald Trump” (**Chart 2**). Public appetite is so high that the Bitcoin Investment Trust, though officially an open-ended vehicle, has traded as high as twice its net asset value in recent months.

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CHART 1
Bitcoin Prices: It's Been A Wild Ride So Far



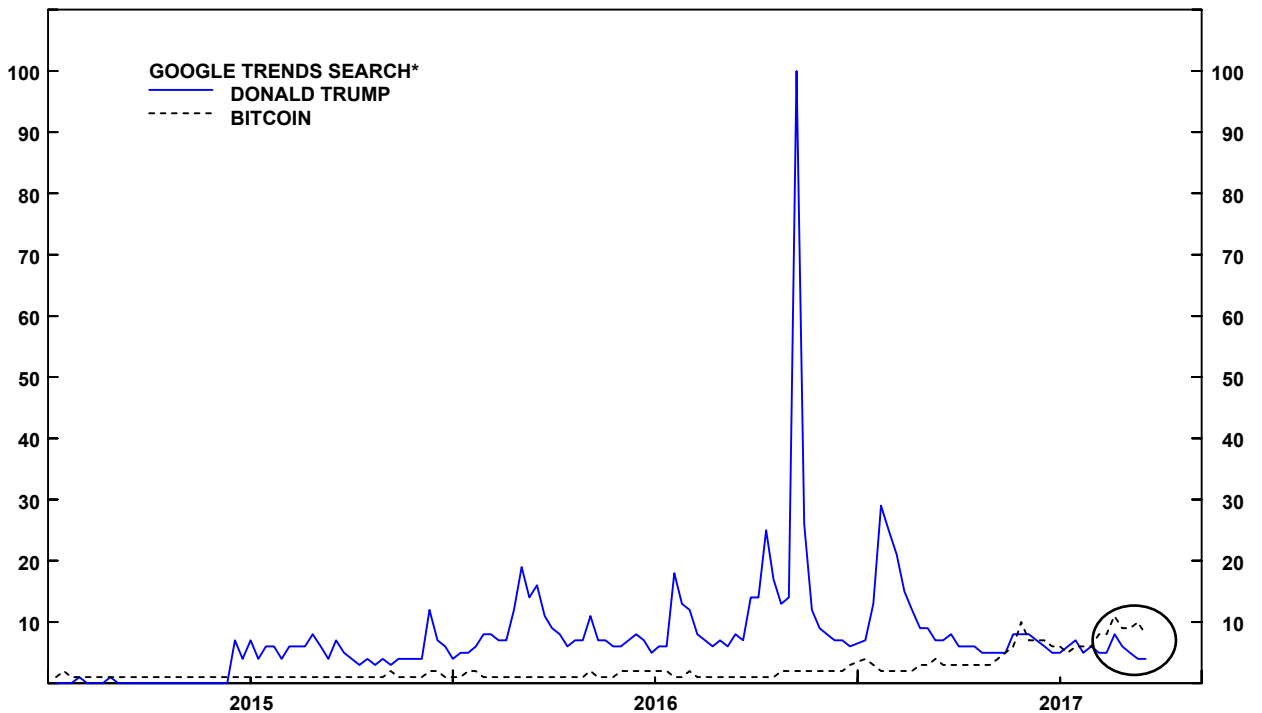
* SOURCE: BLOOMBERG FINANCE L.P.

Other virtual currencies have also seen staggering returns. Ethereum is still up more than 3000% year-to-date, giving it a market cap of \$23 billion. Dogecoin, a currency that was started “as a joke” according to its founders, commands a market cap of \$114 million.

Wider Effects?

The run-up in bitcoin prices bears a close resemblance to classic bubbles (Chart 3). Yet, as the turn of the millennium dotcom boom and bust illustrates, wild swings in asset prices can sometimes mask important structural changes that new technologies have unleashed on the global economy.

CHART 2
President Trump: Bitcoin Is More Popular Than You!



* BASED ON INTEREST OVER TIME, WHERE NUMBERS REPRESENT SEARCH INTEREST RELATIVE TO THE HIGHEST POINT ON THE CHART FOR THE GIVEN REGION AND TIME. A VALUE OF 100 IS THE PEAK POPULARITY FOR THE TERM. A VALUE OF 50 MEANS THAT THE TERM IS HALF AS POPULAR. LIKEWISE, A SCORE OF 0 MEANS THE TERM WAS LESS THAN 1% AS POPULAR AS THE PEAK.

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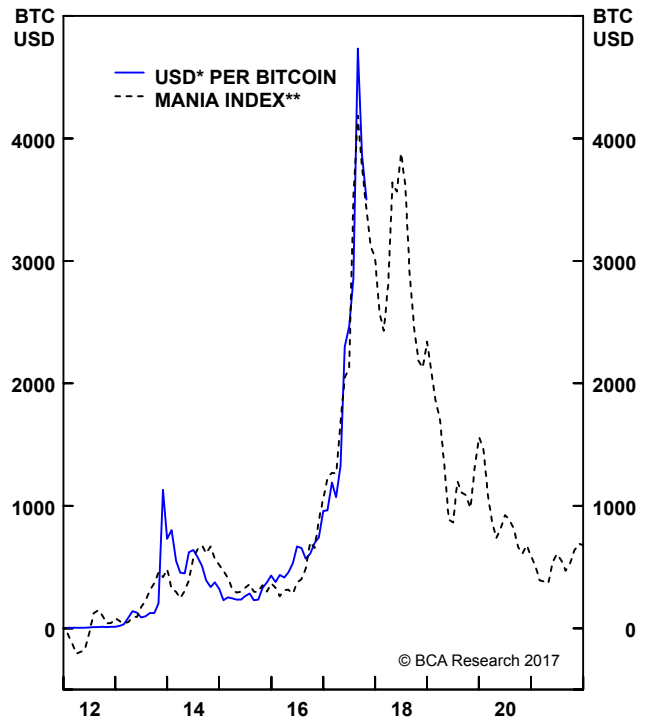
Is the explosion in virtual currencies relevant for the broader investment community, including those investors who would never consider buying bitcoin?

This raises the question of whether the explosion in virtual currencies is relevant for the broader investment community, including those investors who would never consider buying bitcoin. We would answer yes, albeit in a limited form thus far.

The market capitalization of all virtual currencies currently stands at \$120 billion (Chart 4). Globally, there is about \$6 trillion in currency outstanding, so the value of virtual currencies is now 2% that of traditional cash and currency. That's not huge, but it's no longer trivial either.

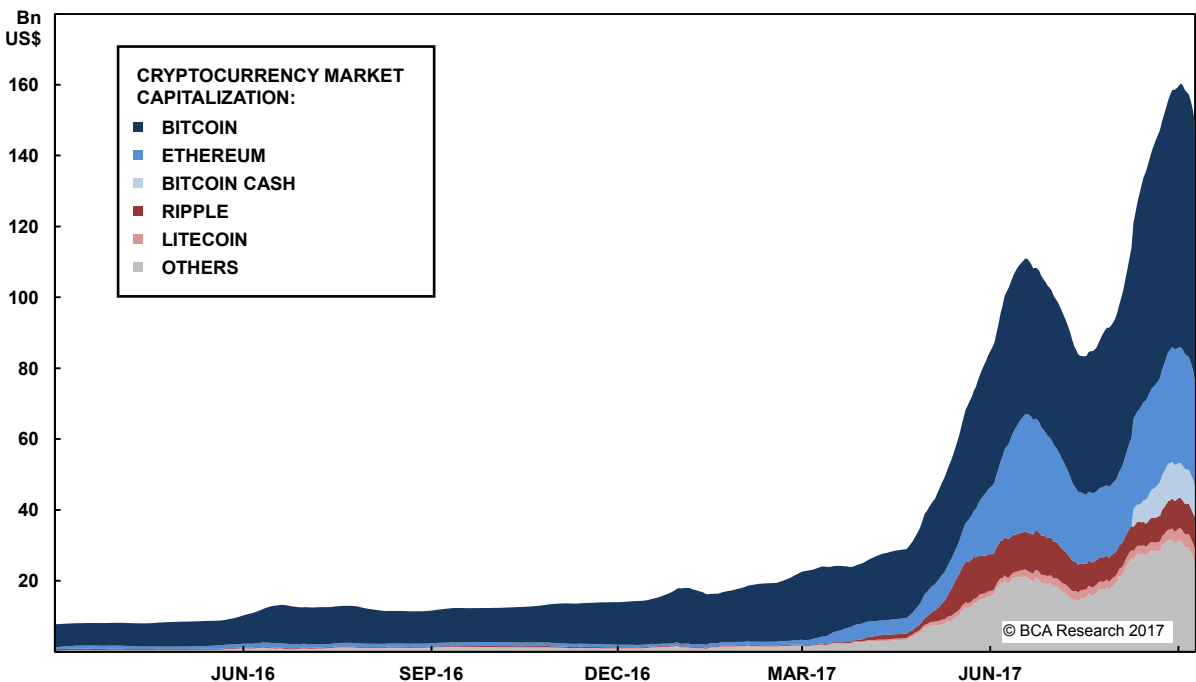
The importance of virtual currencies increases if we look at rates of change. The global stock of currency in circulation has risen by 5.5% over the past 12 months. However, if we add virtual currencies to the mix, the rate of growth jumps to 7%.

CHART 3
Bitcoin Bubble?



* SOURCE: THOMSON REUTERS.
** THE MANIA INDEX DEPICTS HOW THE PRICE OF BITCOIN WOULD BEHAVE IF IT PEAKED IN AUGUST 2017 AND IF IT FOLLOWED THE PREVIOUS BUBBLE-BUST PATTERNS. IT IS BASED ON A REGRESSION WHERE THE DEPENDENT VARIABLE IS THE PRICE OF BITCOIN, AND THE EXPLANATORY VARIABLES ARE PREVIOUS BUBBLES IN THE FOLLOWING ASSETS: THE JAPANESE NIKKEI 225, THE NASDAQ, SILVER PRICES, THE S&P 400, THE U.S. DOLLAR, TAIWANESE EQUITIES, NICKEL PRICES, AND COCOA PRICES. IN REALITY, THE EXTENT OF THE PRICE APPRECIATION IN BITCOIN OVER THE PAST FEW YEARS IS MUCH GREATER THAN THAT OBSERVED IN PREVIOUS MANIA EPISODES.

CHART 4
Virtual Currencies: Market Cap Is Now Non-Trivial



NOTE: DATA AS OF SEPTEMBER 13, 2017; SHOWN AS A 14-DAY MOVING AVERAGE.
SOURCE: COIN MARKET CAP, COIN DANCE.

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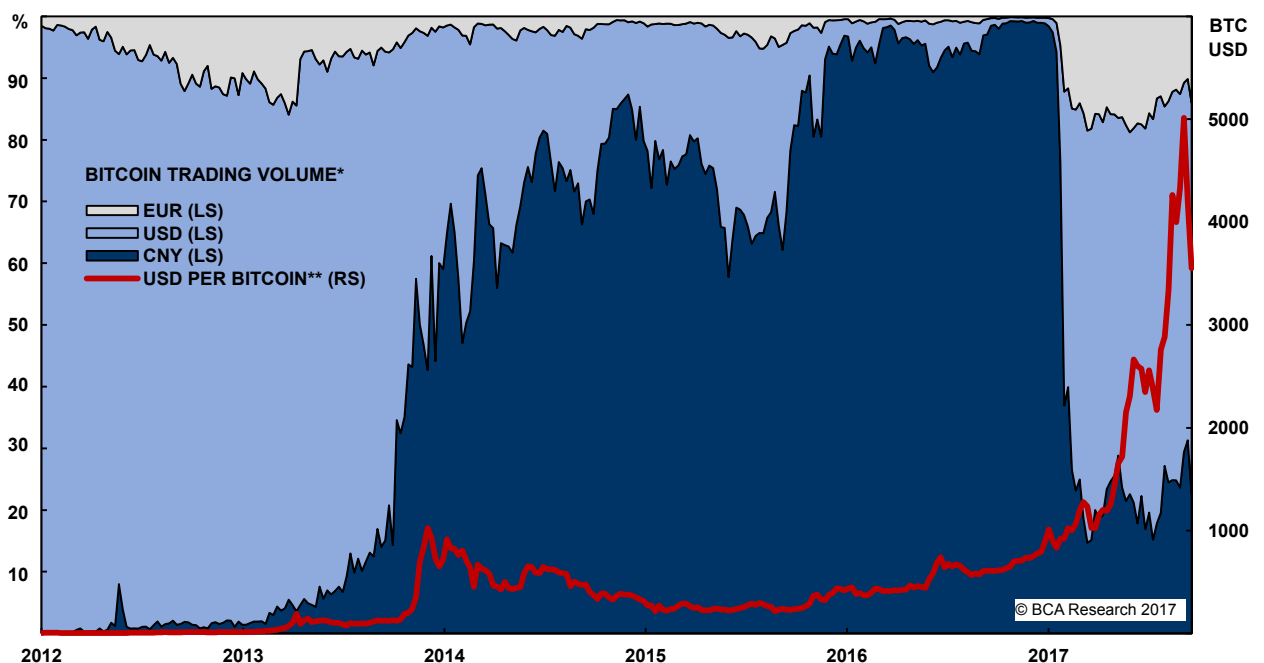
The contribution of virtual currencies to the rate of growth of the broad money supply – which includes such items as bank deposits – is still fairly small. However, economists focus on currency in circulation for a reason: It is the largest component of base money (also known as “high-powered” money). The stock of base money helps determine the total money supply through the magic of the money multiplier and fractional reserve banking.

The Monetary Hot Potato

For the time being, the macro impact of virtual currencies has been constrained by the fact that most people are buying them as a store of value, rather than as a medium of exchange. It is no coincidence that up until recently, a disproportionately large amount of demand for virtual currencies has come out of China, an economy that suffers from a plethora of savings and a dearth of safe investable assets (Chart 5). In addition to squirrelling away their wealth in overpriced condos, the Chinese are now snapping up bitcoins.

Over time, the public may begin to regard virtual currencies as legitimate substitutes for dollars, euros, yen, and yuan. This could lead people to want to hold fewer of these traditional currencies, causing them in turn to either spend their excess cash holdings or deposit them in commercial banks. The first outcome would obviously be inflationary, but so would the second if rising deposit inflows caused banks to increase lending.

CHART 5
Bitcoin Trading Volume By Top Three Currencies



* INCLUDES ESTIMATES FOR LATEST DATA POINT. SOURCE: BITCOINITY.ORG.
** SOURCE: BLOOMBERG FINANCE L.P.

Virtual currencies suffer from numerous deficiencies which expose their users to fraud.

What would happen if people began transacting more in virtual currencies? At that point, the Fed and other central banks would need to decide whether to take some traditional paper money out of circulation in order to make room for the growing share of private virtual currencies.

The merits of doing so would depend on the state of the business cycle.¹ When inflation is low, as it is today in most of the world, central banks would gladly welcome anything that boosts spending and liquidity. Indeed, in some ways, the issuance of private currencies could have similar effects to helicopter drops of money. However, if inflation were to accelerate too rapidly, central banks would have to begin withdrawing their own currencies from circulation, or push for the withdrawal of private currencies.

Governments Want Their Cut

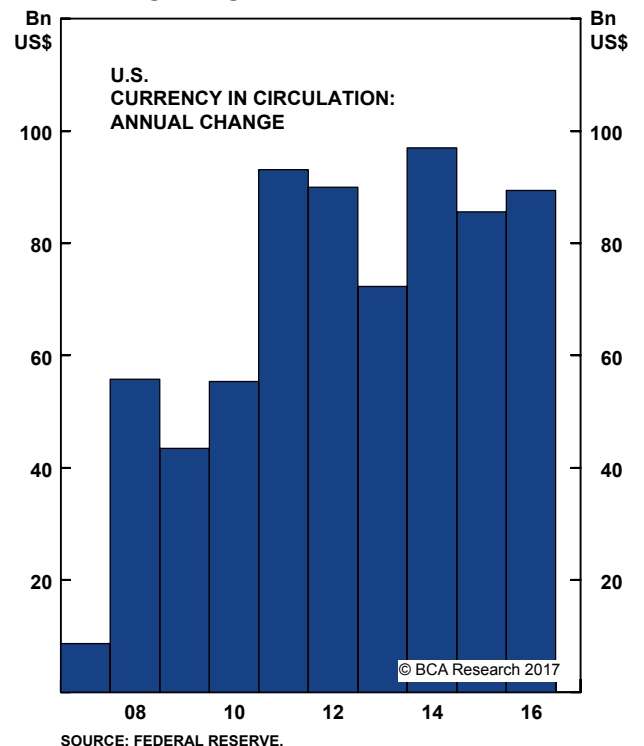
The former outcome would not please the fiscal authorities. When the U.S. Treasury issues a \$100 bill, it gains the ability to buy \$100 of goods and services with it. The government’s cost is whatever it pays to print the bill, which is close to zero. This so-called “seigniorage revenue” is quite large, averaging close to \$70 billion per year for the U.S. government alone over the past decade (Chart 6).

Why would the U.S. or any other country that issues its own currency want to part with this revenue? The answer is that it wouldn’t.

Instead, governments are likely to introduce their own competitors to bitcoin. The blockchain technology on which bitcoin is built is ingenious but completely within the public domain. Central banks are already thinking about how to issue their own virtual currencies. The creation of such parallel electronic currencies would allow people to send funds to one another and purchase goods and services without the need for an intermediary, a potentially negative development for banks and other financial institutions.

These government-sponsored virtual currencies are unlikely to offer the full anonymity of bitcoin, but for most people, that may not be such a bad thing. As our *Technology Sector Strategy*

CHART 6
U.S. Seigniorage Revenue



¹ To appreciate this point, ponder the question of who suffers when someone goes shopping with counterfeit currency. If the economy is operating at full potential, the answer is that everyone else suffers because they have to pay higher prices for the things that they buy. However, if there are plenty of idle workers, the additional spending is unlikely to raise prices. Rather, it will translate into higher output and income.

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service has emphasized, private virtual currencies suffer from numerous deficiencies which expose their users to fraud.² When thieves stole 6% of all outstanding bitcoins from the Mt. Gox exchange in 2014, the victims had nothing to fall back on. A government-sponsored virtual currency could at least offer some protection to its holders, thereby making it more valuable to use.

It would also allow central banks to fulfill their responsibilities as lenders of last resort. The Free Banking Era in the U.S., which at one point saw 8000 different currencies in circulation, experienced multiple banking crises. A world with myriad private currencies all competing with one another would be similarly unstable.

Bitcoin: A Solution In Search Of A Problem?

This gets to a more fundamental issue, which is that bitcoin often comes across as a solution in need of a problem. People can already transfer money fairly easily when it is legal to do so. If the main practical advantage of bitcoin is to overcome capital controls and empower tax cheats, junkies, and hackers, it is hard to see how this does not beget a government crackdown.

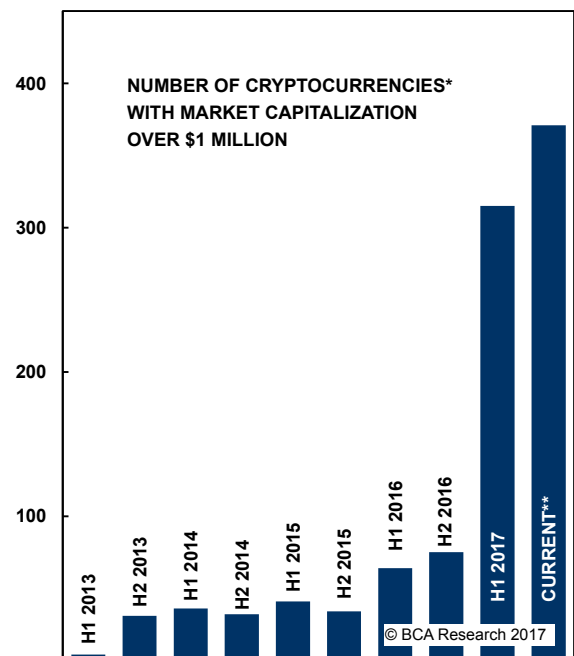
Ironically, the “mining” of additional bitcoins requires significant investment in specialized computers and dollops of electricity. Virtual currencies may exist in bits and bytes, but real resources must be expended to create them. In contrast, governments can create money with simply the stroke of a pen.

Granted, if governments used this power to devalue the value of money – as they have periodically done from time to time – the virtues of bitcoin as a store of value would become more evident. The algorithms that power bitcoin limit the total number of coins that can ever be created to 21 million.

Bitcoin is not the only game in town, however. Dozens of competitors have sprung up (**Chart 7**). While each may cap the number of coins in circulation, collectively they represent a potentially significant (and possibly unlimited) addition to the monetary base. Thus, it is not clear how well virtual currencies would perform as inflation hedges compared to more traditional instruments such as gold and land, let alone modern hedges such as inflation-linked securities.

CHART 7

The Boom In Cryptocurrencies



* INCLUDES CRYPTOCURRENCIES AND CRYPTOASSETS LISTED AT THE END OF EACH PERIOD.
** DATA AS OF SEPTEMBER 14, 2017.
SOURCE: COIN MARKET CAP.

² Please see *Technology Sector Strategy*, “Blockchain and Cryptocurrencies,” dated May 5, 2017.

There are reasons to think that the proliferation of virtual currencies will boost the demand for goods and services.

Investment Conclusions

The role that money plays in modern economies is one of those things that people tend to tie themselves into pretzels thinking about. It's actually not that complicated. For the most part, inflation occurs when the demand for goods and services outstrips the supply of goods and services.

Outside of extreme situations, the choice of monetary regime does not affect the supply-side of the economy (that's determined by productivity and the size of the labor force, neither of which central banks have much control over). Thus, it really is just a question of how the monetary regime affects aggregate demand.

As noted above, there are reasons to think that the proliferation of virtual currencies will boost the demand for goods and services, either through the wealth effect channel (people who acquired bitcoin in its early days feel richer today), or *via* the currency substitution channel (if people start transacting in bitcoin, they may try to dispose of their excess dollars, euros, yen, and yuan either by spending them or depositing them in banks, leading to higher loan growth). Neither of these effects is terribly significant right now, but both have the potential to increase in importance over time.

At some point, governments will take steps to rein in virtual currencies. However, until then, their existence is likely to spur inflation in the *fiat* currencies in which most prices are measured. That's bad for high-quality government bonds, but potentially good for stocks.

The implications for gold are mixed. On the one hand, if the growth of virtual currencies translates into an increase in the global money supply and rising inflation, that is good for bullion. On the other hand, if people see bitcoin as a competitor to gold as a store of value, they may wish to hold less of the yellow metal.

The dollar could lose out from the proliferation of virtual currencies if central banks allocate some of their USD reserves into these new currencies. However, it is doubtful this will happen to any significant degree since most central banks are likely to see virtual currencies as unwanted competitors to their own monies. In the meantime, stronger global demand growth could put disproportionately more upward pressure on U.S. inflation, given that the U.S. is closer to full employment than most economies. This could cause the Fed to raise rates more aggressively than it otherwise would, leading to a firmer dollar.

Peter Berezin, Chief Global Strategist

Global Investment Strategy

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Strategy & Market Trends*

	EQUITY PRICES / WORLD BENCHMARKS**	BOND YIELDS	SHORT RATES	CURRENCY VS. US\$
U.S.	DOWN	UP	UP	
CANADA	UP	UP	UP	UP
JAPAN	UP	FLAT	FLAT	DOWN
AUSTRALIA	UP	UP	UP	FLAT
U.K.	FLAT	UP	UP	FLAT
EURO AREA	UP	UP	FLAT	DOWN
EMERGING ASIA	FLAT	FLAT	FLAT	DOWN
LATIN AMERICA	FLAT	FLAT	FLAT	DOWN

* EXPECTATIONS FOR THE COMING 12 MONTHS.

**EQUITY PRICES RELATIVE TO WORLD BENCHMARK EXPRESSED IN LOCAL CURRENCIES.

NOTE: ITALICIZED AND BOLDDED TEXT INDICATES A CHANGE IN THE VIEW.



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Tactical Trades

The purpose of this section is to provide investment ideas independent of our asset allocation model or direct market forecasts. Once recommended, we will monitor the investment recommendation until we close it out.

TRADE	INCEPTION LEVEL	INITIATION DATE	RETURN-TO-DATE	STOP	COMMENTS
LONG BRENT OIL DEC 2017 FUTURES	49.33	MAY 4/17	11.5%	42.0%	
SHORT FED FUNDS DEC 2018 FUTURES	98.65	SEP 7/17	12 BPS	-25 BPS	
LONG SWEDISH KRONA / SHORT SWISS FRANCO	0.11568	JUL 20/17	4.2%	0.108%	

NOTE: STOPS ARE BASED ON DAILY CLOSING LEVELS. PLEASE NOTE THAT ALL CURRENCY TRADE CALCULATIONS INCLUDE COST OF CARRY.

Strategic Recommendations

This table summarizes our longer-term strategic recommendations. Some of these positions may not necessarily be consistent with our "Tactical Trades."

POSITION	INCEPTION LEVEL	INITIATION DATE	RETURN-TO-DATE	CHANGE FROM PREVIOUS WEEK	COMMENTS
EQUITY RECOMMENDATIONS					
LONG CHINA H-SHARE INDEX / SHORT EM EQUITIES ¹	100	FEB 23/17	-7.4%	-0.5%	
LONG EUROPE AND JAPAN / SHORT U.S. EQUITIES ²	100	FEB 23/17	0.5%	1.0%	
FIXED INCOME RECOMMENDATIONS					
SHORT JAPAN 20-YEAR / LONG JAPAN 5-YEAR GOVERNMENT BOND	100.00	AUG 24/17	0.1%	0.1%	
SHORT U.S. 30-YEAR GOVERNMENT BOND	100	JUN 29/17	-1.4%	2.3%	
LONG JAPANESE 10-YEAR CPI SWAP	22 BPS	MAR 31/16	11 BPS	-2 BPS	
LONG GERMAN 10-YEAR CPI SWAP	151 BPS	FEB 27/15	27 BPS	2 BPS	
CURRENCY RECOMMENDATIONS					
SHORT EURO / LONG BRITISH POUND	0.9033	AUG 3/17	1.5%	3.2%	
SHORT EURO / LONG RUSSIAN RUBLE	68.65	JUL 6/17	2.0%	0.0%	
SHORT EURO / LONG CANADIAN DOLLAR	1.5132	MAY 18/17	4.4%	0.4%	
LONG 2-YEAR U.S. DOLLAR / SAUDI RIYAL FORWARD CONTRACT	3.89	DEC 10/15	-2.1%	-0.1%	
LONG U.S. DOLLAR (DXY INDEX) ³	86.92	OCT 31/14	6.0%	0.8%	
LONG AUSTRALIAN DOLLAR / SHORT NEW ZEALAND DOLLAR	1.08	APR 25/14	0.2%	-0.5%	

¹ CURRENCY UNHEDGED; THE CORRESPONDING ETFs FOR THIS TRADE ARE THE HANG SENG INVESTMENT INDEX FUNDS SERIES: H-SHARE INDEX ETF (2828 HK), AND THE ISHARES MSCI EMERGING MARKETS ETF (EEM US). THE HANG SENG CHINA ENTERPRISE INDEX COMPRISES OF CHINA H-SHARES (CHINESE STOCKS AVAILABLE TO INTERNATIONAL INVESTORS) CURRENTLY TRADING ON THE HONG KONG STOCK EXCHANGE.

² EQUALLY-WEIGHTED BASKET. HEDGE CURRENCY EXPOSURE.

³ PERFORMANCE EXCLUDES A CUMULATIVE CARRY OF 1.5%.

NOTE: RETURNS RELATIVE TO BENCHMARK. MSCI WORLD FOR EQUITY RECOMMENDATIONS UNLESS OTHERWISE SPECIFIED. CUSTOM BENCHMARK FOR FIXED-INCOME RECOMMENDATIONS BASED ON GDP-WEIGHTED G10 GOVERNMENT BOND PERFORMANCE.

Trades Closed In 2015 - 2017

TRADE	INCEPTION LEVEL	INITIATION DATE	CLOSING DATE	REALIZED P&L	TYPE OF TRADE
SHORT GOLD	1225	DEC 10/14	JAN 23/15	-5.0%	TACTICAL
LONG S&P 500 / SHORT WTI	100	OCT 2013	FEB 6/15	126.5%	STRATEGIC
LONG GERMAN 10-YEAR BUNDS / SHORT JAPANESE 10-YEAR JGBs	100	JUL 2013	FEB 27/15	13.5%	STRATEGIC
LONG GREEK STOCKS	716.38	JAN 30/15	MAR 9/15	15.0%	TACTICAL
LONG GOLD	1235	FEB 6/15	MAR 9/15	-5.0%	TACTICAL
LONG U.S. DOLLAR / SHORT JAPANESE YEN	111.94	OCT 31/14	APR 10/15	7.5%	TACTICAL
LONG INDIAN STOCKS / SHORT INDONESIA STOCKS	5.29	OCT 24/14	APR 24/15	-5.0%	TACTICAL
UNDERWEIGHT COMMODITY-MARKET EQUITIES	100	NOV 22/13	MAY 8/15	19.2%	STRATEGIC
LONG CRB METALS INDEX / SHORT WTI CRUDE OIL	100	MAY 08/15	JUN 05/15	-5.0%	TACTICAL
LONG S&P DIVIDEND ARISTOCRATS / SHORT NASDAQ	0.3370	OCT 24/14	JUN 05/15	-5.0%	TACTICAL
LONG GLOBAL CYCLICALS / SHORT GLOBAL DEFENSIVES*	100	MAY 01/15	JUL 3/15	-5.0%	TACTICAL
LONG CHINA H-SHARE INDEX**	11922.56	MAY 23/14	JUL 3/15	50.0%	TACTICAL
SHORT CHINA A-SHARE INDEX / LONG CHINA H-SHARE INDEX	100	JUN 06/15	JUL 3/15	26.4%	STRATEGIC
LONG ITALIAN 10-YEAR GOV'T BONDS	5.878%	AUG 10/12	JUL 17/15	30.5%	STRATEGIC
LONG EURO AREA BANK STOCKS	50.12	JAN 16/15	SEP 24/15	5.9%	TACTICAL
LONG 30-YEAR U.S. TREASURYS / SHORT S&P 500	100	JUN 12/15	OCT 02/15	17.9%	TACTICAL
LONG 12-MONTH NDF USD/CNY	6.4025	MAR 06/15	OCT 02/15	2.5%	TACTICAL
LONG 2.1 UNIT OF U.S. BARCLAYS HIGH YIELD CORPORATE BOND INDEX / SHORT ONE UNIT OF S&P 500	100	OCT 22/15	NOV 26/15	-5.0%	TACTICAL
SHORT NASDAQ 100 MAR 2016 FUTURES	4,692.50	NOV 06/15	JAN 20/16	16.2%	TACTICAL
LONG CHINESE A-SHARES AND H-SHARES	100	JUL 01/15	MAY 19/16	-27.0%	STRATEGIC
SHORT EURO / LONG JAPANESE YEN	139.15	JUN 01/15	JUN 16/16	19.4%	STRATEGIC
SHORT EUROPEAN EQUITIES (U.S. DOLLAR TERMS)	100	JUN 09/16	JUN 24/16	8.2%	TACTICAL
LONG U.S. 30-YEAR / SHORT U.S. 10-YEAR GOV'T BONDS	96 BPS	FEB 07/14	JUL 08/16	22.5%	STRATEGIC
SHORT BRITISH POUND / LONG SWEDISH KRONA	13.16	NOV 12/15	AUG 11/16	19.1%	TACTICAL
LONG 10-YEAR U.S. TREASURYS / SHORT 10-YEAR GERMAN BUNDS	100	AUG 15/14	OCT 27/16	18.5%	TACTICAL
LONG SPANISH 10-YEAR GOV'T BONDS / SHORT ITALIAN 10-YEAR GOV'T BONDS	16 BPS	OCT 15/15	DEC 8/16	6.2%	TACTICAL
LONG CHINESE BANK EQUITIES	100	MAY 19/16	JAN 19/17	32.3%	STRATEGIC
SHORT U.S. DOLLAR / LONG RUSSIAN RUBLE	64.59	NOV 19/15	JAN 19/17	20.1%	STRATEGIC
SHORT NASDAQ 100 MAR 2017 FUTURES	4820.50	AUG 23/16	FEB 23/17	-10.0%	TACTICAL
SHORT U.S. / LONG BASKET OF EURO AREA, JAPANESE, AND CHINESE EQUITIES***	100	FEB 6/15	FEB 23/17	-10.0%	STRATEGIC
SHORT S&P 500	2389.52	MAY 4/17	JUN 15/17	-2.0%	TACTICAL
SHORT EURO / LONG U.S. DOLLAR	1.1205	MAY 25/17	JUN 29/17	-1.6%	TACTICAL
SHORT JAPANESE, GERMAN AND SWISS 10-YEAR GOV'T BONDS	100	JUL 5/16	JUN 29/17	5.3%	STRATEGIC
SHORT FED FUNDS JAN 2018 FUTURES	98.79	APR 20/17	JUL 6/17	11 BPS	TACTICAL
OVERWEIGHT AUSTRALIA (ADD CURRENCY HEDGE)****	100	JAN 23/09	JUL 20/17	59.5%	STRATEGIC
OVERWEIGHT NEW ZEALAND (ADD CURRENCY HEDGE)****	100	JAN 23/09	JUL 20/17	74.2%	STRATEGIC
LONG BRITISH POUND / SHORT JAPANESE YEN	132.01	AUG 11/16	AUG 3/17	9.9%	TACTICAL
SHORT FED FUNDS JUN 2018 FUTURES	98.55	JUL 6/17	SEP 7/17	-18 BPS	TACTICAL
AVERAGE RETURN	-	-	-	15.0%	-
CUMULATIVE RETURN	-	-	-	540.8%	-

* CYCLICALS INCLUDE MATERIALS, ENERGY, INDUSTRIALS, AND CONSUMER DISCRETIONARY; DEFENSIVES INCLUDE TELECOM, CONSUMER STAPLES, AND HEALTH CARE.

** LONG CHINESE BANKS FROM MAY 23, 2014 UNTIL OCTOBER 17, 2014; LONG CHINESE A SHARES FROM OCTOBER 17, 2014 TO FEBRUARY 13, 2015.

*** EQUALLY-WEIGHTED BASKET. HEDGE CURRENCY EXPOSURE.

**** CURRENCY HEDGE ADDED AS OF SEPTEMBER 26, 2014.

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