Payden&Rygel

POINT of VIEW

JANUARY-FEBRUARY 2014

Our Perspective on Issues Affecting Global Financial Markets

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Bitcoin: The Future of Money

Money need not be paper in the pocket. Money needs neither government nor regulatory approval. Money is more an adjective than a noun, a way to make trade easier, and holds no intrinsic value.

From the "electrum lumps of Lydia" which passed from bag to bag (circa 650 BCE), shells, gold, and specially-inked paper have all functioned as money.[1] In our century of screen, itself a product of evolving ingenuity, money has kept lockstep. The latest innovation is the digital currency, Bitcoin. Critics howl that a privately-issued digital money could never replace the mighty US dollar (or any other government-issued currency backed by an aircraft carrier fleet). But a quick tour through Bitcoin's place in a theory of money offers investors a glimpse into the future.

> « MONEY IS MORE AN ADJECTIVE THAN A NOUN, A WAY TO MAKE TRADE EASIER, AND HOLDS NO INTRINSIC VALUE. »

SCROOGE AND MEDIA OF EXCHANGE

What counts as currency, if not the government stamp of approval? Three features distinguish those things which count as currencies: they trade easily, hold value, and can be used to price a wide array of goods and services.

First, money is a liquid media of exchange. None, except Scrooge, hold money for money's sake; we hold dollars, gold, or Bitcoin because we plan to exchange such currency in the future for the other goods and services we desire. Throughout history, humans used the most marketable commodity available as money. Marketability arose from demand for use, divisibility without loss of value and transportability over large distances.[2] In short, consumers prefer to exchange commodities that make trade easier.

Oxen, for example, make worse money than coined gold, for the simple reason that they are not easily exchanged (and oxen tend to expire). In the case of metal money, the advent of coinage improved liquidity and facilitated its wide adoption. In turn, paper banknotes followed by check clearing, further reduced transaction costs and facilitated more exchange.

Indeed, history teaches that government approval needn't always guarantee properly working money. Consider that in 1830s, before the advent of Federal Reserve Notes (today's dollars), there were "approximately 1,500 different banks' notes traded in the US economy."[3] These banknotes were currencies issued by different banks, which the public chose to hold. In Scotland, too, during the eighteenth and part of the nineteenth century, the country "had no monetary policy, no central bank, and very few legal restrictions on the banking industry. Entry was open and the right of note issue universal."[4]

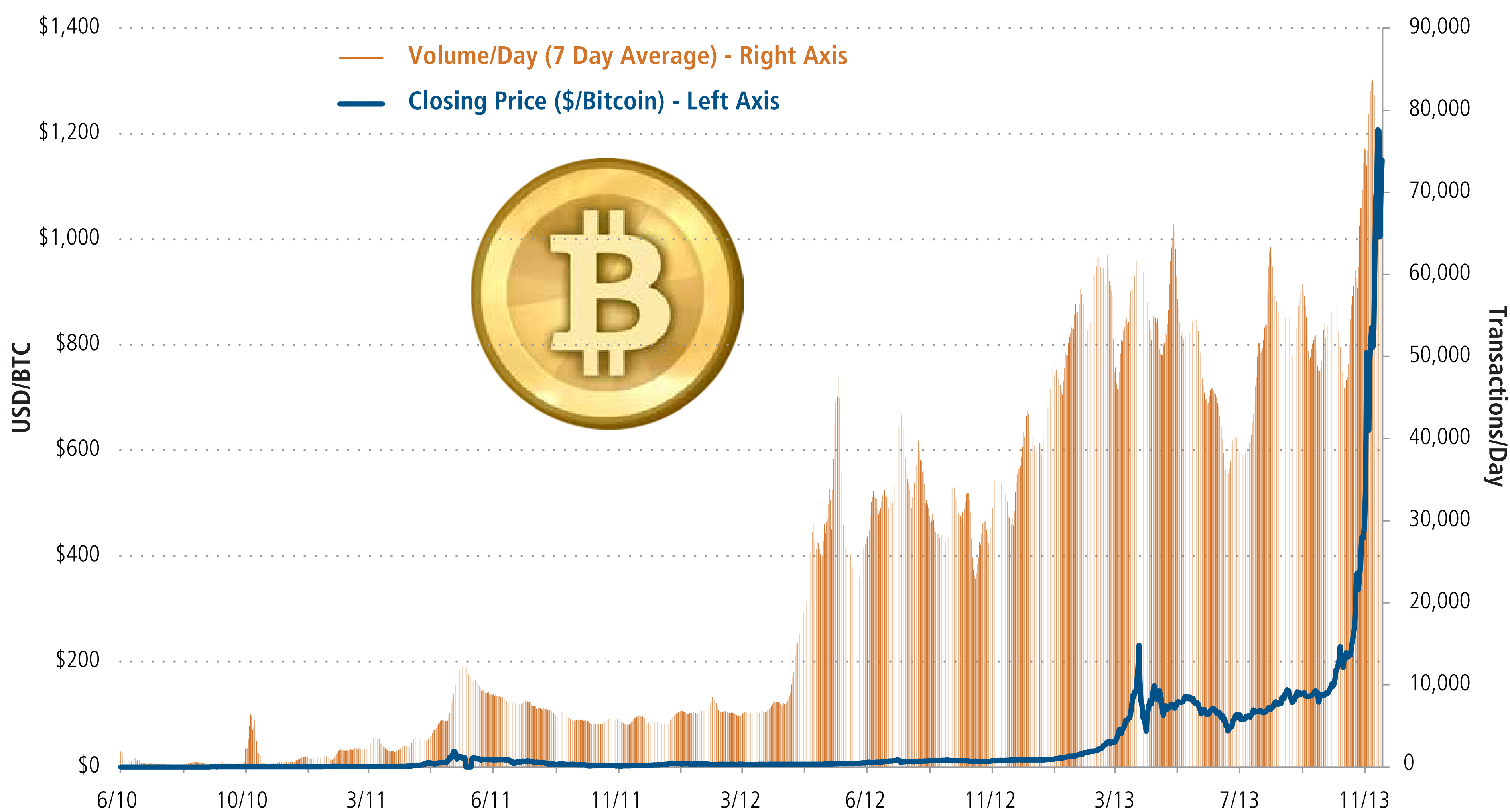
In the internet landscape, will experiments like Bitcoin ascend to the status of currency? Unlike present digital payment systems (e.g., Paypal), which require a third party to authenticate and track transactions, Bitcoin is a direct, peer-to-peer exchange network: "Bitcoin users buy and sell the currency among themselves without any kind of intermediation."[5] Not only does this mean that third parties need not be involved, it also drives down the cost of transacting in Bitcoin (**see Did You Know? on page 3**).

> « NONE, EXCEPT SCROOGE, HOLD MONEY FOR MONEY'S SAKE; WE HOLD DOLLARS, GOLD, OR BITCOIN BECAUSE WE PLAN TO EXCHANGE SUCH CURRENCY IN THE FUTURE FOR THE OTHER GOODS AND SERVICES WE DESIRE. »

Rather than paying fees to Visa or Mastercard for a merchant account, small enterprising businesses might accept Bitcoin, on account of lower transaction costs. In fact, the Bitcoin Store, a consumer electronics e-tailer, sells the newest technology at lower prices due partially to cost savings on exchanges.[6]

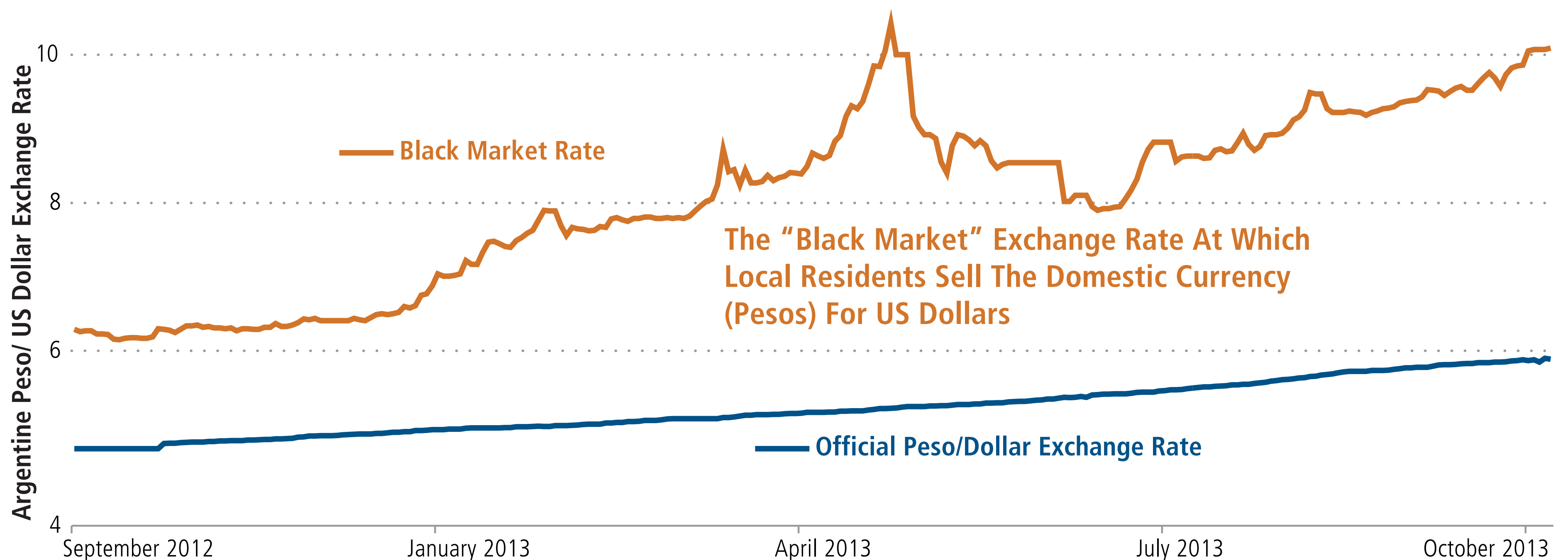
Bitcoin is durable, divisible, portable and secure: a medium of exchange par excellence. The more that paired parties mutually consent to using a cheaper medium of exchange, the more liquid such a medium becomes. Even if Bitcoin doesn't ultimately unseat the US dollar, lower transaction costs incentivize use.

fig. 1 TURN UP THE VOLUME AND THE PRICE OF BITCOIN



Source: Blockchain.info

fig. 2 OUTSIDE THE CIRCLE OF TRUST: WHEN PEOPLE NO LONGER WANT TO HOLD A CURRENCY, THEY'LL SEEK ALTERNATIVES ELSEWHERE



Source: La Nación

WHAT MONEY MUST HOLD

The second feature of money is as a store of value. In other words, collective agreement on the fact that this "thing" will hold its value over time is a prerequisite for any "money." On this point governmental action bears directly on currency. If a political authority requires payment of taxes in a certain form of money, the officially preferred store of value, those acting under such conditions typically prefer to transact in the publicly approved store of value. However, as witnessed in cases where public trust in official currencies erodes (**see Figure 2**), people prefer to use other forms of currency even if they are not officially accepted.

Take Bitcoin, for example. No embargo or dictum forces those holders of Bitcoin to continue holding the asset. Indeed they do so only under the assumption that others value Bitcoins enough to trade other goods and services. Or, take gift cards as another example. A grocery store that issues a gift card effectively issues a liability (or a promise to pay upon redemption) which people must freely want and hold.

Critics object, "Unlike gold, there is nothing of substance backing Bitcoin to assure its value." And certainly the prima facie value of the argument appears true: after all, who wouldn't want gold? Upon closer inspection, faith that one could exchange gold for other goods and services desired gives gold its value. When one hears nostalgic "goldbugs" wax apocalyptic about how gold retains its value in the face of change, the assumption is not so much that there is something intrinsically valuable about gold, but rather a belief that gold may be exchanged in the future more readily than other currencies for the goods and services desired.

To function as a store of value, the creator(s) of Bitcoin wrote open source (available to the public) code that determines the amount of "mineable" units over time (**see Figure 3 and Did You Know? on page 3**). As depicted, the "number of Bitcoins generated per block is set to decrease geometrically, with a 50% reduction every four years. The result is that the number of Bitcoins in existence will reach 21 million in around 2040," up from roughly 10 million Bitcoins today.[7] Hence, the supply of Bitcoin is both limited and known.

Some worry the limited quantity of Bitcoin may hinder its acceptance as a transactional currency (medium of exchange). Why? With the supply limited, the purchasing power of Bitcoin may rise and market participants may want to "hoard" Bitcoin more as a store of value rather than a form of currency. This occurred historically under paper money schemes. The unique feature of Bitcoin is that it is divisible to the eighth decimal place (called a "Satoshi" after the anonymous Bitcoin creator, thought to be a composite for a group of software developers). So, unlike discrete units of paper notes that can be hoarded, Bitcoin transactions occur just in smaller units, electronically. Deflation, then, does not necessarily thwart the progress of Bitcoin.

"THAT'LL BE TWO BITCOINS, PLEASE"

Finally, to be a bonafide currency, a given commodity (or internet good) must qualify as the unit of account: actors in the economy will want to quote commodities in terms of the currency. In theory, the better a currency's ability to store value, and the more liquid it is as a medium of exchange, the more likely it will be the unit of account.

Why is this such a hurdle? With the US dollar as the reserve currency of the world, it is the final unit of account for most international transactions.[8] In a telling example, "if a bank wants to convert [Venezuelan] bolivars into [Polish] zlotys, it will generally trade the bolivars for dollars, then the dollars for zlotys, rather than try to find someone wanting to make the reverse trade. [The dollar] is the currency many though by no means all international transactions are invoiced in. And to some extent people hold dollars or dollar-denominated assets because the dollar is more liquid than other currencies."[9]

To move more seamlessly between less liquid currencies, banks transact in dollars: the prices of the original and final currencies in the transaction (here the Venezuelan bolivars and the Polish zlotys) are quoted in dollars.

Final arrival for Bitcoin would take the shape of brokers quoting the price of dollars in Bitcoin—unlikely in the near future, but not impossible. After all, before World War I, international prices were quoted in British pounds. Don't be surprised if in the near future the inquiry arises at a local coffee shop, "Do you accept Bitcoin?"

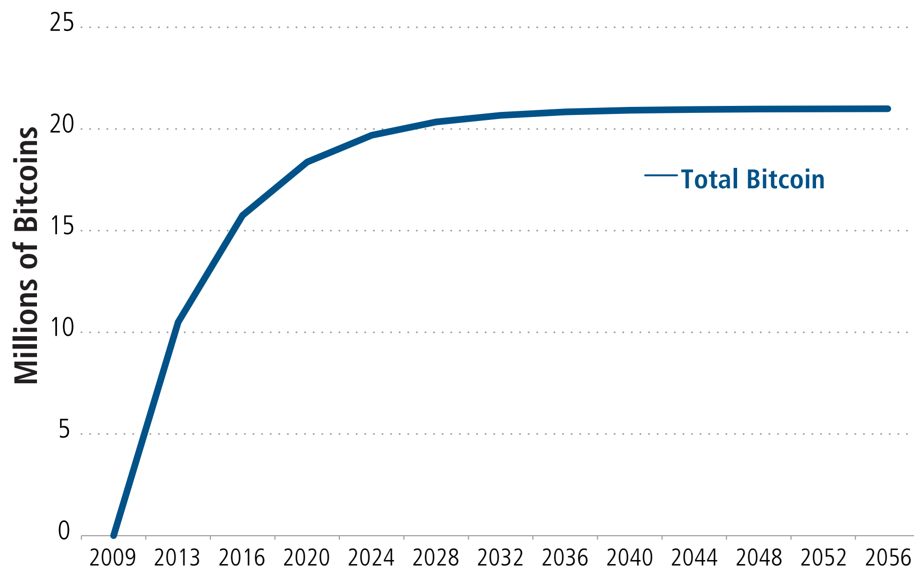
« EMBEDDED WITHIN THE NEW DIGITAL CURRENCY LAY IMPORTANT TECHNICAL AND MONETARY INVENTIONS. THE PUBLIC LEDGER USED BY BITCOIN TO AUTHENTICATE TRANSACTIONS, FOR EXAMPLE, MAY HAVE USE ELSEWHERE FOR DEPOSIT TRANSACTIONS, FOR ESCROW PROCESSES, AND EVEN STOCK TRADING. »

BITCOIN: ON THE ROAD TO FUTURE MONEY

In judging any prospective currency, the foregoing three characteristics—medium of exchange, store of value, and unit of account—make a good litmus test. Applied to Bitcoin, we see today's leading internet-based, digital currency fall short as a store of value (given its large price fluctuations) and as a unit of account (Bitcoin is quoted in dollars, never dollars in Bitcoin).

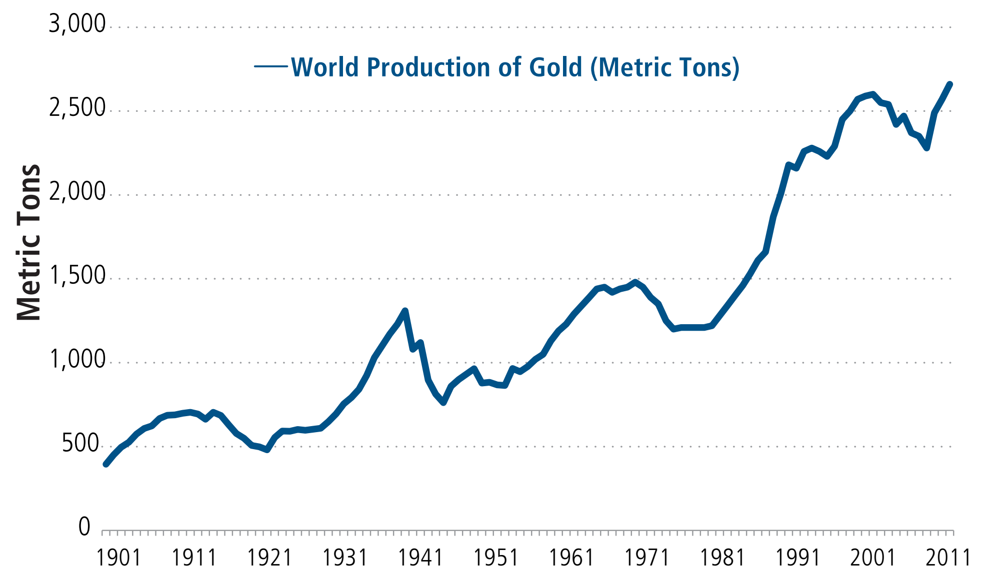
Yet even if Bitcoin fails, embedded within the new digital currency lay important technical and monetary inventions. The public ledger used by Bitcoin to authenticate transactions, for example, may have use well beyond Bitcoin (**see Did You Know?**). Just as in the early days of the Internet many failed to see all the uses for the underlying Internet protocol, a focus on Bitcoin's prospects as a "currency" may cause investors to miss a flourishing architecture built on the Bitcoin technology. Advances such as these, which make trading

fig. 3 TOTAL BITCOIN OVER TIME: PRODUCTION IS CONSISTENT, LIMITED, AND **KNOWN**



Source: en.bitcoin.it

TOTAL OF GOLD OVER TIME: PRODUCTION IS INCONSISTENT, LIMITED, **UNKNOWN**



Source: USGS

safer and more secure, make the prospects of digital currencies more socially valuable than simple stores for illegally-won money.

Issues remain for Bitcoin, but it exemplifies the movement of currency in the 21st century. We might bid farewell to the exclusivity of issuance characteristic of the 20th century and welcome a freer and looser regime of money where users and vendors exchange whichever currency most conveniences them. Certainly not a locus of decline, there is hope to be had in monetary innovation.

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DID YOU KNOW?

What is Bitcoin?

"Bitcoins" are not actual coins at all. They consist of bits and bytes rather than gold and silver. But they solve a similar problem. Indeed, history's merchants (think 18th century Britain) once fretted over the authenticity of metallic currency they received as payment. Reflection on the evolution of metallic money is instructive in revealing the ways monetary systems spontaneously organize to resolve transactional hangups.

Uniquely stamped banknotes or serialized coins achieved a great step on the way to authenticating payments. Recognizing that customers would willingly accept notes promising to pay gold, serialized banknotes issued by financial institutions made trading easier and safer. A merchant could always take the coins and banknotes to a bank to verify "authenticity."

In payments today, when we instruct our bank to send money, it verifies that we have sufficient digital credits in an account and clears the payment. In the US, this process may take up to 3 business days—a terribly slow and archaic system considering the ease of email. Other services like Western Union can be used to wire money around the world. But it's still expensive. And there is still a third-party (namely the banking system) involved--and often times that third party is closed on weekends. Is there an alternative solution?

It turns out cryptology, the art and science of sending secret messages, has an answer. In actual fact, Bitcoin is a way to send encrypted messages ("coins") on a person-to-person basis. Put another way, Bitcoin is a technology that allows you to send an encrypted message with money attached!

Here's how it works. The Bitcoin network consists of a publicly distributed ledger that documents ownership of all Bitcoins in existence. The ledger is called a block chain. A copy of this block chain is publicly available on every computer in the Bitcoin network.

When someone sends a Bitcoin to another person as payment, the recipient broadcasts a message to the global network. Bitcoin "miners" verify that each transaction is the transfer of an actual Bitcoin from one person to the other by checking their copy of the block chain. The term "mining" is both unfortunate and misleading as those "miners" are not miners at all but verifiers or auditors of the public ledger.

But not just anyone can be a miner (verify transactions). Miners compete with each other by solving a complex mathematical equation to prove that they did the work to verify the transaction. However, in return for performing the verification task, they receive newly-minted Bitcoins or a transaction fee (paid in Bitcoin). The computing resources required to conduct verification become higher as the Bitcoin network grows, slowing the growth in the supply of Bitcoins and keeping them relatively scarce.

In short, Bitcoin is less a currency and more a system for verifying person-to-person payments without the need for a third-party (other than the block chain "miners").

With that brief introduction, critics of Bitcoin who chalk up the digital currency's rise to elicit internet transactions should take note: the block chain ledger means that a public record of every Bitcoin exchange is available—hardly the ideal situation for "black market" transactors seeking anonymity. More importantly, transactions are verified by the community, rather than relying on an expensive third-party, like a bank, clearing house or government entity. Such auditing helps prevent fraud, counterfeiting and currency debasement better and more cheaply than any previous method of payment settlement.

Conceptually, we can take the Bitcoin idea one step further: imagine an online accountant's ledger sheet available to all for viewing. The ledger could be used for tracking ownership of anything: property titles, futures, equity shares, royalties, etc. The ledger would leave a public trail of ownership, tracked in real-time and verified by a distributed network.

In the end, whether or not Bitcoin becomes a currency that rivals the dollar may not matter. The technology behind it solves important problems faced by currency and payment systems. The Bitcoin platform could therefore serve as a wonderful springboard for future monetary innovations.

Yellin' About Yellen: *The Next Revolution in Monetary Policy*

Janet Yellen is set to become the most powerful woman in the world. Of course, Maggie Thatcher and Angela Merkel have blazed a trail, but Ms. Yellen will ascend to the helm of the world's most important central bank where her every word will command the undivided attention of politicians and financial market participants.

Inquiring minds want to know: what does Yellen portend for monetary policy and the markets? Fed Chair Ben Bernanke led us into the "zero lower bound", will Janet Yellen lead us out? To answer these questions and more, let's take a few steps back. Once we see the road behind us, perhaps we can see better what lies ahead.

THE HISTORY

When Janet Yellen first joined the Fed in the late 1970s, secrecy, not transparency, ruled the marbled halls of central banking. A wink and a nudge coupled with the obscure mutterings of the central bank chief often signalled shifts in monetary policy. Grizzled bond market veterans may even recall the excitement surrounding Thursday afternoon's release of the US money supply report, from which traders would glean information on the shifting winds of monetary policy.

Over time the conduct of monetary policy evolved. In 1994, the Fed began releasing its target for the federal funds rate, the overnight rate which served as the key tool for monetary policy. The Fed also began providing more details on policymakers' thinking in post-meeting policy statements.

« WHEN JANET YELLEN FIRST JOINED THE FED IN THE LATE 1970s, SECRECY, NOT TRANSPARENCY, RULED THE MARBLED HALLS OF CENTRAL BANKING. »

The evolution in central bank transparency is no accident. As Ms. Yellen herself points out, scholars think better central bank communication drives better monetary policy. Better communication does not mean better technology, or a wish to see her words "posted, tweeted and blogged about" as the path to a better economy. Scholars believe that monetary policy affects employment, incomes, and inflation through its influence on the public's expectations about future policy.

Mark Carney, now ensconced at the Bank of England and the former Bank of Canada chief, argued that the reason clear communication, or as he phrased it, "guidance," worked for Canada was because it "was exceptional, explicit and made a "clear, simple statement directly to Canadians." One could well insert Americans, Britons, or Europeans into that sentence to summarize the revolution in monetary policy.

THAT AWKWARD TERM: FORWARD GUIDANCE

As the Yellen era begins, we already have a fairly long history of "guidance" from which to draw (**see Figure 1**). After a trial run in 2003, the FOMC gave forward guidance in late 2008 that the Fed funds rate would be low for "some time." Soon after realizing the depth of the crisis, in early 2009, guidance on future policy interest rates changed to indicate that rates would remain low for "an extended period." But the vague communique was neither explicit nor clear; in fact, the pronouncement left market participants wondering, "What exactly do they mean by an 'extended period'?"

The initial lack of clarity gave way to the next step in the evolution of monetary policy. In the summer of 2011, with the unemployment rate still high, FOMC moved to a "calendar-based" approach stating, "economic conditions…are likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013." Yet again, market participants were left wondering what the FOMC wanted to see from the economy by that date.

« AS MS. YELLEN HERSELF POINTS OUT, SCHOLARS THINK BETTER CENTRAL BANK COMMUNICATION DRIVES BETTER MONETARY POLICY. »

Continued confusion under the date-based approach catalyzed yet another shift in guidance. Economic expectations finally became explicit: the fed funds rate would remain at zero until the unemployment rate fell below 6.5%, as long as inflation was not expected to exceed 2.5% over the next 1-2 years. Immediately investors began speculation as to when such an economic scenar-

fig. 1 THE LONG HISTORY OF FORWARD GUIDANCE

Date	Federal funds rate (%)	FOMC forward guidance language
Pre-crisis Experience		
8/12/2003	1	"Policy accommodation can be maintained for a considerable period"
1/28/2004	1	"The Committee believes that it can be patient in removing its policy accommodation"
5/4/2004	1	"Policy accommodation can be removed at a pace that is likely to be measured"
6/30/2004	1.25	"Policy accommodation can be removed at a pace that is likely to be measured"
Crisis and post-crisis Experience		
12/16/2008	0-0.25	"Weak economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time"
3/18/2009	0-0.25	"Economic conditions are likely to warrant exceptionally low levels of the federal funds rate for an extended period"
8/9/2011	0-0.25	"Economic conditions…are likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013"
1/25/12	0-0.25	"Economic conditions…are likely to warrant exceptionally low levels for the federal funds rate at least through late 2014"
9/13/2012	0-0.25	"A highly accommodative stance of monetary policy will remain appropriate for a considerable time after the economic recovery strengthens…exceptionally low levels for the federal funds rate are likely to be warranted at least through mid-2015"
12/12/2012	0-0.25	"At least as long as the unemployment rate remains above 6½ percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored"
6/19/2013	0-0.25	"It would be appropriate to moderate the monthly pace of purchases later this year...we would continue to reduce the pace of purchases in measured steps through the first half of next year, ending purchases around midyear...when asset purchases ultimately come to an end, the unemployment rate would likely be in the vicinity of 7 percent, with solid economic growth supporting further job gains"

Source: St. Louis Federal Reserve Bank

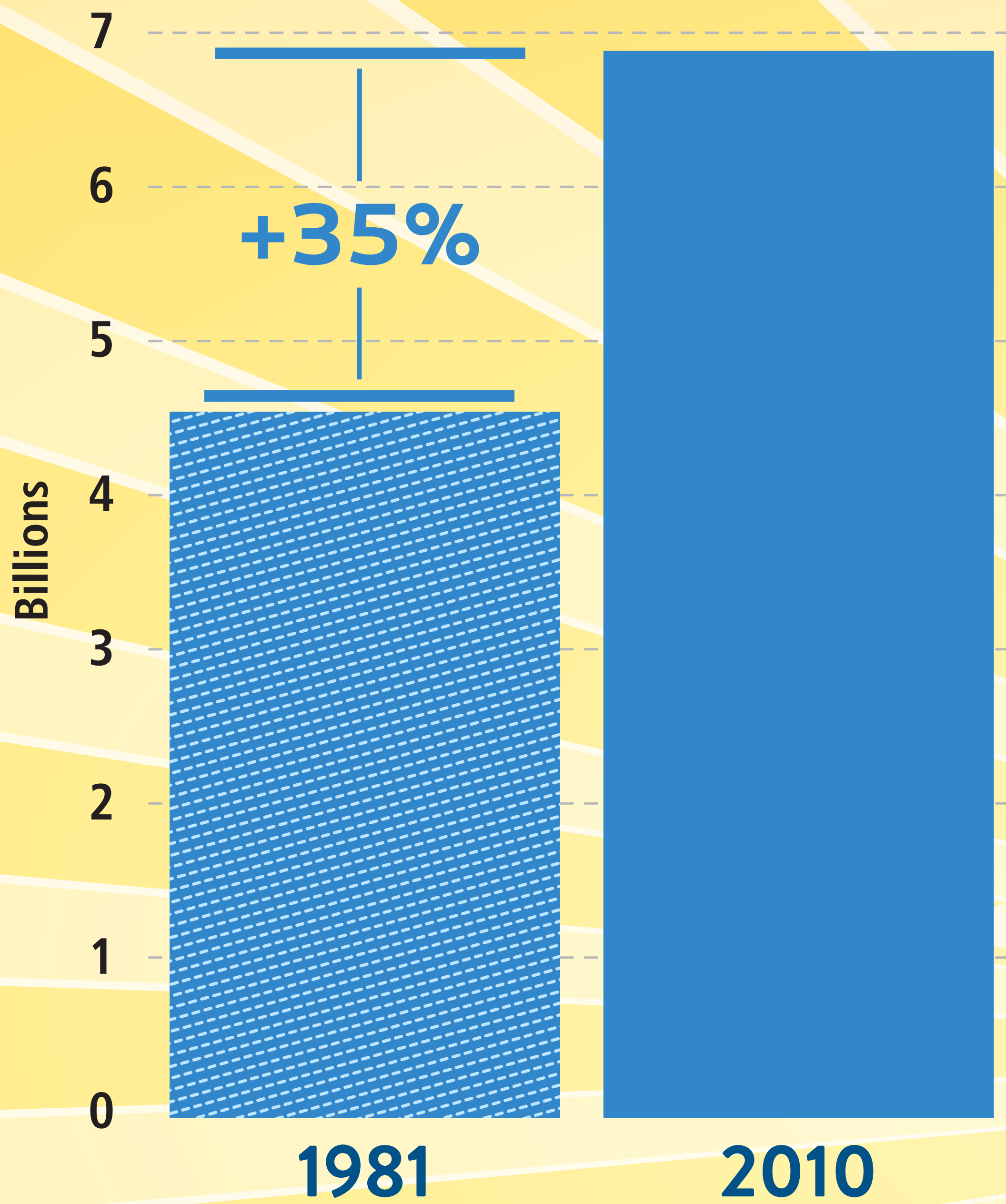
Continued on page 7

GETTING BETTER

Across the world, the promise of better living standards appears now in doubt. Especially in the developed world, concerns over a declining middle class, income inequality, wage polarization, and secular stagnation emphasize how the rich get richer, while the poor get poorer.

Seen from a different perspective, though, n
of living continue to boom: things are getti
the world population has exploded, rising
billion today. But, even as more people inh
living in extreme poverty (on less than $1.

WORLD POPULATION



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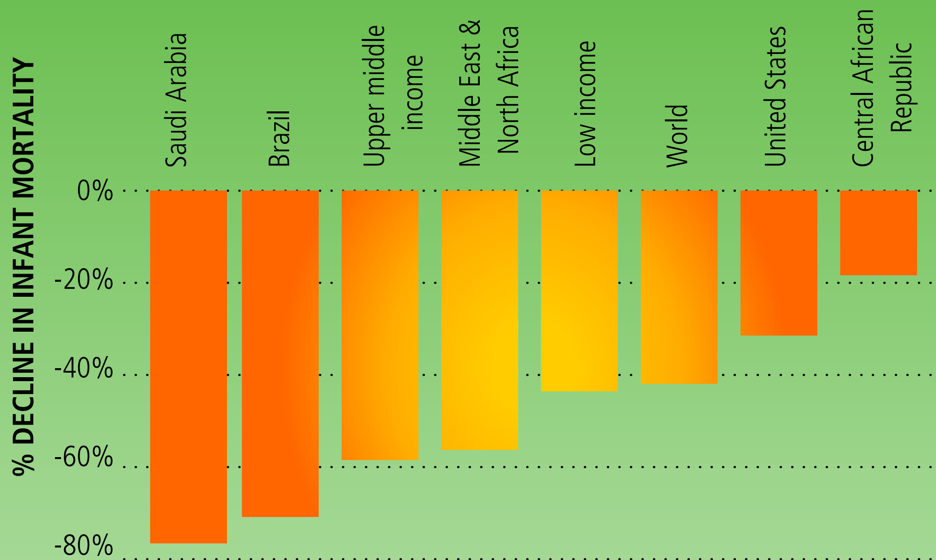
THE MOST BASIC INDICATOR OF WELL-BEING SHOWS REMARKABLE IMPROVEMENT: INFANT MORTALITY



Birthing conditions and the health of infants rose markedly over the past 20 years. World infant mortality fell by 44% over the period with standouts such as Saudi Arabia (infant mortality down -81%), Turkey (-78%), the Czech Republic (-77%) and Brazil (-75%) leading the way.

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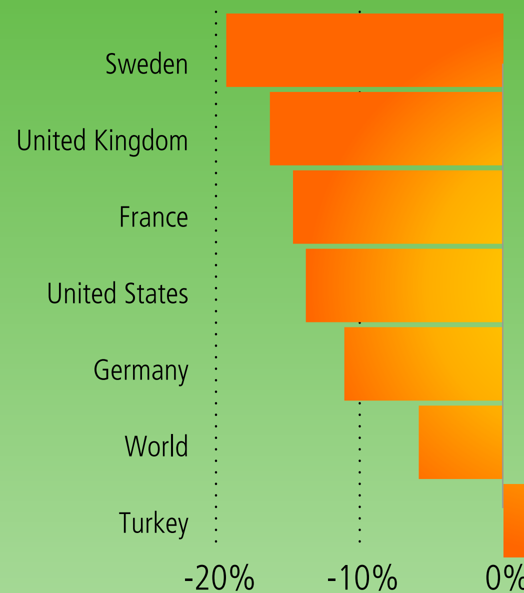

Despite the developed world's elevated level
point to an important structural shift; the a
produced by developed countries is falling. T
CO_2 emissions in the first decade of the 21s

R ALL THE TIME

naterial improvements in standards
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from 4.5 billion people to over 7
abit the globe, the percent of those
.25 per day) has dropped rapidly.

Where once more than 50% of the world lived in extreme poverty, by 2010, only 21% of earth's inhabitants faced such a circumstance. In spite of natural growing pains, the world's economic development will continue to raise wealth and health across all segments of the population.

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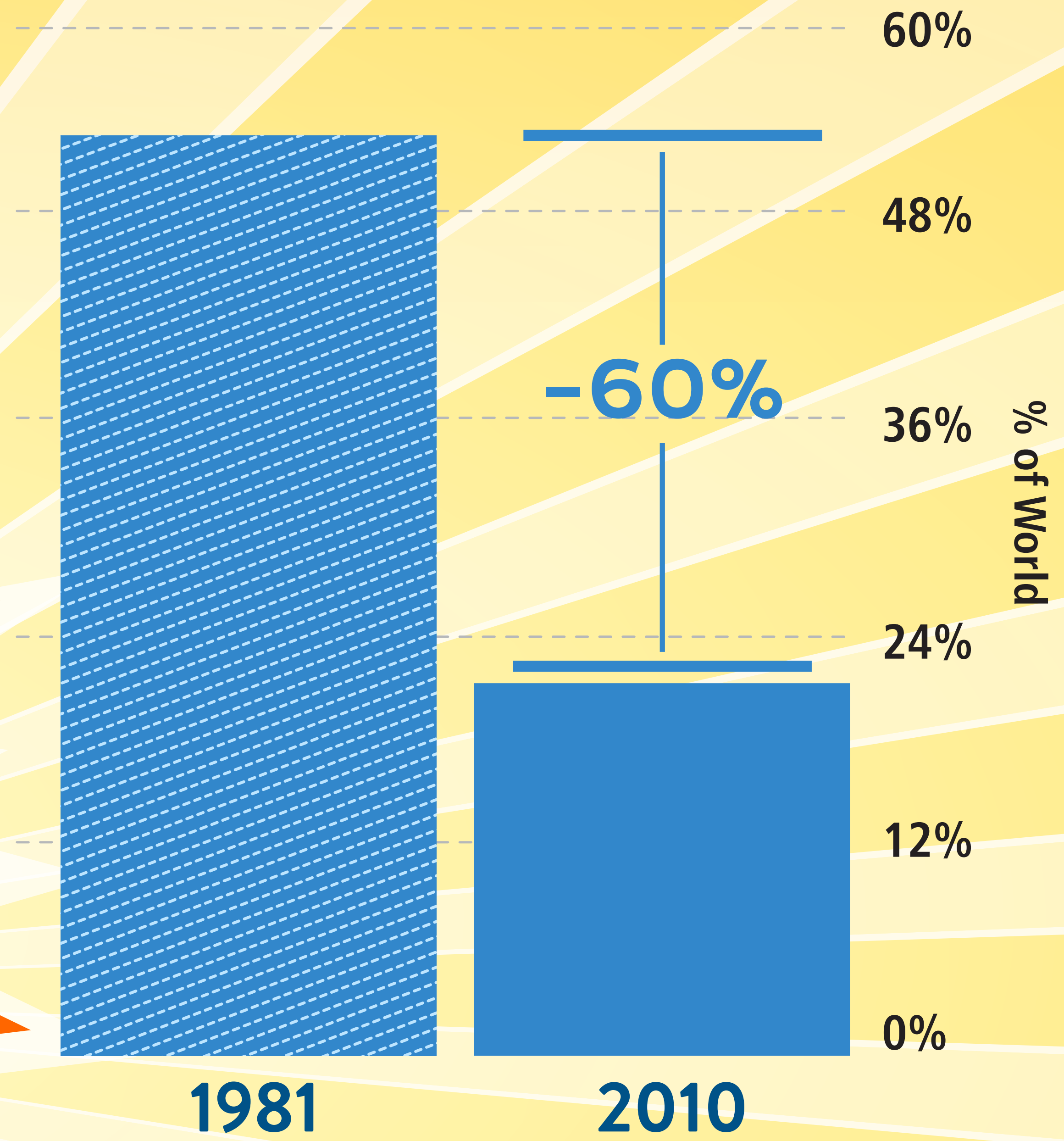

EMISSIONS
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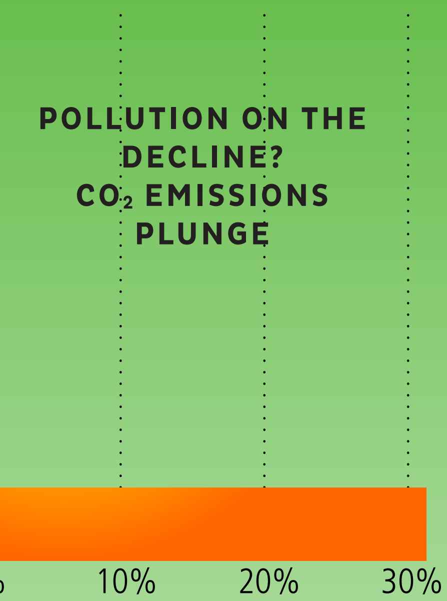
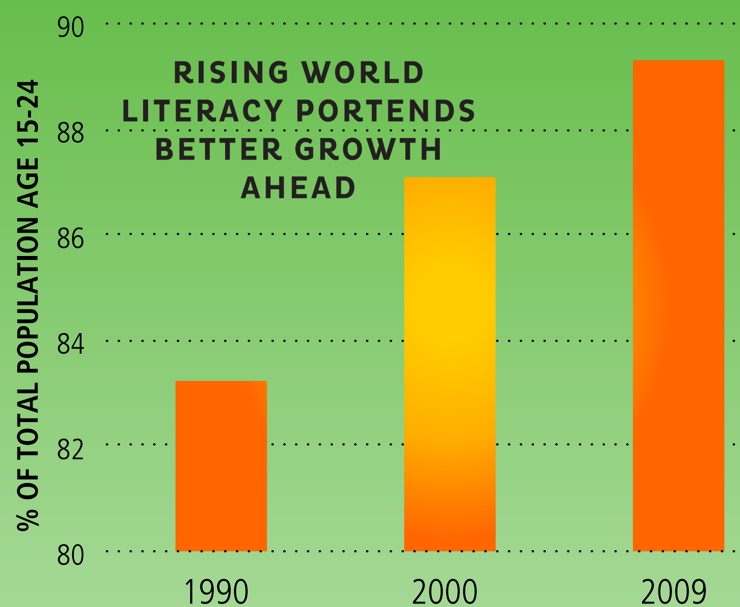


of carbon emissions, recent data
mount of greenhouses gasses
The US alone saw a 14% drop in
t century.

LITERACY RATE



As material conditions improve around the world, the accessibility of education has increased as well. In the past 20 years, world literacy rates for young adults have increased 7%. Now, 9 of every 10 people aged 15-24 in the world are literate. In Bangladesh, literacy rates since the 1980s have increased by more than 110%!

Sources: World Bank, United Nations, UNESCO, OECD

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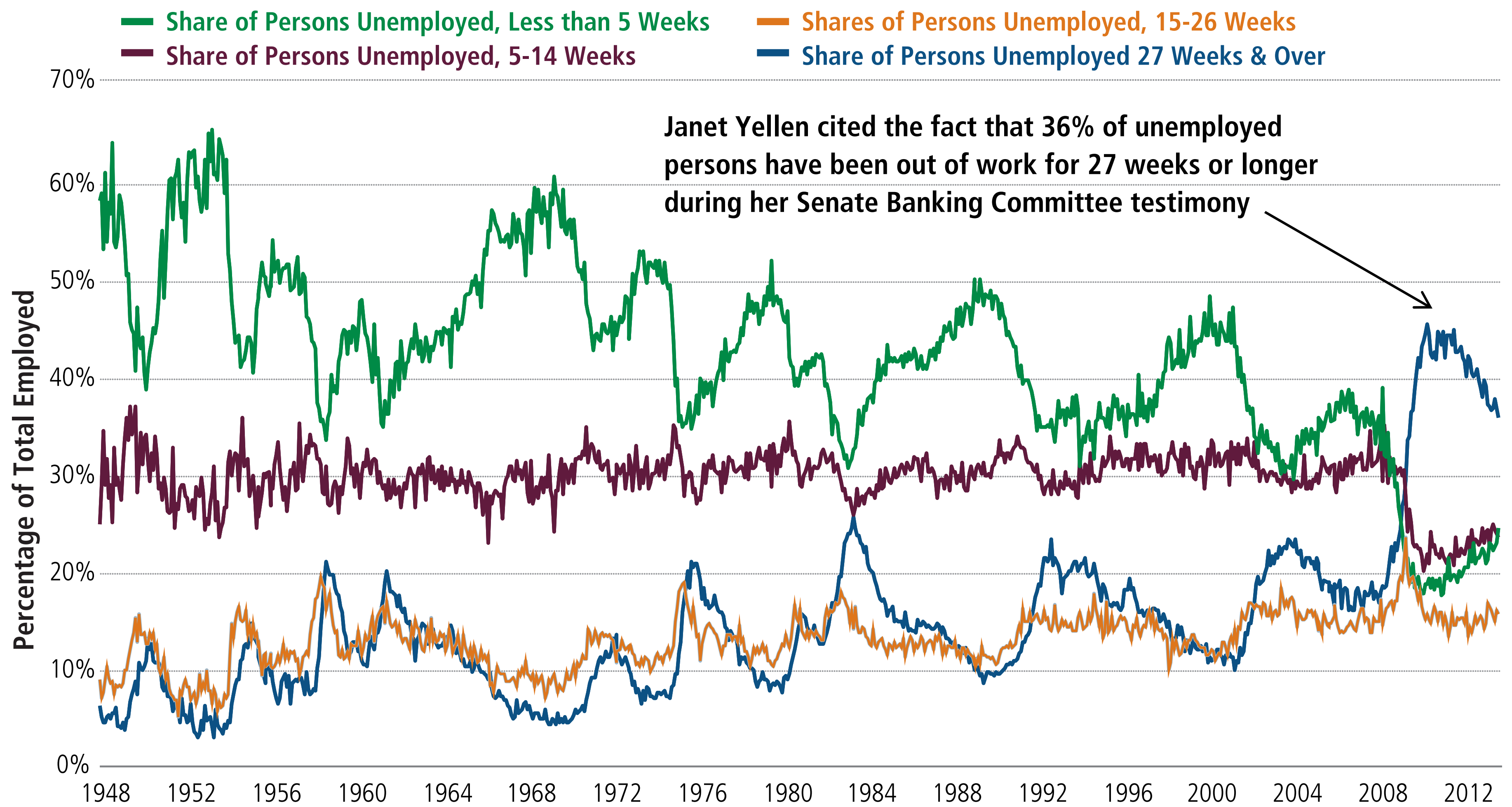
fig.2 THE CHART JANET YELLEN FEARS MOST: LONG-TERM UNEMPLOYED



io might occur, collectively concluding the 6.5% "threshold" was at least two years away.

Into this storm of projection and prediction, Yellen will descend. Under the Yellen regime, the central bank will endeavor to shape expectations about the future path of the federal funds rate through further guidance. As of this writing, the unemployment rate is at 6.7%, a whisker away from 6.5%. On the other hand, inflation is well below the FOMC's target, at 1.1% year-over-year. Are we at the end of the road? How will the Fed respond to persistently low inflation? How does the Fed view the 6.7% level on the unemployment rate?

PATH AHEAD: TAPERING AND TALKING

Despite some signs of improvement and a hint of optimism about the US economy's prospects, the labor market is far from healthy. Yellen points to the fact that approximately 36% of those unemployed have been unemployed for six months or longer, a level unprecedented in the post-war era (**see Figure 2**). For the new central bank chief "there is more work to be done." Even as asset purchases wane, Yellen will stress the Fed's "balanced approach" to monetary policy laid out by the forward guidance; the FOMC is willing to accept (nay, welcome!) up to 2.5% inflation for a period in order to "catch up" for the period of below target inflation, particularly if anything can be done to boost the employment situation. Until then, target interest rates will remain low.

Not only that, stronger forward guidance could come in the form of a lower unemployment rate threshold (closer to 6.0%, for example) or a switch to a broader metric of unemployment. Or, in addition, the FOMC could institute an inflation floor, promising to keep rates low until inflation reaches the 2.0% target even if the unemployment rate falls to 6.0%.

> « THE GUIDANCE IS MUDDLED BUT THE MESSAGE IS CLEAR: FORWARD GUIDANCE IS STILL A WORK IN PROGRESS! »

Improvements to the Fed's communications about the future path of the federal funds rates will continue. As recently as the December FOMC meeting, policymakers softened the threshold for the unemployment rate, suggesting that zero fed funds rate would remain until the actual unemployment rate was "well past" 6.5%. The guidance is muddled but the message is clear: forward guidance is still a work in progress!

Each step along the evolving path of forward guidance aims to reduce uncertainty by offering clearer distinctions about the future path of interest rates. Strengthening and clarifying the economic thresholds would be the next logical step along that path. If markets respond, pricing in lower interest rates for longer, the economy enjoys the stimulus today.

> « AMONG THE MANY FED DOCUMENTS RELEASED TO THE PUBLIC, INVESTORS SHOULD WATCH THE "STATEMENT OF LONGER-RUN GOALS AND MONETARY POLICY STRATEGY" VERY CAREFULLY. »

UNDER YELLEN, WE MAY EVENTUALLY SEE "LIFTOFF"

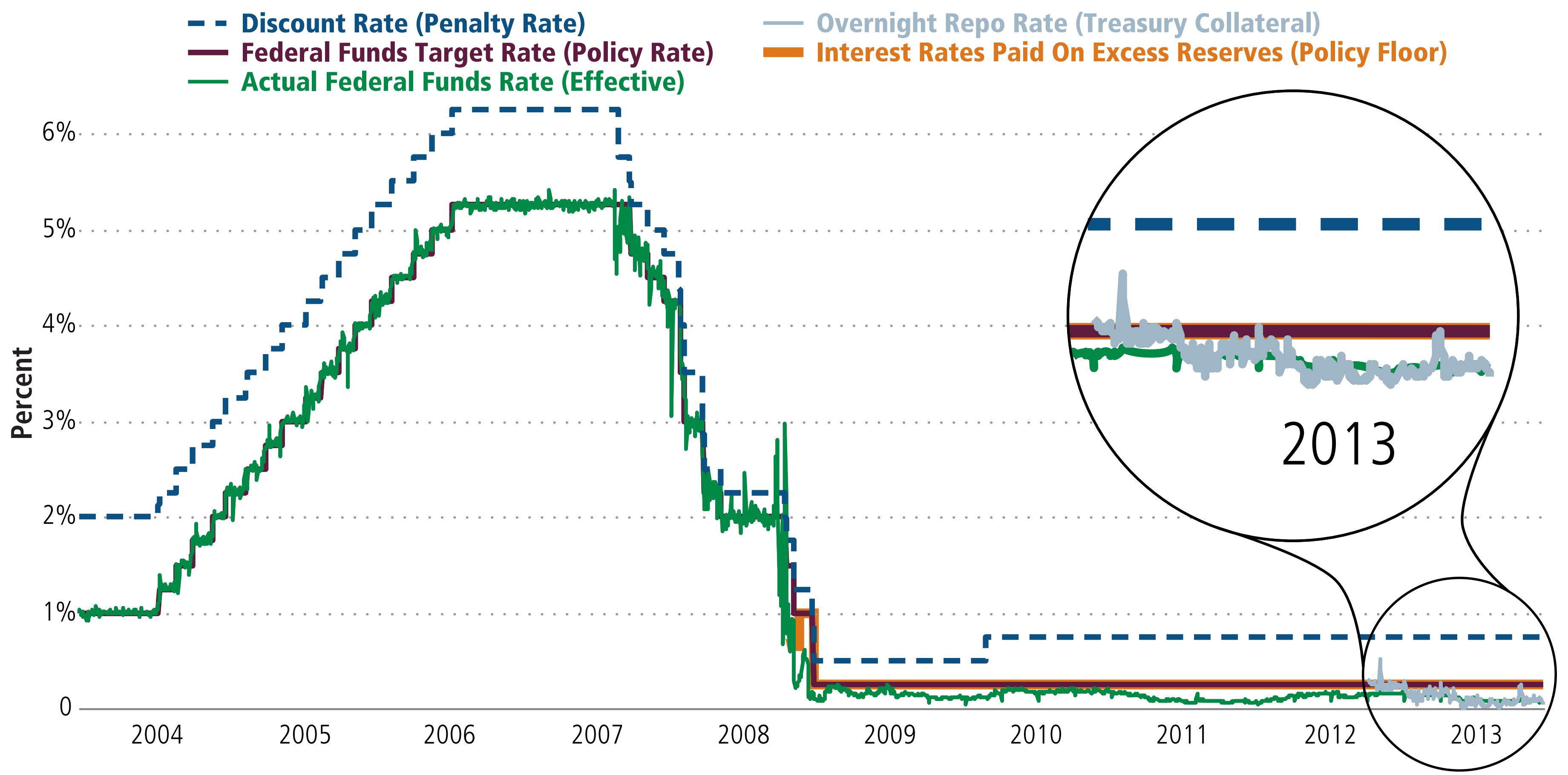
What's more, even after the initial liftoff of the federal funds rate, work must still be done to shape investor expectations. Among the many Fed documents released to the public, investors should watch the "Statement of Longer-Run Goals and Monetary Policy Strategy" (which debuted in January 2012) carefully. The longer-run goals differ from the policy statements released after each FOMC meeting in that they present a "more enduring expression" of longer-term objectives. These are views that will not change in a month or two.

In 2012, Janet Yellen suggested that these longer run goals represent a "consensus statement [that] will be reaffirmed each January, perhaps with minor modifications but with the core principles intact." Clarity and certainty for market participants on these longer-run goals will help control expectations and smooth out short-term fluctuations in the economy as interest rates rise.

CHARLIE BROWN, LUCY AND JANET: THE PROBLEM OF FORWARD GUIDANCE

But is "talking" enough? Will clear communication boost the economy? Even in theory, forward rate guidance only boosts economic activity today if the Fed commits to keeping the funds rate low until well beyond the period which might otherwise justify a hike: and the market has to believe the commitment. As it stands, policymakers do not expect the "terminal" fed funds rate to reach 4% until at least 2017, at which time they project the unemployment rate will be 5.5% and inflation about 2%.

While the commitment to do so sounds good on paper, practice is another thing. Former Bank of



DID YOU KNOW?

If No Trades Occur In The Federal Funds Market, Does It Make a Sound? Will The Fed Funds Market Become Obsolete?

For decades, the federal funds market served as the key overnight lending market. Forced by law to maintain reserves and by bank function to clear payments, banks would borrow (or lend) in the unsecured overnight market for "federal funds" based on excess cash needs. The rate at which they borrow is the "federal funds rate." The effective or actual federal funds rate was determined by transactions. Of course, the Fed influenced this rate, adding new reserves or removing excess reserves, in order to push the actual rate toward its desired policy target each day.

Since 2008, however, one might notice that the actual federal funds rate (the green line in **Figure 3** above) has traded below the Fed's target. That's because in the wake of its decision to pay "interest on excess reserves" or IOER, banks chose to keep money at the Fed rather than transacting in the federal funds market. However, several large market participants (e.g., the Federal Home Loan Banks, Fannie Mae and Freddie Mac) without access to Fed IOER facility still remain active in the federal funds market. The result? As show in our diagram (**see Figure 3**), the actual federal funds rate trades below the policy target and the IOER! In other words, some market participants remain willing to lend out reserves at a rate below the IOER.

But does this mean the fed funds rate is obsolete? One possible solution being tested by the Fed is the reverse repo facility dubbed the Fixed-Rate Allotment Facility. Bureaucratic jargon aside, the aim is to open the number of counterparties available to trade with the Fed (currently it consists of only the primary dealers) which could improve the Fed's grasp of the federal funds rate. In our view this makes sense: if the central bank intends to influence short-term rates, it must evolve to focus on global money markets that now dwarf the fed funds market. Perhaps this is a first step.

England Monetary Policy Committee Member, Adam Posen, commented on the move toward forward guidance in 2012 at the Jackson Hole conference saying, "I worry that this dichotomy between forward guidance and asset purchases, while perhaps useful for research purposes, is much exaggerated in practice." Posen suggested that central bank actions (purchasing assets or cutting rates, for example) complements words and boost the credibility of its promises to keep policy rates low in the future.

So while we expect the Yellen Fed to push ahead with the guidance revolution and focus on clear communication, in the end, the market's trust of central bank guidance reminds us of our favorite cartoon character, Charlie Brown, and his decades-long struggle with Lucy and the football. Lucy would yank the football away just as Charlie approached to take the kick, leaving our cartoon hero tumbling on his head, embarrassed and injured. Yet time after time Charlie Brown returned to attempt the kick again, convinced that this time Lucy's commitment was credible.

We doubt investors will fall for that.

SOURCES

1 Janet Yellen. "Revolution and Evolution in Central Bank Communications." Remarks by Janet L. Yellen Vice Chair Board of Governors of the Federal Reserve System at Haas School of Business, University of California, Berkeley, Berkeley, California, November 13, 2012.

The "Air Pocket": Explaining Fixed-Income Market Turbulence in 2013

We've all been there. As we stow away our carry-on luggage, settle into our assigned seats, and turn off our electronic devices, the captain warns over the intercom: "Expect some minor turbulence along the way." Unfortunately, our modern jets have yet to find a way to avoid the inevitable "air pockets" that disrupt our journey.

Air pockets occur in the financial markets, too, when liquidity "evaporates" and prices "gap"—colorful words for sharp price movements that occur without fundamental economic justification. Such was the case with the US fixed income markets in 2013. Here's how it works.

UNDERSTANDING THE FINANCIAL SYSTEM

An interest rate (or the price of a bond) does not move independent of the actions of buyers and sellers. Unlike aeronautical air pockets, we can trace financial market turbulence back to buyers and sellers of securities, and the intermediaries that connect the two groups.

Broadly speaking, two types of investors inhabit the bond market: investors seeking safe, liquid holdings (low risk "depositors") and investors willing to invest in less liquid projects with the prospect of higher return (high risk "lenders").

For example, nonfinancial corporations hold cash and accept lower returns in order to enjoy immediate liquidity with low risk. Rather than generating returns, these investors focus on covering payroll or having ready cash for acquisitions. It's a popular practice, with nonfinancial corporate liquid asset holdings approaching $2 trillion as of Q3 2013 (**see Figure 1**). Popular though it may be, for trillions of dollars in cash, checking accounts at the local bank do not make attractive deposit vehicles. These investors instead turn to

« AIR POCKETS OCCUR IN THE FINANCIAL MARKETS, WHEN LIQUIDITY EVAPORATES AND PRICES GAP—COLORFUL WORDS FOR SHARP PRICE MOVEMENTS SEEMINGLY WITHOUT FUNDAMENTAL ECONOMIC JUSTIFICATION. »

the money and capital markets, lending cash on a short-term basis and earning an incremental yield on the loan.

On the other end of the spectrum, insurance companies, investment funds, pension and retirement funds, need higher returns and accept in exchange higher risks and lower liquidity. For an insurance company, generating returns to match liabilities, not safety and liquidity, drives investment decisions. By the end of the third quarter 2013, US life insurance companies and property-casualty insurers held a combined $4.3 trillion in assets. Mutual funds and ETFs combined for another $4.5 trillion.

Broker-dealers stand between these two major groups and intermediate their interaction. Much like your local Home Depot (or B&Q for our UK readers) holds shovels, hammers and shrubbery in inventory, dealers accumulate an inventory of bonds: everything from Treasury, agency, corporate, and even municipal bonds to mortgage-backed or asset-backed securities. Also like Home Depot, broker-dealers provide liquidity for market participants, connecting buyers and sellers, depositors and lenders for a small "bid-ask" mark-up.

In providing liquidity, dealers exercise caution and market expertise to gauge the size and composition of the inventories they hold. And instead of relying on bank financing (like Home Depot does at its bank), dealers finance their holdings by borrowing in the eminently liquid global money markets from the "depositor" type investors mentioned earlier.

Before the financial crisis in 2007, the system worked smoothly. Flush with liquidity, dealers willingly absorbed the bonds a pension fund wanted to sell by purchasing the securities and either re-selling them quickly at a profit or stocking their shelves with the excess inventory.

How did they pay for the inventory? By financing the purchases overnight (repurchase agreements or "repo"). In our view, the extent to which broker-dealers relied on the "depositors" to absorb securities led to a virtuous cycle of liquidity. Repo was the glue that kept the whole system together. Relying on short-term, cheap financing, dealers were happy to buy and sell a wide array of securities at fairly low cost to the buyers and sellers.

« MUCH LIKE YOUR LOCAL HOME DEPOT (OR B&Q FOR OUR UK READERS) HOLDS SHOVELS, HAMMERS AND SHRUBBERY IN INVENTORY, DEALERS ACCUMULATE AN INVENTORY OF BONDS. »

STORE SHELVES BARE

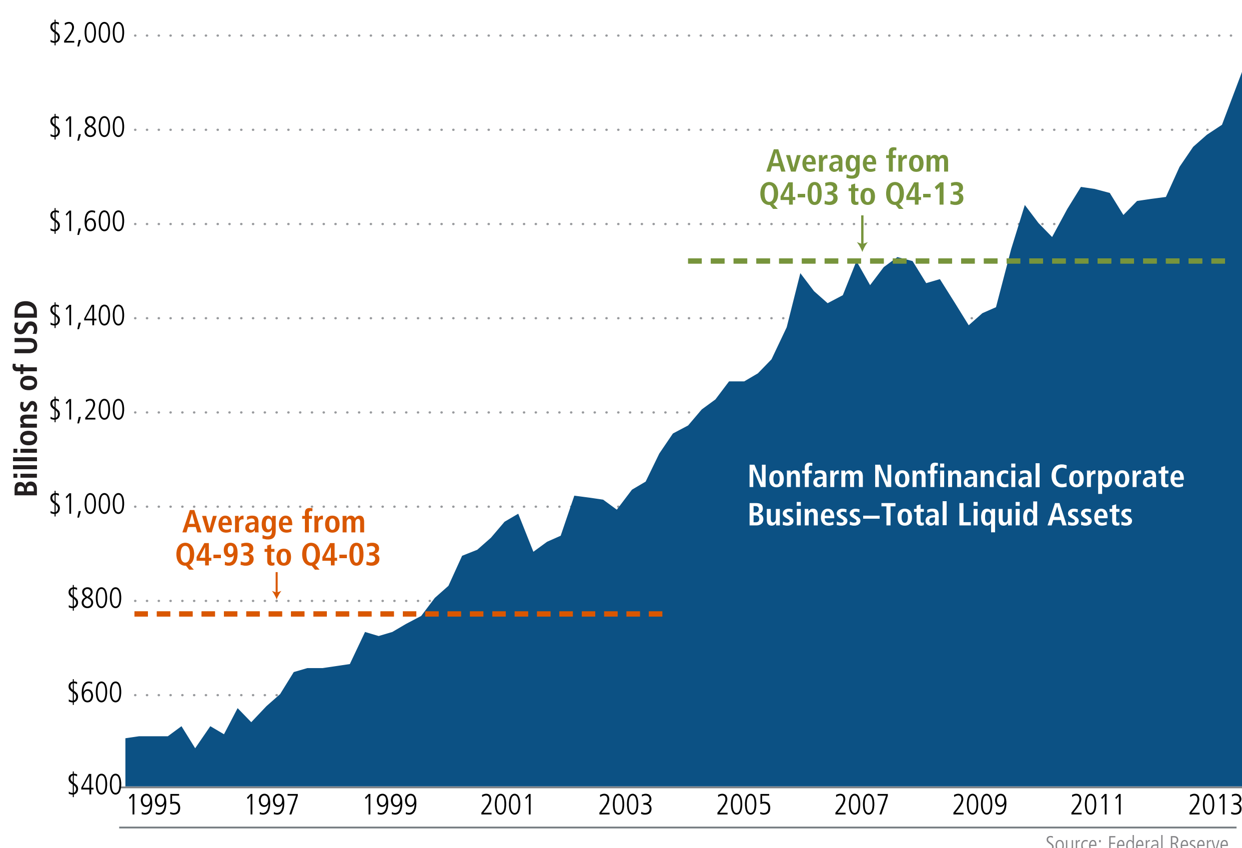
After the collapse of Lehman Brothers, the market for overnight financing evaporated nearly, well, overnight. To this day, broker-dealer reliance on overnight borrowing markets remains below the pre-crisis level. Why?

Like princes made sober after the breaking of a spell, short-term investors (the "depositors") are now more circumspect in how they invest their limited duration holdings. Having been burned once by phony AAA-ratings and fire sale prices, investors now require more security for the use of their short-term funds.

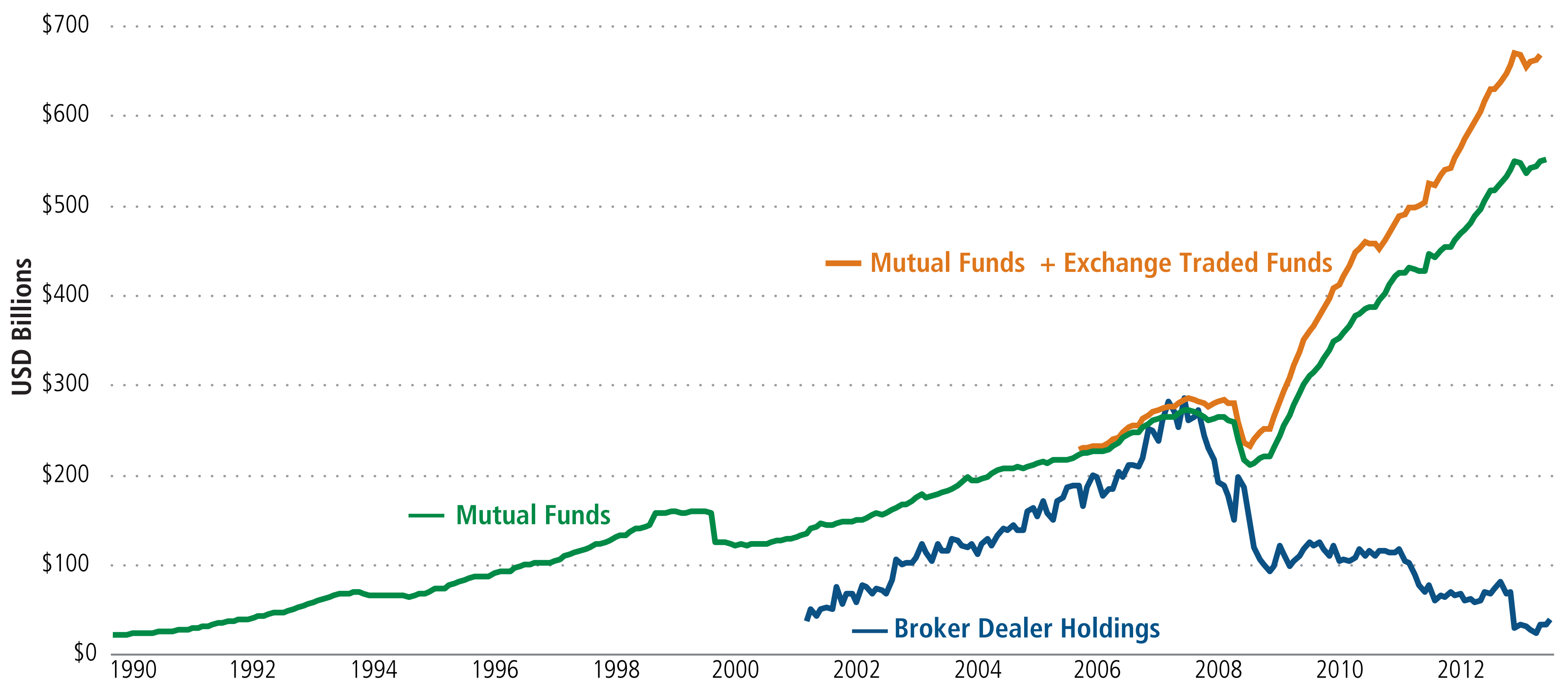
Regulatory changes and altered market psychology wrought by the crisis have also made the business of brokering and dealing in securities more difficult for the traditional intermediaries.

Rather than lending in money markets as they did before the crisis, other strategies such as holding and rolling Treasury bills or parking money in savings accounts at the bank have gained popularity (in the US, savings deposits total over $7 trillion). But the demand for greater safety has come at a cost. Those borrowers (broker-dealers, speculative hedge funds) who relied heavily on overnight financing are now less willing and less able to provide the same wash of market liquidity they once did.

fig. 1 CORPORATE CASH HOLDINGS REACH RECORD HIGHS



Source: Federal Reserve



> « IN OUR VIEW THE EXTENT TO WHICH BROKER-DEALERS RELIED ON THE DEPOSITORS TO ABSORB SECURITIES LED TO A VIRTUOUS CYCLE OF LIQUIDITY. »

Regardless of why, broker-dealers are not as willing as they once were to hold securities they might later sell. Taking the corporate bond market as our example, dealer inventories have plummeted nearly 80% since 2007. Dealers still provide the services, but at higher costs to the buyers and sellers.

But, one might respond, there is more money invested now and more securities floating around than ever before; surely some entity is willing to buy and sell excess inventory. Indeed, our examination of the quarterly data shows the likes of ETFs and mutual funds accumulating corporate bonds at a record clip. By the end of the third quarter 2013, ETFs and mutual funds held $2 trillion in corporate and foreign bonds (**see Figure 2**). Where once broker-dealers bought and sold bonds to other market participants, in the new bond market, non-traditional intermediaries have emerged to provide the much needed liquidity that traditional intermediaries no longer offer.

"PLEASE RETURN TO YOUR SEATS AND FASTEN YOUR SEAT BELTS LOW AND TIGHT ACROSS YOUR WAIST"

So what's the problem? On the surface, it seems like bonds found warm and comfortable new air. However, the new market dynamics described above present a turbulent new reality. When, for example, in 2013, the collective market mindset to shifted allocations quickly, the diminished availability of short-term financing and the new intermediaries were less adept at smoothing over transitions.

Unlike a traditional broker-dealer, a mutual fund who has been stocking the shelves with high-yield bonds may face redemptions at these times of sentiment shift. Now, instead of acting as a buyer to stem the selling (what an old dealer might have done), the mutual fund joins the frantic sellers trying to raise cash.

So it went in 2013. And dealers stood by and twiddled their thumbs. According to the data, dealers' holdings of corporates (including foreign bonds), mortgages and munis actually fell in Q2 and Q3 2013. As "bid-ask" spreads widened on corporate bonds and other fixed income assets, fund managers found other, more liquid securities to sell: US Treasuries. Consequently, yields on Treasuries also lurched higher—far higher than can be explained by better GDP growth data, for example.

> « TAKING THE CORPORATE BOND MARKET AS OUR EXAMPLE, DEALER INVENTORIES HAVE PLUMMETED NEARLY 80% SINCE 2007. »

VOLATILITY IN THE AIR AND IN THE MARKETS: THE FACTS OF LIFE

Naive bystanders might interpret such moves as representing the "collective wisdom of the crowds." How wrong they would be. Dealers hold just 0.25% of the total supply of corporate bonds. With no "circuit breaker" or "shock absorber" able to take on risk and finance it overnight, as there was before the financial crisis, trading occurs through rapid repricing in the cash markets. Such liquidity "air-pockets", not wholesale changes in the levels or direction of interest rates, are more responsible for the shifts witnessed in the market. Trading volume as a share of total investment: grade corporate debt fell to record low levels in 2013.

Put another way, it is as if, following the financial crisis, Home Depot refused to stock shovels on the shelves. Would-be do-it-yourselfers now must haggle with each other in the parking lot outside over tools. It's an inefficient arrangement to be sure, but eventually the shovels find their way into a front yard.

Beware the air pockets: they may not halt your journey, but they will provide a few stomach-churning moments along the way. We expect light turbulence will continue in 2014.

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Corporate Bond Fund
Floating Rate Fund
GNMA Fund
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