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THE TELEGRAPH

Barclays handed biggest bank fine in UK history over 'brazen' currency rigging

Financial Conduct Authority's £284.4m penalty comes amid $6bn in fines for six banks for foreign exchange manipulation

Barclays shares jumped despite the fines Photo: Reuters

By James Titcomb
8:17PM BST 20 May 2015

Barclays has been handed the biggest UK bank fine in history **as six banks were ordered to pay $6bn (£3.9bn)** over manipulating the foreign exchange markets.

Barclays PLC

The Financial Conduct Authority ordered Barclays to pay £284.4m as part of the British bank's £1.5bn settlement with the City watchdog and four US regulators.

Royal Bank of Scotland, JP Morgan, UBS, Citigroup and Bank of America were also fined **by the Federal Reserve**, while all but Bank of America were forced to plead guilty to criminal charges and penalised by the US **Department of Justice.**

Regulators detailed how traders at the banks, referring to themselves with names such as "The Cartel", **colluded to rig euro-dollar currency benchmarks, profiting at the expense of customers**.

The bankers attempted to manipulate vital benchmarks used by companies around the world as a peg for foreign exchange transactions in the $5.3 trillion-a-day market. One Barclays trader wrote in electronic chats: "If you aint cheating, you aint trying."

The banks were accused of failings that meant their traders were able to club together to rig FX markets as late as 2013 – the year after the **Libor scandal** broke. Authorities said they had identified instances of market rigging occurring as early as 2007.

Despite the huge fines, which take combined penalties over foreign exchange manipulation to $10bn, shares in the banks surged on investors' relief that they were not larger.

• **Q&A: Why are the banks being fined for foreign exchange rigging?**

Barclays rose more than 3pc, adding £1.48bn to the bank's value – almost as much as it was forced to pay. **The bank**

had set aside more than £2bn in relation to the probes, while it was not judged to have breached a deferred prosecution agreement with the DoJ.
RBS, which is 80pc owned by the taxpayer, rose 1.78pc. **The bank had set aside £704m for potential fines** but its penalties on Wednesday totalled just £430m.
Barclays' total fines related to currency rigging are the biggest out of the seven banks to have been penalised, and it is still being pursued by the DFS over potential electronic rigging of currency benchmarks.

The regulator is investigating whether the bank's employees set up automated systems to manipulate markets.
"While today's action concerns misconduct in spot trading, there is additional work ahead. The Department's investigation of electronic foreign exchange trading – which makes up the vast majority of transactions in this market – will continue," Mr Lawsky said.
The DFS does not regulate the other banks involved and thus fined only Barclays, but is also investigating Deutsche Bank over potential automated rigging.
Antony Jenkins, **Barclays' chief executive, said**: "The misconduct at the core of these investigations is wholly incompatible with Barclays' purpose and values and we deeply regret that it occurred."

Barclays boss Antony Jenkins

The bank, unlike the other institutions to be fined, had not settled with the FCA and CFTC in November, when HSBC was also penalised in a settlement that totalled $4.3bn. This meant it only qualified for a 20pc settlement discount with the watchdog, compared with the 30pc the other banks received.

The FCA said Barclays’ systems and controls over its FX business were “inadequate” and “gave traders in those businesses the opportunity to engage in behaviours that put Barclays’ interests ahead of those of its clients”.

The regulator, which sends most of the money it raises via fines to the Treasury, has now ordered banks to pay £1.4bn over forex manipulation, almost double the bill for Libor rigging. The FCA has said it will not fine any more banks over the scandal.

James Matkin • 6 hours ago

Important to note these brazen bankers colluded in currency markets by rigging quotes at the end of the day with chat room Internet technology even calling one room the "CARTEL" showing a very cavalier attitude to the public interest. They didn't fear apprehension as things turned so far with no personal fines or jail only the banks shareholders will pay > $5 billion fines. Just like the 2008 mortgage debacle the lack of prudential rules and weak oversight allowed this banking fraud on the public. As we look deeper into the potential of new digital currencies like BITCOIN without leadership or regulation, notwithstanding growing in credibility. "Bitcoin is inching closer to legitimacy. The digital currency reached an important milestone Monday as the first regulated bitcoin-based security began trading in Stockholm...Bitcoin experienced a wild run-up in valuation beginning in the fall of 2013,eventually peaking well over the $1,000-mark. But its price soon crumbled after bitcoins worth hundreds of millions of dollars were stolen by hackers from thepopular bitcoin exchange Mt. Gox last summer, saddling some customers with hugelosses." See http://www.technologyreview.co...

Paul_Weighell James Matkin • 6 hours ago *allowed this banking fraud on the public*You are 'public' so how much exactly did you lose?

–

James Matkin Paul_Weighell • 6 hours ago
Hard to say clearly as an investor I have lost credibility in the currency markets because investors everywhere including me expect currency rates to be determined for US and EURO based on competitive market forces, not rigging and collusion between traders making the rates go up or down artificially.

Secret Currency Traders' Club Devised Biggest Market's Rates

The possibility that a handful of traders clustered in a closed electronic network could skew the worth of global currencies for their own gain without detection points to a lack of oversight by employers and regulators. Photographer: Chris Ratcliffe/Bloomberg

By Liam Vaughan, Barbary Finch and Bob Ivery

http://www.bloomberg.com/authors/AQfZF0G0j3g/liam-vaughan

Dec. 19 (Bloomberg) -- It's 20 minutes before 4 p.m. in London and currency traders' screens are blinking red and green. Some dealers have as many as 50 chat rooms crowded onto four monitors arrayed in front of them like shields. Messages from salespeople and clients appear, get pushed up by new ones and vanish from view. Orders are barked through squawk boxes.

This is the closing "fix," the thin slice of the day when foreign-exchange traders buy and sell billions of dollars of currency in the largely unregulated $5.3-trillion-a-day foreign-exchange market, the biggest in the world by volume, according to the Bank for International Settlements. Their trades help set the benchmark WM/Reuters rates used to value more than $3.6 trillion of index funds held by pension holders, savers and money managers around the world.

Now regulators from Bern to Washington are examining evidence first reported by Bloomberg News in June that a small group of senior traders at big banks had something else on their screens: details of each other's client orders. Sharing that information may have helped dealers at firms, including JPMorgan Chase & Co., Citigroup Inc., UBS AG and Barclays Plc, manipulate prices to maximize their own profits, according to five people with knowledge of the probes.

"This is a market where there is no law and people have turned a blind eye," said former Senator Ted Kaufman, a Delaware Democrat who sponsored legislation in 2010 to shrink the largest U.S. banks. "We've been talking about banks being too big to fail. What's almost as big a problem is banks too big to manage."

'Bandits' Club'

At the center of the inquiries are instant-message groups with names such as "The Cartel," "The Bandits' Club," "One Team, One Dream" and "The Mafia," in which dealers exchanged information on client orders and agreed how to trade at the fix, according to the people with knowledge of the investigations who asked not to be

identified because the matter is pending. Some traders took part in multiple chat rooms, one of them said.
The allegations of collusion undermine one of society's fundamental principles -- how money is valued. The possibility that a handful of traders clustered in a closed electronic network could skew the worth of global currencies for their own gain without detection points to a lack of oversight by employers and regulators. Since funds buy and sell billions of dollars of currency each month at the 4 p.m. WM/Reuters rates, which are determined by calculating the median of trades during a 60-second period, that means less money in the pension and savings accounts of investors around the world.

'Collusive Practices'

At stake is the integrity of a market that affects the daily valuations of private and public money alike, from the $261 billion Sacramento-based California Public Employees' Retirement System to the $237 billion Scottish Widows Investment Partnership in Edinburgh, from the $4.1 trillion BlackRock Inc. in Manhattan, the world's largest asset manager, to the $1.2 trillion Tokyo-based Government Pension Investment Fund, the biggest pension.
"This is a market that is far more amenable to collusive practices than it is to competitive practices," said Andre Spicer, a professor at the Cass Business School in London, who is researching the behavior of traders.

'Big Profits'

Unlike sales of stocks and bonds, which are regulated by government agencies, spot foreign exchange -- the buying and selling for immediate delivery as opposed to some future date -- isn't considered an investment product and isn't subject to specific rules.

While firms are required by the Dodd-Frank Act in the U.S. to report trading in foreign-exchange swaps and forwards, spot dealing is exempt. The U.S. Treasury exempted foreign-exchange swaps and forwards from Dodd-Frank's requirement to back up trades with a clearinghouse. In the European Union, banks will have to report foreign-exchange derivatives transactions under the European Market Infrastructure Regulation.

A lack of regulation has left the foreign-exchange market vulnerable to abuse, said Rosa Abrantes-Metz, a professor at New York University's Stern School of Business in Manhattan.

"If nobody is monitoring these benchmarks, and since the gains from moving the benchmark are possibly very large, it is very tempting to engage in such a behavior," said Abrantes-Metz, whose 2008 paper "Libor Manipulation" helped spark a global probe of interbank borrowing rates. "Even a little bit of difference in price can add up to big profits."

Culture 'Wrong'

The currency investigations are taking place as authorities grapple with a widening list of scandals involving the manipulation by banks of benchmark financial rates, including the London interbank offered rate, or Libor, and ISDAfix, used to determine the value of interest-rate derivatives. The U.K. regulator also is reviewing how prices are set in the $20 trillion gold market, according to a person with knowledge of the matter.

"Some of these problems developed over many years without anybody speaking up," said Andrew Tyrie, chairman of Britain's Commission on Banking Standards and Parliament's Treasury Select Committee. "This is remarkable. It suggests something very wrong with the culture at these institutions."

The story published by Bloomberg News in June, based on interviews with current and former traders, triggered internal probes as banks began reviewing millions of instant messages, e-mails and transcripts of phone calls to see whether employees attempted to rig rates. The U.K.'s Financial Conduct Authority, the European Union, the Swiss Competition Commission and the U.S. Department of Justice are all now investigating.

Deutsche Bank

In addition to seeking evidence of collusion, the FCA is looking into whether traders cut deals for personal profit before completing customers' orders, according to a person with knowledge of the probe. Bloomberg News reported in November, based on the accounts of two people who witnessed the transactions, that some dealers placed side bets for personal accounts or through friends in exchange for cash payments.

At least 12 currency traders have been suspended or put on leave by banks as a result of internal probes, and 11 firms have said they were contacted by authorities. Government-controlled Royal Bank of Scotland Group Plc turned over transcripts of instant messages. Deutsche Bank AG, Germany's largest lender, said it's cooperating with regulators and Zurich-based UBS, the world's fourthbiggest currency dealer, said it's taking unspecified disciplinary measures against employees.

Justice Department

Britain's FCA, which has about 60 people working on benchmark investigations, has asked foreign-exchange traders to come in for voluntary interviews, according to the people with knowledge of the probe. The individuals are among at least 40 traders whose communications are being reviewed, one of them said. The conversations being examined date back to 2004, another said. Chris Hamilton, a spokesman for the FCA, declined to comment.

The Justice Department has issued subpoenas to banks, according to three people with knowledge of the probe who asked not to be identified because the investigation is confidential.

"The criminal and antitrust divisions have an active, ongoing investigation into possible manipulation of foreign-exchange rates," Peter Carr, a department spokesman, said in an e-mail. He declined to name any specific institutions.

EU competition commissioner Joaquin Almunia said in October the Brussels regulator's probe into currency markets was at a "very preliminary" stage. Several banks have come forward with information on possible rigging in the hope of winning leniency, Almunia's spokesman Antoine Colombani said in November.

'The Cartel'

None of the traders or the banks they work for has been accused of wrongdoing.

The investigations have had repercussions across the industry. UBS, RBS, Citigroup, Deutsche Bank, JPMorgan and Lloyds Banking Group Plc are banning traders from using multibank chat rooms, people at the firms said. Investors are breaking their orders into smaller units and using more banks to reduce the opportunity for front-running, one of Europe's largest money managers said.

One focus of the investigation is the relationship of three senior dealers who participated in "The Cartel" -- JPMorgan's Richard Usher, Citigroup's Rohan Ramchandani and Matt Gardiner, who worked at Barclays and UBS -- according to the people with knowledge of the probe. Their banks controlled more than 40 percent of the world's currency trading last year, according to a May survey by Euromoney Institutional Investor Plc.

Entry into the chat room was coveted by nonmembers interviewed by Bloomberg News, who said they saw it as a golden ticket because of the influence it exerted.

Minimizing Losses

Regulators are examining whether discussions among the traders amounted to collusion -- if, with a few keystrokes, they were able to push around rates to boost bank profits and their own bonuses. Traders on the chat deny that, saying they were merely matching buyers and sellers ahead of the fix. That way they could minimize losses by avoiding trades at a time of day when prices typically fluctuate the most, they said.

The men communicated via Instant Bloomberg, a messaging system available on terminals that Bloomberg LP, the parent of Bloomberg News, leases to financial firms, people with knowledge of the conversations said.

The traders used jargon, cracked jokes and exchanged information in the chat rooms as if they didn't imagine anyone outside their circle would read what they wrote, according to two people who have seen transcripts of the discussions.

Usher, Ramchandani and Gardiner, along with at least two other dealers over the years, would discuss their customers' trades and agree on exactly when they planned to execute them to maximize their chances of moving the 4 p.m. fix, two of the people said. When exchange rates moved their way, they would send written slaps on the back for a job well done.

Bollinger Champagne

The conversations echo those uncovered by regulators about Libor, in which bankers promised bottles of Bollinger champagne or cash to counterparts at firms willing to help them rig the benchmark interest rates used to price $300 trillion of contracts from student loans to mortgages. More than six banks have been fined about $6 billion since June 2012, and regulators are investigating traders at half a dozen more firms.

The currency discussions were even more calculating, one of the people who reviewed the transcripts said.

Usher was the moderator of "The Cartel," people with knowledge of the matter said. He worked at RBS and represented the Edinburgh-based bank when he accepted a 2004 award from the publication FX Week. When he quit RBS in 2010, the chat room died, the people said. He revived the group with the same participants when he joined JPMorgan the same year as chief currency dealer in

London.

Standard Chartered

Ramchandani is head of European spot trading at New York-based Citigroup. Born in India, and said by people who know him to be studious and polite, he joined the bank's trading desk after graduating from the University of Pennsylvania with a degree in economics, according to a spokesman for the school and a recruiter who has a copy of his resume. He relocated to London from New York in 2004.

Both Ramchandani and Usher were part of the Bank of England's 27-member London Foreign Exchange Joint Standing Committee subgroup of chief dealers as of the end of 2012, according to the central bank's bulletin. The group met three times last year to discuss matters including regulatory developments, the bulletin reported.

Gardiner joined Standard Chartered Plc in London in September as assistant chief currency dealer. He previously worked at UBS in Zurich and was co-chief dealer with Chris Ashton at Barclays in London.

FCA Inquiry

Usher, Ramchandani and Gardiner were put on leave by their employers after the FCA opened its inquiry, according to people with knowledge of the matter. Ashton, now global head of spot trading at Barclays, was suspended along with five other spot traders at the bank in London and New York.

Ashton and Ramchandani declined to comment when contacted by telephone. Gardiner didn't return messages left on his mobile phone. JPMorgan declined to provide contact details for Usher, who couldn't be located through Internet searches or directory assistance. The bank also declined to comment about the probes, as did spokesmen for RBS, Standard Chartered, Citigroup, Barclays and UBS. Deutsche Bank said in an e-mail that it's cooperating with investigations and "will take disciplinary action with regards to individuals if merited."

London is the world's biggest hub for currency trading, accounting for about 41 percent of all transactions, compared with 19 percent for New York and 6 percent for Singapore, according to a Bank for International Settlements survey published in September. About $5.3 trillion changes hands every day, BIS data show, as companies convert earnings into dollars, euros or yen and managers overseeing pensions and savings buy and sell shares around the world.

Essex Countryside

Spot currency trading is conducted in a small and close-knit community. Many of the more than a dozen traders and brokers interviewed for this story live near each other in villages dotting the Essex countryside, a short train ride from London's financial district, and stay in touch over dinner, on weekend excursions or with regular rounds of golf at local clubs.

Spot traders simply deal with buy and sell orders and don't need the complex math skills their counterparts on derivatives desks use to extrapolate prices. Developing and maintaining relationships are more important, the traders say.

"The foreign-exchange market has a very strong culture, in which practitioners feel more attached to each other than they do their banks," said Spicer, the Cass School of Business professor. "It is also dominated by an extremely small group of individuals, often with strong social ties formed by working with each other at some point in the past."

Golf Club

On one excursion to a private golf club in the so-called stockbroker belt beyond London's M25 motorway, a dozen currency dealers from the biggest banks and several day traders, who bet on currency moves for their personal accounts, drained beers in a bar after a warm September day on the fairway. One of the day traders handed a white envelope stuffed with cash to a bank dealer in recognition of the information he had received, according to a person who witnessed the exchange.

Such transactions were common and also took place in tavern parking lots in Essex, the person said.

Personal relationships often determine how well currency traders treat their customers, said a hedge-fund manager who asked not to be identified. That's because there's no exchange where trades take place and no legal requirement that traders ensure customers receive the best deals available, he said.

Eaton Vance

Hedge-fund managers get the best prices because they trade frequently and are the most sophisticated, according to a former U.S. currency dealer. Next in line are institutional funds -- insurance companies and pension plans that get less-beneficial prices. At the bottom are firms from automakers to smartphone manufacturers that need to swap currencies to purchase materials abroad and repatriate earnings. Traders at banks take advantage of them because they know the least about the market, he said.

Eaton Vance Corp., a mutual-fund company that manages $281 billion, uses the WM/Reuters rate to value its portfolio, so the credibility of the rate as a result of rigging allegations is potentially worrisome and the firm is continuing to monitor its reliability, said Michael O'Brien, director of global trading.

While the Boston-based company has its own trading desk to make sure investors get the best prices, it uses bank traders for certain currencies, O'Brien said, adding that most customers have little choice.

Market Share

"Banks are market-makers in foreign exchange, and to a large degree you can't avoid them," O'Brien said. "People have to trust the pricing."

Four banks control more than half the foreign-exchange market, according to Euromoney's survey. Deutsche Bank, based in Frankfurt, was No. 1, with a 15.2 percent share, followed by Citigroup with 14.9 percent, Barclays with 10.2 percent and UBS, Switzerland's biggest lender, with 10.1 percent.

The WM/Reuters rates for 160 currencies, used as a benchmark by companies and investors around the world, are determined by trades executed in a minute-long period called "the fix," starting 30 seconds before 4 p.m. in London.

The data is collected and distributed by World Markets Co., a unit of Boston-based State Street Corp., and Thomson Reuters Corp. Bloomberg LP competes with Thomson Reuters in providing news and information, as well as currency-trading systems and pricing data. Bloomberg LP also distributes the WM/Reuters rates on Bloomberg terminals.

State Street

Thomson Reuters said it "would lend its expertise to support any authorities' investigation into alleged disruptive behavior on benchmarks." The company doesn't administer the WM/Reuters rates, it added in an e-mailed statement.

"The WM/Reuters benchmark service is committed to reliability and robust operational standards," State Street said in an e-mail. "WM continually reviews recommended methodology and policies in order to ensure that industry best practices are considered."

Aside from trading after economic events such as interest-rate cuts, 4 p.m. is the busiest time for currency dealers as customers place orders to be transacted at the fix price. Things are even more hectic on the last working day of the month, when tracker funds buy and sell currencies with their banks. The funds say they have to trade at the fix because the global indexes they track, such as the MSCI World Index, are calculated once a day using the 4 p.m. WM/Reuters rates.

The frenzy begins an hour earlier on trading floors as dealers jockey for advantage. Bids and offers are exchanged. Slang is common. Mio means million. A yard is a billion.

Loss-Leader

Because traders promise clients they'll get the fix price, it leaves banks open to losses if the market moves against them, one London-based dealer said. He described trading at the fix as a loss-leader that helped his firm win client business.

To make money, traders interviewed by Bloomberg News said they would share information with counterparts at other firms and trade ahead of large client orders. Most tracker funds place their orders as much as an hour before the fix, giving dealers a glimpse of possible future price movements, which they can use to take positions. Traders on instant-message groups increased their chances of predicting market moves by pooling details of their order books and agreeing to align positions at the fix, according to three people with knowledge of the practice.

Dealers can buy or sell the bulk of their client orders during the 60-second window to exert the most pressure on the published rate, a practice known as banging the close. Because the benchmark is based on the median value of transactions during the period, breaking up orders into a number of smaller trades could have a greater impact than executing one big deal.

Market Movements

Some dealers said the tactic is legitimate and necessary for banks to protect themselves from losses. Traders who agree to buy or sell at the close need to push through the bulk of their orders during the window to minimize the risk of losses from market movements, the traders said.

One large transaction can be enough to move the market. A former bank trader said that if he received an order from a customer at 3:30 p.m. to sell 1 billion euros ($1.37 billion) in exchange for Swiss francs at the 4 p.m. fix, he would have two objectives: to sell his bank's own euros at the highest price and also to move the rate lower so that at 4 p.m. he could buy the currency from his client at a lower price.

While foreign exchange is unregulated, dealers are prohibited by market-abuse laws from trading on inside information and sharing confidential data about client orders with third parties. In recent years, banks have tightened rules on employees' trading for their own accounts. Many require staff to hold investments for at least 30 days and obtain written clearance from compliance officials for personal dealings.

Currency Futures

The U.S. Commodity Futures Trading Commission, which has no oversight of the spot market, does regulate foreign-exchange futures, contracts that allow companies or investors to speculate on or hedge against the price movements of currencies. Some of those contracts, such as cash-settled forwards traded on the Chicago Mercantile Exchange, use WM/Reuters rates to determine who owes what at settlement. The agency has been reviewing potential violations of the law, according to a person with knowledge of the matter.

Its chairman, Gary Gensler, who declined to comment about any investigation the agency might be conducting, said the CFTC is understaffed, with 670 employees, when more than 1,000 would better fulfill its mission.

“We need to make sure reference rates are not based on a closing price that’s manipulated,” Gensler said in an interview. “The CFTC does not have enough people, period.”

U.K. Rules

In the U.K., the government is introducing laws designed to curtail market manipulation and punish traders found guilty of wrongdoing. In April, it became a criminal offense for anyone to knowingly make false or misleading statements relating to the setting of benchmarks. Other proposals include deferring bonuses for as long as 10 years and guaranteeing rights for whistle-blowers. They stop short of recommending specific regulations of the spot foreign-exchange market.

Even if regulators were watching the currency market, there would be a question of what they’d see and whether they’d be able to identify wrongdoing, said Felix Shipkevich of Shipkevich PLLC, a derivatives law firm.

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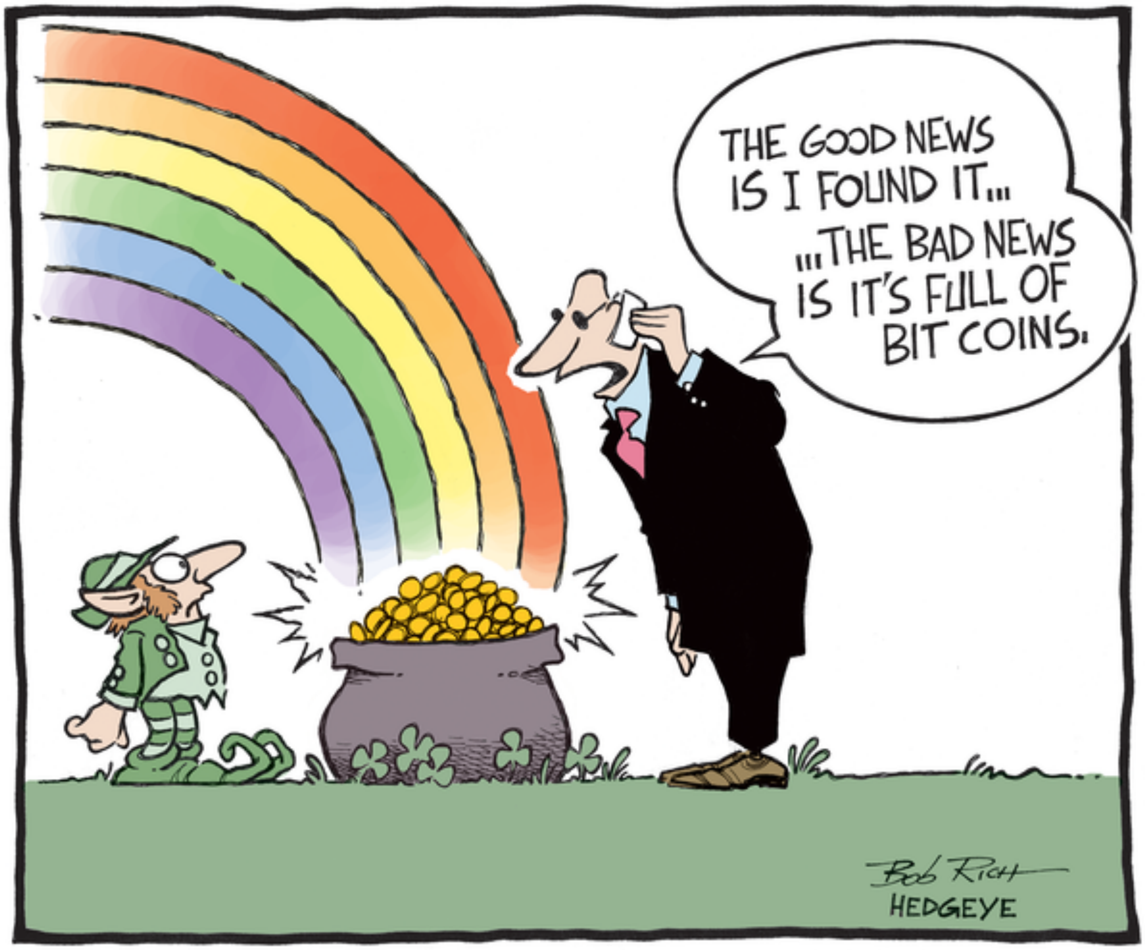
Cartoon of the Day: Bitcoin Bubble?



MIT Technology Review Home

Leaderless Bitcoin Struggles to Make

Its Most Crucial Decision

Bitcoin's most influential developer has proposed a controversial fix that would help it handle more transactions.

In a test of Bitcoin's ability to adapt to its own growing popularity, the Bitcoin community is facing a dilemma: how to change Bitcoin's core software so that the growing volume of transactions doesn't overwhelm the network. Some fear that the network, as it's currently designed, could become overwhelmed as early as next year.

The answer will help determine the form Bitcoin's network takes as it matures. But the loose-knit community of Bitcoin users is not in agreement over how it should proceed, and the nature of Bitcoin, a technology neither owned nor controlled by any one person or entity, could make the impending decision-making process challenging. At the very least it represents a cloud of uncertainty hanging over Bitcoin's long-term future.

The technical problem, which most agree is solvable, is that Bitcoin's network now has a fixed capacity for transactions. Before he or she disappeared, Bitcoin's mysterious creator, Satoshi Nakamoto, limited the size of a "block," or group of transactions, to one megabyte. The technology underlying Bitcoin works because a network of thousands of computers contribute the computational power needed to confirm every transaction and record them all in a permanent, publicly accessible ledger called the blockchain (see "What Bitcoin Is and Why It Matters"). Every 10 minutes, an operator of one of those computers wins the chance to add a new block to the chain and receives freshly minted bitcoins as a reward. That process is called mining.

Under the one-megabyte-per-block limit, the network can process only about three transactions per second. If Bitcoin becomes a mainstream payment system, or even a platform for all kinds of other online business besides payments (see "Why Bitcoin Could Be Much More Than a Currency"), it's going to have to process a lot more. Visa, by comparison, says its network can process more than 24,000 transactions per second.

The developers in charge of maintaining Bitcoin's core software have been aware of this impending problem for a while. Gavin Andresen, who has led work on Bitcoin's core code since Nakamoto handed him the reins in 2010, told *MIT Technology Review* last August that his favored solution to the problem is to increase the maximum block size (see "The Man Who Really Built Bitcoin"). Earlier this month, Andresen got more specific, proposing that the maximum block size be increased to 20 megabytes starting in March 2016, calling this the "simplest possible set of changes that will work." In a subsequent post on his blog, Andresen called the need for the change "urgent," noting that the network would likely become unreliable if it were allowed to reach the current limit.

Mike Hearn, a former Google software engineer who has contributed to Bitcoin's development, has calculated that at the current rate of transaction growth, the limit will be hit sometime in 2016. "Because upgrades take time, we need to prepare for this now," Hearn writes in his own recent post on the issue.

The problem is that a consensus is required to make a change as consequential as the one Andresen suggests, which would substantially alter the requirements for mining. And not everyone in the community of users of the Bitcoin software—which includes miners, developers, and a growing number of startups—agrees that Andresen's proposal is the best path forward.

A popular argument against the change is that it would favor bigger, richer mining operations that could afford the increased costs that go along with processing and storing bigger blocks. That could lead to a dangerous "centralization" within the mining community, says Arvind Narayanan, a professor of computer science at Princeton University (see "Rise of Powerful Mining Pools Forces Rethink of Bitcoin's Design"). Another, more ideological argument is that Bitcoin was never supposed to change this drastically from Nakamoto's original design. Some even argue that the limit doesn't need to increase at all, as long as the developers make smaller adjustments to prevent the network from buckling when it reaches it—though that could make it more expensive to get transactions confirmed without delays.

The growing commercial ecosystem around Bitcoin is at stake. If the limit remains fixed, businesses hoping to store lots of transactions on the blockchain could be out of luck. And such interest is only increasing—earlier this month, the Nasdaq stock exchange said it was testing Bitcoin's blockchain for transactions in its private market subsidiary. If the test is successful, the exchange says, it could use the technology for all Nasdaq trades in the public market.

Will Bitcoin be able to handle that? Pieter Wuille, another of Bitcoin's five core developers, says right now there are just too many unknowns about the consequences of increasing the block size to 20 megabytes. In addition to significantly raising the cost of validating transactions, which could force out smaller players, he says, there may be "things we don't even know of that could break." Wuille is in favor of increasing the block size "in general," but says a smaller increase at first would be less risky.

For now, the debate will continue to play out on the Bitcoin development mailing list, a forum that includes the core developers as well as the many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