



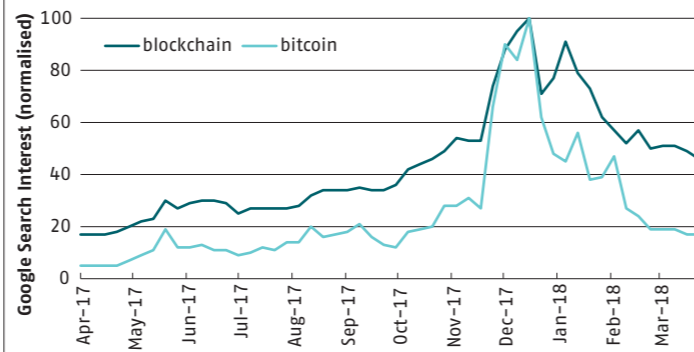
The Blockchain Insurance Revolution

In December 2017, James Howells made his debut in the UK's national media because he reported to have accidentally thrown away 7,500 bitcoins. Having obtained the bitcoins in 2009 for almost nothing, he threw the hard drive with the bitcoins in the bin in 2013 during a clear-out as he had completely forgotten about the bitcoins. The hard drive was put into a general waste bin at James' local landfill site, after which it was buried on site. Despite the site being the size of a football field, James reported in December 2017 to hope to find his hard drive as the total value of his bitcoins now exceeded \$140 m. Not an easy task as four years' worth of garbage has been poured into the dump since, he realised and was quoted in national newspapers saying "digging up a modern landfill brings all sorts of environmental issues such as dangerous gasses and potential landfill fires. It is a big, expensive and risky project." James wanted to try regardless and was hopeful that further bitcoin price increases would convince the local City Council to grant him permission to start digging.

By now we know that the value of bitcoin did not increase in the first quarter of 2018 as James was hoping for, and that bitcoin has become an even more controversial concept since. Nevertheless, the introductory anecdote, and in particular the idea of digging up a landfill the size of a football field to find a hard drive, does nicely illustrate the 'bitcoin craziness' that captured many. Arguably for some good reasons: the first digital currency without a central issuer, which – according to The Sun – could be used to buy everything from pizza to drugs and guns, was breaking price records on regular basis; it all could not have been more exciting.

GOOGLE SEARCH INTEREST: BITCOIN VERSUS BLOCKCHAIN

Then, in January 2018, in conjunction with bitcoin's price dropping, newspapers' headlines started to drift as the focus shifted to what is underpinning bitcoin: distributed ledger technology, better known as blockchain. The next graph shows Google search interest in bitcoin and blockchain and, as numbers are normalised, reveals the development of the relative level of interest in bitcoin and blockchain¹. Both time-series are strongly correlated (95%) which could be explained by the same factor, likely the value of bitcoin which peaked in the second half of December 2017, driving the search interest in both bitcoin and blockchain. Notably, although these two concepts often get confused, they are clearly not the same thing. Whilst there would be no bitcoin without blockchain, the scope and potential of blockchain extends far beyond the world of cryptocurrencies. At its simplest, blockchain is an ingenious new design for a distributed, shared and mutually trusted database, which allows multiple parties to collectively contribute to and manage a shared dataset instead of each party managing its own version. It features the possibility to implement smart contracts, a term first coined in 1994 by a computer scientist, which are basically self-executing algorithms. With blockchain now stepping out of the shadow of the bitcoin, distributed ledger technology is poised to transition from buzz word to real world with several industries in scope of blockchain applications going live in 2018.



Development of normalised global Google search interest: blockchain versus bitcoin.

BLOCKCHAIN IN INSURANCE

While technology has profoundly changed complete industries over the past decade, the multi trillion global (re)insurance industry is, in many ways, still operating on a model from the past, with often slow, manual and paper-based processes that are prone to errors and duplication. Recognising its potential for industry-wide disruption, both major insurers and start-ups are actively exploring blockchain solutions in areas as diverse as fraud prevention, back-office efficiency, administration costs management, general data-sharing capabilities, peer to peer insurance products, reinsurance and health insurance. Regarding the latter for example, despite that health insurance operating models vary globally, there is the need for secured sharing of medical records between multiple parties, lower overhead costs, avoiding patient-unfriendly treatment approval procedures whilst ensuring that the patient controls the accessibility of his private

medical data. Blockchain could deliver just that, and Philips Healthcare is, amongst others, developing solutions in this area.

Similarly, the case for blockchain in reinsurance, or probably better the complete B2B risk transfer ecosystem, is driven by the requisite for a cedent company to share data with multiple potential risk-takers to facilitate underwriting, risk management, contract maintenance and claims handling. Clearly, blockchain is an opportunity for the industry to realise massive cost savings through faster, more efficient and more accurate shared data-management, placement of risk, accounting and claims settlement. In the UK's buoyant bulk annuity and longevity hedging market for instance, £20 b of business volume was transacted in 2017 through approximately 125 transactions, for each of which typically multiple versions of large data files are shared with various interested risk-takers. A longevity hedging transaction is usually executed after an email-heavy Q&A process with multiple data-updates and negotiation rounds, after which, claims management, valuation, and monitoring of collateral positions is required for the long term. Evidently, a blockchain could replace the exchange of thousands of e-mails and many data files during the lifecycle of such a risk transfer agreement, whilst increasing the security, auditability and traceability of the process. As it stands, annuity (re)insurance still needs to debut on blockchain, but the technology is rapidly moving beyond the proof of concept stage in B2B risk transfer. To illustrate, in 2017, catastrophe bonds, effectively securitisations of cat reinsurance contracts, have been executed using blockchain as the platform for settling, clearing and distributing notes to investors; evidencing its benefits.

BLOCKCHAIN CONSORTIA

Interestingly, the set-up in which corporations explore blockchain applications ranges from intra-company projects, inter-company cooperations to even industry-wide consortia. A great example of the latter in insurance is B3i, founded by some of the biggest names in the industry, which aims to deploy a Property Cat Excess of Loss reinsurance contract on its platform in 2018. Other blockchain consortia in the financial industry are the Riskblock Alliance, formed by US-based risk and insurance education provider The Institutes, R3, a company that leads a consortium of more than 80 of the world's biggest financial institutions, and Hyperledger, an open source collaborative effort started by the Linux Foundation with more than 200 organisations across different industries as its members. As industry-wide cooperation is required to reap all the benefits of distributed ledger technology, e.g. ensure interconnectedness, forming consortia makes sense as it enables the industry to move forward collectively. Different consortia usually have their own area of focus and often develop their own blockchain platform and as a result, currently no such thing as an industry standard blockchain platform does exist. However, at present, any selection of market-leading blockchain platforms should include Corda (launched by R3), Quorum (launched by JP Morgan) and Hyperledger Fabric (launched by the Hyperledger consortium), where the ultimate preference between these 3 platforms typically depends on factors like transaction confidentiality and scalability.

BLOCKCHAIN-ENABLED PARAMETRIC INSURANCE

In addition to dramatically improving the operational efficiency and settlement speed of existing products, blockchain technology can also drive new P&C insurance product development. In particular, there is an opportunity to develop new blockchain-enabled parametric insurance products, which could be highly transparent and efficient products that offer the client low-cost protection with an instant claims payment. Essentially, parametric insurance boils down to the payment of a predetermined sum² if a specific measurable variable exceeds a pre-defined threshold. Notably, parametric insurance has featured in catastrophe bonds, industry loss warranties and primary market covers for hurricanes and earthquakes for a long time so this is not a new proposition in itself. However, with the increasing number of data sources available, blockchain technology could very well be the missing piece of the jigsaw to unlock parametric insurance's potential and accelerate its wide-spread adoption globally. Parametric insurance fits blockchain naturally: policies can be recorded on the distributed ledger

and, referencing an independent data source, smart contracts can assess whether insurance claims are payable and trigger instant payment if appropriate. Policyholders do not need to file a claim (or even remember that they are covered in the first place), which clearly improves the customer experience substantially, and claim payments are no longer prone to human error.

FLIGHT DELAY INSURANCE

One example of an innovative blockchain-enabled parametric insurance product is flight delay insurance, launched in 2017 independently by Etherisc, an insurance start-up, and AXA. Its working is simple: the purchase of the policy is recorded on an encrypted distributed ledger, which ensures that the contract is tamper-proof, and a smart contract, which references global air traffic databases, can trigger a compensation payment to the customer once a delay of more than two hours is observed. Importantly, unlike in traditional insurance, the compensation decision is taken by an independent network based on flight statistics, which could boost customers' trust in the product.

OTHER USE CASES

Historically, most use cases of parametric insurance have been related to weather events like earthquakes, storms, floods or droughts. These and other insurance propositions can now benefit from the settlement speed, operational efficiency, reliability and potential scalability offered by blockchain technology. The availability of big data processing techniques and high-resolution satellite images further supports the development of highly efficient parametric insurance offerings, both in Western and developing countries, and the possibilities seem endless. A farmer could wish to protect its crop yield and purchase blockchain-enabled parametric insurance against drought or air pollution, for both of which data sources exist that the smart contract could reference for claims handling purposes. In the energy sector, a wind farm may wish for protection against a decrease in wind, whilst a solar panel farm might want to protect against a lack of sunlight. In the retail segment, skiers might appreciate 'snowfall insurance' that provides a compensation payment if there is too little snow, whilst commuters may want to purchase protection against long traffic jams or severe train delays. These coverages are not necessarily completely impossible at present, but blockchain technology could highly streamline its operations, keep costs low and, importantly, realise immediate and automatic claim settlement. From a product development perspective, the challenge is to identify blockchain-friendly reference triggers that would be attractive on the primary insurance market, where the latter should include an assessment of whether potential basis risk is acceptable for the policyholder.

FUTURE OUTLOOK

Despite that some hurdles to widespread adoption remain, think of legal and regulatory frameworks that need to catch up with technological developments, blockchain could dramatically transform the (re)insurance markets. Putting the hype aside, and regardless of whether the bitcoin survives or not, the clear promise of blockchain stems from its ability to eliminate the root cause of inefficiencies in the (re)insurance market: the siloed record keeping infrastructures. As a result, the processes required to deliver insurance services can be made more secure and efficient and this new technology can transform the complete insurance value chain from data management and underwriting to policy administration and claims processing. Blockchain, hand in hand with other technological developments like Big Data and the Internet of Things, enables innovative and customer-friendly insurance products, that represent the future of the insurance industry in a digital world. Given the revolutionary impact that technology has had on other industries, insurers cannot risk sitting on the sidelines. ■

¹ – Note that this graph does not show absolute search numbers and that, as of the end of March 2018, absolute search interest in bitcoin is roughly 8 times as large than in blockchain, whilst this ratio was more than 20 in December 2017.

² – In contrast to traditional insurance, the claim payable does not indemnify the clients' actual loss.

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