Introducing Blockchain Technology to the world of Tax

Jurgen G., Dec 11, 2018
https://medium.com

The digital roadmap is continuously evolving, as information technology embeds itself in both business and everyday life. The invention of the Internet has redefined the way we communicate on all levels, making everything easier, faster and cheaper. Disruptive information technologies pinpoint weaknesses and change old business models most companies and national authorities have grown accustomed to. Following the increasingly digitised business economy, in which almost everything can be ordered at the tap of a smartphone and transactions are routinely processed and analysed in real-time, it can sometimes feel like the tax system is stuck in analogue.

This article aims to guide you through the fundamentals of blockchain technology and tax, striving to connect both worlds and explore potential synergies.

Introducing Blockchain Technology

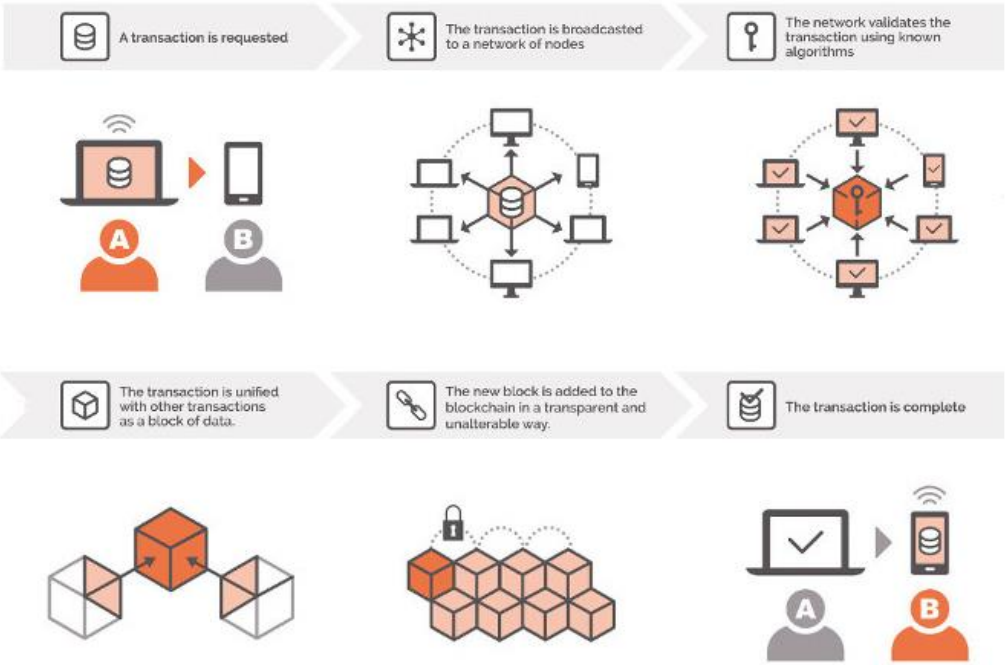
In 2008, the Internet quietly welcomed a mysterious white paper, written by a person or persons under the pseudonym Satoshi Nakamoto. The publication described a new, digital currency based on the idea of cryptographically chaining blocks of data, designed to rely solely on computer technology, detached from any intermediaries. This was the dawn of Bitcoin. For years, Bitcoin grew in popularity and value, but the underlying technology called blockchain remained largely unnoticed or associated strictly with Bitcoin. Nowadays blockchain has evolved from being a quiet presence behind Bitcoin to a technology that could potentially revolutionize the way we conduct payments, store data, verify audit trails, register digital assets and perform transactions. The World Economic Forum identified blockchain technology as one of its six mega-trends outlining the expected transition to a more digital and connected world. Asked about their views on ‘when governments would start collecting taxes using blockchain?’, the average of 800 tech savvies pointed at 2023.[1]

While Bitcoin would not exist without blockchain, blockchain without Bitcoin still has a wide range of uses, outreaching that of cryptocurrencies. With its ability to automate calculations, increase the transparency and accuracy of transaction data, and its decentralized core, this ingenious piece of technology scopes for much more and has the potential to radically transform the tax economy in the near future.

Understanding Blockchain Technology

Blockchain is a ledger of information that is replicated and distributed across computers that are joined in a Peer-to-Peer network. This distributed ledger technology basically creates a single record of a transaction that can be accessed and independently verified by all approved parties in the transaction. That single transaction is called a *block* and serves as an unchangeable, permanent and trusted record maintained in a single, shared digital ledger. Any related new transactions can be added on top of that original record, creating an interconnected *blockchain* of increasingly complex transactions and counterparties — all neatly mapped in the single digital ledger shared by all parties.

This technology eliminates the need of centralization through an intermediary, allowing parties to share information and transact directly with each other in a secure manner. The information stored is not necessarily money or currency, but may also be a variety of other data types as well. Blockchain can be modified to fit different businesses and industries and access to a distributed ledger can be unrestricted, meaning that anyone can access the information stored on it, or limited to a group of users.

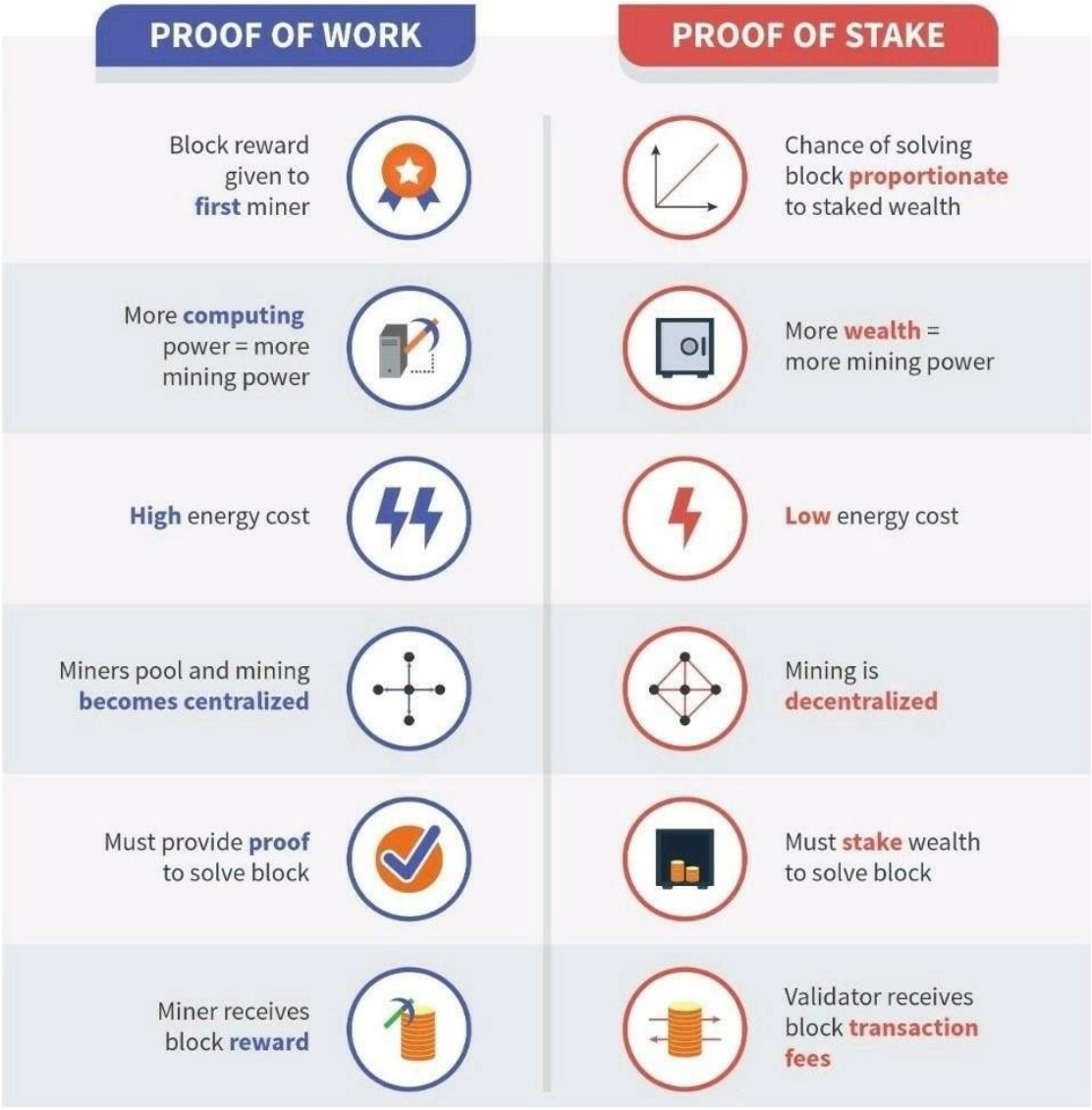


Reaching consensus

The crucial part of the blockchain mechanism is reaching consensus among the parties to add information to the block. This technology breaks down the paradigm of centralized consensus, where a centralized system is used to rule on validity. A consensus mechanism ensures that the added block contains truthful information. The most popular consensus method on the blockchain is Proof of Work (PoW), as used by Bitcoin. In PoW, miners (i.e. members of the Bitcoin network) compete to add the next block of information by solving a cryptographic puzzle. The first miner to solve

it wins and receives new bitcoins plus a transaction fee.[2] However, PoW has several serious flaws that prevent it from being used in a business blockchain. For example, it requires large amounts of energy and computational power.

Another consensus solution is referred to as Proof of Stake (PoS). This works similarly to a stock company, where each shareholder holds a certain stake — a number of shares in the company. In this method every party places a bet on its block. The party that hold the correct block (containing no fraudulent transactions) get their block added to the chain and get rewarded, but the parties whose block turns out to be fraudulent get punished and the amount of bet that they had put get reduced from their balance. The shareholders with a bigger share in the network have a higher chance of being selected. On one hand there is risk related to the scope of shares a party possesses in the network, but on the other they have a higher interest in securing the stability of the network. Contrary to PoW, PoS does not require as much computational power and energy and therefore is more effective for a blockchain that is not crypto currency related.



Proof of Work vs. Proof of Stake

It is worth noting that these are not the only consensus algorithms available. As blockchain technology is still new and undeveloped, there is an ongoing process of creating new algorithms, suitable for many types of blockchains.

Smart contracts

The decentralized ledger which blockchain is, can be used for smart contracts, otherwise called self-executing contracts, blockchain contracts, or digital contracts. As such, contracts can be converted to computer code, stored and replicated on the system and supervised by the network of computers that run the blockchain. Smart contracts are basically agreements in the form of computer programs where the terms & conditions of an agreement can be programmed, designed to self-execute themselves. Alike blockchain technology, the underlying goal of a smart contract is to remove the need for an intermediary, enabling anonymous parties to conduct business over the internet.

Benefits of Blockchain Technology

As with all new and mostly untried technologies, blockchain has attracted a lot of hype and scepticism. Although it could potentially revolutionise almost every aspect of record keeping, exchange and settlement, blockchain is still a technology looking for an application. There are hurdles to overcome before it can be deployed effectively — its application within taxation exemplifies this. Yet, in the right circumstances it can provides for a wide range of benefits, which can be categorized as follows:

- Cost — a distributed ledger potentially reduces costs of transaction processing and data storage.
- Speed — a decentralised network can be faster and more versatile than a centralised server.
- Protection — it is near impossible to alter or overwrite without other parties knowing/agreeing, which provides protection against fraud and disputes.
- Security — tamper-proof data structure with strong encryption, multiple confirmations of each transaction and transparency enhance security.

Introducing Blockchain Technology to the world of Tax

From the collation, cleansing and verification of information to the preparation, validation and submission of returns, tax processes are largely paper-heavy and labour-intensive. Not only does this move up the costs, it also leaves tax teams and authorities with less time to devote to genuinely value-adding activities. The operational demands are accompanied by the difficulties of reaching agreement with tax authorities on interpretation and approach, which leads to uncertainty and risks of audits and legal disputes.

The digital age is shaping the world of tax into an entirely different format. It not only shifts the relationship between taxpayers and tax authorities, but alters the way tax returns are submitted, taxes are paid and information is stored. Blockchain technology has the ability to disrupt and reorganize accounting and automate the process of payments, transfer and recording of assets. The potential of digitizing taxes has been noticed by many countries, and new solutions arise, such as SAF-T in Europe or real-time electronic invoicing in South America. Stimulated by a desire for greater efficiency and better compliance, tax authorities seek to gather and analyse information digitally. On the other hand, taxpayers expect the process of taxpaying to become easier and less time-consuming. Blockchain is without doubt one of the most promising technologies because of its ability to deliver reliable real-time information from many layers to a large audience, as is the case with tax — especially on an international level.

What is in it for Tax Authorities?

Governments and tax authorities have blockchain firmly in their sights as part of a wider move towards digitising the tax system and assessing tax in real-time.[3] Blockchain can pave the way for more advanced levels of transparency, immediacy and security with reporting, as more countries make progress towards digital tax reporting. Accurate and shareable information allows for earlier collection and oversight of transaction related taxes.

As the technology is still in its infancy, introducing blockchain to the tax authorities would require a revolution in both governmental databases and network systems. Asides from integrating IT systems on many levels, it is clear that implementing blockchain would also require far-reaching changes to the legal system, reforming laws on databases, intellectual property and legal identity. For that reason less developed economies are in pole position as they can build from scratch without hindrance from legacy systems. Eventually, blockchain could become the primary means of tax collection, possibly through the use of some form of government-endorsed cryptocurrency.

What is in it for Tax Payers?

While tax authorities' interest in blockchain is clear, you are bound to ask 'what's in it for me?'. The opportunities to rationalise complex processes and reduce the need for repetitive documentation between parties are good starting points. There are also opportunities to bring greater certainty to tax management and reduce the risk of audits and disputes. In particular, your tax records and approach would be agreed up front between the different parties in the network. This includes agreements with the tax authorities as part of the blockchain protocols, much as would be in an advanced pricing agreement. When combined with the move to more focused smart contract review, greater upfront certainty would limit the amount of audit defence time and need to hold reserves to pay disputed tax. Moreover, all transactions would be available for review and any steps to secure a competitive advantage through special

or questionable treatment of comparable transactions would be extremely difficult. Blockchain could thus create a more level playing field between competitors.

In the long run, blockchain can be a driving factor in implementing real-time, automated tax processes for both small and large enterprises. The initial focus is likely to be on indirect tax, though other areas of tax management such as transfer pricing and payroll tax could be brought into play as the blockchain networks develop.

How blockchain disrupts tax and accounting | credits: thomsonreuters.com

Value Added Tax

Value-added tax (VAT) is an indirect consumption tax placed on products or services whenever value is added in the supply chain, from production to the point of sale. Businesses must track and document the VAT they pay on purchases that will be resold in order to receive a credit for the VAT paid on their tax return.[4] VAT is one of the key driving factor of tax authorities and one of the largest contribution to governmental budgets. For these reasons tax authorities seak ways of more effective collection in order to gain more revenue and shorten the budget gap.

In the current state of VAT — on both national and international level — the system is fraught with a variety of problems. It is highly reliant on businesses themselves to correctly calculate the amount of VAT due and submit it to the tax authorities. As tax returns and settlements are calculated over a fixed period, for example monthly or quarterly, the calculations are not based on actual transactions but rather on arbitrary dates (for example invoice dates).[5] In addition, the system makes it difficult for governments to track VAT payments, resulting in different types of fraud.[6] In an international context, controlling VAT data is even more troublesome as each country maintains their own ledgers, making it difficult to obtain wholesome data on VAT movements. As such, blockchain technology potentially has a huge implication on VAT recording and reporting. Below is a non-exhaustive list of potential benefits:

- Real-time — both buyer and seller have a copy of the VAT related data leaving no space for differences. Blockchain technology transactions can be confirmed in real-time making the actual transaction much quicker in comparison with today's processes concerning, stocks, property, assets, etc. between all parties.
- Single use — since the registration of a purchase is processed in real-time for both buyer and seller, there is no possibility for duplication of entries.
- Transparency — transactions executed by smart contracts are tamper proof and transparent, which reduces the risk of fraud and mistakes. The system allows for processing VAT from a transactional point of view, multi-dimension checks and verifications of the transaction, parties of the transactions and legal and business context of the transaction.
- Digital signature — all transactions have to be digitally signed, making it more trustworthy and safer than a paper signature or e-mail approvals.

- Administrative efficiencies — the administrative burden of companies is significantly reduced, saving time and the cost of accounting services. As the blockchain calculates and registers what the item is, the value of the transaction and its provenance, taxpayers get the burden of VAT amount calculations on invoice level and VAT amount due on tax return level taken away.

Transfer Pricing

Transfer pricing is an accounting practice that refers to the setting of prices of goods and services (including those linked with intellectual property like research, patents and royalties) that are exchanged among the subsidiary, affiliate or commonly controlled companies or legal entities that are part of the same larger enterprise.[7] The laws regulating transfer pricing are different for each country, requiring that cross border transactions between related parties comply with arm's length prices — which should mirror the proposed or applied price between non-related parties in an open market. The potential impact of blockchain technology to transfer pricing includes:

- Tracking — instead of the need to heavily rely on intra-firm documents and correspondence to define the role of each involved party, a distributed ledger would make it easy to track the flow of transactions and identity all involved parties. Tracking of payments is no longer ERP- based, but executed by a smart-contract if they meet the specified conditions.
- Smart contracts — agreements would be written into a self-executing smart contract, obviating manual execution.
- Risk — as all movements on the Blockchain are time-stamped and cryptographically sealed, the risk of falsification of transaction documents is eliminated.
- Transparency — instead of paper documents and data stored on many servers, each information is stored on the Blockchain and visible to parties that have access to the blockchain.

Payroll Tax

Payroll tax is a tax that an employer withholds from an employee's salary and pays on behalf of his employee.[8] Matters related to payroll are mostly digitalized In the majority of developed countries. In the system of payroll taxes there are many government institutions involved and each one holds their own register. Implementing a blockchain would free employers from acting as intermediaries, responsible for calculating and transferring tax and social security payments from employee salaries to relevant institutions. Embedding smart contracts, where the employer inserts the gross amount of salary into the system, would result in the blockchain system (limited only to the tax authorities, banks and the other necessary parties) to match tax data calculating the correct tax and social security amounts. The net salary is then automatically transferred to the employee's account and the calculated tax to the authorities. As a result, the payroll tax process is faster and more cost efficient.

Future perspective

Blockchain development is still at an early stage and many issues are yet to be resolved. Transferring blockchain technology from cryptocurrencies into a more complex system like tax, is work in progress. The initial cost of implementation is arguably high, with an often cited lack of privacy and standards, and limited scalability for transactional purposes. Still, technology development is an ongoing process and blockchain is showing many benefits already. While the main hype and buzz is concentrated around financial services and banking, in a long time perspective it is also promising for the world of tax.

Blockchain technology has emerged at a time when many in the tax world are rethinking whether the current tax system — designed for the days when physical goods were traded, bought and sold — is still fit for purpose in the modern, digital era. Digitalization of tax is gaining speed, with not only developed countries adopting various electronic tax reporting, but those just developing as well. Does it still make sense for tax authorities to collect tax as they always have done in the past? No one has to answer — but we all know it's a more likely a question for tax policy rather than technology.

Tax is not the main priority when businesses think about blockchain. Although the focus is blockchain's potential to reduce transactional costs, a more streamlined, efficient and effective tax function would be a significant bonus. Building an entirely new tax system around blockchain is not realistic — we need to start small and look for the human problems that need to be solved. We are in the early stages of understanding what blockchain can do for businesses, for consumers and for the world of tax.

With blockchain technology considered as an enabler, not a solution in itself, exciting possibilities lie ahead.

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[1] https://www.coindesk.com/world-economic-forum-governments-blockchain
[2] https://www.coindesk.com/short-guide-blockchain-consensus-protocols
[3]https://read.oecd-ilibrary.org/taxation/technologies-for-better-tax-administration_9789264256439-en#page14
[4] https://www.investopedia.com/terms/v/valueaddedtax.asp
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