TAX AUTHORITIES EXPLORING BLOCKCHAIN

Blockchain technology enables transparency and trust between governments and citizens, including truthful reporting of tax data.

PROBLEM
With limited visibility on tax payments, countries fail to collect revenue owed to them and lose over $427B in taxes per year.

Higher income countries lose more money, but lower income countries suffer disproportionate financial effects.*

Effects on public services can be significant.

<table>
<thead>
<tr>
<th></th>
<th>Total revenue loss per year</th>
<th>Average tax revenue loss as % of total tax revenue</th>
<th>Average tax revenue loss as % of health expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower income countries</td>
<td>$45B</td>
<td>5.8%</td>
<td>52.4%</td>
</tr>
<tr>
<td>Higher income countries</td>
<td>$382B</td>
<td>2.5%</td>
<td>8.4%</td>
</tr>
</tbody>
</table>

*Aligned with January 2021 World Bank income classifications.

SOLUTION
Traceable revenue improves accountability, bringing a holistic view of taxpayer obligations and corresponding payments.

Certainty for taxpayer and administrator that taxable event occurred, authentication of actors and data to assess tax implications.

Clear and simple processes to monitor and administer compliance with tax obligations.

Data immutability and transparency to empower the tax function and support better policy design.

Reduced data silos to align tax requirements with other government services (e.g., trade, social services, justice, welfare distribution).

TAX AUTHORITIES EXPLORING BLOCKCHAIN

Blockchain ensures data is not manipulated to benefit tax processes, law, and policy.

Balancing privacy and transparency improves data sharing across jurisdictions and functions.

Tax Authorities Can...

- Join decentralized trust networks
- Oversee real-time tax collections
- Make decisions on tax events as they occur
- Increase trust from citizens with accountability

2. GBBC GSMI 2.0 Report (November 2021)
Jurisdictions can benefit from increased tax collections and reliability

- Revenue to develop economies, supporting functional and inclusive societies
- Blockchain to improve efficiencies
- Transparency and accountability to foster
  
  Better rules, policy & decision making
  Trust in government

COMPONENTS OF A BLOCKCHAIN-BASED TAX SYSTEM

- Confidential data not stored in central repositories or recorded directly on the blockchain
- Cryptography & zero-knowledge proofs (ZKPs) to prove a value without conveying sensitive data

- Compatibility between new & existing systems
- Accurate tax data & security measures across organizations

- Partnerships across governments (national, sub-national, municipal) & businesses
- Consistent data ingestion & processes

- Secure technology and audited code to prevent data breaches and other risks
- Consistent risk analytics & reporting, with KYC used in financial services
- Expert security analysis and responsive systems

- Stakeholder participation in governance & design to enhance long term viability
- Governance & board frameworks to define roles & incentive mechanisms
- Shared principles as guidelines that reflect participants' aspirations

- Enables taxable events and a targeted approach to them
- Can be tokenized currency

- Data security, integrity, and availability, with adequate consensus protocols for validation
- Data sourced from existing intermediaries with KYC programs
- Legal responsibility & adherence to due diligence and information sharing standards
BLOCKCHAIN FOR TAXATION #3

PROPOSED MODELS OF SOLUTIONS

SYNERGIES WITH AI & BLOCKCHAIN

Artificial Intelligence
- Sophisticated data analytics optimize compliance & efficiency
- Natural Language Processing analyzes legal provisions & case law

Blockchain Technology
- Information security
- System scalability
- Fraud reduction
- Governance

TRADITIONAL SYSTEMS
- Centralized & fiat-based
- Bilateral & intermediated trust relationships

DISTRIBUTED SYSTEMS
- Individuals, corporations, and states exchange identity, trust, data, and value directly

Smart contracts for legal, regulatory, and contractual restitutions on data usage & sharing
Zero-knowledge proofs (ZKPs) for transnational regimes like value-added tax (VAT) & withholding taxes
Non-fungible tokens (NFTs) establish data is unique, immutable, and owned by users with specified permissions

IMMUTABLE NOTARIZATION ON BLOCKCHAIN

TAXABLE EVENT
- Citizens own their identity keys & decide to share their verified data
- Both parties compute a cryptographic hash of taxable event documentation
- Parties retain their own data

HASH-ONLY BLOCKCHAIN
- Immutable record of cryptographic hash values, with record identifiers for transaction documentation
- Acts as automatic notary for digital legal notarization

GOVERNMENTS
- Tax authorities may request data records
- Can recompute cryptographic hash values for records, ensuring nobody modifies data

LEGAL AND REGULATORY CONSIDERATIONS

- New rules for new issues
- Balancing automation with human review & adjudication
- Addressing legal ambiguity (e.g., binary objective criteria to trigger legal presumptions)
- Cross-border coordination (e.g., smart contracts to attribute tax treatment to adequate jurisdiction)

- Compliance with GDPR & other data laws (e.g., ZKPs & advanced cryptography for privacy)
- Alignment with competition law for different DLT systems & validation mechanisms, preventing use of commercially sensitive data for illegal price setting & anti-competitive behavior
- Protecting taxpayer rights (e.g., dispute resolution, burden of proof, identity management & digital inclusiveness)