

Focal theme for the Hackathon: Use of blockchain technology to improve the efficiency of Government Debt Issuance and / or use blockchain technology to improve the government bonds market efficiency and functionality.

General

The Accountant General's Government Debt Management Unit (GDMU) is responsible for managing the government debt, financing government activity and funding the deficit. The main source of funding is through the issuance of Israeli government bonds. The following are the key features of a government debt system:

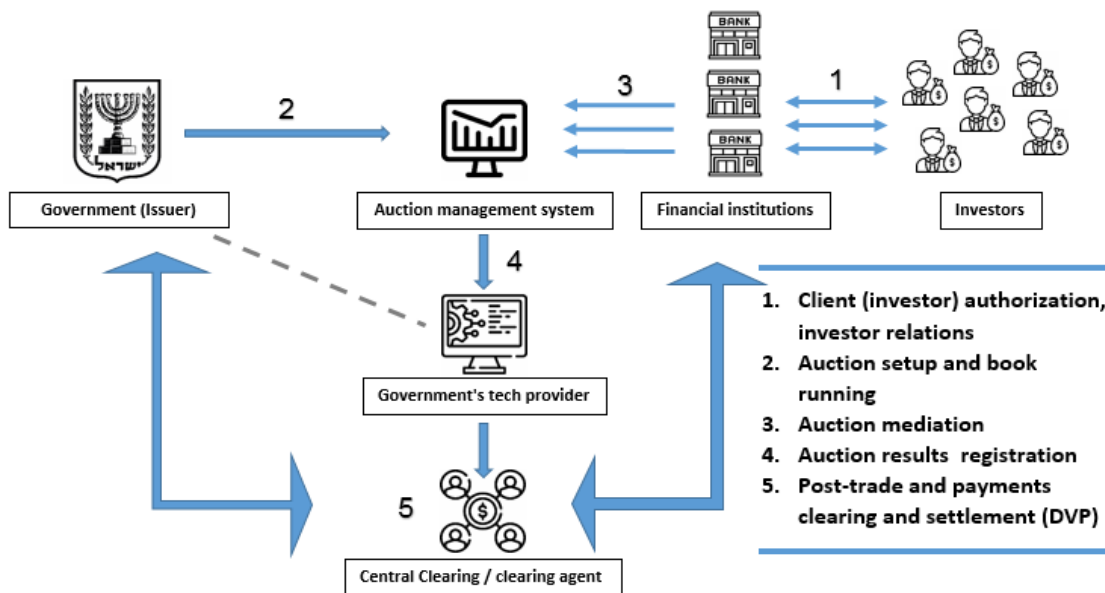
- **Issuance** – New government bonds are issued through a public and fair auction process, and sold to investors. Following the closing of the auction, bonds are registered to the winning bidders, while at the same time funds (FIAT) are transferred from the investors to the state. The transfer of the funds constitutes a precondition for transferring the bonds to the possession of the auction winners.
- **Tradability** – The bonds that were issued in the issuance stage, can be traded by investors in the secondary markets.
- **Interest and principal payments** – The ownership of a bond entitles the owner to coupon (interest) and principal (the debt) payments (FIAT) on specified dates, according to the bond's characteristics and amortization schedule which were defined before the issuance.

These key features are controlled by the Accountant General, while other important aspects of the system are delegated to regulated third parties, or intermediaries. Specifically:

1. Onboarding of investors, both private and institutional, who must go through KYC and AML verification.
2. Marketing and promotion of government bonds to investors, providing visibility of the product.
3. Facilitating tradability of government bonds over authorized trading platforms.
4. Custodianship of the bonds being held by investors.
5. Clearing and Settlement – subject to a Delivery-Versus-Payment (DVP) mechanism by making the transfer of one obligation conditional upon the concurrent transfer of the second obligation (the transfer of bonds, on the one hand, and the transfer of the funds, on the other).

Throughout the entire process the GDMU has no information about the investors' characteristics and the interactions with them and between them, require intermediaries.

Current practice



The Auction / Primary Market

The auction is managed through a competitive process that allows investors to bid on both the amount and the price of the bond.

The GDMU publishes in advance the following characteristics for each auction:

- Bond characteristics: ISIN (International Securities Identification Number), name, type, coupon, maturity date, amortization schedule, etc.
- Auction date, start and closing times
- Total offered amount to be issued
- Settlement date (in accordance to market practice, usually the day following the auction)

Investors submit their bids through selected intermediaries who were authorized in advance to participate and place bids in the GDMU's designated auction system (investors must go through an onboarding process with the intermediary to ensure proper regulatory compliance).

After the auction is closed the bids are sorted according to their price (highest to lowest). The investors will be allocated bonds according to their bid price until the total offered amount is reached.

Post-trade

Following the auction, the intermediary partner ensures that the bidders have the declared funds and are available for transfer.

The issuance process is concluded after the DVP based clearing and settlement are completed. The following trading day, trading in the secondary market commences.

Secondary market

Following their issuance, bonds are available for trading in the secondary market, typically on trading platforms (such as the Tel-Aviv Stock Exchange and MTS-Israel) or Over-the-Counter (OTC). Some data and information related to the trades is transparent to all market participants (transaction's price, size, date and time) by the trading platform. Following each transaction executed in the secondary market begins a clearing and settlement phase.

Trading days are subject to market practices (in the domestic market, for example, Sunday to Thursday, with clearing and settlement on Sunday to Friday).

Debt and coupons payments

Refers to the process where the GDMU executes the coupon and principal payments according to the bond's payment dates (as established in the published details).

DLT-based distribution of issued Israeli government bonds

We are looking for blockchain-based solutions that can address the requirements of the different parties involved. Specifically, mitigating risks and increasing efficiency for the Accountant General and the investors.

Can any of these components and aspects be managed through a blockchain-based solution?

- Build a Government-to-Citizen issuance model that will allow:
 - Increase decentralization and improve system efficiency in the issuance, post-trade and payment components.
 - Provide direct ownership of bonds to the investors (retail, institutional, etc.).
 - Ensuring transparency from the government to all types of investors.
- Build a secure auction protocol for bond issuance to:
 - Ensure the existence of funds or credit so that winning bidders are ensured to complete the purchase transaction.
 - Prevent investors from changing their bids after the auction closes, while enabling them to add, modify or delete the bid while the auction is ongoing.
 - Enable the GDMU to maintain bookkeeping from the auction data stored on the blockchain.
 - Publish in real-time the auction results (amount issued, bid-to-cover ratio, minimal price received, cut-off price).
 - Reveal to the winners their allocation and enable them to complete the operation.

- Build a Peer-to-Peer transactional system to:
 - Establish commercial assurance, where the settlement process is based on DVP mechanism, assuring settlement finality and executed either real time or close-to-real-time.
 - Guarantee direct ownership and full custodianship to the buyer of the bond.
 - Enable payments (coupons and principals) derived from the bonds, to be paid by the GDMU, taking into account that the ownership of bonds changes due to trading in the secondary market.
- Enable the trade-off between privacy vs auditability of the system to:
 - Provide a clear and trusted picture of the current state of the system for the purpose of government auditability, that includes:
 - The blockchain identity of the owner.
 - Confirmation that the owner has been onboarded according to regulation (jurisdiction, KYC, AML). On this aspect the issuance cannot be permissionless with respect to the investors which are eligible to participate in the issuances. The issuances must include a method to confirm that access to the issuances and on-boarding complies with client due-diligence (CDD) requirements:
 - Investors' general characteristics :
 - Type: retail, institutional, bank, etc.
 - Place of domicile.
 - Legal eligibility of investors.
 - Preserving bidders' privacy:
 - The blockchain identity of each bidder in the auction is known to the GDMU, but not necessarily their real-life identity.
 - The identity of each bidder, as well as the price and amount offered, is not disclosed to other investors.
 - The identity of counterparties to a trade in the secondary market is kept hidden from the public, but for the purpose of fixing market price the trades' price and amount may be disclosed (note that privacy-enhancing techniques could be used to prevent this disclosure).
 - The GDMU uses analytical tools to analyze the historical issuance data. The data should be recorded on the blockchain and available exclusively to the GDMU.

Appendix: Terms and definitions

Bonds:

Debt securities are a type of loan, being issued by an issuer, and sold to investors (primary market). Typically, bonds pay regular interest payments (coupons) to investors, and return the full principal loaned when the bond matures.

Following their issuance bonds can be bought and sold in the secondary market.

The entitlement for the coupon and principal payments is determined according to each bond's pre-defined dates (record days).

Clearing and Settlement, DVP:

Settlement is subject to a Delivery-Versus-Payment (DVP) mechanism, which ties between the seller's obligation to transfer the assets (bonds) on one hand, and the buyer's obligation to transfer the funds, on the other hand. This requires the involvement of recognized intermediaries acting as clearing agents / central clearing parties. The transfer is performed only when both parties have assets and funds that are available for transfer.

The outcome of this post-trade phase is the settlement of the funds and the revision of the bonds ownership.

Primary and Secondary markets:

The primary market refers to the phase where securities are created, i.e. sold to investors by the issuer.

The secondary market refers to the phase where issued securities are traded between investors.