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Interest Rate Swap Tokenization

This project demonstrates the deployment and management of Interest rate Swap (IRS) contracts through the ERC-7586 standard. The standard allows the issuance of IRS tokens through the ERC-20 token standard, and the burning of these tokens during the swap.

In addition to all smart contracts deployed for Financial bonds, the following contracts have been implemented to manage the IRS swap:

- ERC7586: This contract inherits the ERC-7585 and ERC-20 interface and allows to mint, and burn IRS tokens, and to manage Interest Rate Swaps.

- ToposBank: A contract that manages issuers, deals and IRS life cycle.

- IRSFactory: This contract allows to deploy IRS contracts for two selected deals.

- IRSCall: This contracts represents an API interface for any IRS contract. It takes the bond contract address as parameter, and makes call to fetch IRS data from the contract, and allows to make transactions.

Core Protocol

At its core, the platform uses ERC-7092 to issue, trade, manage, and redeem bonds, and ERC-7586 to deploy and manage Interest Rate Swap contracts, and ERC-20 to tokenize IRS swaps.

Diagram

The following figure shows the IRS use case where to counterparties (company A and company B) that have issued bonds enter into an IRS contract. Without IRS swap, company A pays pays floating interests to investors, while company B pays fixed interests. With the IRS swap, company A pays fixed interests, while company B pays floating interests.

The diagram can also be found in the Github repo.