INTERNAL MEMO

INNOU Investment Policy Principles in Tokenizing Real Estate

INNOU, March 21, 2021

M.

Digital tokenization of assets based on cryptographic distributed computation is changing the course and manner of business globally.

Application of these technologies are increasing the efficiencies of financing and capital formation, and, when thoughtfully applied, is fundamentally altering traditional forms and terms of fund raising.

Asset tokenization for raising funds is the carefully structured process whereby assets or liabilities are packaged, underwritten, and sold in the various forms of digital cryptographically protected and specifically distributed tokens which currently become commonly known as asset-backed tokens. Such tokens are essentially digitally created contracts with a set of self-governing rules and conditions.

As such, it is a subset of a broader trend, the general phenomenon whereby more and more fund raising is occurring through the agency of digital tokens.

Currently, there are forming three types of Real Estate-Backed Token[1]s for raising funds on the markets:

- Utility Tokens;
- Equity Tokens;
- Debt Tokens.

All three types of Tokens can have strong similarities to the degree of blending, depending on the way the structuring had been approached, which is especially picturesque for the first two types - Utility Tokens and Equity Tokens – due to the very nature of the real estate being used as underlying asset.

These asset-backed financing instruments normally have credit risk which can and must be structured.

> **Whilst INNOU is working on all three types of the tokens, we have distinctly strong focus on the Debt Tokens.**

This memo provides a theoretical overview of asset-backed tokenization and a platform upon which to build an understanding and represents a basic tool kit – the working knowledge one needs to understand the structure of an asset-backed tokenization transactions.

[1] Herewith after we use definition "Token" as designating digital negotiable contract normally created using certain blockchain and distributed computation protocol and protected by cryptographical algorithms.

TOKENIZATION AS A TECHNOLOGICAL ADVANCE

In the economists' definition, a technological advance is a new process that yields either a comparable service from less resources than before, or a better service from the same resources as before.

In this respect, in our view, asset-backed tokenization does represent technological advance – and a very sizable one.

On the surface, asset-backed tokens may look more like complex manipulations of regulatory guidelines and accounting conventions than the product of a technological process. But, although asset-backed tokenization is sensitive to regulatory guidelines and other arbitrary limits, it draws its lifeblood not from regulatory arbitrage but from the way it handles risk. In this respect, it is fundamentally more efficient than conventional fund raising.

UTILITY TOKENS:

Real Estate-Backed Utility Tokens may have strong similarities to the Equity Tokens due to the presence of fractional owner or quasi-ownership as an undivided interest in the underlying real property.

There are two major subtypes of the Real Estate-Backed Utility Tokens to be considered:

- Deeded Fractional Ownership Token, when a buyer purchases interest in a property[2];

- Non-Deeded Fractional Ownership Token, when a buyer purchases the limited rights of use for a property[3].

The General Topology of the Real Estate-Backed Utility Tokens:

- fixed-time-slot ownership - buyers have the right to use a unit during the same time-slot (most often a week) each year;

- floating-time-slot ownership - buyers have the right to use the property during a range of available time slots;

- point-system ownership – club-style system where buyers purchase a specific number of points that can be redeemed at various locations. In some instances, buyers can save their points to purchase more expensive time. The costs can vary by unit size, location, time of year, brand, and other factors.

The mechanisms of the most perspective modifications of the Utility Tokens have strong similarities to well-established timesharing part of the vacation industry.

[2] With deeded contracts the use of the property is usually divided into week-long increments and are sold as real property via fractional ownership. As with any other piece of real estate, the owner may do whatever is desired: use the week, rent it, give it away, leave it to heirs, or sell the week to another prospective buyer. The problem of the present systems is absence of efficient trading platform and liquid instruments. The owner is also liable for an equal portion of the real estate taxes, which usually are collected with condominium maintenance fees (the owner can potentially deduct some property-related expenses, such as real estate taxes from taxable income).Deeded ownership can be as complex as outright property ownership in that the structure of deeds vary according to local property laws. Leasehold deeds are common and offer ownership for a fixed period of time after which the ownership reverts to the freeholder. Occasionally, leasehold deeds are offered in perpetuity, however many deeds do not convey ownership of the land, but merely the apartment or unit (housing) of the accommodation. For a deeded timeshare, the owner also has to the proportionate share of the monthly mortgage.

[3] With right-to-use contracts, a purchaser has the right to use the property in accordance with the contract, but at some point the contract ends and all rights revert to the property owner. Care should be taken with this form of ownership as the right to use often takes the form of a club membership or the right to use the reservation system, where the reservation system is owned by a company not in the control of the owners. The right to use may be lost with the demise of the controlling company, because a right to use purchaser's contract is usually only good with the current owner, and if that owner sells the property, the lease holder could be out of luck depending on the structure of the contract, and/or current laws in foreign venues.

The unfair practices of timeshare servicers were strongly addressed by international and a number of national regulations, especially in the E.U.[4] and the U.S.A.

Timesharing is essentially a form of fractional ownership, where buyers purchase the right to occupy a unit of real estate over specified periods. For example, purchasing one week of a timeshare means the buyer owns 1/52 of the unit. Buying one month equates to one-twelfth ownership.

Time-sharing is relatively popular within vacation locales. Property types include homes, condominiums and resorts. The model can also apply to recreational vehicles and private jets. The timeshare industry is mainly concentrated within the United States.

One of the strongest points of the timeshare is presumed to be competitive pricing for staying in professionally-managed resort in a predictable setting.

Deficiencies of Contemporary Timeshare Market to be Solved by Deployment of Utility Tokens:

- The size of conventional timeshare market is relatively low[5]. However, it can be substantially increased by introduction of the organized market of relevant Utility Tokens;

- Timesharing is rife with gray areas and questionable business practices and has been suffering a serious controversy over recent years due to the unfair practices of some of the operators who had left with them and then leveraged in their own favor the option to increase annual and other periodical maintenance costs, which led to considerable hidden costs to the timeshare participants and often drove the total cost of timeshare ownership to prohibitive levels (contemporary average 10-year one-week-a-year timeshare costs are currently valued at around $45,000 in the US). Timeshare sales more often than not have been high-pressure and fast-moving affairs. This issued can be efficiently addressed by streamlining and simplifying the process through creation of transparent publicly traded Utility Tokens platform;

- Cancellations, or rescission, or even exchange of the timeshare contract, remain the industry's biggest problems to date. A timeshare contract is a binding one; the owner cannot walk away from a timeshare contract because there is a change in his or her financial or personal circumstances. The resale is notoriously difficult (even if the contract allows it at all) as secondary market is extremely underdeveloped

[4] In 1994, the European Communities adopted "The European Directive 94/47/EC of the European Parliament and Council on the protection of purchasers in respect of certain aspects of contracts relating to the purchase of the right to use immovable properties on a timeshare basis", which was subject to recent review,[3] and resulted in the adoption on the 14th of January 2009 on European Directive 2008/122/EC.

[5] In 2019, The Worldwide Vacation Ownership (Timeshare) market size was USD 15 billion and it is expected to reach USD 26 billion by the end of 2026, with a CAGR of 7.3% during 2021-2026.

due to a number of technical reasons. This problem can be solved by creating global public trading platform for the Utility Tokens;

- The negotiability of the timeshare is greatly hampered by the fact that the lion's share of the cost of a new timeshare are sales commissions and marketing overhead, and cannot be retrieved by the timeshare owner if he wants to sell what she bought. Unified Utility Tokens platform solves this problem;

- the unlimited duration of a commitment to pay ownership maintenance fees is often prohibits the potential buyer from purchasing timeshare. Once timeshare has been tokenized, the maintenance fees will be reflected into the market price of the Token;

- The idea of owners exchanging their week, either independently or through exchange agencies, has been used as the basis for attracting mass appeal to purchasing a timeshare. However, in the current state of affairs, it remains mostly idea, but not readily available option. Timeshare reselling by the private owner is almost impossible to implement. In most cases, an owner looking to sell literally cannot give the timeshare away. Timeshare resale companies have sprung up that actually charge the owner to assume his/her timeshare ownership - contending that the resale company must assume the maintenance fees along with marketing fees - until that burden can be transferred to a new buyer. The coverage of the timeshare contracts in terms of locations available for a particular contract remain an issue as they limit buyers' freedom of choice. As a matter of a fact, the exchangeability of the timeshare contract is a matter of liquidity of the timeshare as an instrument. The vacation industry tried to increase liquidity by creating certain similarity of the institutional market through establishment of timeshare location exchange companies, such as Interval International and RCI[6]. However, the efforts essentially failed and the global market remains highly fragmented phenomena, which limit the options available for timeshare holders and thus keeping down the liquidity of timeshare as investment instrument. This problem

[6] RCI and Interval International (II) are the two largest exchange agencies which over 7,000 resorts. They have resort affiliate programs, and members can only exchange with affiliated resorts. It is most common for a resort to be affiliated with only one of the larger exchange agencies, although resorts with dual affiliations are not uncommon. The timeshare resort one purchases determines which of the exchange companies can be used to make exchanges. RCI and II charge a yearly membership fee, and additional fees for when they find an exchange for a requesting member, and bar members from renting weeks for which they already have exchanged. Owners can also exchange their weeks or points through independent exchange companies. Owners can exchange without needing the resort to have a formal affiliation agreement with the companies, if the resort of ownership agrees to such arrangements in the original contract.
Due to the promise of exchange, timeshares often sell regardless of the location of their deeded resort. What is not often disclosed is the low liquidity of the trading market and the difference in trading power depending on the location, and season of the ownership. If a resort is in a prime vacation region, it will exchange extremely well depending on the season and week that is assigned to the particular unit trying to make an exchange. However, timeshares in highly desirable locations and high season time slots are the most expensive, subject to demand typical of any heavily trafficked vacation area. An individual who owns a timeshare in the American desert community of Palm Springs, California in the middle of July or August will possess a much reduced ability to exchange time, because fewer come to a resort at a time when the temperatures are in excess of 110 °F (43 °C).

can be successfully addressed by creation of the global digital trading platform for the exchangeable Utility Tokens so that owners in any given area could exchange their week with owners in other areas effortlessly. This is massively appealing idea.

Pros for the Utility Tokens:

- In the U.S., timeshare is generally not considered to be security, which simplifies issued of Utility Tokens[7];

- The Tokenization of timeshare can simplify the distribution of the maintenance expenses by the fluctuating dynamic pricing of the Tokens on the trading platform (timesharing typically comes with a number of recurring payments and fees. Monthly loan payments often come with high-interest rates and annual maintenance fees can escalate. As with ownership in any type of property, one-off expenses can add up and become more frequent over time;

- With properly structured Utility Token and the public trading platform, the holders will be able to easily:

    - Use their usage time;
    - Rent out their owned usage;
    - Give it as a gift;
    - Donate it to a charity;
    - Exchange internally within the same resort or resort group;
    - Exchange externally into thousands of other resorts;
    - Sell it;
    - Assign their usage time to the point system to be exchanged for airline tickets, hotels, travel packages, cruises, amusement park tickets;
    - rent part of their points without actually getting any usage time and use the rest of the points instead of renting all their actual usage time;
    - Rent more points from either the internal exchange entity or another owner to get a larger unit, more vacation time, or to a better location;
    - Save or move points from one year to another;
    - Etc.

Cons for the Utility Tokens:

[7] The Federal Trade Commission makes it clear that "the value of these options is in their use as vacation destinations, not as investments." (https://www.consumer.ftc.gov/articles/0073-timeshares-and-vacation-plans) - retrieved as at 03.28.21.
In Scott v. Bluegreen Vacations Unlimited, Inc., 2020 U.S. Dist. LEXIS 107212 Applying the definition of an "investment contract" adopted by the U.S. Supreme Court in SEC v. W.J. Howey Co., 328 U.S. 293 (1946), Judge Anthony W. Ishii ruled that the purchased rights were not securities under either the federal or state definitions. In particular, he noted that the Vacation Points were for the use and enjoyment of the purchaser and not transferable. Judge Ishii's ruling, however, should not be understood to mean that a time share arrangement can never come within the definition of a "security". An arrangement's status as a security is not determined by nomenclature but by the particular facts and circumstances involved (https://www.natlawreview.com/article/court-rules-rights-to-timeshare-vacation-points-are-not-securities - retrieved as at 03.28.21.

- The efficiency will depend on the width and depth of the property pool compatible with the Tokens traded on the platform.

The deployment of Utility Token for timesharing contracts allows to mitigate and ultimately eliminate the deficiencies of the inherited timeshare market through liquid negotiability of the instrument on the organized market of digital crypto-tokens, higher transparency, standardization of rules, terms and procedures, typification of conditions and practices and much better protection of the interests of the timeshare holders.

How the Utility Tokens Can Work:

The simplest form of realization is points-style system, that combines features of deeded timeshare with right-to-use offerings.

Purchasers of Utility Tokens (Tokeners) receive a deed conveying an undivided real property interest in a timeshare unit. Each Tokener's property interest is accompanied by an annual allotment of points (sub-Tokens) in proportion to the size of the property interest. The points system shall be highly flexible and may be used in different increments for vacation stays at various locations in a variety of accommodations.

Tokens and sub-Tokens can be exchanged for worldwide for using various locations and premise. They shall also may be banked into or borrowed from future periods. Deeded Token / sub-Token structure shall be adopted by large timeshare developers, like the Disney Vacation Club, Hilton Grand Vacations Company, the Marriott Vacation Club, the Hyatt Residence Club, Accor, WorldMark by Wyndham, Diamond Resorts International and others to offer a large selection of options for destination.

Points/sub-Tokens programs periodically and systematically give the owner a number of Tokens equal to the level of ownership. The owner in a Token program can then use these Tokens to make travel arrangements within the resort or hospitality group.

The platform shall provide flexibility from the traditional week stay and provide access to the entire available inventory of the affiliated members of the platform.

A Tokener may request fractional weeks as well as full or multiple week stays, or any other time slots, down to particular hours.

The number of Tokens required to stay at the resort in question will vary based on a Tokens price chart.

The points chart will allow for factors such as:

- Popularity of the resort;
- Size of the accommodations;
- Quality of the accommodations;
- Number of nights;

- Number of guests;
- Desirability of the season;
- Auxiliary services and amenities (transportation, tour guiding, child care, etc.);
- Additional accompanying services (e.g., through expansive vendor network to help save on repairs and maintenance)
- etc.

As the Token will be openly traded on specially created public platform, it will be easy to compare the price of the Token to staying at hotels and other accommodations.

Monthly vacation mortgage payments, upfront costs, fixed schedules, maintenance fees, preset vacation locations and other factors will be factored into and reflected by the market price of the Token and thus shall not be paid separately.

EQUITY TOKENS:

Utility Tokens are not investment for their holders. Equity Tokens are.

Equity means ownership, and in domain of the Real Estate-Backed Tokens it means fractional ownership in the property.

Simplifying, the fractional co-ownership of the property can be structured as

- either right to use the whole piece of the property for a particular limited period of time, periodically or once;

- or as a right to own particular (either physically defined and non-fungible, or mathematically allocated and thus fungible within the project property domain) fraction of the property continuously, without time limitations, or almost without time limitations such as a long-lease period (e.g., for 10 years and more).

It is implied that the fractional owner is entitled to all benefits and incomes his or her fraction of property generates, along with expenses it incurs, defined by simple and easily understandable arithmetical algorithms applied to the overall revenue capacity and costs burden of the whole property.

Conceptually, fractional ownership is not the same as timeshare. Fractional ownership affords much of the freedom and usage benefits offered in timeshare; however, the fundamental difference with fractional ownership is that the purchaser owns part of the title (as opposed to units of "time"). Therefore, if the property appreciates in value, then so do the shares. As with whole ownership, fractional owners can sell whenever they deem necessary or prudent, releasing the capital growth from their "bricks & mortar" investment.

The General Topology of the Real Estate-Backed Equity Tokens:

In our parlor, we consider Equity Tokens to be only those tokens which entitle the holder to a particular fraction of the property without operational time limitations and periodical interruptions in time (we allocate the ownership of the right to use fraction or whole of the property in particular periods of time to Utility Tokens type). As mentioned above, such continuous ownership of the fraction of property can be structured as

- either ownership in a particularly defined fraction of property, e.g. particular sq. meter designated on the individual plan of the property (such as “sq. meter No.7 in the Bedroom No.1 in the Living Premises Plan No. 003”), which make such underlying fractional property, along with the Token based on it, non-fungible (NFT stands for Non-Fungible Token);

- or blended, typified, collective co-ownership in the fraction of the property which is not assigned to a particular physical piece of the property but is defined as a fungible mathematical portion of it (such as "one sq. meter in the house No.A-001), which delivers fungible the digital cryptographical Equity Token based on it.

In terms of the structuring there is no essential difference between Fungible and Non-Fungible Tokens because of the very nature of the real estate, unless the structure of the tokenization is designed to give to the token holders a right to acquire insulated property through consolidation of the required number of tokens. Such structures may be complicated in terms of rules of functioning and regulations, and although they are feasible, they are out of the scope of the present paper.

Deficiencies of Contemporary Fractional Ownership Market to be Solved by Deployment of Equity Tokens:

Traditional fractional ownership has always been a method in which several unrelated parties can share in, and mitigate the risk of, ownership of a high-value tangible asset, usually a jet, yacht or piece of real estate. It can be done for strictly monetary reasons, but typically there is some amount of personal access involved. One of the main motivators for a fractional purchase is the ability to share the costs of maintaining an asset that will not be used full-time by one owner.

The tokenization of the fractional ownership through Equity Tokens turns the situation upside down, and for the better. Through the low cost of issue and servicing, the Utility Tokens allow to include micro-investors to participate in micro-fractional ownership on a massive scale not for the reasons of sharing expenses, but to participate in the revenue and incomes.

The revenue can be generated through

- rent/leasing income secured by the tokenized property,
- appreciation of the tokenized property;
- sale of the tokenized property.

Every fractional endeavor requires professional management, to administer the rules and regulations which are agreed upon before the fraction is purchased and maintain the asset to the degree laid out in the ownership documents. The tokenization of the ownership through Utility Tokens greatly simplifies the relationships between Tokeners and management by deploying smart contracting.

For example, vacation home sharing, also known as holiday home sharing, traditionally involved four European families that would purchase a vacation cottage jointly, each having exclusive use of the property for one of the four seasons. They rotated seasons each year, so each family enjoyed the prime seasons equally. This concept was mostly used by

related families because joint ownership requires trust and no property manager was involved. However, with deployment of the Equity Tokens the matter of trust can be settled satisfactorily with proper structuring of the rules in the governing smart contract.

Shared Deeded Ownership

Shared deeded ownership

gives each buyer a percentage share of the physical property,

corresponding to the time period purchased.

A resort condominium unit that is sold in timeshare increments of one week

can technically have 52 total deeds.

In other words,

buying one week would confer a one-fifty-second (1/52) ownership interest

in the unit

while two weeks would give a one-twenty-sixth (1/26) interest and so on.

Shared deeded ownership interest

is often held in perpetuity

and can be resold to another party or willed to one's estate.

How the Equity Tokens Can Work:

The ownership interest in the underlying asset can be structured either directly, or through the interest in the equity of the legal entity[8] which keeps the assets on its balance, either in trust or as a full owner. The holding entity can also act as a management company, but not necessarily.

Tokens are issued as a deeded percentage ownership in the underlying property /equity and are sold to individual owners. Normally, in the case of the real estate such interests are denominated in fractions of square feet or square meters of the general / total area. The property may be either in freehold or leasehold[9].

[8] Analogous to "mezzanine entity".
[9] Some jurisdictions have tax laws that provide additional benefits for owners, such as capital-loss allowances, while others might penalize ownership over renting.

Typically, a professional management company manages the asset on behalf of the Tokeners, whose monthly/annual fees for the management plus variable (e.g., per-hour, per-day) use fees are factored into he price of the Tokens.

For rapidly depreciating assets, the Tokeners may give the management company the right sell the asset and distribute the proceeds back to the Tokeners, who can then claim a capital loss and optionally purchase a fraction of a new asset.

Generally, management will oversee the daily operation of more than one property, or a single fractional asset may be managed by a single entity.

Each Tokener is guaranteed a prescribed amount of access to the asset, which typically can be used or offered to the public as rental or charter, the income is usually split between the management company and the Tokener as a fractional owner, unless the Tokener finds the renter himself.

The annual management fees and maintenance, relative to the percent of ownership, are factored into the market price of the negotiable Tokens, which make the situation transparent and easily manageable for the Tokeners.

> *In case of aircraft tokenization, fractional ownership offers an investor the option to purchase a share of an aircraft. The park of the aircraft is pooled to facilitate easier participation for the micro-investors.*

The term fractional ownership originally became popular for business jets. The fractional ownership concept has since been extended to smaller aircraft and now has become common for single-engine piston aircraft like the Cirrus SR22, which are beyond the financial means of many private pilots[10]. The same concepts apply, except that the management company may not provide flight crews nor reposition the aircraft.

Fractional ownership has played a significant role in revitalizing the general aviation manufacturing industry since the late 1990s, and most manufacturers actively support fractional ownership programs.

In conventional fractional ownership of aircraft, the shares are issued from the minimum fractions of 1/16 of an aircraft (which offers approximately 50 hours of flight time per year) up to 1/2 of an aircraft can be purchased, depending on the needs of the operator.

The most common amounts purchased in traditional fractional aviation sharing usually range from about 1/8 to 1/4 (approximately 200 flight hours per year) of an aircraft[11].

Though the owner takes title of the portion of their investment, they are not assigned to a dedicated aircraft for usage. Instead, they are given access to a pool of similar aircraft, and therefore, theoretically, an owner may never actually fly on their titled jet. Members will typically fly in any jet available, not necessarily the one in which they own shares. The

[10] Many pilots get together to buy light aircraft in a privately bought and managed fractional ownership, this is often known as group flying.
[11] "Fractional Ownership". AOPA Pilot Magazine. 2005-02-17. Retrieved 03.27.21.

management company will reposition jets as necessary and provide flight crews. Companies with greater needs purchase larger shares to get access to more time.

> *In tokenized fractional ownership the Tokeners can buy as little as 1/10000 or less interest in the aircraft. The major reason for investment would be participation in the revenue which aircraft generates.*

In traditional fractional aircraft ownership, co-owners (referred to as 'owners') of a fractional program's aircraft are required to pay a percentage of the aircraft's purchase price that is proportionate to the number of hours they wish to fly per year, for the duration of their contract - typically 5 years. In addition to the price, there are fees charged for all occupied flight hours (that fluctuate with changes in fuel prices), as well as monthly fixed-management fees that cover maintenance and administration of the program. In return, the customer receives a predetermined number of hours in the aircraft of their choice, based on the owner's needs and the amount they are willing to pay. Fractional owners are guaranteed that this aircraft, or another aircraft of the same model or comparable aircraft type, will be available 24 hours a day, 365 days per year, with as little as four hours' notice.

> *In tokenized fractional ownership of the aircraft, there is not need to link the Tokens to flight hours, as the Tokens are representing the shares in the asset and revenues it generates.*

The management company provides all scheduling, flight planning, staffing, catering, maintenance, communications, and insurance services.

In traditional fractional ownership of aircraft, the owner simply picks up the phone, calls a dispatcher, requests a flight, and drives to the airport.

> *In tokenized fractional ownership of the aircraft, the Tokener receives his share of the income from use of the underlying asset represented by the Tokens.*

DEBT TOKENS: TRADITIONAL LENDING IS COSTLY AS IT BUNDLES RISKS

Risk in lending comes from two sources.

First, the borrower may not repay on time or may not repay at all – a credit risk.

Second, interest on the debt assumed to fund the loans may not match the terms and pricing of the loans – "mismatching" – which exposes the lender to interest rate or prepayment risks.

Raising funds through asset-backed tokenization instruments manage these risks more explicitly and more efficiently than conventional lending.

It makes these risks more transparent and it also allocates them far more precisely to the players who are the best able to absorb them.

Under traditional lending, the commercial bank, thrift, or finance company that originates loans endeavors to minimize credit risk through two phases:

- Initially, through a review process before granting the credit;
- And thereafter through a continuous monitoring and servicing process.

Whatever risk the credit contains, the lender absorbs by holding the loan in its own portfolio. In other words, it insulates the depositors or other creditors that fund the loan by backing its obligations with its full faith and credit.

This backing requires equity capital: the lending party must provide a buffer layer of funding that is subordinated to the claims of depositors and other providers of low cost funds.

Such capital is expensive.

The capital markets effectively impose equity capital requirements upon lending entities who turn to them in order to borrow at least a portion of the monies needed to fund their loans. In order to borrow at reasonably attractive rates, lending institutions must back up their capital market borrowings with an amount of equity capital proportionate to the risk of default, as viewed by the fund owners in the capital markets.

For unregulated lenders, such as large finance companies, the capital market appear frequently require at least 10 percent equity capital to total assets. It means that 10 or more cents of every dollar lent by many finance companies is funded by equity. The added cost of this expensive equity currently translates into incremental costs over what 100 percent debt funding would have permitted given market conditions.

The high degree of leverage for the regulated financial institutions does not appear to be sustainable. The capital and money markets are increasingly signaling their discontent with the financial soundness of many large banks b requiring a significant credit yield

premiums on the longer-term debt obligations issued by these institutions. The regulators, moreover, are increasing the level of equity capital which they will require commercial banks to put up in return for the deposit guarantees and other supports and privileges which a banking charter brings. Thus the regulators and the capital and money markets are moving together to increase the cost of capital consumed in commercial bank lending. Existing base of capital dedicated to the commercial banking industry costs excessively when measured in terms of the stock market required returns on equity.

Whether it is measured in the aggregate or on a loan-by-loan basis, the cost of the equity buffer in lending is large.

Since asset tokenization is extremely effective at reducing the amount of equity consumed in lending and thus reducing the costs of funding, it presents a fundamentally more efficient technology for lending.

The level of equity that the capital markets are requiring may appear excessive. The net charge-offs for the commercial banking system have remained quite low, whilst the required capitalization rates seem to be overkill. Why are the capital markets insisting on the excess layer of protection?

The reason lies in the combinations of risks that depositors, noteholders, and other senior creditors absorb beyond the expected credit risk:

- Each lending institution tends to concentrate the credit risk in its portfolio – either by region, industry, demographic strata, or some other dimension, Such concentrations, which come abut naturally, render the simple consideration of expected loss rates inadequate, for expected loss is a reasonable measure of total risk for the diversified portfolios, but the undiversified character of the balance sheet of most banks, thrifts, and finance companies makes the unlikely but devastating risk of catastrophic loss quite relevant;

- The lender can use the funds it obtains from the money and capital markets not only to finance its existing loan portfolio, but also to extend future loans whose risk may be greater. The discretion that the bank, thrift, or finance company has over the use of its funds further heightens creditors' levels of uncertainty;

- Lending institutions typically face a number of noncredit risks in the normal course of doing business. Prominent among them are interest rate and prepayment risks, which can outweigh credit risks for many lending institutions and are extremely difficult to eliminate from their balance sheets.

In return for the risk and uncertainty that these three factors add, the capital markets ask for greater protection in the form of more lender equity capitalization, higher yield on their funds, or both.

DEBT TOKENS: MORE EFFICIENT AS THEY MANAGE RISKS BETTER

Tokenization greatly reduces the risks and uncertainties that arise from portfolio concentration, lenders discretion, and exposure of lenders to noncredit losses. At the same time, it increases the transparency of the expected credit risk. Taken together, these benefits lower the cost of lending by removing part of the "excess" equity cushions and funding yield premiums that traditional lending entails.

Tokenization begins with the same loan-by-loan credit review and monitoring processes that traditional lending does. In fact, the same originating institution may perform these steps if the assets which are being tokenized have been already collateralized to them for the traditional borrowing. The similarity, however, ends right there.

If the assets have been to collateralized to traditional lenders, the loans can be pooled, generally into homogeneous portfolios, and sold to trusts, or other special purpose vehicles. This pooling and sale of assets make the loans more transparent, and reduce uncertainties for capital market investors. Since the pool is prespecified, investors know the risk they are absorbing: they are NOT funding future discretionary lending or risk taking that the conventional lender may engage in. Not are they absorbing interest rate or other risks, which may be borne by the originator but are not incorporated in the loan pool itself. Their risk exposure is strictly limited to that represented by the loan portfolio.

Tokenization can split the credit risk into several vertical tranches and place them with institutions that are in the best positions to absorb them.

The first loss tranche can be capped at levels reasonably related to the expected or normal rate of portfolio credit loss. All credit losses up to this cap are borne entirely by the originator. Since the originator has direct contact with the borrower and maintains that contact through loan servicing and monitoring, it is in the best position to manage and absorb the portfolio's normal level of credit loss.

The originator is, however, often ill-suited to absorb the "catastrophe risk" that the portfolio may contain. This risk arises because a good originator tends to operate best in specific lending sectors or regions. But in focusing its efforts on areas where its ability to manage and absorb the expected loss is the greatest, it winds up with an undiversified portfolio.

By confining the originators' exposure to a capped first loss, tokenization reduces the problem arising from lack of diversification – a problem that is pronounced most in the United States owing to the legal heritage of local and regionally focused banks and thrift institutions.

The second tranche can cover losses that exceed the originators cap. The risk band it delineates is itself typically capped at a level equivalent to 7-10 times the pool's expected losses. Such tranche can be borne through credit enhancement by partial or full

capitalizing it through equity or quasi-equity placements and thus partially guaranteeing loan pools.

The risk absorption role of the credit enhancer is directly analogous to that of a reinsurer in the property and casualty insurance business. And the role of the loan originator corresponds to that of the primary policy underwriter The fact that tokenization can adopt the risk-sharing techniques long used by insurers is not surprising, for the risks are similar in each of these businesses.

The third tranche of credit risk above and beyond the second tranche can be absorbed b the investors that buy the asset-backed tokens themselves. Credit loss from this final tranche is exceedingly unlikely.

Tokenization also segments interest rate risks so that they can be tailored and placed among the most appropriate investors. More often than not, the originator absorbs no interest rate risk, having sold the loans in their entirety. Rather this risk is passed on to the token investors that buy the asset-backed tokens and to counterparties.

As a structurer of asset-backed tokens we can and shall fine tune the risk by creating multiple fast-pay and slow-pay tranches, backed by a common pool of primary assets. The counterparties may further absorb mismatch risk through interest rate swaps, or prepayment risk through guaranteed investment contracts.

The view these players take of interest rate risks depends on the eye of the beholder; one institution's exposure may well be another's hedge.

We exploit this fact through unbundling of interest rate risk in asset tokenization, thus allowing the risk inherent in lending to be placed with "natural" absorbers.

The net result of asset-backed tokenization's greater credit transparency, isolated risk ownership, and segmented risk absorption is lower total costs that in traditional lending. The estimated capital required to support lending under tokenized asset-backed instruments is lower that in traditional lending for properly structured portfolios.

This is because of the lower amount of capital required to support the originator's contingent obligations for the first loss.

Technological advances bring benefits, and credit securitization is no exception. Borrowers, originators and investors all may reap advantages from the digital tokenization, which can and shall lead to a more efficient financial services industry that can better satisfy the regulatory objectives of safety and soundness.

BORROWERS can access cheaper sources of funds through asset-backed tokenization and also often make funds available in situations where they were not accessible before. Tokenization offers the opportunity to significantly expand the corporate finance flexibility. A corporation can tap debt markets at a cost of borrowing frequently much lower than the cost of its senior debt. It can also avoid risk from interest rate, currency

exchange, and commodity price exposures. In other words, the securitizing corporation can more finely hone its claims structure and thus reserve for its equity holders only the risk and returns that are most attractive for them.

Another benefit of structured tokenization for the corporate borrower is more managerial freedom. Under traditional lending, restrictive covenants limit the freedom of action of the corporation and its management. Asset sales do not involve there general covenants though they do force management to yield essentially all discretionary power over the assets that they have sold. Typically, the flexibility gained from covenant release means far more for the corporation's strategic and operating health than control over tokenized assets.

INVESTORS can access multiple new investment instruments. This increase in choice and availability is in itself attractive, but investors have other reasons to be pleased with asset-backed tokenization, as these instruments can offer a greater level of protection from rating downgrades than traditional debt securities. Investors in asset-backed tokenized instruments are structurally protected from the event risk that the originator's credit quality may deteriorate.

For example, unlike a normal corporation, a special-purpose vehicle cannot be restructured by management through increased leverage or other means.

As a developmental asset class asset-backed tokens typically do and will provide premium yields compared to those of comparable conventional instruments.

FINANCIAL INDUSTRY in general will evolve into more efficient state lead by asset-tokenization phenomena. Companies that capitalize on their distinctive skills will benefit from the evolving changes; others that lack skills or fail to adapt to the forthcoming new industry structure will be hurt.

Asset tokenization should affect the structure of the financial services industry in three ways, each of which will improve the industry's cost effectiveness and increasingly divide financial servicers into winners and losers.

First, the tokenization further breaks the once vertically integrated process of lending and funding by financial intermediaries into a discrete series of steps.

FIGURE p.14

Each step requires skills the differ from skills in the other, and each displays distinctive economies of scale and scope. This breakup permits firms to implement business configuration that is tailored to their particular strategy.

Second, asset-tokenization enables a strong loan originators or servicers to expand their volume of business without expanding their capital base in the same proportion. Conventional balance sheet lenders lack this freedom.

Tokenizers that possess or develop a competitive advantage through more efficient marketing, tighter credit management, lower cost servicing, and other sources can turn the advantage against their rivals in a more potent way that was possible before.

Since asset-tokenization permits stronger firms to increase their flow of business at many multiples of the rate that their capital base would otherwise have dictated, it should lead to massive shifts in the market share within the overall lending market.

Third, not only does asset-tokenization allow financial service firms to exploit any competitive advantage more decisively through rapid expansion of their market shares, it also magnifies the economic impact of the competitive advantage themselves. The superior credit managers will get the most effect from the technology. Their cost advantages which, among others, are presented by their significantly lower ceilings on their first-loss credit exposure, will translate into progressively reduced capital costs. This underscore one of the major features of the asset-tokenization lending – its greater transparency. Cost and capability differences among competitors will be no longer silenced; rather they will be highlighted and magnified.

REGULATORS currently regard the trend toward securitization with caution. Two major concerns normally arise:

- Since loan originators tokenize and sell the assets they generate, they may lose their incentive to maintain credit discipline;
- Asset sales will undermine the impact of capital adequacy guidelines and other regulatory tools.

These concerns are justified. Poorly done, securitization can magnify the risks of financial system.

… SANITIZED MATERIAL …

To be discussed further.

M.