

The Multi-layered Feature of Capital Market

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I would like to talk about the multi-layered feature of the capital market, a topic related to the theme of this Forum. The capital market has many layers, based on this feature, a proposal was put forward on building a multi-layered capital market in China. The proposal first appeared in the official document in October 2003, i.e. in the *Decision on Several Issues Related to the Improvement of a Socialist Market Economy* adopted at the Third Plenum of the 16th National Congress of the Communist Party of China. The specific part in the *Decision* reads, “it is necessary to build a multi-layered capital market system, improve the structure of the capital market, and diversify the product mix of the market.” At that time, the idea of building a multi-layered capital market was simple. Few layers were defined, i.e. the main board and the growth enterprise board. Gradually it was understood that we needed a deeper capital market with more layers. Let me share with you my understanding of this matter.

The continuity of things and layered treatment approach

In nature and in our daily life, many things are continuous. If we describe them in functions, we could use continuous functions or approximate continuity functions. But in real life, when we deal with these matters, it is difficult to apply continuous functions. Usually we use discrete mathematics and divide them into several sections or ranges. A relevant example is the selection of SIFIs by the FSB not long ago. The FSB designated 29 global systemically important financial institutions, including the Bank of China. The Industrial and Commercial Bank of China, with a larger balance sheet and capitalization, was not a G-SIFI. This has something to do with the definition and criteria of what constitute systemic importance. Five factors are used to assess the internationally active financial institutions, i.e. its size, its complexity, its interconnectedness, the lack of readily available substitutes for the financial infrastructure it provides and its global (cross-jurisdictional) activity. Scores are given to each of the five factors and are aggregated based on specific weights. The top 29 institutions with highest scores are designated G-SIFIs, and are divided into five brackets based on their scores.

The above approach was not criticism free. Some people said that the selection of 29 institutions that would be subsequently subject to higher regulatory standards including capital adequacy, leverage ratio, liquidity ratio, and etc, would be fair to those with highest overall scores, but produce a very large gap for those whose scores were around the 30th place. In particular, the two institutions whose scores were 28th and 29th will be subject to higher and stricter standards although their scores of the five factors were not much higher than the next 3 institutions, i.e. who were on the 30th, 31st and 32nd places. This large gap is called cliff effect. They argued this was not

fair.

Is there a better way to deal with it? The Chinese and U.S. participants proposed a continuous approach. That is, those financial institutions above a certain scale are given a systemic importance coefficient within the range of 0 and 1, based on their scores of the five factors. This coefficient will be multiplied with the capital surcharge and other external regulatory indicators. This way, the external requirements of all financial institutions above the specified scale will be continuous. The institutions at 28th, 29th, 30th, 31st and 32nd places will be subject to regulatory standard commensurate with their systemic importance. This approach will avoid the cliff effect. Its drawback is that it involves complicated calculation and treatment. Ultimately, the proposal was not adopted.

Is it possible to adopt this approach when the too-big-to-fail issue is tackled at the national level by identifying the D-SIFIs? There are some debates. Different countries have different specificities. Large economies usually have many medium and large-sized financial institutions. In China, there are large commercial banks such as the Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, China Construction Bank, and Bank of Communications and more than 10 medium-sized commercial banks including the China Merchant Bank. They all have outlets throughout the country. When they are lined up, it is difficult to cut the line into different sections. These banks are all systemically important to varying degrees. If the G-SIFI selection approach is used, the cliff effect will be more prominent. Therefore, when we implement macro-prudential regulation, we have adopted the continuous approach, calculating the systemic importance coefficient of each institution before applying additional regulatory requirements to them.

The above is an example in the financial area. Another example comes from our daily life. Modern sports have many individual disciplines. Some of the disciplines are divided into several levels. Taking weight lifting as an example, men and women enter different contests. Furthermore, the athletes are divided into groups based on their body mass, i.e. heavyweight, junior heavyweight, middleweight, lightweight, junior lightweight, and etc. These divisions turn the body weight indicator which is a continuous function into several sections, and make it possible to organize contests for each group. This is fair competition and helps measure the performance of athletes in a better way. This also makes the contest more enjoyable to spectators.

Of course, not all the sport disciplines have such multi-layered divisions. Though some are divided into many groups, others are divided into simple groups. The basketball is divided into women's and men's basketball, and there is no further division. Think about this question: why is the height of a basketball hoop the same everywhere, i.e. 3.05 meters, no matter how tall or short are the players? Can we design different heights of the basketball hoop based on the heights of the players? If we did provide differentiated heights of the hoop, there would be some advantages. In

another discipline, the height of net for women's volleyball is different from that of men's. This is the only division in volleyball. The modern competitive sports are designed to be enjoyable to spectators and to entertain them. Therefore, it is not necessary to adopt further divisions.

Some competitive sports cannot be evaluated by dividing athletes into different group. They need many judges to give scores, such as diving, gymnastics, and etc. This approach is of a continuous nature. The scores of different athletes are very close. In theory, continuous assessment is doable, posing no obstacle to the comparison for their ranking. Mathematically speaking, weightlifting and other contest can adopt the approach of having no divisions and using one function to assess the performance of athletes, a function that includes the gender, height, body mass of the athlete and the weight lifted. Then the ranking of the athletes are derived from the assessment.

In reality, we do not do so. There are many reasons. Among them, two reasons are important. First, such an approach makes the contest less enjoyable to the spectators. They would find it difficult to see the weights lifted by different athletes, and have to wait patiently for the final assessment. Many spectators are not mathematic savvy, and cannot understand the assessment approach and its rationality. This will compromise the transparent and open nature of contests. Second, it is difficult to implement. In a contest divided into different groups, the plates are slid into the outer portion of the barbell to obtain the desired total weight, and the weight of each plate is clearly marked for easy operation. If a contest is designed based on a continuous approach, the equipment is not easy to design, and transparent assessment is not easy. In reality, the rules of a continuous approach are not easy to design.

The layered approach is widely used in many other fields. When drafting laws and regulations, the possible scenarios are divided into different classes based on their nature or intensity. In reality, the specific circumstances of a case are considered before it is determined to fall into a specific category with certain natures. Thus, rules are easy and simple, but might produce cliff effect.

From these examples, we know that many matters are analogs that are continuous or close to continuous. In practice, when such matters are managed or treated, a layered approach is adopted in which they are divided into different sections. In the designing of rules, when the listed conditions cannot exhaust or cover the continuous state, they are divided into different layers or sections to reflect such a state, and rules are also designed for different layers or sections. Looking at the financial markets, part of features of the financial markets and products are continuous and contain many kinds of possible supply and demand. When designing and implementing the rules for financial markets, it is not possible to fully reflect such continuity. Technically, it is not practical, and making rules to fully reflect the continuity is not operational. Therefore, in practice, a discrete approach of dividing into different sections or layers is adopted in most circumstances, and rules are made for the different sections or

layers.

The layers of financial products

The layered features of capital market can be measured from many perspectives and usually from supply and demand sides. Looking at the demand for financing, in a large country like China, there are many diversified enterprises, and their financing needs are inevitably diversified. In aggregate, it will be a continuous demand function with many variables. Operationally, they are grouped from many dimensions into many layers. In each dimension or layer, there might be sub-dimensions or sub-layers. For example, industry can be a dimension. Within an industry, enterprises can be divided in traditional, start-up and high-tech groups. Thus, financing demand of enterprises can be divided into many layers, each with features different from that of others. From the perspective of investors, investors have diversified expectations on financial products, which are reflected in the risk appetite, investment time horizon, yield, and the complexity of products. Different investors have different preference mix based on these indicators. In order to meet the diversified investment demand, a capital market needs to have many layers and offer diversified products.

The many layers of corporate bond market

How is the bond market divided into layers? Divided from the perspective of issuers, there are sovereign bonds, corporate bonds, small and medium enterprise bonds, mortgage bonds, bank subordinated capital bonds, and etc. In China, corporate bonds are further divided into listed company bonds, enterprise bonds, medium-term notes, short-term financing bills, and etc. Some people regard the layers within corporate bonds as an outcome of institutional arrangements, and are of the view that these products are essentially the same. Actually, it is necessary to understand the corporate bond market by dividing it into different layers. In most mature markets, the corporate bond market is divided into different layers from the dimension of seniority, including senior secured bond, junior secured bond, senior unsecured bond, and junior unsecured bond. In addition, there is also a category called convertible bond which could be converted into shares under certain conditions. Among these products, there can also be various mixes.

Why are there so many categories of corporate bonds? There are many reasons. One important factor is seniority. In the case of default or bankruptcy settlement, secured and unsecured bonds, senior and junior debts, convertible and inconvertible bonds are paid off with different seniority. In fact, there are other reasons and perspectives for grouping, which are usually related to provisions in the company law or bankruptcy law. Here, there are some specific arrangements of special purpose vehicles, making layered treatment of products even more necessary and specific. I will come back to this topic later.

In addition, another perspective of layered treatment of corporate bonds is based on credit rating. Credit rating includes rating of the bond and rating of the issuer. Credit

rating of different bonds issued by the same issuer might be different. The credit rating assigned by the major credit rating companies are quite similar and have letter designations such as AAA, AA, A; BBB, BB, B; CCC, CC, C, which is combined with plus or minus. The scale of the notches looks to a certain degree like approximation of continuous function. Therefore, with the different distributions of credit rating, corporate bonds can be divided into different layers and have a diversity feature. As such, though some people may think bond products belong to a single group, there are different layers, many of which are approximate to continuous function.

The Layered Approach in the Designing of the Financial Products

In financial engineering, complex methods and tools are used to design and innovate financial products. One important method is layered approach. After financial products are designed at one layer, financial engineers can change an external condition and design products at another layer. If external conditions are changed many times, financial products can be designed in different categories and different layers to meet the diversified demand of investors. Of course, as shown in this round of global financial crisis, product innovation through financial engineering was not always good. Some financial products were overly complex and deviated from the underlying assets in many ways. Some of them even contributed to the outbreak of the crisis.

The collateralized debt obligations (CDOs) are a typical example of layered approach in financial engineering. CDOs include many varieties, such as cash CDO, synthetic CDO, collateralized loan obligation, collateralized bond obligation, collateralized insurance obligation, and other structured variations. In the creation of a CDO, collaterals are usually divided into tranches and subsequently the different tranches of CDO are formed. Furthermore, after CDOs are created, there can be CDO-Squared, CDO-cubed, and even more. From hindsight, CDOs, as a complex ABS and credit derivative, are rated and priced based on complex and sometimes shaky models. Due to CDOs' lack of transparency and the lack of knowledge on the part of investors, these products were thought to be the culprits of the crisis. Nevertheless, we should acknowledge the usefulness of these financial products, especially the simple and transparent CDOs, in enterprise financing, risk management, and etc. Indeed, questions such as transparency, regulations and investor education should not be overlooked. In the many reports and papers that have been written, there are in-depth analysis and summary of the lessons.

From the above examples, we can see that product innovation in financial engineering is about designing different layers of financial products. Changing the external conditions will result in different layers or categories of products. The financial markets has benefited from the development of diversified layers.

In the G20 Cannes Summit in November 2011, the Europeans presented to the summit a layered treatment in their efforts to solve the debt crisis in Euro area. The EU advocated a joint investment approach, i.e. the creation of joint investment funds (CIF) with the European Financial Stability Facility (EFSF). The EFSF has become European Stability Mechanism (ESM), a permanent rescue mechanism in the Euro area. The risk taking of CIF is a layered approach. Specifically, the first proportion (30 percent) of loss incurred by the vehicle will be absorbed by the EFSF. Based on this arrangement, a second tranche, i.e. participating tranche, are sold to investors so that they can buy the sovereign bonds issued by, say Italy or Spain. When there is a loss in the investment, the EFSF will cover the loss according to the pre-designed ratio. This will reduce the probability of incurring a loss of more than 30 percent. If indeed the loss is more than 30 percent, the investors are to bear the loss. Of course, there could be arrangements for more layers of loss sharing. Those who are not familiar with the structure designs of CIF might find it difficult to understand the meaning of this guarantee and question why the EFSF, as a rescue mechanism, only take cares of 30 percent of the loss. The industry professionals who have more knowledge about tranches will know that layered approach of guarantee actually reduces the risks of a product by providing an additional layer of protection. From the perspective of risk management and investment strategy, such arrangements have provided more options for investors.

Financial markets and financial products are complex and diversified in both demand and supply, and they display a continuous feature or are approximate to continuity. A layered approach is taken for the purpose of business arrangements and from the perspective of rule designing. At the outset, the layered treatment is simple, and there are not many layers; with the deepening of understanding and the progress in technology, there are more layers. Of course, it is not the more the better. The actual layering is related to factors including development of the real economy and financial sector, market conditions, and etc. I will come back to these factors later on. In general, a layered approach is probably an important basis in the efforts of developing and regulating market to satisfy demand and supply.

The layered feature in the operation of capital market

In addition to the layered feature of the products in the bond and capital market, the various aspects in the operation of capital market are also layered. Let us look at the many layers of capital market from the dimensions of supply and demand, market organization, issue and trading mechanism.

The diversity of bank capital instruments

In the early days of economic reform in China, when people talked about capital market development, they immediately thought about two financing instruments, i.e. stock and bond. They did not know other instruments. Indeed, in the early days of capital market development, it was quite remarkable for someone to have adequate knowledge of the two basic instruments, and it was also quite a deed to build the stock

and bond market. Moreover, if a very complex capital market were built at that time, people might find it difficult to understand and accept how it worked. With the development of market economy, people gradually realized that a capital market offering only stocks and bonds was not adequate and there should be more varieties of products, in particular the ones in between stocks and bonds.

Preferred stocks are among the products to be developed. Although it is called stocks, preferred stocks are different from common stocks. Under certain conditions, preferred stocks are like bonds as they are more senior than common stocks in liquidation. Another product is convertible bond, which is different from ordinary bonds and can be converted into stocks under certain conditions. After this round of financial crisis, contingent convertible bond (CoCos) was born, which, similar to convertible bond, must be converted to common stocks when reaching the triggering conditions. It is designed as an instrument and contingent measure for financial institutions to increase equity and expand loss-absorption capacity. Therefore, the many layers of equity products have come into being in response to the need of market development. It is impossible to see the need for and design a product when the market has not developed a demand for it.

According to media report, in the Executive Meeting on June 6, 2012, the State Council deliberated the new version of bank capital requirements. It can be observed that the new capital requirements have many layers. People were all familiar with Tier 1 capital and Tier 2 capital, such as common stock and subordinated debt. The subordinated debt was translated into Chinese as sub-prime debt. Later on, it is found that this translation is easily confused with subprime crisis. Therefore, subordinated debt now has a different Chinese translation.

After the recent financial crisis, lessons were learned and additional capital requirements were put forward for banks, including establishment of capital buffer, countercyclical capital buffer, additional capital requirement for SIFIs, contingent (convertible) capital requirement and etc. As I have mentioned the specific contents of these capital layers on several occasions, I will not give out the details here. For the contingent capital mechanism mentioned above, it is mainly achieved by contingent convertible bonds (CoCos). When issuing CoCos, commercial banks must notify investors of its nature and embedded risks, i.e. once a bank is in a crisis situation, such as substantial write-down of mark-to-market assets caused by financial market turmoil, or its capital adequacy ratio falls below a certain level, the CoCos will be automatically converted into common shares to bear the loss. As a typical product in between common share and corporate bond, the price of CoCos is lower than ordinary bonds of the same condition. Besides, there are also some gilt-edged bonds and gilt-edged stocks.

In the Chinese equity market, many are advocating the creation of preferred stock. Why didn't we introduce the preferred stock at the outset? In the early days of reform

and opening up when the Company Law was formulated, most people thought that as the stock-holding system was a new concept, we barely understood the ownership structure, shareholder's interest, and etc., the introduction of preferred stock could complicate the matter. Therefore, the preferred stock was not introduced at that time. Afterwards, as the preferred stock was not written into the law, it was difficult to make any breakthroughs, and in turn, the capital market lacked such a layer.

The preferred stock is a useful instrument. When dealing with the AIG crisis, the U.S. government needed to bail out the institution. Then how did governments get involved in the bailout? While some European countries have adopted nationalization strategy or capital injection, Americans tend to oppose nationalization, which they think would dampen enthusiasm of the private sector and market efficiency. Therefore, the Americans tried to find an arrangement, which not only reflects the cost of the state capital, but also maintains the company's private governance, so as to prevent overt state intervention of the private business. In this case, the preferred stock can be a useful tool. The U.S. authorities used this tool to bail out the AIG and achieved its target, highlighting the unique role of preferred stock as an important layer of the capital market.

The multi-layer nature of securities issuing modes

The most popular understanding of the multi-layer nature of the equity market is that there are separate markets for the large-sized, medium-sized, and small-sized enterprises. However, the matter is not this simple. The size of a company is only one dimension, and there are other dimensions to be considered. First of all, the market organizations are different.

In the Chinese market, when talking of listed companies, people tend to think of IPO and exchange-traded share-holding companies. Later on, people found the term of "listed company" not so accurate. But since they got used to this term, it was difficult to change the convention. Actually, there are many types of public companies. Some are listed but do not make public offering, while others make public offering but are not publicly traded. This is to say, the concept of public companies include many more layers.

From the issuer's perspective, they can raise capital by private offering in markets such as the Zhongguancun Agency Share Transfer System. Of course, different countries have different definition of private offering. Some countries stipulate that subscription by less than 50 people is a private offering, and subscription by over 50 people belong to public offering. According to the Rule 506 of Regulation D of the U.S. SEC, companies that meet specific criteria may raise an unlimited amount of money by selling its securities to an unlimited number of "accredited investors" and up to 35 non-accredited investors, while companies using the Rule 506 exemption do not have to register their securities and usually do not have to file reports with the SEC. According to China's Trust Law, sale to less than 200 investors belongs to

private offering, while sale to more than 200 investors belongs to public offering. Therefore, in the Zhongguancun Agency Share Transfer System, listed companies can sell equities to up to 200 investors. After years of development, people are familiar with basic requirements, conditions and procedures of public offering, which are also basic requirements for public listed companies. During the development of the SMEs board and growth enterprise board, these requirements are further divided into more layers, including company size, profitability, information disclosure, external audit and etc., and each board has its own level of requirements.

In recent years, the issuance of the capital market has added new layers based on demands. It is found that the delineation of public and private offering is not enough, and a different layer is needed, i.e. the so-called “mini public offering”. In the U.S., qualified securities companies can carry out public offering on behalf of small and medium-sized companies, which need not register and file with the SEC prior to offering. The securities companies are responsible for authenticity of securities issued by small and medium-sized companies. Of course, securities companies which wish to engage in this business must meet certain criteria and apply to the SEC. Compared with companies listed on the NYSE or the NASDAQ, the issuing companies are subject to lower level of financing, less constraints, and lower disclosure standards. In addition, there are some requirements for investors, including the level of wealth and a floor for any single investment, so as to prevent very small investors from entering the market. Thus, a company can obtain financing by “mini public offering”, and does not need to meet higher requirement or go on road shows as required for public placement, thereby avoiding high cost of financing. As thus, the market can, in response to the development of demand and supply, create new layers from the existing ones to meet the demand of financiers and investors.

For private offering, its issuance also has different layers. In the U. S., Rule 144A of Securities Law stipulates basic requirements for private offering and relevant transaction. Although private offerings do not have to register with the SEC, they are subject to a series of requirements and restrictions as stipulated in the Securities Law regarding the issuance and transaction of privately placed securities, and generally have large issuance size. Can the issuance size be smaller and rules of private offering simpler? Actually, that has already happened. In April this year, the *Jumpstart Our Business Startups Act* (abbreviated as the JOBS ACT) was signed into law in the U.S., explicitly stating the legality of “crowd funding offering”. According to the Act, domestic non-publicly reporting companies can use the internet “funding portals” or conduct via brokers to advertise and sell shares to unlimited investors. Nevertheless, they have to meet certain requirements, such as the cap of aggregate yearly financing amount of USD1 million, yearly limit on the amount a person may invest in this type of offering based on the person’s net worth or yearly income, and the issuer cannot conduct direct sale and must sell securities through eligible intermediaries and disclose information to the SEC, brokers, internet funding portals, investors, and so forth.

In the JOBS Act, a wide range of reforms of the existing securities regulations are worth our attention and study. Its primary purpose is to relax regulation of start-up companies and SMEs, to encourage more investors to invest in start-up companies, to facilitate financing and public listing, so as to increase the vitality and create more job opportunities for the U.S. economy. For example, the JOBS Act provides a wide range of issuance and compliance exemptions to Emerging Growth Companies with annual income of less than USD1 billion. Moreover, it includes a number of reforms of the existing regulations on small offering and financing. In addition to afore-mentioned “crowd funding offering”, it permits general solicitation or advertisement of private placements of securities, i.e. the private offering can be conducted in a public way. The upper limit for triggering disclosure obligation for small private offering is raised, and regulations on publicly reporting companies are substantially relaxed.

As China has similar needs, we can make further research to find out the actual demand, its necessity, and feasibility.

The multi-layered features of investors

The investors also have stratifications. Classification of investors can often make people feel discriminated against, but from another perspective, the division is a protection to investors to some extent. For example, for those not so rich or retired investors, restrictions can be placed on their investment in some highly risky products. As a means of protecting investors, many countries have done so. For example, everyone has an account in Chile’s pension system, and the account holder can delegate certain types of funds to make specific investment. For those investors with younger ages, the scope of investment is without limit, but for individuals approaching retirement, their scope of investment is subject to restrictions, e.g., the portion of equity investment cannot exceed a certain limit for the purpose of protecting investors.

As investors can be stratified into different layers, the most common standard is the amount of wealth. Currently, private equities and hedge funds have requirements for asset size of investors. This is to ensure that participants have the necessary financial strength on one hand, and to ensure the investors have the ability to absorb losses on the other hand. Besides, investors can also be classified according to their residency, and in China the most common practice is that investors are classified according to their domicile. Most countries do not have the concept of household registration, but stress the concept of citizenship, i.e., they tend to sell municipal bonds to local people of a municipality, who are generally beneficiaries of such projects. If non-residents are allowed to invest in such projects, though they should be welcome from the perspective of attracting capital, it may lead to insufficient surveillance, detrimental to interests of local investors. Requirements on the domicile and identity of investors for some products may help form reasonable pricing and risk identification.

This round of sovereign debt crisis in some countries highlights the significance of investor identification. During the crisis, some countries have excessive level of sovereign debts, i.e. a high outstanding debt to GDP ratio. If judging purely by this standard, Japan's debt ratio may be the highest. But more than 90 percent of Japanese debt is held by domestic residents, so there are less cross-border spillover risks. If Japan is determined to solve its debt problem, it is the internal affair of the Japanese people. In contrast, not only the debt-to-GDP ratio in some European countries is very high, but most investors are not local residents or domestic agencies. After the sovereign debt crisis broke out, investors are very concerned about the safety of their investment. If they do not have a say in debt resolution, these investors tend to flee the market as soon as possible. Debtor countries also want to find a quick solution to their debt problems, and have taken some fiscal austerity measures. However, they often face opposition and resistance from local residents. On the other hand, local residents think holders of these debts are mostly foreigners and have nothing to do with them. This leads to the moral hazard. Based on these facts, the international community has reached some consensus, among which the best practice is that the sovereign debt should mainly sell to local residents. If they are sold to foreigners, the EFSF or ESM should issue the bonds on behalf of the sovereign governments. Some people proposed the issuance of so-called European common debt, which was opposed by other countries.

Of course, investors are diverse. Some hedge funds may have strong speculative incentives, and this is also some kind of stratification of investors. As this stratification is for a different purpose, it is another matter.

Stratification of trading mechanism

With respect to trading mechanism, people usually emphasize the distinction between exchange-conducted trading and OTC trading, which is actually about how the trading is done. Exchange-conducted transactions are usually characterized with continuous quotation and automatic matching, while the OTC transactions are generally more diversified, including non-continuous trading. For intermittent transactions, it also contains the concept of stratification. Are the transactions conducted once in every minute, every hour, twice a day, or once in a week? All of them are intermittent transactions, and can be divided into different layers. Another perspective is whether short trading is allowed? One further perspective is about how quickly the settlement can finish, such as T+0, T+1, or T+2. If the trading frequency is restricted, the transactions will slow down, and short-term investors will not enter the market. If an exchange supports continuous and auto-matching transactions, combined with T+0, day trading is then doable on the exchange. Thus, there will be plentiful of speculative opportunities and the price volatility will be much larger, though the pricing and price discovery mechanism may be improved.

Nowadays, people are talking about high-frequency trading, which is mainly operated by computers. Since high-frequency transactions are so frequent, there is little time

for human brain to react. These computer programs are designed by special software development companies, and can be directly used after being bought. Many people are skeptical of high-frequency transactions, and in their point of view high-frequency transactions are usually carried out by technical savvy people who pay little attention to economic fundamentals, characteristics of the traded products and their issuers. As economic data are not high-frequency per se, it is easier for high-frequency trading to ignore economic fundamental compared with low-frequency trading. Many people think that one important reason for the 2000 NASDAQ bubble is program trading which is highly pro-cyclical. With the booming of high-tech stocks, program trading contributed to the rush to invest in the high-tech companies, which in turn, pushed up the share price and led to the formation of bubbles.

Different participants have different demand for trading frequency. Some investors and market organizers prefer low-frequency trading, and are in favor of intermittent trading. As long-term investment is usually about “buy and hold”, low-frequency trading is more conducive to fundamental analysis and comparison, and there is much room for fair judgment. Other market participants with more advanced computing devices and trading equipments wish to trade as frequent as possible, so that they can take advantage of technology to rapidly process real-time trading data and capture market opportunities. As exchanges charge fees based on the amount of transactions, they certainly prefer high frequency of trading.

As a trading mechanism, short sale also represents a layer of trading. But even in advanced markets, there are negative opinions on short sale. During the global financial crisis, restrictions were imposed on short selling. In 2008, the major exchanges had a list of stocks that were subject to the naked short selling ban within a clearly defined period of time. After the outbreak of European debt crisis, Germany and other countries banned naked short selling on euro zone sovereign debts.

In the stratification of trading modes, market making is another perspective to look at layers, which I will not elaborate here. Recently, there is a new phenomenon, i.e., in addition to the pilot program of the “third board” being carried out in Zhongguancun, other localities also have high enthusiasm to create regional markets, whose trading mechanism is different from that of the Shanghai and Shenzhen stock exchanges. Overall, as China is such a large country, it needs to have more layers of financial markets on the premise of sound development. In this regard, relevant departments are studying how to meet diversified market demand through market building and better regulation.

Financial innovation helps create a multi-tier market

For financial market, financial product and trading mechanism with continuous features, we often divide them into different layers due to practical needs to develop rules for the market. Some layers may have distinctive features, while others are less so obvious. Overall, with deeper understanding and technology development, the

layers have become more abundant. Financial innovation usually plays an important role in this process. Such innovation is like placing a wedge between two layers, and the wedge later on becomes a new layer. In this respect, a typical example is securitization.

Securitization and SPVs

As the topic of securitization has been included in many textbooks, I will not elaborate here. SPV (Special Purpose Vehicle) is frequently used in securitization. Many outside the financial sector do not regard SPV as a good thing, as it is often associated with financial chaos and behind widely-known financial irregularities and frauds. For example, in the Enron scandal in 2002, a lot of off-balance sheet business was done by using SPV. And the sub-prime crisis is also related to SPV to a large extent. But for financial professionals, the issue can be divided into two sides. On one hand, we should recognize the benefit of SPV in meeting market financing and investment demand, hedging and managing risks, and improving capital allocation efficiency; on the other hand, the potential problems associated with SPV are not to be neglected. It should be said that many financing innovations are achieved via SPV, and countries have a lot of successful experiences in SPV and asset securitization. Therefore, SPV has played positive roles in creating a multi-tier financial market, financial products and trading mechanism.

There are basically three kinds of reasons to create SPVs

The first is asset segregation. A parent company takes out some part of assets and issue bonds based on the assets. To this end, independent assets are taken away from the parent company and are injected into the SPV. For example, for mortgage loans, banks can create a SPV to receive mortgage loans, and sell mortgage-backed securities (MBS) to investors based on future cash flow from the interest income as collaterals. Thus, the securitized products are created. Moreover, banks may cut out credit card receivables that meet certain criteria to create a SPV, and issue asset-backed securities (ABS) based on their future cash flow. This creates a new securitized product. The main purpose is to manage and segregate risks. On one hand, through the SPV and asset securitization, banks can move some credit assets away from their balance sheet, sell them to market investors, and receive cash income from the selling. This reduces the scale of risk assets and helps banks comply with regulatory capital requirements, while transferring its risks to other investors. On the other hand, the SPV and asset securitization also protects the securitized assets from the bankruptcy risk of the parent company. In other words, the SPV is an independent legal entity and the securitized assets are separated from the parent company's assets. If the parent company goes bankrupt, the quality of securities issued by the SPV will not be affected. Therefore, the credit rating of securities issued by the SPV solely depends on the SPV assets and their return, and has nothing to do with the parent company's credit rating. Even if the parent company is problematic, investors can buy the securities safely. Likewise, if an independent SPV is bankrupt, the normal

operation of the parent company will not be affected.

The second is for tax reasons. To evade tax regulation, a SPV may be created to exclude it from the tax payment responsibility of the parent company, so as to reasonably avoid taxation. Some critics may say this is unethical. But since there are rules, and if they do not violate the rules, rule-based tax avoidance should be allowed and tolerated. Professionals in the financial sector are usually very smart. They can often identify existing loopholes in rules and reasonable tax avoidance pathways, which is, to a larger extent, a crucial driver of financial innovation. For the rule-makers, they should spot loopholes and improve the rules to prevent tax avoidance. Alternatively, tax reform may be carried out to make it more rational, and include behaviors of reasonable tax avoidance in the sunshine.

The third is to meet market demand in a creative way. Put simply, in the capital market and in the entire financial market, SPV has helped to turn previously impossible practices of investment and financing into reality. Due to government regulation and other objective conditions, some market demand cannot be met. However, with deepening financial markets and evolving financial engineering technologies, professionals in investment banks can design specific SPVs and structural products to meet specific needs, which could not be met in the past. This process is full of financial innovations. In the existing economic and financial environments, these innovative products and trading mechanisms use modern financial engineering techniques to connect financial demand and supply, and play a role in meeting the demand for risk management, investment and financing in certain areas. Of course, in this process SPVs can either play a positive role and promote the operation and development of the market, or become risk-prone and produce negative effects. There are many examples, and I would like to cite a positive example, the aircraft leasing.

Aircraft leasing is generally done through a SPV. For any airliner, purchasing an aircraft is very costly, and many airlines choose to lease aircrafts for their operation. According to statistics, about two-thirds of airlines across the world would fly with leased aircrafts. Most companies' liability/asset ratio is below 60 or 70 percent, otherwise excessive leverage may cause too much operation risks. But when examining financial statements of airline companies, it is astonishing to see that the liability/asset ratio of most companies exceeds 90 percent. For ordinary investors, this may seem unthinkable, but if you have a better understanding of the airline industry, you will find that it has its own peculiarities. As both new and old aircrafts have a very liquid market with the support of insurance, the industry generally has less need for large amount of capital.

Then how to operate the aircraft leasing business? When an airliner is in normal operation and has adequate insurance, its operating aircrafts can obtain stable cash flow. This, together with a transparent and reliable aircraft market, creates

opportunities for the aircraft leasing companies. They can design a SPV in a tax haven to operate the aircraft leasing business. On the one hand, the SPV can apply for banks loans or issue bonds to get financing to purchase aircrafts. On the other hand, besides receiving rents, the leasing company can help airline companies to avoid certain taxes and fees, reducing the airline companies' demand for capital. For the airliners, if they choose to buy their own aircrafts through importation, they have to assume all types of import taxes. In addition to the large amount of capital for purchase of the airplane, they have to pay import duty and VAT. If they choose to lease aircrafts, there is almost no difference in actual operation between a purchased and leased plane. However, the aircraft obtained through leasing can be run with lower capital requirement, and a lot of related expenditures on taxes and fees can be saved. Therefore, the aircraft leasing business is a popular practice. By designing a SPV, a leasing company helps solve many problems and meet various needs, highlighting the positive side of SPV.

Of course, smooth operation of an SPV requires the support of relevant laws and tax system arrangements, and a scope for reasonable tax avoidance. Thus, professionals specialized in financial engineering can make full use of their skills, and create good products to meet the needs of their clients.

Innovation in urbanization financing

Actually, the typical version of SPV is applied in China. However, there is another less accurate version of SPV in China, i.e. the Local Government Financing Vehicles (LGFV). Initially, foreigners regarded the LGFVs as SPVs, and translated them into the local government SPVs, because the mechanism of the LGFVs has the basic characteristics and definition of SPV. Later on, the translation of Local Government Financing Vehicle was adopted. However, regardless of the translation, it is essentially a SPV.

In the process of rapid urbanization, some local governments want to accelerate the urbanization. But with limited fiscal resources, what measures can they take? The local governments consider whether they can make use of the future incomes in order to fill the current expenditure gap. With the development of urbanization and gradual improvement of local infrastructure and public facilities, a stable return will be generated in the future. The urban land prices and rents will rise, commercial activities will become more prosperous, and other tax incomes will increase, too. If the expected income can be put into current use, a SPV can be designed. Under China's current conditions, this kind of SPV usually obtains financing via bank loans or bond issuance, in order to raise funds for current urbanization. LGFV uses urban land and its future earning as collaterals to obtain bank loans.

Certainly, this type of SPVs has some irregularities and risks, and has met with criticism. In a mature market economy, the local governments have done something similar, but generally not in this way. They usually carry out the projects by issuing municipal bonds, mainly through SPVs. In the planning and construction of local

infrastructure or public facility projects, the local government can reasonably expect that the surrounding land will appreciate in value and get commercial development, and they can obtain stable real estate tax or property tax. Thus, the future tax income can be used to secure principal and interest payment for the issuance of municipal bonds, and the local government can obtain financing for the current municipal infrastructure investment. Therefore, in principle the operation of municipal bonds is not quite different from the LGFV, but it is apparently better regulated. It depends on the legitimate future tax revenues, rather than the appreciation and sale of land. The current LGFV depends more on future value of land, and in turn uses the future value of the land to repay the loans. The LGFV is definitely a SPV, but creates a lot of problems.

Of course, this phenomenon has a lot to do with the current legal environment in China. The purpose of the LGFV is to circumvent existing laws and regulations to a large extent. As China's Budget Law prohibits local governments from running deficits, they thus find ways to build a financing platform. Some analysts believe that this behavior is the implicit liability of local governments. Although China's Guarantee Law provides that except the cases where the State Council has granted approval, local governments cannot provide guarantee, yet the LGFV blurs this line of distinction. China has not introduced property tax. Although property tax is implemented in Shanghai and Chongqing on a pilot basis, but that is still an experiment and needs to be improved. Even when the property tax is put in place, can we design a SPV to get financing based on it? Probably not, because the existing tax law has no provisions to support the use of property tax for specific purpose and put them in a SPV. Besides, municipalities are not allowed to issue bonds in China.

In short, to achieve such a level of innovation, a lot of works remain to be done. This is similar to sports events mentioned above, i.e. when the rules have not evolved to a certain stage, it is very difficult to launch new sport competition. The evolution of rules is usually related to demand. When the evolution process is relatively slow, someone will want to make innovations. They propose measures in between the current layers, and some intermediate layers are created. In retrospect, a multi-tier market requires an innovative spirit and environment, and innovation itself may either produce positive effects, or lead to risks. We need to conduct serious studies on both the positive effects and risks.

Factors affecting financial innovation

As mentioned above, factors such as legal requirements, regulations and tax avoidance drive financial innovation. Below, I will focus on accounting standards, capital adequacy ratio, and financial regulation, all of which may affect financial innovation.

Accounting standard

In assessing the benefit and cost of financial innovation, it is important to decide on

what kind of accounting standard to use. Currently, there are two sets of prevailing international accounting standards, i.e. the Generally Accepted Accounting Principles (GAAP) adopted by the U.S. Financial Accounting Standards Board (FASB), and the International Financial Reporting Standards of the International Accounting Standards Board (IASB), which is mainly adopted by the European Union. So far there are still some debates on the merit of the two sets of accounting standards. The G20 Summits and the FSB have required the two accounting standards to converge as soon as possible, in order to facilitate the smooth development of the global capital market.

The gap between the accounting standard which China adopted in the past and the international accounting standard was quite large. Looking back at early days of the capital market, some past practices were quite unthinkable. Even though the accounting standard could not truly reflect the financial situation of enterprises, the stock market has developed into what it is today. However, there were a lot of problems in the early stage, and we have made great efforts in rectifying them. In 1993, China adopted new accounting standards and corporate financial rules; after the Asian financial crisis, we gained new understandings and promoted the revision and improvement of the accounting standards; and in 2002 and 2003, a series of reforms took place including in impairment and write-down, in the pursuit of comprehensive convergence with international norms. After the recent global financial crisis, China has been promoting full convergence of its accounting standards to international norms and narrowed the gap between the two.

Why does the accounting standard matter? It is related to advantages and disadvantages of encouraging financial innovation. With sound accounting standard, financial innovation can produce good results, and with poor accounting standard, financial innovation may bring about bad results. This is related to the accounting and financial treatment of on- and off-balance sheet assets of financial institutions, to the designing of asset-securitization and SPVs, and also closely related to innovative financial engineering products previously mentioned. Therefore, the basic work in this area has to catch up.

Capital adequacy ratio

You may be quite familiar with the capital adequacy ratio as requirements in this regard are quite clear. However, capital adequacy requirements specific to the different layers of the financial markets are quite complex. There are similar financial products or approximately identical financial transactions for enterprises to raise funding in a specific market. Although the nature of its fund-raising is similar, some products require capital support, while other products virtually do not require capital support. It means that for the same purpose of financing, by designing a different financial product, it is possible to save capital and increase the return on the equity. Countries have generally strengthened supervision on regulatory capital adequacy in the aftermath of the recent financial crisis, but product innovations based on capital-conservation are still very active, and it is an important aspect of financial

innovation.

Let me give you an example to illustrate this issue. Commercial banks carry out proprietary and agent trading activities in large amounts. Several weeks ago, J.P. Morgan incurred a trading loss of USD2 billion. This shocked the world. There are a number of reasons behind such a large amount of trading loss, which may have different interpretations. One of the reasons is that the capital requirement of the trading department in the past has been enormously underestimated, therefore, one of the important lessons we drew from the recent financial crisis is to increase capital requirement for trading activities. When calculating the capital adequacy ratio in the past, a large part of trading activities did not get reflected on the balance sheet, and in turn not included in the so-called risk-weighted assets in calculating the capital requirements. As such, the trading departments can use a small amount of capital to carry out large-scale trading activities, which usually bring massive profits to commercial banks, and the trading departments have a lot of incentives to do so. And for the same reason, we can see that many big figures and famous CEOs on the Wall Street made their name as traders. The trading desks can indeed make a lot of money for banks. But as financial products get increasingly complex and leverage ratio rises higher and higher, trading losses may be colossal, which more often than not leads to systemic risks. Therefore, the trading departments and their activities should be subject to higher capital requirement.

Financial risks and regulation

One of the important purposes of financial innovation is to better manage risks, but innovation per se can lead to more risks, which is an important lesson from the recent global financial crisis. This is related to financial regulation, and we need to strengthen regulation while encouraging innovations. Otherwise, it is easy to make mistakes. The experience in China is that, once big problems occurred in the process of financial innovation, they would have far-reaching consequences. As an old saying goes, once beaten, twice shy, it is not easy to stand up again after falling into a pit. Therefore, we should properly handle the relationship among encouraging financial innovation, warding off risks, and strengthening regulation.

Exactly how to handle the relationship is related to the development phase of the market economy in China. In the early days of China's reform, it was not an easy thing to distinguish stocks from bonds, and the conditions were not available for the creation of complex products and multi-level market innovations. If we had acted recklessly, there would have been large risks. We had learned big lessons in this regard, and a typical one is the government bond futures. Recently, there is a proposal to resume the government-bond futures trading, which could be a useful bond derivative product but was suspended 17 years ago due to the "327 government bond future incident". So when promoting financial innovation, we have to deal with risks and strengthen financial regulation.

One of the features in the development of the market economy in China is that the process of institutional transition brought frictions and pains of reform. The objective has been to have the market to play a fundamental role in resource allocation in the transition from a planned economy to a market-oriented economy. But in the early days, there were no clear and effective rules. For example, China's accounting standards were very different from international norms; our tax system was a product tax system and the VAT was introduced in 1994; the loan risk classification was traditional four-category classification until the pilot five-category loan classification system was introduced in 1997 (and was actually implemented in the aftermath of the Asian financial crisis). With the absence of necessary institutions in the transition period, we went through a series of stumbling and failures. In addition, incidents related to the financial industry usually bring financial losses, carrying with them great shocks to both the economy and the public. It was easy to over react and resort to financial repression through rigid regulation over the financial industry.

There are rationales for this historical experience. After all, that happened during China's transition into an emerging economy. Thanks to the reform and development, we have begun to enter into a new stage. The constraint of the system and cumbersome rules are being felt, and we need to consider how to promote more innovations. When the external environment provides more sufficient condition for innovation, innovative products and market layers will emerge as a result, better serving the real economy and promoting safer integration into the global economy.

Today's topic is to discuss characteristics of a multi-tier capital market, but I do not attempt to discuss how to build such a market. By giving examples, I hope to elaborate on the multi-tier characteristics of the capital market in terms of products, market organization, investor risk appetite, issuance and trading modes, and etc. We have overlooked the multi-tier feature in the past. As the economy becomes more complex and diversified, the multi-tier feature of the market has been constantly unfolding itself. In the process, financial innovation is essential. If the system supports financial innovation, the layers of the capital market will be richer. On the other hand, if there are too many institutional obstacles, financial innovation will receives less support, and the multi-tier feature of the capital market is not easy to unfold. We should attach importance to and go with the trend of multi-tier capital market development, remove institutional and mechanism obstacles to support financial innovation, and facilitate more market layers to better serve the real economy.