

## Developing New Financing Instruments for Iran's Higher Education System (Case Study: Mortgage Securities Model)

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### Abstract

Optimizing the financing of Iran's higher education system faces major challenges such as smallness of the private sector, lack of a competitive market in knowledge production, the state's small role in higher education, and also the absence of new financial instruments in the capital market along with the development of the money market. As a result, the most important financing resources and major clients of academic research projects are state-run organizations, which also raise finance through tuition. Apparently, there are a few reasons why the higher education system should change its financing methods to achieve great goals. These reasons include intensified economic sanctions, declined capacity of the state to finance this sector, decreased power of families and firms to cover educational and research expenses through private budgets, and the necessity of making higher education expenses efficient with respect to the need to train the future workforce.

The method of this study is a descriptive-qualitative, which was carried out in two stages of the library and the implementation of the Delphi method by referring to 20 experts.

Aiming to introduce new instruments to make banking asset-backed securities (of facilities type) to education and research clients (families and firms), this study seeks to prove the hypothesis that the mortgage-backed securities can be employed to achieve the following goals. The first goal is to grant facilities to the students who are

financially unable to pay tuition. This relieves the pressure on the Students Welfare Fund. The second goal is to grant business financing facilities to talented students. Finally, the third goal is to finance the firms that have research needs but are unable to cover the expenses through their revenues. Regarding 17 indicators, the research findings indicate that experts reached a consensus (Kendall's  $W=0.702$ ).

**Keywords:** higher education system, banking system, banking securities, capital market, development banks.

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## Introduction

According to Iran's Sixth Development Plan, the average economic growth rate was predicted 8%, a part of which comes from the productivity growth rate of the entire workforce (with an annual average of 4.1%), and the other part should come be provided by increasing the use of other production factors and financial resources. Although the average growth rate was mostly negative in the 1990s, it became 1.1% and 1.2% in Japan and the US, respectively, during the 2010-2015 period. This indicates the necessity of developing a workforce “skill development plan” more than ever before.

A productivity growth solution is to develop knowledge and skill. All over the world, states pay special attention to the higher education system that is responsible for developing knowledge and skill of the workforce. Since states are aware of the vital role of this system, they try mainly to develop it qualitatively (Organization for Management and Planning of the Country, 2015). This has made some countries intervene maximally in policymaking and implementation of higher education policies. On the contrary, some researchers believe that the Iranian state's minimal intervention has delegated the power supply higher education to civil and public institutions or non-governmental organizations in an effort to develop the higher education system both qualitatively and quantitatively (Seyyed Abadi, 2012). Depending on geographical and economic conditions of countries, UNESCO has advised states to spend 4-6% of their gross national product (GNP) on education. The average rate of this portion was nearly 4.1% in the late 1980s and the 1990s (the researcher's calculations of Iran's total budget). Therefore, it is safe to state that Iran has followed other countries to put special emphasis on higher education regarding the Iranian young population. In fact, a considerable part of financial resources for higher education is provided by the state's public budget in Iran (Khalafkhani, 2001).

Naturally, continuing the existing trend will make Iran's state and those involved in higher education face serious problems. First, since the state's incomes are limited and especially dependent on crude oil exports, the effect of its extreme volatility will cause formidable challenges in the state's ongoing financing actions to supply the necessary higher education resources in the future. Second, the independence of higher education centers and improvement of their internal and external efficiencies will never be achieved if the previous trend is followed and if these centers rely completely on the state's allocations. In order to overcome these problems, higher education units have to diversify and improve their financial resources (Naderi, 2001). The third reason for these changes is the public awareness of higher education benefits and costs. It goes without saying that the economic return of education and demands for education (especially in technical, academic, and knowledge-based activity education) have changed, and people have gained the necessary interest and capacity to cover part of their education expenses. Hence, individuals and families have found the appropriate foundations for participating in paying for education expenses partly (Jabal Ameli, 2004).

At the same time, given the importance of education and skill in production and productivity, employers and industrialists have paid special attention to education and decided to play a role in financing the higher education system by establishing independent education departments at work to directly provide the necessary educations or by covering education expenses totally or partially (Entezari & Gharon, 2015). Despite all of the existing challenges, Iranian policymakers have thus decided to diversify higher education financing instruments in the supply-demand sector, pay attention to the income-expense gap at universities, and stay away from governmental resources to achieve qualitative development and actual effectiveness of education both worldwide and nationwide.

In Iran's economy, an appropriate but disappeared instrument for helping finance the higher education sector is the capital market. However, the capacities of the capital market are now utilized to finance the higher education sector in Iran. In 2016 for instance, Iran's state allocated 13000 billion rials to pay the debts of universities and higher education centers to contractors. In the capital market, a prominent financing instrument that can be implemented in the higher education system is the use of facilities-backed securities which are a type of mortgage securities. This study analyzes a banking facilities-backed model (at specialized banks) for granting facilities to students or firms that need to cover research expenses with the purpose of financing the higher education sector.

## Literature review

No study has ever been conducted in Iran to address the conversion of banking facilities into securities for higher education financing. However, apart from the higher education system, a few studies have been carried out on the use of this instrument in financing banks. Some of such studies are reviewed in this section.

In a paper entitled "Mortgage loan-Backed Securities: An Instance of Diverse Instruments of Capital Market", Abdo Tabrizi (1997) explained how to develop a capital market instrument known as "mortgage-backed securities" and presented an image of the market size of mortgage debts in the US. The aforesaid paper also scrutinized the features of mortgage securities and the necessary analytic framework to design these securities in addition to introducing different types of publishable mortgage securities and their categories from the early simple forms to more complicated types.

In another paper entitled "Converting Assets into Securities: An Important Solution for Islamic Banks", Karimi (2007) introduced this process in the conventional banking system and identified the conversion of assets into securities as an instrument that would decrease the initial bank's balance sheet risk because of its emphasis on the exclusion of assets from the balance sheet of the initial facilities grantor.

In the book of transforming assets into Securities (Loans) in Banking Industry, Feghhiye Kashani (2006) addressed different types of assets convertible into securities, relevant costs of this process, and necessary facilities and market conditions required to grow and convert assets into securities from an applied perspective. The appendix of the abovementioned book defines the conversion of assets into securities based on Islamic criteria (Sukuk), introduces different types of Sukuk and discusses different experiences of issuance of Sukuk in other countries.

In the book of Islamic Financial Instruments (Sukuk), Mousavian (2009) scrutinized the jurisprudential and economic foundations of Islamic financial instruments, analyzed the conventional securities economically from the Islamic jurisprudence view, and introduced an Islamic financial instrument (Sukuk).

In a paper entitled "Housing Financing through Mortgage Securities", Jafari and Allah Gholi (2008) introduced different types of mortgage-backed securities, reviewed the background to the issuance of these securities in the

US and England markets, and addressed the history of three mortgage securities guaranteeing institutions, i.e. GNMA<sup>1</sup>, FNMA<sup>2</sup>, and FHLMC<sup>3</sup>, in the US. They also proposed a structure for the issuance of mortgage securities in Iran and discussed a few features of the Iranian financial and housing markets.

In a paper entitled "Mortgage Corporate bonds: A New Instrument for Financing Banks", Soroush (2008) analyzed mortgage facilities-backed securities in jurisprudential and tax aspects and introduced mortgage-backed corporate bonds as an alternative instrument for financing banks (especially in the housing sector).

In a paper entitled "Mortgage Corporate Bonds: A Solution to Financing of Housing Sector", Saeidi (2009) discussed the feasibility of issuance of these bonds in Iran from jurisprudential and tax dimensions and introduced mathematical equations for pricing the mortgage securities. The aforesaid paper also analyzed the role of mortgage securities in the credits crisis of the US and reviewed a few reasons for the emergence of the current financial crisis.

There are a large number of international studies on the conversion of banking facilities into securities in financing higher education. Some of the relevant studies are reviewed in the following few paragraphs.

In a paper entitled "Developing a Framework for Converting Student Loans into Islamic Securities", Ismail, Bakri, Rosalan, and Noor (2014) proposed a higher education financing model by converting student loans into securities. The student loan-backed securities have long been granted to student's extensively in developed countries and recently in some developing countries such as Malaysia.

As Fried and Breheny (2009), Hartong et al. (2006), and Larrain and Zurita (2011) pointed out in their documented reports, many researchers predict, regarding the conversion of assets into securities, that this topic will help finance higher education for everyone. These researchers believe that

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1-Government National Mortgage Association (GNMA) – ginniemae

2-Federal National Mortgage Association (FNMA) or ([Fannie Mae](#))

3-Federal Home Loan Mortgage Corporation (FHLMC or Freddie Mac)

student loans play a significant role in providing the ground to help students continue their higher educations, especially low-income or medium-income students.

In a paper entitled "Implementing Asset-Backed Securities Based on Student Loans in Malaysia's Higher Education System", Ismail, Serguieva, and Gregoriou (2008) the addressed economic development of Malaysia after asset-backed securitization. Their paper proposed a structure for the student loan securitization. It was expected that this process would benefit both (domestic and foreign) students and the state and would account for the 5% share of entire facilities in that country. They also emphasized the student loan securitization as the main alternative of mortgage securities in Malaysia's higher education system.

Global Center on Private Financing of Higher Education (2009) analyzed the global status of higher education and the increase in private financing in a paper entitled "Recent Innovations in the Private Financing of Higher Education". This paper focused on the conversion into securities, which is mainly a technique developed in the housing market but can also be utilized to facilitate granting student loans and paying tuition. It is estimated that more than 89 million people will benefit from it in OECD countries by 2022.

In a paper entitled "Asset-Backed Securities Based on Student Loan in the US", Vigneron and Nelson (2010) analyzed different types of student loan securitization including the US government-backed student loan securities and private (or alternative) student loan securities. Education expenses have been increasing for bachelor and postgraduate education in the US. This increase has affected the overall life expenditure index and caused an economic pressure coexisting with the ongoing demands for higher education in the US. Therefore, an unprecedented need has risen for alternative financing resources. According to a statistical comparison of financing between student loans and securitization, most of the alternative student loans (nearly 78%) are finally financed by capital markets through the use of security intermediaries

### **State's Role in Higher Education Financing**

The share of Tuition-paying students for nearly 85% of all of the Iranian students, and only 15% of them can benefit from free higher education (Shiri & Noorollahi, 2012). Tuition is paid from family incomes or student loans. The second payment method poses extra pressure on the state and students welfare funds. Although it appears that the dedicated higher education budget (out of Iran's total budget) has "nominally" increased in recent years, the budget figures should be considered in fixed prices and subtracted by the inflation

impact. In recent years when Iran has faced oil sales sanctions, universities have sustained serious financing problems because their budgets depend on the oil sales rate (Farsatkah, 2014). According to the trend in granting higher education credits within the 2005-2016 period, the Iranian state's public resources for higher education financing were outnumbered by the dedicated incomes of universities in the past eleven years, and the summation of these two sources of income failed to cover total expenses and resulted in budget deficiency.

Table 1 shows the growth of the actual income of higher education, obtained from the discrepancy between the nominal growth of incomes and inflation. Since 2008, it has been -11% on average (Eftekhari & Davari, 2009).

Table 1. Estimates of Credits and Incomes of Ministry of Science, Research, and Technology (Figures are presented in million rials)

Year	Cost				Incomes			Budget Deficiency	Actual Income Growth of Higher Education
	Cost Credits	Dedicated Credits	Ownership of Capital Assets	Total	General Incomes	Dedicated Incomes	Total		
2005	6605620	3318630	233337	12261587	217800	3318630	3536430	-8725157	
2006	1327762	1080001	350756	5915519	228500	4462571	4691071	-1224448	20.6
2007	9955290	6174864	2899307	19029461	270960	6174864	6445824	-12583637	19.2
2008	2267170	1170122	948744	4386036	795300	1170122	1965422	-2420614	-94.9
2009	2825654	1079376	1578585	5483615	331300	1560890	1892190	-3591425	-14.5
2010	3090905	1947019	902577	5940501	477400	1547019	2024419	-3916082	-5.4
2011	3897436	1648861	960571	6506868	680400	1648861	2329261	-4177607	-6.4
2012	6615233	1718628	2011607	10345468	750500	1716828	2469128	-7876340	-24.5
2013	3348718	4231000	1201374	8781092	730650	4231000	4961650	-3819442	66.2
2014	5652381	4889575	1009514	11551470	850650	4889575	5740225	-5811245	0.2
2015	6659395	3949745	1831087	12440227	1150650	3949745	5100395	-7339832	-23.1
2016	7197410	4413350	1541089	13151849	1300650	4413350	5714000	-7437849	2.8

Source: Budget rules of different years

### **Transforming Facilities and Non-Facilities Assets of Banks into Securities**

“Converting banking assets into securities” is used as a new financing method to help banks and the entire economy. The goal is to increase the number of cases benefiting from facilities granted by the banking system. Conversion into securities is a process in which the assets of an owner institute or an originator institute are separated from the balance sheet. Instead, financing is performed by the investors who purchase an exchangeable financial instrument. The asset-backed securities (ABS) or the mortgage loan-backed securities (MBS) are among the most important products used for conversion into securities. This method can be employed in publically beneficial processes such as financing of housing or education sectors.

**Asset-Backed Securities (ABS):** Issuance of Sukuk(ABS) to convert non-facilities assets into securities fits the situation when the bank itself requires resources. In fact, the bank aims to obtain cash resources to resolve liquidity problems by issuing Sukuk. In this method, the bank can start issuing Sukuk, based on its non-facilities assets in the balance sheet, to the clients to obtain cash resources. For instance, the bank can obtain liquidity by withdrawing the ownership of some of the fixed assets (such as buildings of branches) temporarily (Meysami & Nadari, 2016).

**Mortgage-Backed Securities (MBS):** issuance of Sukuk(MBS) is meant for the conversion of facilities assets into securities. In this method, the banks which have granted their assets to clients through facilities (and now have facilities claims) can convert their claims into saleable securities in financial markets to free their resources and allocate them to other clients. With the issuance of mortgage securities, the granted mortgage facilities of banks are returned to the financial cycle sooner than expected. This helps the bank to grant re-facilities and play its role in achieving the desired goal. These securities are also characterized by the reduced costs of borrowing, release banking capitals for reinvestment purposes or the satisfaction of the need for national interests, asset management improvement, and credit risk management for the issuer. In addition, mortgage securities can provide investors with the higher levels of immunity through guarantees resulting from collaterals, credit ratings, and flexibility in cash management because of the cash structure of issued asset-backed securities (The Housing Bank's Justification of the Issue of Mortgage Bonds, 2016).

Iranian banks grant clients a wide variety of facilities through different contracts based on the law of banking operations without usury. Therefore, it is possible to classify the facilities are lawful and applicable enough to be

converted into Mortgage-Backed Securities(MBS) as three categories. The first category includes the facilities that lead to debts. In fact, the Murabaha, instalment sales, Ja'alah, and debt purchase contracts are that the bank charges clients who are then obliged and committed to paying their debts according to a specific schedule. In these cases, the bank can convert all or a part of its claims from eligible customers into securities and sell it in the money market through the sale of debt (Meysami & Nadari, 2016). The second category is the facilities leading to the ownership of a physical asset with fixed returns. In fact, in lease contract-based facilities, the final result of granting facilities is that the bank (in addition to the charged rent) owns the physical assets (such as land, buildings, and machinery) which have fixed and regular returns. The bank can convert all or a part of its physical assets into securities and sell its joint share of these assets in the money market through a contract of sale. The third category is the facilities leading to the ownership of physical assets with expected returns because the contracts of civil participation, legal participation, profit and loss sharing(Mudarabah), Mozarahe, sharecropping(Mosaghat), and direct investment allow the bank to own all or a part of the capital in a plan, project, or economic activity having regular expected returns. The bank can convert all or a part of these assets into securities and sell it on the capital market through the joint-profit contract of sale (Hosseini & Hekmat, 2013).

From a jurisprudential view, most of the facilities granted by non-usury banks can be converted into securities. However, from the view of economic functions, it appears that instalment sale facilities and contract of the lease on the condition of ownership are more appropriate than other options for conversion into banking Sukuk because these facilities have fixed and predetermined returns and suit risk-avoiding individuals (who account for the majority of clients in the banking network and money market). Moreover, in the facilities of the lease on the condition of ownership, the bank usually owns the existing asset on lease and will have the ownership until the last rent payment is made. Although the ownership of the soled asset is granted to clients in the instalment sales facilities, the same asset or an equivalent asset can be used as a mortgage. The facilities of mortgage instalment sales and lease on the condition of ownership are set by totally specific and clear schedules. As a result, banks can select appropriate packages of instalment sales facilities or those of lease on the condition of ownership concerning the market conditions. Also, the specificity of the profit interval improves the ability of these instruments to perform the process of converting assets into securities (Meysami & Nadari, 2016).

**Processes of Mortgage loans-backed Securities**

The following model indicates the process of converting banking facilities into securities for relevant institutions and their relationships:

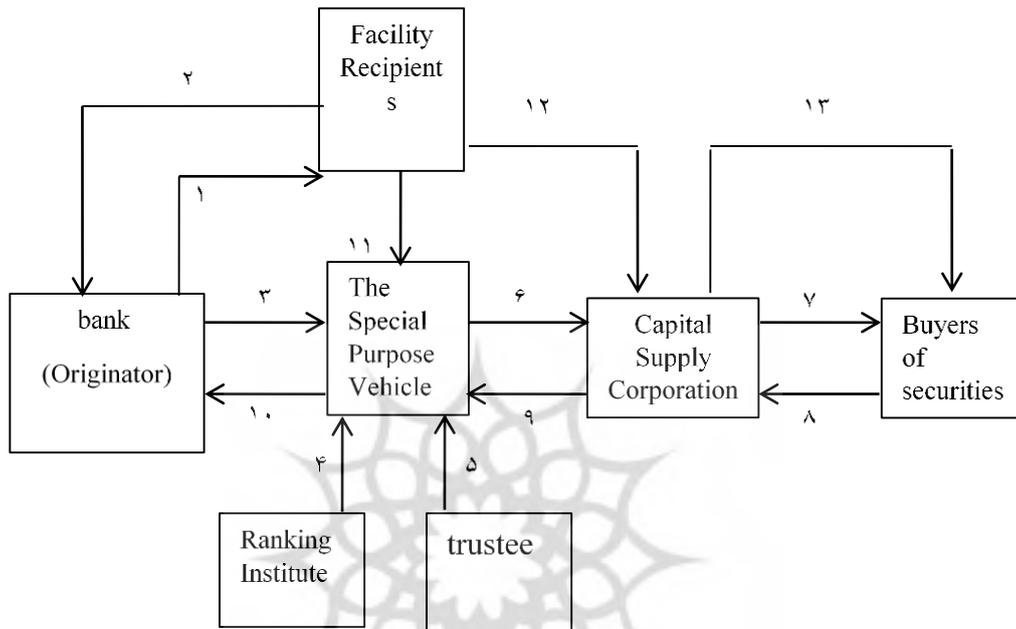


Chart 1. The Process of issuance of Mortgage Securities

1. The product purchased through facilities is held mortgage by the bank (or an originator), and the bank grants facilities to clients.
2. The recipients of facilities repay the instalment fees of facilities to the bank in line with the contract of instalment sales.
3. Banks take the necessary actions to convert the granted facilities after obtaining the essential permissions through an SPV (special purpose vehicle).
4. A credit ranking institute announces the credit ranting of the originator or the SPV if it is necessary.
5. A Trustee institute is assigned by relevant institutions to monitor that everything is done properly.
6. The SPV uses the Capital Supply Corporation for the marketing of securities if it is necessary.

7. The SPV performs marketing activities to sell the securities through the Capital Supply Corporation under the contract signed with the originator. Then it issues the mortgage Securities and collects the necessary funds.

8, 9, and 10. The Special Purpose Vehicle is acting to the lawyer on behalf of buyers of securities, the SPV uses the collected funds to purchase the debts from the originator in cash at discounted rates, and then the hypothecation items are transferred to the SPV. In total, this process consists of contracts of instalment sales, attorney, participation, and sales of debts.

11, 12, and 13. After receiving the instalments from the recipients of facilities, the SPV pays the principle and profit sums to the owners of securities on a monthly basis (Feghiye Kashani, 2006).

### **Issuance of mortgage Securities in Iran**

The instances of these securities were published by Bank Maskan in Iran in 2016. In the mortgage Securities published by Iran's Bank Maskan, different assets such as homes, land, and buildings were held mortgage by the bank. Bank Maskan transfers its instalment housing facilities to an SPV, which then pays the resulting funds to the bank by the issuance of these securities backed by facilities. Bank Maskan can then start granting re-facilities to customers during the first year. The issued mortgage Securities backed by these instalments are due in two years. The cash flows of facilities are paid to investors (owners of securities) during specific periods. When the securities are due (at the end of the second year), investors are paid in the fees of issued securities (The Housing Bank's Justification of the Issue of Mortgage Bonds, 2016).

### **Securitization Backed by Student Loans in the Global Education System**

The process of conversion into securities backed by student loans has practically been performed in developed countries and some of the developing countries recently. This process is a method of helping provide access to more financial facilities to expand higher education for everyone. According to the studies conducted by Fried and Breheny (2009) and Larrain and Zurita (2011), education loans play a significant role in providing students with more research opportunities in higher education, especially for the low-income or medium-income students. Education loans act in response to the decreased budget allocated by the state to the higher education sector. These loans were designed because of the increasing demands for higher education and the increasing expenses imposed on higher education institutes as a result of new students (Larrain & Zurita, 2011).

Conversion into securities backed by student loans, also known as student loan-backed bonds, is a creative process of collecting financial resources. Fan et al. <sup>4</sup>(2010) gave a definition in line with these concepts and emphasized that financial resources could be provided by issuing securities in the market with the support of cash flows resulting from future lucrative assets. These securities have been utilized to facilitate granting student loans and paying tuition in many parts of the world (Fan, Sing, Ong & Sirmans, 2010).

This process allows students to benefit from easier access to credit markets, and universities can finally have future incomes from tuition to perform financing. As a result, this instrument increases the number of individuals and institutions that are able to invest in education. This process has been used in Islamic and non-Islamic countries (Ismail, Bakri, Rosalan & Noor, 2014).

### **Worldwide Experiences**

Peru: In 2005, the University of San Martín de Porres published 30 million dollars of bonds backed by student loans with a default rate below the total cancellation rate of facilities in the banking system. Analyses indicated that developing this financial instrument increased the number of student users by nearly 20%.

Chile: The Chilean Education System is known as one of the most private markets in the world. The Chilean Congress passed a law in 2005 which provided the legal framework for the creation of a student loan system guaranteed both by the government and higher education institutes (HEI). Financed by the capital market through the securitization of the loans. The system operated for the first in 2006. As a result, nearly 21000 students were able to finance their higher education and access the remainder of their courses. This newly proposed model states that the student loan should extend the coverage of other loans to not only include registrations but also the reasonable cost of living. This model can then improve access to higher education (Larrain & Zurita, 2011).

South Korea: In the student loan policies in South Korea, Hong and Chae (2011) discovered new opportunities and challenges affecting the success of converting student loans into securities. They concluded that student loan-backed securities had a central role in improving the financial capacity of higher education for everyone in South Korea from 2005 (Hong & Chae,

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4-Fan, Sing, Ong & Sirmans

2011).

**Malaysia:** Since the process of securitization is a part of Islamic bonds or Sukuk in Malaysia, a framework was proposed to create Islamic student loan mortgage-backed securities (I-SLMBS) (Ismail, Bakri, Rosalan & Noor, 2014).

**USA:** In the United States of America, nearly 1.2 trillion dollars of emergency student loans have been paid. There are 40 million recipients of facilities in the US with an average debt rate of 29000 dollars. The student loan mortgage-backed securities (SLMBS) provide more students with access to loans, and investors can have an instrument to diversify their investments. Besides, lenders can reach a cash flow through the conversion of loans into securities and Debt payment services (Goksu & Goksu, 2011). The number of student recipients of facilities and the average rate of credit per recipients of facilities are on the rise every year, inasmuch as student loans have turned into one of the four categories of central assets financed through asset-backed securities.

After passing through the key legislation in 1992, the US market started to grow to provide the student loan mortgage-backed securities. With the expansion of more than 80 billion dollars for new issuance since 2006, The student loan mortgage-backed securities have continuously and steadily been growing (Vigneron & Nelson, 2010). There has been a significant growth in the student loan mortgage-backed securities in the US over the past two decades.

Due to the intrinsic similarities between the student loan market and Mortgage market without backing, there is an epidemic panic that the next market collapse, which will cause another financial crisis, is the collapse of the student loan industry. The evidence shows that even in current conditions in which the economy is booming, most of the university graduates have failed to find employment and repay their student loans. This results in the default rate which has continuously been increasing since 2003. However, unlike a mortgage, there is no guarantee in student loans (Brada, Bienkowski & Kuboniwa, 2015).

### **The Proposed Conceptual Framework for Converting Securities Backed by Banking Facilities of Development Banks and Students Welfare Funds**

This paper addresses an approach to create securities backed by the instalment sales facilities provided by development banks. These reissued loans will be utilized to pay tuition, help create or expand student businesses, and also finance research services required by nongovernmental firms.

With this approach, a part of pressure can be lifted from the student welfare funds to grant facilities to all classes of students (including wealthy or poor); therefore, this fund can cover vulnerable groups of students more regularly.

### **Position of Development Banks in Iran's Economy**

A development bank is a bank that operates to support economic development, help the economy grow with direct and indirect aids of states, and mainly grant long-term and medium-term credits and facilities to real and legal entities for manufacturing and developmental purposes to achieve the development goals of the country. It is fair to state that these banks, considering their missions, can start developing this type of instrument to finance the higher education system. There are no laws regarding a clear definition of development banks in Iran's banking system. However, it is fair to regard Banks of industry and mine, agriculture, housing, export development and Tose'e Ta'avon are called "development" because of their specialization. It is then possible to compare their outcomes with those of commercial banks (Sayyah & Safari, 2014). According to statistics, these five development banks were the investment targets of nearly 10.5% of public savings by December 21, 2018. However, these banks granted 22% of loans given to firms.

### **Model of Securities Backed by Facilities of Development Banks**

In these securities, the bank that delegated its resources through contracts of instalment sales and held a mortgage in return for the granted facilities can convert the claims of these facilities into securities to renew its resources. As a result, this bank can grant re-facilities to students (to pay tuition or develop firms) and also to firms to cover their research expenses. For this purpose, the bank goes to a reputable trustee institute to establish an SPV. Then the SPV collects the funds of investments by issuing Murabaha securities and purchases their debts of instalment sales facilities on their behalf at a discounted price from the originator (the bank). The originator pledges to receive the nominal amounts of debts from debtors at specific due times and delivers to the owners of securities through the Capital Supply Corporation. The owners of securities can either wait until the due time to benefit from the interest rate or sell their securities in a secondary market before the due time (Meysami & Nadari, 2016).

### **Secondary Market of Securities**

The Murabaha mortgage securities are among profitable financial instruments with a fixed rate of interest. Accordingly, they can satisfy an important group of owners of extra funds who are willing to make risk-free investments. As a

result, if there is no jurisprudential problem, these bonds can be sold and purchased in the secondary market. In fact, the holders of these bonds own financial documents with specific due times; therefore, they can sell them to a third party (purchaser) at a lower price than the nominal price concerning the discount rate. The discrepancy between the sale prices and the nominal prices of these bonds will be the purchaser's profit made from investing in bonds. This profit is at a fixed rate.

### Economic Analysis of the Operational Model of Converting Instalment Sales Facilities into Mortgage Securities (Merely for Granting Loans to Students)

The following diagram shows the amounts of facilities granted by the specialized banks:

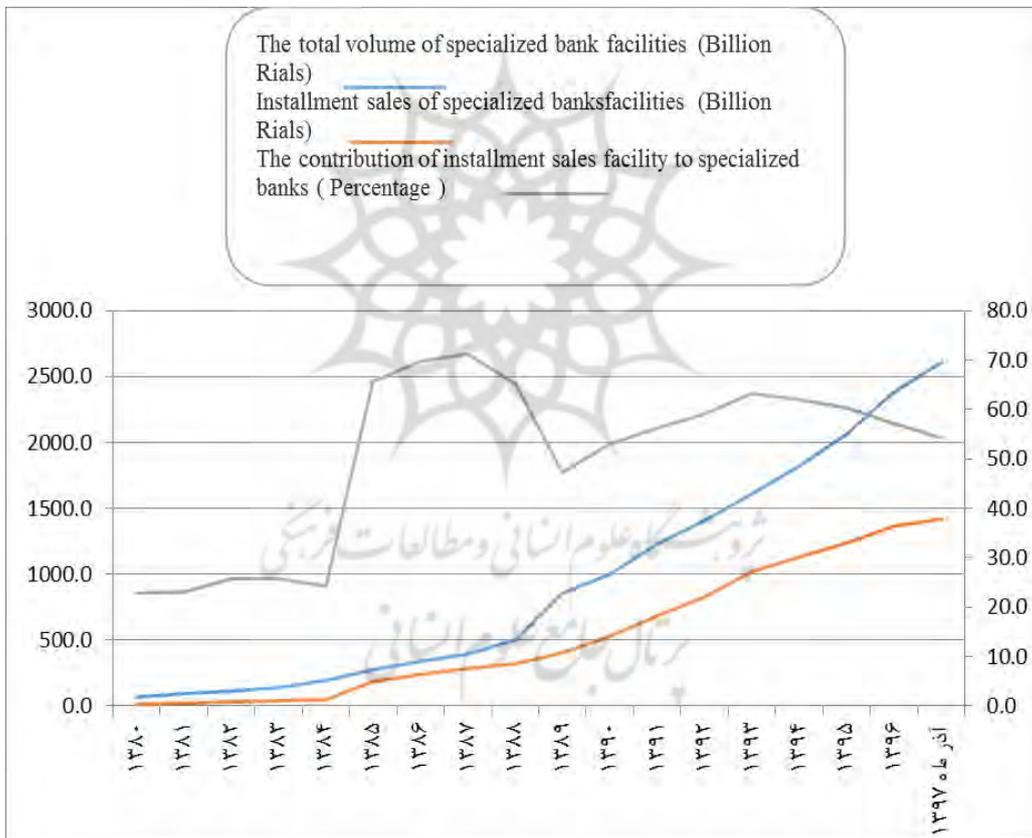


Chart 2. Facilities Granted by the Iranian Specialized Banks

Source: Central Bank of Iran

It is assumed that the entire resources required to grant student loans were

worth nearly 300 billion rials provided by securities. From an economic viewpoint, it is necessary to analyze the market status and inflation rate to determine the discount rate. After that, all of the future cash flows related to the installments received from the recipients of the facilities, who intended to convert them into securities, are pointed out. Then the current value of those funds is obtained for the discount rate. The resultant value is actually the very amount that can logically be paid to the originator to purchase the asset used in the process.

The rate of interest paid to the owners of securities is also determined in consonance with the inflation rate, the interest rate of similar securities in the market, marketing, and market conditions. Therefore, the inflation rate and other economic and political indices are taken into account to try to determine a higher rate than the rate of similar products in the market. Other costs of issuance are determined on the basis of a percentage of the value of these securities including the guarantee cost added by other similar factors. If the SPV faces a risk in matching the due times, it will be merely an expected risk. If the SPV is used only as a pass-through, then the risk will be out of the question, and the relevant cost will be deleted.

Given the resultant cost of financing (the interests paid to the owners of securities) as well as other costs and commissions earned by doing these operations and the finalized prices of banknotes. These values were compared to determine whether these operations were economical. Accordingly, the average cost of money is nearly 13.5% in Iran's development banks over three years without considering the penalties paid to the central bank.

Table 2. Overview of Finalized Price of Money at Iranian Specialized Banks from 2015 to 2017

<b>Cost of capital (Finalized Price of Money) at Iranian Specialized Banks</b>			
2017	2016	2015	Year / Percentage
12.9	10.5	12.6	Interest Cost
2.1	1.6	1.7	Noninterest Cost
14	12.1	14.3	Finalized Cost of Money

Source: Financial Statements of Banks Published by the Supreme Institute of Banking and Calculations

The following equation can be employed to obtain the current value of debts of future facilities that banks will receive from their customers and want to sell them. Given the fact that the received instalment debts, which will be paid in the future years, will be discounted by the SPV, then (the instalments of banking facilities will be received from recipients of facilities, who are students, on a monthly basis):

$$A = \sum_{i=1}^n \frac{Ins_i}{\left(1 + \frac{r}{12}\right)^i} \quad (1)$$

$Ins_i$ : the instalments received from recipients of facilities (students) in the  $i$ th month

$r$ : discount rate of banking instalments

$i$ : the number of monthly instalments (for instance, if the securities last for 3 years, then  $i$  is 36.)

$A$ : the price of facilities (this the fee that the SPV has to pay to purchase the banking debts.)

At the same time, the profit made by the owners of securities ( $k$ ) is determined with respect to the features and credit rankings of securities. This rate is the function of the return rate expected by investors. This rate is estimated by the Capital Supply Corporation based on the credit risk of securities. The Capital Supply Corporation determines the return rate of securities based on the verification test and marketing. Accordingly, it will make then underwriting contract. The other costs of issuance include guarantee cost and other factors based on the percentage of securities ( $F$ ). If the SPV faces a risk in the process of matching the due times, it will merely be an expected risk. If the SPV is used only as a pass-through, then the risk will be out of the question, and the relevant cost will be deleted. Also, the funds earned from the issuance of securities will directly be spent on the purchase of debts (discounting facilities). The current value of the profit paid to the holders of the securities is obtained from the following equation:

$$B = \sum_{j=1}^n \frac{P_j}{\left(1 + \frac{k}{12}\right)^j} \quad (2)$$

$P_j$ : the profit paid to the owners of securities during the  $j$ th month

$k$ : the interest rate of Mortgage securities

$B$ : the price of the facilities package (the fee that the SPV has to pay to purchase banking debts.)

$j$ : the number of paid profits

Generally, investors invest as much as  $A$  in Mortgage securities and will receive other profits. Therefore, the internal return rate (IRR) of these investments should be equal to the expected return rate ( $k$ ;  $IRR=k$ ).

Accordingly, the following equations can be employed to calculate the amounts of profit paid to the owners of these securities. Moreover, the instalments received from the recipients of facilities might not be equal because some facilities might be due in some months. However, the profit paid to the owners of securities ( $P_j$ ) should be equal figures, which include the principle and profit of securities.

$$\begin{aligned}
 NPV &= -A + \sum_{j=1}^n \frac{P_j}{\left(1 + \frac{k}{f}\right)^j} = \cdot \\
 - \sum_{i=1}^n \frac{Ins_i}{\left(1 + \frac{r}{f}\right)^i} + \sum_{j=1}^n \frac{P_j}{\left(1 + \frac{k}{f}\right)^j} &= \cdot \\
 \sum_{i=1}^n \frac{Ins_i}{\left(1 + \frac{r}{f}\right)^i} &= P_j \sum_{j=1}^n \frac{1}{\left(1 + \frac{k}{f}\right)^j} \\
 P_j &= \frac{\sum_{i=1}^n \frac{Ins_i}{\left(1 + \frac{r}{f}\right)^i}}{\sum_{j=1}^n \frac{1}{\left(1 + \frac{k}{f}\right)^j}}
 \end{aligned} \tag{3}$$

If the due times of the received instalments are equal to the due times of Mortgage securities ( $i=j$ ), then the SPV will face no risk. In addition to the aforesaid costs, there is also another cost called “debt owed to Central Bank”. Currently, the cost of making an extra withdrawal from the Central Bank is 34% for other banks. This is one of the factors affecting the acceptance or refusal of the probability of issuing or profitmaking of the processes of converting facilities into securities because this rate and its fee are significant.

Table3. Debts of Iranian Specialty Banks to Central Bank (1000 billion rials)

2017	2016	2015	Year / Billion Rial
472	494	572	Debt to Central Bank

Source: Central Bank Representative

It is necessary to analyze the information on the granted facilities based on the instalment sales contracts of specialty banks to present this model. According to the precautionary laws on the conversion of mortgage claims of credential institutes into securities passed by the Credential Commission of Islamic Republic of Iran’s Central Bank regarding how to issue these securities, there has to be at least a two-year interval between the starting point of this process (March 20, 2018, for instance) and

the first instalment paid on them. Since the research securities spin for three years, there has to be at most three years of instalments left. Therefore, this is the first step in extracting the sums of granted instalment sales facilities. Since these mortgage facilities are of the amortized loan type, the nominal prices of securities and relevant profits are paid partially in each period.

The gradual refund of the nominal price in each period and the resultant decrease in the nominal value of securities over time are the two important features of these securities, which distinguish them from other securities.

### Financial Analysis of the Operational Model

Given the latest rate of interest of securities issued in the market (18%) as on account in a year, a rate of 19% was considered in this study for the holders of securities. moreover, this rate was definite. Since the contract of debt purchase is among exchange contracts in the Islamic Banking Industry, the fixed rate is legal and lawful.

Moreover, the originator's discount rate was considered 21%. The higher the discount rate, the less willing the bank to issue securities because the sum of the current value of total debts will decrease. Therefore, the bank tries to set a lower discount rate in dealing with the issuer. Then the future cash flows of all facilities will be extracted, and all of the saleable cash flows of the facilities portfolio will be obtained after the monthly received cash flows of the entire facilities are aggregated. According to the following table, the result is 3000 billion rials. Then the discussed equations are employed to obtain the current value of this cash flow. Table 4 shows an overview of the results.

Table 4. Cash Flow and Current Value of the Saleable Cash Flow

Cash Flow and Current Value of the Saleable Cash Flow (1000 billion rials)					
Month	The cash flow of instalments	The current value of instalments	Month	The cash flow of instalments	The current value of instalments
19	0.0931	0.0670	1	0.0931	0.0915
20	0.0931	0.0658	2	0.0931	0.0900
21	0.0931	0.0647	3	0.0931	0.0884
22	0.0903	0.0617	4	0.0931	0.0869
23	0.0850	0.0570	5	0.0931	0.0854
24	0.0850	0.0561	6	0.0931	0.0839
25	0.0833	0.0540	7	0.0931	0.0825
26	0.0775	0.0493	8	0.0931	0.0811
27	0.0775	0.0485	9	0.0931	0.0797
28	0.0775	0.0477	10	0.0931	0.0783
29	0.0721	0.0436	11	0.0931	0.0770
30	0.0721	0.0429	12	0.0931	0.0756
31	0.0721	0.0421	13	0.0931	0.0743

32	0.0721	0.0414	14	0.0931	0.0731
33	0.0699	0.0394	15	0.0931	0.0718
34	0.0699	0.0388	16	0.0931	0.0706
35	0.0699	0.0381	17	0.0931	0.0693
36	0.0699	0.0374	18	0.0931	0.0682
Total	3.1000	3.3229			

Then the SPV should calculate the costs of issuance or consider the percentage of costs out of the total sum of debt purchase to obtain the net cost of issuance of the securities (amount of securities). The result should be added to the abovementioned sum. In the calculations of this study, the costs of issuance were considered 2% of the total sum of the current value of purchased cash flows. The following equation can be utilized to calculate the sum that can be paid to the owners of securities (profit of securities) every month. In fact, this equation was taken from the equation stating the equality of sales price of debts to the purchasers of securities to the purchase price of debts from the bank:

$$\sum_{i=1}^{36} \frac{Ins_i}{(1 + \frac{21\%}{12})^i} = \sum_{i=1}^{36} \frac{P_i}{(1 + \frac{19\%}{12})^i} \tag{4}$$

Now the sum of the current value of cash flows (2.3000 billion rials) is more than the costs of issuance(46.5 billion rials), the total of which is 2.36000 billion rials. The interest rate and the discount rate were considered 19% and 21%, respectively, in the previous formulas. The sum of the monthly interest paid to the holders of securities was obtained 0.08515 billion rials.

The following relationship is true between the discount rate, interest rate, and costs of issuance:

$$\text{Discount rate} = \text{cost (rate) of interest mortgage securities} + (\text{costs of issuance})$$

$$21\% = 19\% + (2\%)$$

This equation means that the bank paid 21% of interest to the publisher that paid 19% of interest to the holders of securities. In fact, the publisher subtracts 2% to cover the expenses. In this study, the cost of issuance was considered 2% of the current value of the received instalments. Moreover, another model can be taken into account to state that the conversion of these student facilities into republished Mortgage securities and to collect resources to grant facilities to other students or firms that need to cover research expenses.

## Research Methodology

The method of this research is quantitative. The type of research based on the purpose is practical and how it is achieved required data, the present study is a descriptive one and is a descriptive survey. The field method was used to collect the data, it was decided to identify the facilities and non-facilities assets of financing which could be converted into securities and used in the higher education sector by reviewing the research literature. Then a researcher-made questionnaire was developed through the Delphi technique to determine and complete the applications of these instruments. The questionnaire was then distributed among experts in two steps.

### Statistical Population

The statistical population included faculty members (10 individuals), researchers and PhD students (4 individuals), and financial managers of the higher education system (6 individuals), whose opinions were used in the Delphi technique. If the participants are homogenous in the Delphi technique, 10-15 samples will be enough to perform the process (Tabrizi,2012). According to the review of studies and papers which selected the Delphi technique, there were 10-12 experts. Therefore, nearly 30 individuals were identified to maintain the research validity concerning the attrition rate of respondents. After the responses were filtered and applying the desired indicators, the list included 20 experts when the necessary indices were applied.

## Research Results

### Kendall's Test

In this study, Kendall's test and Kendall's coefficient of concordance were utilized to analyze the consensus and concordance of opinions given by the panel members. The test hypotheses were first introduced to conduct the Kendall's test. H0 states that experts disagree on the application of facilities asset-backed securities model, whereas H1 states that experts reached a consensus. In the second step, the test statistic was calculated in SPSS. The critical significance rate was considered 0.05 for hypothesis testing. In fact, sig. was considered zero (lower than 5%). Therefore, H0 was rejected, and the claim stating that experts reached a consensus on the application of the research model was confirmed, and H1 was accepted (Table 5). Also, Kendall's coefficient was obtained ( $W=0.702$ ) at the end of the final period. According to Table 6, the interpretation of different values of Kendall's coefficient showed a high rate of concordance and consensus on the use of this new instrument in the higher education system. There was also a high level of confidence in these applications.

Table 5. Standardized Test Statistic

N	20
Kendall's W	0/702
Chi-Square	293/403
df	19
Asymp. Sig	0/000
a. Kendall's Coefficient of Concordance	

Table 6. Interpretation of Different Values of Kendall's Coefficient

Confidence in the sequence of factors	Interpretation	W
None	Very poor consensus	0/1
Low	Poor consensus	0/3
Medium	Medium consensus	0/5
High	Strong consensus	0/7
Very high	Very strong consensus	0/9

In the first period, 20 questionnaires were filled out and collected. Then they were aggregated to analyze expert opinions after the mean of opinions was calculated. Besides, the Cronbach's alpha of the questionnaire was reported 0.710, which was higher than 7%. This showed that the questionnaire reliability was confirmed. Then the mean of expert opinions was determined on each of the questionnaire items. The mean range (3) can be employed to identify the importance of each index. Based on the expert opinions in this study, the questions with mean rates of lower than 3 were identified as unimportant and then deleted. In this step, the second-period questionnaire was designed concerning the conditions reported by the questionnaire designed in the first period. Given the mean obtained for each of the questionnaire items, it is observed that 2 out of 19 items of the first questionnaire had mean rates of lower than 3. Therefore, these items were considered unimportant and could be disregarded. Moreover, the experts introduced a few new questions which could be useful in studies. In this step, the questionnaire designed in the previous step was sent to experts. In addition to the second questionnaire, the overall results obtained from the first questionnaire were also provided for the experts. In fact, the experts were provided in this step with the aggregation expert opinions and the mean of expert opinions obtained from the first-period questionnaire. Then the questionnaire filled out in the second period was analyzed. After the completed questionnaires were collected, they were aggregated in the same way as the first period. Then the mean of expert opinions was calculated to analyze the collected data.

Table 7 shows the responses given by 20 experts, the method of the calculating mean of expert opinions, and the method of analyzing the results of each item in the same way as the first questionnaire. According to this table,

the mean of expert opinions was higher than the mean range (3) for all of the research items. Therefore, the items of the second questionnaire were important and effective in the process of evaluating suppliers. Hence, the results helped us reach the research goal, i.e. developing the applications of the mortgage securities model in the higher education system. However, it is still necessary to analyze the consensus condition to see whether a consensus was achieved on all items. To check the consensus condition, as it was agreed at first, at least 70% of experts had to respond the same to one of the options in each item. The following table shows this condition. Accordingly, the experts reached a consensus on all items.

Table 7. Results of Two Rounds of the Delphi Technique – Indicators of Applying the Mortgage securities Model in the Higher Education System

Second period Mean	First period Mean	Indicators of Applying the Mortgage securities model in the Higher Education System	No.
4.14	4.27	Diversification of attainable financial resources to grant student facilities	1
0.19	4.09	Improving financing methods with long-term due times	2
4.41	4.22	Overcoming the problems caused by loan delays	3
4.14	4.09	Financing universities through the capital market	4
4.38	4.23	Freeing capital and increasing its returns	5
4.73	4.05	Improving access to higher education	6
4.73	4.59	Quick and considerable access to liquidity for universities	7
4.45	4.14	Helping expand and improve the academic environment	8
4.41	4.23	Helping train specialized and skilled workforce for the knowledge-based economy	9
4.23	4.09	Helping manage the loans better	10
3.59	3.27	Improving risk management	11
4.35	4.18	Lower dependency on governmental budget	12
4.77	4.45	Investing in financial resources obtained from lucrative activities	13
4.03	3.23	Complete supervision of university over the use of funds and retention of independence	14
4.38	4.16	Converting illiquid assets such as students loans into exchangeable assets	15
3.43	3.21	Implementing general policies of the resistive economy and the Sixth Development Plan based on the all-round modification and improvement of Iran's financial system	16
4.73	4.22	Granting facilities to finance talented students' businesses	17

## Conclusion

According to the research results and findings in two rounds of the Delphi technique, the applications of the facilities asset-based securities were identified. In 17 indicators, the research findings indicated that the experts reached a consensus (Kendall's  $W= 0.702$ ).

Since some of the most important highlights of the Supreme Leader include making fundamental changes to the education sector and emphasizing oil-independent economy and financial discipline, modification of education financing methods can lift a considerable financial pressure off of the state, resulting in better education fairness, and start fundamental changes. New financing instruments have been used in Iran and other countries. The use of these instruments has met different needs. However, the advantages of this method (converting banking facilities into securities) have not yet been employed to meet the needs of Iran's education sector, which is the most important foundation of development in every country. It is safe to infer from the research findings that the effective and efficient use of methods of converting banking facilities into securities can be regarded as an alternative method for the financing of Iran's higher education system. On the one hand, this method can affect financing students to help them pay their tuition. On the other hand, it can help students' businesses flourish and finance the firms in need of research expenditures.

The following suggestions are made to help provide the necessary foundations for the development of the Sukuk market and other novel instruments for financing universities:

- ✓ Standardizing those assets of the higher education centers which can be employed in such processes.
- ✓ Facilitating the evaluation regarding the issuance of Sukuk securitizations
- ✓ Standardizing the process of issuance of asset-backed securities
- ✓ Creating a dedicated market for the sales and purchase of securities and helping its liquidity
- ✓ Developing the appropriate culture and disseminating proper awareness among university managers and higher education policymakers

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