IRSTI 73.01.75
UDC 336.76

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LOW INTEREST INCOME AND SECURITIZATION OF BANKS AS KEY DRIVERS OF GLOBAL FINANCIAL CRISIS 2007–2009

Abstract

The role of low interest income as well as securitization in amplifying the global crises was significant. Prolonged low interest rate environment led to decline in banks' earnings. The banks reacted by increasing their leverage as cost of equity was higher than cost of credit. Besides, banks were searching for high yields by increasing non-lending investment activity, such as derivatives. As the result the use of financially innovative instruments such as securitization increased. In the article 4 aspects of securitization's role in the amplification of the crisis are distinguished: contributing to lengthening of the intermediation chain; creating conditions for incentives and interests between participants in the securitization chain to be misaligned; increasing the reliance on mathematical models and on external risk assessments; increasing both individual and systemic bank risks. However, it exposed a number of misaligned incentives. The financial institutions were not interested to support quality of loans. On the other side investors searching for yields were not incentivized to evaluate the risk of securities issued by the SPVs and check the quality of collateral. Credit rating agencies failed to assess total and systemic risk. Regulators were not incentivized to regulate shadow banking sector. However, lessons were drawn from the crises and regulators responded with establishment of macroprudential regulation, as well as additional requirements towards bank management compensation and credit rating agencies. As the result risks associated with securitization are now better managed and securitization activity is rising.

Key words: interest income, securitization, derivatives, stimulus, crisis, investors, regulators, risks.

Interest income is one of key characteristics of banking business, because of their function as intermediaries between lenders and borrowers in the economy. Banks collect funds from lenders and pay interest expenses on these liabilities and transfer funds to borrowers, expecting to generate interest income on the asset side of the balance sheet. The bank is able to charge for this intermediary function, because of its ability to evaluate borrower's risk and service debt collection as well as perform maturity transformation. In an economy terms at which lenders desire to lend cannot fully match the terms at which the borrowers are willing to borrow, therefore maturity transformation becomes an important economic function of banks. Banks' ability to borrow short-term and provide long-term loans is derived from confidence of economic agents, supported by prudential regulation and central bank's lender-of-last-resort function. Typically interest rates for different maturities of debt are different, resulting in yield-curve having a non-flat slope. So, if long-term debt has higher interest rates than short-term debt, the yield-curve would have an upward slope. This allows banks to pay lower rates on short-term interest-bearing liabilities and charge higher rates on longer-term interest-earning assets. The difference between the two would constitute to net interest income (NII) of the bank.

Market interest rates tend to change thereby changing the amount of interest charged and interest paid by the bank. The potential volatility of net interest income and market value of equity amounts to interest rate risk of the bank. Net interest income is an important factor in bank performance valuation, because it is typically the largest part of bank's profit and market relies on net interest margin (NIM) to estimate bank's ability to generate future return on equity. NIM is the ratio of net interest income (calculated as difference between interest income and interest expense) to average earning assets. Different factors affect NII: changes in level of interest rates, changes in the composition of assets and liabilities, changes in the volume of assets and liabilities, changes in the relationship between the yields on earning assets and rates paid on interest-bearing liabilities.

The interest rate risk is the potential impact on a bank's economic value or profitability from a change in interest rates. Interest rate risk may arise from different sources. English [1] identifies repricing risk, which results from the mismatch in the time to maturity (for fixed-rate instruments) or

time to repricing (for floating-rate instruments) between balance sheet assets and liabilities. Another source of interest rate risk is non-parallel shifts in the yield curve (term structure of interest rates steepens, flattens or becomes negatively sloped). Interest rate risk can also result from optionality clauses embedded in financial instruments on both sides of the balance sheet (e.g. prepayment of loans or early withdrawal of deposits).

Review of theoretical literature does not show consensus regarding the optimal degree of interest rate risk exposure. For example, Diamond [2] considers that zero interest rate risk increases bank's intermediation efficiency. Various methods of mitigation of interest rate risk exist, but the more common approach is hedging through the use of derivatives: financial futures, forward rate agreements (FRA), interest rate swaps, caps, floors and other options. Banks can employ microhedging to mitigate risk of specific financial instrument or product. On the other hand, macrohedging allows to reduce aggregate interest rate risk. A sophisticated bank would combine the two strategies, because combination optimizes cost of hedging.

Financial futures are agreements on price and quantity of a standardized financial asset or index which are settled at specified time in future. When the underlying asset is interest-bearing the instruments are called interest rate futures. The advantage of using futures is their standardization, which provides liquidity and ease to enter and exit from the agreement. The futures are also traded on exchanges, which reduces counterparty risk.

A forward rate agreement is a forward contract which allows the buyer to pay a fixed-rate coupon and receive floating rate payments and the seller accordingly vice-versa. While FRA is a useful tool to control interest rate risk it has a number of limitations: the bank is exposed to counterparty risk when the other party might not settle; it is not a standard instrument, so it might be difficult for find a counterparty who wants to assume the exact opposite risk; being non-standard instrument it also leads to lack of liquidity, so it is difficult for a party to exit from the agreement before settlement.

Interest rate swap is an agreement between parties to exchange a series of cash flows and as such is similar to a package of FRAs. Swaps have an advantage over FRAs because they have been used more widely by banking community, which lead to some standardisation of documentation (e.g. ISDA), higher liquidity and longer tenors. A disadvantage of swaps results from attempt to mitigate counterparty risk through the use of collateral, thus affecting the price of this instrument. Interest rate cap and floor limits the purchasing bank's interest rate exposure to a maximum and minimum rate. Bank's purchase of interest rate caps and floors is equivalent to purchasing call and put options on an interest rate respectively. A simultaneous purchase of cap and floor is called interest rate collar and would be used because a bank wants to accept interest rate fluctuations within a certain band. This instrument is quite versatile and various combinations can be used by a bank depending on the bank's objectives. The main disadvantage of these instruments is typically their high price.

The diversity of instruments for active interest rate risk management allowed the banks to undertake more interest rate risk as well as use derivatives note only for hedging but also for speculative purposes. With regard to the extent of this dual use of derivatives the literature shows different views. Gorton and Rosen [3] find that US banks use interest rate swaps as one of the most common instruments to hedge interest rate risk.

Since the global financial crises of 2008 and European sovereign debt crises of 2010 banks have been operating in the environment of decreasing to almost zero interest rates and flattening yield curve. This situation should theoretically lead to lower income for banks from maturity transformation and increase in share of longer term liabilities for banks, because of flatter yield curve. Also, zero lower bound position means that interest rates can only increase and this distorts pricing for derivatives. Persistent lower interest environment therefore could pose danger for banks income.

In fact, prolonged low interest rate environment lead to decline in banks' earnings, Buckley [4]. The banks reacted by increasing their leverage as cost of equity was higher than cost of credit, Maddaloni, José-Luis [5]. As the result the use of financially innovative instruments such as securitization increased.

Among factors that caused Global Financial Crises (2007–2009), researchers identify a combination of low lending standards, amplified by high securitization activity and weak supervision as key cause of the crises.

Securitization is the process of syndicating (pooling) future cash flows from multiple homogenous debt obligations, transferring them to a special entity which uses them as collateral for issued bond, which are distributed to investors. The debt obligations, such as mortgages and car loans are typically illiquid because the investor would be required to understand individual credit risk of each obligation. Pooling allows individual non-performing loans to be covered by cash flow from performing ones. The pool can therefore be divided into tranches of loans from performing (senior tranches) to default (equity tranche). The senior tranches bonds carry less risk and are more interesting to the investors and therefore more liquid.

There are two main types of traditional securitizations.

1. Asset-backed securities (ABS) – securities whose collateral is composed either from mortgage loans (mortgage-backed securities − MBS) or from collections of other types of financial assets (non-mortgage securities).
2. Collateralized debt obligations (CDO) – securities whose collateral pool is composed, among others, by bonds, loans, or other types of debt, as well as by asset-backed securities.

Here we will focus on 4 aspects of securitization's role in the amplification of the crisis that were suggested by Delivorias [6]:

- contributing to lengthening of the intermediation chain;
- creating conditions for incentives and interests between participants in the securitization chain to be misaligned;
- increasing the reliance on mathematical models and on external risk assessments;
- increasing both individual and systemic bank risks.

There are a number of parties involved in the securitization transaction:

- originator, which is a financial institution that initiates securitization by pooling debt obligations and selling them to a Securitization Special Purpose Entity;
- Securitization Special Purpose Entity (SPV – Special Purpose Vehicle) is a legal entity, established for the purpose of issuing securities collateralized by the pool of debt obligations. These receivables are protected in case of the originator's insolvency, so the securities can have a higher rating than the originator;
- underwriter estimates demand by investors and in collaboration with the Credit Rating Agency provides guidance on seniority 'tranches' of the securities issued by the SSPE;
- rating agencies provide credit ratings to the securities, based on their credit risk assessment;
- others, such as sponsors, third-party credit enhancers, servicers and trustees can participate in the securitization transaction.

Researchers agree that shadow banking played a big role in funding toxic mortgages. Bernanke [7] defines the shadow banking as the "set of institutions and markets that, collectively, carry out traditional banking functions but do so in ways only loosely linked to the traditional system of regulated depository institutions. Examples of the shadow banking system include securitization vehicles, commercial paper, money market funds, repurchase agreements (repos), investment banks, and mortgage companies". Securitization made the financial system more vulnerable, because as more mortgage-issuing financial institutions, commercial banks, investment banks, money market mutual funds became involved in the securitization activity, their interconnectedness and contagion risk increased.

One of the main features of securitization is credit risk transfer. The issue of arising moral hazard risk for the originator has been debated in academic literature. Disintegration of mortgage finance in the intermediation chain led to some misaligned incentives to take more credit risk, as this risk was passed on to another party. Originators passed bad loans to the SPVs which in turn passed them to the investors, so little of the assets retained on the originators balance sheets which incentivized to emphasize loan volumes over credit quality. In addition to credit risk transfer, it is also transformed during securitization.

Basel Committee on Banking Supervision identified "a weakening of due diligence along the securitization chain. This resulted in poorly underwritten assets being securitized by originators, and those securities being bought by many investors who did not understand the extent of the risks they were taking on. Originators/sponsors, in particular, weakened their asset screening and monitoring practices." Department of the Treasury's report established that underwriting standards declined due to

demand for securitization. Keys et al. [8] suggest that "securitization created moral hazard in borrower screening". On the other hand, a decline in underwriting standards could be the result of "too low for too long" monetary policy. For United States and Euro-zone markets Maddaloni, José-Luis found "robust evidence that lending standards to firms and households are softened when short-term interest rates (monetary policy rates) are low".

By their nature, pooling and tranching of assets requires mathematical modeling. The complexity of structured finance was underestimated, because valuations of these assets may prove to be difficult and require good understanding of the assumptions.

As the models become more sophisticated the ability of the parties from the above-described lengthened intermediation chain to correctly assess risks diminishes. Moreover, due to information asymmetries, the value securities issued by the SPVs is difficult for investors to assess. Therefore they rely on credit ratings provided by independent credit rating agencies.

Credit rating agencies played a key role in the process of securitization before the crises. The quality of credit ratings for structured products has been criticized by the researchers and regulators.

The mathematical models for structured finance used by the credit rating agencies have been optimistic because they relied on historically low default rates for mortgages. Another reason was that the United States did not experience nationwide housing market decline for decades, therefore the models assumed low contagion effect for regional declines in housing prices/

Securitization increased the systemic risk because banks not only retained the equity tranches from their securitized portfolios, but also frequently invested in other banks' securities as well as financed part of the shadow banking, which also invested into the same asset classes. The increased involvement of many parties led to increase in contagion risk. Koo [9] argues that securitization increased the rapidity and strength of contagion originating a generalized balance sheet recession. The shift from the originate-and-hold to originate-and-distribute models of banking partially decreased the individual bank credit risk, but resulted in reliance on a more volatile non-interest income, thus increasing banks' exposure to systemic macroeconomic risk. The regulators had to design macroprudential measures, because banks were not able to estimate and manage macroeconomic risk properly.

The evolution from Basel I to Basel II framework allowed the capital requirements of banks to be more correlated with their risk profile. This move supported growth of securitization as a tool to manage regulatory capital. The supervisors failed to take into account the potential spillovers from the US housing market despite the data pointing to the fact that European banks have built up their exposure to American non-bank borrowers. As part of the response to the crises Basel committee for banking supervision established securitization framework for capital treatment of simple, transparent, and comparable (STC) securitizations which came into effect in January 2018. The revised framework simplifies hierarchy in terms of the number of approaches, reduces mechanistic reliance on external ratings, and enhances risk-sensitivity.

The role of low interest income environment as well as securitization in amplifying the global crises was significant. However, it exposed a number of misaligned incentives. The financial institutions originating the loans were not incentivized to support the quality of underwriting. Investors searching for yields were not incentivized to evaluate the risk of securities issued by the SPVs and check the quality of collateral. Credit rating agencies were not incentivized to assess total and systemic risk. Regulators were not incentivized to regulate shadow banking sector.

However, lessons were drawn from the crises and regulators responded with establishment of macroprudential regulation, as well as additional requirements towards bank management compensation and credit rating agencies. As the result risks associated with securitization are now better managed and securitization activity is rising.

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Аңдатпа

Төмен пайыздық мөлшерлемелер мен секьюритизация қаржы дағдарыстын күшеюіне елеулі рөл атқарды. Көп уақытқа созылған төмен пайыздық мөлшерлемелер банктардын табыстарын азайтты. Оған банктер левереджін үлкейтті, себебі капитал құны қарыз алу құнынан жоғары болып табылды. Сонымен қатар, банктер дериватив сияқты инвестициялық қызмет құралдарды арттыру бастады. Нәтижесінде олар секьюритизация сияқты қаржы инновациялық құралды қолдануын ұлғайтты. Мақалада дағдарысты күшейтудегі секьюритизацияның рөлінің төрт аспектісі көрсетілген: аралық тізбегін ұзартуына әсер етті; секьюритизация тізбегін қатысушылар арасында қате ынталандырмалар пайда болуына жағдай туғыздырды; математикалық модельдерге жане сыртқы тәуекелдерді бағалауға тәуелділік; дербес және жүйелік банктік тәуекелдерін көбеюі. Алайда, бұл бірнеше теріс ынталандырмаларды ұрындырды. Қаржы институттары кредитті берушілер ретінде қызығушылық тудырмады. Инвесторлар жоғары табысты іздеуде агент шығарған бағалы қағаздардың тәуекелдерін бағалауға, сондай-ақ қамтамасыз етудің сапасын тексеруге мүдделі емес. Рейтингілік агенттіктер жалпы және жүйелік тәуекелдерді бағаламады. Реттеуші көлеңкелі банк секторын реттеу ынталандырылмады. Қорытындысында, дағдарыстан сабақ алынды, регуляторлар макропруденциалдық ережелер кабылдады, басшылығың өтемақысына жане рейтингілік агенттіктерге қосымша талаптар койды. Нәтижесінде, секьюритизацияға байланысты тәуекелдер жақсырақ реттеледі және секьюритизация келісімдер үлкейді.

Тірек сөздер: пайыздық мөлшерлемелер, секьюритизация, деривативтер, ынталандырмалар, дағдарыс, инвесторлар, реттеушілер, тәуекелдер.

Аннотация

Низкие процентные ставки, а также секьюритизация сыграли существенную роль в усилении мирового финансового кризиса. Затянувшаяся ситуация с низкими ставками привела к падению доходов банка. Банки отреагировали путем увеличения левереджа, так как стоимость капитала была выше, чем стоимость заимствования. Кроме того, банки искали возможность заработать высокую доходность путем расширения инструментов инвестиционной деятельности, таких, как деривативы. В результате расширилось применение такого инновационного финансового инструмента, как секьюритизация. В статье выделены четыре аспекта роли секьюритизации в усилении кризиса: влияние на удлинение промежуточной цепочки; создание условий для появления некорректных стимулов между участниками цепочки секьюритизации; повышение зависимости от математических моделей и внешней оценки рисков, увеличение индивидуальных и системных банковских рисков. Однако это спровоцировало ряд некорректных стимулов. Финансовые институты не были заинтересованы в качестве выдаваемых кредитов. Инвесторы в поисках высокой доходности не были заинтересованы в оценке рисков ценных бумаг, выпускаемых агентом, а также в проверке качества обеспечения. Рейтинговые агентства не смогли оценить общий и системный риск. Регулятор не был заинтересован регулированием теневого банковского сектора. В итоге были извлечены уроки из кризиса и регуляторы ответили установлением макропруденциальных правил, а также дополнительных требований к компенсации руководства и кредитным рейтинговым агентствам. В результате риски, связанные с секьюритизацией, лучше регулируются и объем сделок по секьюритизации увеличивается.

Ключевые слова: процентный доход, секьюритизация, деривативы, стимулы, кризис, инвесторы, регуляторы, риски.