NATIONAL BANK OF KAZAKHSTAN

PIGOUVIAN TAX FOR HIGH DEPOSIT RATES AS A MACROPRUDENTIAL TOOL: KAZAKHSTAN'S EXPERIENCE

Department – Center for Research and Analytics

Economic Study No.2023-04
Working Paper

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NBRK – WP – 2023 – 04

ISSN: 2789-150X

Pigouvian Tax for High Deposit Rates as a Macroprudential Tool: Kazakhstan's Experience

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Abstract

The framework for cap rates of the deposit insurance fund was supplemented by a systemic risk fee based on the Pigouvian tax principle. An additional fee for systemic risk was introduced to curb overly aggressive price competition in the deposit market by creating incremental explicit financial costs that could offset the gain to individual banks from the increased deposit market share. However, the existing inelasticity of the implemented framework, which manifests itself in the absence of stable pressure over the entire range of rates, necessitates its reform. In this study, the authors give insight into the details of the implemented mechanism for the systemic risk internalization in the deposit market, the reasons that prompted its implementation, evaluation of its success and ways for a further reform.

Key Words: Pigouvian tax, pecuniary externalities, deposit market, deposit insurance system, deposit insurance, systemic risk, moral hazard, Kazakhstan Deposit Insurance Fund, systemic risk fee

JEL classification: E43, G21, G28.

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The authors express their acknowledgment to Aliya Miller and the staff of the Kazakhstan Deposit Insurance Fund for their participation in designing the mechanism of systemic risk fee as well as for provided materials that were used in the preparation of this working paper

1. Preamble

Banks that are part of the fractional reserve banking are exposed to two main financial risks – bank runs as the realization of liquidity risk and insolvency as the realization of credit risk. The interaction of these risks at the level of a bank, the banking system, and the economy as a whole accelerates and intensifies the losses associated with these risks. Historically, insurance schemes including deposit insurance, access to emergency liquidity and prudential liquidity risk management have been introduced to counteract bank runs. A side effect of this intervention was to increase the main problem of finance – irresponsibility of an agent.

The deposit market is distorted by coordination issues, systemic externalities, information asymmetries, and moral hazard, which are intensified because of deposit insurance and once bank balance sheets weaken. Pecuniary externalities in the deposit market are associated with the actions of individual banks, whose aggressive policy of deposit-taking affects the growth of rates. In a closed and limited market, even if there is a cap on interest rates, the emergence of pecuniary externalities is inevitable, especially when competition for limited resources strengthens. Competition in such market results in an inefficient equilibrium, with higher rates on deposits and loans, with an increased share of less reliable banks, and heightened credit risk.

Maximum rates are the earliest attempt to limit unhealthy competition in the deposit market (USA in 1934, RK – in 2000). The shortcomings of this framework forced the Fed to abandon it as a macroprudential tool and turn it into a microprudential one (in 1980).

In Kazakhstan, the framework for cap rates encountered the problem of a gradual increase in market rates since banks were offering rates at the boundary of maximum values. Khakimzhanov et al. mentioned this effect when "banks did not exceed the cap rate but came close to it, thereby narrowing their interest margin and hoping to expand or not to lose the market share, which shifted upward the average market rate and the cap rate of the next month" (Khakimzhanov et al., 2022). The moral hazard of poorly capitalized banks was perceived as the main reason for the increase in market rates on deposits as a result of intense competition. Higher deposit rates were offered by banks with an unstable financial position compared to banks with sufficient capitalization.

A gradual and progressive increase in rates results in the systemic risk buildup through increased cost of funding, reduced availability of funding for conservative banks, higher cost of credit resources for borrowers and, in general, a weakening of the intermediary function of banks, which consists in transforming attracted funds into long-term credits to the economy.

With the reduction in the number of "weak" banks, strengthened supervision, formation of the term deposit market and the improved culture of risk management in banks, the need for more flexible and elastic mechanisms for regulating the deposit market, ensuring the achievement of financial stability and monetary policy objectives, has increased.

In this context, a more effective macroprudential tool is a Pigouvian tax, which skews a distorted market in the opposite direction. In the deposit market, a Pigouvian tax should motivate banks to lower the rate. The systemic risk fee, introduced in 2021, is close to the idea of Pigouvian tax, but the framework parameters and the calculation procedure turned it into a maximum rate option.

To neutralize the moral hazard of banks, a fee for aggressive behavior in the deposit market was introduced, structured as a Pigouvian tax. The tax rate depended on the excess of the bank's rate over the average market rate. The volume of deposits attracted during a quarter was chosen as a tax base.

The introduction of an assessment depending on the excess of the bank's rate over the average market rate was submitted for consideration by the Financial Stability Council back in June 2020, and since January 2021 it has been factored into the KDIF regulation perimeter.

This paper will provide an analysis of the nature of pecuniary externalities, methods for their neutralization and the use of such methods in relation to banks whose behavior creates externalities in the Kazakh deposit market.

Section 2 provides a review of the theoretical and empirical literature, which analyzed pecuniary externalities, their nature and occurrence, methods for mitigating the pertinent risks, including moral hazard and excessive risk-taking by banks in a deposit insurance environment. Section 3 describes the problems of the deposit market, the stages of introducing a progressive fee for high rates on deposits, and an assessment of elasticity of the proposed framework for systemic risk internalization. Proposals for reforming the systemic risk fee are presented in Section 4. The conclusion section reflects and systematizes the main findings.

2. Literature Review

The concept of pecuniary externalities and their role in destabilizing the financial system is widely studied and discussed in the theoretical and empirical literature. Pecuniary externality is manifested in pricing based on the actions of economic agents, leading to a rise or decline in market prices/rates, which generally affects all market participants. The manifestation of a negative externality in closed and limited markets is inevitable due to constant competition for limited resources.

The emergence of pecuniary externalities justifies government intervention aimed at reaching the Pareto optimum, as well as the use of macroprudential tools to prevent economic agents from taking excessive risks (Pigou, 1920; Greenwald & Stiglitz, 1986; Bianchi & Mendoza, 2010; Perotti & Suarez, 2011; Kato & Tsuruga, 2021). In the theory of externalities, it is proposed to solve the problem with regulation of externalities through internalization by introducing an adjustment tax in the context of general equilibrium, in particular, by applying a Pigouvian tax to the economic agents that generate negative externalities in order to increase their marginal private costs to the level of marginal social ones. Khakimzhanov's work also points out that "an effective regulatory system should transfer social costs from the actions of individual agents to the agents themselves" (Khakimzhanov et al., 2022). Thus,

economic agents, whose decisions provoke the appearance of negative externalities, must bear the costs in full without transferring them to third parties. Bianchi points to the need to introduce a new macroprudential concept of regulation, based on which the actions of individual market participants should be considered as potentially destabilizing the economy at the macro level. He explored externalities and their consequences in the form of excessive accumulation of risk, and also studied the possibilities of reducing vulnerability to financial crises through a tax on excessive risk-taking (the subject matter of his study was debt overburden and systemic credit externality). At the same time, Bianchi also supports the idea of introducing an adjustment tax like a Tobin style tax, which is similar in principle to a Pigou tax and can smooth out the economic cycle (Bianchi, 2011). The idea of an adjustment tax was also developed in a study by Perotti & Suarez, who proposed considering a Pigouvian tax as a tool that reduces the share of short-term funding and increases the overall stability and well-being of the market and its participants. In their opinion, the decisions of each bank regarding the fund-raising affect vulnerability of other banks and their exposure to liquidity risk, generating negative externalities. Less capitalized banks tend to raise funds aggressively at high rates, investing in riskier and/or "related" projects and transferring their idiosyncratic risks to the banking system as a whole (Perotti & Suarez, 2011).

The idea that intensification of bank competition for deposits weakens financial stability and worsens welfare is well-known (Greenwald & Stiglitz, 1986; Bianchi & Mendoza, 2010; Perotti & Suarez, 2011), has been proved empirically (for example, Hellmann, Murdock & Stiglitz, 2000) and is described in theoretical models (for example, Dewatripont & Tirole, 2012).

The history of fractional reserve banking is full of bank runs and bankruptcies. The inefficiency of market allocation always attracts the attention of normative economists seeking corrective intervention. The most frequent proposal in the literature is to introduce a Pigouvian tax to correct the risky behavior of banks and curb the excessive risk-taking.

By raising the rate, the bank increases the risk and the expected net return of shareholders, but also reduces the overall wealfare, as it exposes creditors, or guarantors, to an increased risk of losses. Depositors do not bear the risk of losses as they are protected by insurance, therefore, they do not take into account credit risk and evaluate banks only by the return on deposits (R, interest rate) and bank-specific services (monopolistic competition).

The market inefficiency in this case arises from the moral hazard caused by guarantees and the increased risk appetite of bank shareholders.

Moral hazard manifests itself both from financial institutions aggressively attracting deposits at higher rates and from depositors who are more careless in choosing a bank to deposit funds (Kareken & Wallace, 1978; Gennotte & Pyle, 1991; Boot & Greenbaum, 1993; Matutes & Vives, 1996, 2000; Vaez-Zadeh et al, 2002; Khakimzhanov et al., 2022). According to Matutes & Vives, deposit insurance schemes provoke a fiercer competition among banks, and with direct competition the elasticity

of deposit supply increases because of stiffer competition between banks (Matutes & Vives, 1996). In their theoretical model, Martinez-Miera & Repullo show that risk appetite of banks, even well-capitalized ones, increases as the competitive struggle among banks intensifies. At the same time, due to the presence of deposit insurance system, depositors perceive all banks (even insolvent) as safe banks (Martinez-Miera & Repullo, 2008).

Nonetheless, according to researchers, moral hazard is the smallest price to pay compared to the consequences of systemic risk associated with the lack of deposit insurance (Vaez-Zadeh et al, 2002). In this regard, an important task is to develop a deposit insurance scheme that concurrently minimizes systemic and contagion risks and, at the same time, discourages excessive risk-taking by banks. In the theoretical literature, it is proposed to establish a higher premium for deposit insurance, increase capital requirements and the intensity of supervision with a significant increase in the difference between deposit rates (Vaez-Zadeh et al, 2002; Khakimzhanov et al., 2022). Accounting for risk as part of the premium paid by banks for participation in the deposit insurance system will help reduce moral hazard by discouraging bank shareholders from taking excessive risk. At the same time, charging higher insurance premiums from participants in the deposit insurance scheme that are more aggressive in their behavior is fair from the point of view of minimizing the risks of the insurer.

3. Two Mechanisms of Interest Rate Regulation

Macroprudential regulation of the deposit market is aimed at reducing the total cost of funding, and in particular, the equilibrium market rate. In practice, there are two types of pricing regulation tools: restriction of price level and tax on increased prices.

Historically, an interest rate ceiling, i.e. a direct limit on interest rates has been applied more often in the deposit market. The earliest attempt to limit unhealthy competition in the deposit market with an interest rate ceiling was made in the US in the 1930s. The shortcomings of this framework manifested themselves already in the 1960s and forced the Fed to abandon it as a macroprudential tool, while preserving it as a microprudential tool (FDIC 1980). In Kazakhstan, interest rate ceilings with varying degrees of flexibility have been applied since 2001.

A Pigouvian tax is a more efficient and flexible tool, which distorts the market, skewed by moral hazard towards higher rates, in the opposite direction. In the deposit market, a Pigouvian tax should motivate banks to lower the rate. The systemic risk fee, introduced in 2021, is close to the idea of Pigouvian tax but the details of the mechanism have effectively turned it into an interest rate ceiling.

3.1 Tax on High Interest Rates

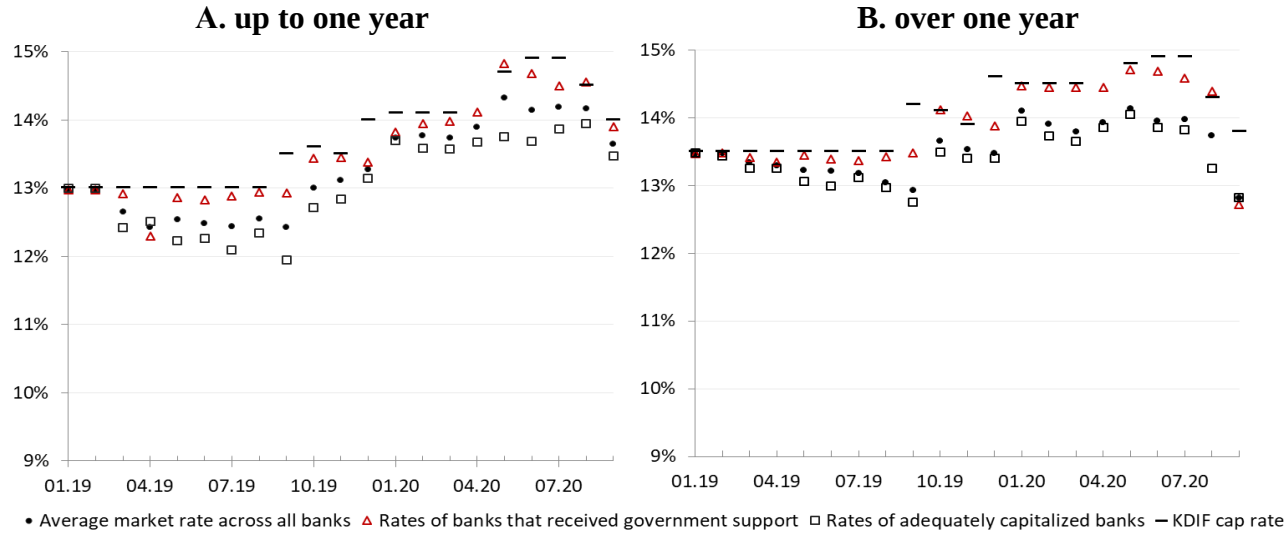
After the 2008 financial crisis, domestic banks faced the need to reorient their funding base from external to domestic sources. Gradually, the domestic funding sources were redistributed towards deposit resources. The efforts of banks were mainly aimed at attracting large volumes of deposits, without regard of the cost and of funding

and liquidity risks. The result was that banks offered flexible and convenient terms to attract more customers while taking risks and costs on their balance sheets. As a consequence, the market of term deposits had undergone transformation and the very concept of maturity had gradually blurred (Khakimzhanov et al., 2022). In their paper, Khakimzhanov et al. conducted an analysis of bank deposit agreements and deposit turnover statistics, which showed that until 2019, the so-called term deposits were such only in name. Concurrently with the introduction of a differentiated approach to cap deposit rates in October 2018, deposits in the KDIF reporting were classified depending on the conditions for early withdrawal. Thus, a separate type was singled out – deposits that meet the conditions of maturity, where the determining criterion was the presence of a minimum penalty for early withdrawal.

Under the new framework, the cap rate on deposits was calculated as the average market rate on attracted deposits in the previous period, taking into account the spread. With this approach, there is room for increasing rates within the specified spread from period to period, which spirals further rate hikes. In the context of existing distortions in the deposit market because of negative externalities due to the increasing competition, the cost of the deposit base was showing growth, which ultimately increased the funding and liquidity risks.

The actions of some banks led to an increase in market prices for funding, which backfired on all market participants that raised interest rates along with the market, fearing the loss of market share. Thus, banks offered higher rates within the allowed limits at their upper boundary, thereby shifting upward the next month's market rate and the pegged cap rate (Figures 1.A and 1.B).

Figure 1. The path of weighted average bank interest rates on savings deposits in the tenge, of average market rate and cap rate



Note: The troubled banks included banks whose licenses were revoked in the period from 2018:11 to 2022:01, as well as banks that received government support or were restructured with the help of government support in 2015-2020 through additional capitalization, long-term funding at a low rate, and buyout of their loan portfolio at book value. At the beginning of the sample period, the number of troubled banks offering savings deposits was 8 (as of 2018:11) and it decreased to 4 (by 2022).
Source: the authors' assessment based on the data from regulatory reports of banks and the KDIF

Exceeding the cap rate was penalized by increasing the assessment paid by a bank to the maximum (0.5% per quarter of the amount of insured deposits). Given this circumstance, banks do not violate or exceed the cap rate but come close to it. Thus, the punitive measure included in the framework for cap rates does not produce to increase responsibility of banks.

Higher rates because of the overly aggressive rate hikes can be seen as a negative pecuniary externality. The emergence of such external effect is associated with the isolation and limitation of the deposit market, where the competition for limited resources is intensifying. The cap rates are offered mainly by banks with a less stable financial position compared to banks with adequate capitalization, aggressive in their policy to raise funds. At the same time, in the face of unhealthy competition, the problem of coordination intensifies, when even responsible banks are forced to follow the market and raise rates in order not to lose their market share.

In the absence of regulation of this process, an increase in the final cost of funding, the narrowing of bank margins, the decreasing profitability, weakened viability of banks and, as a result, escalation in systemic risks are possible. At the same time, banks can transfer their costs to borrowers but this will cause deterioration in the loan portfolio quality and lead to increasingly significant losses.

In order to prevent systemic implications from growing interest rates, the KDIF decided to set cap rates on certain products[3] that are calculated as a sum of the base rate and the spread. However, a discretional interest rate management in order to curb their unjustified growth is not a market measure and in the long run can jeopardize the interests and operations of bank themselves and financial stability as a whole.

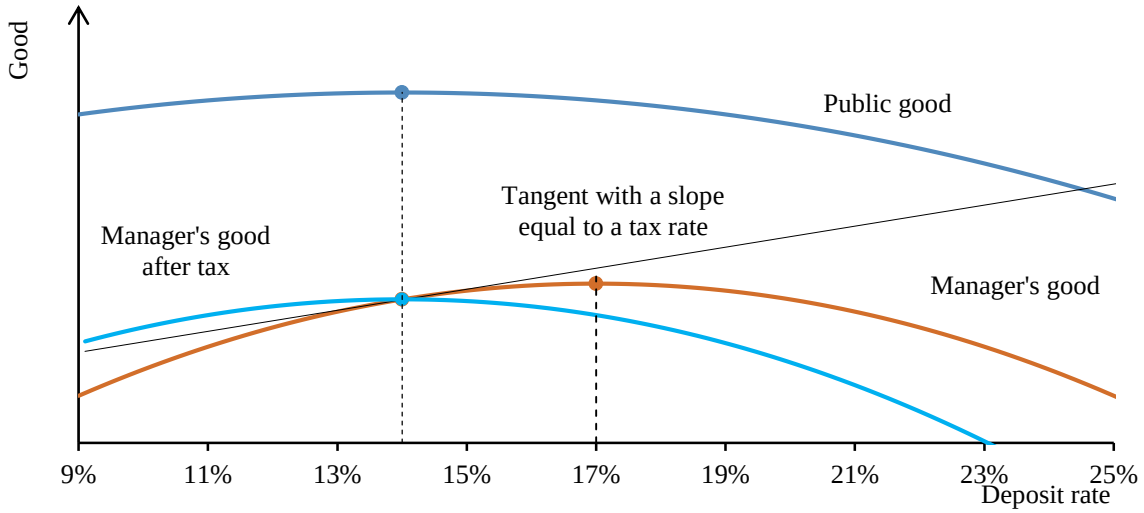
In 2020, a motivating framework was designed that was based on a penalty commensurate with the aggressiveness of offered deposit rates. In order to limit the growth of interest rates in the system as a whole, the framework for cap rates was supplemented by the systemic risk fee developed on the basis of Pigouvian tax.

The mechanism of systemic risk fee can be illustrated as follows. A rate of 14% is optimal and maximizes the public good (Figure 2). Banks that offer a higher rate (at 17%) maximize their private good while increasing social costs, in particular the costs of the deposit insurer, whose risks increase with the risk of a bank that is aggressive in attracting deposits. In this case, a Pigouvian tax shifts the market rate towards the socially optimal rate by passing the social cost on to banks that offer high deposit rates. Conceptually, the optimal tax rate is equal to the marginal increase in private good as the rate increases. In addition, the greater the moral hazard, the higher the tax rate required.

It should be understood that this is an illustrative example, but in practice, the heterogeneity, variability and non-observability of private good make the task of choosing the Pigouvian tax rate non-trivial.

[3] This approach is applied to deposits that do not meet maturity conditions, for all terms, to savings deposits and deposits that meet maturity conditions, with standard terms of 3 and 6 months

Figure 2. The scheme of systemic risk fee based on Pigouvian tax



Thus, the proposed mechanism of systemic risk fee of a macroprudential nature demotivates the deposit-taking at the rates on the boundary of cap rates due to the internalization of systemic risk through additional assessments commensurate with the bank's contribution to the growth of deposit rates.

The bank's contribution to the increase in the average market rate R is assumed to be equal to the product of the excess of the bank's rate over the average market rate $r_i = R_i - \bar{R}$ and the attraction volume Q_i. In this case, the systemic risk fee should be calculated as $Z_i = \tau*(R_i - R)*Q_i$, where τ is the systemic risk fee. However, at the stage of translating the fundamental idea into regulatory documents, decisions were made that unnecessarily complicated the mechanism, distorted the advocated principles and weakened its ability to solve the stated objectives.

3.2 The Implemented Mechanism of Systemic Risk Fee

Just like any tax, the systemic risk fee Z_i of bank i was calculated as the product of taxable base of bank $\bar{Q}_i$ and interest rate $\bar{T}_i$:

$$Z_{it} = \bar{Q}_{it} * \bar{T}_{it} \quad (1)$$

where

Z_{it} – systemic risk fee of bank *i* in quarter *t*;

$\bar{Q}_{it}$ – a taxable base of bank *i* in quarter *t*;

$\bar{T}_{it}$ – rate of fee of bank *i* in quarter *t*.

The volume of taxable deposits attracted during the reporting quarter *t* was taken as the base $\bar{Q}_{it}$:

$$\bar{Q}_{it} = \Sigma_{j \in J,\, m \in M(t)} Q_{ijm} \quad (2)$$

where

J – is a set of taxable deposits that included term deposits (including savings deposits), in the tenge, of all terms;

M(t) = {3t-2; 3t-1; 3t} – a set of months of quarter *t*.

Rate of fee T_{it} was calculated as the largest of rates T_{ijm} among the multiplicity of all examined deposits $j \in J'$ for each month $m \in M(t)$:

$$T_{it} = \max_{j \in J',\, m \in M(t)} \{ T_{ijm} \} \qquad (3)$$

Let us pay attention to the difference between the set of taxable categories *J* and the set of studied categories *J'*. The examined categories were understood to be the categories whose behavior served as the basis for charging a fee from the bank. The examined categories $J' \subset J$ included taxable deposits of only two terms, "12m" and "12m+", as "making the largest contribution to the growth in the cost of funds".

The rate T_{ijm} for each combination (*j*,*m*) was determined as a piecewise linear dependence on the excess of the bank's rate R_{ijm} over the average market rate $\bar{R}_{jm}$. The dependence consists of a flat part with a zero fee rate and a "hump", where the fee rate increases linearly depending on the excess of the rate on the threshold:

$$T_{ijm}(r_{ijm}) = \begin{cases} 0 & \text{with } r_{ijm} \le a \\ b*(r_{ijm} - a) & \text{with } a < r_{ijm} \le c \end{cases} \qquad (4)$$

where

$r_{ijm} = R_{ijm} - \bar{R}_{jm}$, the excess of the bank's rate R_{ijm} over the market rate $\bar{R}_{jm}$;

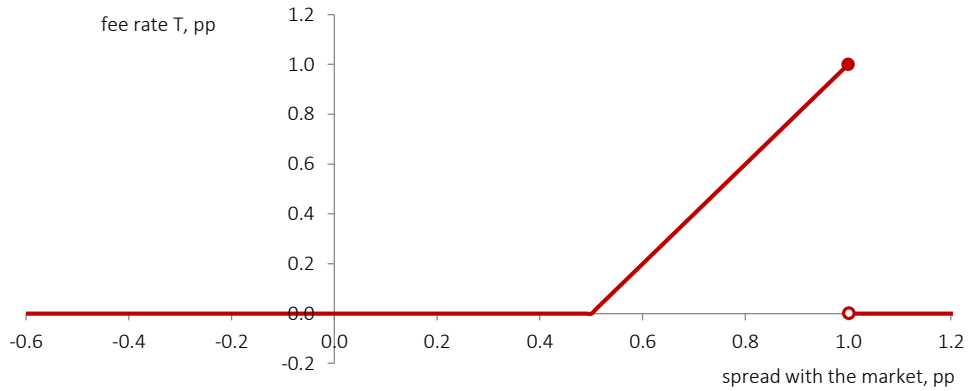
a = 0.5pp, the threshold outside of which the fee is activated;

c = 1pp, spread to an average market rate for determining the marginal rate;

b = 2, a slope of dependence of fee rate on the excess in the "hump" zone.

The average market rate $\bar{R}_{jm}$ was calculated as the weighted average (weighted for the volume of insured deposits) rates of all banks $R_{ij,m-3}$ three months earlier.

Figure 3. Dependence of the fee rate on a bank rate and an average market rate (a benchmark)



Thus, the formula for a fee rate of bank *i* was written as:

$$T_i = b * \max_{jm} \{ \max (r_{ijm} - a; 0) \} \qquad (3')$$

The maximum interest rate among all deposits of the *j* type attracted in month *m*, and not the weighted average rate on attracted deposits was taken as statistics for the bank's rate R_{ijm}.

$$R_{ijm} = \max_{k \in K(i,j,m)} \{ R_k \} \quad (5)$$

where

k – a deposit agreement index;

K(i,j,m) – a set of deposit agreements of the $j \in J'$ type opened by bank *i* in month *m*.

In addition, in the process of discussion of the mechanism with supervised banks, a ceiling was added to the mechanism, limiting the systemic risk fee in absolute terms, in the order of 400 million tenge.

$$Z_{it} = \min (400 \text{ mln tenge}; \bar{Q}_{it} * \bar{T}_{it}) \quad (1')$$

The systemic risk fee that without this modification would be explicitly an ad valorem tax, took on the features of a specific tax, or fine, whose regressivity gave an advantage to large banks. With a maximum possible fee rate $\bar{T}_{it}$ = 0.5pp, this limitation could reduce the fee for 1-5 banks only.

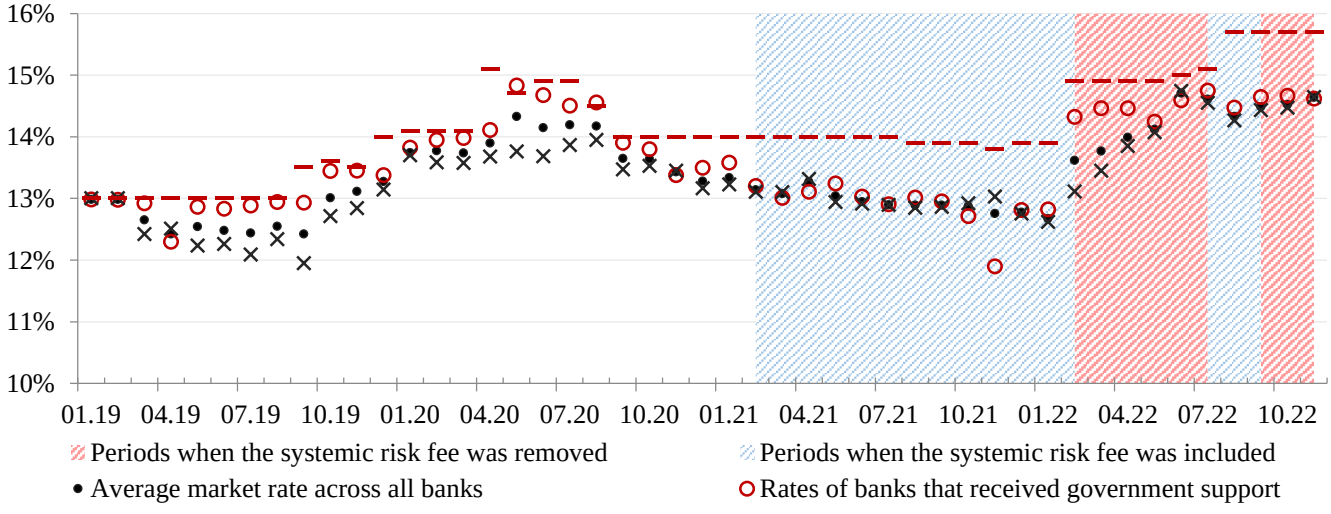
3.3 The Effect of Systemic Risk Fee in Practice

The effect of narrowing spread between the market rate and bank rates

At present, the systemic risk fee has been set for the savings and term deposits in the tenge[4] on maturities of 12 and 24 months.

After the introduction of the systemic risk fee in 2021, the frequency of bank rates exceeding the average market rate has decreased. Banks, in order to avoid paying an additional assessment for systemic risk, offered rates above the market average in 2021 much less frequently compared to prior periods (Figure 4). The spread between banks' rates and the average market rate narrowed. However, in 2022, amid the realization of shocks as well as due to an increase of the base rate, the mechanism of system risk fee was occasionally removed on a discretionary basis.

Figure 4. Deposit-taking rates before and after the introduction of systemic risk fee: the example on the basis of savings deposit rates without the right to attract deposits for 12 months



[4] Deposits meeting the maturity conditions, according to the KDIF definition

Note: The troubled banks included banks whose licenses were revoked in the period from 2018:11 to 2022:01, as well as banks that received government support or were restructured with the help of government support in 2015-2020 through additional capitalization, long-term funding at a low rate, and buyout of their loan portfolio at book value. At the beginning of the sample period, the number of troubled banks offering savings deposits was 8 (as of 2018:11) and it decreased to 4 (by 2022).
During the period from 01/11/2022 to 02/24/2022, the systemic risk fee was partially removed (for all deposits, except for savings deposits for a period of 12 months); therefore, this period in the Figure is shown as the period when the systemic risk fee was removed.
Source: the authors' assessment based on the data from regulatory reports of banks and the KDIF

Macroprudential Effect

In the period of 2019-2020, cap rates served as the only instrument of interest rate regulation; according to the KDIF rules, rates were pegged to average market rates with a lag of two months and a spread of 1 pp. During this period, the distribution of bank rate excesses over cap rates could indeed be described as the censored normal distribution (Figure 5.1). Banks were thoroughly complying with the regulator's requirements. Out of 725 combinations of banks, deposit categories and months, there were only 9 cases (1%) when the cap rates were exceeded.

However, the cap rates per se were not pegged to the average market rate as was required by the rules. Out of 192 combinations (12 months x 8 deposit categories) only in 40 cases (21%) the cap rate was compatible with the rule. The KDIF was setting cap rates discretionally.

Since 2021, the systemic risk fee has been introduced in addition to cap rates pegged to the average market rate. The systemic risk began to truncate observations at 0.5 pp above the benchmark, closer to the distribution center and began to censor more observations (Figure 5.2).

Figure 5.1. Distribution of rates R_{ijm} relative to the cap rate CAP_{jm} in 2019-2020

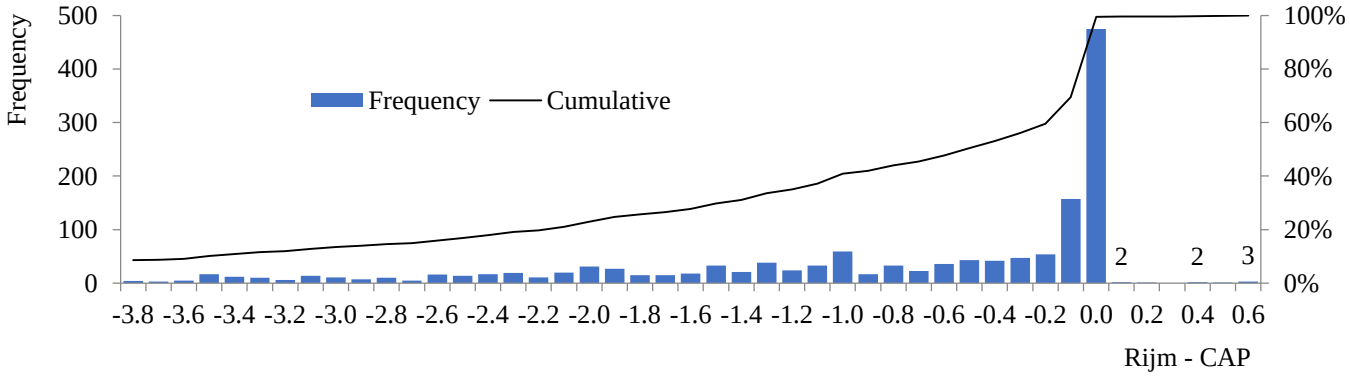
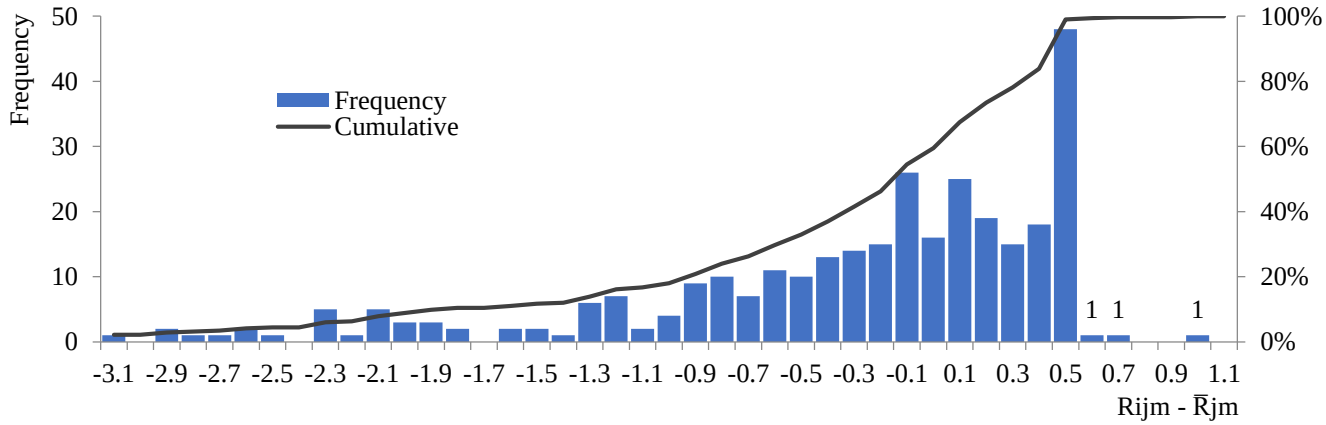


Figure 5.2. Distribution of rates R_{ijm} relative to the average market rate $\bar{R}_{j,m-2}$ in 2021



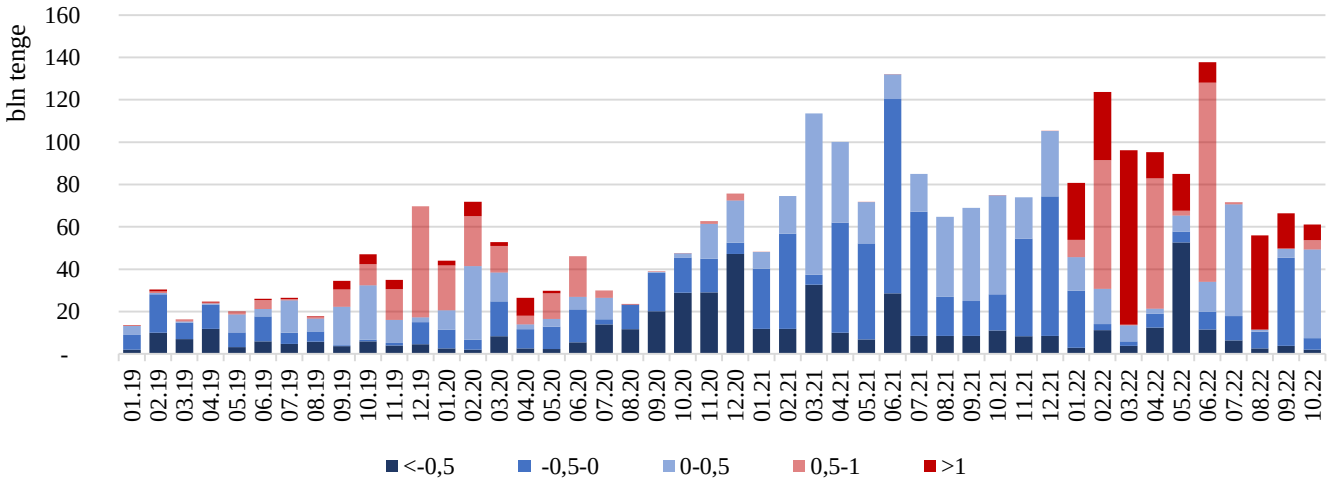
Notes:
1. Numbers on a horizontal scale are showing the upper boundary of the basket.
2. Each observation is indicated by a combination of indexes i (bank), j (product), m (month). The sample includes all banks, all months of the observation period, but is limited to four products (term 12m, savings 12m, term 24m, savings 24m, all without the right to replenish). The data is not balanced as not all banks offered all products during the entire observation period.
3. The sample is divided into two periods. In the period 2019m1-2020m12, rates were regulated only through cap rates. The CAPjm framework for cap rates capped the bank rates Rijm from above. According to the adopted rule, cap rates were to be set 1pp above the average market rate with a lag of two months, CAPjm = $\bar{R}_{j,m-2}$ + 1pp. In fact, they were more often set discretionally. Compliance with the cap rates by banks was ensured by taking action against violators, which, as before 2019, included a mandatory increase in the general assessment rate to the maximum level (0.5%/Q of the insured deposit balance) and the adoption of discretionary supervisory measures comparable to early response measures. During the observation period, banks did not exceed the cap rates.
4. In the period 2021m1-2021m12, a systemic risk fee was added to the cap rates. In 2022, the systemic risk fee was almost permanently removed. The risk fee was charged when the threshold rate was exceeded by 0.5pp above the average market rate $\bar{R}j,m-2$, and grew linearly as the threshold was exceeded. The fee was high enough and in 2021, there were only three steps over the threshold.
Source: the authors' computations, regulatory reporting data.

Including and Removing the Fee

The frequency with which the banks exceeded the established spread in 2022 increased compared to 2021. During 5 months of 2022, 65 cases were recorded when banks attracted deposits at rates with a spread of more than 0.5 pp from the market rate, and in 2021, there were 7 cases. This happened because of the increase in cap rates for non-term deposits, set on the basis of the base rate with a certain spread. Due to a sharp increase of the National Bank's base rate of the after February 24, 2022, market rates on term and savings deposits, calculated with a certain lag, became lower than the base rate, and, accordingly, lower than rates on non-term deposits. In such circumstances, banks were forced to offer rates on savings and term deposits above the allowed limit for exceeding the market rate, so as not to lose customers in these segments of the deposit market.

In 2021, with the introduction of the mechanism for systemic risk internalization, the volume of deposits attracted at rates above the threshold for exceeding the weighted average rate was insignificant. However, in 2022, banks were forced to offer rates without regard to market rates of prior periods, and this determined the structure of attracted deposits: deposits were taken by banks with a spread over 0.5pp (Figure 6).

Figure 6. Volumes of savings and term deposits taken (12m and 24m) depending on the spread to the average market rate



Source: the authors' assessment based on the data from regulatory reports of banks and the KDIF

4. Reforming the Interest Rate Regulation Mechanism

The systemic risk fee was conceived as a tool to curb unnecessarily aggressive interest rate competition. It had to reduce the equilibrium rate, bringing it closer to the socially optimal one. In addition, the mechanism should not slow down the process of identifying the equilibrium price. These two criteria can be called static and dynamic efficiency and can be associated with the objectives of financial stability and monetary policy, respectively.

In solving these two problems, the mechanism must be sufficiently flexible and elastic so that its impact on the behavior of banks is uniform, constant and predictable for different banks, market segments, in a wide range of interest rates and situations. Based on the principles of Pigouvian tax, the mechanism also had to comply with the principles of tax efficiency, neutrality and proportionality, and to be easy to administer.

However, the existing mechanism adopted in 2021 poorly met these criteria. The mechanism, in an arbitrary and unmanageable way, enhanced the demotivating effect of the tax on high rates, effectively turning it into a restriction. This was mainly due to the chosen order of aggregation of interest rate and the base and the limited scope of the tax. The mechanism also dramatically worsened the market's ability to increase the rate as a result of the linkage to the lagging market statistics and the chosen aggregation order. There were also less fundamental shortcomings.

4.1 Order of Aggregation: Product of Aggregates of the Rate and the Base

The procedure for aggregating the tax base and the tax rate used to calculate the systemic risk fee is unusual for a mechanism whose purpose is to modify the behavior. According to formula (1), the fee is calculated as the product of the base and rate aggregates that are independent of each other. This method of aggregation distorts the motivating effect of the tax on banks' pricing policy in an undesirable and unmanageable way: it is either multiplied or completely neutralized depending on irrelevant or changing circumstances.

Let us consider the case of gearing. Suppose a bank plans to actively attract only in a certain category and is ready to bear the costs associated with climbing the "hump". However, climbing the "hump" in category *j'*, according to (2), turns into a rate that is uniform for all categories and not only for *j'* category. Actually, the slope of the "hump" *b* increased by $\bar{Q}_{it}/Q_{ijm}$ times. For a medium-sized (in terms of the attraction volume) category, the multiplier of the increase in the slope is x60 (5x for the term, 2x for the restriction on early withdrawal, 2x for the right to replenish, 3x months), but for unpopular categories of deposits it could be much more. For example, if a bank decides to climb from the foot of the "hump" to the top once a quarter, the effective value of the attracted funds $\hat{R}_{ijm}$ in this category and in this month will increase not by 1.5 pp (0.5 pp for the depositor and 1.0 pp as a KDIF fee) but by 60.5 pp.

It is obvious that there is no sense for the bank to climb the "hump" in order to attract deposits whose value is not way above the market value. For the entire period of the mechanism being in effect, there were only 5 cases of climbing the "hump",

which occurred in the first two quarters of the mechanism operation, when the response behavior of banks had not yet shaped.

In fact, the aggregation order (formulas 1 and 2) turned the slanting hill into a sheer wall. The regulatory mechanism, which could have been flexible and elastic under a different order of aggregation, has actually turned into a new cap rate at the boundary of 0.5 pp above the benchmark, in addition to the already existing cap rate at the boundary of 1.0 pp above the benchmark.

Declining the slope proportionally would solve only a small part of the problem – it would decline the average slope. However, the problems of scatter and arbitrariness of the slope, the loss of neutrality and controllability associated with the idiosyncraticity and variability of the $\overline{Q}_{it}/Q_{ijm}$ coefficient would remain unresolved.

To implement the declared objectives of the mechanism in a more complete way, the adoption of the correct order of aggregation is required. In it, the fee is calculated as the sum of fees for each regulated product in the form of products of Qijm bases and T_{ijm} rates:

$$Z_{it} = \Sigma j \in J, m \in M(t) \, (Q_{ijm} * T_{ijm}) \qquad (6)$$

4.2 The Maximum as an Aggregate of Tax Rates

The aggregation of fee rates with the help of *maximum* statistics makes the demotivating effect on the bank uncontrollable: for products with the highest excess, it increases many times, and for other products, it drops to zero.

A multiple increase in the actual fee slope with the coefficient $\overline{Q_{it}}/Q_{ijm}$ is described above and is related to the order of aggregation. This effect only applies to products *j'* on the "hump" ($r_{ij'm} > 0.5$pp) and have the maximum excess for the bank ($r_{ij'm} \geq r_{ijm}$, $\forall j$).

Complete neutralization of the demotivating effect from the fee occurs for all other products. Under the formula (2), the fee rate $\overline{T_{it}}$ does not depend, in the neighborhood of dot T_{ijm}, on quotes of bank R_{ijm} for neither pair (*j,m*) – of products *j* and months *m* – except for the pair (*j',m'*) with a maximum excess. For example, if the bank has already decided to climb the "hump" on the pair (*j',m'*) in the first or second month of a quarter, then the incremental increase in rate R_{ijm} for (*j,m*) ≠ (*j',m'*), or in the next months of the quarter, will not be accompanied by the incremental increase in the bank's fee. This may be realized as intra-quarter seasonal effects, as correlation of excesses $r_{ijm} = R_{ijm} - \overline{R}_{jm}$ for bank *i* within the quarter.

Thus, there were cases of multiple (double, triple) violations by one bank of the deposit rates for different products in one quarter: in the first month of the quarter, the bank attracted term deposits at an increased rate (more than 0.5 pp. of the average market rate) and continued to offer the increased rate on term deposits in the second month of the quarter as well.

4.3 The Taxable Base is Wider than the Deposits in Question

The total amount of term and savings deposits of all maturities attracted during the quarter was taken as the taxable base, although the basis for charging the fee is the bank's behavior only for maturities exceeding one year. The gap between the two samples – for base aggregation and for tax rate aggregation – brings in arbitrary and unmanageable distortions into the mechanism.

Those deposits for which systemic risk fees are not charged should be excluded from the taxable base. Alternatively, the range of deposits charged with the fee should be expanded to include all maturities.

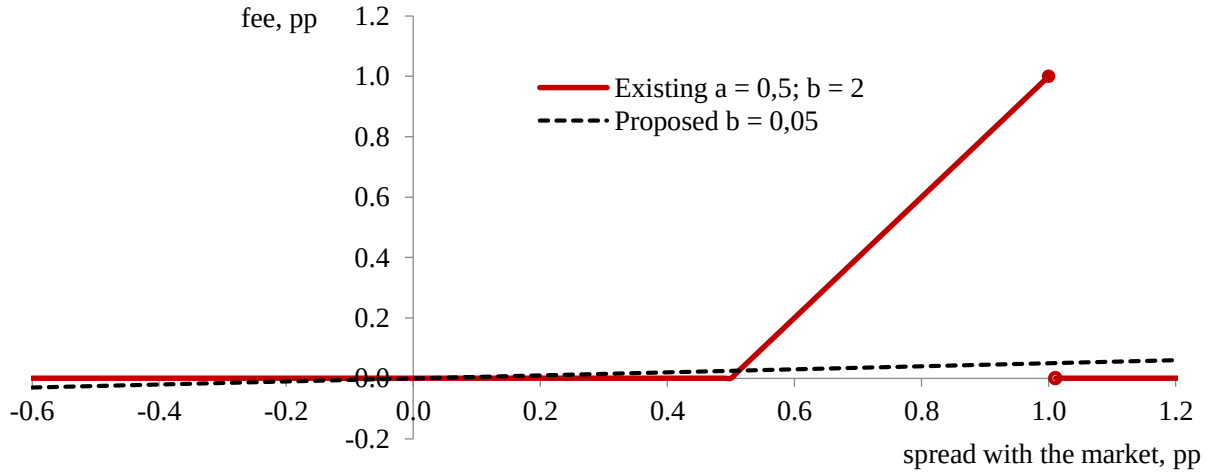
4.4 Piecewise Linear Dependence of the Tax Rate on the Bank Rate

The existence of dependence of the tax rate on the bank rate and of the threshold a = 0,5 pp narrows the rate range, where the fee modifies the bank's behavior. Replacing the piecewise linear dependence with a linear one would allow maintaining the motivating effect of the fee not only for positive excesses, but also for negative ones, when the fee turns into a credit for attracting deposits below the market. A linear relationship would also make the risk fee tax-neutral. At stable rates, the amount of the accrued fee for exceeding the average market rate is equalized with the amount of the accrued credit for attracting below the market.

$$T_{ijm} = b * r_{ijm} \qquad (7)$$

Figure 7 demonstrates the existing and proposed dependence of the fee rate on the excess over the benchmark.

Figure 7. Reforming the mechanism of systemic risk fee



4.5 The Choice of Benchmark and its Lag

In the existing mechanism (formulas 2 and 4), the average market rate two months earlier serves as the starting point for assessing the aggressiveness of the bank's behavior,

$$\bar{R}_{j,m-2} = \Sigma_{i \in I} w_{ij,m-2*} R_{ij,m-2} \quad (8)$$

where weights $w_{ijm} = Q_{ijm} / (\Sigma_{i \in I} Q_{ijm})$ are proportional to attraction volumes.

The choice of the weighted average rate $\bar{R}_{jm}$ as a benchmark factors the proportionality principle into the mechanism: the fee, which is calculated as the products of spread $r_{ijm} = (R_{ijm} - \bar{R}_{jm})$ and the attraction volume Q_{ijm} is proportional to the bank's contribution to the average market rate.

The average market rate may differ significantly from the socially optimal rate, but the choice of the average market rate as a benchmark is more an advantage of the mechanism than a disadvantage, since it does not require from the regulator to know and justify the optimal rate.

The choice of lagging statistics is a problem for the dynamic efficiency of the mechanism. Lagging brings in upward rigidity into the pricing process. Rigidity is the greater, the greater the lag; the lower the limit on the rate, into which the threshold a = 0.5pp has turned; and the more σ_m – the spread of rates that banks are willing to offer.

The reason for a two-month lag was the necessity to publish a market benchmark for fee calculation before banks set rates, to ensure that the relationship between R_{im} chosen rate and $\bar{T}_{im}$ fee is certain. The KDIF followed this principle of regulatory certainty well before the introduction of the systemic risk fee mechanism, publishing cap rates by the 25th of the preceding month. In 2021, this principle was taken for granted when designing the systemic risk fee mechanism.

The two-month timeframe reflected technical constraints on the collection and processing of reports. Banks submitted reports before the 15th day of the month following the reporting (current) month, disclosing the borrowing rates of the preceding month, based on which the benchmark for the next month was calculated. Such a long delay turned out to be a serious flaw of the mechanism, capable of outweighing its advantages. Reducing the lag or completely getting rid of it appeared to be crucial in order to ensure the future successful operation of the mechanism.

A cardinal decision could be a complete rejection of lagging statistics and the transition to a synchronous benchmark $\bar{R}_{jm}$. However, this also implies a broader understanding of the principle of regulatory certainty as one of the criteria and the search for an optimal compromise between them. When using a synchronous benchmark, at the time of the decision-making on R_{ijm} rates, banks will not know its $\bar{R}_{jm}$ value and will face uncertainty relative to spread r_{ijm} and fee rate $\bar{T}_{im}$. Increasing the risk in relation to the fee amount may cause resistance from banks, but this measure should only be considered in the context of joint adoption, together with other modifications of mechanisms that significantly reduce this risk, by reducing the cost of error in estimating the synchronous benchmark.

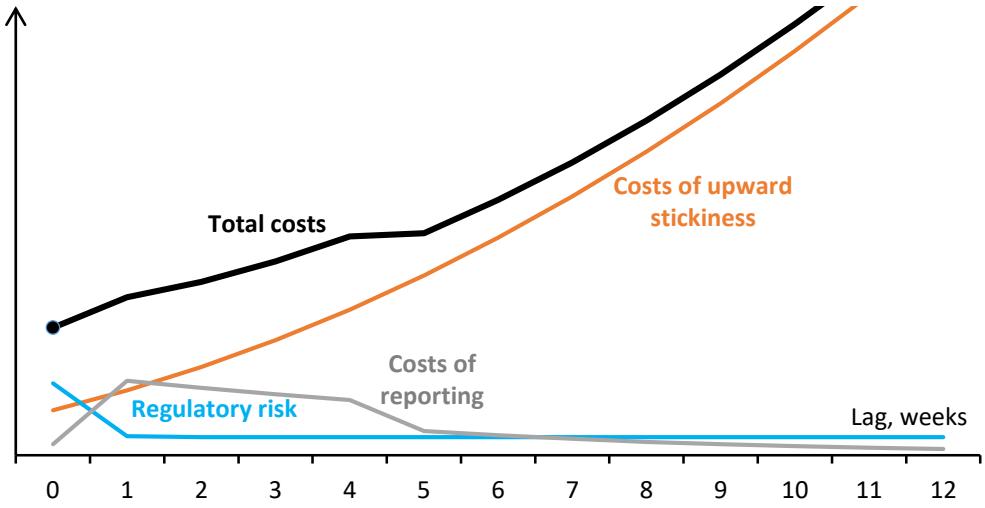
Dividing the fee by products and months, as in formula (6), will significantly reduce the actual slope of the "hump", and hence the risk of climbing the "hump" of the mechanism. Replacing the piecewise linear dependence of the fee rate on the spread

(4) with a linear one (7) will expand the range of the motivating effect of the hump and eliminate the angular solution at its foot. These measures will mitigate the risks and perceptions associated with uncertainty about the spread and fee amount.

For each individual bank, this creates a risk relative to the benchmark value, but banks can manage this risk through rate management, and as the rates of each bank and the average market rate stabilize, this risk becomes insignificant. By introducing an element of randomness, such benchmark will remove any stigma associated with exceeding the benchmark, especially if this excess is temporary and insignificant. Finally, with such benchmark, the systemic risk fee at the system level will be identically equal to zero for each product.

If we formalize the problem of choosing the optimal lag as minimizing the total costs, including the costs associated with pricing inertia, with the risk in the amount of fee, and the monetary costs of collecting reports, then the optimal lag can be presented as in Figure 8.

Figure 8. Choosing an optimal lag in the proposed mechanism of systemic risk fee



4.6 Justification for Choosing Parameters of the Mechanism

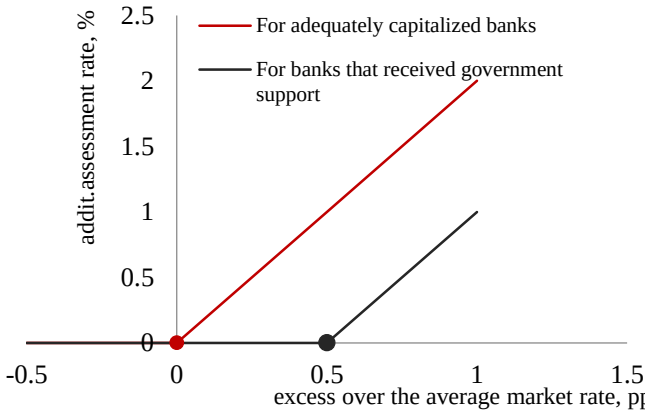
The chosen order of aggregation worsened the controllability, reduced the efficiency of the mechanism, and discredited its idea, as it ran counter to the declared regulatory objectives. It was not a conscious choice and was not on the agenda during the discussion and agreement on the mechanism. It was chosen, similarly to the framework for cap rates, as a *general assessment*, where the amount of assessment was calculated as the product of the tax base (balances of an insured account) and the assessment rate, which depended on the maximum excess among all months and products of the bank. An obvious omission of the developers, it turned out to be a detail where the devil lurked.

The issue that was explicitly discussed was choosing the dependence of the fee rate on the bank's behavior. Besides the chosen formula (4), options were considered with differentiation of fee parameters depending on credit risk, with a lower threshold for less reliable banks (Figure 9.a); options for the values of the threshold and slope of

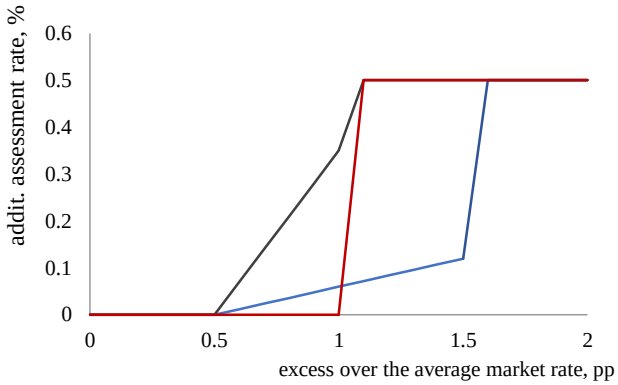
the hump (Figure 9.b); and a piecewise linear relationship with slope escalation as the spread with the market increases (Figure 9.c).

Figure 9.

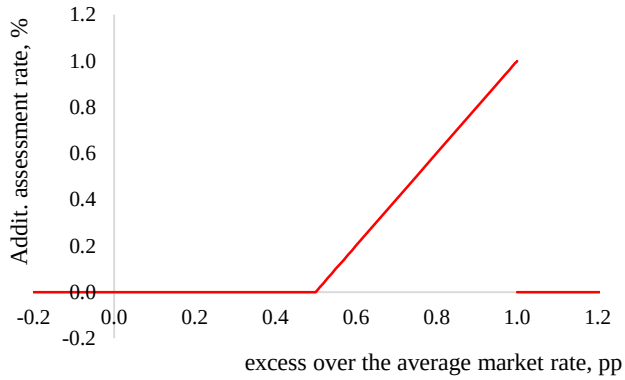
9.a. Thresholds depending on banks' condition



9.b Options for the threshold values and the slope of the "hump"



9.c Piecewise linear dependence



4.7 Relationship with the Framework for Cap Rates

The KDIF's right to charge the systemic risk fee has the same grounds as the KDIF's right to collect assessments for deposit insurance – the accession agreement with insured banks and the Deposit Insurance Law. The Deposit Insurance Law also limits assessments for deposit insurance to 0.50% per quarter of retail account balances at the beginning of the respective quarter. This mandate allows the KDIF to set assessments at its own discretion. KDIF does this in accordance with the internal Methodology, which is also part of the accession agreement. The amount paid by a bank depends on the assessment of the bank's credit risk performed in line with the KDIF methodology. The general assessment scale starts from 0.04% per quarter for Group A banks as the most reliable and reached 0.38% per quarter for Group D banks as the least reliable. A maximum assessment of 0.50% is reserved for violators of cap rates, regardless of the credit risk group. In addition to a higher assessment rate, in case of exceeding the cap rate supervisory measures, mostly discretionary, are applied, which were perceived by banks as having more serious consequences than the increased amount of assessment.

The systemic risk fee was presented as part of the quarterly assessments. In the accession agreement, the fee is referred to as the “additional assessment”, as opposed to the “general assessment”, which reflects the bank’s individual credit risk. However, the sum of general and additional assessments should not exceed the maximum allowable 0.50% of insured deposits.

The mechanism of systemic risk fee has much in common with the framework for cap rates. Both mechanisms are designed to modify the behavior of banks in the deposit market, both are based on the deposit insurance fund’s regulatory mandate, both link the bank’s insurance premiums to its deposit rates, both use a lagging market rate as a benchmark, and both apply to all banks.

Their similarity allows representing one mechanism as a limiting case of parameterization of another. However, taking a closer look, the resemblance is rather superficial. The mechanisms have two fundamental differences: the range of rates in which they affect the behavior of banks, and the information requirements to the regulator.

As a regulatory tool, the rigid restriction of the agent’s freedom of choice does not differ much from direct (“manual”) control and therefore imposes increased information requirements on the regulator, without which regulation can hardly be both effective and flexible. The modern system of report collection and processing at the level of banks, both regulatory and management reports, was not able to satisfy the necessary information requirements. This is one of the reasons why the mechanism of cap rates has been less than successful in curbing the rate competition.

In the period from 2000 to 2018, cap rates were changed no more than once every six months and were set quite arbitrarily by the decision of the Board of Directors of the Fund within a wide range set by the Fund’s rules. On and off, cap rates either turned out to be too high and therefore practically did not limit the attraction rates, or they did not keep up with the market and turned out to be too low and hence so restrictive that they pushed competition out of price conditions into non-price conditions, which at that time were not regulated at all. Bank rates did not exceed the limit, but there were no real term deposits in the market, and dollarization was high.

In 2016, the National Bank gave up managing the exchange rate and moved to inflation targeting. This enhanced the need for the term deposit market as an important link in the monetary policy transmission mechanism. The presence in the market of banks that are eager to offer high rates on deposits but have a low ability to meet obligations on such deposits increased the need to curb competition in the deposit market.

In 2019, the KDIF had transited to the reformed framework for cap rates. A definition for the term deposit was made. Instead of one interest rate for all deposits in the tenge, regulatory categories of deposits had been established, depending on the maturity and term. Cap rates were set every month, according to the rule, as the sum of market benchmark and the spread of 1.0pp. The most recent available statistics of the average market-weighted interest rate was used as a benchmark; this, in the context of that time, meant a two-month lag.

$$\hat{R}_{jm} = \bar{R}_{j,m-2} + 1.0pp \qquad (9)$$

where $\bar{R}_{j,m-2} = (\Sigma_{i \in I} Q_{ij,m-2} * R_{ij,m-2}) / (\Sigma_{i \in I} Q_{ij,m-2})$.

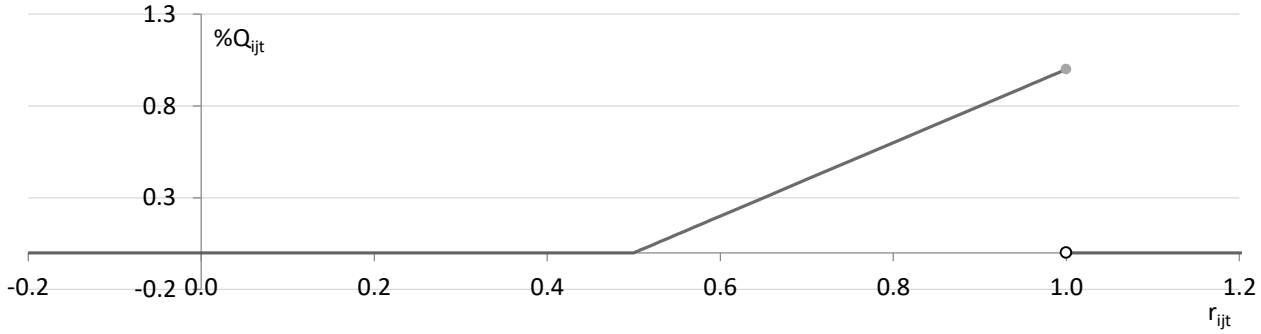
Just as before 2019, violators were moved to the category of maximum assessment of 0.5% for one month and were treated as those violating prudential ratios, with all that implies.

By classifying the regulated rates by maturity and term, the new framework has created a market for term deposits that had been previously suppressed by the single cap rate and opportunities for regulatory arbitrage based on maturity.

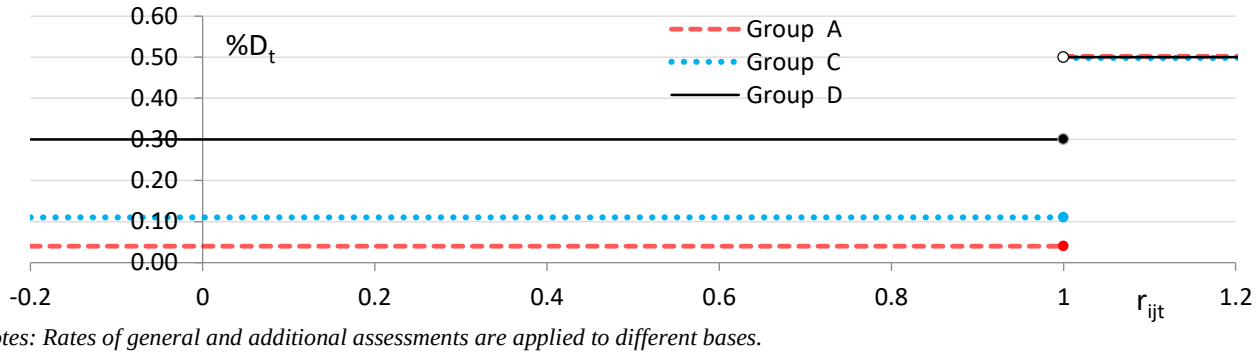
Like any restriction, the framework was unable to limit the growth of rates at a level that the regulator considered justified. The spread of 1.0pp was too wide to contain the gradual increase in the average market rate and the cap rate pegged to it. The framework for cap rate limited not so much the level of the rate as the rate of its growth, since cap rates were growing along with the market rates (formula 9).

Figure 10. Frameworks for cap rates and systemic risk fees

10a. Systemic risk fee (additional assessment)



10b. Credit risk fee and penalty for exceeding the cap rate (general assessment)



Notes: Rates of general and additional assessments are applied to different bases.
The base of general assessment is the balances of retail accounts. The general assessment rate depends on the category of credit risk in the range of 0.08%-0.30% per quarter (provided cap rates are complied with) and rises to 0.50% per quarter with a spread to the market rate of more than 1pp. The framework for cap rates has been in effect since 2002, when the decision was made by the KDIF Board of Directors on a single cap rate for all deposits. In 2018, cap rates began to be differentiated by deposit categories and to be set at the level of the market rate with a spread.

The base for additional assessment is attraction of term and savings accounts of individuals. The additional assessment rate (the systemic risk fee) depends on the excess of $r_i = max_{jm} \{R_{ijm} - \bar{R}_{jm}\}$, which is the largest among all types of deposits j and months of the quarter of a spread of the bank's rate R_{ijm} to the market rate $\bar{R}_{jm}$. The framework was brought into force in 2021.

This was caused by the choice as an instrument of strict limitation of rate and a graduated penalty for its violation instead of a proportional penalty, driving a motivating wedge and modifying a bank's behavior along the entire interest rate range.

The systemic risk fee was introduced in 2021 in order to prevent "unhealthy" competition in terms of interest rate – an objective that appeared to be impossible to be accomplished by the framework for cap rates.

The framework for cap rates provided for market pricing of bank deposits, but with the possibility of adjusting the rate caps through revision of the spread in case of sharp market fluctuations or a significant change in the market environment. However, during practical implementation of the framework, the KDIF faced the problem of unreasonable growth of rates, since some banks offered rates almost at the level of cap rates, thus provoking an increase in weighted average rates in the next accounting period.

The systemic risk fee is aimed to discourage banks from offering high deposit rates very close to the KDIF cap rate, whose amount is commensurate with the bank's contribution to generation of systemic risk. In doing so, the amount of additional assessment should be such so that not to worsen the bank's financial position in case of incidental excess of the threshold and should preserve the flexibility of pricing in the deposit market.

Table 1. Comparing the existing frameworks for cap rates and the systemic risk fee

Parameter of the framework	**Systemic risk fee (additional assessment)**	**Cap rates (general assessment)**
Regulatory perimeter	All banks	All banks
Assessment base	Retail term and savings deposits attracted in a quarter	Beginning balances of all retail deposits
Aggregating the base and the rate	The product of base and rate aggregates $Z_{it} = \bar{Q}_{it} * \bar{T}_{it}$ where $\bar{Q}_{it} = \Sigma_{jm} Q_{ijm}$ $\bar{T}_{it} = \max_{jm} \{ T_{ijm} \}$	The product of base and rate aggregates $Z_{it} = X_{it} * G_{it}$ where X_{it} – balances of insured accounts at the beginning of *t*; G_{it} – general assessment rate.
Dependence of the fee rate T_{ijm} on the excess r_{ijm}	Piecewise linear dependence with a slope *b* in case of exceeding the threshold *a* $T_{ijm} = b * \max (r_{ijm} – a, 0)$ where $b = 2$; $a = 0.5$pp	Penalty for exceeding the threshold *a* $G_{it} = \begin{cases} g_{it}, & \text{if } r_{ijm} \le a \\ g_{max}, & \text{if } r_{ijm} > a \end{cases}$ where $a = 1.0$pp
Statistics of the bank's rate	Maximum rate on all bank products and months of the quarter $R_{ijm} = \max_{k \in K(i,j,m)} \{R_k\}$	Maximum rate on all bank products and months of the quarter $R_{ijm} = \max_{k \in K(i,j,m)} \{R_k\}$
Market benchmark	Weighted average rate with a 2-month lag $\bar{R}_{j,m-2} = \Sigma_{i \in I} Q_{ij,m-2} * R_{ij,m-2} / \Sigma_{i \in I} Q_{ij,m-2}$	Maximum rate on all bank products and months of the quarter $\bar{R}_{j,m-2} = \Sigma_{i \in I} Q_{ij,m-2} * R_{ij,m-2} / \Sigma_{i \in I} Q_{ij,m-2}$

4.8 Further Steps

Reform of the Systemic Risk Fee

The mechanism of systemic risk internalization in the form of additional assessment paid by the bank when the maximum threshold exceeds the market rate restrains the growth of deposit rates. However, its specification currently requires further calibration, in particular, a revision of the base for calculating the amount of additional systemic risk fee. We consider it too harsh to calculate a penalty based on the entire amount of savings and term deposits attracted during the quarter, despite the possible violation of the excess thresholds by the bank only in one month of the quarter or only for one category of deposits. To increase the mechanism's elasticity, it is worth considering the option of calculating a penalty for systemic risk, based on the volume of deposits that was attracted by the bank at a rate with a spread above the excess threshold.

In addition, we'd like to mention that the systemic risk fee currently applies only to certain types of deposits. It will be possible to assess its effect, even indirectly, on rates on other types of deposits only after the transition of the calculation of cap rates on all deposits from manual calculation to the market-based. This issue cannot be resolved without a transition to market pricing of manually operated deposit cap rates, which requires additional discussions and a comprehensive assessment of the framework for cap rates.

Table 2. Comparing the existing and proposed mechanism of systemic risk fee

Parameter of the mechnism	Existing	Proposed
Regulatory perimeter	All banks	All banks
Assessment base	Term and savings deposits attracted in a quarter	Each taxable type of deposits attracted during a month
Aggregating the base and the rate	The product of base and rate aggregates $Z_{it} = \bar{Q}_{it} * \bar{T}_{it}$ where $\bar{Q}_{it} = \Sigma_{jm} Q_{ijm}$, $\bar{T}_{it} = \max_{jm} \{ T_{ijm} \}$	The sum of products of bases and rates $Z_{it} = \Sigma_{jm} Q_{ijm} * T_{ijm}$ where $T_{ijm} = b * r_{ijm}$
Dependence of the fee rate T_{ijm} on the excess r_{ijm}	Piecewise linear dependence $T_{ijm} = b * \max (r_{ijm} - a, 0)$	Linear dependence $T_{ijm} = b * r_{ijm}$
Statistics of the bank's rate	Maximum rate on all bank products and months of the quarter $R_{ijm} = \max_{k \in K(i,j,m)} \{R_k\}$	Weighted average rate on attracted deposits across all bank products and months of the quarter $R_{ijm} = \Sigma_{k \in K(i,j,m)} R_k * Q_k / \Sigma_{k \in K(i,j,m)} Q_k$
Market benchmark	Weighted average rate with a 3-month lag $\bar{R}_{jm} = \Sigma_{i \in I} Q_{ij,m-3} * R_{ij,m-3} / \Sigma_{i \in I} Q_{ij,m-3}$	Synchronous weighted average rate $\bar{R}_{jm} = \Sigma_{i \in I} Q_{ijm} * R_{ijm} / \Sigma_{i \in I} Q_{ijm}$

Differentiating Micro- and Macroprudential Regulation

The development and successful implementation of the mechanism of systemic risk fee capable of assuming the role of a macroprudential (universal) deposit market disciplinarian will enable to focus the framework for cap rates on a narrower group of undercapitalized banks with the microprudential task of preventing them from attracting deposits at rates that are much more expensive than the market. To do this, the KDIF must go through the same evolution of challenges experienced by the FDIC in 1980, when the power to set cap rate was retained only for "less than well-capitalized banks".

Communicating with Supervisors

According to the FSF recommendations, risk mitigation, including moral hazard, can be achieved by using the instruments for early identification of insolvent banks and demonstrating the insurer's intentions to apply limited enforcement measures against shareholders and managers of banks for illegal actions (FSF, 2001).

In addition to empowering supervisors and the insurer, early intervention requires access to detailed and high-quality risk information, ongoing validation of data, and verification of key parameters and important elements of the risk assessment model. The quality of assessment and classification of banking risk determines the timeliness of identifying financial problems in individual banks, and if such problems arise, the insurer must have the appropriate authority to effectively respond to these problems. At present, the KDIF's functionality to respond to deterioration in banks' financial condition is limited and implies differentiation of the amount of assessments paid by banks based on the degree of their inherent risk. In terms of minimizing an insurer's risks, its mandate can also be expanded and include examination of a bank with the signs of deterioration in its financial standing or the requirement to conduct the examination of operations of such bank by including the insurer's personnel into the examination team.

Conclusion

The introduction of a progressive fee for high deposit rates complemented the framework for cap rates and expanded the regulator's toolkit, opening the door for transformation of the framework for cap rates into a macroprudential tool applicable to undercapitalized banks only.

The collection of additional insurance premiums from banks that are more aggressive in their deposit-taking policy, similarly to a Pigouvian tax, is fair from the standpoint of minimizing the insurer's risks. The Pigouvian tax mechanism was intended to curb overly aggressive price competition in the deposit market by gnerating additional explicit financial costs, which could offset the gains in deposit market share that banks were supposedly seeking. The Pigouvian tax rate should be high enough to negate these benefits and advantages but not so high as to become another constraint

and limit the ability of banks to formulate the pricing policy in accordance with the market environment.

The operation of the mechanism in its existing form can be arbitrarily called successful in terms of neutralizing negative externalities in the deposit market. What is successful is the very fact of realizing the problem, the willingness to solve it with the help of the most appropriate and less intervention methods. At the same time, success is conditional and limited, because the parameters of the mechanism require significant calibration.

The mechanism turned out to be inelastic, in other words it does not exert stable pressure over the entire interest rate range. This was partly due to the piecewise linear dependence of the fee rate on the deposit rate but largely due to the procedure for aggregating rates for deposit products and the choice of the base.

The current mechanism of systemic risk uses the entire volume of deposits attracted by this bank for the quarter as a base, and the largest excess from each regulated category of deposits is taken as an excess over the average market rate. For systemic risk fee to truly meet its macroprudential objective, it needs to be more elastic and proportionate. This will require pegging to the base in terms of volumes and terms of deposits taken, i.e. applying to each regulated category of deposit products in proportion to the volume of attraction, and the excess threshold should be determined based on the rates of each category of deposits separately. Systemic risk fee should be charged separately for each regulated category of deposits.

However, even a well-tuned mechanism is not sufficient to neutralize the external effects of competition from poorly capitalized banks. Without government liquidity, such banks sooner or later encounter a net outflow of resources and are forced to more and more aggressively raise funds in the market. The willingness of such banks to offer high interest rates is based to a lesser extent on their ability to pay such interest rates. Therefore, the introduction of risk fee in a market with a significant presence of poorly capitalized banks is a necessity.

The objective of the systemic risk fee mechanism should be to create an elastic and flexible system to motivate the responsible behavior of banks in the deposit market in a wide range of rates and situations, a mechanism consistent with the principles of tax neutrality and proportionality, and efficiency of administration.

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