

CASE ANALYSIS OF THE RELATIONSHIP BETWEEN LOAN INTEREST CALCULATION METHOD SELECTION AND ITS EFFECT ON CUSTOMERS

Pandu Adi C

pandu.cakranegara@president.ac.id

Dedi Rianto R,

dedi1968@president.ac.id

Etty S

ettys@president.ac.id

Faculty of Business, Management Major

University President, Jababeka, Jababeka Indonesia

ABSTRACT

Level of competition among banks in Indonesia to raise funds and distribute loans is very high. The competition takes place between the bank books 2, 3 and 4 in the fight over third-party funds. The main reason for customers to save and obtain credit is the interest rate. On the banking side, the setting interest rates on deposits are very competitive, so the impact on the cost of loanable funds is high. These conditions have an impact on the increase in the loan interest rate. If banks still maintain high lending interest rates, emerging risk include bad debts and turning away customers are the low level of interest rates. This study aimed to determine the interest rate calculation method used bank loans and its effect on customers. The method used is the study of literature with a case study approach. The results showed that the interest calculation method provides the highest returns flat method. On the other hand, consumers will tend to choose an effective method and annuity due to interest rate to be paid by consumers was lower than the flat method. This study suggests that the banks should determine the level of interest rates and should consider the cost of loanable funds and consumer characteristics.

Keywords: Flat Method, Effective and Annuity.

INTRODUCTION

Growth in the banking world today is very rapid . New banks are emerging . The increasing number of new banks resulted in competition between banks is becoming increasingly tight . The increasingly fierce competition requires banks to be able to retain and attract customers as much as possible.

In order to attract borrowers, banks compete to use the lowest lending rate . However, though this rate has the same number in percentage but the total amount of interest for the client is different. This can occur because there are three methods of calculating loan payments, namely the effective interest method, the flat rate and interest rate annuities. There are also differences in the determination of the nature of the interest; that is fixed rate or floating that will affect the interest rate that will be paid by consumers during the loan period (Stuart I. Greenbaum, Anjan V. Thakor, Amoud Boot, 2015).

An increase in interest rates on commercial banks will affect the intermediation role of the banking sector in the Indonesian economy. Rising interest rates on commercial banks either directly or indirectly, will have an impact on customers demand for credit.

The interest rate is itself determined by the two powers, namely: supply and demand for capital investment savings (mainly from the business sector). Savings are amount left from income after consumption. Interests are basically acting as the main driver for people willingness to save. Total savings will be determined by the height of the lower interest rates. The higher the interest rate, the higher the attractiveness for people to save; and vice versa. The high or low offers of investment funds is determined by low interest rates of people's savings.

1. A flat rate system.

Interest rate calculation system which refers to the start of principal, interest and principal payments remain the same each month. For example, the monthly installments of Rp.1000,00 consisting of principal Rp.750,00, and interest Rp.250,00, these systems are usually used for the installment of consumer goods, such as household appliances, electronic appliances or cars.

2. Effective rate system

Interest rate calculation system that spans the remaining debt, the portion of the principal and interest are different every month. Although the amount of the installment fixed, the portion of interest on these systems early in times will be very large, while the principal portion of the debt will be very small. This calculation system is the opposite of the flat system.

3. Annuity rate system

Loan interest annuity is a modification of the calculation of effective interest loans. This modification is done to facilitate customers to pay per month, for each month installments is equal.

This can have an impact on decision-making material, especially for consumers who do not have the information that there are different alternatives in the calculation of bank interest rates. The policy concerning the method of calculating the interest is in the hands of banks

Bank Indonesia in its issues (Bank Indonesia, 2015) urged consumers to ask what the interest method is used. Banks often use method that give impression lower interest rate. Therefore, in comparing the interbank interest rate the consumer needs to consider whether the method of calculating the interest rate used is the same. Bank Indonesia issued this appeal because differences in the use of the method of calculating the interest will lead to differences in interest costs borne by consumers.

This study aimed to provide information to customers, how the banks determining the method of calculation of loan interest rates that offered to the client?

LITERATURE REVIEW

Banking Regulation in Indonesia

Bank under Law No. 7 of 1992 is an institution that serves to collect, distribute and provide service to the society. Banks then divided into Commercial banks and rural banks . Commercial Bank is divided into commercial banks and Islamic banks . Based on core capital banks are divided into 4 groups (Otoritas Jasa Keuangan, 2015).

- a) BOOK 1 is a bank with core capital to less than 1.000.000.000.000,00 (one trillion Rupiah) ;
- b) BOOK 2 is a Core Capital Bank with the least amount of 1.000.000.000.000,00 (one trillion Rupiah) to less than Rp5.000.000.000.000,00 (five trillion Rupiah) ;
- c) BOOK 3 is a bank with a core capital of at least Rp5.000.000.000.000,00 (five trillion Rupiah) to less than Rp30.000.000.000.000,00 (thirty trillion Rupiah) ; and
- d) BOOK 4 is a bank with core capital of at least Rp30.000.000.000.000,00 (thirty trillion Rupiah).

Interest rate determination

According to (Kartika Wahyu Sukarno, Muhamad Syaichu, 2006) factors that positively significant affect the performance of commercial banks are Capital Adequacy Ratio and Loan Deposit Ratio. Loan Deposit Ratio is the ratio between the numbers of loans granted by the bank and the amount of third party funds received by banks. The lending side is a source of income for banks that comes from interest income. While the funding is a source of cost for the bank because the bank needs to provide interest for owners of third party funds. Therefore, ideally banks are able to lend all the funds that are saved by customers. This means the bank has used its full capacity, which can be measured by using Loan to deposit ratio.

The interest rates on loans (Kurniawan, 2004) was influenced by the macro and micro factors. Macro theory is based on the classical assumption that the interest rate is a factor of supply and demand in the market for money. While the theory of micro explains interest rate as a result of the level of competition with other banks or other funding sources.

By using the framework contained in article Taufik Kurniawan (Kurniawan, 2004), the high rate of loan interest rates can be traced to each component:

1. Cost of Loanable Fund
Indonesia has more than 121 banks with 13.453 branches (Besar, 2012). However, for the control of banking assets, 70% of banking assets controlled by 14 large banks. This means capitalization held by book 1 banks. In other words 107 other banks that are in book 2, 3 and 4 have to scramble the rest of third party funds available in the market.
2. Overhead Cost
Overhead costs are the operational funds banks uses for their daily operations. Overhead expenses are comprised of fees, appraisal fees, administration fees, notary fees, and the cost of insurance.
3. Risk Factor
Banks face risk of default when lending money. We can see the banks as a party that will lend fund to people as their service. This is an example of the buyer dilemma (Akerloff, 1970). In the example (Akerloff, 1970) showed that only a used car salesman who knew the quality of the used cars he sold. In insurance there is also the dilemma in which the buyer insurance policy has better knowledge of their own health than the seller of the policy does. Then there is natural selection where people with more risk would accept higher interest because they know their level of risk. This will happen when a bank's interest rate is higher than competitor bank lending rates.
4. Spread
Based on the survey of accounting firm PriceWaterhouseCooper (Cooper, 2015), net interest margin remained the bank's main source of income. Net Interest Margin itself is the excess of interest on the loan to the amount of interest cost (cost of funds). It means that the banks will compete to seek third-party funds to be lent. However, due to limitations in third party funds, the alternative to enhance the net interest margin is by raising interest on the loan. But, on the other hand, higher interest charges will cause the level of credit risk as high as those discussed in the framework number two.
5. Taxes

Tax is the amount that must be paid by the bank according to government regulations. Taxes increase the size of the loan interest the bank will give. The main difference between big banks and small banks is big banks have the resources to manage the tax. Big banks have a greater tax division and able to hire tax consultants, that might be of a renowned accounting firm.

According to (Tumangkeng, 2013), the main factors that affect the size of interest rate setting outlined as follows:

1. The need for funds, if banks lack of funds (the amount of deposits is low), while loan applications increased, bank meets the funding needs by quickly increasing deposit rates. The increase in deposit rates will attract customers to keep their funds in the bank.
2. The government's policy, in the sense both for deposit and our loan interest, may not exceed the rate set by the government.
3. The desired profit is the amount of profit that the bank wants. If the desired profit is large, the loan interest is also large, and vice versa.
4. The period, the longer the loan term, the higher the interest. This is due to the magnitude of the possible risk in the future.
5. Quality assurance, the more liquid guarantee is given, the lower the loan interest is charged.
6. The company's reputation, corporate reputation and reliability of firm that will earn credits also determine the interest rate to be charged later on, because normally bona fide companies have relatively small possible risk of future bad loans, and vice versa.
7. Competitive products means the products financed by the loan sold on the market. For products that are competitive, interest loans is relatively low compared to the products less competitive.
8. Good relations, in practice the bank classifies its customers into two major customers (primary) and regular customers (secondary). This classification is based on the activity and the customer loyalty to the Bank. Major customers usually have a good relationship with the bank, resulting in the different determination of interest rates from regular customers.

Methods of Calculating Interest Rates

There are three methods of calculating the interest rate. Those are fixed interest calculation method, the effective interest and annuities. In the method of a flat rate interest, costs are allocated evenly to each payment period, while in the effective interest method, interest is calculated on the value of late payments in the previous period. In the annuity, amount of monthly installment method does not change, the portion of the interest installment will decrease and principal portion will be enlarged (Bank Indonesia, 2015).

Flat Method	Effective Method	Annuity Method
Interest per month = $x \text{ credit ceilings interest} / 12$	interest per month = $\text{Balance at end of period} / 12$	monthly installment = $\text{Credit ceiling} / 12x (1 / (1 - 1 / (1 + i / 12)))$

Nature of Interest Rates

There are two types of property interest rates, namely fixed and floating interest rates. In fixed rate the amount of interest paid on the loan will amount fixed period and on the amount of floating rate paid by debtor may change based on market interest rates.

Banks set interest rates on floating because there is the risk of changes or volatility in interest in the future of the so-called term interest rates structure (Zvi Bodie, Alex Kane, Alan J. Marcus, 2013). The difference in interest rates in the future will lead to the risk in which today's loan interest seemingly becoming too low or too high.

2.5. Interest Rates and Customer Satisfaction

Research from (Tumangkeng, 2013), which conducts research on the BTN (National Savings Bank), found that rates negatively affect customers' interest for bank borrowing. This means that interest rates have a significant impact on the choice of the customer to borrow money in the bank. Therefore, banks have to compete to provide competitive interest rates.

RESEARCH METHOD

The method used is study of literature using case studies. The study of literature is to find structured research on publications, including journals, which discuss the theory and show empirical results that are relevant to the topics (Zvi Bodie, Alex Kane, Alan J. Marcus, 2013). This article tries to analyze based on previous studies on why the bank chose a method of determining the interest and the consequences for consumers as borrowers. As for the data, secondary data is used.

Apart from these findings, other source of data is Indonesia Banking Statistics in 2015. This data are the data from all banks in Indonesia. Hopefully, the banking statistics can be a descriptive overview of banking in Indonesia.

RESULT AND DISCUSSION

Result

In Table 1 below are the assumptions made to do a comparison between the method of calculating the flat rate, effective and annuities. The assumption used is the number of loans worth Rp.100.000.000, 00 with old loan for 120 months loan and loan interest 12 % a year.

Table 1. Interest rate calculation assumption

Perbandingan Bunga Kredit			
Jumlah Pinjaman	: Rp 100.000.000,00		
Lama Pinjaman	: 60 bulan (5 tahun)		
Bunga per Tahun	: 12 % / tahun (1 % / bulan)		
Perhitungan Bunga	: Flat & Efektif & Anuitas		
	Flat / Tetap	Efektif	Anuitas
Bunga per bulan	Rp 1.000.000,00	Rp 1.000.000,00 ~ Rp 16.666,67 (menurun seiring berkurangnya sisa pinjaman)	Rp 1.000.000,00 ~ Rp 22.024,21 (menurun seiring berkurangnya sisa pinjaman)
Pokok per bulan	Rp 1.655.666,67	Rp 1.666.655,67	Rp 1.224.444,77 - Rp 2.202.420,56 (naik seiring perubahan komposisi bunga)
Pembayaran Angsuran per bulan	Rp 2.655.666,67	Rp 2.666.655,67 ~ Rp 1.683.333,33 (menurun seiring berkurangnya bunga)	Rp 2.224.444,77
Total Bunga 60 bulan	Rp 60.000.000,00	Rp 30.500.000,00	Rp 33.466.586,11
Total Pembayaran Angsuran 60 bulan	Rp 160.000.000,00	Rp 130.500.000,00	Rp 133.466.586,11
	Lanjut	Lanjut	Lanjut

Flat & Effective & Annuity	
Amount	: <input type="text" value="100.000.000"/> rupiah Rp 100.000.000,00
Periods	: <input type="text" value="120"/> months = 10.00 years
Interest	: <input type="text" value="12."/> % / yearly = 1.00 % / monthly
Method of Calculation	: Flat & Effective & Annuity

Table 2. Comparison between different calculation of interest rates

Table 2 shows the results of the calculation of the flat rate calculation method, effective and annuity assumptions in Table 1. From the comparison in Table 2, it can be seen that the three methods produce the same initial interest loans. But the interest method will still produce the same interest. Interest on effective methods and annuity will be reduced over time.

If the interest rate is based on floating interest rates then clients will experience volatility risk of interest. Installments have a complex structure because it has been linked with interest rates in the future (Lesniewsky, 2015). Interest rates in

the future will now be affected by perceptions of future conditions. In developing countries, risk is compounded by their association with the risk of interest to other developing countries (Sebastian Edwards, Raul Susmel, 2003).

Discussion

Research from (Kartika Wahyu Sukarno, Muhamad Syaichu, 2006) showed that the economy liquidity has no significant effect on the interest rate of bank loans, but Loan to Deposit Ratio has significant effect on interest rates. From this study, we can see the high and low levels of liquidity do not affect the bank. Factors that affect the bank is bank ability to obtain third-party funding to maintain the ratio of loan to deposit ratio.

If the bank gives high interest rates to depositors to attract third party funds, the cost of Loanable factors will be high. If Cost of Loanable factor increases, then the bank's risk factor will also increase. Banks spread are still the main income of banks in Indonesia. Based on this framework, the high cost of loanable funds will make banks less competitive unless the bank is capable of delivering higher spreads to extend credit loan with higher interest rate.

Meanwhile, if the bank charges higher interest, it will affect borrowers' satisfaction (Tumangkeng, 2013). It is like a vicious cycles that is always turning. Therefore, the bank would try to give loans at the highest interest rate that is still acceptable to consumers. To maximize the spread (Kurniawan, 2004), the bank needs to make the selection method of calculation of interest. Bank Indonesia provides three methods of calculating interest, which are the method of flats, effective and annuities (Bank Indonesia, 2015). The bank can choose one of the three methods.

Bank earnings will be highest when using a flat rate. Method of calculating interest by the flat rate method assumes that lending remains even though the consumer has to pay the loan principal. This method will be most profitable for bank, but it will be most detrimental to consumers because of the high interest payments.

Meanwhile, calculating interest by the annuity method will harm consumers who is experiencing liquidity difficulties. Consumers will be given two options of restructuring or taking assurance. Bank restructuring preferred options for making guarantees in case the bank needs to sell the collateral assets. If an asset is sold at a short time, liquidity discount can occur. This means that the assets will be sold cheaper as long as it can be sold quickly. Restructuring options prevent banks from liquidity discount.

Restructuring measures can be implemented in several ways; among others is to provide a longer repayment term. If this alternative is taken then the rest of the loan principal will be repaid within a longer period in the smaller amount. For the interest calculation, flat method makes the remaining interest smaller than the annuity method does. For banks, annuity method will be more beneficial for the consumers at the beginning of the repayment period, because they will pay a portion of interest on the loan in advance. So, in case there is a restructuring, banks will receive greater interest payment amount.

If we look from the consumer side, the annuity method will give more risk to consumer when they have liquidity problems. The increase in interest rates will also affect the installments paid by consumers. Effective methods will give customer the lowest interest rate increase.

Meanhile, the use of floating interest rate will give borrowers the risks of volatility in future interest as reflected in the term structure of interest rates. Customers who use flats method with floating interest rates is experencing greatest payment risk.

If we look from the perspective of risk for banks, effective method will make banks more at risk of rising interest rates due to the effective interest method that gives the least amount of revenue when interest increase. The use of floating interest rate protect banks because there is transfer of risk from banks to consumers.

CONCLUSION AND SUGGESTIONS

Conclusion

If consumers have the freedom to choose, they would benefit from the use of the effective interest method. The advantage of the effective interest method for the consumer is the interest rate which is the lowest among the three methods. Based on table 2 the effective interest method also provides the lowest total instalment. This means there is money that can be saved simply by replacing the consumer's interest payment method.

The effective interest method also provides smaller risk for the borrowers, especially if consumers experiencing liquidity problems. It is important for consumers, especially when they borrow in longer period. The longer the loan period, consumers will face the risks of higher liquidity. The effective interest method gives a lower risk because of the loan principal that falls in line with the decrease in interest on the loan.

If the bank's performance is efficient in terms of managing the cost, it will get optimal profit level and able to raise the funds disbursed

Suggestion

Suggestion for bank

One of the factors that leads to the high interest rate loans, such as mortgages, is overhead costs which consist of fees, appraisal fees, administration fees, notary fees, insurance costs (Dony Ramadhan, Kertahadi, Heru Susilo, 2014). If the bank can operate more efficiently and reduce overhead costs these banks will have a cheaper cost of funds. Banks that have efficient overhead cost and have the same spread with its competitor will be able to provide credit with lower interest rate (Steven Fries, Anita Taci, 2004). Consequently, consumers will choose the bank to borrow, and banks will

have higher incomes so that the bank's assets can continue to grow. Overhead cost efficiency will break the vicious cycles and creating virtuous cycles.

Rather than trying to impress customer with lowest interest rates, banks can focus on product quality (Hidayat, 2009). By providing choice to customers in determining the amount of the down payment and the repayment period, the bank can provide loans more in line with customer liquidity (Miftilasari, 2015). Customers may be given the option to provide large or small down payment and longer or faster period of installment (Miftilasari, 2015). By bridging between customers' needs and interests of the bank, credit lending process can be beneficial to both parties.

5.2.2. Suggestion for customer

Customers need to pay attention to the interest calculation so they know how much its actual cost. In addition, consumers also need to consider the existing component that determine interest; mainly overhead factors such as fees, appraisal fees, administration fees, notary fees, and the cost of insurance.

REFERENCE

- Akerloff, G. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*, 488-500.
- Besar, D. S. (2012). Indonesian Banking Development: Financial Service Liberatization, the Regulatory Framework and Financial Stability. *Workshop on Trade in Financial Service and Development* (pp. 1-34). Geneva: World Trade Organization.
- Dony Ramadhan, Kertahadi, Heru Susilo. (2014). Analisis Sistem Informasi Pengambilan Keputusan Pemberian KPR (Kredit Pemilikan Rumah) dengan Menggunakan Model Herbert A. Simon. *Jurnal Administrasi Bisnis*, 1-6.
- Hidayat, R. (2009). Pengaruh Kualitas Layanan, Kualitas Produk, dan Nilai Nasabah terhadap Kepuasan Loyalitas Nasabah Bank Mandiri. *Jurnal Manajemen dan Kewirausahaan*, 58-73.
- Indonesia, B. (2015, September 7). Memahami Bunga Kredit. Retrieved from www.bi.go.id: <http://www.bi.go.id/id/perbankan/edukasi/Documents/0e0048745cd34a5aaec5b5d03ff9937bPerhitunganBungaKreditdenganAngsuran.pdf>
- Kartika Wahyu Sukarno, Muhamad Syaichu. (2006). Analisis Faktor-faktor yang Mempengaruhi Kinerja Bank Umum di Indonesia. *Jurnal Manajemen dan Organisasi*, 46.
- Kuangan, O. J. (2015). *Statistik Perbankan Indonesia*. Indonesia: Otoritas Jasa Keuangan.
- Kurniawan, T. (2004). Determinan Tingkat Suku Bunga Pinjaman di Indonesia Tahun 1983 - 2002. *Buletin Ekonomi Moneter dan Perbankan*, 437-461
- Lesniewsky, A. (2015, June 16-18). *mfe.baruch.cuny.edu*. Retrieved from *cuny.edu*: <http://mfe.baruch.cuny.edu/wp-content/uploads/2015/06/VolWork1-Andrew.pdf>
- Miftilasari, C. (2015). Sistem Pendukung Keputusan Pemilihan KPR Perumahan dengan Metode Profile Matching. *Jurnal Sistem dan Teknologi Informasi*, 1-7.
- Sebastian Edwards, Raul Susmel. (2003). Interest Rate Volatility in Emerging Market. *The Review of Economics and Statistics*, 328-349.
- Steven Fries, Anita Taci. (2004). Cost of Efficiency of Banks in Transition: Evidence from 289 Banks in 15 Post-Communist Countries. *Journal of Banking and Finance*, 1-27
- Stuart I. Greenbaum, Anjan V. Thakor, Amoud Boot. (2015). *Contemporary Financial Intermediation 3rd Edition*. Academic Press.
- Tumangkeng, G. A. (2013). Kualitas Produk, Suku Bunga dan Kualitas Pelayanan Pengaruhnya terhadap Kepuasan Pelanggan KPR Bank BTN cabang Manado. *Jurnal EMBA*, 78-85.
- Zvi Bodie, Alex Kane, Alan J. Marcus. (2013). *Investment*, 10th Edition. New York: McGraw Hill