ANALYSIS OF THE EFFECT OF INTEREST RATE ON LOAN AND FINANCIAL LOAN IN THE PRESENCE OF FINTECH IN INDONESIA

ANALISA PENGARUH SUKU BUNGA TERHADAP PINJAMAN DAN PINJAMAN SEKTOR KEUANGAN DI ERA KEHADIRAN FINTECH DI INDONESIA

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Abstract: Fintech revolution has led to a great transformation in the banking sector. While fintech is continuing to grow, credit tends to slow down. The presence of Fintech is affecting the market. People that used to consider interest rate as the standard to borrow from conventional banks, now prefer to borrow from Fintech that offer an ease of access. This research aims to analyze the effect of interest rate on loan and financial loan in the presence of fintech in Indonesia. This study uses quantitative method. Secondary data from Central Bank data are used to collect the data. The sample of this study are State banks, Regional Development banks, Private banks and Foreign and Joint banks in Indonesia. This research examined the model through data panel regression model. Finding of this research shows that before the presence of Fintech, Working Capital Interest Rate, Investment Interest Rate and Consumption Interest Rate are significantly affecting Loan in general and Financial Loan but after the presence of Fintech, Consumption Interest rate become the only variable left that significantly affects Loan in general and Financial Loan. The conventional banks need to reconsider the regulations of loan to make the customers easier to access the loans.

Keywords*: fintech, interest Rate, loan, financial Loan*

Abstrak: *Revolusi Fintech telah menyebabkan transformasi besar di sektor perbankan. Sementara fintech terus tumbuh, kredit cenderung melambat. Kehadiran Fintech mempengaruhi pasar. Orang-orang yang dulu menganggap suku bunga sebagai standar untuk meminjam dari bank konvensional, sekarang lebih suka meminjam dari Fintech yang menawarkan kemudahan akses. Penelitian ini bertujuan untuk menganalisis pengaruh suku bunga terhadap pinjaman dan pinjaman keuangan di era kehadiran fintech di Indonesia. Penelitian ini menggunakan metode kuantitatif. Data sekunder dari data Bank Sentral digunakan untuk mengumpulkan data. Sampel dari penelitian ini adalah bank pemerintah, bank pembangunan daerah, bank swasta dan bank asing dan bank campuran di Indonesia. Penelitian ini menguji model melalui model regresi panel data. Temuan dari penelitian ini menunjukkan bahwa sebelum kehadiran Fintech, Suku Bunga Modal Kerja, Suku Bunga Investasi dan Suku Bunga Konsumsi secara signifikan mempengaruhi Pinjaman pada umumnya dan Pinjaman Keuangan tetapi setelah kehadiran Fintech, Suku Bunga Konsumsi menjadi satu-satunya variabel yang secara signifikan mempengaruhi Pinjaman secara umum dan Pinjaman Keuangan. Bank konvensional perlu mempertimbangkan kembali peraturan pinjaman untuk membuat pelanggan lebih mudah mengakses pinjaman.*

Kata kunci*: fintech, suku bunga, pinjaman, pinjaman sektor keuangan*

INTRODUCTION

Research Background

Everyone is currently going through the biggest revolution in the financial history called the Fintech revolution which has led to a great transformation in the banking sector recently. The main reason Fintech came into existence was due to the huge amounts of cash that was inflating the economy in the past few years. Fintech is a vast term which mainly relates to those companies that generally apply cloud-based tools, and other different types of technologies so as to improve the field of banking and finance. Some professionals also claim that Fintech start-up enterprises improve the efficiency of the financial system (Vlasov, 2017; Vovchenko *et al.,* 2017; Setyawati *et al.,* 2017). Fintech essentially aimed at as a competition to the traditional practice of finance and financial services. For banks, these trends mean an increase in operational risks and long-term risks (Novokreshchenova *et al.,* 2016; Fetai, 2015; Thalassinos *et al.,* 2015). Fintech is growing very significantly. The development of Fintech users continued to grow, from 7% in 2006-2007 to 78% in 2015-2016. While Fintech is growing, credit tends to slow down. The growth of lending grew only 3.7 percent and the collection of deposits grew by 4.34 percent until September 2016 compared to the position at the end of 2015.

The presence of Fintech is responded and affecting the market. The customers and borrowers assumed begin to move to Fintech services that provide easier access, fast service and simple requirements rather than use the services of conventional banks. People that used to consider interest rate as the standard to borrow from conventional banks, now prefer to borrow from Fintech that serve an ease of access even with higher interest rate. Researcher divide to analyze this study before the presence of Fintech and after the presence of Fintech, this study aims to gaining more comprehensive understanding about the effect of interest rate towards loan and financial loan in the presence of Fintech.

Research Objective

This Research paper aims to answer this following question:

1. Does Fintech have contribution on the causal relationship between interest rate and loan in general?
2. Does Fintech have contribution on the causal relationship between interest rate and financial loan?

THEORETICAL REVIEW

Finance

Finance is defined as the management of money and includes activities like investing, borrowing, lending, budgeting, saving, and forecasting. Financial development is a critical and inextricable part of the economic growth process. Well-functioning financial systems help mobilize savings, promote information sharing, improve resource allocation, and facilitate diversification and risk management (Levine, 2005).

Banking

Banks function as financial intermediaries that transform savings into investments, and deal with loans in an efficient manner, where stronger banks provide greater confidence (Rumler *et al*., 2010). It has now transformed into the online banking era, where banks nowadays are exploring new methods of delivering their offered services to their customers (Ghaziri, 1998).

Financial Technology

Fintech, short for Financial Technology is a service sector, which uses mobile-centered IT technology to enhance the efficiency of the financial system (Kim, Y., Park, Y. J., & Choi, J., 2016). Fintech companies are being established to improve the financial services currently being offered by traditional financial institutions. Fintech companies acknowledge the paradigm shift experienced by the banking sector as millennials are increasingly migrating to digital platforms to carry out their banking activities.

Loan

A loan is money, property, or other material goods given to another party in exchange for future repayment of the loan value or principal amount, along with interest or finance charges. Loan appraisal plays important role to keep the loan losses to minimum level, hence if those officers appointed for loan appraisal are

competent then there would be high chances of lending money to non-deserving customers (Boldizzoni, 2008). Loan assets are the most important for most banks. Loans are usually paid back as equated monthly installments.

Financial Loan

Development of a country's financial sector is often faced with a financial sector that experiences deepening (financial deepening) and a financial sector that improves superficiality (Agrawal, 2001). Financial loan is a financial facility that allows a person or business entity to borrow money to be used in the financial sector to buy a product and pay it back within a specified time period.

Interest Rate

Interest rate is defined as the cost incurred by the borrower for the use of money they borrowed from a lender or a financial institution (Collins and Wanjau, 2011). An increase in the interest rate will decrease the present value of dividend income in the future, so that this condition will reduce the price of shares in the capital market.

Working Capital Interest Rate

Working capital is a significant and important issue during financial decision making because it is a part of the investment in total assets that requires an appropriate financing investment (Bhunia, 2010). Working capital refers to the amount of capital that is promptly accessible to the company.

Investment Interest Rate

Today's society has an ever-increasing desire to invest its funds, both in the form of deposit shares, or in the form of other investments (Alif and Hizkia, 2014). An investment is an asset or item acquired with the goal of generating income or appreciation. In an economic sense, an investment is the purchase of goods that are not consumed today but are used in the future to create wealth. If investment was added as an endogenous variable into a monetary utility function model, the result turned out that investment indeed has a certain impact on interest rates (Qing and Chong, 2004 in Wuhan, Suyuan, Khurshid, 2015).

Consumption Interest Rate

Consumption is the vital foundation for economics, as well as the broader economy. In a simple sense, consumption is simply defined as the total demand for all consumer goods and services in a particular economy expressed in monetary terms. Originally, consumption function has its theoretical undertone from John Maynard Keynes' psychological law which says that men are disposed, as a rule and on the average to increase their consumption as income increases, but not by as much as the increase in their income.

Previous Research

Johannes P. S. Sheefeni (2016) conduct a study about the impact of interest rate spread on non-performing loans in Namibia. This study examined the effect of interest rate spread on non-performing loans in Namibia. The study was based on quarterly data, utilizing the technique of unit root, integration and error correction model.

Ioannis Anagnostopoulos (2018) study develop an insight and review the effect of Fintech development against the broader environment in financial technology. The study examines the implications for financial institutions, and regulation especially when technology poses a challenge to the global banking and regulatory system.

Svetlana Saksonova and Irina Kuzmina Merlino (2017) evaluate Fintech's level of development in Latvia compared to Europe. The paper identifies financial services using innovative technologies offered by Fintech companies, analyses the advantages and disadvantages of these services in comparison with services offered by the traditional financial sector companies (banks, insurance companies, institutions involved in asset management and investment, etc.), and evaluates how prepared are consumers to use Fintech services.

Conceptual Framework

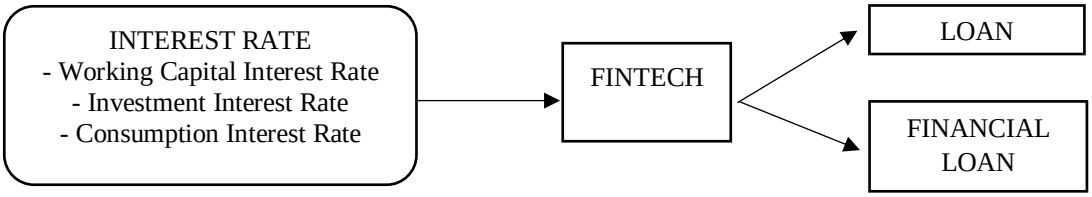

Figure 1. Conceptual Framework
Source: Data Processed, 2019

Research Hypothesis
H1: Fintech has contribution on the causal relationship between interest rate and loan in general
H2: Fintech has contribution on the causal relationship between interest rate and financial loan

RESEARCH METHOD

Research Approach

This research is considered a quantitative research. To answer the main problem question, which is the effect of interest rate on loan and financial loan in the presence of fintech, writer identify the data that are needed by determine the variables that are used to apply correlations between each variable. By processing the data using correlation, defining the basic context of the correlation study you may observe that this method involves measuring two specific variables and attempting to quantify the relationship that exists between these variables.

Population, Sample, and Sampling Technique

Population refers to the entire group of people, events or object of interest that the researcher seeks to investigate (Sekaran, et al., 2010: 127). The population identification of this research is 4 group of bank in Indonesia which are State Banks (BUMN), Regional Development Banks (Bank Pembangunan Daerah), Private Banks (Bank Swasta), and Joint Banks (Bank Asing dan Campuran).

Data Collection Method

Secondary data is used to gather the data for this study. The secondary data was from the annual report of the listed group of banks and from central bank data to gain information of financial performance before and after Fintech era.

Operational Definition of Research Variables
Table 1. Operational Definitions and Indicators

No	Variable	Operational Definition	Indicator
1	Interest Rate	Interest rate is the cost incurred by the borrower for the use of money they borrowed from a lender or a financial.	- Working Capital - Investments - Consumption
2	Loan	Loan is the lending of money by one or more individuals, organizations, or other entities to other individuals, organizations etc.	- Loan (in general terms) - Financial loan

Source: Author's Note, 2019

Panel Data Regression Analysis Model

Panel data is a model that combine cross-section and time-series data. In panel data the same cross-sectional unit (industry, firm, country) is surveyed over time, so we have data which is pooled over space as well as time. The reason why researcher use panel data is because panel data can take explicit account of bank-specific heterogeneity, by combining data in cross section & time series, panel data gives more data variation, less collinearity and more degrees of freedom, panel data is better suited than cross-sectional data for studying the dynamics of change.

Time series and cross-sectional data are special cases of panel data that are in one dimension only. A time series dataset has one panel member or individual whose characteristic(s) of interest are observed over several time periods. On the other hand, cross-sectional data involves one time point at which many panel members or individuals are observed for certain characteristic(s) of interest. In most cases, when $T \gg N$, the pane data set is likely to be a time series data, and when$N \gg T$, the panel data is likely to be a cross-section data. Panel data set, therefore, possess a combination of the characteristics of both time series and cross-sectional data Hasio (2005).

Panel data possess some advantages over the time series and cross-sectional data. For instance, they are more informative than time series and cross-sectional data because they allow tracking individual histories, reflect dynamics and Granger causality across variables. They are also useful in situations in which one suspects that the outcome variable may depend on some unobservable explanatory variables that are possibly correlated with the observed explanatory variables. If such omitted variables are constant over time, then, panel data estimators allow for consistent estimation of the effect of the unobserved explanatory variables on the response. Hsiao (1986) also enumerates more benefits of panel data. These include control of the individual heterogeneity; panel data models have greater variability, less collinearity between variables, more degrees of freedom and more efficiency; they are more capable to identify and measure effects that aren't detected in cross-section or time series data. Panel data enables the study of more complex behavioral models – for example the effects of technological change, or economic cycles. And also, panel data can minimize the effects of aggregation bias, from aggregating firms into broad groups.

If all the cross-sectional units have the same number of time series observations the panel is balanced, if not it is unbalanced. A matrix of balanced panel data observations on variable y, N cross-sectional observations, and T time series observations is as follows.

This study uses panel data regression model of loan which is given by $loan_{it} = \alpha + x'_{it}\beta + q_{it}'\gamma + u_{it}$ (1) where $loan_{it}$ is the predicted variable, x'_{it} it is a *K*-dimensional row vector of interest rate variable (i.e. time-variant endogenous variables) and q'_{it} is an *M*-dimensional row vector of control variables (i.e. time-variant explanatory variables excluding the constant), α is the intercept, β is a *K*-dimensional column vector of parameters, γ is an *M*-dimensional column vector of parameters, and u_{it} is an idiosyncratic error term.

RESULT AND DISCUSSION

Result

Table 2. Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Year	40	2014	3.20	2009	2019
Bank id	40	2.50	1.13	1	4
Total loan	40	681669.80	609001.40	81249.00	1943797.00
Finance loan	40	54935.02	63011.71	2178.81	240981.00
Working capital interest rate	40	11.86	1.87	7.71	15.69
Investment interest rate	40	11.54	1.36	8.58	14.52
Consumption interest rate	40	17.25	7.32	11.12	35.24

Source: Author's Calculation, 2019

The data is collected from year 2009 to 2019 covering 4 types of bank, namely, state banks, Regional Development banks, private national bank and foreign and joint banks. Based on the table above, the average allocation for total loan in general is Rp. 681,669 trillion. The lowest loan is Rp. 81,249 trillion and the highest one is Rp. 1,943,797 trillion. The average allocation for finance loan is Rp. 54,935 trillion. The lowest finance loan is Rp. 2,178 trillion and the highest one is Rp. 240,981 trillion. In percent, the average amount from the listed year of working capital interest rate is 11.86%. The lowest working capital interest rate is 7.71% and highest one is 15.69%. The average investment interest rate between 2009 and 2019 is 11.54%, the lowest is 8.58% and the highest one is 14.52%. The average consumption interest rate for the same listed year is 17.25%, the lowest is 11.2% and the highest one is 35.24%.

Table 3. Panel Data Regression Models of Loan

VARIABLES	(1) Loan 2009-2015	(2) Loan 2016-2019
Working Cap. Interest Rate	-233,596.9**	-104,337.2
	(105,761.4)	(609,187.1)
Investment Interest Rate	-210,380.5*	-100,390.3
	(119,169.0)	(757,371.9)
Consumption Interest Rate	-54,612.0***	-102,103.3**
	(13,467.4)	(50,967.4)
Constant	1,858,125.7***	4,859,408.3**
	(650,823.4)	(2,301,454.2)
Observations	24	12
Number of bank ID	4	4

Source: Authors' calculation using STATA Package, 2019

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Before the presence of fintech, the coefficient of Working Capital Interest Rate is -233,596, which means that 1% increase in Working Capital Interest Rate will reduce the loan by 233,596 billion rupiahs and the effect is statistically significant at 5% level. The Investment Interest Rate is coefficient -210,380, which means 1% increase in Investment Interest Rate will decrease the loan by 210,380 billion rupiahs and the effect is statistically significant at 10% level. The coefficient of Consumption Interest Rate is -54,612.0 which means that 1% increase in Consumption Interest rate will decline the loan by 54,612.0 billion rupiahs and the effect is statistically significant at 1% level.

After the presence of Fintech between 2016 and 2019, the result finds that Consumption Interest Rate as the only variable that has significant impact to Loan. The coefficient of this variable is -102,103 which means 1% increase in Consumption Interest Rate will decrease 102,103 billion rupiahs and the effect is statistically significant at 5% level. Working Capital Interest Rate and Investment Interest Rate are insignificantly affecting Loan in this era of Fintech.

Table 4. Panel Data Regression Models of Financial Loan

VARIABLES	(1) Finance Loan 2009-2015	(2) Finance Loan 2016-2019
Working Cap. Interest Rate	-40,809.7***	-86,892.2
	(10,698.1)	(82,611.8)
Investment Interest Rate	-46,589.5***	99,085.5
	(12,054.3)	(102,707.1)
Consumption Interest Rate	-5,200.3***	-11,751.1*
	(1,362.3)	(6,911.7)
Constant	81,108.4	149,166.3
	(65,832.9)	(312,100.0)
Observations	24	12
Number of bank ID	4	4

Source: Authors' calculation using STATA Package, 2019

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Before the presence of Fintech, the coefficient of Working Capital Interest Rate is -40,809, which means that 1% increase in Working Capital Interest Rate will decrease the financial loan by 40,809 billion rupiahs and the effect is statistically significant at 1% level. The Investment Interest Rate is coefficient -46,589, which means 1% increase in Investment Interest Rate will reduce the financial loan by 46,589 billion rupiahs and the effect is statistically significant at 1% level. The coefficient of Consumption Interest Rate is -5,200 which means that 1% increase in Consumption Interest rate will decline the financial loan by 5.200 billion rupiahs and the effect is statistically significant at 1% level. after the presence of fintech, the coefficient of this variable is -11,751 which means 1% increase in Consumption Interest Rate will decrease 11,751 billion rupiahs and the effect is statistically significant at 10% level. Working Capital Interest Rate and Investment Interest Rate are insignificantly affecting Financial Loan.

Discussion

The findings show that before the presence of Fintech, between 2009 and 2015 all Interest Rate variables of all groups of bank have significant impact on Loan. When there is an increase of interest rate, it will decline the loan in general according to its coefficient value, that people will borrow from the conventional banks. As it is said in the previous research by Johannes P. S. Sheefeni (2016) which stated that Interest rate is defined as the cost incurred by the borrower for the use of money they borrowed from a lender or a financial institution (Collins and Wanjau, 2011). However, after the presence of Fintech between 2016 and 2019, the result finds that Consumption Interest Rate as the only variable that has significant impact to Loan. The Working Capital Interest Rate and Investment Interest rate is no longer affect the loan in general. Interest rate is consider no longer become the determinant of the value of people to borrow from the conventional banks.

The results show that Fintech is affecting the effect of Interest rate on Financial Loan. before the presence of Fintech, between 2009 and 2015, all Interest Rate variables of all groups of banks have significant impact on Financial Loan. When the Interest Rate is increase, it will decline the financial loan according to its coefficient value, that people may borrow from the conventional banks. However, in the presence of Fintech, which begins in 2016, Consumption Interest rate become the only variable left that significantly affects Financial Loan. The Working Capital Interest Rate and Investment Interest rate is no longer affect the Financial Loan. Interest rate is consider no longer become the determinant of the value of people to borrow from the conventional banks. This result related to the previous research by Svetlana Saksonova and Irina Kuzmina-Merlino (2017) which stated that the increase in the number of people around the world, who for various reasons cannot use or are not willing to use traditional banking services, contributes to the development of Fintech which offers the same services, but is faster, cheaper and more profitable than banks.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

After examining the findings, the conclusions based on this research can be formulated as follows:

1. Before the presence of Fintech, there is a causal relationship between Interest Rate and Loan in general. All variables of interest rates are significantly affecting Loan in general. However, after the presence of Fintech, there is no more causal relationship between Interest Rate and Loan in general. Consumption Interest rate become the only variable left that significantly affects Loan in general.
2. Before the presence of Fintech, there is a causal relationship between Interest Rate and Financial Loan. All variables of interest rates are significantly affecting Financial Loan. But in the presence of Fintech, which begins in 2016, there is no more causal relationship between Interest Rate and Financial Loan. Consumption Interest rate become the only variable left that significantly affects Financial Loan.

Recommendations

When Fintech enter the market, people tend to choose the easiness Fintech provided rather than the low Interest rate offered by the banking services. Even though banks can sometimes offer better interest rate to compete with Fintech, higher or lower interest rate is no longer changing the level of lending in this Fintech era. The conventional banking industry is no longer have the power of low Interest rate to attach the customers. The researcher suggests the conventional banks to reconsider the regulations that the customers should meet to access the loans. Even though conventional banking offers lower interest rate compared to Fintech, but convenience is what the customers mostly expect and that is what Fintech have. Other than that, Fintech continues to grow because they have seen what market needs the most. Customers or borrowers nowadays tend to prefer borrow little loan. Borrowers demand for easy access, fast service and simple requirements. Conventional banks need to reconsider the requirements to get loans in the small amounts. Nonetheless, reform requirements for banking industry is not as easy as Fintech due to the strict government regulation that is why the researcher also highly recommend the government to reconsider the regulations of banking industry loan to adapt the new era of Fintech presenc.

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