Analysis of Credit for Residential Property

in Special Region of Yogyakarta

A THESIS

Presented as Partial Fulfillment of the Requirements to Obtain the Bachelor Degree in Economics Department

By :

Nadya Tri Oktiviani

Student Number: 14313199

DEPARTMENT OF ECONOMICS

INTERNATIONAL PROGRAM

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UNIVERSITAS ISLAM INDONESIA

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DECLARATION OF AUTHENTICITY

Hereby I declare the originality of the thesis; I have not presented someone else's work to obtain my university degree, nor I have presented someone else's words, ideas or expressions without any of the acknowledgments. All quotations are cited and listed in the bibliography of the thesis. If in the future this statement is proven to be false, I am willing to accept any sanction complying with the determined regulation or its consequence.

Yogyakarta, April 12th, 2018

Nadya Tri Oktiviani

"And whatever you have of blessings and good things

– it is from Allah"

(Quran, 16:53)

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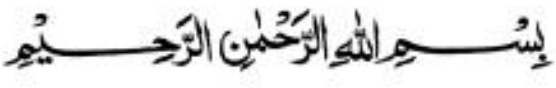

Assalamu'alaikum Warahmatullahi Wabarakatuh.

All perfect praise is due to Allah, the Lord of the Worlds. I bear witness than none is worthy of worship but Allah, alone with no partners. And I bear witness that Muhammad is His Messenger, may Allah exalt his mention.

Alhamdulillahirrabbil'alamin, the thesis wich entitled **"Analysis of Credit for Residential Property in Special Region of Yogyakarta"** as a partial requirements to obtain the bachelor degree in Economics Department, International Program, Faculty of Economics, Universitas Islam Indonesia is finally finished.

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Yogyakarta, April 12th, 2018

Nadya Tri Oktiviani

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ABSTRACT

The increasing population in the Special Region of Yogyakarta made the demand in the need for housing increased. Credit facilities are used to finance the purchased of housing easily. This study aims to analyze the factors that affect the housing loan, especially in Special Region of Yogyakarta. These factors are population density, interest rate, and construction price indices. This study used secondary data from the Central Bureau of Statistics D.I.Y and Bank Indonesia D.I.Y. Data analysis used multiple regression analysis.Based on the results of the study, it was indicated that the credit for housing in D.I.Y was significantly influenced by population density and construction price indices. Population density had a positive effect on the property credit in the housing sector, while the construction price indices negatively affected the property loan in the housing sector in Special Region of Yogyakarta. Meanwhile, the interest rate had no significant effect on the property loan in housing sector in Special Region of Yogyakarta.

Keywords: credit property, population density, interest rate, construction price indices.

ABSTRAK

Seiring dengan bertambahnya jumlah penduduk di Daerah Istimewa Yogyakarta membuat permintaan dalam memenuhi kebutuhan akan tempat tinggal meningkat. Fasilitas kredit diberikan untuk membiayai pembelian rumah dengan mudah.. Penelitian ini bertujuan untuk menganalisa faktor-faktor yang mempengaruhi kredit properti khususnya dalam sektor perumahan di Daerah Istimewa Yogyakarta. Faktor-faktor tersebut adalah kepadatan penduduk, suku bunga, dan indeks harga konstruksi.
Penelitian ini menggunakan data sekunder dari Badan Pusat Statistik D.I.Y dan Bank Indonesia D.I.Y. Analisis data yang digunakan yaitu analisis regresi berganda. Berdasarkan hasil dari penelitian menunjukkan bahwa kredit untuk sektor perumahan di D.I.Y dipengaruhi secara signifikan oleh kepadatan penduduk dan indeks harga konstruksi. Kepadatan penduduk memberi pengaruh yang positif terhadap kredit properti pada sektor perumahan, sedangkan indeks harga konstruksi memberi pengaruh negatif terhadap kredit properti pada sektor perumahan di D.I.Y. Sementara itu, Suku Bunga tidak berpengaruh signifikan terhadap kredit properti pada sektor perumahan di D.I.Y.

Kata kunci: kredit properti, kepadatan penduduk, suku bunga, indeks harga konstruksi

CHAPTER 1
INTRODUCTION

1.1 Background of Study

Yogyakarta as a Special Province is one of the provinces in Indonesia which is keen to boost its economic growth. Special Region of Yogyakarta is known as a city of culture, which relies economically on sectors such as manufacturing, trade, hotels, restaurants, transportation, telecommunications, finance, and corporate services. In that case, those efforts are done to make sure all sectors can reach the balance of the economic structure. Since then, the existing economic system was viewed to improve the welfare of a nation through economic development and the growth of national income.

Yogyakarta's government is continuously working to improve the quality of the population, especially in terms of welfare because it can be one of indicators used to monitor the success of the development of good population welfare. To improve the welfare of the community, Yogyakarta requires a form of physical infrastructure construction to support economic growth rate. Its rapid population growth and the need for residential facilities and amenities that the higher the economic activity, the higher the need of the residential facilities. Therefore, the fulfillment of a residence with a variety of classes, buildings, factories, offices, roads, bridges, ports embodies the people's welfare.

The economy in DIY should be encouraged to grow more rapidly at least until it can pass the average condition of the national economy. If in

previous years D.I.Y was below the national average, in the year of 2014-2015 D.I.Y's economic growth, although slowed to grow only 5.16 percent and 4.94 percent, but it was still higher than the national average that only grew 5.02 percent and 4.79 percent. Regional economic potential in terms of categorical potential can also be seen from the share of the distribution associated with its growth. The category of educational services has the strongest potential because in addition to have a considerable contribution, the growth is also high. Categories with similar potential levels are trade and repair of cars and motorcycles, followed by real estate category (Tovani,et.al,2017)

The number of population in Special Region of Yogyakarta in 2000 until 2015 was described in the table below:

Table 1.1 Number of Population Estimation by Regency In D.I. Yogyakarta Year 2000 – 2015

Regency	Area (km^2)	Number of Population Estimation by Regency in D.I Yogyakarta			
		2000	2005	2010	2015
D.I Yogyakarta	3.185,80	3,120,478	3,365,506	3,457,491	3,679,176
Kulonprogo	586,27	370,944	373,770	388,869	412,198
Bantul	506,85	781,013	871,203	911,503	971,511
Gunung Kidul	1.485,36	670,433	681,554	675,382	715,282
Sleman	574,82	901,377	999,586	1,093,110	1,167,481
Yogyakarta	32,50	396,711	439,393	388,627	412,704

Source : Central Bureau of Statistics / Badan Pusat Statistik D.I Yogyakarta

According to the Central Bureau of Statistics of Special Region of Yogyakarta, population growth in Special Region of Yogyakarta from year to year is increasing. The population at the 2000 was 3,120,478 people, but according to the latest official estimation at 2015 has risen to 3,679,176 people. The data infered that population growth has increased significantly in the last sixteen years.

In fact, the increase of population is also supported by the presence of people who migrate to Special Region of Yogyakarta. In addition, it also is known as "Kota Pelajar" or The city of Student where many people from outside Special Region of Yogyakarta come for Education, in another case for economy sector. Special Region of Yogyakarta is located near to many regions that do not have so many job fields. Therefore, this is an opportunity for people to come to Special Region of Yogyakarta for looking job. Moreover, when the person has already got a job in Yogyakarta, there is a possibility that the person will buy a house by borrowing money in the bank or usually called a home loan.

Table 1.2 Recent Migrant by Regency/Municipality and Main Reasons to Move from Residence 5 Years Ago (2015)

Regency	Recent Migrant by Regency/Municipality and Main Reasons to Move from Residence 5 Years Ago						
	Work	Looking for Work	Educat-ion	Following Relatives	Housing	Others	Total
D.I Yogyakarta	43 398	5 045	98 782	105 648	15 318	18 040	286 231
Kulonprogo	3 302	270	2 501	11 712	505	3 010	21 300
Bantul	12 040	937	15 321	33 376	8 267	4 102	74 043
Gunung Kidul	1 838	1 160	333	11 891	714	1 621	17 557

Sleman	16 377	1 553	45 191	37 128	5 291	6 964	112 504
Yogyakarta	9 841	1 125	35 436	11 541	541	2 343	60 827

Source : Central Bureau of Statistics / Badan Pusat Statistik D.I Yogyakarta

According to the latest Survey of Population Intercensus which is shown in Table 1.2, the main reason why majority people migrate to Special Region of Yogyakarta is to follow parents or relatives, the second is for education and the third one is for work. Another important reason that has already explained by the table is for housing.

Housing is extremely vital to all people. Since housing is an essential need, and home ownership has been considered as one of the crucial elements of high living standards. Residents place a high degree of importance on home ownership, which is regarded as important for the stability of family life and for wealth creation (Rahman, 2010).

Because population growth is increasing in Special Region of Yogyakarta, the need for housing will be higher. The increase in demand for housing and the scarcity of land for development is revolving landed residential properties in major urban areas. For households and businesses, residential properties have also become an attractive form of investment. Houses are investment assets that grow in value over time and are, therefore, a means of saving and wealth accumulation.

To fulfill the housing needs, it is usually necessary for people for having credit for property from bank in order to achieve home ownership. On the basis

of the fact, the authors conducted research on "Analysis of Credit for Residential Property in Special Region of Yogyakarta"

1.2 Problem Formulation

How does the rate of population density, interest rate and construction price indices against to the level of credit for residential property in Special Region of Yogyakarta?

1.3 Research Objectives

To determine the effect of population density, interest rate and construction price indices to the level of credit for residential property in Special Region of Yogyakarta.

1.4 Research Contributions

1. For the developers in property sector, this research can provide input for them to facilitate the estimation before doing credit in residential property.
2. For the households and businesses, this research can give the information about factors that can affect credit in residential property.
3. For the government, the results of this study can provide useful input in determining policies towards credit in residential property.

1.5 Systematics of Writing

To simplify and clarify the writing of this thesis, the writer uses systematics of writing so that the writing will be more focused. This research will be divided into several chapters, they are:

CHAPTER I: INTRODUCTION

This chapter contains background of the study, problem identification, problem formulation, problem limitation, research objectives, research contributions, and systematic of writing.

CHAPTER II: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

This chapter describes references of previous studies which were ever done in the same field as well as load the foundation of theory used to approach the issues that will be examined.

CHAPTER III: RESEARCH METHOD

Chapter III elaborates the method of analysis used in the study and data source that are used.

CHAPTER IV: DATA ANALYSIS AND DISCUSSIONS

Chapter IV contains the finding results from the data that have been obtained previously and analysis to find out the influence of the respective data obtained.

CHAPTER V: CONCLUSION AND RECOMENDATION

This chapter is the concluding chapter which contains the conclusions and implications of the analysis results of the data of the previous chapters.

CHAPTER II

THEORETICAL FRAMEWORK & LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 Credit for Property

A. Definition of Credit for Property

Credit is a payment agreement in the future in the form of money, goods, and services, for money, goods, and services in the present time. (Winardi, 1997)

Badrulzaman, (1983) gave some definition of credit from the literature:

1). Savelberg states that credit has meaning, among others, are:

a. As the basis of any engagement in which a person has the right to demand something from another;

b. As a guarantee, in which someone gives something to others in order to recover what is handed over (commodatus, depositus, regulare, pignus).

2). M. Jakile argues that credit is a measure of the ability of a person to get something of economic value in return for his promise to repay his debt on that date.

Definition of housing loans is a loan facility provided for the purchase of a house, renovate or build a house, buy land or shop, where the loan can be repaid within a certain time with the number of installments in accordance with the ability. The mortgage loan is

granted because of the income of a person who can guarantee the continuity repayment of the debt.

B. Credit Functions

In addition, there are many credit functions which are, Muchdarsyah, S.(1989) :

1. Credit to improve the use of money.

Funds collected by the bank will be useful if the bank can distribute in the form of credit to the debtor based on the proper feasibility study.

2. Credit to improve the circulation and traffic of money.

Credit creates excitement trying so that the use of money will improve both qualitatively and quantitatively. One example of the provision of a credit account facility by the bank to the debtor has the understanding that, with the signing of an instant credit agreement, the new money circulated in the community for the maximum amount of the account statement .

3. Credit will increase the usefulness of goods.

Credits can be used by producers to produce or process goods to be useful.

4. Credit will increase the circulation of goods.

Credit can accelerate the flow of goods from one region to another.

5. Credit as an instrument of economic stability.

Loans disbursed by banks should be directed to the productive sectors that affect the livelihood of many people. In addition, the loans provided will increase the amount of goods needed by the community, increasing the excitement of exports that support the acquisition of foreign exchange for the country.

6. Credit can activate and improve the benefits or usefulness of existing economic potentials.

Credit assistance will encourage entrepreneurs such as industry to produce or increase their production by activating their economic potentials.

7. Credit as a bridge to improve the distribution of national income.

Credit can increase business and business increase means increase in profit, so the income will increase also the impact of corporate tax will increase. In addition, various policies that support export in the form of Export Credit will stimulate export activities to generate additional foreign exchange for the country.

8. Credit as an instrument of international economic relations.

Banks as an institution that distributes credit not only move in the country but also abroad.

2.1.2 Property Sector

a. The property is a property owned by a person or can be interpreted as one's own wealth (Steward,1996).

b. The property sector is a synonym of with the development of residential housing or settlements for the middle class and above (Heinz, 1984).

In this study, the researchers limited the credit for property only in two kinds:

a. Residential property, including tangible buildings either real estate, flats or houses.

b. Construction property (building), including tangible construction for industrial products such as building factories, facilities and infrastructure.

2.1.3 Role of Property Sector in the Economy

Prosperity and property rights are inextricably linked. The importance of having well-defined and strongly protected property rights is now widely recognized among economists and policymakers. A private property system gives individuals the exclusive right to use their resources as they see fit. That dominion over what is in theirs leads property users to take full account of all the benefits and costs of employing those resources in a particular manner. The process of weighing costs and benefits produces what economists call efficient outcomes. That translates into higher standards of living for all.

It is only in the last few decades, however, that economists have accepted the importance of property rights. Throughout much of the history of modern economics, the subject was given short shrift. Even stalwart supporters of the market economy glossed over the subject. Not surprisingly, much bad development policy resulted from that neglect. Even if policymakers in developed countries and international institutions now recognize the critical role played by a system of private property in economic development, they are limited in what they can do to help developing countries evolve such a system. Policymakers can, however, avoid recommending policies that undermine private property. (Hoskins, 2003).

2.1.4 Population density

Population density is comparison between population with the occupied area (Mantra, 2007). Population density is influenced by physiographic, security, culture, biological and psychological as well as closely related to the increase of population called population growth that is:

1. Natural population increase is the population growth obtained from the difference in the number of births with the number of deaths.
2. Population growth migration is the population growth obtained from the difference in the number of incoming migration (immigration) and the number of out migration (emigration).

3. Total Population Growth is population growth calculated from the difference in the number of births with the number of deaths plus the difference in the number of immigration by the amount of emigration.

Various kinds of population density, among others (Sugiyanto, 2013),

1. Arithmetic Population Density

   The density of the arithmetic population is the ratio of population to the total area in every km^2.

   Formula :

$$\text{Arithmetic population density} = \frac{\text{Total population (lives)}}{\text{Wide area (km2)}}$$

2. Physiological population density

   Physiological population density is the ratio of population with the area of the soil that can be processed.

   Formula :

$$\text{Physiological population density} = \frac{\text{Total population (lives)}}{\text{The entire land area } (km^2)}$$

3. Agrarian population density

   Agrarian population density is the ratio between population that has activity in the agricultural sector with the area of land (area) that can be processed for agriculture.

   Formula :

$$\text{Agrarian population density} = \frac{\text{The number of farmers (lives)}}{\text{The whole area of agricultural land (km}^2\text{)}}$$

4. Population density of the economy

   The population density of the economy is the ratio between the population with the area but according to its production capacity.

2.1.5 Interest Rate

Interest rate is the price of the use of money or as a lease for the use of money for a certain period. In other words the price of borrowing money to use its purchasing power and is usually expressed in percent (%) (Sanjaya,2015).

The interest rate consists of the real interest rate and nominal interest rates. The interest rate is the nominal interest rate reported while the real interest rates have been adjusted for inflation.

Regarding to the effect of the real interest rate to the level of influence investment, both using a simple approach and the approach are

more complicated leading to the conclusion that the investment is a function of the real interest rates with DI / Dr <0, in the sense of rising real interest rates or i, resulting in reducing investment and vice versa, declining real interest rates resulting in increased spending for investment (Suparmoko, 1991).

According to the Keynes theory, he thought that interest rate was determined by supply and demand for money (determined in the money market). Money will affect economic activity, all this money affects interest rate, changes in interest rates, which would influence the desire to hold investments (Nopirin, 1997).

The interest rate is determined by the forces of demand and supply of money market funds, the cheaper the cost of borrowing money, the more money demanded by households and businesses. Keynes argued that the flow of investment plans was primarily determined by expectations of the business world over the location of economic activity in the future. Investments can be determined by the level of interest rates. If the interest rates is high then the amount of investment will decrease and if the interest rates go down, the amount of investment will be increased so that it can be said that between the interest rates by the amount of investment has a negative relationship (Sukirno, 1997).

2.1.6 Construction Price Indices

A. Definition of Construction Price Indices

The term construction covers a wide variety of activities, these include the construction of dwellings, non-residential buildings, and civil engineering works such as roads, bridges, dams, etc. Construction activity also encompasses repair, renovations, rehabilitation and maintenance of existing structures, etc.

Construction price indices are used in guaranteed value clauses in rental, leasing, and other contracts; adjustment of sales contracts for buildings under construction; and as a basis for indexation for insurance purposes. They are also used to deflate national accounts which estimates output of construction activities, and gross fixed capital formation in residential construction.

In summary, construction price indices are used to track changes/trends in the cost (or price) of construction. In summary, construction price indices may be described as indices compiled from, prices paid by the contractor for inputs to the construction process,the price received for the completed output of construction activity paid by the client, the selling price including *all* of the demand side cost elements paid by the purchaser or final owner.

B. Main Types of Construction Price Indices

The methods used to compile construction price indices vary significantly between OECD and European Union Member countries. Individual member countries also use a variety of methods, and data sources. for the different construction price indices they produce.

Three main types of construction price indices are compiled in OECD and European Union Member countries: input price indices, output price indices, and seller's price indices.

1. Input Price Indices

Input price indices measure changes in the price of inputs to the construction process by monitoring separately the cost of each factor. This generally entails the compilation of a weighted index of the costs of wages and materials.

Initially, representative object (e.g. a dwelling of a specific type, size, and style.) is taken and the quantity of labor hours and materials needed for its construction calculated. These quantities are periodically multiplied by the corresponding prices and the outcome totalled.

Input price indices should not be used to provide information on price movements for finished construction work as they generally do not reflect the whole range of influences that impact on market prices . These include changes in productivity, profit, and trade margins of the

construction contractor, and changes in actual market conditions.

Input price indices only provide a reflection of changes in the prices of construction inputs. The indices produced are production cost rather than production price indices (Mackenzie,1994) .

As a result, the real trend of building costs may differ considerably from the trend compiled solely on the basis of wages and material costs. An input cost index is likely to overstate the price rise of completed construction work as it ignores gains in productivity reflected in price reductions.

2. Output Price Indices

Output price indices measure changes in the prices of what is produced by entities engaged in construction activity.

Output price indices cover most of the items normally built into the price paid by purchasers or clients to entities involved in producing the completed output of the construction activity. These generally include materials, labor, equipment hire, land preparation costs, bathroom/kitchen fittings, overheads, profits, and trade margins.

Several different techniques are used to include all these components. One method involves the inclusion in the index of all (or as many as possible of) the individual factors involved in the construction of a dwelling, non-residential building, etc. These include

overheads, profits, trade margins, and any other costs paid by the client or purchaser to the builder. An alternative method entails basing the index on the prices of actual finished constructions. Both methods are described in detail below in the typology of methods used to compile construction price indices.

3. Seller's Price Indices

Seller's price indices measure changes in the prices of construction output paid by the purchaser or final owner of the output of construction activity. The term "seller's price" is used to distinguish it from the "purchasers' price" as defined in the System of National Accounts (SNA). The latter (which is discussed in more detail in Section 1E below) excludes the land component in the ownership transfer.

2.2 Summary and Implications

2.2.1 The Relationship Between Population Density with Credit for Property

Every person needs a place to stay as a shelter, then any increase of population both naturally and non – natural (due to urbanization) would increase the demand for housing (Awang, 1997). Population has a very important role in economic development, on the other hand the existence of the population growth directly involved in the business in the field of house construction. Increasing in population it would affect the amount of

house construction and it would lead increase the demand for housing (Dengah, 2014).

2.2.2 The Relationship Between Interest Rate with Credit for Property

In the residential property market, demand for housing is also affected by government policy and financial institutions such as banking. Characteristics of the property market ie requires substantial funds, it caused consumers to rely on ease funding. The ease funding can be in the form of loan credit facilities, decreased levels lending rates, and the term of loan repayment. If the ease can be obtained by the consumers, the demand for housing would increase. Otherwise, if the terms of getting a loan is very tight or the interest rate is high then would decrease the demand for housing (Awang, 1997).

2.2.3 The Relationship Between Construction Price Indices with Credit for Property

Increase in property prices in particular housing is also influenced by the total construction cost incurred by developers as the determinant of house prices from the supply side. The construction cost includes the wage of construction labor and the price of construction materials. The higher the development required by developers in build a house would drive the increase in the price of property assets, especially housing in the property market. (Rochmawati, 2017).

In short, increasing construction cost would decrease people's purchasing power. This happens because wage increases are not as fast as price increases, so increasing construction price indices would reduce the real wage of people who earn a fixed income. In conclusion, increasing construction price indices would affect the purchase of credit for housing.

2. 3 Literature Review

Having a place to live is primary need in human life. Several studies have observed about what affects people want to buy a house in some countries. According to Takala, K., and Matti (1990) who observed study case housing investment in Finland, the results do not provide a very clear-cut answer to the determinants of housing investment. Housing markets seem to be quite volatile and subject to seasonal and cyclical variation. Hongyu, L., et al (2002) revealed the growth of housing investment in China predicts a growth in GDP in the short run. Since housing investment is an important indicator which was predicted in the short run economic growth or recovery, it follows the collapse of housing investment that can lead to large fluctuations of GDP which may harm the stability of the national economy. According to Glaeser, E. L., and Joshua, D. G (2010) found no convincing evidence that changes in approval rates or loan-to-value levels can explain the bulk of the changes in housing prices, but definitive judgments on those mechanisms cannot be made without better corrections for the endogeneity of borrowers'

decisions to apply for mortgages. Aron, J., et al (2010) said that the empirical findings for the UK, US, and Japan demonstrate the importance of credit constraints for consumer spending. They found that the evolution of credit availability differs over time within countries, as well as between them.

Franken, M., and Bloom (2011) identified eight variables namely construction cost, consumption, debt-to-income ratio, GDP, inflation, interest rates, JSE ALSI, and affordability with significance at the 95% confidence level or better. The R^2 and adjusted R^2 values obtained from the regression analysis indicated that more than 90% of the variation in South African's house prices can be explained by the combination of the eight independent variables. Duca, J. V., et al (2011) explained that the results are consistent with the view that many asset bubbles are linked to an unsustainable easing of credit standards or adoption of risky financial practices that eventually unwind during a subsequent bust. Mercy, M. K (2012) indicated GDP, interest rate, real estate prices are having a positive correlation, and real estate prices have a great impact together with interest rate on GDP. The results of the correlation and the regression analysis indicated that there is a relationship between real estate prices and GDP in Kenya. Golob, K., et al (2012) described in the research found out that loan conditions are influencing real estate values and speed of sales. There exists a positive correlation among declining interest rates, higher prices and growth real estate transactions.

According to Maxey, J. H (2013) indicated that income and unemployment have no significant relationship to price and do not contribute significantly to price of single-family homes. Interest rates, total crime, and school average SAT scores have a significant relationship with price and contribute individually and collectively to the final sales price of single-family homes in Prince George's County, Maryland, United States.

Theuns, V (2013) stated the findings which imply that any positive increase in the GDP would increase the Rand value of houses. Other factor such as demographic location and demand for the proposed development also increase or decrease the selling price. The GDP contributes to 69% in the changes that occur in the housing price index. A further 25% contributed change by factors together such as : inflation rate, household disposable income, final household consumption, household and debt. Loyford, M. M., and Makori, M (2014) it is stated in the reviewed the effects of economic factors on the performance of real estate in Kenya by reviewing the following areas; interest rate, inflation, transaction cost and demand for housing. From the study, it can be conclude that, Interest rate, inflation, cost of transactions and the availability level highly influence the performance of the real estate industry. The study revealed that the effect of the interest rate had volatility on income and its interest rate elasticity performance. Kavarnou, D., and Anupam, N (2014) explained that the Greek Islands provide a

unique set-up for analyzing how geographical and economical differences among the islands may influence housing market characteristics and outcomes. The living space has a significant positive impact on the assessed value. As expected, the land area also has a significant effect on assessed value across all groups of islands. The age of the structure has a significant negative effect and the effect is consistent and robust across all groups of islands. Dapaah, K.A., and Mai, N. A (2014) stated that housing loan is found to be positively correlated with housing price and GDP but negatively correlated with interest rate in the long run. While there is long run equilibrium among housing loan, housing price, interest rate and GDP, the causality direction between housing loan and housing price is somewhat obscure.

Zandi, G., et al (2015) conducted the study to verify the relationship between the economical factors and housing price in Penang. Both the individual effects and the interactive effects are analyzed and reasonable explanations are given on the observations. Based on Bivariate study, Basic Lending Rate (BLR) showed positive and significant correlation towards housing price. GDP rate and GNI rate showed positive correlation with housing price. However, the correlation is not statistically significant. Inflation rate has the least influence towards housing price. Using the regression model, the selected economical factors were carefully examined. Similarly with the bivariate findings, BLR demonstrated the strongest correlation towards housing price, follow

by GDP rate and GNI rate. Justiano, A., et al (2015) this study revealed that the large increase in house prices and mortgage debt, a stable ratio between mortgages and the value of the real estate that collateralizes them, and the fall in mortgage interest rates. It depends on the interaction between borrowing and lending constraints, and it cannot be reproduced with either of the two constraints in isolation. In fact, the interplay of the two constraints produces rich dynamics of interest rates, debt and house prices, which even hint at a possible trigger of the fall in house prices.

Panagiotidis, T., and Panagiotis, P (2015) revealed that the housing price index responds to mortgage, CPI and retail trade shocks, while shocks to IP do not affect Housing Price Index (HPI) in a significant way. Thaker, H.M.T., and K. Chandra, S (2016) the result revealed that one of most important attributes in buying residential property in Malaysia is pricing, in which it has been considered as a higher priority among buyers, followed by community amenities, location, financing, structural factor, home amenities and developer. Ren, Q. (2016) showed that if it is compared to inland area of China, the housing prices in coastal provinces seem to be much strongly affected by both real estate development loans and personal mortgage loans. Monnet, E, and Clara, W (2017) population growth is an important determinant of the housing stock in the long-run, but the role of demographics as a source of housing cycles is usually underestimated. Kelly, R., Fergal, M.,

and Conor, O (2017) stated the findings which imply an important role for macroprudential in cooling a rapidly-growing housing market.

2.4 Framework for Research

The framework of this research can be explained through the following picture:

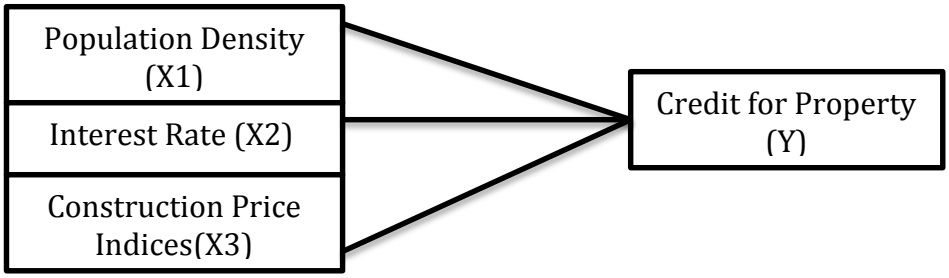

Figure 2.1. Framework for Research

2.5 Hypothesis Formulation

A hypothesis is a temporary assumption of a problem and that needs to be tested for truth. Hypothesis in this research are:

1. population density has positive and significant impact on credit for property of Special Region of Yogyakarta,
2. interest rate has a negative and significant impact on credit for property of Special Region of Yogyakarta, and
3. construction price indices has a negative and significant impact on credit for property of Special Region of Yogyakarta.

CHAPTER III

RESEARCH METHOD

3.1. Type of Study

Type of study which was used by researcher was quantitative research. This research used quantitative method by way of generating numerical data or data that can be transformed into useable statistics. The type of data in this research was secondary data, the data obtained directly from the source, such as a quote from the books, scientific journals, as well as data sources published by several agencies which have relevance to the theme of research. Data required in this research are:

a. credit for property data of Special Region of Yogyakarta year 2000 - 2015,
b. construction price indices data of Special Region of Yogyakarta year 2000 - 2015,
c. interest rate data of Special Region of Yogyakarta year 2000 - 2015, and
d. population density data of Special Region of Yogyakarta year 2000 - 2015.

3.2. Data Collection Method.

The definition of concepts and variables used in this study as follows:

a. Credit property sector is measured in Million of rupiah (Rp).
b. Interest rate is the annual interest rate as a percentage of the cost amount of money lent to be paid by the borrower to the lender. The interest rate that is used in market interest rates or nominal namely interest rates approved by the borrower and the lender is measured in percent (%).
c. Construction Price Indices (CPI) is derived from the *supply side* of the industry (i.e. from construction firms, sub-contractors, materials supply firms, etc.) CPI measured in percent (%).
d. Population density is the ratio of the population with the area. Population density shows the average number of inhabitants per km^2

3.3 Research Variables

This research contained independent variable and dependent variable. Dependent variable in this research was credit for property of Special Region of Yogyakarta and the independent variables are population density, interest rate, and construction price indices that can be defined as follows:

3.3.1 Dependent Variable

Dependent variable is a variable of which magnitude is influenced by other variables. This study used credit for property (Y) as a dependent variable. Credit for property of Special Region of Yogyakarta is calculated from year 2000-2015.

3.3.2 Independent Variable

The independent variable is the variable that can affect another variable. Independent variables used in this study are:

a. Population Density (X1)
b. Interest Rate (X2)
c. Construction Price Indices (X3)

3.4 Analysis Technique

The secondary data that have been collected from various sources were proceed by using some statistical program packages, such as Microsoft Excel 2013 and EViews 9.0 program. In processing data activities, the researcher used Microsoft Excel 2013 to create tables and analysis. Meanwhile, multiple regression log model were processed by using EViews 9.0 program.

3.4.1 Time Series Method

This analysis aimed to know the direction of relation between independent variable and dependent variable whether each independent variable is positive or negative and to predict the value of the dependent variable if the value of the independent variable increases or decreases. The analytical tool used to analyze the data was multiple regression as the dependent variable Y depended on two or more independent variables X.

Regression function used is as follows:

$$Y = bo + b1\ X_1 + b2\ X_2 + b3\ X_3 + ei$$

where:

Y: Credit in property sector in Million of Rupiah

bo: intercept

b1: Coefficient of the Population density

b2: Coefficient of the Interest Rates level

b3: Coefficient of the Construction Price Indices level

X_1: Population Density in (Lives/ km^2)

X_2: Interest Rate in percent

X_3: Construction Price Indices in percent

ei: Elements Disruptors

There were four testing in statistic test, i.e. T-test, F-test, coefficient of determination (R^2) test, and normality test.

A. Statistic test

1). T-Test

T test is a test to determine the influence of the independent variable on the dependent variable individually, with regard in the constant independent variables. The t-test was used the following hypotheses:

Ho: $\beta I = 0$

HA: $\beta I \neq 0$

Where the coefficient βI is a certain degree, Ho is rejected means that the independent variables tested significantly affect the dependent variable. T value was obtained by the formula (Gujarati, 1995):

$$T\ count = \beta I / Se\beta I$$

where:

βI = coefficient of independent variables to I

SeβI = Standard error of the independent variables to I

If the calculation results show the value of t is greater than t table then Ho is rejected, which means significant independent variable on the dependent variable. Conversely, if t is smaller than t table then Ho is accepted which means that the independent variable had no significant effect on the dependent variable.

2). F-Test

F test is a test to determine the influence of the independent variable on the dependent variable together. For this test, the following hypotheses were used:

Ho: βI = βI = ... βk = 0 (no influence)

HA: βI 1 ≠ 0 (no influence)

This testing was done by comparing the value of F arithmetic with F table. If the count is greater than F table then Ho is rejected, which means that the independent variables jointly affect the dependent variable. Conversely, if F count is smaller than F table then Ho is accepted, which means that the independent variables together does not affect the dependent variable

F count can be obtained by the formula (Supranto, 1983):

$$F\ count = \frac{R^2 / (k-1)}{(1-R^2) / (n-k)}$$

where:

R^2: coefficient of determination

n: number of samples

k: The number of independent variables

If the value of the F is larger than F table then Ho is accepted. This means that the hypothesis of independent variables simultaneously is not significant in influencing the dependent variable (acceptable), but otherwise if F is less than F table arithmetic then Ho is rejected. This means that the independent variables collectively together affecting the dependent variable is significant.

3). Coefficient of determination (R^2) test

This test was used to see how well the samples matched the data. If the estimated coefficient of determination is greater (close to 1) it indicated that the estimation would be close to the actual state or the selected variables which could be explained by its affiliated or otherwise.

4). Unit Root Test (Stationary)

In statistics, a unit root test tests whether a time series variable is non-stationary and possesses a unit root. The null hypothesis is generally defined as the presence of a unit root and the alternative hypothesis is either stationarity, trend stationarity or explosive root depending on the test used.

In general, the approach to unit root testing implicitly assumes that the time series to be tested $(y_t)_{t=1}^{T}$ can be written as,

$$Yt = D_t + Z_t + \varepsilon_t$$

Where:

- D_t is the deterministic component (trend, seasonal component, etc.)
- Z_t is the stochastic component.
- ε_t is the stationary error process.

The task of the test is to determine whether the stochastic component contains a unit root or is stationary.

A commonly used test that is valid in large samples is the augmented Dickey-Fuller test. The optimal finite sample tests for a unit root in autoregressive models were developed by Denis Sargan and Alok Bhargava by extending the work by John von Neumann, and James Durbin and Geoffrey Watson. In the observed time series cases, for example, Sargan-Bhargava statistics test the unit root null hypothesis in first order autoregressive models against one-sided alternatives, i.e., if the process is stationary or explosive under the alternative hypothesis.

5). Normality Test

Normality test was conducted to assess the distribution of data in a group of data or variables, whether the distribution of data was normally distributed or not.

Most normality test were based either on comparing the empirical cumulative distribution with the theoretical normal cumulative distribution (Kolmogorov-Smirnov, Anderson-Darling, Chi-Square) or empirical quantiles with the theoretical normal quantiles (PPCC, Wilk-Shapiro). In contrast, the Jarque-Bera test was based on the sample skewness and sample kurtosis.

The Jarque-Bera test statistic was defined as, the following:

$$JB = \frac{n}{6} \cdot \left(S^2 + \frac{(K - 3)^2}{4} \right)$$

where:

n : Sample Size
S: Expected Skewness,
K: Expected Excess Kurtosis.

For sample sizes of 2,000 or larger, this statistic test was compared to a chi-squared distribution with 2 degrees of freedom (normality was rejected if the test statistic was greater than the chi-squared value).

The chi-square approximation required fairly large sample sizes to be accurate. For sample sizes less than 2,000, the critical value was determined via simulation. Specifically, one hundred thousand normal samples with the same mean and standard deviation as the original data sample were generated

and the Jarque-Bera test statistic computed to generate the reference distribution.

B. Econometrics Test (Classical Assumption Deviation)

1). Heteroskedasticity

Heteroskedasticity case occured when confounding variables did not have the same variance for all observations. As a result of their heteroskedasticity among others: Although the adjuster OLS is still linear and unbiased, but will have a variant that is not minimum again and inefficient in small samples, formulation to estimate variance of the estimator-estimator OLS in general is biased, predictions that are based on coefficients independent variable parameters of the initial data would have a high variance. It can be represented as follow.

$$E = (ui^2) = r^2$$

where:

r^2 = variant

If the same variance obtained the assumption of heteroskedasticity (the same deployment) is accepted. The identification of the presence and absence of heteroskedasticity problem is to use:

Using regression test first park on the model used by the OLS (Ordinary Least Square) without noticing any symptoms of heteroskedasticity, then from these results that the quantity of residual. Both performance regression on the residuals of the above results represented as the dependent variable.

Regression was done one by one with each of the independent variables. The above statement can be written as follows:

$$\text{Ln } e^2 = \beta o + \beta 1 \text{ Ln } Xi$$

where:

E = residual

Xi = independent variable

Ho = E (ui^2) = r^2

Hi = E (ui^2) 1 ≠ r^2

The identification of the presence and absence of heteroskedasticity can be seen incoefficient β1 in the equation. If the value is not significant b1 then Ho is accepted and it indicates homoskedastic. However, if β1 was significant then Hi was welcome. It showed heteroskedasticity.

2). Autocorrelation

Autocorrelation is a state that shows where the disturbance variables at certain periods correlated with disturbances in other variables. In other words, disturbance variables are not random. The result of the autocorrelation is estimator OLS which is not biased in repeatable and consistent sampling. Furthermore, estimation variance of the estimators OLS is biased. As a result, many values of t statistic estimator OLS are high so, they can not to be

trusted. Moreover, the value of R square is too high so as not to be trusted, the standard error which used for forecasting is not efficient.

The identification of the presence or absence of autocorrelation can be done by testing: Lagrange Multiplier Test, Test and Test Durbin Breusch Godfrey Watson Statistics (Gujarati, 1995)

3). Multicolinearity

Multicolinearity is a situation where one or more independent variables are correlated with other independent variables, or in other words an independent variables comprise the linear function of other independent variables. To test whether there any multicoliniearity, it can use partial correlation or using methods that compare the resulting correlation coefficients of correlation matrices with coefficient of determination (R^2). The hypothesis used states, when the square of the correlation coefficient is smaller than the coefficient of determination, the model is not found their multicolinearity problem.

Multicolinearity is a perfect relationship between some of all the independent variables in a regression model. If all of the classical linear regression model assumptions are met, Gaust Markov theory states that the OLS estimator is BLUE, namely the efficient and consistent estimator in the sense of an unbiased estimator which is linear and has a minimum variation.

To treat the problem of multicollinearity among others, the research use a prior information, combining data across sectors with time series data or time

series, issue and bias specification variable, variable transformation by adding new data or using koutsoyianis.

CHAPTER IV

DATA ANALYSIS AND DISCUSSIONS

4.1 Result

The purpose of this research is to know how population density, interest rate, and construction price index toward credit for property in Special Region of Yogyakarta. Sequentially specifically on each the variables.

This study were used the analysis tool, i.e multiple regression log model.This model was used to analyze the effect of population density, interest rate, and construction price indices toward credit for property in Special Region of Yogyakarta. This study used annual data (time series) from 2000 to 2015 obtained from various sources, i.e Central Bureau of Statistics (BPS) and Bank of Indonesia (BI) in Special Region of Yogyakarta.

4.1.1 Unit Root Test (Stationary)

Stationary is a condition of time series data which if the average, variant and covariance of the variables are entirely unaffected by time (Juanda and Junaidi, 2012). The unit root test used in this study was augmented dickey fuller test (ADF).

Table 4.1 Augmented Dickey Fuller Results at Second Difference Level

Variable	Prob.	Conclusion
Credit for Property	0.0051	Stationary
Population Density	0.0002	Stationary
Interest Rate	0.0025	Stationary
Construction Price Indices	0.0000	Stationary

(Source: results of processed data)

Table 4.1 showed that all variables are stationary at the second difference level, ie the credit for property variable, population density,interest rate, and construction price indices at the 5 percent significance level. Therefore it is said all the data used in this research is integrated on the second degree (second difference).

4.1.2.Normality Result

Jarque Bera was often used in the Normality Test on Residual variables resulting from Linear Regression Test because of its excellent ability to detect normality in residuals.

Table 4.2
Normality Test

Mean	-2.12e-14
Median	0.056587
Maximum	0.249514
Minimum	-0.391240
Std. Dev	0.175695
Skewness	-0.573039
Kurtosis	2.587579
Jarque -Bera	0.989057
Probability	0.609858

(Source:Processed by Eviews 9.0)

Normality test was used to determine whether the residuals of a regression model were normally distributed or not. This normality test was performed using the Jarque - Bera test. The result of normality test was done by using Eviews 9.0 program. On this model, yields probability Jarque – Bera was bigger than α (0.609858 > 0.05), then the null hypothesis failed to be rejected which means that the residual of this model

was normally distributed so that t test and f test were done to see the significance of the model.

4.2 Econometrics Test (Classical Assumption Deviation)

4.2.1 Heteroskedasticity Result

The heteroscedasticity test was performed to determine whether the variant of the error was constant or not. On the classical basic assumptions the variant of the error must be constant. Informal and formal were held to conduct heteroscedasticity test on the regression model.

Breusch-Pagan-Godfrey test was used as the formal way to detect whether or not the heteroscedasticity in this analysis. This test was performed using Eviews 9.0 program obtained probability value from Obs*R-squared compared with the level of significance (alpha). The following was the result of Breusch-Pagan-Godfrey test using Eviews 9.0:

Table 4.3
Heteroskedasticity Test : Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.548688	Prob. F(3,12)	0.6585
Obs*R-squared	1.930009	Prob. Chi-Square(3)	0.5871
Scaled explained SS	0.861762	Prob. Chi-Square(3)	0.8346

(Source:Processed by Eviews 9.0)

From the Table 4.2 which showed the output of the Breusch-Pagan-Godfrey test in the Eviews 9.0 program, it can be seen that the probability of Obs * R-squared is greater than α (0.5871 > 0.05) , then the

null hypothesis failed to be rejected. In conclusion, there is no heteroskedasticity problem.

4.2.2. Autocorrelation Result

Another autocorrelation test is a serial correlation. Many of these test methods can be done, but the Breusch-Godfrey Serial Correlation LM test were used in this analysis.

Table 4.4

Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.362341	Prob. F(2,10)	0.1445
Obs*R-squared	5.133890	Prob. Chi-Square(2)	0.0768

(Source:Processed by Eviews 9.0)

From the results above, the Prob Chi Square value (2) which was the value of p value of the Breusch-Godfrey Serial Correlation LM test, where, 0.0768 > 0.05. In conclusion, there is no serial autocorrelation problem.

4.2.3 Multicolinearity Result

Multicolinearity test was used to test whether there was a relationship between independent variables and the test was done using VIF (Variance Inflanatory Factor) obtained by using Eviews 9.0 program.

Table 4.5
Multicolinearity

Variance Inflation Factors
Date: 02/14/18 Time: 15:13
Sample: 2000 2015
Included observations: 16

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	533.2218	194239.6	NA
LOG_POPDENSITY	10.33645	181875.5	9.888481
INTEREST_RATE	0.002948	250.0891	6.719962
CPI	9.14E-07	18.19013	3.975186

(Source:Processed by Eviews 9.0)

It showed that all of the Centered VIF value's variable are less than 10. It can be concluded that there is no multicolinearity in this model.

4.3 Hypothesis Testing

Table 4.6
Multiple Regression

Dependent Variable: LOG_CREDIT_FOR_PROPERTY
Method: Least Squares
Date: 02/14/18 Time: 15:03
Sample: 2000 2015
Included observations: 16
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-123.6477	23.09160	-5.354660	0.0002
LOG_POPDENSITY	18.93972	3.215034	5.890984	0.0001
INTEREST_RATE	-0.077952	0.054292	-1.435807	0.1766
CPI	-0.002944	0.000956	-3.079660	0.0095

R-squared	0.979258	Mean dependent var	6.933250
Adjusted R-squared	0.974073	S.D. dependent var	1.219932
S.E. of regression	0.196433	Akaike info criterion	-0.204669
Sum squared resid	0.463033	Schwarz criterion	-0.011521
Log likelihood	5.637348	Hannan-Quinn criter.	-0.194778
F-statistic	188.8460	Durbin-Watson stat	0.819390
Prob(F-statistic)	0.000000	Wald F-statistic	251.6666
Prob(Wald F-statistic)	0.000000		

(Source:Processed by Eviews 9.0)

The results were formulated in the equation below.

Log Credit for Property = -123.6477 + 18.93972 Log PopDensity -

0.077952 Interest rate- 0.002944 CPI.

After obtained the estimation parameters, then a test was conducted consisted of : T-test, F-test, coefficient determination R^2, adjusted R squared.

4.3.1 T-test

To acquire the t-test, t-figures of statistics or probabilities of variables were conducted. If using t-statistic then if t-statistic was bigger than t-table then it could be said as significant and if t-statistic was smaller than t-table then it was not significant. By using probability, it could be seen if the value of prob. t-statistic (shown in Prob.) is smaller than the error rate $\alpha = 0.05$, then it can be said that the independent variables affect significantly to dependent variable. Meanwhile, the value of the prob. t-statistic is greater than 0.05 error rate, then it can be said that the independent variables do not affect significantly to the dependent variable

Table 4.7 : Significance of Independent Variables

Variable	t- Statistic	t- Table	Probability	Conclusion
Log Population Density	5.890984	1,782	0.0001	Significant
Interest Rate	-1.435807	-1,782	0.1766	Not

				Significant
Construction Price Index	-3.079660	-1,782	0.0095	Significant

(Source: results of processed data)

The t-test results can be seen in Table 4.6. The value of the probability t-statistic of independent variables of population density and construction price indices had significant influence toward dependent variable bound to the alpha 5% or in other words, the influence of population density and construction price indices to Special Region of Yogyakarta's Credit for Property are significantly at the 95% confidence level.

Meanwhile, interest rates had no significant influence toward dependent variable where probability of interest rate is 0.1766. In other words, two of the variables had significant effect toward credit for property of Special Region of Yogyakarta except interest rate variable.

4.3.2 F-test

F-test was used to perform a hypotheses test of the regression coefficient (slope) simultaneously. F test showed the effect of independent variables toward the dependent variables simultaneously. If F is calculated from the data greater than F-critical, H_0 is rejected. Rejecting H_0 means that there is minimum one independent variable that influenced dependent variable. If it was viewed from the value of the probability of

the F-statistic is 0.00000, then the value was smaller than $\alpha = 0.05$. Based on this condition, the decision taken was to reject the null hypothesis or accept the alternative hypothesis. This means the independent variables in the model simultaneously have significant effects toward the credit for property.

4.3.3 Coefficient determination (R^2)

Coefficient determination (R^2) was used to see the level of appropriateness or suitability of the estimation model that was formed (goodness of fit), that was done by looking at the value of R^2 in the model. Table 4.5 showing coefficients determination (R^2) generated by the model is 0.979258.

This figure means variable of credit for property was explained by population density, nterest rates, construction price indices number by 97% and the residual 3% described by the other variables outside the model.

4.3.4 Adjusted R-squared

The adjusted R-squared value showed how much independent variable was able to explain the variant of the dependent variable. If adjusted R-squared was closer to the number 1, the greater the ability of independent variables in explaining the variant of the dependent variable. The adjusted R-squared is 0.974073. The adjusted R-squared value describes 97% of the variant of the dependent variable that can be explained by the independent variable.

4.4 Discussions

a. The Influence of Population Density on Credit for Property.

The results showed, the population density had positive and significant impact on credit for property. This was indicated by the value of t-statistic which was 5.890984 which was bigger than the value of the t-table (0,05:df12) was 1,782. The coefficient value of population density was 18.93972, it means that an increase in 1 % of population density would increase 18.9 % of credit for property. In other words, population density and credit on property in Special Region of Yogyakarta had significant and positive relationship. The growing number of human population in Special Region of Yogyakarta which was not accompanied by the expansion of land made people take credit for the property.

b. The Influence of Interest Rate on Credit for Property

Interest rate had no impact to credit for property in Special Region of Yogyakarta with the value of probability was 0.1766 greater than 5%. It means increasing or decreasing interest rates did not affect credit for Property in Special Region of Yogyakarta. From the regression results that interest rate has negative effect to credit for property. It means, when interest rates increase the demand of credit for property would go down. This result is supported by previous rescarch conducted by Budi (2009) who researched about analysis of simple

housing demand in Semarang which indicated that interest rate had no significant effect on demand for housing loans. The growing number of population which the majority from outside Yogyakarta are from rich family, when they buying a house they are not considered about interest rate.

c. The Influence of Construction Price Indices on Credit for Property.

The results showed, the construction price indices had a negative and significant impact on credit for property. This was indicated by the value of t-statistic which was -3.079660 which was less than the value of the t-table (0,05:df12) which was -1,782. The multiple regression estimation time series model obtained the coefficient of construction price indices was -0.002944. It means, increasing 1% of construction price indices would decrease 0.29% of credit for property. Construction price indices had a negative effect on the credit for property. It was appropriate in accordance with the hypothesis. This was due to rising construction prices which would make the price of housing increase. Thereby, lowering people's purchasing power, would had an affect to the investment desire for businesses and household because low purchasing power would lower the rate of return for businesses and household. Therefore, businesses and household were reluctant to invest especially in the property sector.

CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Based on the empirical results and discussion, it can be summed up as follows:

1. Factors that significantly influenced credit for property of Special Region of Yogyakarta in 2000-2015 are population density and construction price indices. Interest rates had no significant influence towards credit for property. Population density had positive impact toward credit for property in Special Region of Yogyakarta's, while interest rate and construction price indices gave negative impact to credit for property of Special Region of Yogyakarta in 2000-2015.
2. Increasing in population density would have an effect on the increasing in the number in credit for property specifically in residential house of Special Region of Yogyakarta in 2000- 2015.
3. Interest rate had no significant towards credit for property of Special Region of Yogyakarta in 2000-2015.
4. Increasing in construction price indices would decrease the credit for property of Special Region of Yogyakarta in 2000-2015.

5.2 Recommendations

Based on the conclusions of the study results, some recommendations were given as follows:

1. A mild construction price index could make more people actively invest in property sector. Therefore, it was expected that construction price indices (CPI) was cultivated in order to achieve the minimum CPI, because high CPI would make the economy sluggish. Furthermore, investment especially in property sector would decline. To manage construction costs, appropriate cost control procedures must be implemented. When controlling costs, earlier in the cost process could be checked and approved against the budget it was easier to control the cost.
2. In an effort to keep credit for property sector in stable condition, which is interest rate do not be too high because the high interest rate will incriminate the investors who borrow funds from the bank. In order investment for property sector was one of the capital intensive sectors. Therefore, it is expected that the interest rate is applicable low in order to encourage businesses to invest in the property sector.
3. In line with the increased population growth, the demand for housing also increased. This is a great opportunity to boost investment in property sector for developers or entrepreneurs by setting up housing to cater to the rapid growing communities.

5.3 Weaknesses of Research

This study has a weakness due to the limitations on the author. The weaknesses is the variables used in this study do not represent all factors that influence the credit for residential property in Special Region of Yogyakarta.

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APPENDIX

Appendix I

Datas of Credit for Property, Construction Price Index, Interest Rate, and Population Density in Special Region of Yogyakarta in 2000-2015.

Year	Credit for Property (Million Rp)	Construction Price Index (Percent)	Interest Rates (Percent)	Population Density (Lives/ km^2)
2000	114	201.6	16.59	980
2001	139	218.12	17.90	995
2002	180	251.73	17.82	1,010
2003	287	280.13	15.68	1,025
2004	525	127.44	14.05	1,040
2005	847	143.68	15.66	1,056
2006	1,133	153.28	15.10	1,067
2007	1,319	162.75	13.01	1,071
2008	1,635	116.71	14.40	1,089
2009	1,736	118.34	12.96	1,092
2010	2,194	122.5	12.28	1,098
2011	2,653	128.6	12.04	1,102
2012	3,266	132.44	11.27	1,115
2013	3,461	139.3	12.36	1,128
2014	3,718	116.48	12.12	1,142
2015	3,981	121.62	11.21	1,155

Source : Central Bureau of Statistics (Badan Pusat Statistik D.I Yogyakarta) and Bank of Indonesia D.I Yogyakarta

Appendix 2

Result of Data Time Series Using Eviews 9.0

Stationary Test

Null Hypothesis: Unit root (individual unit root process)
Series: CREDIT_FOR_PROPERTY_MILL, POPULATION_DENSITY, INTEREST_RATE, CONSTRUCTION_PRICE_INDEX
Date: 04/21/18 Time: 15:26
Sample: 2000 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Total number of observations: 51
Cross-sections included: 4

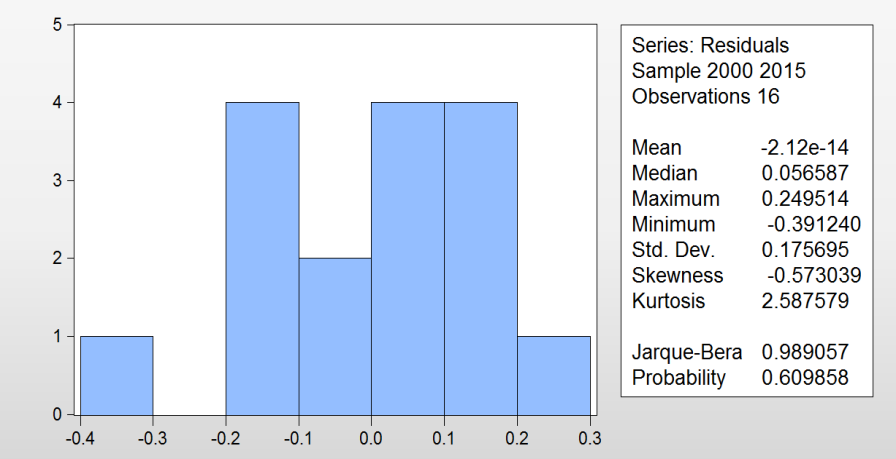
Method	Statistic	Prob.**
ADF - Fisher Chi-square	46.9494	0.0000
ADF - Choi Z-stat	-5.52553	0.0000

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Intermediate ADF test results D(UNTITLED,2)

Series	Prob.	Lag	Max Lag	Obs
D(CREDIT_FOR_PROPERTY_MILL,2)	0.0044	0	1	13
D(POPULATION_DENSITY,2)	0.0011	0	1	13
D(INTEREST_RATE,2)	0.0034	1	1	12
D(CONSTRUCTION_PRICE_INDEX,2)	0.0038	0	1	13

Normality Test



Econometrics Test (Classical Assumption Deviation)

1. Heteroskedasticity Test : Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.548688	Prob. F(3,12)	0.6585
Obs*R-squared	1.930009	Prob. Chi-Square(3)	0.5871
Scaled explained SS	0.861762	Prob. Chi-Square(3)	0.8346

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 02/14/18 Time: 15:15
Sample: 2000 2015
Included observations: 16
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.987532	3.249961	-0.611556	0.5522
LOG_POPDENSITY	0.287746	0.456859	0.629835	0.5406
INTEREST_RATE	0.000806	0.005699	0.141482	0.8898
CPI	-1.53E-05	0.000258	-0.059254	0.9537

R-squared	0.120626	Mean dependent var	0.028940
Adjusted R-squared	-0.099218	S.D. dependent var	0.037659
S.E. of regression	0.039484	Akaike info criterion	-3.413548
Sum squared resid	0.018707	Schwarz criterion	-3.220401
Log likelihood	31.30839	Hannan-Quinn criter.	-3.403657
F-statistic	0.548688	Durbin-Watson stat	1.084460
Prob(F-statistic)	0.658488		

2. Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.362341	Prob. F(2,10)	0.1445
Obs*R-squared	5.133890	Prob. Chi-Square(2)	0.0768

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 02/14/18 Time: 15:05
Sample: 2000 2015
Included observations: 16
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.908369	17.50900	-0.565901	0.5839
LOG_POPDENSITY	1.338949	2.413412	0.554795	0.5912
INTEREST_RATE	0.037502	0.054418	0.689148	0.5064
CPI	0.000186	0.001512	0.123063	0.9045
RESID(-1)	0.804171	0.371209	2.166355	0.0555
RESID(-2)	-0.236939	0.447986	-0.528899	0.6084

R-squared	0.320868	Mean dependent var	-2.12E-14
Adjusted R-squared	-0.018698	S.D. dependent var	0.175695
S.E. of regression	0.177330	Akaike info criterion	-0.341608
Sum squared resid	0.314460	Schwarz criterion	-0.051888
Log likelihood	8.732868	Hannan-Quinn criter.	-0.326772
F-statistic	0.944936	Durbin-Watson stat	1.682289
Prob(F-statistic)	0.493157		

3. Multicolinearity Test

Variance Inflation Factors
Date: 02/14/18 Time: 15:13
Sample: 2000 2015
Included observations: 16

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	533.2218	194239.6	NA
LOG_POPDENSITY	10.33645	181875.5	9.888481
INTEREST_RATE	0.002948	250.0891	6.719962
CPI	9.14E-07	18.19013	3.975186

4. Multiple Regression

Dependent Variable: LOG_CREDIT_FOR_PROPERTY
Method: Least Squares
Date: 02/14/18 Time: 15:03
Sample: 2000 2015
Included observations: 16
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-123.6477	23.09160	-5.354660	0.0002
LOG_POPDENSITY	18.93972	3.215034	5.890984	0.0001
INTEREST_RATE	-0.077952	0.054292	-1.435807	0.1766
CPI	-0.002944	0.000956	-3.079660	0.0095

R-squared	0.979258	Mean dependent var	6.933250
Adjusted R-squared	0.974073	S.D. dependent var	1.219932
S.E. of regression	0.196433	Akaike info criterion	-0.204669
Sum squared resid	0.463033	Schwarz criterion	-0.011521
Log likelihood	5.637348	Hannan-Quinn criter.	-0.194778
F-statistic	188.8460	Durbin-Watson stat	0.819390
Prob(F-statistic)	0.000000	Wald F-statistic	251.6666
Prob(Wald F-statistic)	0.000000		