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Empirical Investigation on Determinants of Lending Behaviour: Evidence from Commercial Banks in Ethiopia

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Abstract:
This study was carried out to investigating determinants to lending behaviour in commercial banks of Ethiopia from 2010- 2017. The study tried to investigate bank specific and macroeconomic determinants of lending behaviour based on data of eleven commercial banks in Ethiopia by using deposit ratio, liquidity ratio, bank size, efficiency ratio and banks ownership as bank specific factors and Reserve requirement ratio, exchange rate, lending rate, inflation rate and gross domestic product as macroeconomic determinants of lending behaviour. The study also sought to examine lending disparity among banks under the investigation by taking into account individuality of each bank through dummy variable. Data was obtained from national bank of Ethiopia and world bank data base and analyzed through panel data regression analysis by applying fixed effect regression model. The finding revealed that from bank specific factors, deposit ratio and bank ownership have positive and significant effect on lending behaviour of banks under the investigation. On the other hand, liquidity ratio, bank size and efficiency ratio have negative but statistically insignificant effect on lending behaviour. The finding also shows that from macroeconomic factors, exchange rate, lending rate and gross domestic product have found to have positive but statistically insignificant effect on lending behaviour. Result on macroeconomic factors also shows that reserve requirement ratio and inflation rate have negative but insignificant effect on lending behaviour of banks under the investigation. Finally, the study revealed existence of statistically significant disparity between CBE and other banks under the investigation in terms of lending behaviour.
Keywords: lending behviour, lending behaviour in Ethiopian banks, Girma Diriba
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1. Introduction

It is incontestable that financial institutions play indispensable roles in the overall economic development of a country. It has been widely agreed that financial institutions play a significant role in the development process, mainly through their role in allocating resources to their maximum productive uses. According to Dhungana (2016), Economists have generally reached into a consensus on the significant role of financial institutions in economic development of a country. According to the author, financial institution is one of the significant components of the financial system, plays crucial role for the enhancement of a national economy through efficient resource management for business and development project that are essential for economic development. The author insists that well-developed financial institution supports for capital formation and encourages investment by identifying and financing productive business opportunities. Evidences suggest that financial institutions perform an important function in the economic development process, particularly through their role in allocating resources to their most productive uses. They are one of the most important components of any country's economic development. As a key component of financial system, financial institutions offer an institutional mechanism through which resources can be mobilized and directed to from less productive to more productive investment (Demetriades & Hook Law, 2004).

Commercial banks are such most essential financial institutions that play decisive roles in economic growth and development of a country. They play an important role in capital formation by mobilizing the small savings of the people scattered over a wide area through their network of branches all over the country and make it available for productive purposes. As a lending institution, commercial banks play a major role in economic growth and development through provision of credit in efficient and effective way. Evidences suggest that commercial banks have been at the center of driving the economy as evidenced through the tremendous growth in the private sector credit over time. Available evidences strongly suggest that commercial banks serve as key agents of economic growth and development. They play intermediation role by channeling funds from the surplus spending units to the deficit spending units of the economy, therefore, transforming bank deposits into credits (Yakubu and Affoi, 2013).

Commercial banks play essential roles in an economy primarily by providing required funds for economic activities. According to Freixas and Rochet (2008), commercial bank loans are one of the most important short term and long-term financing sources in many economies. Commercial banks do grant loans and advances to individuals, business organizations as well as government in order to enable them embark on investment and development activities as a means of aiding their growth in particular and contributing toward the economic development of a country in general (Felicia, 2011). Several empirical studies have shown that the efficient

provisioning of credit has a positive and significant effect on output and employment opportunities and enhances the productive capacity of firms and enhances their potential to grow. Evidences suggest that availability of investable funds from commercial bank in the form of loan play vital roles in financing economic project and activities that would promote economic growth and development. It has been widely argued that access to credit bank loan fuels economic activities by allowing businesses to invest beyond their cash on hand, households to purchase homes without saving the entire cost in advance, and governments to smooth out their spending by mitigating the cyclical pattern of tax revenues and in investing in infrastructure projects (Tang, 2015).

As shown above, commercial banks play significant roles in economic development of a country by financing economic activities. However, commercial banks in Ethiopia have been very reluctant in playing these crucial roles despite to rapidly growing credit demand in Ethiopia. Evidences suggest that though remarkable progress has been made in bank credit facility, in term of credit volume and accessibility, there is still a significant gap between credit demand and bank credit supply. According to evidences obtained from literatures on the area, although progress in the financial sector, especially the banking sector has been encouraging in the recent history of the country, access to the formal credit market remained limited. As stated by Amidu (2014), access to credit in Ethiopia remains the lowest among the SSA countries and the Credit growth to the private sector seems stalled, and increased only marginally from 8.2 percent of GDP to 9.4 percent of GDP in 2015. According to evidences obtained from studies conducted on credit accessibility in Ethiopia, the country is lagging behind many African countries in term of credit accessibility. Like other developing countries, access to bank loan has remained a privilege for many Ethiopian and credit accessibility is one of the major challenges hindering economic growth potential Ethiopia and leaving people under poverty line.

Evidences suggest that access of domestic credit is the main challenge of the Ethiopia economy and ensuring credit accessibility should one of the top priorities of development effort of the country. There is general consensus among experts on the area that access to bank is considered as one of the key elements in addressing development issues in Ethiopia. This requires among other things investigating and understating of factors that affect bank's willingness and ability to advance credit in the economy. To investigate factors that affect lending behaviour of commercial banks in Ethiopia, several studies have been conducted. According to evidences obtained from literatures on the area, though extensive studies have been conducted to investigate determinants of lending behaviour in Ethiopia, considerable level of inconsistent of findings have been reported by previous studies on the area. This study will therefore contribute to insistent findings reported by previous studies on the area by investigating determinants of lending behaviour in Ethiopian commercial banks-based variables widely used by researchers, who have studies lending behaviour of commercial banks in Ethiopia and with some new variables that have been widely cited as factors that influence lending behaviour of banks by existing literatures on the area.

2. Literature review

Considerable body of theoretical and empirical literatures has been reviewed regarding factors affecting lending behavior in commercial banks. Evidences obtained from comprehensive review of existing theoretical and empirical literatures suggest that substantial amount of studies have been made to investigate factors that influence banks' willingness and ability to extend credit to borrowers. As stated by Robert (2004), there is vast empirical literature on the factors associated with lending behaviour among commercial banks. Evidences on the area suggest that there are number of studies that have examined the determinants of commercial bank lending in various countries around the globe (Sarath & Pham, 2015; Tomak, 2013; Rabab'ah, 2015; Amidu, 2014; Chernykh & Theodossiou, 2011; Imran & Nishat, 2013). According evidences obtained from accessible literatures on the area, various factors determine lending behavior of commercial banks as banks do consider a number of factors in determining lending decision.

Evidences obtained from literatures on the area tend to suggest that most studies have divided determinants of commercial banks' lending into internal and external factors. As stated by Haron (2004), determinants of commercial banks' lending behavior can be divided into external and internal factor. As it can be evidences from literatures on the area, extensive studies have been conducted to investigated the determinants of bank lending from bank-specific characteristic and macroeconomic specific perspective (Adzis, Sheng & Bakar, 2018). They insist that there are several common bank's specific characteristics and macroeconomic variables used in the previous studies to determine bank lending. According to review results obtained from existing literatures on the area, both bank specific factors and external factors (macroeconomic factors) influence bank's willingness and ability to provide credit to individuals, business organizations and government. The author insists that credit growth in the banking system is influenced by both banking factors and macroeconomic factors. This can be supported by the idea of Gideon, Acheampong and Ibrahim*a* (2017**)**, who insist that credit by a bank to private sector is driven by micro and macroeconomic factors.

Evidences suggest that spacious amount of literatures on the area investigated lending beahviour in banking industry from bank specific factors and macroeconomic factors. As stated by Blerta (2014), commercial banks' lending decision can be influenced by a number of internal and external factors such as; liquidity risk, credit risk,

management efficiency, equity risk, the volume of deposit, bank size, inflation rate, required reserve ratio, and GDP growth. In a similar way, Bakri et al. (2017) assert that microeconomic & macroeconomic factors are main factors that affect the banks' loan supply. Generally speaking, literatures on the area have generally classified determinants of lending behvaiour in commercial banks into microeconomic and macro-economic factors. In line with existing literatures on the area, this study tried to investigate bank specific factors and external factors that have been widely cited as determinant lending behavior by previous studies on the area and with some new variables that are believed to influencing bank's lending behaviour. The following section discusses theoretical and empirical results on internal and external factors that affect lending behavior of bank.

Bank specific determinants of lending behavior

The bank's specific characteristics are those determinants that are primarily affected by the bank's management decisions and the bank's policy objective (Sufian, 2009). It has been widely posited that bank specific factors greatly determine banks' willingness and ability to extend credit. According to literatures on the area, great deal of literatures on lending behavior have reported that bank-specific variables have a capacity to explain credit delivery in commercial banks. Evidences obtained from literatures on the area suggest that volume of loans granted by a bank in a year is a function of its internal characteristics, which are within control of a bank (Churchill, 2014). The author insists that volume of loans granted by a bank in a year is a function of its internal characteristics such as size, deposit base, liquidity, credit policy and other internal factors, all of which is within the control of the bank. According to evidences obtained from accessible literatures on the area, a lot of empirical literatures on determinants of lending behaviour have focused on bank specific data to investigate determinants of lending behaviour in commercial banks. Some of bank specific factors, which have been widely visited in the previous literatures as discussed as follows

Volume of deposit

Bank deposits is amount of money placed into bank through savings accounts, current accounts and money market accounts that gives the account holder has the right to withdraw any deposited funds, as set forth in the terms and conditions of the account (Ayieyo, 2016). Commercial banks act intermediary role by accepting deposit from savers and extend credit to borrowers. They perform the act of financial intermediation by collecting money from the surplus unit in the form of deposits and lend it to various sectors of the economy. As stated by Mukhanyi (2016), the primary role of a bank is intermediation function by way of collecting savings from depositors and making these savings available as loans to borrowers. According to evidences obtained from literatures on the area, volume of deposit collected from surplus economic unit plays important role in the commercial banks' ability to advance loan to borrowers as they primarily rely on depositor's money as a source of funds to advance credit. As it can be evidenced from literatures on the area, deposit of depositors is the major source of lending as total amount lent out is usually a fraction of the aggregated deposits. This can be supported by the idea of Bologna (2011), who assert that deposits play a pivotal role in bank credit, as a major portion of a commercial bank's assets is usually financed through customers deposits.

Empirically, extensive studies have been conducted to investigate the impact of volume of deposit on lending behaviour. Substantial amount of empirical studies has reported existence of positive and significant relationships between deposits and amount of loans to be granted to customers. For instance, Amano (2014**)** conducted investigation on determinants of lending behavior in commercial banks in Ethiopia to test and confirm the effectiveness of the common determinants of commercial banks' lending behavior and how they affect lending behavior of commercial banks by employing balanced fixed effect panel regression for the data of eight commercial banks from 2001 to 2013. Result obtained from panel data regression analysis revealed that volume of deposit had positive and significant impact on loan and advance. In a similar way, Ohadebere et al. (2012) conducted study to examine determinants of lending behavior of commercial banks in Nigeria over a period of 37 years, from 1975 to 2010. By using bank loan and advances as a measurement of credit lending, the study found that volume of deposits is positively and significantly affect the lending behavior of commercial banks. This can be confirmed by the finding Olokoyo (2011), who conducted study on Nigerian commercial banks and found that volume of deposit has the highest impact and influence on the lending behavior of commercial banks. According to finding of the study, a change in volume of deposit will yield the highest change in bank loans and advances.
Empirical results of several studies have shown that significant positive relationship between volume of deposit and lending behaviour. For instance, John (214) conducted investigation to examine the effect of volume of deposit on lending behavior in the Nigerian during post-consolidation banking period. Based on data obtained from the audited annual reports of the 22 banks for the post-consolidation period of 2006 – 2012, the study found a positive and significant relationship between deposit volume and loan and advances in the selected banks.This is similar with the finding of Mukhanyi (2016), who conducted study to analyze determinants of lending behavior for a sample of a commercial banks operating in Kenya for the period (2002-2011). According to finding of the study, volume of deposit has positive and significant impact on the total loans. This can be confirmed by the finding

Olokoyo (2011), who conducted study on Nigerian commercial banks and found that volume of deposit has the highest impact and influence on the lending behavior of commercial banks. According to finding of the study, a change in volume of deposit will yield the highest change in banks‟ loans and advances.

LIQUIDITY

Evidences obtained from accessible literatures on area suggest that liquidity level of bank is one of bank specific factors that influence on the bank's ability to advance loan. It has been widely argued in the literatures that commercial banks must pay more attention to liquidity than any other type of financial institutions. Unlike other financial institutions, liquidity is the main foundation of commercial banking as a large part of gross payments by a bank is met from current gross receipt of funds in the normal course of business (Timsina, 2014). According to the author, liquidity is the base of confidence in the banking business and it has great implication on bank lending behavior. This is similar with the idea of Yuga (2016), who states that liquidity is one of the most important resources that affect the ability of bank to provide banking services. The author insists that liquidity is basic and important requirement as banks should meet any requests from the customers related to cash or loans. This can be substantiated by the idea of Olumuyiwa et al. (2012), who insist that banks have to stock reasonable quality of cash to meet customers demand since checks have to be met in cash in many cases.

Empirically, considerable studies have been conducted to investigate the relationship between liquidity and lending behaviour. Empirical results of several studies more in general show a negative relationship between liquidity and lending behaviour of bank. Empirical evidence from previous studies indicates that liquidity position of a bank negatively influences the commercial bank lending. A lot of studies have reported a negative relationship between liquidity ratio and volume of loans and advances. For instance, Rababah (2015), conducted investigation on banking lending factors in Jordan during 2005–2013 by using the ratio of credit facilities to total assets as a response variable and found a negative impact of liquidity ratio on credit facilities. In a similar way, Sarath & Pham (2015) conducted investigation on determinants of commercial bank lending in Vietnam and found that higher liquidity held by the bank will negatively affect the bank lending. On the same ground, Alkhazaleh(2017) conducted study to identify the impact of some internal and external factors on bank credit by using financial data over the period from 2000 to 2013. Based on data obtained from a sample of 18 Tunisian banks, the study found that liquidity had a significant impact on the volume of bank loans.

Evidences obtained from empirical literatures suggest that liquidity ratio has a negative and significant impact on lending. For instance, Amidu (2014) conducted investigation to investigate factors that influence banks' lending for the Sub-Saharan Africa using data of 264 banks for 24 SSA countries and found that liquidity ratio is significantly and negatively influences the lending in SSA countries. This can be supported by the idea of (Fadare, 2011), who insist that liquidity position of a bank shows that the bank has short term funds being held. According to the author, higher the liquidity ratio, the higher the bank cannot exercise its true potential for credit distribution. On the other hand, some literatures on the area have claimed a positive relationship between liquidity of banks and credit growth. As stated by Mukhanyi (2016), banks with more liquid assets extend more credit to borrowers. According to evidences obtained from some studies some studies on the area, there is a positive relationship between liquidity and volume of loan and advance. For instance, Sarath (2015) investigated the determinants of lending behavior in Vietnam and found that liquidity ratio has positive and significant impact on lending behavior. This can be supported by the idea of Asiegbu (20103), who argues that the higher the liquidity capability of a bank, the more the bank is to distribute credit for public use.

Bank size

According to prior literatures on the area, bank size is considered as an important determinant of bank lending decision. Evidences suggest that bank size is used to measure the commercial bank lending as it shows the economics of scale enjoyed by a bank (Chernykh &Theodossiou,2011). Regarding the impact of bank size on lending behaviour, literatures in the area more in general tend to suggest that bank size positively influence commercial bank lending.

Empirical evidence from the earlier studies more in general indicates that bank size positively influences commercial bank lending (Azira, Lee, & Juhaida, 2018). According to the authors, bank size tends to positively influence the commercial bank lending as larger bank have more accessibility and have larger fund to grant loan to the public than smaller banks. This can be substantiated by the idea of Zulfiqar et al. (2016), who argues that there would be positive relationship between bank size and lending as large and complex banks are able to process soft information about borrowers through technical expertise than small size banks.

It can also be supported by the argument of Ladime et al (2013), who insist that bank size has a statistically significant and positive relationship with bank lending behavior. According to the author, larger commercial banks tend to lend more to customers.

As it can be evidenced from theoretical and empirical literatures, bank size is expected to have a positive influence on the lending behavior of bank. As stated by Mukhanyi (2016), size of bank's assets measures the base

for the total resources available to the bank for lending. The author insists that there is a positive relationship between value of the bank size and the level bank's lending. According to the idea of the author, large banks have an advantage in providing a large variety of financial services to their clients since they are capable of mobilizing more funds. The author further insists that big balance sheet allows managers to invest more in different geographical and business segments to address the issues of asymmetric shocks. The author finally concludes that there is a positive relationship between the value of the bank size and the level bank's lending. Evidences suggest that small banks adopt small business loan underwriting practices, that are riskier than those of larger banks Cole et al., 2004). This is similar with the idea of Ayieyo (2016), who states that banks with low size have lower funding for long term loans and reluctant to supply long term loans.

Empirically, several studies have been conducted to investigate empirical relationship between bank size and lending behaviour. For instance, Constan & Augustin (2012) conducted investigation on determinants of bank long-term lending behavior in Central African Economic and Monetary Community context by using panel data model. Based on sample bank of six countries and sixteen numbers of observations, the study found that long-term lending by a bank depends on bank size. In a similar way, Amidu (2014) conducted study on determinants of bank lending in the context of Africa countries and found that bank size positively influences bank lending. On the same ground, Rababah (2015) conducted investigation on the determinants of commercial bank lending in Jordan by using the ratio of credit facilities to total assets as a dependent variable and eleven (11) independent variables including the ratio of deposits, ratio of nonperforming loans, capital ratio, liquidity ratio, deposit rate, window rate, legal reserve ratio, inflation and economic growth based on data obtained 10 Jordanian commercial banks during the period (2005-2013). Result obtained from data analysis showed that bank size has a positive and significant impact on the ratio of credits facilities granted by commercial banks in Jordan.

Management Efficiency

Evidences suggest that ability of a bank to profit and manage its expense has significant effect on lending behaviour. As stated by Tabila (2016), ability for a bank to generate and maximize its profitability performance is very vital in carrying out its lending decision. According to the author, when banks' expenses increase as a result of higher cost and higher salaries, which tend to reduce their profitability, they become reluctant to lend. The author concludes that a negative relationship between management efficiency and banks' lending behavior. Empirical result of several studies has also reported adverse impact of management efficiency on lending behaviour. By using cost to income ratio as a measure of management efficiency, substantial amount of previous studies has reported negative relationship between management efficiency and lending behaviour. For instance, Alhassan (2013), conducted study on the impact of asset quality on banking lending behavior in Ghana by investigate 25 banks for the period 2005-2010. The findings show negative and significant relationship between management quality and lending behavior in Ghana.

According to the author, Management efficiency ratio shows how banks' assets and liabilities are well organized and managed in order to maximize profit and hedge against risk. The author further insists that in order to measure the banks management efficiency ratio for this research, the cost/income ratio will be used.

Empirical result of several studies has also reported adverse impact of management efficiency on lending behaviour. According result obtained from several empirical studies, there a negative relationship between management efficiency and lending behaviour. For instance, Alhassan, Brobbey & Asamoah (2013) conducted study on the impact of management quality on banking lending behavior in Ghana by investigate 25 banks for the period 2005-2010. The findings show negative and significant relationship between management quality and lending behavior in Ghana. On the other hand, some literatures on the area have advocated positive relationship between management efficiency and lending behaviour. As stated by Gaiotti and Secchi (2006), a bank with efficient and productive management and labour force, ceteris paribus, enjoys higher margin and consequently, higher supply of bank loans. This can be confirmed by the finding of Pham (2015), who conducted study to investigate the determinants of bank lending for 146 countries and found that management efficiency has significant and positive impact on lending.

Ownership

Evidences suggest that lending behaviour of banks differs based on their ownership structure. There is a growing piece of literature on the impact of on credit market (Tsapin, 2010). According to evidences obtained from accessible on the area, ownership in bank has been viewed from two perspectives by various researchers on the area. The first view of ownership in the literatures is government owned banks and private owned bank. In this perspective, considerable amount of studies has been conducted to investigate lending disparity between government owned banks and private banks. The second view of ownership of bank in the previous literatures is domestic banks and foreigner banks. In this study, ownership in bank has been seen from the perspective of government owned banks and private owned banks as there are no foreign banks in Ethiopia. The study tries to determine whether lending varies between government owned and privately owned commercial banks. According

to evidences obtained from literatures on the area, extensive studies have been conducted to investigate the lending disparity between private lending disparity between government owned banks and private owned banks.

Evidences obtained from accessible literatures on the area suggest existence of significant disparities of lending behaviour between public banks and private banks. According to evidences obtained from accessible literatures on the area, government influences lending policy of banks to enhance accessibility and affordability of credit to the poor people, which is very common in developing countries. For instance, study conducted by Tomak (2013) to examine how access to funds has an impact on banks' lending behavior in Turkey using quarterly bank level data of fifteen private commercial banks and three state-owned banks for the 2003-2012 private banks revealed that loans performance in private banks is better than the state-owned commercial banks. This is consistent with the finding of Sapienza (2004), who conducted study on 40 privately and 43 are state-owned banks between 1991 and 1995 and found that state-owned banks charge systematically lower interest rates than privately owned banks, which in turn influence amount of credit to be granted by banks. According to the author, state-owned banks mostly favor large firms and firms located in depressed areas.

External determinants of lending behavior

Evidences obtained from accessible literatures on the area suggest that in addition to internal factors, external factors determine bank's willingness and ability to extend credit to borrowers. External factors are those factors that are not to be controlled by the bank management (Olumuyiwa et al, 2012). Evidences suggest that volume of loans a bank grants in a year is not only the function of its internal characteristics like size, deposit base, liquidity, credit policy and other internal factors, all of which are within the control of the bank, but also by the external environmental factors, particularly the regulatory and macroeconomic factors. In a similar way, Sashana (2010) states that though the volume of loans granted by a bank is a function of its internal characteristics such as size, deposit base, liquidity, credit policy and other internal factors, these factors, to a large extent, are influenced by the general macroeconomic environment. As stated by Jonas, Emmanuel and Kofi (2013), macroeconomic environment within which a bank operates also matter for its lending decision. According to the authors, macroeconomic environment within which a bank operates matter for its lending decision. The authors further insist that macroeconomic environment within which a bank operates matter for its lending decision.

According to evidences obtained from literatures on the area, banks do not operate in a vacuum and their overall lending behaviour is generally influenced by regulatory and macroeconomic factors. As stated by Gideon, Isaac *and* Muazu *(2017),* bank credit to private sector is driven by micro and macroeconomic factors. According to the authors, while the microeconomic factors are bank and individual-specific, where credit is advanced based on individual traits, the macroeconomic factors influencing bank credit relate to macroeconomic fundamentals underlying the overall economy. This can be confirmed by the idea of Churchill (2014), who insists that bank loan behavior is influenced by macroeconomic factors that prevails in the economy. In a similar way, Amidu(2014) states that macroeconomic determinants lending behavior are those variables that are not under the control of bank management but reflect itself in the monetary, economic and legal compliance of a country influence the lending activities of a banking institutions. Macroeconomic factors, which have been widely used in the previous studies, are discussed as follows.

Cash Reserve Requirement

Reserve requirement is it is one of the most well-known and commonly used monetary instruments in the world. According to literature on the area, cash reserve requirement is one of the monetary policy instruments, which allow central bank or national bank to manage the liquidity and credit creation in the banking system. Evidences obtained from accessible literatures on the area more general tend to suggest negative impact of reserve requirement on bank lending. Considerable amount of literatures on the area has reported adverse impact of cash reserve requirement on bank lending behaviour. According to evidences obtained from literatures on the area, amount of cash reserve requirement by central bank affects cash position of a bank, which will in turn affect amount of fund available for credit. Results obtained from theoretical and empirical literatures on area suggest that there is a negative relationship between cash reserve requirement ratio and lending. Apergis and Alevizopoilou, (2011) also make similar point by stating that change in bank's loan supply is caused by the change in their reserve.

Evidences suggest that an increase in reserve requirement will lead to decrease in bank credit. According to the economy theory, cash reserve requirement tends to influence commercial bank lending negatively as the commercial banks are require to reserve some proportional of its eligible liabilities with national/central bank, which will restrict the credit creation of the commercial bank in the economy (Azira, Lee &Juhaida ,2018). Empirical evidence from the previous study finds that cash reserve requirement affects the commercial bank lending negatively. According to idea of the author, cash reserve requirement tends to influence commercial bank lending negatively as the commercial banks are require to reserve some proportional of its eligible liabilities with bank, which will restrict the credit creation in the commercial bank. The authors further insist that cash reserve requirement is an important monetary policy instruments, which tends to adversely influence the bank lending.

Empirically, several studies have been conducted to investigate empirical relationship between cash reserve ratio and lending behaviour. As it can be evidences from literatures on the area, considerable amount of empirical literatures has reported a negative relationship between cash reserve requirement and lending behaviour. According to evidences obtained from accessible empirical literatures on the area, negative relationship has been found between cash reserve requirement ratio and volume of loans and advances. For instance, study conducted by Cargill & Mayer (2006) to investigate the effect of reserve requirement on bank lending in the context of America revealed that the bank tends to reduce its earning assets in order to increase the reserve requirement set by the federal reserve. The study suggests that cash reserve requirement is an important monetary policy instruments which it tends to negatively influence the bank lending. This can be substantiated by the finding of Azira, Lee, & Juhaida (2018), who found that cash reserve requirement is an important monetary policy instruments which tends to negatively influence the bank lending. They insist that cash reserve requirement tends to influence commercial bank lending negatively as the commercial banks are require to reserve some.

Inflation

It has been widely argued that inflation in the economy has significant effect on lending behaviour of banks. According to evidences obtained from accessible literatures on the area, various views have been reflected in the literatures on the area regarding to the impact of inflation on lending behaviour. Evidences on the area tend to suggest that no conclusive finding has been reached regarding the relationship between inflation and lending behaviour. According to evidences obtained from existing literatures on the area, inflation affects lending behaviour of commercial banks positive or negatively. However, substantial amount of literatures on the area more in general tend to advocate a negative impact of inflation on lending behaviour. According to evidences obtained from accessible literatures on the area, only few literatures have claimed a positive relationship between inflation and lending behaviour. Review result of accessible literatures on the area suggest that considerable amount of literatures have advocated adverse effect of inflation on lending behaviour. For instance, Jongwanich (2010) found that there is a strong and negative impact on the lack of funds to be distributed as credit by commercial banks.

In a similar way, study conducted by Taner (2000) to investigate the effects of inflation uncertainty on credit markets revealed that unpredictable inflation raises decreases loan supply and affect loan demand.

According to evidences obtained from literatures on the area, substantial amount of empirical studies has reported negative relationship between inflation and lending behaviour. For instance, study conducted by harma and Gounder (2012) to examine credit delivered by bank to the private sector in seven countries in the South Pacific during the period 1982–2009 suggest that rate of inflation has a negative impact on the rate of growth in loans. This is consistent with the finding of Somoye and Ilo (2009), who examined credit distribution in Nigeria and found that for every 1 percent increase on inflation rate, Nigeria's credit distribution fell down by 0.04 percent. According to finding of the study, inflation can cause a significant and negative influence to lending distribution in the long period of time. Similarly, Bruce et al. (2000) conducted study on the impact of inflation on Financial Sector Performance and found that at low-to-moderate rates of inflation, there is a strong negative association between inflation and lending by the financial sector to the private sector. This can be substantiated by the idea of Huybens & Smith, (1998), who assert by stating that inflation adversely affects credit market activities with negative repercussions on the commercial bank's performance. They insist that increases in inflation drives down the return on the commercial bank lending volumes as a result of high lending rates. It can also be substantiated by the idea of Boyd, Smith & Levine (2001), who claimed that higher inflation implies less long-run financial activity.

Economic Growth (GDP)

According to evidences obtained from accessible literatures on the area, economic growth is another macroeconomic factor that significantly influences lending behavior of banks. As stated by Sashana (2010), loan behaviour of most banks reflects signals from the aggregate economy. This is similar with the idea of, Azira, Lee &J uhaida (2018), who argue that the gross domestic product is one of the crucial factors that influence the bank lending. According to the authors, the pace of the economic activity might indirectly influence the preference of bank to grant loan to the public. The authors insist that GDP growth is one of the most vital and consistent factors to define a bank's propensity to lend long term business loan. The Authors further assert that gross domestic product will influence bank lending to private sectors as they increase their borrowing for investment and doing business during economic boom. This can be supported by the argument of kashif and mohammed (2013), who argue that strong economic condition creates more demand for goods and services, which lead to more investment in different sectors increase the per capita income as well as the savings. The author insists that collectively, these factors convince to banks to issue more private credit.

It has been widely agreed that commercial bank lending is largely determined by the economic growth of a country Sashana (2010). According evidences obtained from accessible literatures on the area, several literatures found the positive impact of economic growth and development on bank lending. As stated by Mercy (2016), high

rates of growth in GDP induces a high rate of growth in bank credit as banks loosen up their criteria and lend to both good and bad projects during the period of economic boom. This can be confirmed by the finding of Vazakidis and Adamopoulos (2009), who conducted study to investigate the relationship between economic growth and credit market development in Italian market by applying log-linear regression model, and found a positive effect of economic growth on credit market development. In a similar way, the finding obtained from the study conducted by Imran and Nishat (2012) to investigate the determinants of the bank credit by using time series data from 1971 to 2010 in Pakistan revealed that economic growth has significant impact on banks credit to the private sector in Pakistan, particularly in the long run. This is a similar with the finding of Olumuyiwa, Oluwatosin and Chukwuemeka (2012), who conducted study to examine determinants of lending behaviour of commercial banks in Nigeria during the period of 1975 to 2010 using the secondary data and series of econometrics techniques and found a positive relationship between economic growth and lending behaviour.

THE PRESIDING INTEREST (LENDING) RATE (IR), / INTEREST RATE SPREAD

bank lending is considered to be the main function of every bank, which greatly depend upon the rate of return it charges to borrowers. Evidences suggest that Lending rate charged on the customer's loan is important for the bank as it provides the most significant sources of income for the banks (Moussa &Chedia, 2016). According to review results of accessible literatures on the area, interest rate is one of the most important factors considered by both the borrower and the lending institution in the process of lending decision (Maurice, 2013). Evidences obtained from accessible literatures imply a negative relationship between lending rate and inflation. As stated by Azira, Lee &Juhaida (2018), empirical evidence from existing studies show that lending rate influences commercial bank lending negatively. They insist that, high lending rate charged by the bank on borrower's loan will increase financial cost of the borrower, which will reduce the desire of the public to borrow money from the commercial banks. This can be substantiated by the idea of Dr. Ali & Marsida (20150), who argue that there is a negative relationship between interest rate and credit growth. According to the author, an increase in interest rates leads to a reduction of credit growth as individuals or businesses tend to lower their demand for credit banks following rise in interest rates.

Empirical results of several studies also show a negative relationship between interest rate and lending behaviour. For instance, Amano (2014**)** conducted investigation on determinants of commercial banks' lending behavior in Ethiopia to test and confirm the effectiveness of the common determinants of commercial banks' lending behavior and how they affect lending behavior of commercial banks by employing balanced fixed effect panel regression for the data of eight commercial banks from 2001 to 2013. Result obtained from panel data regression analysis revealed that interest rate had negative and significant impact on loan and advance. In a similar way, Abdkarim et al (2011) conducted study to investigate the impact of interest rate on bank lending in Malaysian context, and found that interest rate affects bank lending negatively. This can be substantiated by the finding of Iriana(2003), who examined bank liquidity and exchange rate in European perspective, and found that higher lending rates do not encourage banks to lend more. It can also be supported by the finding of Abdkarim et al (2011), who investigated the impact of interest rate on bank lending in Malaysian context, and found that interest rate affects bank lending negatively.

Exchange Rate

Prevailing exchange rate is another macroeconomic factor that influences lending behaviour of commercial banks. Evidences obtained from accessible literatures on the area suggest that change in exchange rate is another macroeconomic factor that influences credit extension of bank. According to Fanlu(2016), exchange rate is considered as one of the determinants of banks' lending behavior. Review results of accessible literatures on the area suggest that change in exchange rate negatively influence lending behaviour of banks. As stated by Mbutor(2010), depreciation in exchange rate might cause lending to decline in two different ways.

First, if such depreciation worsens borrowers' balance sheets, then the default risk will be enlarged and banks would shy away from making loans. On the other hand, if banks are exposed to short term liabilities in foreign currencies, then such liabilities will be amplified to the tune of the extent of depreciation of the local currency and any other associated costs, thus, dampening their potential to create credit. This is similar with the idea of Jonas, Emmanuel & Kofi (2013), who insists that exchange rate depreciation will negatively affect bank lending behaviour in a developing and open economy.

According to macroeconomic determinants of lending behaviour, change in exchange rate influence credit extension of banks. It has been argued that excessive exchange rate variation weakens economic mic and financial growth in a country and is seen to be the most significant cause of the banking crises in a lot of countries (Lindgren *et al*. 19963). As stated by Timsina (2011), exchange rate is considered as one of the determinants of banks' lending behavior. This can be confirmed by the finding of Imran and Nishat (2012), who conducted investigation on the determinants of the bank credit by using time series data from 1971 to 2010 in Pakistan and found that exchange rate has significant impact on banks credit to the private sector in Pakistan. This is similar with the

finding of Imran and Nishat (2013), who used the ARDL econometric approach to identify the factors that explain the flow of bank credit to businesses in varying financial environments and emerging global challenges from the period 1971–2010. The study found that exchange rate is significantly associated with bank credit to the private sector in Pakistan, particularly in the long-run.

On the other hand, some literatures on the other hand reported a positive relationship between exchange rate and lending rate. For instance, Shijaku and Kullaci (2013) conducted investigation on the determinants of bank credit in Albania spanning 2001–2011 By employing the vector error correction model. Results from their study show that in the long run credit supply is positively influenced by exchange rate. This can be confirmed by the finding of Olumuyiwa,Oluwatosin, & Chukwuemeka (2012), who conducted on determinants of lending behaviour of commercial banks in Nigeria by using Nigerian commercial bank Loan and advances as dependent variables and as Volume of deposits annual average exchange rate of the naira to dollar, Investment Portfolio, Interest rate (lending rate), Gross domestic product at current market price and Cash reserve requirement ratio between 1975 to 2010.According to finding of the study, there is positive relationship between Loan and advances and Volume of deposits, annual average exchange rate of the naira to dollar.

Sources of data

The study relied on secondary sources of data in order to investigate empirical relationship between dependent variable and independent variables of the study. Accordingly, Secondary sources of data on eleven samples commercial banks in Ethiopia has been collected from national banks of Ethiopia and world data base from 2010 to 2017 E. C. The study used only data of eleven commercial banks from 2010-2017 and other commercial banks were excluded from the study as the researcher could not access data of these banks on the variables of the study from 2010-2017.

Estimation Techniques

Regarding to tools of data analysis, substantial amount of previous studies on the area has used descriptive and econometric (regression) as a tools of data analysis. In line with previous studies on the area, the study applied both descriptive and econometric to analysis. Accordingly, multivariate data analysis has been applied to data obtained from financial statements national banks and world data base on the variables of the study by applying correlation, regression and inferential statistics as tools of data analysis. Econometrics test was also used test stationarity of time series data by applying Augmented DickeyFuller (ADF) method to test whether time series variables are stationary during study period under the investigation.

Formulation of Empirical Model

Comprehensive review has been conducted to identify empirical model adopted by previous researchers on the area and to develop appropriate empirical model for the study. Review of results of accessible literatures on the area suggests that no single empirical model has been accepted by previous researchers on the area. According to evidences obtained from accessible literatures on the area, various empirical models have been used by several empirical studies. Empirical model adopted for this study is therefore a combination of several models adopted by various researchers on the area.

Model specification

To examine empirical relationship between dependent variable and independent variables identified by the study, fixed effect regression has been applied to take into account effect of the individuality of each bank on lending behaviour. The researcher believes that fixed effect regression model helps to explore lending disparity among sample banks as each may have unique feature that influence its lending behaviour in addition to investigating the empirical relationship between dependent variable and independent variables of the study. The Fixed effect model to explore whether lending behaviour varies among banks under the investigation during the study period. For this reason, the study has applied fixed effect or least square dummy variables regression model. The basic framework of the panel data regression model is stated in the form of:

$Y_{it} = a + \beta X_{it} + u_{it}$

Where:

Yi,t: dependent variable,

Xi,t: independent variables

α: Represents the intercept of the equation ε: is the error term of the model

i: Presents the cross-sectional dimension

t: Presents the time series dimension

Based on the above basic panel data regression model, the study has reached the following econometric model to measure empirical relationship between dependent variable and each independent variable and to explore how lending behaviour varies among sample banks and over the study period.

$LARit = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \alpha_4 D_{4i+} \alpha_5 D_{5i} + \alpha_6 D_{6i+} \alpha_7 D_{7i+} \alpha_8 D_{8i+} \alpha_9 D_{9i+} \alpha_{10} D_{10i+} \alpha_{11} D_{11i+} \beta_1 DR\ it + \beta_2 LR\ it + \beta_3 BS\ it + \beta_4 ER\ it + \beta_5 BO + \beta_6 RR\ it + \beta_7 EXR\ t + \beta_8 BLR\ t + \beta_9 IR\ t + \beta_{10} GDP\ t + \mu it$

Where
LAR: loan ad advance ratio for bank
D_2 = 1 if the observation belongs to Dashen bank, 0 otherwise
D_3 = 1 if the observation belongs to Awash International bank, 0 otherwise
D_4 = 1 if the observation belongs to Bank of Abyssinia, 0 other wise
D_5 = 1 if the observation belongs to Wegagen bank, 0 otherwise
D_6 = 1 if the observation belongs to United bank, 0 otherwise
D_7 = 1 if the observation belongs to Lion International bank, 0 otherwise
D8 = 1 if the observation belongs to Cooperative Bank of Oromia, 0 otherwise
D_9 = 1 if the observation belongs to Nib International Bank, 0 otherwise
D_{10} = 1 if the observation belongs to Zemen Bank, 0 otherwise
D_{11} = 1 if the observation belongs to Oromia International bank, 0 otherwise
DRi, t = deposit ratio for bank i at t period
LR i, t = liquidity ratio for bank i at t period
BS *i*, *t* = bank size for bank i at t period
ER *i*, *t*= Efficiency ratio for bank i at t period
BO = bank ownership (equal =1 if government owned bank, 0 otherwise)
RR *i*, *t* = Reserve ratio for bank i at t period
EXR t = exchange rate at t period
BLR *t* = Bank lending rate (average) at t period
IR t= inflation rate (general) at t period
GDP *t*= gross domestic product at t period
α_1 = constant (intercept) of reference group (CBE)
$\alpha 2, \alpha 3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8, \alpha_9, \alpha_{10}$ & $\alpha 11$ = differential intercept coefficients of other sample banks.
$\beta 1, \beta 2, \beta 3, \beta 4, \beta 5, \beta\ 6, \beta 7, \beta 8, \beta 9, \beta 10$ are respective coefficient value for each independent variable.
μ, *Error term (*other factors that not explicitly included in the model)

Results and Discussion
This section presents and discusses unit root test, correlation analysis and regression analysis.

Unit root test
Unit root tests provide statistical evidence on the stationarity of a given series. Prior to conducting regression analysis on panel data, it is necessary to test whether time series variables are stationary over time. Accordingly, unit root test has been conducted to test whether time series variables of the study are nonstationary and possess unit root problem by using of LevinLin–hu method and its result is presented in the following table.

Variable	Ho: Panel data contain unit root Ha: panels are stationary		P-value	Decision
	statistics			
	un adjusted t	Adjusted t		
LAR	-5.8391	-3.4160	0.0003	Ho is rejected--panel data is stationary
DR	-3.3467	-.2367	0.4064	Ho is accepted- panel data is not stationary
LR	-9.9941	-9.3303	0.0000	Ho is rejected--panel data is stationary
BS	4.9865	5.8613	1.0000	Ho is accepted- panel data is not stationary
ER	-9.2912	-8.7708	0.0000	Ho is rejected--panel data is stationary
RR	-11.2912	-9.7826	0.0000	Ho is rejected--panel data is stationary
BLR	-2.5880	8. 44.78	1.0000	Ho is accepted- panel data is not stationary
EXR	9.6419	13.0130	1.0000	Ho is accepted- panel data is not stationary
I	-38.7162	-38.0125	0.0000	Ho is rejected--panel data is stationary
GDP	-23.0967	-20.3653	0.0000	Ho is rejected--panel data is stationary

Source: Researcher's own computation, 2020

As it can be evidenced from the above table, unit root test result of LevinLin–hu method shows that deposit ratio (DR), bank size (BS), bank lending rate (BLR) and exchange rate (EXR) are not stationary. Before detecting unit root problem of DR, BS, BLR & EXR, it is necessary to verify accuracy of stationarity problem revealed by LevinLin–hu method by comparing it with other stationarity test methods. The following table shows unit root test result of LevinLin–hu method and other methods.

Variable	Ho: Panel data contain unit root Ha: panels are stationary							
	Unit root testing method							
					Fisher-type method			
	LevinLin–hu method	Hamis-Travalis method	Breitung method	Im-pesaran-shin method	Inverse chi squared	Inverse normal	Inverse logit	Modified Inv.Chi squared
	P - value	P - value	p- value	p- value	p- value	p- value	p- value	p- value
LAR	0.0003	0.1542	0.1216	0.5904	0.8411	0.8251	0.7913	0.8374
DR	0.4065	0.0000	0.1477	0.0491	0.0000	0.0002	0.0000	0.0000
LR	0.0000	0.3533	0.9726	0.2765	0.4785	0.4076	0.4027	0.5186
BS	1.0000	0.9939	1.0000	1.0000	0.9998	1.0000	1.0000	0.9933
ER	0.0000	0.8081	0.8470	0.9834	0.9997	0.9986	0.9972	0.9917
RR	0.0000	0.0578	0.8669	0.0467	0.0000	0.0001	0.0000	0.0000
BLR	1.0000	0.0025	0.0021	0.9888	1.000	0.9997	0.9988	0.9972
EXR	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	09995
I	0.0000	0.0000	0.0000	0.0178	0.1194	0.0149	0.0270	0.1150
GDP	0.0000	0.0000	0.2518	0.0003	0.0000	0.0000	0.0000	0.000

Source: Researcher's own computation, 2020

As shown in the above table p- value of majority of stationary testing methods for variable DR, I &GDP is less than 5%, which suggests rejection of null hypothesis in favour of alternative hypothesis. As it can be evidenced from p- value of majority stationarity testing shows that DR I& GDP has no unit root problem. On the other hand, P- value of majority of unit root testing methods for variable LAR, LR, BS, ER, BLR & XER is greater than 5%, which lead to rejection of the alternative hypothesis in favour of null hypothesis. As it can be evidenced from P-value of majority unit root testing methods, theses variables have unit root problem and using them for regression will result in spurious regression output.so, non-stationarity problem of these variables has to detected before conducting regression analysis. One way to makes non stationary time series to stationary is by differencing (computing the differences between consecutive observations). Accordingly, first difference was computed for LAR, LR, BS, ER, BLR & EXR and unit test result after differencing is presented in the following table.

Variable	Ho: Panel data contain unit root Ha: panels are stationary							
	Unit root testing method							
					Fisher-type method			
	LevinLin–hu method	Hamis-Travalis method	Breitung method	Im-pesaran-shin method	Inverse chi squared	Inverse normal	Inverse logit	Modified Inv.Chi squared
	P - value	P - value	p- value	p- value	p- value	p- value	p- value	p- value
LAR	0.0000	0.0000	0.0023	0.0035	0.0000	0.0000	0.0000	0.0000
LR	0.0000	0.0000	0.0000	0.0053	0.0000	0.0000	0.0000	0.0000
BS	0.2904	0.0000	0.0020	0.1020	0.0000	0.0000	0.0000	0.0000
ER	0.0000	0.0000	0.0007	0.0021	0.0000	0.0000	0.0000	0.0000
BLR	1.0000	0.0000	0.0013	0.0036	0.0000	0.0000	0.0001	0.000
EXR	1.0000	1.0000	0.9962	1.0000	1.0000	1.0000	1.0000	0.9995

Source: Researcher's own computation, 2020

As it can be evidenced from the above table, first difference of each variable has no unit root problem except exchange rate. In order to further test unit root problem of EXR, Hadri LM stationarity test method was conducted for EXR and its result is presented in the following table.

Ho: All panels are stationary **Ha: some panels contain unit root**		**Decision**
Statistics	P- Value	Rejection of Ho hypothesis- EXR has unit root problem.
3.0619	0.0011	

Source: Researcher's own computation, 2020

As it can be seen from above table, root test result of exchange rate under Hadri LM method is similar with other unit root test methods presented in the previous table. The result suggests that data distribution of variable EXR lacks stationarity requirement of panel data regression analysis. Existence of unit root problem in the panel

data of EXR variable will creates non sense regression output, whose result outcome cannot be used for inferences or forecasting.

According to evidences obtained from statistics materials, such result will be used only for the time period under consideration and it should not be used to generalize other periods. Accordingly, regression output on the impact of exchange rate on lending behaviour will be used only to understand the impact of change in exchange on bank lending behaviour during the period under the investigation.

Correlation analysis

Before conducting regression analysis, it is must to identify direction and magnitude of relationship among independent variables of the study through Pearson correlation coefficient. Accordingly, correlation analysis was conducted to evaluate strength and direction of association that exists among independent variables of the study. In order to test strength and direction of relationship among independent variables of the study, Pearson correlation test was conducted & its result is presented in the following able.

	DR	LR	BS	ER	RR	EXR	BLR	IR	GDPl
DR	1.0000								
LR	-0.1243	1.0000							
BS	0.0317	-0.7228	1.0000						
ER	-0.1582	0.5473	-0.6087	1.0000					
RR	-0.1730	0.4074	-0.4946	0.5545	1.0000				
EXR	0.1493	-0.2679	0.4621	-0.3155	-0.6474	1.0000			
BLR	0.1564	-0.3014	0.4151	-0.4128	-0.5095	0.5471	1.0000		
IR	-0.0518	-0.2415	0.2275	0.0179	0.4451	-0.4051	-0.3805	1.0000	
GDPl	-0.0758	0.5742	-0.6582	0.5751	0.5780	-0.5724	-0.6240	0.0297	1.000

Source: Researcher's own computation, 2020

As the above correlation matrix exhibits, almost all variables of the study have correlation coefficient of less than 0.7. As it can be evidenced from the above Pearson's correlation coefficients, there is no multi collinearity among predictors of the study. According to Colin Drury (2008), for Multi collinearity to exist, the correlation coefficient (r) between the independent variables should be 0.70 or above ($r \geq 70$). Pearson's correlation coefficients of all variables show that variables of the study do not have multi collinearity problem.

Regression Analysis

Regression analysis was conducted to examine to examine empirical impact of independent variables on dependent variable. Regression analysis was also run to examine existence of significant lending disparity among banks under the investigation to in terms of lending behaviour. t- statistics and critical p- value of the test were used to test whether regression coefficients were statistically significant by using 5 percent significant level.

In order to test joint effect of independent variables on dependent variables of the study and percentage of variation of dependent variable that can be explained by the independent variables of the study, the study used adjusted coefficient of determination (Ad. R^2) with F- statistics. Regression output of balanced panel data is presented in the following table.

Variables	Coefficient	St. error	T- value	p- value
Bank specific/ Internal variables/				
DR (Deposit ratio)	.0236258	.1218894	0.19	.0236258
LR (liquidity ratio)	-.0926308	.0468001	-1.98	-.0926308
BS (Bank size)	-2.678474	.9791666	-2.74	0.008
ER (Efficiency ratio)	-.0199626	.0123665	-1.61	0.111
BO (Bank ownership)	13.55119	4.433742	3.06	0.003
Macro-Economic/ external Variables/				
RR (reserve ratio)	-10.95989	10.04745	-1.09	0.279
EXR (Exchange rate)	.8865169	.2286906	3.88	0.000
BLR (bank lending rate).	2.211267	1.636028	1.35	0.181
IR (Inflation rate)	-.0264061	.0701589	-0.38	0.708
DGP (Gross domestic product)	.5914844	.6353863	0.93	0.355
Dummy variables (for banks)				
D_2 (Dashen bank observation)	-26.02988	4.18119	-6.23	0.000
D_3 (Awash Int. bank observation)	22.40906	4.099914	5.47	0.000
D_4 (Bank of Abyssinia observation)	21.14205	4.19921	5.03	0.000
D_5 (Wegagen bank observation)	17.86169	4.064878	4.39	0.000
D_6 (United bank observation)	20.88803	4.107433	5.09	0.000
D_7 (Lion Int. bank observation)	19.05433	4.067683	4.68	0.000
D_8 (Coop. Bank of Oromia observation)	19.30341	4.057823	4.76	0.000
D_9 (Nib Int. bank observation)	21.49128	4.052159	5.30	0.000
D_{10} (Zemen bank observation)	15.84333	4.072765	3.89	0.000
D_{11} (Oromia Int. bank observation)	14.59633	4.110922	3.55	0.001
Constant (CBE)	1.942112	12.10957	0.16	0.873
R-square	0.9461			
Adjusted R -square	0.9301			
F	58.86			
Sig.Prob (Fstatistic)	0.0000			

Source: Researcher's own computation, 2020

The above table shows regression output on bank specific variables, macroeconomic variables and dummy variables for each bank under the investigation.The regression results presented in the above table shows that there is positive and significant relationship between deposit ratio (DR) and bank loan and advance ratio (LAR). The result shows that volume of deposit has strong and positive impact on bank lending behaviour. Beta value of deposit ratio suggests that about 24% increase in lending behaviour of banks under the investigation is observed as a result of 1% increase in volume of deposit. The result suggests that the higher a bank deposit, the more a bank will advance more credit. This result is consistent with argument and empirical results discussed in the literature review results regarding to the impact of volume of deposit on bank behaviour. As discussed in the literature review part, considerable amount of theoretical and empirical results has reported positive relationship between volume of deposit. For instance, it can be substantiated by the idea of Mukhiya (2016) & Bologna (2011), who insist positive impact of deposit of bank lending beahviour. It can also be substantiated by the finding of Amano (2014), Ohadebere et al. (2012) & Olokoyo (2011), who found positive relationship between volume of deposit ratio and bank lending behaviour.

The above result also shows that negative but insignificant relationship between (LR) liquidity ratio and loan and advance ratio (LAR). As it can be seen from beta coefficient of liquidity ratio (LR), 1% increase in liquidity ratio led to about 9% decreases in loan and advance ratio by assuming the being constant. Based on the result of the study, it is possible to infer that banks that prefer liquidity reduces lending by maintaining high cash balance. As discussed in the literatures review part, no conclusive finding has been reached regarding to the impact of liquidity on bank lending behaviour. This finding supports those literatures that have advocated negative relationship between liquidity and bank lending behaviour. For instance, it can be substantiated by the idea of Fadare (2011), Adzis, Sheng & Bakar (2018), who insist adverse effect of bank liquidity on lending behaviour. It can also be confirmed by the finding of Rababah (2015), Sarath & Pham (2015), Alkhazaleh, (2017) & Amidu (2014), who found negative relationship between liquidity and bank lending behaviour. on the other hand, it contradicts with the idea of Fadare(2011), Asiegbu(20103) & Mukhanyi (2016), who insist positive relationship between liquidity and bank lending behaviour. It also contradicts with the finding of Karim et al. (2010), Sarath (2015) & Onyango (2015), who found positive relationship between liquidity and bank lending behaviour.

Panel regression output presented in the above shows that there is negative but insignificant negative relationship between bank size and loan and advance ratio. The result suggests that lending behaviour of bank

decreases as the size of the bank increases.This finding is not consistent arguments and empirical results discussed in the literature review part. As discussed in the literatures review part, considerable amount of literatures advocated positive relationship between bank size and lending behaviour. For instance, this finding is not consistent with the argument of Azira, Lee, & Juhaida (2018), Zulfiqar et al. (2016), Mukhanyi (2016), Ayieyo (2016) & Ladime et al (2013), who assert positive impact of bank size on lending behaviour. it is also not consistent with the finding of Constan & Augustin (2012), Amidu (2014) & Rababah (2015), who reported positive relationship between bank size and lending behaviour.

The above table also shows an inverse relationship between management efficiency and lending behaviour. The beta coefficient of efficiency ratio (ER) suggests that a 1% increase in bank efficiency led to about 20 % decline in bank lending behaviour of sample banks under the investigation by assuming that other things being constant. This is consistent with the arguments and empirical results discussed in the literature review part regarding to the impact of management efficiency on lending behaviour. As discussed in the literature review part, previous studies on the area have reported negative relationship between management efficiency and landing lending behaviour by using cost to income ratio as proxy of management efficiency. For instance, the finding of this study can be substantiated by the finding of Alhassan (2013), Alhassan, Brobbey & Asamoah (2013), who found negative relationship between management efficiency and lending behaviour.

On the other hand, this finding is not consistent with the argument of by Gaiotti and Secchi (2006), who argue positive impact of management efficiency on bank lending behaviour. It is also not consistent with the empirical result of Pham (2015), who found positive relationship between management and bank lending behaviour.

The above table also shows that existence of significant positive relationship between bank ownership and lending behaviour. As it can be seen from the above table, bank ownership (BO) has positive and significant effecting of lending behaviour. Result suggests existence of lending disparity between government owned banks and private banks. Regression output on macroeconomic variables also suggest adverse impact of reserve requirement ratio (RR) and inflation rate (IR). The sign of reserve requirement ratio (RR) and inflation rate (IR) shows that an increase on bank reserve requirement and rise in inflation rate contributed to decline in bank lending behaviour by assuming that things being the same. This finding is in line with ideas and empirical results discussed in the literature review part. As discussed in the literature review part, relatively considerable amount of literatures advocated that increase in reserve requirement and rise in inflation will reduce bank's willingness and ability to advance loan. On the other hand, the sign gross domestic product (GDP) conforms prior expectation to the relationship between GDP and bank lending behaviour. Beta value of GDP suggest that 1% increases in gross domestic product will lead to about 59 % increases in bank loan and advances.

The last part of regression output in the above table shows existence of difference among sample banks of the study in terms of their lending behaviour. The result suggests that there is statistically significant difference lending behaviour of base bank and other banks of the study. As it can be seen from regression output on dummy variables, there is significant difference between base bank (CBE) other banks (Dashen bank, Awash International bank, Bank of Abyssinia, Wegagen bank, United bank, Lion International, Cooperative bank of Oromia, Nib international bank, Zemen bank and Oromia International bank in terms of lending behaviour. Lastly, F- statistics shows that the overall explanatory power of the regression model is statistically significant at 5% significant level. As it can be seen adjusted coefficient of determination (Ad. R^2), about 93% of variation in bank lending behaviour has been explained by the independent variables of the study.

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