ST. MARY`S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

POLITICAL CONNECTEDNESS, ACCESS TO FINANCE AND FIRM-LEVEL INNOVATION: AN EMPIRICAL EVIDENCE FROM ETHIOPIA

BY

NETSANET TILAHUN

June 2021

Addis Ababa, Ethiopia

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A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MBA IN ACCOUNTING AND FINANCE

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DECLARATION

I declare that this paper is a result of my independent research work on the topic entitled "Political Connectedness, Access to Finance and Firm-level Innovation: An Empirical Evidence from Ethiopia" is my own work and in partial fulfillment of the requirements of MBA in Accounting and finance at St. Marry University.
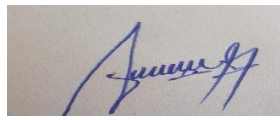
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The Undersigned certifies that, he has read and hereby recommend for acceptance by St. Marry University a thesis entitled: Political Connectedness, Access to Finance and Firm-level Innovation: An Empirical Evidence from Ethiopia.

Misraku Molla (PhD)

Signature

Date _____

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ACKNOWLEDGEMENTS

First of all and foremost, I would express my heartfelt thanks to the almighty God, who blessed me with adequate strength, and health to complete this proposal. I would like to express my respectful gratitude and deepest thanks to my advisor **Misraku Molla (PhD)**for his continuous inspiration, precious suggestion, valuable directions and support commencing from the very first day till the completion of my paper.

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ABSTRACT

Using a sample of 475 firms in Ethiopia, this paper examines; 1) the impact of political connectedness on firm's innovation as measured by TPP; 2) the effect of access to finance on TPP innovations, 3) the effect of connectedness on firm's access to external finance in Ethiopia. The study also aimed at showing the extent of firm-level innovation and degree of access to external finance. The data was obtained from the WBES which is conducted in 2015 covering the period 2012 to 2014. The study used a standard probit model to show the relationship between political connectedness, access to finance and TPP innovations. The following five major results were obtained. First, firms that are political connection to the government are more likely to innovate than those who do not have connection. Second, firms that have access to finance are more innovative than those who do not have access to finance. Third, the result suggest that politically connected firm did not have special advantage to secure external loan. Finally, on average, 51% of sampled have introduced product innovation or process innovation during the last three years prior to the survey period. In Ethiopia, about 48% of sampled firms have access to finance during the survey periods. The policymakers should strength their relationship with business community and design and implement mechanisms that can improve firm's access to finance for external loan.

Keywords: Political connectedness, Access to finance, Innovation, Ethiopia

LIST OF ACRONYMS

GII= Global Innovation Index

R&D= Research and Development

ICTs = Information and communication technologies

CPCs= Corporate political connections

SEC's= Securities and Exchange Commission's

P= political connectedness

SMS= Test Message surveys

WBES= World Bank's Enterprise Survey

FIN_CON= Access to Finance

FIN_OBS= Obstacle access to finance

TPP= Technological Political Process

GDP= Gross Domestic products

IT= Information Technology

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In the simplest term innovation can be defined as the practical implementation of ideas that results in the introduction of new goods, services, markets or practically anything or improvement in one or more of those things that yields significantly new item (OECD, 2005). According to OECD-Eurostat manual (2005), innovation broadly defined as - "The implementation of a new or significantly improved product (good or service) or process, a new marketing method or a new organizational method in business practices, and workplace organization or external relations" (OECD-Eurostat, 2005, pp. 46). It can be more narrowly defined as the implementation of one or more types of innovations, for instance, Technological Product and Process innovations (TPP). A narrower-based definition of innovation is preferable for policy studies that compare the level of innovation across countries, industries, firm size and age categories (OECD-Eurostat, 2005). Innovation occurs in all of the four broad sectors of an economy: business enterprises or the corporate sector, general government, households, and Non-profit institutions serving households (OECD-Eurostat, 2005).

The broad-based definition includes organizational and market innovations and the narrow-based definition only includes product and process (OECD, 2005). In this study innovation refer Product innovation and Process Innovation what mostly known as Technological product and process innovation (TPP). Technological product and process innovations comprise implemented technologically new products and processes and significant technological improvements in products and processes.

Achieving sustained long-term economic growth is intrinsically linked to innovation investment (Ayalew et al, 2019b). At the macro level, innovation has a strong influence on economic growth and employment (Aghion et al, 1998; Coe et al., 2009). At the micro-level, it has an impact on corporate performances and competition and survival of firms. This, innovation is placed at the heart of the company's core strategy and the country's national and international policies and strategies. Developed countries are well aware of the benefit of investment in R&D and innovation. Developing countries have become

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increasingly aware of the vital role that innovation and efficiency play in driving economic growth and development (Ayalew et al, 2019b)). In recent years, we are observing mass political determination across the globe to foster innovation and related policies on the ground.

Despite much political and corporate commitment to innovate, the innovation performance at national level and firm-level is not going as anticipated, especially in developing countries and regions. Several firm-level studies have shown that innovation performance can be affect by many micro and macro level factors. For instance, among micro-level factors; firm size, firm age, human capital, access to finance, Research and Development (R&D), ownership structure and other institution specific factors determine innovation performance (see Ayalew et al, 2019c; Hall, 2010). Similarly, the macro-level variables such as, protection of property rights, financial system development the political stability and the attitude of government towards innovation and competition influence the innovative capabilities of firms and individuals (Hall, 2010).

Finance remain the core issues of the innovation process (Ayalew and Xianzhi, 2019b). Specially, lack of access to external finance remain the main factor hindering the firm's innovation process in developing countries (Ayalew and Xianzhi, 2019b).Without the resources needed to realize what we create, innovation could not exist and ideas will just to be a fancy imagination which might even be outdated as time progress. Hence, the availability of and access to finance plays a vital role to the extent that its absence means no innovation.

Similarly, though little studies conducted, the firm's degree of political connectedness has an effect in their innovation process. Political connectedness favors those who are part of a certain group of community so hinders a potential good investment that could boost country's development just because the innovators are not from that specific group. Besides that, the fact a firm is favored because of its political connection and gets unfair competitive advantages, could adversely affect the firm's potential for innovation. Since everything they need is accessible to them, they would not be that interested to strive to excellence. Politically connected firms are more accessible to trade protection from local government, thereby lowering the firm's motivation and advance innovate.

This study is designed to examine; 1) the effect of political connectedness on the firm's innovation performance and access to finance; and 2) to further investigate the effect of access to finance on firm's innovation in Ethiopia using WBES. The rest of this chapter contains statement of the problem, research objectives, research hypothesis, significance, scope and limitation of the study.

1.2 Statement of the problem

In recent years, formal and informal innovation is blossoming and we are observing mass political determination across the globe to foster innovation and related policies on the ground (GII, 2019). Technological frontiers want to keep their superior position in technological leadership, while technologically lagged countries want to catch-up the frontiers and share the advantage of technological competitiveness. Despite, the increasing demand and commitment to innovate, improve exportation and global competitiveness, there are several key practical problems in the subject that needed a solution, particularly from the perspectives of Ethiopia.

Firstly, African countries in general and Ethiopia in particular are characterized by low productivity, prolonged poverty, and slow economic development, in the region, investment in innovation remains lower compared with other regions of the world. The 2019 GII report indicates that the Ethiopia competitiveness rank from 140 countries is decrease from 109th in 2016 to 126th in 2019. In contrast, neighbor countries such as Kenya (95th) and Rwanda (100th) shown a remarkable improvement in the global competitiveness index. Generally, innovation remains relatively low in Ethiopia even as compared to other African countries.

Second, access to finance is remain the key problem in developing country's innovation process and, it also remains the core concern of researchers, policymakers and business leaders. The availability of and access to finance plays a vital role to the extent that its absence means no innovation. Availability refers to the existence of the required resources for the new investment. In Ethiopia, the level of financial constraints or low level of access to finance is worse than even compared with other African countries. For instance, Ayalew and Xianzhi (2019) reported, in Ethiopia, about 44% of firms face

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financial constraints which higher 36% and 42% of East Africa and Africa average, respectively. In Ethiopia, the financial sector is opaque, underdeveloped, and bank-based which adversely affect the firm's access to external finance to fund their innovative projects. However, we know very little how and to what extent lack of access to external finance affects innovation.

Third, corruption and informal linkage between government and some business is becoming common especially in developing countries (Tian et al, 2019). Connectivity with government will allow firm's to get access to public resources (including public funding, accessibility of utilities such as electricity, ICT, and other infrastructure) that potentially enhance access to external finance, innovation and competitiveness, and productivity performance. In contrast, in countries where the general business deal with politicians in the informal way such as in the form of corruption, bribe and other informal gifts destruct the business community engagement in innovation, and productivity innovation. In this regard, according to the 2018 Transparency International's Corruption Perceptions Index, Ethiopia ranked 114th out of 180 countries which is higher compared to 107th out of 180 countries in 2017. This indicate, both formal and informal political connectedness of firms might have either positive or adverse effect on innovation and access to finance. Evidence show the adverse effect companies commitment in investment in innovation and their global competitiveness and productivity (Tian, Wang et al. 2019). Political connectedness actually poses a twofold problem. One is that politically connected firms are more accessible to trade protection from local government, thereby lowering the firm's motivation and advance innovates. The other one is hindrance on access to finance for those firms who could have been innovating something of great value for the firm and the country. Very little has been done on the past regarding the interrelation between political connectedness, access to finance and innovation and what has been done have been on developed countries.

Finally, the effect of access to finance on firm's innovation is well explored in developed and some developing countries perspective. However, there is no published research work that examine the relationship between access to finance and firm-level innovation in Ethiopia. The relationship between political connectedness, access to finance, and innovation

is not universally well explored, an exception in this regard is Tian et al., (2019) which conducted in Chinese firms. Thus, there huge empirical gap both globally and internationally.

1.3 Objectives of the study

1.3.1 General objectives

The overall objective of the paper is to examine the relationship between political connectedness, access to finance and firm-level innovation in Ethiopia.

1.3.2 Specific objectives

The study has the following specific objectives

- To examine the impact of political connectedness on firm-level innovation performance.
- The investigate the effect of political connectedness on firm's access to finance.
- To investigate the relationship between access to finance and firm-level innovation.
- To show the level of innovation and degree of firm's access to finance in Ethiopia.

1.4 Research Hypotheses

The following hypotheses are developed to test the relationship between political connectedness and innovation; political connectedness and access to finance; and access to finance and political connectedness.

Hypothesis 1(H1)-Firms that are political connected have more likely to innovation than those that are not politically unconnected firms.

Hypothesis 2 (H2)- Political connected firms have more access to finance than those politically unconnected firms.

Hypothesis 3 (H3)- Firms that have high access to finance are more likely to innovative than those who do not have

1.4 Significance of the study

Accordingly, the study might serve as input for governments, financial institutions, and/or owners /investors or innovators in making decisions about identifying the key variables to develop innovation by understanding the interrelation between and among Political Connectedness, Access to Finance and Innovation. It also serves as input for policy makers for organizations concerned. Furthermore, the study serves as a stepping-stone for academics and innovators who may be focusing on similar topics and issues. Finally, the findings of the study can be expected to stimulate research interests among academics and students to further investigate in the area as well.

1.5 Scope and Limitation of the study

The scope of this study is delimited to examine the relationship between political connectedness, access to finance and innovation in Ethiopia using the 2015 WBES for Ethiopia. There has several limitations. First, the study only address the term innovation from product and process innovation point of view it doesn't consider marketing and organizational innovation. This is due to the fact that the WBES do not include marketing and organizational innovation. Thus this study was address the objectives from the product and processes. Secondly, the study used the 2015 WBES for Ethiopia which cantina formation for the year 2012, 2013 and 2014 only. Therefore, the data is relatively old but we do not have option as the latest available data is the 2015 survey. Finally, the data is cross-sectional which is often criticized in its limitation to show the effect over time as panel data does.

1.6 Organization of the study

The paper is structured as follows. There are five chapters. Chapter one is introduces the paper; laying out its background, significance and objective together with the statement of the problem the research wishes to address. Chapter two encompasses the literature review. Chapter three is concerned with the research methodologies used for the study. Chapter four is data analysis, interpretation and discussion questions and the last chapter concludes and summarizes the study.

CHAPTER TWO

REVIEW OF LITERATURE

2.1. Review of Theoretical Literature

2.1.1 Definition, Classification and Measurement of innovation

Innovation is one of the most important concerns of each organization; it is common to all organizations. ''Innovation is the implementation of a new or significantly improved products (good and services), or process, a new marketing methods, or a new organizational methods in business practices, workplace organization or external relation (OCED /Eurostat, 2005, p46)...It means doing something differently than has been done before. Innovation is a key determinant of firm competitiveness in both fast-growing high-tech sectors and more traditional sectors. ''Innovation, which comprises the introduction of new products, process, quality certification, activities, knowledge transfers and technologies, impact on the organization of a firm's business activities (Bloch, 2007)''. A researcher Schumpeter in 1939 he defines technological innovations as a new means of combining factors of production resulting from a change in inputs to produce outputs. According to Oslo manual (OECD, 2005), technological innovations are classified as product and process.

Technological products innovation refers to the application of product that is new or significantly advanced for its planned usage that may include the combined technical applications, components and materials or other characteristics their-in. It incorporates innovative knowledge or techniques, or mixture of both current knowledge and systems. The other is Technological process innovation is the application of new or significantly enhanced method of production or service delivery .it includes significant changes introduce in process of manufacturing ,skilled knowledge, machinery or different software that are engaged during the innovation process (OECD, 2005). It helps to reduce cost of production or service delivery and to improve good quality product or service to the market with these it helps to have sustainable relationship with customer and develop long lasting customer handling.

2.1.2 Measurement of Innovation: Input and Output measures

The global GDP will shrink by 4.9% in 2020.Since Ethiopia is one of developing country and the level of innovation at 127 out of 131 countries. Measurement of innovation is categorized in to inputs and output measure which measuring innovation on an economy .Inputs are enable an economy stimulate innovation while output are the result of innovation activates within the economy. (The Global Innovation Index,2020).Innovation Input Sub –Index and the innovation output Sub-Index each built around pillars. There are four of measurements of Innovation discussed below;

Innovation Inputs Sub-Index: Five input pillars capture elements of national economy that enable innovative activates.

Innovation output Sub –Index: Innovation outputs are the results of innovative activates within the economy. Although the output Sub-Index includes only two pillars, it has the same weight in calculating the overall GII Scores at the input Sub-Index.

The overall GII Score: is the simple average of the input and output Sub-Index. The innovation efficiency ratio: is the ratio of the output Sub-index to the Input sub index .it shoes how much innovation output a given county is getting for the inputs. Thus the study is focus only input and output measures of innovation (The Global Innovation Index (GII) 2016)

The Innovation Input Sub Index: Five input pillars capture element of the national economy that enable innovation activates. Institutions, Human Capital and research infrastructure, Market sophistication, and Business sophistication. And two pillars capture actual evidence of innovation output: knowledge and technology output and creative output (The Global Innovation Index (GII) 2016 & 2017).

Human Capital: The level and quality of education and research capacity are important determinant of the innovation capacity of the region. This pillar tries to gauge the human capital of state through five key indicators. Human resource of the country is a significant factory in the development of innovation areas, which cannot flourish without adequate investment in education system. Therefore it is crucial to have good quality institution of

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learning and R&D centers'. A static, stagnant education system cannot support innovation. An environment that encourages asking critical question is the one that can foster innovation. More gathering of information is not sufficient, it is far more crucial to see what one does with that information garnered in school. Investing in education leads to long benefits by improving human capacity and in turn the innovation capacity of a nation, as it is said quality begins and ends in education.

Infrastructure: Information and communication technologies (ICTs), General infrastructure, and Ecological sustainability. Good and ecologically friendly communication, transport, and energy infrastructures facilitate the production and exchange of ideas services, and goods and feed into the innovation system through increased productivity and efficiency, lower transaction costs, better access to markets, and sustainable growth.

Market sophistication: The availability of credit and an environment that supports investment, access to the international market, competition, and market scale are all critical for businesses to prosper and for innovation to occur. The Market sophistication has structured around market conditions and the total level of transactions. It includes a measure on the case of getting credit aimed at measuring the degree to which collateral and bankruptcy laws facilitate lending by protecting the rights of borrowers and lenders.

Business sophistication: The last input index enabler to capture the level of business sophistication to assess how conducive firms are to innovation activity. The Human capital and research made the case that the accumulation of human capital through education, particularly higher education and the prioritization of R&D activities, is an indispensable condition for innovation to take place. That logic is taken one step further here with the assertion that businesses foster their productivity, competitiveness, and innovation potential with the employment of highly qualified professionals and technicians.

The Innovation Output Sub-Index: Innovation outputs are the results of innovative activities within the economy. There are two output pillars: Knowledge and technology outputs and Creative outputs.

Knowledge and technology outputs: covers all those variables that are traditionally thought to be the fruits of inventions and/or innovations.as a component and individuals invest in R&D and develop innovative products and service offering better value, their apply increases across markets. This is train benefits the region those enhanced competitiveness those variables like number of patents and trade market failed the objective is to cover fruit of innovation. The scientific and technological output is reflected by the number of scientific article published.

Creative outputs: The role of creativity for innovation is still largely undervalued in innovation measurement and policy debates since it has to be underlined measuring creativity as part of its Innovation Output. It is intangible assets includes statistics on trade- mark applications by residents at the included in applications at a regional or national, on creative goods and Services includes proxies to get at creativity and the creative outputs of an economy. (GII) 2016 & 2017).

2.1.3. Theories Underline the Relationship between Political Connectedness, Access to Finance and Innovation

2.1.3.1. Information Asymmetric Theory

Information asymmetry theory postulate that when two parties are making decisions or transactions, there exists a situation where when one party has more or better information than the other. Thus information asymmetry may cause an imbalance of power between the parties. In this context, for example, the borrowers are more likely to get more information than the lenders. Information related with the risk associated with the investments is likely to be available to the borrowers. Matthews and Thompson (2008) observed that this may lead to the problems of moral hazard, where a party will take risks because they assume final cost of that risk, as well as adverse selection, where there are adverse results because parties have different/imperfect information; therefore, the problems may cause inefficiency related to the flow or transfer of funds from the lenders (surplus) to the borrowers. Furthermore, for overcoming these issues, the financial intermediaries use three major ways such as providing the commitment for long-term relationship with the clients. The second way is through the sharing of the information. Lastly is through the delegation and monitoring of the credit applicants. When the customers borrow money directly from banks, the banks should consider the need for relevant information to be addressed and so as to redress the asymmetry of the information (Matthews and Thompson, 2008).

It is argued that the acuteness of information asymmetries between bankers and entrepreneurs is the main stumbling block to SME financing in Sub-Saharan Africa. However, the gap between banks and SMEs can be narrowed by developing financial systems that are more adapted to local contexts. In addition, avenues should be explored for sharing of risks and reduction of perceived risks by banks by promoting sustainable guarantee funds to facilitate better access to financing by SMEs (Leffileur, 2009).

2.1.3.2. Resource-based Theory

The essence of the resource- based theory is that given resource heterogeneity and resource immobility and satisfaction of the requirement of value, rareness, imperfect imitability and non- substitutability a firm's resources can be a source of sustained competitive advantage (Barney et al, 1991). Three basic types of resources may provide

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competitive advantage namely physical resources, organizational capital resources and human resources. RBT posits that resources are embedded in organizations and the standard carriers of resources are established firms and corporations. However, in the entrepreneurial context, the entrepreneur is the resource carrier whose personal resources, which exist as personalized collections of assets, impact upon the firm's competitive advantage and performance (Bamford et al, 1999, Chrisman et al, 1998, Greene et al, 1998). The human-based entrepreneurial resources neutralize the liability of newness of entrepreneurial firms and enables entrepreneurs to marshal tangible resources and formulate and implement the right strategy in the right industry determining venture survival and growth (Stinchcombe, 1965).

Entrepreneurship is the main part of the resource-based framework because the appropriate inputs ultimately a matter of entrepreneurial vision, intuition the abilities of the entrepreneur are the principal resources of the firm (Connor, 1991; Rumelt, 1987). Empirical studies have examined the determinants of microenterprise performance using RBT. Masakure et al, (1994) used the RBV theory to assess whether firm-specific resources influence microenterprise performance recommended by the resource-based theory, or recognized that factors embodied in firm-specific resources jointly impact enterprise performance. Okeyo (2013) used RBT to examine the relationship between entrepreneurial orientation, business environment, business development services, and performance of small and medium manufacturing enterprises in Kenya. Thapa (2014) RBT used to examine the influence of managerial perception on microenterprise performance in Nepal and established that managerial foresight had a key role in enhancing microenterprise performance and that managerial foresight mediated the facts of several entrepreneurs- enterprise and environment-related factors on microenterprise performance. Kinuthia (2011) RBT use to investigate the marketing strategies and factors influencing their implementation by garment-making micro-enterprises in Nakuru town and concluded that both internal and external resource factors influenced the implementation of marketing strategies in microenterprises. Mira.et.al.,(2013) used the RBT theory to examine the challenges facing the accessibility of credit facilities among women-owned enterprises in Nairobi Central Business District in Kenya.

2.1.3.4 Transaction Cost Theory

Transaction cost theory explains that organizations incur costs as they acquire, configure and utilize resources. Transaction costs reflect the costs of economic or organization both outside the firm and inside the firm and are one means by which one can measure the efficiency of different institutional designs in achieving economic outcomes in particular environments (Polski et al, 2001). Transaction costs thus represent the difference between what a consumer pays and what a seller gets for the products (Ciborra, 1993).

In financial markets, transaction costs relate to the cost of accessing financial services. Requirements for accessing financial services impose reflect high transaction costs and microenterprises often face higher transaction costs of borrowing than large firms which affects their performance (Beck et al, 2009). Scholars argue that there are interdependencies between resources and transaction characteristics where resources are considered as antecedents of transaction costs (Zott et al, 2005). Further, firm specific resources are characterized by high asset specificity and hence are associated with high transaction costs (Langlois et al, 2009; Silverman, 2009). It has also been hypothesized that resources that are difficult to isolate and emulate increase the costs of opportunities when they are exchanged in a transaction because of the high ambiguity involved in the exchange (Zott et al, 2005). In this study, transaction cost theory will be used to examine the influence of transaction costs on the relationship between entrepreneur financial literacy and performance of enterprises.

2.1.4 Political connectedness and Innovation

Innovation means that an organization adopts new ideas or behaviors, which may be a new product, a new service, a new technology, or a new management method (Wolfe, 1994). Innovation ability is the most important determinant of corporate performance. The improvement of innovation ability is conducive to companies maintaining a competitive advantage in a rapidly changing environment (Forsman, 2008). Lawson and Samson (2001) believe that innovation ability is the ability to continuously transform knowledge and ideas into new products, processes and systems and to create revenue for companies and shareholders.

From a narrow perspective, corporate innovation capability is the ability to create technological innovation. Based on this, she believes that companies should have four innovation capabilities: product innovation capability, process innovation capability, functional innovation capability, and value chain innovation capability. There are also some scholars who believe that the existence of political connections has played a role as a supporting hand. Against the background of the transitional economic system, companies need to obtain development opportunities through informal alternative mechanisms due to the imperfect formal system of finance and law (Allen et al., 2005; Mcmillan and Woodruff, 2002). Faccio and Lang's (2002) study shows that the government plays an important role in business operations. The research of Faccio et al. (2006) shows that the government is more inclined to help companies with political connections out of business difficulties. Faccio (2007) shows that political connections bring credit support, tax incentives, and market forces to companies. Companies that enjoy tax incentives have more patents, new products and technology incentives. It should be noted that political connections refer to the implicit political relationship between a company and an individual who has political power. Unlike corruption, it is completely acceptable at the legal level (Faccio, 2006). The introduction and implementation of policies, such as the government's innovation funding program, will, to a certain extent, promote the optimization of corporate innovation decisions. This was adjust and optimize the types of firms' innovation and then increase innovation efficiency and innovation capabilities.

Kang and Park (2012) believe that the government allocates resources through industrial policies and fiscal measures to promote firms' innovation. Financial subsidies can make up for the lack of innovation resources, reducing the marginal cost and uncertainty of the company's own technological innovation efforts, decentralizing the risks of corporate technological innovation activities, and encouraging companies to carry out research and innovation. At the same time, the study was also reduce the cost of technological innovation for enterprises and stimulate an increase in investment in technological innovation for enterprises, thereby narrowing the gap between private benefits and social benefits brought about by technological innovation achievements.

2.1.5 Access to finance and Technological innovation

Every firms need finance to invest in assets for a day to day business operations. The overall goal is to increase productivity, reduce cost of manufacturing, to be more competitive, to develop new products to have more market shares, it helps discover new opportunity, cover finical promises, helps to create new ideas and technologies that increase productivity and generate great output with the same inputs. There are two ways of financing available for firm's debt and equity financing. ''Debt financing refers to funds that are borrowed from internal or external which are creditor and which need the amount to be repaid at a future point in time .''(European Commission,2014a:12). According to Casson et al. (2008), debt preferred to equity since it involves less loss of control rights. So access to finance of Enterprises that external debt finance instruments: such as bank loan and credit line are more relevant than internal funds. In Africa innovative firms' exhibit financing patterns different from non-innovative firms, further analysis conducted involved splitting the overall finance to working capital and investment finance which confirms this difference in financing patterns of the two groups. About the hierarchy of financing instruments of innovative firms, innovation in Africa is mostly financed using internal/retained earnings finance, followed by bank finance, trade credit, credit from non-bank financial sectors and other sources including moneylenders, friends, relatives and bonds. Therefore first, the difference in financing patterns of innovative and non-innovative firms gradually decreases along with an increase in the firm's size and the difference disappears for large firms. Second, age-based separate analysis generally provides the same result as the baseline result. This study has several limitations that open avenues for future research. The first limitation revolves around the lack of data relating to government funding support for innovation and R&D activities and venture capital financing. There is a high probability that Government subsidies and financial support are important sources of financing innovation. The second limitation goes to the cross-sectional nature of the data. (Ayalew.et.al., 2019)

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2.2. Review of Empirical Studies

This section review some of selected prior recent research which has been done around the globe. For the purpose of clarity we divide this section in to two; political connectedness and innovation, and access to finance and innovation.

2.2.1. Review of Empirical Literature: - Political Connectedness and Innovation

Literature that examine the link between political connectedness and innovation is very scant. In this section we review the valuable limited prior works.

The data we use to identify political connections come from a variety of publicly available sources. The research covers 47 countries and identifies 458 politically connected companies in 35 countries. From this sample, we exclude eight companies whose connections are with foreign politicians (because we are interested in home country connections, which are most likely to lead to home-country bailouts), leaving 450 politically connected companies. The allover result of the study are politically connected firms are significantly more likely to be bailed out than similar non connected firms. Additionally, politically connected firms are disproportionately more likely to be bailed out when the international monetary fund or the World Bank provides financial assistance to the firm's home government. Further, among bailed-out firms, those that are politically connected exhibit significantly worse financial performance than their non-connected peers at the time of and following the bailout. The researcher may take large number of country data it may affect the result of perfectness. The research rise broad issue but not clearly indicate sampling techniques (method) used.

Osad and Andrew (2013) examined importance of board political connection on firm's performance in Nigeria. The study has used secondary sources of data and includes all thirty listed firms in the Nigerian Stock Exchange in sample. The study analyze collected data based on regression analysis using ordinary least square method and correlation analysis .The authors has revealed that there is no significant positive relationship between board composition, board political connection and firm performance. There is a negative relationship between board size and firm performance. Furthermore, the study

suggests that managers should lay appropriate policy in order to maximize firm performance as well as organizing the firm's resources.

The study made by Wang (2016) examine the impact of firms' political connectedness on firm innovation in private listed Chinese firms in the manufacturing sector under the study topic "Business cycles, political connectedness, and firm performance in china". The study had employed the difference-in-difference (DID) method to estimate the impact of political connectedness, comparing the change of firm performance in association with the stimulus between politically connected firms and non-connected ones and the study period covers 2005 to 2012. Result of study shows that political connectedness, particularly executives or directors being political delegates, enable firms to have better access to bank credit but have no direct impact on firm sales. Additionally, the study indicates that two types of political connectedness, being political delegates or former officials, have different impact on firm profitability.

Tian et al., (2019) finds that business-government relations have a significant positive impact on firms' innovation. The stronger the business government relations, the higher the firm's innovation. As internal moderator variables, female managers play an important role in moderating the relationship between business-government relations and firms' innovations. Among companies with at least one female manager, business-government relations have a stronger effect on firms' innovation. At the same time, market competition intensity, as an external moderator variable, plays an important moderating role in the relationship between business-government relations and firms' innovation. When informal competition exists in the market, it often hinders the effectiveness of the positive impact of business-government relations on firms' innovation. Overall, the study is very useful and provide a wide range of benefit for technology development, but I think it would have been better if it had included the following shortcoming in the research. The study only focus on manufacturing sector but it is best if the study covers all sector level firm as a measurement. From total population size the researcher used small number of sample size it may reduce the quality of result.

Similarly, Omonona & Oni (2019) examined the relationship between political affiliations and performance of firms in South African mobile telecommunication industry. The study was conducted a survey on population drawn from selected mobile telecommunication organization and their result indicated that political connections affects both performance and non-performance of mobile telecommunication firms. The study suggested that a reduction in frequent cabinet reshuffle while ensuring political integration and government stability.

2.2.2. Review of empirical literature: - Access to Finance and Innovation

According to Mulu.G,(2009) conducted to examine entrepreneurs' behavior and resource availability to enterprises as a major determinant of innovativeness and its impact on firm innovation , based on a survey conducted in 2003 by the EDRI on 1000 microenterprises with 10 and fewer workers. The survey was done in six selected major towns including Addis Ababa, Ethiopia. A total sample of 974 enterprises interviewed. However, firms owned by female and old entrepreneurs are less likely to get involved in innovation. In an extended model of firm growth determinants that include innovation indicators, the study found strong evidence that innovators grow faster than non-innovators. Innovation and firm's growth are also affected by the firm size, age, access to finance, sector, and owner character factors. The survey data were collected from Addis Ababa and Nazareth on 27 Small, 35 Medium and 9 large-scale enterprises revealed that manufacturing product with slight modification on production process shows 44% (12 out of 27) small and 51% (18 out of 35) medium scale enterprises introduces the product or process innovation. Similarly, 18% (5 out of 27) of small scale and 20% (7 out of 35) of medium scale enterprises have introduced new technology in the three years. In contrast, none of the large-scale enterprises included in the survey have undertaken product, process, or management-related innovation. The study also identified the major obstacles to innovation within SMEs in Ethiopia: lack of information support systems, shortage of technical skills, relatively weak intellectual property rights protection system, absence of proper and effective standard-setting and quality control mechanism, and lack of appreciation by government authorities United Nations

Conference on Trade and Development (UNCTAD, 2002:95-99)**.** In light of this study intended to investigate factors hindering technological innovativeness of SME in Addis Ababa by including the manufacturing & construction sector.

Agénor el. Al., (2014) examine the relationship between on access to finance, product innovation, and Middle-income growth traps. Their result shows that the lack of access to finance exerts a direct or adverse effect on innovation activity and an indirect effect. Labor market effect of access to finance (or lack thereof) is particularly important to understand the interaction among financial intermediations. While access to finance remains an equally important constraint on the innovation activity of small and medium-sized firms. Inadequate access to finance may therefore be the source of slow-growth equilibrium, just as with the middle-income trap for both high- and middle-income countries, which have argued that lack of access to external finance may hamper the development of innovative firms. Since larger firms tend to be less constrained in operation and growth because of their ability to obtain external finance "a possible reflection of their ability to pledge collateral" promoting innovation requires a particular focus on improving access to finance for small and medium firms.

The study made in Ethiopia by Regasa et al. (2017) Examines the effect of access to finance on firm growth. The study has used Ethiopian firm-level data from the total of 1,492 observations surveyed in 2011 and 2015. The survey comprises a sample of firms stratified by 15 different industries and 1,492 from six regions and the study employed ordinary least square estimates and stratified sampling technique. Unlike previous studies of firms in low-income countries, the result of study evidenced that negative relationship between the use of external finance and firm growth, which suggests that there are substantial cross-country differences in the finance-growth nexus.

According to Fowowe.B (2017), in Nigeria, the study shows the effects of access to finance on the innovation of firms in African countries. To achieve this, data set from the World Bank's Enterprise Surveys are employed subjective and objective measures of access to finance. The study use data collected from 10,888 firms across 30 African countries and the results use as the subjective measure and show that access to finance constraint exerts a significant negative effect on firm growth. The results using the

objective measurements show that firms that are not credit-constrained experience faster growth than firms that are credit constrained. The results have provided two important insights into the financing of firms in Africa. Firstly, the results have shown that inadequate finance has an inhibiting effect on the growth of firms. This was evident from the estimations that showed a significant negative effect of access to finance constraints on firm growth. Secondly, the results showed that participation in financial markets promotes firm growth; the finding indicates significant positive relationships between various objective measures of access to finance and firm growth.

Rufei et al (2017) conducted on R&D, financial constraint and innovation performance in Venezuela. The study deliberates whether, and with whom, R&D cooperation can alleviate the adverse influence of financial constraint on firms' innovation performance. The researcher collected data from 2700 privately owned and 148 state-owned firms with a restriction on minimum firm size, where the size is defined by the number of employees and set at five for all the industries which collects data from key manufacturing and service sectors from the Chinese Enterprise Survey (December 2011 – February2013) by using stratified random sampling and by using regression model. Additionally, the study find that R&D with suppliers and research institutes in mitigating the negative effect of financial constraint on new product development, while R&D cooperation with suppliers is more effective than cooperation with customers and research institutes in improving technological processes. The result indicates that are financial constraints have significant negative effect on performance both, in product innovation and process innovation and cooperative research can effectively improve innovation performance when firms face financial constraints, providing direct evidence that R&D cooperation can be an effective strategy to mitigate the negative influence of financial constraint on firms' innovative performance. In addition, the outcome shows that cooperation with customers is more effective than cooperation with suppliers and research institutes in new product development, while cooperation with suppliers is more effective in process innovation.

Ayalew and Xianzhi (2019c) investigate the effect of financial constraints on innovation across firm's heterogeneity in size, age and sector. This study was one of the most important study conducted in Africa considering 11 African countries. Their result shows that financial constraints adversely affect the innovation performance firms in Africa. Their finding further shows that the adverse effect of financial constraints on innovation vary across firm's heterogeneity in size, age and sector.

2.3 Summery and knowledge gap

The literatures reviews that are discussed so far showed that, firms' innovation performance are determined by many factors from those, political connection and access to finance are the most important ones. The empirical studies also suggest that the effect of both factors vary across countries and regions. For instance, some of those studies argued that political connectedness affect firm performance positively; whereas others found that political connection affect performance of firm negatively and the same is true for access to finance. Therefore, there is a continuous debate on the effect of both access to finance and political connectedness on firm performance in different countries and more detailed investigation of this was promised for future research by prior researchers. As per the review of literatures, no empirical study was conducted in Ethiopia context in this specific title. Based on the review of the literatures majority of the empirical studies was conducted with the intent of examining "the effect of political connectedness on firm performance" and "the effect of access to finance on firm performance" separately.

In general, lack of research study on this specific subject in the context of Ethiopian initiates this study. To the best of my knowledge, this is the first study that will investigate the effect of political connectedness and access to finance on firm performance and the effect of political connectedness on access to finance. Therefore, this study aims to fill the gap by giving more emphasis on both political connectedness and access to finance factors that affect firm performance in Ethiopia. Further the study will investigates the effect of access to finance on firm performance.

2.4 Conceptual Framework and Research Hypotheses

2.4.1. Conceptual Framework

Figure 2.1 show the conceptual framework. It show; i) the link between political connectedness and Innovation (H1), ii) political connectedness and access to finance (H2), and iii) the link between access to finance and innovation (H3). In investigating the relationship between political connectedness, access to finance and innovation, we control additional variables such as firm size, firm age and Research and Development (R&D).
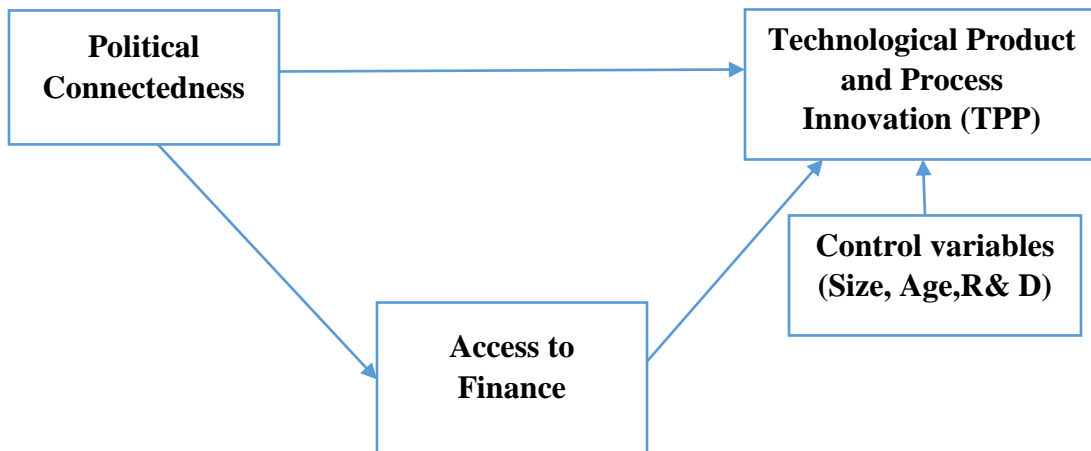
Figure 2.1 Conceptual Framework (Self Developed)

2.4.2. Hypotheses Development

Based on the above framework, we developed the following three hypotheses. The Government officials can influence the economic value of a corporation by awarding lucrative government contracts, imposing tariffs on competitors, or reducing regulatory requirements, to name a few (Goldman et al., 2006). Faccio et al. (2006) give further evidence on the soft budget constraints of PCFs, documenting that governments are more likely to bail out connected firms in the event of economic downturn or financial distress. From the above statements we can say that firms that have more access to finance have more innovative. Finally political connections can also increase the confidence of firms (Li et al. 2008). Politically connected firms with the government they can have more access for being innovative by having different opportunities from the government.

Hypothesis 1(H1)-Firms that are political connected have more likely to innovation than those that are not politically unconnected firms.

Politically connected firms are more advantages that benefit the whole firm, even if the people investigating time in political connections and the people working in innovations are different new products are subjected to the approval of a license or permit, safety clarification, taxation, or environmental impact inspections (Krammer, 2019). Chaney et al. (2008) add to this evidence by showing that although the quality of earnings reported by PCFs is significantly poorer than that of similar unconnected companies, they are not penalized by the market because their cost of debt is actually lower than that of their comparable non-connected peers. Therefore, establishing a connection with government officials can facilitates lobbying for favorable decision (peng and Luo, 2000).in addition, political connections can speed up the administrative and bureaucratic, process, especially in those country with low level of institutional development (Dikova et al .2016). Therefor political connection may help firms to gain loan or credit ,subsidies ,and

light taxation from government (Faccio, 2006; Johnson and Mitton, 2003; Song et al. 2015; Ma et al. 2016; Ridge et al. 2017; Li et al. 2018).

Hypothesis 2 (H2): Political connected firms have more access to finance than those politically unconnected firms.

There are different study made to show the relationship between Access to finance and Innovation there is a direct relation, when there is high access to finance there will be high level of innovation .Using surveys for UK, few works find a negative association between "innovativeness" and loan application success (Freel 2007) and a positive relation between "innovation activity" and its relative cost and availability of credit Canepa and Stoneman (2008). Also, these firms generally pay less taxes (Faccio, 2007), hence they benefit from lower operating costs. In the spirit of Faccio (2006), a firm is politically connected if at least one of the firm's largest shareholders or one of its top officers is a member of parliament, a minister, a head of state, or is closely related to a top official. Other similar definitions exist in the literature

Hypothesis 3 (H3):- Firms that have high access to finance are more likely to innovative than those who do not have.

CHAPTER THREE

RESEARCH METHODOLOGY

The third chapter of the paper presents about the research methodology. The chapter structured in to five main contents. The first part presents the research design and approach. The second section presents data source and the data source method of data collection. The third section presents about sample selection, composition and distribution. The fourth main section of the chapter presents about research models and econometric specification. Finally, definition and measurement of variables is presented.

3.1 Research Design

The research design is methodical, well-organized procedure utilized by researcher or scientist to carry out a scientific study (Kothari, 2004). It is a comprehensive co-existence of already identified elements and any other information or data leading to a reasonable end result. The research design is required to follow a pre-planned, well-thought –out methodology in agreement with the pre –selected research type, in order to come up with an error-free, authentic conclusion.

There are four type of research designs, Descriptive, Explanatory, exploratory and evaluation research (Kothari, 2004)**.** Descriptive research design**:** as we can see from the name implies, this is an in-depth sort of research design that answers what and how. It deals with the relationship between variables, the testing of hypothesis and the development of generalizations, principles or theories that have universal validity. In a descriptive design, a researcher is solely interested in describing the situation or case under their research study.

Explanatory research design: this sort of research, design Explanatory explain the subject of the research and thereby answer what, why and how. Design uses a

researcher's ideas and thoughts on a subject to further explore their theories. The research explains unexplored aspects of a subject and details about what, how, and why of research questions.

Exploratory research; this is the other type of research design that explore the subject matter and answers what and how question in the study. Evaluation research which determines the productivity of the subject matter, or program and is, therefore, quite extensive.

This study used explanatory research design which is recommended for study that study causal relationship. The objective of this study is to examine the relationship between political connectedness, access to finance and innovation in Ethiopia.

3.2 Research Approach

According to Creswell (2008), there are three main types of research approach; Qualitative, Quantitative, and mixed research approach. Qualitative Research Approach are depending on human observations and descriptions. It is descriptive, no facts, highly subjective and designed to look beyond the percentages to gain an understanding of feelings, impressions and viewpoints. This kind of method is used to assess knowledge's, attitudes, behaviors, opinions of people depending on the topic of research and experiences which are not allowed to be used in quantitative method at all. Qualitative research implies an emphasis on the qualities of entities and on processes and meanings that are not experimentally examined or measured (Denzin & Lincoln, 2005). Therefore, the investigator is capable of studying a phenomenon without influencing it or being influenced by it and concerned with the collection & analysis of data in numeric form (Guba and Lincoln, 1994).

Quantitative research design relates to the design of a research project which uses quantitative research methods. The design varies depending on the method used, which could be telephone interviews, face-to-face interviews, online surveys, or surveys by post for instance. Other methodologies include SMS / Test Message surveys, or physical counts. Quantitative research design is aimed at discovering how many people think, act or feel in a specific way. Quantitative projects involve large sample sizes, concentrating on the quantity of responses, as opposed to gaining the more focused or emotional insight

that is the aim of Qualitative research. The standard format in quantitative research design is for each respondent to be asked the same questions, which ensures that the entire data sample can be analyzed fairly. The data is supplied in a numerical format, and can be analyzed in a quantifiable way using statistical methods. Surveys can, however, be tailored to branch off if the respondent answers in a certain way - for instance people who are satisfied or dissatisfied with a service may be asked different questions subsequently. Finally, mixed research incorporates the behavior of both qualitative and quantitative research approaches.

Therefore, quantitative approach is designed to investigate the problem under study in order to show the effect of Political Connectedness and Access to Finance on Corporate Innovation on firms in the case of Ethiopia.

3.3 Data Source and Type

I used this data set from the World Bank Enterprise Surveys (WBES). The WBES collects data from key manufacturer and service sectors in every region of the world .The survey use standardized survey instruments and a uniform sampling methodology in order to minimize measurement error and to produce data that are equivalent across the world's economies .The enterprise survey is intended to provide panel data sets. This includes World Bank reports and documents made throughout different years and they gate data from the statistical system of member's countries, and the quality of global data depends on how well these national system performs.

So far the World Bank Enterprise group conduct enterprise survey in Ethiopia two times; in 2011 and 2015. This study used the 2015 WBES for Ethiopia which collect information for the period from 2012 to 2014..The WBES is a very rich firm level data set which collect information about firms innovation, access to finance, business-government relation, labor productivity and other very important information. Thus, this study used secondary data which is correctional in nature.

3.4. Sample Selection, Composition and Distribution

The 2015 WBES for Ethiopia includes 849 firms across different regions of Ethiopia. The data must be screened before I used for analysis. The following screening criterion were

used in rodet to have a final usable sample of 475 firms. First, spontaneous response (e.g, I don't know) for the variable of interest are removed as such response are difficult to quantify. Second, variable with omitted data are dropped these a firms that jump to fill the answer to the survey question are dropped. Third, all micro firms (a firm with less than 5 permanent employees) are removed from our sample as these type of firms may not have objective report(document) related to access to finance, innovation, and degree of connectedness. Finally, firms with possible out-layer effect are removed to keep the regression output safe.

Table 3.1. Show the distribution of sample firms across region. From the total of 475 sampled firms 281 are located in Addis Ababa which is 59.16%, 16 firms are from Amhara which is 3.37 %, firms are from 17, Dire Dawa which is 0.36%, 13.89 firms are from Oromia which is 66 ,from SNNPR which is 8 % which is 38 and 57 firms are from Tigray which is 0.12%. The sample selected from Addis Ababa is more than from the other locations. Unfortunately, the WBES take samples only from these six regions and city administrations.

Table 3.1 Sample composition according to Firm location

No	Location	Frequency	Percentage
1	Addis Ababa	281	59.16
2	Amhara	16	3.37
3	Dire Dawa	17	3.58
4	Oromia	66	13.89
5	SNNPR	38	8.00
6	Tigray	57	12
Total		475	100

Table.3.2. Shows sample distribution across firm size, firm age and sector. From total sample of 475 firms, large firms involved in the study are 130(27.37%), small firms 177 (37.26%) and the remaining are medium firms that are 168 (35.37%) of sampled firms

and it shows that the sample selection of the small firms is more than that of the medium firm and large. According to Ayalew and Zhang (2019a), Young firms are the age between of 1 year up to 5 years that are 34 firms from the total sample that is 7.48%, and matured firms are from 6 years to 15 years the sample shows 256 firms which are 56.27% whereas old firm is above 15 years that are 165 firms and the percentage indicates 36.27 %. Thus matured firm are dominated sample selection than that of young and old firms.

From the table we can see that out of 475 firms the study covers as per sector , manufacturing covers 236 (49.69%), from service and retailer sector 239 (50.31%)

Table 3.2 Sample composition according to firm size, firm age & sector

Sub group	Size	Frequency	Percentage
Firm Size	Large	130	27.37
	Medium	168	35.37
	Small	177	37.26
Firm Age	Young (1 to 5 years)	34	7.48
	Matured (6 to 15 years)	256	56.26
	Old (above 15 years of experience)	165	36.26
Sector	Manufacturing	236	49.69
	Service & Retail	239	50.31

3.5 Model Specifications

The objective of this study is to examine; i) the impact of political connectedness on firm's innovation and access to finance and ii) to investigate the effect of access to finance on firms innovation. Thus, innovation and access to finance are the dependent variables. Unfortunately, the two dependent variables are measured in dummy form taking value of 1 or 0. In this situation, the model choice is simply to apply limited response models; either logit or probit models.

For the majority of the applications, the logit and probit models was give very similar characterizations of the data because the densities are very similar. Both approaches are much preferred to the linear probability model (Brooks, 2008). Therefore, this study was used a cross sectional probit model which drive from the latent regression of the form

$$y^* = x\beta + \varepsilon, \qquad y = 1[y^* > 0] \qquad\qquad (Eq\ 3.1)$$

Where y^* is unobserved variable ranging from $-\infty$ to ∞, ε is a continuously distributed variable independent of x, and the distribution of ε is symmetric about zero. x is a vector of explanatory variables, and its primary goal is to explain the effect of x_i on the response probability $p(y = 1 \mid x)$ the and β is a vector of parameters, respectively. The probit model uses the cumulative normal distribution function (Φ) to transform the model (Brooks, 2008).

The following probit model specification is used to investigate the impact of political connectedness (PC) and access to finance (Access_FIN) on the firm's innovation.

INNOV = β1 + β2PC + β3ACC_FIN + β4ContVar + ε ---------------------------- *(Eq 3.2)*

Specifically incorporating the control variables (ContVar) in the model, the model can be re-write as follow

INNOV = β1 + β2PC + β3ACC_FIN + β4Log (size) + β5Log (age) + β6RD + ε …………………………………………………………………………………….*(Eq* 3.3)

Where, INNOV refer innovation which is measured using TPP, PC represent Political connectedness, ACC_FIN represent access to finance, and Log(size) and Log(age) represent natural logarithm of firm size and firm age, respectively while RD represent Research and Development. Moreover, **β0,** **β1**, **β2**, **β3**, β4, **β5**and **β5**, represent the coefficient of the constant, PC, ACC_FIN, firm size, firm age, and RD, respectively.

Finally, in order to investigate the effect of political connectedness on firm's access to finance, the following probit model is specified.

$$ACC\_FIN = \beta_0 + \beta_1 PC + \beta_2 LogSize + \beta_3 LogAge + \beta_4 RD + \varepsilon \qquad\qquad (3.4)$$

The data gathered from the WBES was analyzed by quantitative approaches and mainly using regression analysis .In addition, explanatory statistics and correlation analysis was used .The study used STATA /IC software version 14.

3.6 Variable Definition and Measurement

3.6.1 Measurement of Technological innovation

A This study mainly used output measures of innovation, such as product innovation, process innovation and product or process innovation (TPP). Section H of the WBES mainly designed to collect information about firm's innovation performance. Based the firm's response to H1 which was asked 'From fiscal year 2011 thru 2013), did this establishment introduce any new or significantly improved product or service?' Where "new" means new to the establishment and not necessarily new to the market. Response to this question indicates whether the firm introduced product innovation or not. Based on their response to this question a dummy variable 'product innovation' is constructed that takes the value equal to 1 if the firm introduced any innovative product or service, and 0 otherwise. .

Similarly, section H5 of the WBES, asked a firm's about their process innovation performance as follow; 'From fiscal year 2011 thru 2013, did this establishment introduce any new or significantly improved process)?' We construct a dummy variable '*Process innovation*' which takes the value of 1 if the firm introduces any innovative methods of manufacturing products/offering services, logistics, delivery/distribution, methods/product or service, or supportive activity during the last three years, 0 otherwise.

Finally, by combing product or process innovation, we construct a variable Technological product or process (TPP) which takes equal to 1 if a firm introduces the new or significantly improved process such as innovative methods of manufacturing products/offering services, logistics, delivery/distribution, methods/product or service, or supportive activity/process in the last three years, 0 otherwise. This study adopt a method used by Ayalew, Xianzhi et al. (2019) and Ayalew and Xianzhi (2019) to measure product innovation, process innovation, and TPP innovations.

3.6.2 Measurement of Access to finance

Access to finance used as both the dependent and independent variable. Different scholars use different measures of access to finance including the availability of overdraft facility and line of credit/loan. In this study, following Atalew et al., (2019a), we measure access to finance using a direct method which is measured as a dummy variable take value equal to 1, if the firms has active credit line/loan during the time of survey and 0, otherwise.

3.6.3 Measuring Political connectedness

On the WBES, this study used four indicators of business-government relations.

1. ***Political Connectedness by Management time (PC-Regulation):*** In the assessment of World Bank enterprises survey questionnaires number J2 is used which represent, in a typical week over the last year, what percentage of total senior management's time was spent on dealing with requirements imposed by government regulations? (By senior management mean managers, directors, and officers above direct supervisors of production or sales workers. Base on the response to this question we measure this variable as percentage of total senior management's time spent on dealing with requirements imposed by government regulations

2. ***Political Connectedness by inspection (PC-Inspection):*** In this study of World Bank enterprises survey questionnaires number J3 is used which represent, over the last year**,** was this establishment visited or inspected by tax officials or required to meet with them? Based on this response a dummy variable ***PC-Inspection*** is equal to 1 if the establishment was visited or inspected by tax officials or required to meet with them, 0 otherwise

3. ***Political Connectedness by Government contract (PC-Contract):*** In the study of World Bank enterprise survey questionnaire number J6 which represent, over the last year, has this establishment secured or attempted to secure a government contract? Based the respondent response a dummy variable equals to 1 if the establishment secured or attempted to secure a government contract

4. ***Political Connectedness by Corruption:*** Percentages of total annual sales the establishment made informal payment or gift to public officials for the purpose of things done.

3.6.4. Measuring Control Variable

Firm size: The first control variable is firm size, it can be small, medium or large: this variables have effect on the access to finance, level of innovation of firm due to different reason either as a result of level of productivity of different firms. The situations that size can adversely affect innovation. For example if the firms are large it is easy to gate access to finance either for capital items or finance to run the business. With this we can say large firms can have better advantage than smaller one to get access to finance .but there is no studies which can show relationship between size and innovation. Majority of the study supports negative and other there a positive relation. Scholars Ayalew.et.al.,(2019) shows that there is a positive relationship between innovation and size of firms .it is easy we can say there is direct relation between size of firms and innovation. When one increase the other will increase.

Firm Age: The second is firm age it can be, young, matured and older firms ;do this have effects on the political connectedness ,access to finance and innovation on the firms .Firm age can affect the adversely affect innovation. New firms have an access to for uniqueness and technologically countless products and process, they can easily .on the other side when we see young firms are advantage to innovate there product or service. Different scholars assume that new firms have a tendency to have higher probability of innovating there product or service rather than those which stay long on the market. Majority of studies showed that there are mixed evidence which shows the relationship between age and innovation firms age has a significant negative effect on young and insignificant impact on old firms. Old firms because of their existence on the market for long time they have good experience to have incremental innovation. Whereas firms which are new for the market they can came up with important finding of innovation.

R&D: The last is R & D; while the young firms bring new technologies order to enter to the market and applied it on their product or service. Researcher Ayalew.et.a; (2019) there is no statistical significant effect firm's age on innovation .Therefore, firms age may or may not have significant effect to be innovating.Finally, Table 3.4 presents the variable definition, measurement and location in the WBES.

Table 3.4 Variable definition and measurement

Variable	Measurement and definition	Measure adopted from	Question No. in the WBES
Technological Product or Process (TPP)	Dummy variable equal to 1 if a firm is innovative; an innovative firm is the one that introduced the improved product or improved process in the last 3 years, 0 otherwise (non-innovative).	Ayalew Xianzhi, Hailu, Dinberu (2019)	H1 & H5
Business-Government relation (BGR) indicators			
Political connectedness-time (PC_regulation)	Percentage of total senior management's time spent on dealing with requirements imposed by government regulations	Own proxy based on WBES	J2
Political connectedness -informal payment (PC_corruption)	Percentages of total annual sales the establishment made informal payment or gift to public officials for the purpose of things done.	Own proxy based on WBES	J7
Political connectedness -Inspected by tax officer (PC_inspection)	Dummy variable equal to 1 if the establishment was visited or inspected by tax officials or required to meet with them, 0 otherwise	Own proxy based on WBES	J3
Political connectedness -Government contract (BG_GovCont)	Dummy variable equals to 1 if the establishment secured or attempted to secure a government contract	Own proxy based on WBES	J6a
Access to finance line of credit/loan (Access_Fin_CL)	Dummy variable equal to 1 if a establishment have a line of credit or a loan from a financial institution, 0 otherwise.	Fowowe (2017) , Lee el.ta (2017),	K8
Control variables			
Firm size (Log(size))	Natural logged value of the number of permanent full-time employees.	Ayalew and Xianzhi (2019	L1
Age (Log(age))	Natural logged value of age in years of a firm since its establishment.	Ayalew and Xianzhi (2019	B5
Research and development s (*R&D*)	Dummy variable equals to 1 if a firm conducts internal or external R&D, 0 otherwise.	Ayalew and Xianzhi (2019),	H8

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

This part of the paper covers the results and finding from the study .It presents findings of the analysis based on the objectives of the study, the first part of the analysis is about the descriptive statistical analysis, correlation and VIF results as well as normality test, the second section regression result of TPP in probit regression model.

4.1. Descriptive Statistics

Description of variables used in the study and their descriptive statistics are presented in the Table 4.1 on average of sample 51.79% of sampled from the firms have introduced technological product and process innovation during the last 3 years to the survey. Political regulation from the total sample population percentage of total senior management's time spent on dealing with requirements imposed by government regulation is 92.86% with maximum of 85% and minimum of 0 it shows that the firm senior managements spent more time with government. From the political connectedness inspection by tax officers from government office 56.63% out of the sample firms inspected by the government it is more than half of the survey firms .out of the total 38.11 % of the firms they are attempt the to secure a government contract .28.42 % of firms from their annual sales they informally make payments or gifts to public officials for the purpose of either to facilitates there work or be more advantage than the other .48% from the total firms they have more access to finance either as loan or credit from financial institutions . The average number of employees were 118 with minimum of 6 and maximum of 5,600.The average number of sampled firms is 16 years with minimum of 3 years and maximum of 90 years. From sampled firms 10.53% are engaged in R & D during the three years prior to the survey.

Table.4.1. Summary of descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TPP	475	0.5179	0.5002	0	1
pc_regulation	475	9.2863	14.460	0	85
pc_inspection	475	0.5663	0.4961	0	1
pc_govcont	475	0.3811	0.4862	0	1
Pc_corruption	475	0.2842	1.9684	0	30
access_fin	475	0.4800	0.5001	0	1
Firm size	475	118.04	343.94	6	5,600
Firm age	475	16.717	13.996	3	90
RD	475	0.1053	0.3072	0	1

4.2 VIF and Correlation Analysis

In order to check the existence of multicollinearity problem, we calculate VIF and correlation matrix. Table 4.2 show present VIF. Generally, the VIF for both individual variable and overall VIF is by far less than 10 which is a point where multicollinearity problem exist.

Table 4.2. Variance Inflation Factor (VIF)

Variable	VIF	1/VIF
Log(size)	1.23	0.8102
Log(age)	1.15	0.8677
pc_regulation	1.12	0.8960
RD	1.1	0.9084
pc_govcont	1.08	0.9224
Pc_corruption	1.07	0.9364
pc_inspection	1.02	0.9781
access_fin	1.08	0.9280
Mean VIF	1.11	

Table 4.3 present the correlation matrix .It shows that the correlation between explanatory variables is very small with maximum of 35.89 which is between firm size and firm age .However, a correlation up to 0.7 is often acceptable .The correlation between of the explanatory variables is attractive less than 0.2 in most case .Therefor there is no multicollinearity problem in our model.

Table 4.3 Correlation matrix

	Variables	1	2	3	4	5	6	7	8	9
1	tpp	1								
2	pc_regulation	0.1889	1							
3	pc_inspection	0.2099	-0.0341	1						
4	pc_govcont	0.1671	0.211	0.1093	1					
5	pc_corruption	0.0645	0.2262	-0.0139	0.1291	1				
6	access_fin	0.1849	-0.0082	0.084	0.001	0.054	1			
7	logsize	0.2449	0.0365	0.07	0.127	0.0239	0.2421	1		
8	logage	0.1034	0.0275	0.0735	0.0454	0.0306	0.1485	0.3589	1	
9	rd	0.2211	0.1613	0.0233	0.084	0.1074	0.151	0.2508	0.0744	1

4.3. Regression Results

4.3.1. The effect of political connectedness on innovation

Table 4.4 present probit estimation result the relationship between political connectedness measured by innovation with TPP. In order to interpret the magnitude of the effect, the marginal effect is computed after probit estimation. The stata output for both standard probit estimate and computation of the marginal effects are reported.

The result in the table shows political regulations have positive relationship with the innovation (TPP).It further indicate that a one unit increase in political regulation result in increase of firms probability to innovate by 0.63 % ,the result of the coefficient also showed change in political regulation by one unit increase the probability of firm to be innovative by 1.58 percent .This, implies that 0.63 percent probability if being innovative is determined by total senior management's time spent on dealing with requirements

imposed by government regulations. When we make comparison with other political regulation will be at the middle of others not higher not lower means

The result in the table shows that political connectedness inspection has positive relationship with innovation (TPP). It further indicates that a one unit increase in political connectedness inspection result in increase of firm's probability to innovate by 21.59 percent. Result of coefficient also showed change in political connectedness inspection by one unit increase the probability of firm to be innovative by 0.5484. This, implies that 21.59 of probability of being innovative is determined by visit or inspection by tax officials or meeting with them. When compared to other political connectedness measures it has higher effect on innovation, followed by political connectedness government control, political connectedness regulation and lastly political connectedness corruption.

The result in the table present politically government contract have a positive relationship with innovation (TPP). In addition it specifies that increase on firms by one unit's innovation will increase a probability to innovate by 0.0904 % and result of coefficient values change by one unit increase the probability of firm to be innovative by 0.04 %.

The other result is about corruption and it have positive relation with innovation (TPP) .It further indicates that a one unit increase in political corruption results an increase of firms probability by 0.45 % to innovate by gave for government official to facilitate work to be done or some other purpose of firms the payment made from total annual sales informal payment or gift to public officials for the purpose of things done and the result of coefficient value change by one unit increase the probability of firm to be innovative by 1.13 .

Regarding control variables we find the following result ,Firstly ,we find a positive and strong relation between TPP and R& D expenditure .The result support firms that invest on R& D are more likely to be innovative than those who do not invest that is a 1% increase in R&D would increase the probability to innovation by 28.05 %. Secondly the result show a positive and statistically significant association between TPP and firms size as measured by Log (size), indicating large firms are more likely to have innovated products and process than their smaller counterparts. A 1% increase a firm size (log (size)) would increase the probability to innovate by 16.09%, all other things remain

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constant. Next, the firm's age (log (age) has no significant effect on TPP in the sample. Therefore, R& D and firms size has maximum and statically significant whereas firms age has no significant effect on TPP.

Table 4.4 the effect of political connectedness on innovation (probit estimation)

TPP	Coef.	marginal effect	Std. Err.	Z	P>z	[95% Interval]	Conf.
pc_regulation	0.0158	0.0063	0.0048	3.28	0.001***	0.006	0.025
pc_inspection	0.5484	0.2159	0.1242	4.41	0.000***	0.305	0.792
pc_govcont	0.2281	0.0904	0.1299	1.76	0.079*	-0.027	0.483
pc_corruption	0.0113	0.0045	0.0397	0.28	0.777	-0.067	0.089
Log(size)	0.4043	0.1609	0.1117	3.62	0.000**	0.185	0.623
Log(age)	0.0330	0.0131	0.2258	0.15	0.884	-0.410	0.476
RD	0.7708	0.2805	0.2379	3.24	0.001**	0.305	1.237
_cons	-1.220		0.266	-4.59	0.000***	-1.741	-0.699
No. obs	475						
Prob > chi2	0.000						
Pseudo R2	0.1255						
Log likelihood	-287.6						

Note: 1) The dependent variable Technological Product and Process innovation (TPP) is measured as a dummy variable take the value equal to 1, if the firm introduced new or significantly improved product or process during the last three years. 2) The marginal effect is computed after probit estimate. ***, **, and * represent significant level at 1%, 5%, and 10% significance level, respectively. 3) The estimated output is reported in the appendix.

4.3.2 The effect of political connectedness on firm's access to finance

Another alternative measure of political connectedness on firm's access to finance. Table 4.5 present the estimated output of the model specified in 3.4. The result in table shows that political regulation inspected have a positive effect of 45.20 % relation with access to finance. It further indicates that one unit increase in political regulation result in decrease of firm's probability access to finance by -0.13 % percent. Result of the coefficient also showed change in political regulation by one unit decrease the probability of firms to get finance by -0.033% .

The outcome in the table shows that political connectedness inspection has positive relationship with access to finance. It further indicates that a one unit increase in political connectedness inspection result in increase of firm's probability to get access to finance by 7.25 percent. Result of coefficient also showed change in political connectedness inspection by one unit increase the probability of firm to get access to finance 18.24. This, implies that 7.25 of probability of getting access to finance. It is determined by visit or inspection by tax officials or meeting with them.

The effect in the table present politically government control have a positive relationship with access to finance , In addition it specifies that increase on firms by one unit's access to finance will decrease a probability to innovate by 0.458 % and result of coefficient values change by one unit decrease -1.150 % the probability of firm to be innovative by 3.630 %.

The other result is about corruption and it have positive relation with access to finance .It further indicates that a one unit increase in political corruption results an increase of firms probability by 1.150 %   access to finance by gave gifts or some other things   for government official to facilitate work to be done or some other purpose of firms the payment made from total annual sales informal payment or gift to public officials for the purpose of things done and the result of coefficient value change by one unit increase the probability of firm to be innovative by 3 .76 % .

Regarding the effect of control variables (firm size, firm age and R&D expenditure) we find the following result, Firstly, we find a positive and strong relation between access to finance and R& D expenditure .The result support firms that invest on R& D are more likely to have more access to finance than those who do not have access to finance that is a 1% increase in R&D would increase the probability of to get access to finance by 17.36 %. Secondly the result show a positive and statistically significant association between access to finance and firms size as measured by Log (size), indicating large firms are more likely to have access to finance products and process than their smaller counterparts. A 1% increase a firm size (log (size)) would increase the probability to get access to finance by 16.89%. Next, the firm's age (log (age) when there is a unit increase of age (log (age) has increase access to finance by 11.96 %.

Table 4.5. The effect of political connectedness on firm's access to finance

access_fin	Coef.	marginal effect	Std. Err.	Z	P>z	[95% Conf. Interval]	
pc_regulation	-0.0033	-0.0013	0.0044	-0.7500	0.4520	-0.0119	0.0053
pc_inspection	0.1824	0.0725	0.1202	1.5200	0.1090*	-0.0532	0.4181
pc_govcont	-0.1150	-0.0458	0.1264	-0.9100	0.3630	-0.3626	0.1327
pccorruption	0.0376	0.0150	0.0347	1.0800	0.0790*	-0.0304	0.1056
Log(size)	0.4238	0.1689	0.1096	3.8700	0.0000***	0.2090	0.6386
Log(age)	0.3002	0.1196	0.2176	1.3800	0.1680	-0.1263	0.7268
RD	0.4423	0.1736	0.2087	2.1200	0.0340**	0.0333	0.8513
_cons	-1.1264		0.2570	-4.3800	0.0000***	-1.6302	-0.6226
No. obs	475						
Prob > chi2	0.000						
Pseudo R2	0.0605						
Log likelihood	-308.95						

Note: 1) Dummy variable equal to 1 if a establishment have a line of credit or a loan from a financial institution, 0 otherwise. 2) The marginal effect is computed after probit estimate. ***, **, and * represent significant level at 1%, 5%, and 10% significance level, respectively. 3) The estimated output is reported in the appendix.

4.3.4. The effect of access to finance on innovation

The final objective of this study is to investigate whether access to finance has an effect on firm's innovation performance. Table 4.6 presents the effect of access to finance on firm's innovation. The result shows on the table when there is a unit increase on access to finance there is a probability of firms to be innovative increase on by 12.23% ,from this a firm that have access to finance are more likely to innovate than those who do not have access. Specifically, a firm that have access to finance are 12% more innovative than those who do not have with significant level of 5%.

Regarding the effect of control variables (firm size, firm age and R&D expenditure) we find the following result, Firstly, when there is a unit increase on Log (size), there is an increase of 14.95 % of probability to be innovative and R& D when there is a single unit increase on R & D there is a probability of the firm to be innovative by 28.69% . The

result is significant at 5% level. Like the previous two regressions, control variables especially firm size and R&D has a statistically positive effect on the firm's likelihood to innovate. The result is significant at 1% level.

Table 4.6 the effect of access to finance on firm's innovation

tpp	Coef.	Marginal effect	Std. Err.	z	P>z	[95% Conf.	Interval]
access_fin_	0.3085	0.1223	0.1223	2.52	0.012**	0.0688	0.5482
logsize	0.3754	0.1495	0.1101	3.41	0.001***	0.1597	0.5912
logage	0.0588	0.0234	0.2220	0.26	0.7910	-0.3762	0.4938
rd	0.7875	0.2869	0.2267	3.47	0.001***	0.3432	1.2317
_cons	-0.8192		0.2504	-3.27	0.001**	-1.3100	-0.3284
No. obs	475						
Prob > chi2	0.000						
Pseudo R2	0.0773						
Log likelihood	-303.52						

Note: 1) Dummy variable equal to 1 if a establishment have a line of credit or a loan from a financial institution, 0 otherwise. 2) The marginal effect is computed after probit estimate. ***, **, and * represent significant level at 1%, 5%, and 10% significance level, respectively.

4.4. Discussion

Using 475 firms from the 2015 WBES for Ethiopia, this study examine the relationship between political connectedness, access to finance and innovation as measured by TPP. In order to test this relationship three hypotheses are postulated. The hypothesis and result obtained on these hypotheses are summarized in table 4.6.

Table 4.6 Empirical results on the hypotheses

Ser Number	Proposed hypothesis	Decision based on result
H1	Firms that are political connected have more likely to innovation than those that are not politically unconnected firms.	Accepted
H2	Political connected firms have more access to finance than those politically unconnected firms.	Accepted
H3	Firms that have high access to finance are more likely to innovative than those who do not have	Rejected

Regarding hypothesis 1, among the four measures of political connectedness three of them (*pc_regulation, pc_inspection, and pc_govcont*) are found significantly and positively affect the firm's likelihood to innovate. As a result, hypothesis 1, is accepted. The result is consitant with prior studies conducted by Tian et al, (2019). The result suggest that firm's that are politically connected have better access to use government resources and knowledge, this in turn, help them to innovate more.

Concerning hypothesis 2, the result support a positive and significant relationship between access to finance and firms innovation performance. The empirical literature on the effect of access to finance on innovation remains a debating issue and studies continued to provide mixed or inconclusive results. The majority of empirical studies indicates the presence of difficulties in raising funds for innovative activities, and this difficulty is regarded as a persistent barrier to innovate (Agénor and Canuto 2017; Cincera and Santos 2015). In the context of Africa, using data from the World Bank's enterprise survey for nine countries, Lorenz (2014) investigates whether credit-constrained firms to innovate less. The finding indicates financing constraints hurt the probability of successful innovation and that the negative effect impact tends to be higher for small-sized and young firms compared to their counterpart, large and old

firms. Similarly, Ayalew and Xianzhi (2019) examine to what extent financing constraints in Africa affect innovation. They find evidence that firms that do not have access to finance are less likely to innovate in Africa. The finding of the present study supports these prior studies.

Regarding Hypothesis 3, we find a little evidence that politically connected firms have better access to external finance. However, only one of the indicators of political connectedness that is inspection found marginally significant at 10%. However, the general conclusion to this hypothesis tends to reject. The find on this hypothesis is not anticipated and is not in line with the finds of prior studies. Finally, we find a very consistent evidence that the control variables especially firm size and R&D expenditure has a statically positive effect on the firms innovation performance.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION
5.1 Conclusion

Using a sample of 475 firms in Ethiopia, this paper examines; 1) the impact of political connectedness on firm's innovation as measured by TPP; 2) the effect of access to finance on TPP innovations, 3) the effect of connectedness on firm's access to external finance in Ethiopia. The study also aimed at showing the extent of firm-level innovation and degree of access to external finance. The data was obtained from the WBES which is conducted in 2015 covering the period 2012 to 2014. The study used a standard probit model to show the relationship between political connectedness, access to finance and TPP innovations. The study used four indicators of political connectedness, and one direct measure of firm's access to finance.

Based on the result, the study arrive the following conclusions. First, firms that are political connection to the government are more likely to innovate than those who do not have connection. This finding was consistent while using different indicators of political connectedness. Second, firms that have access to finance are more innovative than those who do not have access to finance. This result was consistent using different access to finance indicators. This result was statistically significant at 1% level. Third, we do find a very little and weak relationship between political connectedness and access to finance. In other words, our result suggest that politically connected firm did not have special advantage to secure external loan. Forth, the firm's innovation performance as measured Finally, In Ethiopia On average, 51% of sampled have introduced product innovation or process innovation during the last three years prior to the survey period. In Ethiopia, about 48% of sampled firmss have access to finance during the survey periods..

5.2 Recommendation

The result underlined that firms that are politically connected are found more innovative than those who do not. Thus, policymakers should developed mechanism that strengthen the relationship between business organizations and the government. This might have the biggest effect in promoting corporation innovation, growth and business sustainability in the form of providing additional resources for resource constrained firms such as small and young enterprises. The firm manager are also recommend to strengthen their relationship with the government so as to enjoy resource of the government that could reduce resource constraints to innovate.

Our result shows that access to finance significantly affect the firm's likelihood to innovate. Thus, policy directed at improving access to finance in Ethiopia is at most needed so as to improve innovativeness and productivity. For instance, design and implement mechanicals that enforce financial institutions such as banks and micro-finance institutions to provide credit for SMEs may be effective. In addition, SMEs should have seen alternative financing mechanisms including the use of trade credit. As a result, SMEs can get competitive advantage in the market. Since access to finance as line credit or loan was the major factor that influence firms innovation for creating employment to a large group of people and contribute to the nation income; SMEs need awareness, communication and transparency of support and finance sources to be improved, because SMEs complained they did not identify what funders are looking for in a funding proposal. So government should make up follow on the rules and regulations that provide financial institutions to help the innovation process of firms in Ethiopia.

Moreover, the result show that a strong, consistent positive the effect of R&D investment and firm size on TPP innovations in Ethiopia. The study recommends that firms should undertake or invest more R&D to promote their innovation performance and growth. Investment on R&D especially on innovation activities particularly shall bring a significant impact on the long-term economic growth and development of the country. The government should develop policy to encourage innovative firms by facilitating external

funds, minimizing income tax, creating awareness, facilitating market share and facilitate training and development to share experience.

5.1 Limitations and Future Research Directions

Although this study is the first in its kind conducted in Ethiopia, it is not free of limitations that open avenue for future researchers. Among others, this study has the following limitations. First, this study mainly used Technological Product or Process innovation (TPP) as a measure of the firm's innovation performance. It did not consider other innovation performance measures such as patent, marketing and organizational innovations. Second, this study used cross-sectional survey data that comes from the WBES. This indict of panel data might provide robust finding. Thus, future researchers can fill and strengthen the findings of this study by filling the above gaps. Finally, the data used for this study is cross-section, future researchers better to use panel data to examine the effect of political connectedness and access to finance on the firm's innovation performance.

Reference

1.A diversified or a focused export-strategy? Journal of World Business, 51, 185–199.Drucker P,[1985] Innovation and Enterprenurship,Butterworth-Heinemann,Oxford

2.Aghion, P., Howitt, P., 1992. A model of growth through creative destruction. Econometrica 60, 323–351.

3.Aghion, Philippe, and Patrick Bolton. 1997. A Theory of Trickle-Down Growth and Development. The Review of Economic Studies 64, 151-72.

4.Ayalew, M. M., and Xianzhi, Z. (2019) 'Bank competition and access to Finance: evidence from African countries', Journal of Industry, Competition and Trade, 19(1): 155-184.

5. Ayalew, M. M., Xianzhi, Z., and Hailu, D. H. (2019) 'The finance of innovation in Africa', European Journal of Innovation Management, 23(3): 348-382.

6.Ayalew, M. M., Xianzhi, Z., Dinberu, Y. D., and Hailu, D. H. (2019) 'The Determinants of Firm's Innovation in Africa', Journal of Industry, Competition and Trade, 20(3): 527-567.

7. Ayalew.M, Xianzhi.Z & Hailegebreal, (2019),"The finance of innovation in Africa" European Journal of Innovation Management School of Accounting, Dongbei University of 8.Finance and Economics, Dalian, China 36.

9.Ayalew.M, Xianzhi.Z & Hailegebreal, (2019),"The finance of innovation in Africa" European Journal of Innovation Management School of Accounting, Dongbei University of Finance and Economics, Dalian, China.

10.Ayyagari, M., Demirgüç-Kunt, A. and Maksimovic, V. (2011), "Firm innovation in emerging markets: the role of finance, governance, and competition", Journal of Financial and Quantitative Analysis, Vol. 46 No. 6, pp. 1545-1580.

11.Beck, T., Demirgüç-Kunt, A. and Maksimovic, V. (2005), Financial and Legal Constraints to Firm Growth: Does Firm Size Matter?, Journal of Finance 60, 137-177

12.Beck, Thorsten, Asli Demirgüç-Kunt and Ross Levine. 2007. Finance, Inequality, and the   Poor. Journal of Economic Growth 12, 27-49.

13.Berry M.M.J., Taggart J.H., [1994) "Managing Technology and Innovation: A Review", R&D Management, Vol. 24, No. 4, pp.341-353.

14. Bloch, C. (2007), "Assessing recent developments in innovation measurement: the third edition of the Oslo manual", Science and Public Policy, Vol. 34 No. 1, pp. 23-34.

15.Canepa, A., & Stoneman, P. (2008). Financial constraints to innovation in the UK: evidence from CIS" and CIS3. Oxford economic papers 60, (4) 711-730.

16.Casson, P. D.; Martin, R.; Nisar, T. M. (2008). "The financing decisions of innovative firms", Research in International Business and Finance, Vol. 22, pp. 208 -221.

17.Chaney, P.K., Faccio, M., Parsley, D.C., 2008. The quality of accounting information in politically connected firms. Unpublished working paper. Vanderbilt University.

18.Chaney.P.K.,Faccico,,M.,Paresely ,D.,2011.The quality of accounting information in politically connected firms,J.Account.Econ.51(1-2),58-76 .

19.Creswell, W., (2008), Research Design: Qualitative, Quantitative and Mixed Approaches, 2nd edition. Sage publication, California

20.Dikova, D., Jaklic, A., Burger, A., and Kuncic, A. (2016). What is beneficial for first-time exporters from a transition economy?

21. Faccio, M., 2006. Politically-connected firms. American Economic Review 96, 369-386.

22.Faccio, M., 2007. The characteristics of politically-connected firms. Unpublished working paper. Vanderbilt University

23.Faccio, M., Masulis, R., McConnell, J.J., 2006. Political connections and corporate bailouts. Journal of Finance 61, 2597-2635.

24.Freel, M.S. (2007). Are Small Innovators Credit Rationed?. Small Business Economics, 28, 23–35.

25. Galor, Oded and Omer Moav. 2004. from Physical to Human Capital Accumulation: Inequality and the Process of Development. Review of Economic Studies 71, 1001-26

26.Galor, Oded, and Joseph Zeira. 1993. Income Distribution and Macroeconomics. The Review of Economic Studies 60, 35-52.

27.GII, 2019 Global innovation index (GII) 2019

28.Goldman. E., Rocholl, J., So, J., 2006. Do politically connected boards affect firm value? Review of Financial Studies, forthcoming.

29.Grossman, G. M., Helpman, E., 1991a. Innovation and Growth in the Global Economy. MIT Press.

30. Johnson, S., and Mitton, T. (2003). Cronyism and capital controls: Evidence from 31.Malaysia. Journal of Financial Economics, 67, 351–382.

32.Kaufmann, D., Wei, S.-J., 1999. Does grease money speed up the wheels of commerce?   NBER Working Paper 7093.

33.Kerlinger, F.N, and Foundations of behavioral research, Delhi: Surjeet Publications, 1978,   pp.300-301, cited in R.S. Dwivedi, Research Methods in Behavioral Sciences, New 34.Delhi: Macmillan India Limited, 1997, p.39.

35.Klapper, Leora, Luc Laeven, Raghuram Rajan, 2006. Entry regulation as a barrier to entrepreneurship. Journal of Financial Economics, 82, 591-629.

36.Krammer, S. M. S. (2019). Greasing the wheels of change: bribery, institutions, and new product introductions in emerging markets. Journal of Management, 45 (5): 1889-1926.

37.Leff, N. H., 1964. Economic development through bureaucratic corruption. American Behavioral Scientist 8, 8–14.

38.Li, H., Meng, L., Wang, Q., and Zhou, L. A. (2008). Political connections, financing and firm performance: Evidence from Chinese private firms. Journal of Development Economics, 87(2), 283–299.

39.Liu, H., Yang, J. Y., & Augustine, D. (2018). Political ties and firm performance: The effects of proself and prosocial engagement and institutional development. Global Strategy Journal, 8(3), 471-502.

40.Lopez, Humberto and Luis Serven. 2009. Too Poor to Grow. World Bank Policy Research Working Paper 5012.

41.Lui, F. T., 1986. A dynamic model of corruption deterrence. Journal of Public Economics 31, 215–236.

42.Luigi Benfratello; Fabio Schiantarelli and Alessandro Sembenelli, (2008), Banks and innovation: Microeconometric evidence on Italian firms, Journal of Financial Economics, 90, (2), 197-217

43.Mauro, P., 1995. Corruption and growth. Quarterly Journal of Economics 110, 681–712.

44.Nanda R. and Nicholas T. (2011) "Does Bank Distress Stifle Innovation during the Great Depression?" Working Paper.

45.OECD (2005). Guidelines for collecting and interpreting innovation data (3rd ed.). OECD Publishing, Paris, OECD.

46. Peng, M. W., and Luo, Y. (2000). Managerial ties and firm performance in a transition economy: The nature of a micro-macro link. Academy of Management Journal, 43(3), 486–501.

47.Ridge, J. W. Ingram, A. and Hill, A. D. (2017) "Beyond lobbying expenditures: How lobbying breadth and political connectedness affect firm outcomes". Academy of Management Journal, 60(3), 1138-1163.

48.Romer, P. M., 1990. Endogenous technological change. Journal of Political Economy 98, S71–S102.

49. Shleifer, A., Vishny, R. W., 1993. Corruption. Quarterly Journal of Economics 108, 599–   617.

50.Wei, S.-J., 2000. How taxing is corruption on international investors? Review of Economic and Statistics 82, 1–11.

51.World Bank. 2007. Finance for All? Policies and Pitfalls in Expanding Access. Washington, D.C

Appendixes

Appendix A

Probit estimation: Political connectedness and innovation

```
Probit regression                               Number of obs    =        475
                                                LR chi2(7)       =      82.56
                                                Prob > chi2      =     0.0000
Log likelihood = -287.65999                     Pseudo R2        =     0.1255
```

tpp	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
pc_regulation	.0157508	.0048038	3.28	0.001	.0063354	.0251661
pc_inspection	.5483919	.1242394	4.41	0.000	.3048872	.7918967
pc_govcont	.2281361	.1299421	1.76	0.079	-.0265457	.4828178
pccorruption	.0112584	.039748	0.28	0.777	-.0666462	.089163
logsize	.404344	.111712	3.62	0.000	.1853925	.6232955
logage	.0329856	.2257906	0.15	0.884	-.4095558	.475527
rd	.7708056	.2378869	3.24	0.001	.3045559	1.237055
_cons	-1.219969	.2660067	-4.59	0.000	-1.741332	-.6986053

Probit estimation: Political connectedness and innovation (marginal effect computation)

```
Marginal effects after probit
      y  = Pr(tpp) (predict)
         =  .52873927
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
pc_reg~n	.0062673	.00191	3.28	0.001	.002524	.010011	9.28632
pc_ins~n*	.2159315	.04776	4.52	0.000	.122318	.309545	.566316
pc_gov~t*	.090372	.05112	1.77	0.077	-.009812	.190556	.381053
pccorr~n	.0044798	.01582	0.28	0.777	-.026518	.035477	.284211
logsize	.1608912	.04444	3.62	0.000	.073783	.247999	1.55103
logage	.0131252	.08984	0.15	0.884	-.162966	.189217	1.11631
rd*	.2805061	.07313	3.84	0.000	.137168	.423844	.105263

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix B

The effect of political connectedness on access to finance (probit estimate)

```
Probit regression                              Number of obs   =       475
                                               LR chi2(7)      =     39.82
                                               Prob > chi2     =    0.0000
Log likelihood = -308.95704                    Pseudo R2       =    0.0605
```

access_fin_cl	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
pc_regulation	-.0032907	.0043788	-0.75	0.452	-.0118731	.0052916
pc_inspection	.1824111	.1202296	1.52	0.129	-.0532345	.4180567
pc_govcont	-.1149621	.1263626	-0.91	0.363	-.3626282	.132704
pccorruption	.0375598	.0346975	1.08	0.279	-.0304461	.1055656
logsize	.4238068	.1095739	3.87	0.000	.209046	.6385677
logage	.3002292	.217636	1.38	0.168	-.1263296	.726788
rd	.4423067	.2086683	2.12	0.034	.0333244	.8512891
_cons	-1.126429	.257049	-4.38	0.000	-1.630236	-.6226224

The effect of political connectedness on access to finance (marginal effect)

```
Marginal effects after probit
     y  = Pr(access_fin_cl) (predict)
        =  .48094881
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
pc_reg~n	-.0013113	.00174	-0.75	0.452	-.004731	.002109	9.28632
pc_ins~n*	.072541	.04765	1.52	0.128	-.020843	.165925	.566316
pc_gov~t*	-.0457517	.05019	-0.91	0.362	-.144128	.052624	.381053
pccorr~n	.0149671	.01383	1.08	0.279	-.012134	.042068	.284211
logsize	.1688816	.04367	3.87	0.000	.083287	.254476	1.55103
logage	.1196375	.08672	1.38	0.168	-.050338	.289613	1.11631
rd*	.1736477	.07881	2.20	0.028	.019184	.328111	.105263

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix C

```
Probit regression                              Number of obs   =        475
                                               LR chi2(4)      =      50.82
                                               Prob > chi2     =     0.0000
Log likelihood = -303.52822                    Pseudo R2       =     0.0773
```

tpp	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
access_fin_cl	.3084683	.1223059	2.52	0.012	.0687531	.5481836
logsize	.3754434	.1100704	3.41	0.001	.1597094	.5911773
logage	.0588091	.2219523	0.26	0.791	-.3762094	.4938277
rd	.7874548	.2266832	3.47	0.001	.343164	1.231746
_cons	-.8191898	.2504141	-3.27	0.001	-1.309992	-.3283872

```
Marginal effects after probit
      y  = Pr(tpp) (predict)
         =  .52381771
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
access~l*	.1223111	.0481	2.54	0.011	.028042	.21658	.48
logsize	.1495132	.04383	3.41	0.001	.063605	.235421	1.55103
logage	.0234196	.08839	0.26	0.791	-.149818	.196657	1.11631
rd*	.2868921	.06962	4.12	0.000	.150438	.423346	.105263

(*) dy/dx is for discrete change of dummy variable from 0 to 1