THE BORROWING BEHAVIOR OF SMALL AND YOUNG FIRMS FROM THE PAYCHECK PROTECTION PROGRAM

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APPROVAL

This thesis titled THE BORROWING BEHAVIOR OF SMALL AND YOUNG FIRMS FROM THE PAYCHECK PROTECTION PROGRAM submitted by HÜLYA AYDEMİR, in partial fulfıllment of the requirements for the degree of Master of Arts in Finance and Banking is approved by

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DECLARATION ON RESEARCH ETHICS AND PUBLISHING METHODS

I, HÜLYA AYDEMİR; hereby declare

- that this Master of Arts that I have submitted is entirely my own work and I have cited and referenced all material and results that are not my own in accordance with the rules;
- that this Master of Arts does not contain any material from any research submitted or accepted to obtain a degree or diploma at another educational institution;
- and that I commit and undertake to follow the "Kadir Has University Academic Codes of Conduct" prepared in accordance with the "Higher Education Council Codes of Conduct".

In addition, I acknowledge that any claim of irregularity that may arise in relation to this work will result in a disciplinary action in accordance with the university legislation.

Hülya Aydemir

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ABSTRACT

Small businesses and entrepreneurs face certain obstacles when they try to meet their funding needs. They can receive funds through self-funding, investors, loan and grants. However, receiving funds through all these channels have some limitations, procedures, rules, and regulations. Especially, during periods of financial crises, small businesses and entrepreneurs have limited access for raising capital because financial institutions and investors try to be more cautious when they spend money. hı order to understand whether access to finance is important for fırın growth, I focus on the period of Covid-19 which created uncertainty for fırms and resulted in a decline of financing opportunities. This period can be used for empirical analysis because the Covid-19 pandemic was an exogeneous shock to fırms and helps me alleviate endogeneity concems. Because of lockdown and policies tak.en during the pandemic, small businesses and entrepreneurs struggled to operate. Their profits reduced, and their cost of funding and the need for funding increased. To alleviate the hazard impact of the pandemic on small businesses, tlıe US govemment introduced the Paycheck Protection Program (PPP). The program offers cheap and forgivable credit to small businesses. hı this study I illustrate the determining characteristics of firms that obtained PPP especially with respect to revenues and previous funding preferences. I analyze how young firms with limited revenue find funding using the PPP program which made cheap and forgivable loans to these firms and see whether they used these resources efficiently for their survivability. I find that firms that obtained funding via pre-seed, seed, series A and venture capital before PPP were more likely to take advantage of PPP as an additional funding. In addition, companies which had limited revenues are attracted by this cheap and forgivable loan. Therefore, we can say that the companies which have limited revenue range are inclined to take PPP loan. I also find that companies that received PPP loan were more likely to survive. in the light of my results, I conclude that fırms that are younger as well as fırms that had limited revenues were more likely to use the PPP option and more likely to

continue their operations. This suggests that access to finance is important for ali firms but especially for finns that have limited cash flow options.

Keywords: Small and Medium Sized Enterprises, Entrepreneurship, Covid-19, Paycheck Protection Program, Access to Finance

KÜÇÜK VE GENÇ FİRMALARIN PAYCHECK PROTECTION PROGRAMINDAN BORÇLANMA DAVRANIŞI

ÖZET

Küçük şirketler ve girişimciler fonlama ihtiyacım karşılamaya çalıştıkları zaman bazı zorluklarla karşılaşmaktadırlar. Yatırım, kredi, hibe ve kendi kendini fonlama yoluyla ihtiyaçları oldukları fonlamaya erişebilirler. Ancak, bu gibi fonlama kanalları bazı limitler, prosedürler, ve kurallar barındırır. Özellikle, finansal kriz dönemlerinde küçük şirketlerin ve girişimcilerin fonlama ihtiyaçlarını karşılamaları zordur çünkü yatırımcılar ve finansal kurumlar bu dönemlerde daha dikkatli hareket etmektedirler. Tezimde finansmana erişimin fırına büyümesinde önemli olup olmadığını anlamak istemekteyim. Şirketlerin fınansman kararları içsellik içerdiği için firmalar için belirsizlik yaratan ve finansman fırsatlarının azalmasına neden olan Kovid-19 dönemine odaklanıyorum. Kovid-19 salgını firmalar için dış kaynaklı bir şok olduğu ve içsellik sorununu hafifletmeye yardımcı olduğu için bu dönem deneysel analiz için kullanılabilir.

Pandemi sırasında alınan tedbirler ve kapanmalara dolayı, küçük şirketler ve girişimciler işlerini yönetmekte güçlük çektiler. Karlarında düşüş ve maliyet ve fon ihtiyaçlarında artış oldu. Bu kötü etkileri azaltmak için Amerika hükümeti küçük şirketlerin faydalanabileceği "Paychek Protection Program (PPP)" adında ucuz ve affedilebilir bir kredi imkanı sundu. Bu çalışmada, özellikle gelirler ve önceki fonlama tercihleri açısından PPP alan firmaların belirleyici özelliklerini ortaya koyuyorum. Geliri kısıtlı genç firmaların, bu firmalara ucuz ve affedilebilir krediler sağlayan KÖİ programından nasıl fon bulduklarını analiz ediyorum ve bu kaynakları ayakta kalabilmeleri için verimli kullanıp kul1anmadıklanm analiz ediyorum. PPP'den önce ön tohum, tohum, seri A ve risk sermayesi yoluyla finansman elde eden firmaların, ek bir finansman olarak PPP'den yararlanma olasılıklarının daha yüksek olduğunu buldum. Ayrıca gelirleri sınırlı olan şirketler de bu ucuz ve affedilebilir krediden etkileniyor. Dolayısıyla gelir aralığı sınırlı olan şirketlerin PPP almaya daha yatkın olduğunu söyleyebiliriz. Ayrıca PPP kredisi alan şirketlerin hayatta kalma ihtimalinin daha yüksek olduğunu da tespit ettim. Sonuçlarım ışığında, daha genç firmaların yanı sıra geliri sınırlı olan firmaların PPP seçeneğini kullanma ve faaliyetlerine devam etme olasılıklarının daha yüksek olduğu sonucuna

vardım. Bulgularım finansmana erişimin tüm firmalar için önemli olduğunu, özellikle de nakit akışı seçenekleri smırlı olan firmalar için önemli olduğunu göstermektedir.

Anahtar Sözcükler: Küçük şirketler, Girişimcilik, Fonlama, Finansa Erişim, Kovid

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2. INTRODUCTION

Each entrepreneur and small business needs capital to start a business or to grow their business. Making decisions about how a business is funded and finding capital is significant because it has an impact on the business structure and its conduct, so businesses try to find the cheapest and optimal financing options. Firms, however, can face some difficulties and obstacles to accessing capital because they have a high probability of failure, especially at the beginning when they are young and small. Small businesses do not have access to many of the traditional sources that are available for financing corporate business development (Walker, 1989). Mainly capital sources for small businesses include self-funding, investors, loans, or grants (U.S. Small Business Administration, "Fund Your Business", 2023). üne of the main sources of capital for firms is through debt financing. However, it is difficult to be qualified for bank loans. Banks try to be sure about the success ofthe business that receives their ınoney. Receiving bank loans for small businesses can especially be impossible because banks try to ensure their money will be paid back and this small business ınay be seen as too risky. Entrepreneurs who have adequate money to finance or support their businesses may use self-funding. In addition, they can obtain money from their family and friends for capital. With self-funding, entrepreneurs may make any decision without anyone's approval, and they gain full control over their business because they do not obtain money from any investor for their businesses. However, they bear all the consequences of their business failures like money loss and bankruptcy (U.S. Small Business Administration, "Choose a Business Structure", 2023). Toere are also some grants that are offered by govemment agencies, corporations, and non-profit organizations for businesses, and they can benefit from them. However, finding a grant for funding is not easy. On the other hand, small businesses have to meet some criteria when they prefer to finance their business through extemal sources like loans or equity from investors and bank loans. Because most of them do not have enough savings for financing their business or because they do not think debt financing as an option, soıne entrepreneurs and small businesses may try to find capital

through venture capital including angel investors. Angel investors who are regarded as private investors invest some of their money in the early stages ofthe company and they generally do not demand any ownership and control rights from the business they invest in (OECD, "Financing SMEs and Entrepreneurs", 2016). However, finding an angel investor for funding is considerably difficult. For venture capital in general, small businesses try to find proper venture capital firms at the beginning and then they share their business plan with them. Businesses can receive venture capital if their investing criteria are met, and they reach an agreement about the terms and conditions (Investopedia, "Venture Capital: What Is VC and How Does It Work?", 2023). However, it is not guaranteed that the business will receive venture capital, the process is considerably slow, and being approved is slightly hard. The company that receives venture capital financing is not required to make monthly payments or interest payments, unlike the bank loan. In addition, the amount that the companies receive does not have to be repaid even if they fail. In addition, small businesses can utilize their investor's knowledge, networks, and guidance for their business. Small businesses accept to give some portion of equity ownership and control of their businesses to the investors in exchange for funding when they receive funding via venture capital. Therefore, receiving funds from investors may not be ideal for small businesses. Also, the company may not meet investors' expectations about the growth of the company. Also, private equity can be an option for small businesses which want to finance their business. Investors may invest their money in companies' private equity through a private equity fırın. Private equity firms gather money from investors and invest the money in businesses that have growth potential. The main goal of the private investment is to receive profit gain after the efficiency and value of the business are 2nhanceed, and the business grows (Powell, 2018). Companies that receive private equity investment can utilize from knowledge and connection of their investors. Also, they are not responsible for interest payments like in bank loans when the companies receive fınancing through private equity. However, finding private equity investors is difficult as well, especially for companies that have not grown enough or can show positive cash flow generation. In addition, investors can have different success aspects from the company in which they invested, so the company may not meet their expectations. Companies may not prefer private equity financing because they must share decision-making authority about the management or stnıcture of the

business. Another more recent altemative to finding funds is through the use of fintech where altemative ways of financing and new financing platforms like peer-to-peer lending platforms and some crowdfunding platforms provide people loans without acting]ilce financial institutions as middlemen.

In my thesis, I would like to analyze whether and how access to financial resources can help small businesses in terms oftheir growth. However, the question ofwhether getting extemal finance helps firms is endogenous as it is not c1ear whether firms grow because they receive funding or firms that are already growing are more likely to receive funding. Similarly, firms' choices of financing could impact the cost as well as their growth opportunities. Especially during the rougher times for the economy, obtaining a Ioan or receiving investınent can be more difficult for small businesses unless they are exceedingly e1igible. There are reductions in SME lending during the financial crisis (Deyoung et al., 2015).

To tackle my research question, I focus on the Covid-19 period. This period provides an exogenous shock which helps me alleviate some of the concems coming from endogeneity. Globally all businesses and industries were affected by the COVID-19 pandemic, most negatively. With the rapid spread in the coronavirus epidcmic, there was a rapid increase in the number of coronavirus cases and tbe number of deaths due to the epidemic. To alleviate the spread of the pandemic and reduce the number of cases and deaths, governments took some precautions lilce shutdowns, quarantines, social distancing rules, and travel bans. Financial distress, economic crisis, and economic downturns were triggered by these precautions. Revenues ofbusinesses were reduced due to these precautions, and they have been subject to pay obligations like their debt, their employees' salaries, and their operating costs, even if they could not generate positive cash flows during the lockdown. Therefore, banks, lenders, and credit unions had a crucial role during the pandemic because businesses need credit more to meet their obligations. In response to such financial and economic struggles, governments designed many policies that aid individuals and businesses such as the Paycheck Protection Program (PPP).

2.2 The Paycheck Protection Program

The Coronavirus Aid, Relief, and Economic Security (CARES) Act was signed into law by The U.S. govemment in March 2020. The Paycheck Protection Program which was part of the CARES Act is a policy to alleviate the negative impact of the Covid-19 pandemic on small businesses. It has been administered by the Small Business Administration (SBA) and is an SBA-backed loan that is designed to prevent businesses from dismissing their employees during the pandemic. PPP loan applications started to be received by the Small Business Administration in early April 2020. According to SBA data as of December 26, 2021, the coımt of PPP loans between 2020 to 2021 was 11,450,275 and its total value was $791,077,887,062. The total loan forgiveness value was $658,960,627,150 (SBA). First draw Paycheck Protection Program loans are designed for businesses that have not obtained PPP loans before. PPP loan is planned to help small businesses maintain their payroll. Snıall businesses may use First Draw PPP loans to fund payroll costs. It can also be used for payment of mortgage interest, rent, utilities, worker protection costs related to COVID-19, uninsured property damage costs occasioned by looting during 2020, certain supplier costs, and operation expenses (SBA). PPP loans offer an interest rate of 1% and there is no requirement of any collateral or personal guarantees for receiving PPP loans. Also, the government and lenders do not request any fees from small businesses. There are some qualifications that small businesses must have to receive a PPP loan. Entities affected by COVID-19 like sole proprietors, independent contractors, self-employed persons, and any small business that meets SBA's size standards, can be qualified for PPP loans. In addition, non-profit organizations, veterans organizations, or tribal businesses as defined by the SBA, are qualified if they meet the size criteria ofthe program. On the other hand, the Second Draw PPP loan is designed for certain businesses that obtained PPP loans previously. A Second Draw PPP loan has similar general loan terms to their First Draw PPP loan anda Second

Draw PPP loan can be used for the same cost and expenses as their First Draw PPP loan. PPP loan might be forgiven by SBA when the business which received the PPP loan fulfill all criteria about employee retention and use the fund far proper expenses. First Draw PPP loans and Second Draw PPP loans have the same forgiveness terms. Borrowers can receive full forgiveness for PPP Ioans ifthey preserve employee and compensation levels, spend the loan proceeds for payroll costs and other proper expenses, and spend at least 60% ofthe loan proceeds for payroll costs.

2.3 Purpose of the Study

In this research, I would like to analyze whether and how access to financial resources can help small businesses in terms of their growth. How young firms with limited revenue find funding using the PPP program which made cheap and forgivable loans to these firms and whether they used these resources efficiently for their growth opportunities is examined in this research. In this research, a PPP loan does not seem as substitution far other financial resources like bank loans, private equity, investors, ete. The subject is handled as an additional financial resource during the Covid-19 crisis. In other words, a PPP loan is seen as a supplement to other financial resources. I want to understand whether access to finance especially during a crisis period helps firms grow and the determinants of access to finance during these crisis times. I will especially focus on young enterprises as these firms have limited cash to grow. I will mainly take advantage ofthe usage ofthe PPP program by these firms as an oppoıtunity for additional funding. In this research, I consider companies who choose to finance their business via funding types like pre-seed, seed, and venture capital as young companies and companies who have a revenue range of less than one million and one to ten million as companies who have limited revenue, and hence I consider them as small. Because ofthe precautions that have been taken to reduce Coronavirus cases by the government such as lockdowns, and because of economic recession, the profits of small businesses have reduced. However, they are responsible for meeting their payment like their bills, employees' salaries, and debts even if their revenues have decreased. Companies that have limited revenue and are

not old enough will be more vulnerable than ever during the pandemic due to their cost, payment obligations, and barriers to fund receiving due to their age. Especially, during the Covid-19 period it was quite difficuJt for small and young companies to have access to extemal financing opportunities. For instance, according to Gompers et al. (2021), VC investing involves great uncertainty about the future, and the Covid-19 pandemic creates an enormous amount of new type of uncertainty. They find out that venture capitalists have decelerated their investment and have devoted their time to leading portfolio companies during the pandemic. Therefore, I will observe the question by examining companies that are not old enough and have a limited revenue range.

Due to all these reasons, firms with limited revenues and smaller companies can choose to get financing through PPP which is cheap and even it can be forgiven as an opportunity to access to finance their business, so they use the resource to grow their business and meet their obligations.

To examine my research question, I created my hypothesis as follows;

Young firms and firms that are smaller with respect to the revenues that have difficulty in accessing sources of finance are more likely to get advantage of the cheaper financing option that is available as compared to firms that already found financing through altemative sources during crisis periods.

Additionally, I examine the survival probability of the firms that received **PPP** loans during the crisis. How PPP loans have an impact on the survival of the firms is an indication suggesting the importance of finance for fırın survival.

3. Literature Review

Small businesses and entrepreneurs have more difficulty in funding due to their riskiness from an investment point of view (World Bank, 2018). If information about borrowers' financial situation and investment opportunities is known by borrowers more than lenders do, It leads to information asymmetries. Because of this insufficient infonnation cause inefficiencies in the lending market (World Bank, 2018). According to Beck and Demirguc-Kunt, small and medium-sized enterprises' growth can be inhibited due to market imperfections and institutional weaknesses (2006). Firn1s who are credit-constrained that is, who do not have access to financial markets will have lower growth opportunities. In addition, small finns experience growth constraints due to a lack access of financial market more than mature firms experience (Fowowe, 2017). Due to reasons like litt1e or highly volatile cash flows of start-ups, the probability of the negligible collateral value of the project, substantial uncertainty about the value of the idea underlying the start-up, and unclear revenues and expenses of the project, using public equity finance, and debt finance became difficult (Greenwood et al, 2022). According to Walker (1989), only a segment ofthe debt and equity markets that are imperfect markets is available for small businesses. The imperfections in thc financial markets for small business financing arise from some financial and regulatory entry barriers and demandants' size and economic characteristics. Berkowitz and White (2004) indicate that the supply of credit drops and demand for credit increases when non-corporate firms are located in states that have higher bankruptcy exemptions. Small businesses and entrepreneurs do not easily get bank loans because of their default risk. Whether small businesses will succeed, cannot be estimated properly, and their business, operation, services, and financial condition can easily get harmed, so banks are not inclined to give them credit because they are seen as risky borrowers. In addition, Paglia and Harjoto (2014) found that establishrnents owned by minority, women, and foreign business owners are significantly less likely to obtain private equity and venture capital financing. In addition, they figured out that net sales and eınployment growth rates of the establishments are significantly and positively influenced by private equity and venture capital financing. Sometimes due to discrimination, small business is also rejected and

do not receive funds. For instance, Blanchflower et al. (2003) show that black-owned firms are less inclined to apply for credit because they are afraid to be rejected. After their analysis, they found out black-owned firms tend to be rejected rnore than the other groups. Sirnilarly, according to Fairlie et al. (2022), black entrepreneurs are less likely to dernand bank loans than white entrepreneurs because of the fear of rejection. With fintech, these discrirninations are slightly dirninished nowadays. For instance, Howell et al. (2021) revealed that automation reduces racial disparities in small business lending. Discrimination arises generally from two forrns that are statistical discrimination and preference-based discriinination.

Due to the high probability of rejection, borrowers, especially borrowers who have higher rejection rates depend on discrimination tend to accept high prices (Agarwal et al., 2022). During crisis periods, investors and financial intermediaries try to be more cautious when they give their money. At the beginning of the Great Recession, there was amount 40% decline in bank originations ofbusiness loans (Cotes et al., 2022). Therefore, during crisis times, receiving funds can be more difficult than ever before especially for srnall businesses and entrepreneurs. For instance, srnall businesses and entrepreneurs were heavily influenced by the financial crisis and the Great Recession. According to Kennickell et al. (2016), revenues and profits dropped by percent and 51 percent in the year between 2007 and 201O. In addition, they report that 60 percent of new firms claimed their credit needs were not met (Kennickell et al., 2016). Cortes et al. (2022) indicate banks that are influenced by stress tests decrease the supply of small business loans and enhance the interest rates of small business loans. in addition, Fakos, Sakellaris, and Tavares (2022) focus on the impacts of credit supply on investment by manufacturing firms during the 201O recession in Greece following the 2009 global financial erisis. They found that during the crisis period of 2010-2014, investment was suppressed the firm's profitability decreased, and firms deleveraged constantly. Thus, they figured out investrnent dynamics were affected by finance.

More recently, the Covid-19 pandemic has disrupted the financial sector and the global economy. Small businesses and their owners were considerably influenced by the COVID-19 pandemic and there was a more than forty percent reduction in the average

revenue after the weeks following the national emergency declaration (Kim et al., 2020). There are dramatic early-stage declines in small business activity according to the first estimates ofthe impact of COVID-19 on business owners from nationally representative April-June 2020 Current Population Survey (CPS) <lata (Fairlie, 2020). According to Alekseev et al.'s survey (2020), many businesses strive to make payments for their bills, rent, wages, and debt obligations. Half of the businesses they analyzed stated they had more outflows than inflows in the past month. Fairlie et al. (2022) indicate that there were great rises in rates of closures in the first two quarters of 2020 and this rise was greater for small businesses than large businesses. Because investors and financial intermediaries behave cautiously, small businesses and entrepreneurs can struggle to reach additional funds. Lockdowns and government policy create new research opportunities and how Covid-19 affect business, the financial system, and the government became significant question.

The literature started to analyze the effects of the Paycheck Protection Program. Cororaton and Rosen (2021) observed that almost half ofU.S. public firms were qualified for the PPP and 41.8% of those qualified fıms have preferred to borrow. According to Hubbard and Strain (2020), the employment, financial health, and survival of small businesses have been enhanced by PPP. In addition, the level of employment at eligible firms rose through the PPP (Autor et al, 2022). However, according to Humphries et al. (2020), the PPP was less known by the smallest businesses and was less applied by them. Additionally, when they applied for PPP, its processing times were longer, and their application was less likely to get approval. Atkins et al. (2020) found out black-White disparities in PPP loans are slightly smaller in areas with more bank competition, and they observed that by allowing non-bank lenders like fintech to participate in PPP programs, this difference in loan size diminished over time. Erel and Liebersohn (2020) examined how access to :financial services is switched by fintech through observing govemment decisions during the Covid-19 pandemic about allowing non-traditional lenders which are experts in :fintech to distribute PPP loans along with traditional banks. They analyzed whether the areas where need PPP loans more reach access via fintech and businesses that have little previous access to the banking system are provided PPP loans by fintech lenders, relative to traditional banks. They found areas with less access to lower

incomes, the traditional finance, and a larger minority share of the population prefer to choose fintech lenders for PPP loans. Also, using pre-covid and post-covid <lata, Najaf et al. (2021) ascertained the volume of P2P lending was higher than before the pandemic.

My research focuses on small firms with limited revenue sources using data from a database of small firms and their previous financing preferences as a result I plan to contribute to the importance of finding funding for firms by focusing on the determinants of PPP borrowers.

4. Data

4.1 CrunchBase Data

My marn <lata sources is Crunchbase. I collected the <lata from the website http://www.crunchbase.com.

Crunchbase is "the leading destination for company insights from early-stage startups to the Fortune 1000" and is website which "has best-in-class live <lata powered by our unique community of contributors, partners, and in-house <lata experts" (Crunchbase, Vlho We Are). There are more than 400000 funding round <lata on their website. The data contains information like organization descriptions, organization industries, organization location, organization websites, revenue range, total amount of funding, funding status, number of funding round, number of investors, number of partner investors. The period ofthe <lata is between April 1984 to November 2021.

This <lata consists of different sub data fields. I mainly focus on the funding fıles and the United States data files.

4.2 PPP Data

I collected The Paycheck Protection Program loan level <lata from the website https://data.sba.gov/dataset/ppp-foia.

PPP data contains the inforınation of companies which receives PPP loan such as loan number, borrower name, borrower address, loan status, approval amount, servicing lender name, servicing lender address, race, ethnicity, business type, gender, forgiveness amount. Data covers the period from April 2020 to May 2021.

5. Methodology

To examine my research question, I utilized from two databases which the CrunchBase data and the Paycheck protection program loan level <lata. The companies' information such as the organization name, funding type, money raised, funding stage, pre-money valuation, organisation industries, organisation location, organisation website, organisation revenue range, lead investors, investor names, number of investors, numbcr of partner investors, total funding amount, funding status, and nuınber of funding rounds can be reached in CrunchBase website. I firstly received premium membership[1]. Then, I downloaded the data, but it is quite hard because the website limits the aınount of <lata you download at one time. Download limitation amount was 1000. Therefore, I filtered the <lata to download 1000 pieces each time. After downloading the <lata, I fırst merged the CrunchBase <lata and PPP <lata using company name as the common identifier. Through using the fuzzy matching, companies which have similar names in both data have been ınatched. After that I matched the companies which are available and exactly same in both <lata so, the companies transferred into Stata and I reached new data which I will used for my analysis. Data information are presented in descriptive statistics. I created some table to observe the region, revenue, funding type of companies and to understand <lata and to understand the companies' characteristics. I exclude data after

[1] I aın grateful to my advisor for purchasing the data source for me to use in my research.

2019 to reach pre-covid <lata. Pre-covid period inforınation about funding types, age, region, revenue, funding amount, industry of companies is showed in tables 5.3, 5.4., 5.5. Because Covid is an exogenous shock to the system, small businesses will need additional fıınds. There are some firms that prefer PPP and some others that do not. Descriptive statistics and the correlations are also showed as findings. Table 5.2 presents all variables' descriptive statistics. The minimum value, maximum value, mean, standard deviation can be examined in this table. I will rely on an econometric model where I want to see how the companies which are in the need of funds shows behavior to PPP program. I focus on the fırst round of PPP. I exclude the data after 2019 to observe my research question. I will use probit model to see my control variable significancy and to analyze my research question. Probit model is the one of the well-known economic models. I used PPP Ioan that represents whether firms received PPP loan or not as the dependent variable. I used five control variables for this model:

- Funding type
  - pre-seed
  - seed
  - venture capital
- Less than 1 million revenue range
- Revenue range between one million to ten million

To test my hypotheses I utilize the following model:

$$\alpha + \beta X_{i,t} + \varepsilon \qquad (1)$$

where $Y_{i,t}$ represents an indicator variable of 1 if firm i received PPP funding at year t and zero otherwise. For my second hypothesis my dependent variable $Y_{i,t}$ takes on the value

of 1 ifa fırm is marked as active and O otberwise. X is a matrix of control variables which are funding type like pre-seed, seed, and venture capital, and also size of the fırın based on revenue less than 1 million revenue range, and revenue range between one million to ten million. These are all for fırın i at time t.

I also run another specificiaton with industry fixed effects and the model then is as follows where *"{j* and ôk represent industry and state fixed effects, respectively.

$$Y_{I,t} = a + /3Xi,t + r_1 + 8k + E \quad (2)$$

Industry fixed effects control for any variation within an industry other than my variable of interest, in this case PPP funding. My coefficient of interest is */3.*

5.1 Description of the variables

Table 5.1 provides the description of the variables. The variables include are organization name, funding type, organization industries, organization location, organization revenue range, borrower name.

5.1 Description of variables

fame	Variable label	Variable Description	Source
rganizationname	Organization Name	Organization name (String)	Crunchbase
ındingtype	Funcling Type	Funding Type (String)	Crunchbase
rganizationindustries	Organization Industries	The 6 digit industry classifications are based on SIC code (String)	Crunchbase
rganizationlocation	Organization Location	Organization Location (String)	Crunchbase
rganizationrevenuerange	Organization Revenue Range	Organization Revenue Range (String)	Cruncbhase

pp_all	PPP Loan	An indicator variable for which a fırın receiving funding during a given year is labeled as 1 and O otherwise.	PPP
ındingtype_num	Funding Type	A numeric variable that is divided into 28 with ranges.	Crunchbase
rganizati.onlocati.on_num	Organization Location	A numeric variable that is divided into 51 with ranges.	Crunchbase
rganizati.onindutries_num	Organization Industries	A numeric variable that is divided into 660 with ranges.	Crunchbase
rganizationrevenuerange_nuın	Organization Revenue Range	A numeric variable that is divided into 8 with ranges.	Crunchbase

5.2 Descriptive Statistics

As shown in Table 5.2, 173,821 observation is available for PPP which are merged with CrunchBase. İts mean is approximately 0.624 and its standard deviation is slightly 0.242. Min is O and max is 1 because it is a dummy variable.

Table 5.2 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.		Max
ppp	173821	.062	.242	0	1

5.3 Firm funding choices before PPP program

I will observe both <lata that are before PPP program started and data that are during PPP program. According to the table 5.3, total observations after merging the 2 datasets is 173,821 times. 45,898 ofthis observation received fund through seed funding that relates to 26.41% of all other funding types. Venture - Series Unknown is also high which is

32,654 times that relates to 18.79 of ali other funding types. 5,148 of this observation receives fund from angel investor and it is quite low, and it is 2.96% of all other funding types. Debt Financing is used by 10,388 times and it is 5.98% of all other funding types. 7,487 times were received fund from grant, and it is reflected 4.31% of ali other funding types. Equity crowdfunding that was received by 3,015 times and product crowdfunding that was received by 519 times is quite low. Private Equity which relates to 2.96% of all other funding types, was received by 5,151 times.

Table 5.3 Funding Type Beforı-e PPP

Funding Type	Freq.	Percent	Cum.
Angel	5148	2.96	2.96
Convertible Note	5112	2.94	5.90
Corporate Round	504	0.29	6.19
Debt Financing	10388	5.98	12.17
Equity Crowdfunding	3015	1.73	13.90
Funding Round	2032	1.17	15.07
Grant	7487	**4.31**	19.38
Initial Coin Offering	147	0.08	19.46
Non-cquity Assistance	2699	1.55	21.02
Post-IPO Debt	1045	0.60	21.62
Post-IPO Equity	3723	2.14	23.76
Post-IPO Secondary	35	0.02	23.78
Pre-Seed	6441	3.71	27.49
Private Equity	5151	2.96	30.45
Product Crowdfunding	519	0.30	30.75
Secondary Market	461	0.27	31.01
Seed	45898	26.41	57.42
Series A	19487	11.21	68.63
Series B	11392	6.55	75.18
Series C	5923	3.41	78.59
Series D	2741	1.58	80.17
Series E	1193	0.69	80.85
Series F	430	0.25	81.10
Series G	136	0.08	81.18
Series H	47	0.03	81.21

Series I	10	0.01	81.21
Series J	3	0.00	81.21
Venture - Seri.es Unknown	32654	18.79	100.00
Total	173821	100.00	

According to table 5.4, total observation is 123,338 in table. In observation, 52,667 of companies' revenue range is between $1m to $10m. It relates to 42.70% of total observations. Also, the frequency of companies that its revenue ranges is less than $1m is high that is 35,106. It relates to 28.46% of total observations. The frequency of companies that its revenue range is between $1Om to $50m is 22,636. The frequency of companies that its revenue range is more than $10b is 255 and it is very low.

Table 5.4 Firm Revenue Range Before PPP

Organization Revenue Range	Freq.	Percent	Cum.
$100M to $500M	5789	4.69	4.69
$10B+	255	0.21	4.90
$10M to $SOM	22636	18.35	23.25
$1B to $10B	1063	0.86	24.12
$1M to $10M	52667	42.70	66.82
$500M to $1B	1094	0.89	67.70
$SOM to $100M	4728	3.83	71.54
Less than $1M	35106	28.46	100.00
Total	123338	100.00	

Table 5.5 provides the frequency of the companies' state where they locate in. The observation of companies where locate in Califomia is quite high. It is 61,512 and it

relates 35.39% of the total observation. The frequency of New York is 20,438 and it relates 11.76% of total observation. The frequency of companies where locates in Massachusetts (13,742) and in Texas (9,364) is also high. According to the observation, there are 5,394 companies in the capital city of US which is Washington, and it relates 3.10% of the total observation. The frequency of crowded state like Florida, Illinois, and Pennsylvania are between 4000 to 5000. The frequencies of Alaska, Arkansas, Delaware, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, South Carolina, South Dakota, Vermont, West Virginia, and Wyoming is low. it is lower than 1000 and their percentage are below 1%.

Table 5.5 Firm Location by State

	Freq.	Percent	Cum.
Alabama	455	0.26	0.26
Alaska	69	0.04	0.30
Arizona	1795	1.03	1.33
Arkansas	445	0.26	1.59
Californıa	61512	35.39	36.98
Colorado	4782	2.75	39.73
Connecticut	1640	0.94	40.67
Delaware	654	0.38	41.05
District of Columbia	1229	0.71	41.76
Florida	4930	2.84	44.59
Georgia	3165	1.82	46.41
Hawaii	249	0.14	46.56
Idaho	330	0.19	46.75
Illinois	4517	2.60	49.35
Indiaua	1166	0.67	50.02
Iowa	425	0.24	50.26
Kansas	473	0.27	50.53
Kentucky	602	0.35	50.88
Louisiana	430	0.25	51.13
Maine	361	0.21	51.33
Maryland	2494	1.43	52.77

Massachusetts	13742	7.91	60.67
Michigan	1698	0.98	61.65
Minnesota	2194	1.26	62.91
Mississippi	149	0.09	63.00
l\1issouri	1513	0.87	63.87
Montana	197	0.11	63.98
Nebraska	363	0.21	64.19
Nevada	919	0.53	64.72
New Hampshire	589	0.34	65.06
New Jersey	2705	1.56	66.62
NewMexico	376	0.22	66.83
NewYork	20438	11.76	78.59
Notth Carolina	2963	1.70	80.29
North Dakota	100	0.06	80.35
Ohio	2647	1.52	81.88
Oklahoma	321	0.18	82.06
Oregon	1841	1.06	83.12
Pennsylvania	4641	2.67	85.79
Rhode Island	416	0.24	86.03
South Carolina	698	0.40	86.43
South Dakota	79	0.05	86.48
Tennessee	1848	1.06	87.54
Texas	9364	5.39	92.93
Utah	1863	1.07	94.00
Vermont	275	0.16	94.16
Virginia	3066	1.76	95.92
Washington	5394	3.10	99.02
West Virginia	60	0.03	99.06
Wisconsin	1530	0.88	99.94
Wyoming	109	0.06	100.00
Total	173821	100.00	

5.4 PPP program

PPP program started in March 2020, and it was ended in May 2021. According to the table 5.7, before 2020, there are 173821 companies who receives funding before PPP. 10847 ofthese companies received PPP loan. 93.76 % ofthese companies did not obtain PPP loan.

Table 5.7 PPP

ppp	Freq.	Percent	Cum.
0	162974	93.76	93.76
1	10847	6.24	100.00
Total	173821	100.00	

According to table 5.8, before 2020, there are 173,821 companies that received funding. 162,974 of these companies received fund through funding type like angel, convertible note, corporate round, debt financing, ete and they did receive PPP. On the other hand, 10,847 companies received PPP. Debt financing, grant, pre-seed, seed, series a, series b, and venture - series are popular funding type. According to the table, PPP loan mostly received by companies that prefer seed funding. In addition, companies who prefer debt financing, grant, seed, series A, and venture capital far funding tend to prefer PPP loan. There are 45,898 companies that prefer seed. 2,909 ofthese companies received PPP loan and it is 26.82% of total companies who receive PPP. 2,275 of 32,654 companies who used venture capital received PPP. It is 20.97% of total companies who received PPP loan. Alsa, there are 19,487 companies that prefer series A. 975 of these coınpanies received PPP loan and it is 8.99% of total coınpanies who receive PPP. 1001 companies

who used grand received PPP. It is 9.23% of total companies received PPP loan. 453 of 6.441 companies who used pre-seed received PPP. It is 4.18% of total companies who received PPP loan. In addition, there are 5,148 companies that prefer angel investor. 254 of these companies received PPP 1oan and it is 2.34% of total companies who receive PPP. 740 companies who used debt financing for funding received PPP. It is 6.82 % of total companies received PPP loan.

Table 5.8 Funding Type and PPP

	PPP		
Funding Type	O		Total
Angel	4894	254	5148
	3.00	2.34	2.96
Convertible Note	4741	371	5112
	2.91	3.42	2.94
Corporate Round	474	30	504
	0.29	0.28	0.29
Debt Financing	9648	740	10388
	5.92	6.82	5.98
Equity Crowdfimding	2910	105	3015
	1.79	0.97	1.73
Funding Round	1888	144	2032
	1.16	1.33	1.17
Grant	6486	1001	7487
	3.98	9.23	4.31
Initial Coin Offering	144	3	147
	0.09	0.03	0.08
Non-equity Assistance	2533	166	2699
	1.55	1.53	1.55
Post-IPO Debt	984	61	1045
	0.60	0.56	0.60
Post-IPO Equity	3489	234	3723
	2.14	2.16	2.14

Post-lPO Secondary	34	1	35
	0.02	O.Ol	0.02
Pre-Seed	5988	453	6441
	3.67	4.18	3.71
Private Equity	4932	219	5151
	3.03	2.02	2.96
Product Crowdfunding	496	23	519
	0.30	0.21	0.30
Secondary Market	448	13	461
	0.27	0.12	0.27
Seed	42989	2909	45898
	26.38	26.82	26.41
Series A	18512	975	19487
	11.36	8.99	11.21
Series B	10910	482	11392
	6.69	4.44	6.55
Series C	5692	231	5923
	3.49	2.13	3.41
Series D	2647	94	2741
	1.62	0.87	1.58
Series E	1157	36	1193
	0.71	0.33	0.69
Series F	416	14	430
	0.26	0.13	0.25
Series G	128	8	136
	0.08	0.07	0.08
Series H	43	4	47
	0.03	0.04	0.03
Series I	9	1	10
	O.Ol	O.Ol	O.Ol
Series J	3	0	3
	0.00	0.00	0.00
Venture - Series Unknown	30379	2275	32654
	18.64	20.97	18.79
Total	162974	10847	173821
	100.00	100.00	100.00

In table 5.9, mostly PPP loan preferred by companies that their revenue range is less than $lm, companies that their revenue range is between $1m to $10m, and companies that companies for which their revenue range is between $lOm to $50m. There are 52667 companies for which that their revenue range is between $1m to $1Om. and 4201 of them receive PPP loan. It is 46.02% of total number of companies which obtain PPP loan in the variable. In addition, 2977 of 35106 companies that their revenue range is less than $lm have received PPP loan. 32.61% of total number of companies which have received PPP loan in the variable. There are 22636 companies that companies for which their revenue range is between $10m to $50m. PPP loan has been prefer by 1572 of them and it is 17.22% of total number of companies which obtain PPP loan in the variable. Also, there are 4728 companies that companies for which their revenue range is between $50m to $lOOm and 202 of them receive PPP loan. It is 2.21% of total number of companies that obtain PPP loan. 114 of 5789 companies that have revenue range between $1000m to $500m have received PPP loan. It is 1.25% of total number of companies that ohtain PPP loan. 34 companies with ınore than $10b revenue range obtained PPP loan. It is 0.37% of total number of companies that obtain PPP loan. Moreover, 15 companies with revenue range between $500m to $1b have received PPP loan and 14 companies with revenue range between $1b to 1Ob have received PPP loan.

Table 5.9 Organization Revenue Range and PPP

	PPP		
Organization Revenue Range	0		Total
$100M to $500M	5675	114	5789
	4.97	1.25	4.69
$10B+	221	34	255
	0.19	0.37	0.21

$10M to $SOM	21064	1572	22636
	18.44	17.22	18.35
$1B to $10B	1049	14	1063
	0.92	0.15	0.86
$1Mto $10M	48466	4201	52667
	42.44	46.02	42.70
$500M to $1B	1079	15	1094
	0.94	0.16	0.89
$SOM to $1OOM	4526	202	4728
	3.96	2.21	3.83
Less than $1M	32129	2977	35106
	28.13	32.61	28.46
Total	114209	9129	123338
	100.00	100.00	100.00

According to table 5.10, PPP loans were received by firms mainly located in states such as Califomia, New York, Massachusetts, and Pennsylvania. There are 61512 companies are located in Califomia. 3181 of them have received PPP loan. it means that 29.33% of PPP loan have receivcd by companies that locate in Califomia. For companies which locate in New York, this rate is 9.64 and the number of received PPP loan by companies which locate in New York is 1046. Total number of companies which locate in New York in variable is 20438. In addition, there are 13742 companies which locate in Massachusetts in variable. 816 of them have obtained PPP loan. loan. It 7.52% of total number of companies which obtain PPP loan in the variable. There are 547 companies which locate in Pennsylvania. it is 5.04 of total number of companies which obtain PPP loan in the variable. 430 companies that are located in Colorado have received PPP loan and 3.96% of total received PPP loan. There are 9364 companies which located in Texas and 403 ofthem have received PPP loan. It is 3.72% of total number of companies obtain PPP loan. In Illinois, 400 companies have received PPP loan and it is 3.69% of total received PPP loan. PPP loan have obtained by 371 companies which located in Florida and It is 3.42% of total received PPP loan. In Arizona, 232 companies have received PPP loan. it is 2.14% of total number of companies obtain PPP loan.

Table 5.10 State and PPP

State	PPP		
	0	l	Total
Alabama	392	63	455
	0.24	0.58	0.26
Alaska	63	6	69
	0.04	0.06	0.04
Arizona	1563	232	1795
	0.96	2.14	1.03
Arkansas	410	35	445
	0.25	0.32	0.26
California	58331	3181	61512
	35.79	29.33	35.39
Colorado	4352	430	4782
	2.67	3.96	2.75
Connecticut	1495	145	1640
	0.92	1.34	0.94
Delaware	637	17	654
	0.39	0.16	0.38
District ofColumbia	1142	87	1229
	0.70	0.80	0.71
Florida	4559	371	4930
	2.80	3.42	2.84
Georgia	2984	181	3165
	1.83	1.67	1.82
Hawaii	221	28	249
	0.14	0.26	0.14
Idaho	318	12	330
	0.20	0.11	0.19
Illinois	4117	400	4517
	2.53	3.69	2.60
hldiana	1041	125	1166
	0.64	1.15	0.67
Iowa	374	51	425
	0.23	0.47	0.24
Kansas	445	28	473
	0.27	0.26	0.27

Kentucky	573	29	602
	0,35	0.27	0.35
Louisiana	386	44	430
	0.24	0.41	0.25
Maine	307	54	361
	0.19	0.50	0.21
Maryland	2212	282	2494
	1.36	2.60	1.43
Massachusetts	12926	816	13742
	7.93	7.52	7.91
Michigan	1539	159	1698
	0.94	1.47	0.98
Minnesota	1999	195	2194
	1.23	1.80	l.26
Mississippi	133	16	149
	0.08	O.1S	0.09
Missouri	1344	169	1513
	0.82	1.56	0.87
Montana	167	30	197
	0.10	0.28	0.11
Nebraska	335	28	363
	0.21	0.26	0.21
Nevada	870	49	919
	0.53	0.45	0.53
New Hampshire	558	31	589
	0.34	0.29	0.34
New Jersey	2499	206	2705
	1.53	1.90	1.56
NewMexico	330	46	376
	0.20	0.42	0.22
NewYork	19392	1046	20438
	11.90	9.64	11.76
North Carolina	2709	254	2963
	1.66	2.34	1.70
Noıih Dakota	93	7	100
	0.06	0.06	0.06
Ohio	2438	209	2647
	1.50	1.93	1.52

Oklahoma	309	12	321
	0.19	0.11	0.18
Oregon	1733	108	1841
	1.06	1.00	1.06
Pennsylvania	4094	547	4641
	2.51	5.04	2.67
Rhode Island	387	29	416
	0.24	0.27	0,24
South Carolina	596	102	698
	0.37	0.94	0.40
South Dakota	70		79
	0.04		0.05
Tennessee	1744	10	1848
	1.07		1.06
Texas	8961		9364
	5.50		5.39
Utah	1790	73	1863
	1.10		1.07
Vermont	262		275
	0.16		0.16
Virginia	2947	119	3066
	1.81		1.76
Washington	5238		5394
	3.21		3.10
West Virginia	58		60
	0.04		0.03
Wisconsin	1428		1530
	0.88		0.88
Wyoming	103		109
	0.06		0.06
Total			173821
	100.(I		100.0

According to the results in the table, there are 146.436 companies that operating status is active, and 21.468 companies is not active anymore. In addition, the table illustrate that

21.188 companies are not active and do not receive PPP loan. 280 of companies than are not active anymore received PPP loan. Also, there are 115.204 active companies that did not receive PPP loan. On the other hand, there are 9.764 active companies that received PPP loan. Table illustrate just 2.79% of companies that received PPP loan closed over time.

Table 5.11 Operation Status and PPP

Active/Passive	PPP Loan		
	0	1	Total
0	21188	280	21468
	15.53	2.79	14.66
1	115204	9764	124968
	84.47	97.21	85.34
Total	136392	10044	146436
	100.00	100.00	100.00

6. Analysis

6.1 Economic Model

6.1.1 Probit Analysis

After understanding the characteristics of firms that obtained PPP loans, Firstly, I structured the model as containing ali companies' characteristic information to understand characteristic of companies who prefer PPP loan and to understand the data more efficiently. Therefore, the data like funding type, revenue range, region, and industry is included in the model. According to the table A.1, angel, convertible note, corporate round, debt financing, equity crowdfunding, funding round, grant, initial coin offering, none-equity assistance, post IPO debt, postIPO secondary, pre seed, private equity, product crowdfunding, secondary market, seed, series A, series B, series C, series D, series E, series F, series G, series H, series I, and venture series is statistically significant since their p values are equal to zero. The model shows that all coefficient for funding types is positive, and it indicates PPP will be increased if there is one point increase in companies funding types. For instance, there will be 3.256 increase in PPP when grant increase one point. There is a positive association between pre-seed and PPP. PPP increase by 3.02 if there is one point increase in pre-seed preferences. In addition, companies that have received venture capital before PPP, are inclined to obtain PPP loan because the coefficient of the venture capital is positive and 2.92, that means each one-point increase in venture capital received, PPP loan received will increased by 2.92. PPP loan received also is increased by more debt financing preferences. üne point rise in debt financing relates to 2.91 increase in PPP loan preferences. I observe almost similar result for seed funding. Each one-point increase in seed funding relates to 2.90 increase in PPP loan preferences. According to the result, ali companies' revenue range is statistically significant. PPP loan preferences are decreased by 0.51 ifthere is one-point increases in the number of companies that have revenue rage between 1 billion to 1O billion. Also, one-point increases in the number of companies that have revenue rage between 500 million to 1 billion relates to 0.38 drop in PPP loan preferences. There is almost a similar result for companies that have revenue rage between 100 million to 500 million. PPP loan

preferences are drop by O18 when there is one-point increases in the number of companies that have revenue rage between 100 million to 500 million. On the other hand, PPP loan preferences is increased by 0.45 when there is one-point increases in the number of companies that have less than 1 million revenue rage. Also, companies that have revenue rage between 1 million to IO million relates to 0.43 increases in PPP loan preferences. There are 0.38 increases in PPP loan preferences if there is one-point increases in the number of companies that have revenue rage between 1O million to 50 million. In addition, PPP loan preferences is increased by 0.12 via one-point increases in the number of companies that have revenue rage between 50 million to 100 million. The results illustrate that all region in the <lata which is presented is not statistical1y significant. Out of Delaware, Idaho, Kentucky, New Hampshire, New York, Oklahoma, Tennessee, Texas, Utah, Vermont, and Washington, PPP loan preferences increases via one point increase in the rest of regions which is Alabama, Alaska, Arizona, Arkansas, California Colorado, Connecticut, District of Columbia, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dak:ota, Virginia, Wisconsin, and Wyoming. According to the result, there are industry that are statistically significant and also there are industry tlıat are not statistically significant. Industry like Agriculture, Automotive, Biometrics, Biotechnology, Catering, Charity, Chemical engineering, Clean energy, Communication hardware, Confectionery, Construction, Consumer application, Consumer electronics, Consumer goods, Direct marketing, Enterprise software, Fraud detection, Handmade, Hardware, Graphic design, Healthcare, Industrial design, Industrial engineering, Leasing, LegalTech, Life insurance, Machine leaming, Medical, Personal development, Personal health, Search engine, Social media advertising, and Sporting goods are some of the industry that are statistically significant. PPP loan preferences rise by 0.40 if there is one point increase in agriculture industry. it is similar for automotive industry. PPP loan preferences have increased by 0.45 when there is one point increase in this industry. Biotechnology industry relates to an 0.44 increase in PPP loan preferences via one point increase in the industry. PPP loan preferences are increased by 1.35 if there is one point increase in chemical engineering industry. üne point increase in Communication hardware industry led to 0.60 increase in

PPP loan preferences. 0.57 increase in PPP loan preferences occur when there is a one-point increase in consumer application industry. Coefficient of the consurner goods industry is 0.46 and it means that one point increase in consumer goods industry relates to 0.46 increase in PPP loan preferences. Also, the result shows that there is 0.66 increase in PPP Ioan preferences if one point increase in healthcare industry occur. In addition, a 1.25 increase occur in PPP loan preferences if there are one point increase in life insurance industry. Similarly, one point increase in mach1ne learning industry relates to 1.02 rise in PPP loan preferences. The coefficient of the medical industry is 0.42 and it means PPP loan preferences are increased by 0.42 ifthere are one point increase in medical industry.

. In this research, companies who prefer funding type like pre-seed, seed, and venture capital will reflect the youth companies and companies who have the revenue range lik:e less than one million and one to ten mHlion will reflect companies who have limited revenue, so they are small. According to the first model, indicators pre-seed, seed, venture capital, less than one million the revenue range and the revenue range between one to ten million PPP are statistically significant and there is positive association with PPP loan <lata. Therefore, I focus my research question and structure the model which contains appropriate indicators for my hypothesis. I used funding types Iike pre-seed, seed, and venture capital and the revenue range like less than one million and one to ten million PPP as an indicator to show how young and small companies prefer PPP more. Companies that have limited revenue and are not old enough will be more vulnerable than before the pandemic due to their cost, payment obligations and barriers to fund receiving due to their age. During the pandemic, the revenue ranges of the businesses reduced sharply due to lockdown and other governınent policies. On the other hand, they are responsible to meet their operation cost and payment obligation even if they do not enough fund. Also, there are some bias about youth firms to be eligible for receiving fund. Banks and other financial intermediaries are not inclined to give credit to youth fınns due to the high probability oftheir failure. The faith of these companies is hard to be foresaw because they do not enough financial record and maybe their business idea is not enough interesting, or it will not be interesting anymore. Therefore, the intermediaries are not willing to provide fund to youth firms. During the pandemic, the opportunities of receiving fund became quite hard because some types of intermediaries stop to fund

business fora while and some of them try to be more careful since they ensure their money will be returned. Due to all these reasons, companies with limited revenue ranges and companies which are not old enough became more vulnerable than ever during the pandemic.

In table 6.1, I used as an indicator to show how young and small companies prefer PPP more because companies with limited revenue ranges and companies which are young will be more vulnerable than before the pandemic due to their cost and payment obligations. Therefore, companies with limited revenue ranges and companies which are young are more likely to get PPP Which suggests they are more in need of finance when things go bad.

According to first model of table 6.1, the number of observations is 173,818. Table illustrates that pre seed, seed, series A and venture capital are statistically significant. Also, the revenue range like 1ess than one million and one to ten million are statistically significant. The model show that the coefficient ofthe pre-seed is positive and is 0.3 that means when there is a one-point increase in pre-seed funding, the preferences ofthe PPP increase by 0.3 at the same time. It indicates that companies which prefer pre seed as funding type before PPP is inclined to prefer PPP. On the other hand, funding type like seed has positive association with PPP preferences. It is means that PPP preference increase by 0.2 if there is one point increase in seed funding types. According to these results, PPP is more likely preferred by the companies which are financed via seed before PPP. Also, coefficient of series A is positively related to PPP and is 0.19 illustrates that PPP loan is increased by 0.19 when there is one point increase in companies that prefer series A as funding choice. In addition, the coefficient of the venture capital is positive and is 0.3 that means when there is one point increase in venture capital funding, the preferences ofthe PPP increase by 0.3 at the same time. It indicates that companies which prefer venture capital as funding type before PPP is inclined to prefer PPP. The first model shows that less than one million revenue range and revenue range between one million to ten million are statically significant. The coefficient results of the revenue ranges are positive. The coefficient ofless than one million revenue ranges is 0.45. It indicates that PPP increases by 0.45 when there is increase in the amount of the companies with less

than one million revenue range. There is similar result for companies with revenue range between one million and ten million. Its coefficient is positive and 0.42. It demonstrates that one point increase in companies with revenue range between one million and ten million leads to 0.42 increase in PPP preferences.

According to the second model oftable 6.1, the p-value of PPP is statistically significant. Its coefficient is positive and 0.83 means that PPP hasa positive association with active operating status. Also, it illustrates that one-point increase in PPP relate to one point increase in active operating status. Results show that the coefficient of funding types like angel, convertible notes, debt financing, seed, series a, venture series are negatively related to active operating status. it indicates that active operating status may reduce if there is increase in any of these funding types. In other words, during the Covid-19 pandemic, companies that took the advantage of PPP loan survive more than the companies did not prefer PPP loan. Alsa, companies that prefer PPP loan are more likely to survive than the companies did not prefer other funding options.

Table 6.1 Probit Model with lndustry No Fixed Effects

VARIABLES	(1) PPP Loan	(2) Active
PPP Loan		0.834***
		(0.0294)
Angel	0.0595	-0.255***
	(0.102)	(0.0862)
Convertible Note	0.235**	-0.0925
	(0.101)	(0.0865)
Corporate Round	0.195	0.646***
	(0.133)	(0.150)
Debt Financing	0.279***	-0.0511
	(0.0994)	(0.0844)
Equity Crowdfunding	-0.0533	-0.107
	(0.107)	(0.0883)
Funding Round	0.288***	0.198**
	(0.106)	(0.0942)
Grant	0.673***	0.330***

	(0.0993)	(0.0865)
Initial Coin Offering	-0.335	0.308*
	(0.261)	(O.184)
Non-equity Assistance	0.221**	0.245***
	(0.105)	(0.0916)
PostIPü Debt	0.236**	0.228**
	(0.116)	(O.105)
PostIPü Equity	0.239**	0.380***
	(0.103)	(0.0900)
PostIPü Secondary	0.165	
	(0.437)	
Pre Seed	0.299***	0.533***
	(0.100)	(0.0877)
Private Equity	0.129	0.405***
	(0.103)	(0.0882)
Secondary Market	0.115	0.0953
	(0.159)	(0.139)
Seed	0.191*	-0.122
	(0.0980)	(0.0829)
Series A	0.0881	-0.147*
	(0.0988)	(0.0835)
Series B	0.0402	-0.169**
	(0.1000)	(0.0841)
Series C	0.0354	-0.158*
	(0.102)	(0.0857)
Series D	-0.00105	-0.195**
	(0.108)	(0.0892)
Series E	-0.00525	-0.146
	(0.123)	(0.0984)
Series G	0.402**	-0.137
	(0.204)	(0.181)
Series F	0.0603	-0.0670
	(0.156)	(0.122)
Series H	0.709**	-0.171
	(0.292)	(0.260)
Series I	0.742	
	(0.599)	
o.Series J		
Venture Series	0.263***	-0.0401
	(0.0982)	(0.0831)
Hundred Million to Five Hundred Million	-0.205***	1.074***
	(0.0403)	(0.0331)
Ten Million to Fifty Million	0.371***	0.924***
	(0.0168)	(0.0159)
üne Billion to Ten Billion	-0.447***	1.084***
	(0.108)	(0.0801)
üne Million to Ten Million	0.426***	0.735***

	(0.0134)	(O.Ol 11)
Five Hundred Million to üne Billion	-0.383***	0.978***
	(0.103)	(0.0721)
Fifty Million to Hundred Million	0.143***	1.219***
	(0.0346)	(0.0391)
Less than üne Million	0.445***	0.728***
	(0.0146)	(0.0129)
Constant	-2.042***	
	(0.0981)	
		0.452***
übservations	173,818	(0.0827)
		122,798

Discussion

Young firms with a limited revenue range have limited sources of finance. These fırms with limited revenue range can struggle to meet their operational cost and to finance new projects due to a lack offinancing options. Because of small businesses' high probability of failure, uncertain revenue, and unavailability of credit scores, cannot find easily financial sources. According to the literature, accessing sources of finance is a crucial factor for sınall businesses' operation, success, and growth. With the pandemic, accessing financial sources by young firms with limited revenue range became more difficult than ever. PPP program offer cheap and forgivable credit to small businesses so young firms with limited revenue range use it to reduce their cost and then increase their growth. Therefore, they can see a PPP loan as a new source of financing opportunity for their growth.

In this study, PPP loan is assumed as an additional funding opportunity during the CüVID-19. in addition, it is not seen as substitution of other funding options. I tried to observe young fırms see additional funding as an opportunity to take and how it helps this business to survive.

in light of all results, we can say that young and small companies are inclined to prefer PPP because coınpanies that are funded via pre-seed, seed, series A and venture capital before PPP, prefer PPP loans ınore. In addition, sınall businesses which have limited revenue, prefer PPP more. PPP attracts these young and small companies ınore. This attraction can depend on their additional fund need due to their financial issue or depend on the charm of the cheap and forgivable credit. Young fırıns with limited revenue range see PPP loans as additional financial sources and they can use them to reduce their cost which can impact their growth opportunities.

Second model illustrates how PPP loan more generally access to credit ınay have and have impact on fırms' operating status. Also, it reflects how fırms' revenue range influence their operating status. According to table 6.1, PPP loan is positively related to firrns' operating status. Result shows that companies that receives PPP loan survived more than companies that do not prefer PPP loan. Almost all types of funding options are positively related to PPP loan. It means that firms use this additional funding option that is cheap and forgivable and so they reduce their cost and meet their obligations. Firms faced the negative impact of COVID-19 erisis. They have to meet their cost even if their revenues reduced because of govemment precautions and economic downturns. Therefore, they need additional financing to meet their cost and obligations. PPP loan seems to have positive impact on firms' survivability. Also, it can be thought that these firms received the loan and then they used it for their financial improvement. Due to the findings above, we can say that young fırms are inclined to receive PPP loan more than mature fırms and PPP loan has contribution on fırın' fınancial stability because fırms that receives PPP loan survives more than firms that do not receive it. My findings show the importance of access to finance for firms and provide evidence to policymakers that providing access to finance is important especially for firms that have difficulty in finding financing when a financial crisis is evident.

7. CONCLUSION

Small businesses struggle to receive funding due to their uncertain future financial condition bank and investors assume that small businesses have great bankruptcy risk, so they do not prefer to give them loans or to make investments. Because they are seen as too risky, to obtain funds they face strict criteria to meet. Therefore, they are less likely to receive credit. The COVID-19 pandemic has occurred, it has negative influences on all funding channels including banks, private equity, venture capital, fintech lending, and so on. Because of lockdown and economic recession, all businesses face difficult times. Especially, small businesses were more negatively affected by the pandemic due to their limited cash flows as well as limited access to finance opportunities. They had fewer chances to receive funding from banks or investors because especially during the time of recession they behave more conscientious and wary to provide business funding. In the USA, government introduced a relief program which is the Paycheck Protection Program for small businesses to aid them during the pandemic. It is cheap because its interest rate is low, and it is forgivable. Young firms with limited revenue range have limited sources of finance so they see PPP loans as a new source of financing opportunity for their growth. In this research, I examined whether and how access to financial resources can help small businesses in terms of their growth. I analyzed young with limited revenue and found the PPP program as an opportunity far additional funding. Therefore, I observed the question through hypothesis which focuses on the companies that fund their business via pre-seed, seed, series A, and venture capital before PPP and the companies that have a limited revenue range. Funding types like pre-seed, seed, series A and venture capital reflect the youngness of companies and the limited revenue range reflects the smallness of the companies. PPP program is loan like cheap and forgivable financial opportunity so young finns with limited revenue range use it to reduce their cost or to increase their growth. Alsa, it aids them when they face financial difficulties, and they use it to survive. Therefore, they can see a PPP loan as a new source of financing opportunity for survivability their business. Result showed that PPP loans is regarded as an additional financial source by young firms. They are ınore inclined to prefer it. In addition, I found that companies that received PPP loan are inclined to ınaintain their operating status as active. According to the result, companies that receive PPP loan are

inclined to survive during the COVID-19 crisis. We can say that PPP loan help small business to reduce negative impact of COVID-19 crisis on their financial stability so they can survive. It means that companies that receive PPP loan can use this additional loan as an opportunity to meet their expenses, payroll, and cost so they secure their operational status. In this research, I showed PPP is obtained by companies and these companies' industries, age, revenue range, funding amount before PPP, and funding type before PPP. I analyzed how access to financial resources can help small businesses in terms of their growth and examined young with limited revenue to find the PPP program as an opportunity for additional funding. Therefore, this research helps to understand how companies due to their youngness and smallness behave when they face this cheap and forgivable loan during the pandemic.

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APPENDIXA

Table A.l Probit Model with lndustry Fixed Effects

	(1)
VARIABLES	ppp_all
Angel	2.823***
	(0.204)
Convertible Note	2.930***
	(0.202)
Corporate Round	2.841***
	(0.224)
Debt Financing	2.913***
	(0.212)
Equity Crowdfunding	2.553***
	(0.211)
Funding Round	2.972***
	(0.206)
Grant	3.256***
	(0.202)
Initial Coin Offering	2.522***
	(0.316)
Non-equity Assistance	2.935***
	(0.208)
PostIPO Debt	2.810***
	(0.223)

PostIPO Equity	2.816***
	(0.202)
PostIPO Secondary	2.727***
	(0.486)
Pre Seed	3.020***
	(0.204)
Private Equity	2.760***
	(0.203)
Product Crowdfunding	2.665***
	(0.228)
Secondary Market	2.806***
	(0.218)
Seed	2.906***
	(0.209)
Series A	2.797***
	(0.206)
Series B	2.738***
	(0.197)
Series C	2.728***
	(0.216)
Series D	2.684***
	(0.210)
Series E	2.671***
	(0.208)
Series F	2.759***
	(0.242)
Series G	3.065***
	(0.277)
Series H	3.286***
	(0.343)
Series I	3.393***
	(0.597)

Venture Series	2.921***
	(0.204)
Hundred Million to Five Hundred Million	-0.180***
	(0.0414)
Ten Milhon to Fifty Million	0.381***
	(O.Ol 73)
üne Billion to Ten Billion	-0.514***
	(0.101)
üne Million to Ten Million	0.434***
	(0.0139)
Five Hundred Million to üne Billion	-0.377***
	(0.104)
Fifty Million to Hundred Million	0.130***
	(0.0354)
Less than üne Million	0.450***
	(0.0152)
Constant	-5.074***
	(0.424)
State Fixed Effects?	Yes
Industry Fixed Effects?	Yes
übservations	169,076

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