ISCTE ◈ Business School
Instituto Universitário de Lisboa

VALUATION OF A FINTECH COMPANY:

LENDING CLUB

JIAYU YAO

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Supervisor:

Prof. Paulo Viegas de Carvalho, Assistant Professor,

ISCTE Business School, Department of Finance

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Instituto Universitário de Lisboa

Resumo

Este projeto visa realizar uma avaliação da empresa Lending Club, usando o método do Free Cash Flow e dos múltiplos, fornecendo informações sobre a avaliação de uma empresa com resultados negativos. Esta avaliação permite adquirir informação relevante sobre as empresas de tecnologia financeira (Fintech). Os dados originais sobre a empresa foram obtidos através do seu website. Os resultados revelam que os rácios P/S e EV/Vendas são adequados para a avaliação de empresas de tecnologia de ponta, que ainda não são rentáveis. O fator mais crítico para as empresas de Fintech é o goodwill, razão pela qual a Lending Club sofreu um revés na deterioração do seu goodwill. Mesmo que esta indústria em desenvolvimento tenha problemas em termos de supervisão, segurança da informação e de gestão, a perspetiva ainda é favorável. Este estudo empírico ajuda a entender os benefícios e fatores de risco associados às Fintech e aos métodos de avaliação para empresas com problemas de saúde financeira.

Classificação JEL: G30; G32

Palavras chave: Fintech; Lending Club; Corporate valuation; Goodwill

Abstract

The objective of this project is to perform a firm valuation analysis of Lending Club, using the Free Cash Flow method and multiples in order to provide insight on the valuation of a company with negative income. Let us know deeply of financial technology (Fintech). Original data was collected via Lending Club's website.

The FCFF and relative valuation methods were used in the valuation of the target firm. The results reveal that the P/S ratio and EV/Sales ratio are suitable for the valuation of high-tech companies, which are not yet profitable.

The most critical factor for Fintech companies is goodwill and the reason why Lending Club suffers a setback is goodwill impairment. Even though a developing industry usually has many problems in terms of supervision, information safety and management, the prospect is still lactiferous. This empirical study helps to understand the benefits and risk factors associated with Fintech and the valuation method for companies with ailing financial health.

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Acronyms

ACH	Automated Clearing House
API	Application programming interface
APV	Adjusted Present Value
BABA	Alibaba Group Holding
CAPM	The capital asset pricing model
CEO	Chief executive officer
CRP	Country risk premium
D/E	Debt-to-equity ratio
DCF	Discounted cash flow valuation
DDM	Dividend discount model
DPS	Expected dividends per share
EBIT	Earnings before Interest, Tax,
EBITDA	Earnings before Interest, Tax, Depreciation, and Amortization
EQV	Equity value
EV	Enterprise value
FCFE	Free Cash Flow to the Equity
FCFF	Free Cash Flow to the Firm
FDIC	Federal Deposit Insurance Corporation
FHN	First Horizon Nation
GEM	Globe entrepreneurship monitor
HX	Hexindai Inc.
LCOI	Lending Club open integration
MRP	Market risk premium
NASDAQ	NASDAQ stock market
NOPLAT	Net operating profit less adjusted taxes
NYSE	New York Stock Exchange
ONDK	On Deck Capital
P/S	Price-to-sales ratio
PBR	price-to-book ratio
PCF	Price to cash flow ratio
PEG	PER divided by growth rate

PER	Price-to-earnings ratio
PPDF	PPDAI Group, Inc.
RF	Regions Financial Co
SEC	United Securities and Exchange Commission
SQ	The Square
U.S.	America
U.S. GAAP	Generally Accepted Accounting Principles
WACC	Weighted average cost of capital
XRF	China Rapid Finance
YRD	Yirendai Ltd.

1. Introduction

Advances in information technology have contributed to the rapid expansion of new and innovative financial services generally referred to as financial technology (FinTech), an emerging field that is attracting much research attention. The term FinTech is derived from the words "financial" and "technology." According to the Accenture report (Skan et al., 2014), worldwide investment in FinTech companies and start-ups increased dramatically from $4.05 billion (USD) in 2013 to $12.2 billion (USD) in 2014. Until 2015, the USA had the largest FinTech market, followed by the UK, India, Canada, and China though at a considerable distance (Haddad & Hornuf, 2018). FinTech is increasing transparency, reducing costs, eliminating middlemen and making financial information accessible (Zavolokina et al., 2016a). The development of FinTech is an irresistible trend. Most current studies of the financial industry concentrate on macroscopic analysis, but studies on specific cases are very few, especially for firms with ailing financial health.

Lending Club is the first peer-to-peer lending company registered with the United Securities and Exchange Commission (SEC).

It operates America's largest online lending marketplace platform. It is a successful firm and is suitable to study deeper. In May 2016, Lending Club executives sold $22 million in loans to investors, even though they knew that those transactions did not meet the buyers' criteria. As a result, the founder and CEO were forced out and Lending Club's share price dropped by 35 percent. This scandal raised many questions about the peer to peer lending business model. If FinTech companies cannot retain customers and facilitate continuous operation, they are unlikely to recover their costs and achieve long-term success (Hyun-Sun Ryu, 2018).

As stated in Koller *et al.* (2010, pp.3) "value is the defining dimension of measurement in a market economy". Corporate valuation is widely used in portfolio management, corporate finance and mergers, and in acquisition processes. While corporate valuation is mainly aimed at valuing and analyzing enterprises with stable income, companies with negative earnings or in crisis are often ignored.

This study was motivated by the following research questions:

1) How exactly can high-tech companies that are yet to gain profits be valuated?
2) How does goodwill affect emerging FinTech companies and what are the determinants of their development?

3) According to data and information on Lending Club, what is the future of the industry?

In order to bridge these research gaps, this study will try to determine the most accurate valuation method for FinTech firms with or which may be having negative income, to establish the crucial factors that affect the growth of these enterprises, and to analyze the future of the FinTech industry.

The remainder of this project is organized as follows. Section 2 will present the background of Lending Club and the FinTech industry. Section 3 will discuss the literature review of valuation methods. Section 4 will describe a valuation and analysis of Lending Club, and also include the results of this study. Section 5 will analyze the influence of the scandal involving Lending Club. Finally, Section 6 will present the findings and limitations of this study, and recommend future research directions.

2. Background Analysis

2.1 Company Presentation

2.1.1 Overview

Lending Club is the first peer-to-peer lending company registered with the United States' Securities and Exchange Commission (SEC). It operates America's largest online lending marketplace platform. The mission of the company is "transforming the bank system by providing more affordable credit facilities and making investment more rewarding". Qualified customers and small business owners borrow through Lending Club to get lower credit rates and enjoy a better experience than traditional banks provide. Lending Club also offers services to investors who have access to an asset class available only to institutional investors. Loans issued through the platform are funded by any of the following means: issuance of notes to the retail investors, issuance of certificates, direct investment by the company, or the sale of whole loans to institutional investors.

Investors and borrowers first need to sign in on the platform of Lending Club. After that, borrowers apply for loans from Lending Club, and investors choose and evaluate the information of the loan demands. For approved loans, borrowers are divided into seven credit rating levels; from A to G. Level B and C represent 50% of the business. With a decrease in the credit rating, the average loan rate increases from 7.54% to 22.58% (Zhang &Tian, 2015). The three primary duties of Lending Club are as follows:

1) **Approving the information of borrowers**

During the registration process, Lending Club needs to verify the identification and credit record of borrowers. It is also pertinent that Lending Club members satisfy all the requirements for the credit loans. Based on the data from Lending Club, the average acceptation rate is about 11%. In other words, the rejection rate is high (Zhang & Tian, 2015).

2) **Auditing the demand for loans**

The demand for loans is standardized on the platform, including the amount of money, date of return loans, interest rate, usage, and basic information of borrowers. Besides, the loan amount approved must be lower than $35,000. The life of loans is 3 or 5 years, and the main usages are credit card payments, house decoration, and consumption. It is also important to

note that 80% of the loans provided are used for consolidating debts and credit card repayments (Zhang & Tian, 2015).

3) Confirming the lending interest rate

According to the credit standing of borrowers, Lending Club fixes the basic interest rate. There are 7 credit levels already presented, as well as 35 sub levels, to evaluate the probability of default at every level. The final interest rate is equal to the sum of the basic interest rate and the credit risk spread. Until now, the average lending interest rate was between 7.54% and 22.58%. What is more, the net capital expenditures changed from $39.4 million (9% of the total net revenue) in 2015 to $44.6 million (8% of the total net revenue) in 2017. The capital expenditures consist of internally developed software, computer equipment, and construction in progress, all of which will continue to enhance the business growth. Based on this information, Lending Club has developed proprietary technology platforms to support businesses. The platform provides analytical tools and data to assist investors to assess their portfolios and make informed business decisions. In addition to this benefit, Lending Club generates revenues from transfer fees based on the platform's role in accepting decision applications, investor fees (i.e., servicing fees from investors for various services and management fees from investment funds), gains on sales of whole loans, interest income earned, and fair value gains/losses from loans recorded on the balance sheet

2.1.2 Business Model

Launched in 2006, Lending Club started its business through Facebook. Since 2007, Lending Club via its website has provided peer-to-peer lending services to its users. After registering with the U.S. Securities and Exchange Commission (SEC), it collaborated with WebBank and transferred to the Securities Development Model. A few years later, the company expanded its business operations across the U.S. rapidly and became the leading lending service platform in the U.S. From 2007 through 2010, Lending Club distributed $2.68 billion interests to investors. The interest rate of borrowing（9.3%）was higher than both the average high yield of bonds in the U.S. (8.5%) and the S&P 500 stock return (4.2%) during this period (Zhang & Tian, 2015).

What is more, the business process of Lending Club comprises three stages: a promissory note pattern, a bank pattern and a security pattern. In sum, findings show that Lending Club moved from a social app to a financial institution gradually.

1) Promissory note pattern

Since 2007, Lending Club has managed loans based on the promissory pattern (Figure 1). In this process, Lending Club does not bear credit risks, and its core responsibility is to issue loans to borrowers and transfer notes to investors. Apart from that, Lending Club has acted as an intermediary and a lender of record. Nevertheless, the development of the company is limited because users are charged different interest rates across different states in the U.S. (Liao & He, 2014).

Figure 1. The process of promissory note pattern
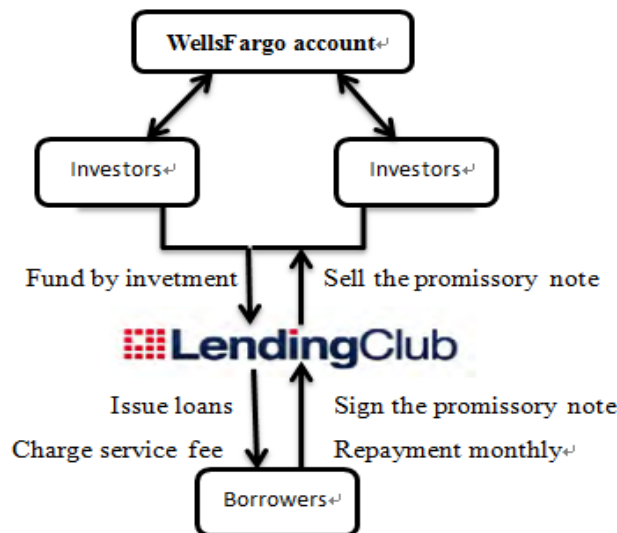
2) Bank patterns

Since 2008, Lending Club has cooperated with WebBank, a traditional bank that receives the promissory note, issues the loans, and transfers notes to Lending Club. The essence of the bank pattern (Figure 2) was also the promissory note pattern (Liao & He, 2014). Yet, Lending Club has not taken the role of the lender of record that avoids the upper limit of interest rates. The upper limit of interest rates is also different in several states across the U.S., and the aim

of this limit is to protect borrowers. It is believed that Lending Club could decrease its business costs using this strategy.

Figure 2. The process of bank pattern
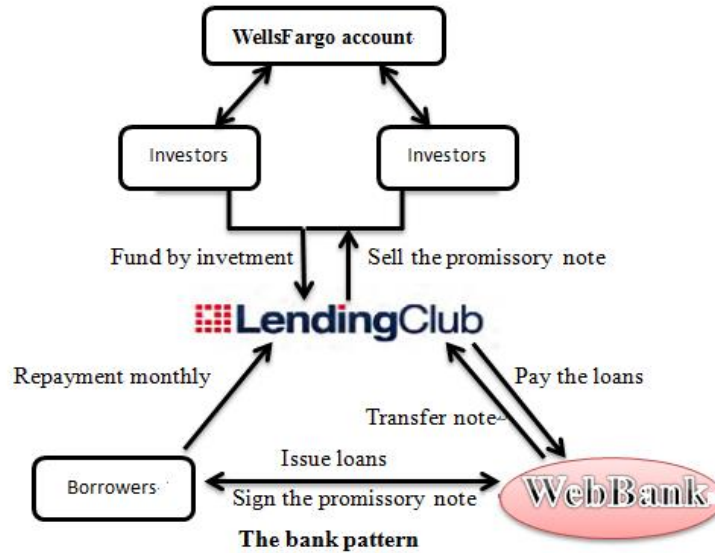
3) Security pattern

Until October 2008, Lending Club registered with the SEC. The company changed its business model to the security model (Figure 3). With this new model, the relationship between borrowers and investors is different in that borrowers buy the securities issued by Lending Club directly, and investors receive profits based on the investment performance (Liao & He, 2014). In sum, the relationship between borrowers and investors is no longer a debtor-creditor relationship.

Figure 3. The process of security pattern

The security pattern
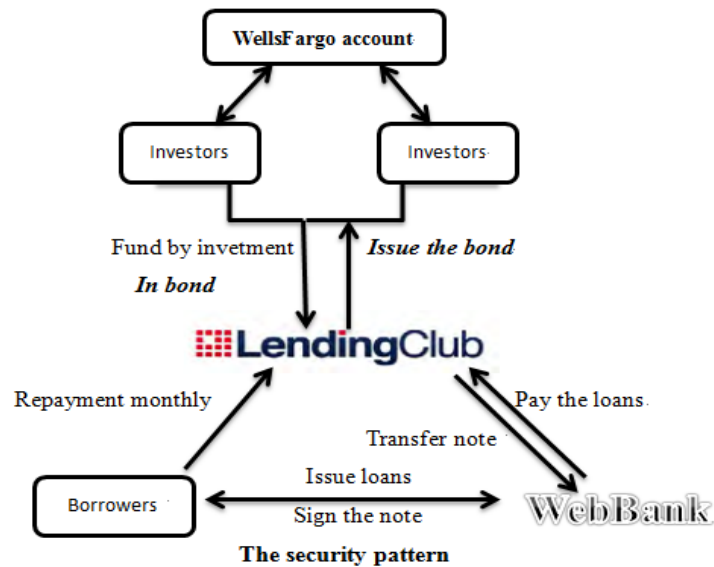
2.1.3 Products and Services

a) For Borrowers

At Lending Club, loan products for consumers and small businesses are as follows:

1) Personal loans

These include unsecured personal loans that can be used to make major purchases and refinance credit card balances and other purpose.

2) Education and patient finance loans

These encompass unsecured education and patient installment loans, and there are no interest loans through the issuing bank partners. Installment loan terms include amounts ranging from $2,000 to $50,000. Apart from the fact the maturities of installment loan range from 2 to 7 years, there are fixed interest rates and no prepayment penalties.

3) Auto refinancing loans

Secured auto refinancing loans can be used to help qualified consumers save money by refinancing into more affordable loans. The amount of installment loan terms ranges from $5,000 to $55,000, with maturities from 2 to 6 years. Borrowers are required to make monthly amortizing payments and no prepayment penalties. Lending Club currently has loans in 29 States and plans to expand its business to more states in 2018.

4) Small business loans

Unsecured small business loans enable business owners to expand their small business. Besides, small business loans are fixed-rate loans, and the amounts vary $5,000 to $300,000 with maturities from 1 to 5 years and no prepayment penalties or fees.

b) For investors

Investors could invest in a larger range of loans based on terms and credits. Apart from the fact that investors can receive monthly cash flow and risk-adjusted returns, they have access to borrowers' the proprietary credit grades and credit profile data on each listed loan, and the historical performance data on loans issued by Lending Club. Investors could also invest in loans through the following channels:

1) Notes

Lending Club issues notes (Note Registration Statement). Investors can be regarded as people who are satisfied with the financial suitability requirements and have completed an investor account opening process. When investors register, they automatically enter into an investor agreement that governs the investor's notes purchase. The note channel is supported by the firm's website and Investor Services group, which provides customer support to investors.

2) Securitizations

To expand the company's institutional investor base, in 2017 Lending Club developed the capability to support the self-sponsored securitization of loans in asset-backed securities transactions. There were four securitization transactions in 2017.

3) Whole loan purchases

Lending Club sells complete standard or custom program loans to certain institutional investors such as banks through purchase agreements. Upon the sale of the loans, the investor owns all the rights, titles and interests on the loans. Also, Lending Club can be a servicer in limited circumstances.

4) CLUB Certificates

In December 2017, Lending Club introduced a whole loan transaction structure known as the CLUB Certificate. This financial instrument trades in the over-the-counter market with a CUSIP and is cleared through the Depository Trust and Clearing Company. The CLUB

Certificate is tailored for institutional investors who need a liquid vehicle for accessing the consumer credit asset class.

5) Certificates and investment funds

Issued by the Trust, the certificates are unsecured and settled with cash flows from underlying loans selected by investors. Most times, investors in certificates pay an asset-based management fee rather than cash flow-based servicing fee paid by note investors.

2.1.4 Stockholders Structure

Lending Club's stock is listed in the New York Stock Exchange (NYSE) under the ticker symbol "LC." In January 31, 2018, 58 holders were recorded in Lending Club's common stock. The closing market price per share on the date was $3.66. Many Lending Club's shares of common stock are held by brokers and other institutions on behalf of stockholders, so the company could not estimate the total number of stockholders represented by these record holders.

2.1.5 Dividend Payment Policy

Lending Club had not paid cash or other dividends since its launch and does not anticipate paying cash or other dividends in the predictable future.

2.1.6 Sales and Marketing

The aim of the marketing efforts of Lending Club is to attract and retain borrowers and investors and to build brand awareness and reputation. The company has devoted significant resources in marketing and brand advertising efforts and strategic relationships. Lending Club has also tried to use a diverse array of marketing channels and has been constantly seeking to improve and optimize customers' experience both online and offline to improve efficiency and boost customers' satisfaction.

2.2 Industry Analysis

Since 2015 and until now, the number of FinTech companies in the U.S. sharply increased from 800 to 2000. The investment scale and trade volumes have grown rapidly and it is predicted that financial activities will increase massively, mainly in the U.S. The loan service has taken mainly percentage in FinTech products. The storage and investment service accounts for about 16.7% of these products, while insurance service and loans online have the lowest proportion. The younger generation and high-income group tend to accept the changes

in financial marketplace. While China and Japan will play important roles in this area, Goldman Sachs predicted that an income of $660 billion will be transferred from the traditional financial service to FinTech in 2017. This means that FinTech firms might pose a tremendous threat to traditional banks in the future.

Furthermore, to analyze the influence on FinTech companies, Huo and Zhang (2015) used four core factors: the number of users, the risk of transactions, the investors' will of the transaction and the usage of big data, and the long end theory. The traditional finance services are bound by Pareto's principle. One is that minority influential customers contribute about 80% of bank profits, and the other is that the public and middle- and small-sized companies account for the remaining 20% profits (Stiglitz, 1981) (Figure 4). The Pareto's principle leads to information asymmetry and rejects small customers. Andersen (2004) proposed the long end theory; it states that if a company has the lowest storage and information cost and a large number of customers, the product will take part in meaningful shares of the market.

Figure 4. The long end theory
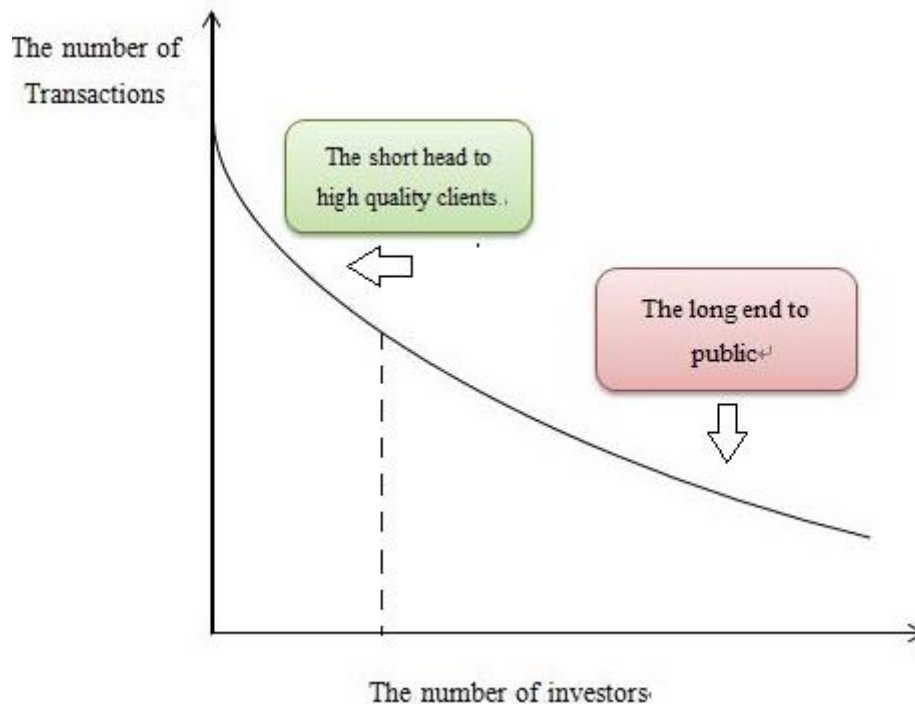
Merton (1995) also argued that the financial function is very stable no matter what the business model is. FinTech does not change the nature and function of finance (Zhang, 2014); on the contrary, it develops finance. With the advent of Internet technology, more clients are

likely to participate. Digital financial products, for instance, have lower costs than traditional financial products. Besides, this method is more attractive to investors due to the advantages of unlimited time and territory, convenient online operations, and lower information asymmetry (Huo & Zhang, 2015).

The 2007/2008 financial crisis has launched new regulatory initiatives and has accelerated existing ones. From the point of risk management, the Fintech industry has the feature of public and crime easily; it even increases the systematic risk (Zhang, 2014) The Fintech companies should keep under the strict supervision. However, the regulatory environment for lending and online market is complex. They are constantly evolving which prompts uncertainty, and creates a number of challenges as well as opportunities. Fintech Companies are subject to extensive and complex rules and regulations, licensing and examination enacted by various federal, state and local government authorities. This is done to grant legal protection to borrowers and investors. Similar to Lending Club, WebBank is also subject to the legal regulation from Federal Deposit Insurance Corporation (FDIC) and the State of Utah. The authorities impose obligations and restrictions on the companies' activities and facilitate the granting of loans.

2.3 SWOT Analysis of Lending Club

Many companies have conducted a SWOT analysis as part of their strategic planning process to identify the strengths, weaknesses, opportunities and threats before making a strategy (Houben et al., 1999). A number of models could help firms and researchers analyze the external and internal environment. Michael Porter's framework, the famous five forces model, focuses on five forces that shape competition in any industry: (1) the threat of potential competitors; (2) the bargaining power of suppliers; (3) the bargaining power of buyers; (4) the threat of substitute products (5) the rivalry among established firms (Porter, 1998).

In the software industry, Edward (2002) developed Michael Porter's model to analyze from the external analysis on the macro-environmental aspect and on the generic building blocks of competitive advantage together with resources and capability-based view for the internal analysis.

Internal analysis

The six variables that influence the long-term business success are as follows: resources, capabilities, quality, efficiency, customer responsiveness, and innovation.

External analysis

1) Potential exogenous growth barriers (treats): These include marketing/distribution in foreign countries, trade/commerce law issues, regulations by the governments or regional authorities, the acquisition of venture capital, labor legislation issues, e-business maturity in the country, the market size, taxation issues, rivalry, and staff recruitment.

2) Potential exogenous growth drivers (opportunities): These include the software patent protection initiative, domestic market, and currency conversion.

SWOT analysis will be used to analyze Lending Cub based on the company's presentation, the previous industry analysis, and the reference from Edward and Michael Porter's framework.

2.3.1 Strengths

The strengths of the technology company include the following:

1) Efficient risk management

Risk management is a critical factor in financial institute, and Lending Club is regarded as the best peer-to-peer company in risk management. The company has been able to strengthen its risk management, thanks to the thorough credit system in the U.S. and its proficiency in data analysis.

2) Highly automated

With internally developed software, borrower and investor acquisitions, registration, credit decision and scoring, servicing and payment systems are highly automated. Proprietary cash management software can operate electronic cash movements, record cash entries, and calculate cash balances. An electronic payment network, named Automated Clearing House (ACH), is used to pay loan proceeds in most transactions.

3) Scalable platform

The scalable infrastructure utilizes standard techniques such as virtualization and high-availability platforms. The database tiers are designed to be scaled horizontally by adding additional servers when needed. The firm runs on a cloud-based platform simultaneously, ensuring flashy scalability and rapid agility for businesses.

4) Data integrity and security

The security program of Lending Club is based on well-established security standards and best practices, including ISO2700x and NIST 800 series.

5) Application programming interface (API)

API provides investors and partners' access to publicly available loan attributes. It also allows them to analyze the data and place orders based on their criteria without visiting the company's website. Apart from the fact that investors and partners can create their own software that uses API, they may use a variety of third parties that offer API services.

6) Lending Club open integration (LCOI)

LCOI allows online advisors and broker-dealers to offer Lending Club investments effectively and conveniently to their client bases, using API services that integrate directly into their websites.

7) Loyalty to clients

In 2008, the SEC required Prosper and Lending Club, the two biggest FinTech companies in America, to stop their business operations unless they register with SEC. Even though Lending Club closed their business, it used its own capital to issue loans. While, Prosper closed its own business totally (Han, Huang, & He, 2015).

8) Lower business cost

Many experts believe that Lending Club has low business costs compared with traditional financial organizations (Han, Huang, & He, 2015).

Besides the strengths mentioned above, there are some strengths in other sides. For example, because of its culture of innovation, Lending Club generated over 10 patent applications in 2017.

2.3.2 Weakness

Even though the company has taken measures to detect and reduce the risks of fraud, these measures need to be improved continually. Besides, the security measures of Lending Club may not be effective against new and continually evolving forms of fraud, especially those that are related to new product offerings. Hence, high-risk loan applications must be subjected to further investigation.

2.3.3 Opportunities

With approximately $9.0 billion transactions in 2017, Lending Club is America's largest online lending marketplace that connects borrowers and investors. Nevertheless, the company still has the potential to develop and expand its business operations. By cooperating with traditional banks such as WebBank, Titan Bank and Congressional Bank, Lending Club can have access to a large amount of capital controlled by traditional banks. FinTech companies collaborating with traditional banks is mutually beneficial to both partners (Edward,2002), thus allowing Lending Club to focus more on expanding its operations in foreign markets. In addition, the U.S. peer-to-peer lending company could also pay more attention to establishing Internet, technology and financial services to possess large, existing customer bases and substantial financial resources. The brand, scale, network effect, and historical data of Lending Club could give the company a competitive edge over potential rivals in the future.

2.3.4 Threats

Whether Lending Club likes it or not, it has to compete with financial institutions and companies that attract borrowers or investors or both. From the views of borrowers, the main competitors of Lending Club are traditional financial institutions such as banks, credit unions, and credit card issuers. From the vies of investors, Lending Club needs to compete with other investment tools and assets such as equities, bonds and short-term fixed income securities. Others include online lending marketplaces and unconventional lenders.

3. Literature Review of Corporate Valuation

3.1 Introduction of Corporate Valuation

It is a fact that every asset has a value. Not only what the value is, but the sources of the value are also important for people who want to invest and manage asset successfully. According to Koller *et al.* (2010, pp. 3) "value is the defining dimension of measurement in a market economy".

The two main approaches to corporate valuation are relative valuation and absolute valuation. In the absolute valuation method, the equity value depends on the future profits of the equity (Pratt, 1981). Discounted Cash Flow is also included in absolute valuation. Damodaran (2010) suggests that the relative valuation approach is easy-to-understand for investors due to fewer assumptions and data.

Corporate valuation is an important tool in portfolio management, corporate finance and mergers and acquisitions process (Damodaran, 2002). Fernandez (2002) states that the valuation of listed companies is used to recommend what shares to buy or sell, decide which securities the portfolio should concentrate on, and compare companies. Corporate valuation is focused on the firm's intrinsic value, which determines the firm asset and profitability. The three main factors that influence the valuation include the capital structure of the company, the cash flow, and the market occupancy. The industry factors and macro-economic variables also have impact on the calculation.

However, valuation is not absolutely quantitative and objective. The results obtained from the valuation model are colored by the inevitable bias from the process. Firms encounter different market situations which will affect the result obtained from the valuation model. Besides, the valuation model is not timeless. Because of some assumptions made by companies, the data obtained may be not very relevant. As a reasonable margin for error is necessary in the valuation (Damodaran, 2010), there is no ideal valuation model for any business. In other words, the valuation model is chosen based on the characteristics and specificities of each company.

3.2 Discounted Cash Flow Valuation

The discounted cash flow valuation is computed by the present value of the expected future cash flows generated by the asset, and it is discounted at a rate which reflects the risk or uncertainty of the estimated cash flows (Damodaran, 2002; Luehrman,1997). The formula is as follows:

$$Value = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t} \qquad (1)$$

where,

n = asset life

CF_t = cash flow at a certain period t

r = discount rate

The valuation method emerged in the 1970's (Luehrman, 1997), and it is extensively used to evaluate companies' value. With constant development and improvement of the valuation method, Damodaran (2002) and Fernandez (2007) points out that the discounted cash flow method has two main approaches: firm valuation and equity valuation. According to Damodaran (2002), firm valuation has two paths: the Free Cash Flow to the Firm (FCFF) and

Adjusted Present Value (APV). As for equity valuation, there are the Free Cash Flow to Equity (FCFE) and the Dividend Discount Model (DDM).

3.2.1 Equity Valuation

a) Dividend discounted model (DDM)

The value of a stock is the present value of expected dividends of the stock (Damodaran, 2010). The basic principle of the DDM model is similar to the present value rule. The content of present value rule is that the value of any asset is the present value of expected future cash flows discounted at a rate appropriate to the riskiness of the cash flows (Damodaran, 2010). The value of a stock is determined by the expected future dividend payments and the cost of equity.

To calculate the expected dividends, we make some assumptions about the payout ratios and the expected future growth rates in earnings. Developed by Williams (1938) firstly and improved by Gordon (1962) to produce the famous Gordon Model, DDM is the most original DCF valuation approach. The formula is expressed as follows:

$$Value\ per\ share\ = \sum_{t=1}^{t=\infty} \frac{E(DPS)}{(1+K)^t} \tag{2}$$

where:

DPS = expected dividends per share

K = cost of equity

There are currently five versions of the dividend discount model. The difficulty of computing future dividends is confirming the growth rate of the dividend.

1) Zero growth pattern: This model assumes that there is no growth rate during the investment process.

2) The Gordon Growth Model: This model assumes that a constant growth rate is often used by companies with a stable dividend growth rate. The formula is as follows:

$$P_0 = \frac{D_1}{K-g} \tag{3}$$

where:

g = growth rate in dividends forever

Even though the model is simple and convenient, it is sensitive to changes in the growth rate. The assumption that the growth rate will be constant forever is also not realistic, especially due to the volatility of earnings. The value per stock becomes negative when the growth rate is close to the cost of equity. According to Damodaran (2002), this model is very appropriate for mature companies with stable growth rates and well-defined payout policies.

3) Two-stage dividend discount model

This model encompasses two processes: one is that an extraordinary growth stage during some years, and the other is that after the first process, a stable growing stage last forever.

$$P_{0=} \sum_{t=1}^{t=n} \frac{DPS_t}{(1+K_t)} + \frac{P_n}{(1+K_t)^n} = \frac{D_1}{1+K} + \frac{D_2}{(1+K)^2} + \cdots + \frac{D_n}{(1+K)^n} + \frac{P_n}{K-g} \times \frac{1}{(1+K)^{(n-1)}} \qquad (4)$$

where,

g = growth rate of dividends forever

D_n = dividends of year n

DPS = expected dividends per share

K = cost of equity

P_n = Terminal price at the end of year n

According to Damodaran (2010), sometimes this model undervalues companies, especially those that are not distributing dividends.

4) The H Model for valuing growth

This is a two-stage growth model, and it assumes that the earnings growth rate begins from a high initial rate (g_a) and decreases linearly during an extraordinary period to a stable growth rate (g_n) (Damodaran, 2010).

5) Three-stage dividend discount model

This model combines the features of the two-stage model and the H model. It assumes an initial period of stable high growth, then a period of declining growth and lastly a stable low growth that lasts forever.

b) Free cash flow to equity (FCFE)

The FCFE uses future cash flows to value the company. This model utilizes the actual income, which is adjusted, to obtain cash flows using the financial obligations and the necessary investments to continue the company's operating cycle:

FCFE = Net Income + Depreciation - Capital expenditures

        - Changes in non-cash working capital - (New debt issue - Debt repayment)   (5)

The equity value could be calculated by the future cash flows to shareholders after debt payments, discounted by the required rate of return (Damodaran, 2002). The formula is as follows:

$$\text{Value of equity} = \sum_{t=1}^{t=n} \frac{FCFE_t}{(1+K_e)^t} \tag{6}$$

where K_e = cost of equity.

The discount rate represents the return on equity demanded by the shareholders. The Capital Asset Pricing Model (CAPM) is often used to estimate the cost of equity:

$$k_e = R_f + \beta\left[E(r_m) - r_f\right] \tag{7}$$

where:

    R_f = risk-free rate

    β = coefficient of systematic risk

    $E(r_m)$ = the expected return of the market

3.2.2 Firm Valuation

There are two approaches to estimate the value of the firm. One is based on the FCFF and is calculated by discounting the free cash flow of the firm using the weighted average cost of capital (WACC). The APV is another approach, which values each claim of the company separately.

a) Free cash flow to the firm (FCFF)

The free cash flow to the firm is the total cash flow to all claim holders in the firm, and it is the cash flow that is available after expenses, taxes and changes in net working capital are deducted. Stockholders, bondholders, and preferred stockholders are included in the claim holders.

  *FCFF = EBIT * (1-tax rate) + Depreciation – Capital Expenditure - ΔWorking capital*   (8)

Depreciation is relevant due to the fiscal aspects. The capital expenditure is the investment made in the productive capacity and relevant to the operating activity, while ΔWorking capital is the change in working capital (i.e., the difference between current assets and current liabilities).

When the FCFF is estimated, it is assumed that no business could produce significant growth continuously and that growth is the main component of the enterprise value. This approach aims to ensure that the annual growth for the cash flow of the firm is constant. The resulting value is the Enterprise Value (EV) which is obtained by discounting the free cash flow to the firm at the weighted average cost of capital. It is assumed that the firm is growing at a stable rate. Hence, the equation is as follows:

$$EV = \frac{FCFF_1}{WACC - g_n} \tag{9}$$

where:

$FCFF_1$ = expected FCFF next year

$WACC$ = weight average cost of capital

g_n = growth rate of the FCFF

If the growth rate is less than or equal to the growth rate in the economy (the nominal growth) and the firm has a stable growth (Damodaran,2010), this model can be used to value the firm. The FCFF model is as follows:

$$EV = \sum_{t=1}^{\infty} \frac{FCFF_t}{(1+WACC)^t}. \tag{10}$$

where t denotes the year of the cash flow. If the growth rate is stable after n years and the growth rate is g_n, the enterprise value is shown below:

$$EV = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + (FCFF_{(n+1)}/(WACC_n - g_n))/(1 + WACC)^n \tag{11}$$

The firm value adds cash and other non-operating assets to the enterprise value.

It is important to note that WACC is the minimum rate of return required by investors and that WACC will be used if there is a stable capital structure. The demand for the perspective buyer determines the current or targeted WACC. If the buyers want to introduce a new financial strategy for the firm, the current WACC will be used; if the aim is to access the funds at a different cost, the targeted WACC will be employed.

$$WACC = R_e \times \frac{E}{D+E} + R_d \times \frac{D}{D+E} \times (1 - Tax\ rate) \tag{12}$$

Where R_e and R_d are the cost of equity and the cost of debt, respectively. Both are calculated as follows:

$$R_e = R_f + \beta_L \times \text{market risk premium (MRP)} + \text{country risk premium(CRP)}$$

$$R_d = R_f + \beta_D \times \text{market risk premium (MRP)}$$

The equity value could be finally calculated by adjusting the firm value obtained previously. The equation is as follows:

$$EQV = EV + Non\text{-}operating\ assets - financial\ debt \tag{13}$$

b) Adjusted present value (APV)

The APV method, presented by Myers in 1974, ensures that each claim of the company is valued separately. The value of the firm could be expressed as follows:

Value of the firm = value of all equity financed + PV of tax benefits

$$+expected \qquad\qquad bankruptcy \qquad\qquad costs$$
$$\tag{14}$$

According to Damodaran (2002), three steps need to be taken when computing APV. First, we start with all financed equity and consider that the firm is unlevered. The formula is as follows:

$$Value\ of\ unlevered\ firm = \frac{FCFF(1+g)}{(r_u - g)} \tag{15}$$

where:

FCFF = the free cash flow to the firm

r_u = the unlevered cost of equity

The unlevered cost of equity can be calculated by the unlevered beta of the company.

$$\beta_U = \frac{\beta L}{1 + (1-t)\left(\frac{D}{E}\right)} \tag{16}$$

where:

β_u = unlevered beta of the company

β_L = levered equity beta of the company

$t = tax$ rate

D/E = debt to equity ratio

Second, we add the debt effect. The debt effect consists of summing the expected tax benefit from a certain level of debt. The tax benefit is discounted at the cost of debt and is influenced by the tax rate. Third, we need to calculate the risk costs and the bankruptcy costs, considering the debt level. It is also essential to estimate the probability of bankruptcy and

indirect cost (Damodaran, 2002). When using APV, managers can trace the origin of the value. This advantage help researchers to know the influence of changing the capital structure.

3.5 Relative Valuation: Multiples

Multiple valuations can express the market value of companies which is relative to key statistics. The key statistics should have logical relationship to the market value. The objective of multiples is to value assets based on a similar asset which is currently priced in the market (Damodaran, 2001). The relative valuation also uses fewer assumptions, thus assisting in obtaining results quickly. Investors and clients could understand and use it easily. Nevertheless, it may reflect the current mood of the market (Damodaran,2010). Additionally, this method provides a framework for making value judgments, and it is a complement approach to the absolute valuation. Multiples are robust tools for obtaining useful information about relative value.

However, multiples ignore key variables such as risks, growth rate, and cash flow potentials. It can sometimes even result in an overvaluation of assets, and it is only used on a point of time. Historical data are the basement of multiples, and they suffer from a short-term bias. According to Fernandez (2002), a relative valuation could be used only on a second evaluation stage and to ensure the results obtained previously by another methodology. A peer group and value assets on relative basis needs to be created to find a similar firm when using multiples to value a company. The peer group is a set of companies which are selected to compare the company being valued effectively.

To achieve this goal, a standardization of values is needed. There are two basic types of multiples: using the enterprise method and using the equity method. Fernandez (2002) noted that in a study conducted by Morgan Stanley, the most used metrics are the Price to Earnings Ratio (PER) and the Enterprise Value to Earnings before Interest, Tax, Depreciation, and Amortization (EV / EBITDA) ratios.

a) PER

When buying a stock, it is not uncommon to consider the price paid as a multiple of the earnings per share. The PER can be calculated by using the current earnings per share, earnings over the last 4 quarters and expected earnings per share. The results are current PER, trailing PER and forward PER respectively. The PER is determined by using the following formula:

$$PER = \frac{Market\ Value\ per\ share}{Earnings\ per\ share} \tag{17}$$

A company fully financed by equity shows a higher PER than a company financed by debts. Hence, the ratio is related to the capital structure. Managers could replace debts with equity to increase the ratio (Koller et al., 2005).

Similar to PER, the price-to-book ratio (PBR) is used as a benchmark to compare the market value with the accounting book value of assets. The book value should abide by the accounting rules and is also influenced by the original price of the assets (Damodaran, 2010). By using the total market value of equity and book value of equity, the process could be easier when calculating the PBR. The formula of PBR is as follows:

$$Price\text{-}to\text{-}book\ ratio = \frac{market\ value\ of\ equity}{book\ value\ of\ equity} \tag{18}$$

The PER and PBR should follow the accounting rules and principles. However, the multiples that are determined by revenues such as the price-sales ratio should not be strictly limited by the accounting principles. The price-sales ratio can be used to compare companies in different industries easily.

$$Price\text{-}to\text{-}sales\ ratio = \frac{market\ value\ of\ equity}{revenues} \tag{19}$$

The reciprocal of the PER is the yield rate that is an essential index in corporate valuation. Also, the price/earnings to growth ratio (PEG) is a multiple and is more intensive than PER because it considers the growth rate of the firm. If the value is higher than 1, the company may be overvalued or the future growth will be better than market expectation and vice versa. The equation of PEG is as follows:

$$PEG = \frac{PER}{100 \times Growth\ rate} \tag{20}$$

b) EV/EBITDA

This ratio is a measure related to the total market value of the company with its earnings before interest, tax, depreciation, and amortization.

The change in capital structure does not affect the EV/EBITDA, and it is not very vulnerable to changes unless the cost of capital is affected by huge changes. Enterprise value multiples

such as EV/EBITDA are more reliable than equity multiples such as PER (Koller et al., 2005).

There are four basic steps before using multiples. First, we need to ensure that the definition of multiples is consistent and uniform. The numerator and denominator should also be consistent during the calculation. The numerator, for instance, could use equity value or enterprise value. At the same time, the denominator should be an equity measure (earnings or net income) or a firm measure (operating income or EBITDA). Second, we need to focus on the sectional distribution of the multiple throughout the entire market. Third, we need to analyze multiples and know how changes in fundamentals translate into changes in multiples. Lastly, we need to find the right firms to compare and determine the value of the firm or its equity. These steps could help prevent misuse (Damodaran, 2010).

Additionally, while using multiples, we often utilize several different multiples and employ an average of the value produced by each multiplier or establish an interval for the value of the company.

c)   **Price-to-sales ratio**

The price-to-sales (P/S) ratio is a recently emerging financial ratio in the international capital market, and it is mainly used by high-tech companies and the GEM. The PER is effectively for mature companies, while the P/S ratio is more reliable for startups which are not yet profitable. We cannot, for instance, use the PER to evaluate business risks or value companies listed on the NASDAQ because earnings are not required. Nonetheless, the P/S ratio could help researchers to investigate a company's quality of earnings.

Besides, the P/S ratio will never be negative, and it is meaningful for loss-making and insolvent enterprises. Compared to earnings, sales cannot be manipulated easily, and they are stable and reliable. They are also sensitive to changes in price policies and corporate strategies and could reflect the consequences (Li, 2012). The cost, however, is an important factor for enterprises cash flow and value, even though the changes of cost could not be reflected in the P/S ratio. Also important is that only a comparison in the same industry could use this ratio. That is, the comparison between different industries is meaningless (Du & Ping, 2005).

$$\text{Price-to-sales} = \frac{total\ market\ value}{sales\ in\ main\ business\ area}. \tag{21}$$

d) EV/Sales

The EV/sales ratio refers to the ratio of the stock price to the sales income per share. A score between 0 and 100 is given based on the ratio. The higher the EV/sales ratio, the higher the corresponding stock value. The EV/sales is computed with the following formula:

$$\text{EV/sales} = \frac{stock\ price}{sales\ revenue}\ \times 100\%. \tag{22}$$

EV/sales is an important index for company's stock value, and it clearly reflects the potential value of firms in emerging markets. In the increasingly competitive environment, a company's market share determines its viability and profitability.

e) PCF

The PCF is the result of the market price divided by the cash flow per share. This metric indicates the risks faced by companies. The lower the PCF, the lower pressure of business operations is. The PER, the PCF is effective for enterprises with stable development.

4．Valuation of Lending Club

4.1 Financial Statements Schedule

4.1.1 The Income Statement（Appendix 1）

The income statement is used to measure Lending Club's financial performance from 2015 to 2017. The main results are from the company's public data. To calculate conveniently and clearly, we add the gross profit, EBITDA or EBIT in the statement. Lending Club has made huge losses in the last three years. Even in 2015 when there was no scandal, Lending Club was seen as the most promising FinTech Company with a negative net income. Although we cannot explain the negative data, the performance of FinTech companies or Internet companies is related to both the net traffic and the number of users. Thus, we need to combine the traditional value method (i.e., the FCFF), with a suitable method for high-tech companies, to analyze these companies. The main costs for Lending Club are transaction fees. The 2016 scandal affected the brand reputation of this company, forcing Lending Club to pay about $37050 to repair its goodwill.

4.1.2 The Balance Sheet （Appendix 2）

Only the Lending Club's balance sheet of 2016 and 2017 could provide more insights into the financial status of the firm. It is an essential requirement to inspect business health status. Loans held for investment at a fair value account for a highest percentage of the total asset, about 77% in 2016 and 63% in 2017. This means that the primary business of Lending Club is lending money to borrowers. While the percentage of the loan to institutions is lower than 5% in these two years, the main liabilities of Lending Club are notes, certificates, and secured borrowings at fair value, over 94% in 2016 and 79% in 2017. When the scandal happened in 2016, the accrued expense and other liabilities sharply increased from $85,619 to $228,380 and the stock price slumped. In these two years, Lending Club used $1,226,206 and $1,327,206 separately to buy back some shares while the financial performance in balance sheet was still weak.

4.2 The Free Cash Flow of the Firm (FCFF)

Using the FCFF model, we merge data from three sources: Damodaran database, Lending Club annual report, and the U.S. government database to obtain the weight average cost of capital (WACC) and forecast the free cash flow in the future five years. We calculate them separately.

a) WACC (Appendix 5)

To calculate the WACC, the computation is done according to Equation 12.

The value of *E* is the market value of equity and *D* is the interest-bearing liabilities used in the WACC. The WACC uses the target of the capital structure that the company plans to obtain in the future. To simplify the calculation process, we assume a constant D/E ratio based on values of 2017. The assumptions used in the income statement and balance sheet will lead to some small changes in the capital structure. The difference of debt and liabilities is a kind of interest-bearing liabilities, and the debt value is $3,528,263 obtained from the balance sheet in 2017. More so, the equity value is equal to the share price in 2017 multiplied by the number of shares. The number of basic weighted average common shares are 408,995,947 in 2017 and the price per share is $0.38, *E* is $155,418,459.9.

Furthermore, the cost of debt (R_d) is equal to risk free rate plus the credit spread. In this thesis, we assume that the risk-free rate corresponds to the rate of 10-year U.S. Government bonds. From January 2018 until now, the average rate of 10-year U.S. Government bonds is 2.867%,

which is the highest rate in past five years. From 2012 to 2017, the average rate of the bond is 2.135%. The average rates for each past five years and the growth rate of risk-free rate (r) are in Appedix5. As the result of geometrical mean, the growth rate of risk-free rate (r) is 3.9%. The credit risk value was seen in Damodaran's website. The default spread value is 18.60% for financial service companies with rating D2, considering long-term debt rating of Lending Club.

The tax value of all financial service companies given by Damodaran's website is 19.89% in U.S. To estimate the cost of equity (R_e), the Capital Asset Pricing Model (CAPM) is used, as represented in Equation 7. The Beta (β) is a systematic risk and it is levered. The levered beta (β_L) of Lending Club is calculated with Equation 16 by using the unlevered beta (β_u) given for the industry which is 0.07. The Market Return (R_m) is calculated through the equity risk premium of 5.08% (the average for the U.S.), and the data is obtained from Damodaran's website.

Table1. WACC

WACC					
	2018	**2019**	**2020**	**2021**	**2022**
WACC	3.54	3.65	3.77	3.89	4.02

b) Free cash flow for the Firm (Appendix 4)

The concept of free cash flow and MM theory were first proposed in 1958 by the American scholars Franco Modigliani and Merton Miller. They re-explained that the goal of a company is to maximize the enterprise value. Rappaport and Jensen in the 1980s suggested the specific and fulfilling idea of (free cash flow) FCF, while Professor Tom Copeland expounded the calculation method of FCF. Berkman (2000) also provided the concept and computation of FCFE separately at the same time (Song, 2005). The formula is as follows:

FCF = (NOPLAT + depreciation and amortization) – (capital expenditure + ΔWorking capital) (23)

Free cash flow is computed as after-tax earnings before extraordinary items and interest (both income and expense). It is then adjusted for amortization, depreciation, the change in (non-cash) working capital, and net capital expenditure (Berkman, 2000). The equation is as follows:

FCF = EBIT × (1-tax rate) + Depreciation – Capital expenditure - /+ ΔWorking capital (24)

Net operating profit less adjusted taxes (NOPLAT) is one of the most important concepts in calculating the company's earnings before taxes and interest. It is less adjusted taxes and evidently generated from the operating activity, excluding the non-operating activity. In other words, NOPLAT can be calculated by the earnings before interest and taxes (EBIT) adjusted by taxes (Song, 2005).

$$NOPLAT = EBIT \times (1 - t) \qquad (25)$$

The U.S. GAAP (Generally Accepted Accounting Principles) does not allow reserves, except for the bad debt reserve (Yu and Zeng, 2006). The non-cash expense should be added back to NOPLAT. The depreciation and amortization are included in non-cash expense. The working capital is the difference between current assets and current liabilities. To calculate the working capital, we only need to consider the items that support the company's daily operations.

ΔWC is the variances in working capital which can be positive or negative, while the capital expenditure is the investment made in productive activities related to business operations. FCFF is the cash available to pay to the investors after the company pays its costs of doing the business.

Table2. Forecasted FCF

FCF forecast						
In Thousands, Except Share and Per Share Amounts						
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023 (n+1)**
FCF		20458.22	22704.41	25197.22	27963.73	31033.98	34441.32
WACC（%）		3.54	3.65	3.77	3.89	4.02	4.18
growth rate							0.11
continue value		19758.93	21132.63	22549.73	24003.21	25484.59	6899.21
EV	119828.30						
Non-operating asset	156,278						
Firm value	276106.30						
Debt	3443193.00						
Equity	(3167086.70)						
Shares	374,872,118						
Price	(0.01)						
Price in fact	3.88						

In Table 2, it is assumed that the real growth rate of free cash flows is 11%. The forecasted FCFF is positive. This means that the company has sufficient revenues to cover its costs. By discounting all the future expected FCFF to the WACC discount rate, the enterprise value (EV) is calculated to be $119,828.30.

In the income statement, the revenue in the last three years is negative, and the free cash flow obtained from 2015 to 2017 is also negative. The FCFF may be negative in the long-term result in some adverse outcomes. The company had no cash to operate in the long term, and they needed to obtain loans from external sources finance. The performance in the dividend will be influenced, and it will reduce the attractiveness of the company. The negative net income is not a necessarily bad consequence. Inner Mongolia Yili Industrial Group, for instance, prefers a high levered debt operation, and its average debt ratio is about 60% with a negative free cash flow in recent 10 years. However, the growth and development of the company has not been affected. The dividend issued was less than the additional rights issued during the past 20 years. The situation of the firm is capital accumulation.

This case gives clues regarding how to analyze the situation of Lending Club. Even though the negative free cash flow for Lending Club is not attributed to high levered debt operations and capital accumulation, the result does not indicate that Lending Club is completely moribund.

Based on the analysis of the situation of the firm, the negative data is mainly because of the credit risks and management issues. FinTech companies, such as Lending Club, have both Internet and financial industries' features. Besides, the net traffic and users are the essential components of the Internet industry. This means that FinTech firms do not only need to consider the credit risks but the core of the traditional financial industry, risk management. Hence, not only traditional valuation would be used for evaluation.

It can be seen from Table 2 that the FCFF, the traditional corporate valuation method, is not suitable for valuing Lending Club which has negative net income and cash flow. In other words, we could not use this method because of the negative equity value.

4.3 Multiples Analysis (Appendix 6)

In the research report "Democratizing Lending through the Marketplace; Initiating at EW on Full Valuation" written by Morgan Stanley (2015), Lending Club is an intermediary and does not take the main risk. Morgan Stanley participated in Lending Club, which is to be listed in 2014, and used the relative valuation method to value the company. According to the report, they obtained the target price $22 by using EV/EBITDA 19 times and EV/ Sales 11 times WACC. By the way, they used PE/DCF to prove the answer. In the analysis, Morgan Stanley thought that Lending Club had plenty of time to develop and metamorphose into a FinTech giant.

Furthermore, Morgan Stanley chose three kinds of companies to make up the peer group: 1) the third-party platform: Grub Hub, HomeAway, eBay and Priceline; 2) industry companies: Facebook, LinkedIn, Twitter, Yelp and Alibaba; 3) financial companies that depend on service charge: Visa and MasterCard.

To compare Lending Club and its competitors, we selected two applicable American FinTech companies：Square (SQ), On Deck Capital (ONDK). Also chosen were two traditional financial companies: First Horizon Nation (FHN) and Regions Financial Co (RF). Because of the galloping progress of FinTech companies in China during the last 10 years, we chose five Chinese FinTech Companies: Alibaba Group Holding (BABA), PPDAI Group, Inc. (PPDF), Hexindai Inc. (HX), Yirendai Ltd. (YRD), and China Rapid Finance (XRF). All the firms selected are listed on the Nasdaq Stock Market.

Furthermore, we selected five ratios to value Lending Club: two frequently-used ratios PER, EV/EBITDA, two emerging ratios P/S (price-to-sales), and EV/Sales, and PCF. After comparing all data obtained in order to remove the negative data and the data with a significant difference, the results of the average industry were calculated by averaging the ratios of all appropriate companies, except Lending Club. The consequences are shown in Table 3 in which the number in red is negative or too high or too low for the average industry chosen.

Table3. Multiples

Multiple						
In hundred million						
Company	EV/EBITDA	P/E(PER)	Yield	P/S	EV/Sales	PCF
Industry	15.78	17.80	5.62%	3.25	2.84	10.12
Lending Club	-26.14	8.02	12.47%	1.30	3.40	-2.59
Square	943.51	590.93	0.17%	14.08	13.98	244.43
On Deck Capital	-83.03	137.00	0.73%	1.75	3.39	4.80
First Horizon Nation	35.23	29.71	3.37%	6.05	11.00	16.45
Regions Financial	14.11	16.22	6.17%	5.44	6.62	11.64
Alibaba	30.59	50.73	1.97%	11.80	11.32	23.46
PPDAI	7.69	12.81	7.81%	3.20	2.54	7.24
Hexindai	3.51	5.89	16.98%	3.33	2.20	4.64
Yirendai	3.56	5.81	17.21%	1.27	1.10	2.64
China Rapid Finance	-2.87	3.44	29.07%	1.72	1.19	-26.45

Generally, PER and EV/EBITDA are suitable for companies that have stable net income. The EV/EBITDA and PCF ratios of Lending Club are -26.14 and -2.59, respectively. These metrics are meaningless in valuing and analyzing Lending Club. The PER of Lending Club is

positive as illustrated in the table, while the ratio (8.02) is less than 2 times that of the average industry (17.80). The negative net income makes the enterprise value negative when the PER is used for calculation. Also compared is the yield of Lending Club (12.47%), which is the reciprocal of the PER, and the rate of the 10-year U.S. Government bonds is around 3%. The yield rate, which is higher than the rate of bonds, accounts for the cheaper stock price. The stock price of Lending Club is undervalued. Similar to the PER, the PEG is the percentage of PER/growth rate of earnings per share. The PEG of Lending Club is 1.6: it exceeds 1. The ratio shows different alternatives of effects: the stock price of Lending Club is overvalued, and the future growth is better than the market expectation.

If the P/S ratio is above 10, the company has high risks. However, if the P/S ratio is lower than 1, the investment of the company is worthless. Moreover, the P/S ratio can be used to compare companies in the same industry. The number of sales in the denominator is reliable and is unaffected by the depreciation, inventory and non-operating cost. The net income of high-tech companies is negative, while their sales are increasing and developing rapidly. These companies use the P/S ratio to value and forecast their business prospects. What is more, the P/S ratio of Lending Club (1.30) is lower than that of the average of the industry but higher than 1. It is important to note that 1.30 is a well-formed data to show the investment value of Lending Club is worthwhile.

The benefits of the EV/sales ratio are similar to those of the P/S ratio. However, compared to the P/S ratio, a higher EV/sales ratio means that companies will have better performance in the future. The data of Lending Club (3.40) is higher than that of the average industry (2.84). This means that Lending Club could offer satisfactory performance in the future. The EV/sales ratio and P/S ratio are effective in valuing companies such as Lending Club with a negative net income; nevertheless, the operation cost is not considered when calculating these ratios. As shown in Table 3, the ratios of two famous and influential companies Alibaba and Square have been removed from the average industry because of the large difference. This shows that the emerging FinTech industry is fluctuating and that every company and event have analytic value.

4.4 FCFE, APV and DDM

We could not use FCFE and APV in this case for the negative net income and cash flow. Like FCFF, these metrics are more suitable for the cyclical and stable business. Lending Club did not pay cash or dividends; hence, the dividend discount model is not an alternative.

4.5 Basic Result

After the 2016 management scandal, CEO Renaud Laplanche resigned and the stock price of Lending Club sharply decreased from $24.5 to $4.62 per share. The goodwill and reputation of the U.S. company was seriously impaired. Lending Club faced intense competition and heavy fines for 3 years due to the scandal in these three years. The editor of Investor Place Vince Martin listed "Lending Club in ten companies that are going to disappear in recent 10 years". Nevertheless, the company management remained resolute to restore its former glory. The company has taken several measures to boost investors' confidence. As for the risk of bad debts, Lending Club improved its credit level result, minimized the number of clients, and cut the further losses. It reduced its stock price to $3.

In this paper, we use two methods to value the firm: the absolute valuation method (FCFF) and the relative valuation method (PER, EV/EBITDA, P/S, and EV/Sales). The FCFF, PER and EV/EBITDA methods are widely accepted, but they can only be used to evaluate companies with stable profits. The P/S and EV/sales ratios are also appropriate for high-tech companies with a negative net income but not consider the cost. From the data obtained, the P/S and EV/sales ratios are well-formed data compared with the average of the FinTech industry. Based on these ratios, we can predict that Lending Club could have stronger performance in the future, but we cannot rule out the bad consequence.

5. Analysis

Figure 5 compares the Lending Club's stock price from 2015 to 2018 relative to the average of NASDAQ (the light blue line), the Square (the purple line) and the Alibaba Group (the pink line). Founded in 2009 by Jack Dorsey, Square specializes in payments. It has a software application named Square point of sale to support business available in Google and Apple. Also, Alibaba is a famous FinTech company in China; it provides a service named Ant Check Later which is widely used by mobile phone users. Lending Club's common stock began trading on the NYSE on December 11, 2014, and its relative performance was tracked through December 29, 2017.

As shown in the chart, the other three stock price lines increase, except Lending Club (the dark blue line). The FinTech industry is promising. Alibaba still has stable growth, yet we should consider the factors that influence the markets in different areas. With reference to Square, the stock price has increased from 2016. The rise in stock price is as a result of efficient market selection, effective management, and unflagging governments' support. The essential point is credits for financial companies which is related to goodwill.

Goodwill is created by a well-managed team, a healthy employee-employer relationship, corporate identity, high credit ratings, and a good working relationship between governments and companies. In the area of accounting, goodwill is divided into self-produced goodwill and merger and acquisition goodwill. According to the Statements of Standard Accounting Practice issued by ASC, the nature of self-produced goodwill and merger and acquisition goodwill is the same. The difference is that compared to self-produced goodwill, merger and acquisition goodwill could be measured and recognized now (Wang, 2015).

In 1855, the judge John Romilly refers to goodwill as building positive relationships between enterprises and customers in order to promote business growth and development in the case of Wedderburn V. Wddderburn (Gabriel, 1936). Many experts in the accounting field have espoused numerous viewpoints. Bourne (1888), for instance, pointed out that goodwill is affected by the favorable impression. Nelson (1953) proposed the unique momentum theory to identify goodwill. To measure the value of goodwill, Leake (1984) recommended the concept of super profit and calculated goodwill as the present value of excess profits. While the definition of goodwill is still under discussion in the literature, goodwill is an untamed force which business cannot ignore to remain relevant in the industry (Dong, 2008).

Lending Club, the pioneer of the FinTech industry, should have had a good prospect if not for the 2016 scandal which impaired its reputation. Figure 6 shows the sharp down of the stock price in March 2016. Until now, the bad impact result from the goodwill impairment, the situation did not improve. Goodwill impaired is a serious accident for financial firms during their development. The 2016 scandal exerted great but negative influence on investors' desire to invest in the company. Hence, it is difficult to predict the future of Lending Club. Although the developing FinTech industry has more advantages than traditional finance, it is pertinent that FinTech startups should learn from the mistakes of Lending Club. Most importantly, they should focus on the core factors of development and ensure stricter management than ever before.

Figure5. The comparison of stock price

Figure6. The stock price of Lending Club

6. Conclusion

In this paper, we have discussed the FinTech industry, the situation of Lending Club, 3and corporate valuation in deep. We used two methods, FCFF and multiples, to value Lending Club and found that the most suitable valuation methods for companies with unstable or no stable income are P/S ratio and EV/Sales. The DDM, APV, FCFE and other multiples are mainly used to value the companies with stable income. However, the P/S ratio and EV/sales do not put into consideration computational costs, thus the findings of this research are still limited, which the reason why we could not assert the future of Lending Club. In the FinTech industry, there are many new high-tech firms with no profits but which are still making progress, and the two ratios could help to enhance the understanding of such firms.

This paper introduces the long end theory and 'two 8 laws' to explain the difference between traditional financial services and the FinTech industry, and illustrates why the latter should encourage common customers and small-and-middle size companies to take part in buying meaningful shares in the market. Huo and Zhang (2015) found the number of users, the risk that goes with transactions, the investors' will in the transactions and the use of big data as the four core factors affecting FinTech companies. Analysis results of the data and information from Lending Club showed that goodwill is also provides essential value for companies, especially in the financial sector.

In only three years, Lending Club changed from an outstanding and promising enterprise to a struggling firm. Even though some people predict that the company will be no more within ten years from now, the results of this project indicate that Lending Club could have a good performance in the future. It is only from the P/S ratio and EV/Sales ratio of Lending Club that we could not guarantee about this. But it is certain that the FinTech industry will maintain good momentum.

In this thesis, we found that there is a need for a more appropriate and thorough method to value the high-tech companies without stable profits. Although the multiple ratios (P/S and EV/Sales) are suitable for valuation, they do not put into consideration the influence of costs during operation. From the analysis in section 5, the scandal that happened in 2016 really had an adverse effect on the future development of Lending Club, which is the reason why we selected to focus on stock prices from 2014 until now for analysis purposes. The event allows us to identify the value of self-produced goodwill. Today, the study on the merger and

acquisition goodwill is not enough, especially in the FinTech industry. It is worth noting that reputation and goodwill are vital to whether the enterprise can survive or die.

On searching literatures and case studies on FinTech companies' corporate valuation, the results are monotonous. Since there are more studies focusing on the policy and factors affecting development already, future studies should consider specific instances. The future of the FinTech industry is getting better and better; however, more attention and supervision are needed. In addition, globalization is necessary in this industry, but the majority enterprises, excluding a few famous FinTech companies, such as Alibaba, do business in their own countries, and government policies between countries are widely divergent. Just like how the Internet connects the world today, the FinTech industry should connect the financial world.

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8. Appendix

8.1 Appendix 1- Income statement

Statements of Operations			
(In Thousands, Except Share and Per Share Amounts)			
December 31,	2015	2016	2017
Revenues	**426697.00**	**495467.00**	**565522.00**
Transaction fees	373,508	423,494	448,608
Investor fees (1)	43,787	79,647	87,108
Gain (Loss) on sales of loans (1)	4,885	(17,152)	23,370
Other revenue (1)	4517	9,478	6,436
Expense and loss in main business area	**232861.00**	**291430.00**	**316756.00**
Sales and marketing	171,526	216,670	229,865
Origination and servicing	61,335	74,760	86,891
Gross Profit	**200328.00**	**214727.00**	**266802.00**
Fixed and other expense and loss	**77,062**	**152407**	**219514**
Engineering and product development	77,062	115,357	142,264
Class action litigation settlement	—	—	77,250
Goodwill impairment	—	37,050	—
EBITDA	**123266.00**	**62320.00**	**47288.00**
Other general and administrative	122,182	207,172	191,683
EBIT	**1084.00**	**-144852.00**	**-144395.00**
Net interest income and fair value adjustments (1)	**3,246**	**5,345**	**9,018**
Interest income	552,972	696,662	611,259
interest expense	(549,740)	(688,368)	(571,424)
Net fair value adjustment	14	(2,949)	(30,817)
Loss before income tax expense (EBT)	**(2,162)**	**(150,197)**	**(153,413)**
Income tax expense (benefit)	2,833	(4,228)	632
Less: Loss attributable to noncontrolling interests	—	—	(210)
LendingClub Net Income（loss）	**(4,995)**	**(145,969) $**	**(153,835) $**
Net loss per share attributable to LendingClub			
Basic	(0.01)	(0.38) $	(0.38) $
Diluted	(0.01)	(0.38) $	(0.38) $
Weighted-average common shares - Basic	374,872,118	387,762,072	408,995,947
Weighted-average common shares - Diluted	374,872,118	387,762,072	408,995,947

8.2 Appendix 2 - Balance Sheet

Balance Sheets ($)		
(In Thousands, Except Share and Per Share Amounts)		
December 31,	2016	2017
Assets		
Current Assets		
Cash and cash equivalents (1)	515,602	401719
Restricted cash (1)	177,810	242,570
Securities available for sale	287,137	117,573
Loans held for investment at fair value (1) (2)	4,295,121	2,932,325
Loans held for investment by the Company at fair value (1) (2)	16,863	361,230
Loans held for sale by the Company at fair value (1)	9,048	235,825
Accrued interest receivable (1)	40,299	33,822
Total Current Assets	5341880	401719
Non Current Asstes		
Property, equipment and software, net	89,263	101,933
Intangible assets, net	26,211	21,923
Goodwill	35,633	35,633
Other assets (1)	69,644	156,278
Total Non Current Assets	220751	4239112
Total assets	5,562,631	4,640,831
Liabilities and Equity		
Liabilities		
Current Liabilities		
Accounts payable	10,889	9,401
Accrued interest payable (1)	43,574	32,992
Accrued expenses and other liabilities (1)	85,619	228,380
Total Current Liabilities	140082	270773
Non-current Liabilities		
Payable to investors	125,884	143,310
Notes, certificates and secured borrowings at fair value (1)	4,320,895	2,954,768
Payable to securitization note and residual certificate holders (includes $1,479 and $0	—	312,123
Warehouse notes payable (1)	—	32,100
Total Non-Current Liabilities	4446779	3442301
Total liabilities	4,586,861	3,713,074
Equity		
common stock at par value ($0.01 par value)	4,003	4,198
Additional paid-in capital	1,226,206	1,327,206
Accumulated deficit	(234,187)	(389,419)
Treasury stock, at cost; 2,282,700 shares	(19,485)	(19,485)
Accumulated other comprehensive loss	(767)	(5)
Total LendingClub stockholders' equity	975,770	922,495
Noncontrolling interests	—	5,262
Total equity	975,770	927,757
Total liabilities and equity	5,562,631	4,640,831

8.3. Appendix 3 – The free cash flow (2015-2017) and growth rate

The free cash flow from 2015 to 2017			
	2015	**2016**	**2017**
FCF	**-2620547.4**	**-757474.8**	**18434.25**
EBIT	1084.00	(144852.00)	(144395.00)
Tax rate	0.35	0.35	0.35
NOPAT	704.60	(94153.80)	(93856.75)
WC	2666372.00	5201798.00	130946.00
Administrative	122182.00	207172.00	191683.00
Capital Expenditure	77,062	(4331305.00)	(51554.00)
Inflation rate (π)	0.00	0.01	0.02
Growth rate	0.29	(0.02)	
Nominal growth rate		0.12	
average inflation π'		0.01	
Real growth rate		0.11	

8.4. Appendix 4 - Free cash flow forecast

FCF forecast						
In Thousands, Except Share and Per Share Amounts						
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023 (n+1)**
FCF		20458.22	22704.41	25197.22	27963.73	31033.98	34441.32
WACC（%）		3.54	3.65	3.77	3.89	4.02	4.18
growth rate							0.11
continue value		19758.93	21132.63	22549.73	24003.21	25484.59	6899.21
EV	119828.30						
Non-operating asset	156,278						
Firm value	276106.30						
Debt	3443193.00						
Equity	(3167086.70)						
Shares	374,872,118						
Price	(0.01)						
Price in fact	3.88						

8.5. Appendix 5 – WACC

WACC					
	2018	**2019**	**2020**	**2021**	**2022**
D	3528263.00	3528263.00	3528263.00	3528263.00	3528263.00
E	155418459.86	155418459.86	155418459.86	155418459.86	155418459.86
A	158946722.86	158946722.86	158946722.86	158946722.86	158946722.86
t	0.20	0.20	0.20	0.20	0.20
rf	2.87	2.98	3.10	3.22	3.35
rm	7.95	8.06	8.18	8.30	8. 43
rd	21.47	21.58	21.70	21.82	21.95
βu	0.07	0.07	0.07	0.07	0.07
βl	0.07	0.07	0.07	0.07	0.07
re	3.23	3.34	3.46	3.58	3.71
WACC	**3.54**	**3.65**	**3.77**	**3.89**	**4.02**

Other information

10 year U.S. bonds						
	2012	**2014**	**2015**	**2016**	**2017**	**average**	**r**
rf	2.361	2.479	2.094	1.823	2.334	2.135	0.03960017
ERP				5.08			
CRP				0			

8.6. Appendix 6 – Multiple

Multiple								
In hundred million								
Company	market value	Debt	Cash	EBITDA	EV/EBITDA	Price	EPS	P/E(PER)
Industry					15.78			17.80
Lending Club	15.28	32.99	8.27	-1.53	-26.14	3.61	0.45	8.02
Square	312.14	13.32	15.45	0.33	943.51	88.64	0.15	590.93
On Deck Capital	6.14	6.92	1.15	-0.14	-83.03	8.22	0.06	137.00
First Horizon Nation	59.87	55.39	6.39	3.09	35.23	18.42	0.62	29.71
Regions Financial	216.86	86.32	39.11	18.71	14.11	19.46	1.20	16.22
Alibaba	4455.75	199.53	380.15	139.77	30.59	175.01	3.45	50.73
PPDAI	19.48	7.37	11.39	2.01	7.69	6.02	0.47	12.81
Hexindai	4.09	0.24	1.62	0.77	3.51	8.54	1.45	5.89
Yirendai	10.61	6.98	8.36	2.59	3.56	18.13	3.12	5.81
China Rapid Finance	1.51	0.78	1.24	-0.37	-2.87	2.58	0.75	3.44

Multiple							
In hundred million							
Company	Yield	EV	sales/revenue	P/S	EV/Sales	CFO	PCF
Industry	5.62%			3.25	2.84		10.12
Lending Club	12.47%	40.00	11.77	1.30	3.40	-5.91	-2.59
Square	0.17%	310.01	22.17	14.08	13.98	1.28	244.43
On Deck Capital	0.73%	11.91	3.51	1.75	3.39	1.28	4.80
First Horizon Nation	3.37%	108.87	9.90	6.05	11.00	3.64	16.45
Regions Financial	6.17%	264.07	39.88	5.44	6.62	18.63	11.64
Alibaba	1.97%	4275.13	377.62	11.80	11.32	189.94	23.46
PPDAI	7.81%	15.46	6.09	3.20	2.54	2.69	7.24
Hexindai	16.98%	2.71	1.23	3.33	2.20	0.88	4.64
Yirendai	17.21%	9.23	8.37	1.27	1.10	4.02	2.64
China Rapid Finance	29.07%	1.05	0.88	1.72	1.19	-0.06	-26.45