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Investování do vybraných technologických společností

Investing in Selected Technology Companies

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2. Principles of Investing in Capital Market
3. Description of the Selected Companies
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5. Conclusion

Bibliography
List of Abbreviations
Declaration of Utilisation of Results from the Bachelor Thesis
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Annexes

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The declaration

"Herewith I declare that I elaborated the entire thesis, including all annexes independently."

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Content

1 Introduction

Financial market is a place that people trade different financial securities to earn the profits in general. Capital market plays a significant role in the financial market. It provides people funds to invest or debt financing for long term, which greater than one year. Because of the uncertainty of the capital market in the future, investing in capital market is not easy. Therefore, my aim is to evaluate investments in the capital market.

The main objective of this thesis is to evaluate performance of the selected technological companies in the capital market. Due to Apple company and Google company are both leading companies in IT industry, they are chosen to compare to each other. According to the investing triangle, we evaluate these two companies by using return, risk and liquidity. Comparing Apple company and Google company, it can let us understand more about the condition and situation of the IT industry in the USA, and the results will help us to figure out which choice is better for the investors according to the different criteria. The criteria which includes stock prices, market values, dividends, annual returns, monthly returns and risks are counted to help us evaluate the advantages and disadvantages of both Apple company and Google company.

In this thesis, the first part is the principles of investing in the financial market in general. The classification, history, roles and functions, main instruments and basic principles of investing in capital market are all included in the first part. The second part introduces mainly the development history of Apple company and Google company, and basic financial characteristics such as ROA and ROE shows us how profitable these two companies are. Then market indicators, for example, EPS, P/E ratio and dividend payout ratio will be introduced and analyzed in the second part as well. The third part is the core of my study. In this part, the main objective is comparison of both Apple's and Google's stock performance. It composes of monthly and annual returns and cumulative returns. Risk is calculated by using standard deviation method. Liquidity is also mentioned to show the volume of the stocks. By comparison of Apple

company and Google company, we draw a conclusion which company is better for the investors.

2 Principles of Investing in Capital Market

Capital market plays a significant role in the financial market. Due to capital market is a part of financial market, financial market will be introduced in the following sub-chapters and will be classified into different groups. Then basic principles of investing will be mentioned.

2.1 Financial Market

Financial market is a market in which people can trade financial securities, commodities, and other fungible items of value at low transaction costs and at prices that reflect supply and demand. Securities include stocks and bonds, and commodities include precious metals or agricultural products (Fabozzi et al, 2011).

Financial market is huge, and it has several classifications, such as classify by its maturity, by nature claim, by seasoning of claim, by immediate or future delivery. (Fabozzi et al, 2011)

(a) Classification by maturity of claim.

The most common classification is to classify financial market by its maturity. For short term, usually less than 1 year, it's called the money market; while for long term, usually more than 1 year, it's called the capital market. Money market can provide people funds to invest or debt financing for short period, and it is used by participants as a means of borrowing and lending in the short term, from several days to just under a year.

Money market instrument are generally sold in large denominations. For example, the T-bills, the commercial papers, the negotiable certificates of deposit, bankers acceptance, repurchase agreement and so on. For example, T-bill which is known as the most risk free investment in the market is a short-term debt obligation of national government. T-bills usually are sold at a discount from face value, and the

appreciation of the value is the return of the investors. Another example for money market instrument is commercial paper. Commercial paper is also sold at a discount from face value, and the appreciation of the value in the future is the return. But note that commercial paper is sold by the blue-chips (well-known and large companies in the world) which implies a slight difference between T-bills and commercial paper. While T-bills are considered as the most risk free investment, commercial paper is comparably unsecured because it cannot promise the return in the future, and that indicates your high possibility of losing money if you buy the commercial paper of this company once the company you invest meets the deficit. But at most of time, the blue-chips will usually operate really well and the companies can make lots of profits.

On the opposite of the money market, capital market is for long term and the maturity usually greater than one year. In capital market, it can provide people funds to invest or solving financial problem for long period. Capital market composes of stock market and bond market. First, stock markets are markets in which stocks are issued and traded. Bond markets are markets in which bonds are issued and traded. Stock is the ownership of a corporation, and it represents that there is a claim on the corporation's earnings and assets. Usually a stockholder owns a percentage interest in a firm. The higher is the percentage, the higher is your controlling power and yield in the company, as long as the company goes well. Bond, which is unlike the stock, is a long-term debt obligation issued by corporation, municipalities and government units, which is less risky than the stock.

Expect the length of maturity, there exists other aspects that are different between money market and capital market. First, the liquidity is opposite. While money market has high liquidity, capital market has low liquidity. Second, the risk is not the same. Money market has lower risk than capital market, because if the time is short, the impact of other factors in a period of time will be nearly none. And if in a long time, it can influence the price of the capital market instrument. Last but not least, the yield is quite different. The yield of money market is low, at the same time, the yield of capital

market is high. Note that the yield links to the risk, if the risk is low, there is no necessary to pay more.

(b) Classification by nature of claim.

Financial market will be classified into 2 parts: debt market and equity market by the nature of claim. Debt market is the market in which bonds are issued and traded, and equity market is the market in which stocks are issued and traded. As mentioned above, stock is the ownership of a corporation and it represents that there is a claim on the corporation's earnings and assets. Bond is a long-term debt obligation issued by corporations, municipalities and government units. There are 2 ways for investor to make money, first one is that the stock price will rise up in the future, and the second way is that the stockholders will get dividends from corporation.

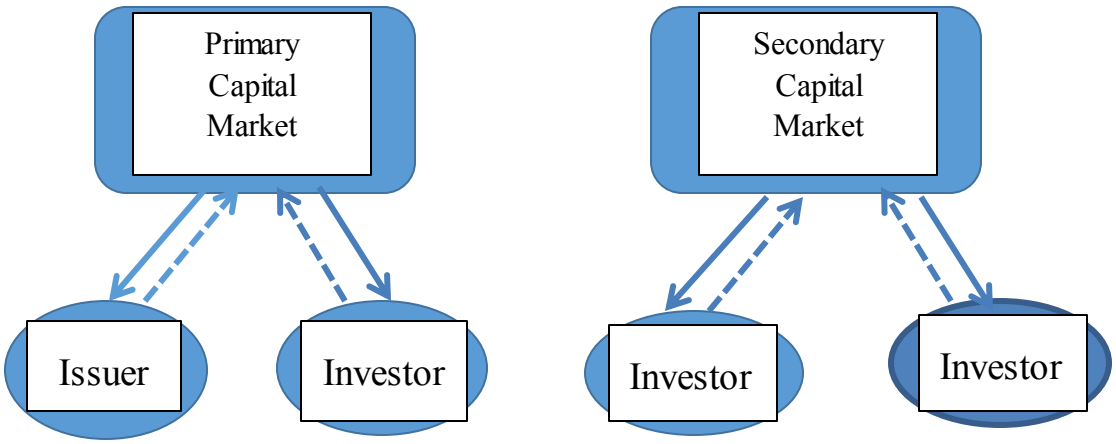
But the profits are not fixed because nobody will know whether the company goes better or worse in the future. On the opposite, the bond holders' profits compose of a fixed amount of bond's face value and coupon interest paid by the bond issuers.

(c) Classification by seasoning of claims.

Through seasoning of claims, financial market can be distributed into primary market and secondary market. Primary market is a market that issues new securities on an exchange. Secondary market is a market in which existing securities are traded among the investors. There are IPOs in the primary market, and IPO means initial public offering which is a popular way for company to raise funds. After traded in the primary market, the securities are resold to secondary market.

As can be seen in figure 2.1, the difference between the primary capital market and secondary capital market is obvious.

Figure 2.1: Difference of primary and secondary capital market.



Source: Fabozzi et al, (2011); Author

The first public issue of financial instrument by a firm is called initial public offering (IPO). The IPO are often issued by smaller, younger companies that are seeking the capital to expand themselves, however it can also be done by large privately owned companies looking to become publicly traded. The details of IPO will be introduced in the next chapter when referring to the specific companies (Fabozzi et al, 2011).

(d) Classification by immediate or future delivery.

In this way to classify financial market into 2 parts by immediate and future delivery. First part is cash(spot) market, and second part is derivative market. Cash(spot) market's delivery is immediately, while derivative market's delivery is in the future, such as futures and options.

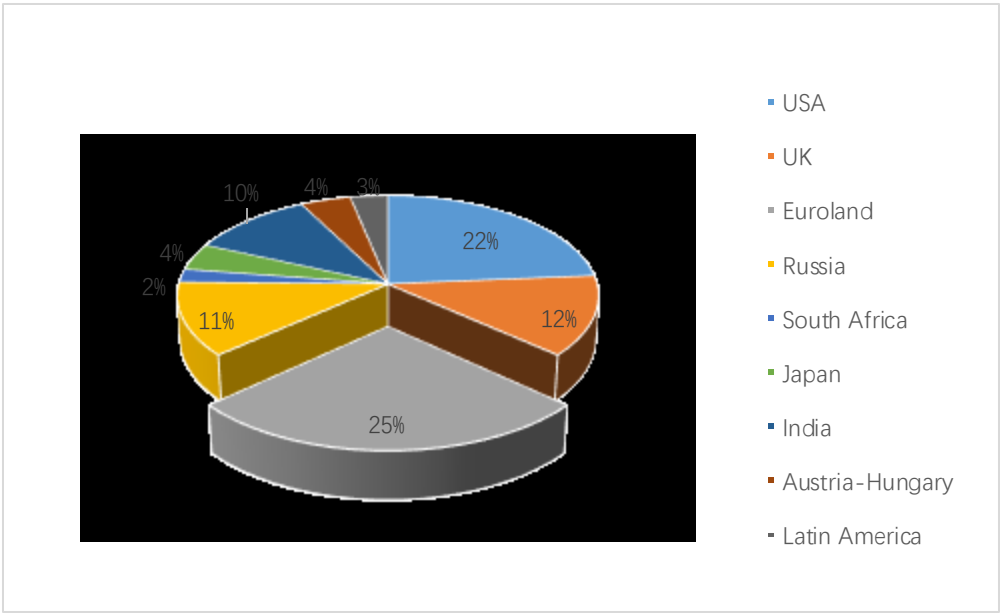
2.2 History of Capital Market

As it was mentioned in the chapter 2.1, the stock and bond markets are two main parts of the capital markets. So in this sub-chapter, the history of these markets will be briefly introduced.

The beginning of stock market dates back to around May 17th, 1792, and about that time New York Stock and Exchange Board was born. After that in 1865, during the Civil War in the U.S, it has changed the name to the New York Stock Exchange, which used until now. In this period of time, the New York Stock Exchange have grown stronger, but it still cannot compete with the London Stock Exchange (Fabozzi et al, 2011).

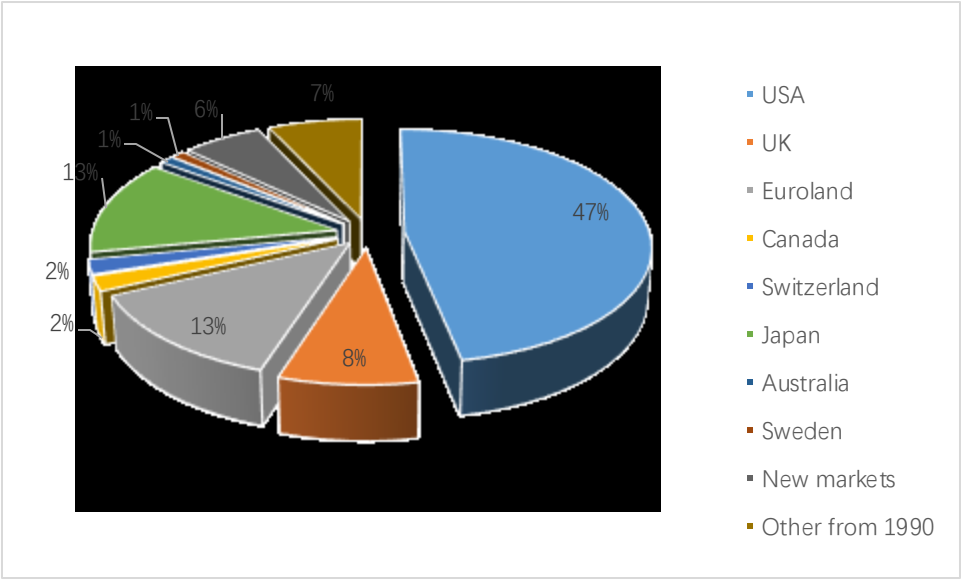
In figure 2.2 and 2.3, we can see clearly how USA changed its ratio in the stock markets all around the world during 1900 to 2000.

Figure 2.2: Stock markets in 1900



Source: Investopedia, 2006 (Data); Author

Figure 2.3: Stock markets in 2000



Source: Investopedia, 2006 (Data) ; Author

*Euroland: here means France, Germany, Italy, the Netherlands, Belgium and Luxembourg.

As we can see in the figure 2.2 and 2.3, the USA stock markets increased from 22% to 47% in the global stock markets during 100 years. That means in the last century the United States achieved market dominance in the global stock market.

Not just because the growth of U.S. stock market gradually, but also the stock market met a great opportunity. In the last century, there were WW I and WW II . These two world war caused a huge pain and countless loss in the global, but it really gave U.S. opportunity and time to develop its stock market. Because the United States, suffered relatively little disruption to its stock market during the world wars and didn't have the prolonged declines while many of the European and Asian markets experienced significant drop. In fact, many people said that the United States' economy largely benefited from the wars. At the same time, many other economies suffered great losses, for example the Great Britain. That can explain why U.S. stock market's weighting increased from 22% to 47%, while the UK shrank from 12% to 8% (Fabozzi et al, 2011).

It seemed that the U.S. market's success was an exception, but it is not by coincidence. For example, it took the United Kingdom much longer to recover its own economy from the world wars. We can speculate that the U.S. stock market was the biggest winner of the twentieth century which isn't surprising.

The table 2.1 shows the government bond real returns for the 20th century. While all of the countries listed in the table below showed positive real returns on their equity markets during this period.

Table 2.2: Government bond real returns, 20th century

Country	Minimum return	Minimum Year
Australia	-30%	1951
Belgium	-27%	1920
Canada	26%	1915
Denmark	-26%	1919
France	-44%	1946
Germany	-100%	1923
Ireland	-34%	1940
Italy	-64%	1944
Japan	-75%	1946
The Netherlands	-18%	1915
South Africa	-33%	1920
Spain	-30%	1920
Sweden	-37%	1939
Switzerland	-16%	1918
United Kingdom	-34%	1915
United States	-19%	1918

Source: Investopedia, 2006 (Data); Author

The reason that return in the table 2.1 called "real return" is because of the inflation. Because bond is a fixed-yield financial products in general, then once issued, the future cash flows of return are determined. If the inflation rate increases during the holding period, although the future cash flows are still, the actual purchasing power is declining. The money that we will receive in the future is no longer equal to the value it used to be. All these leads to the fact that the real return of bond is decreasing. The inflation rate is out of consideration in this case. So that's the main reason why we use "real return".

As you can see in the table 2.1, the U.S. government bond real return from 1900 to 2000 was disappointing. The minimum return in most countries are negative, which represents the extremely low return for the bond investors. Due to the WWI and WWII, in the 20th century government cannot afford their expending just by the income, even they issued government bonds. Bond investors lost their money because of the war.

2.3 Roles of Capital Market

In this part the roles of capital market will shortly be introduced. The primary role of the capital market is to raise long-term funds for governments, banks, and corporations while providing a platform for the trading of securities. This fund raising is regulated by the performance of the stock and bond markets within the capital market.

The organizations of the capital market may issue stocks and bonds in order to raise funds. And investors can then invest in the capital market by purchasing those stocks and bonds. In short, the main role of the capital market is to raise long-term funds and to provide a platform (Fabozzi et al, 2009)

It is very important for investors to understand market trends before fully investing in the capital market. Therefore, there are various market index which are available to investors that reflect the present performance of the market, and we will

talk it in details in following chapter with the calculation.

2.4 Function of Capital Market

The capital market plays a significant role in the economy. A developed, dynamic capital market can immensely contribute for speedy economic growth and development (Rose and Marquis, 2008).

Capital market have many functions, and the most important functions will be shown as follow.

- Important channel to raise funds;
- Allocation of resources rationally;
- Conducive to enterprise restructuring;
- Provide opportunity of investment;
- Speed up economic growth and development.

Capital market is an important channel to raise funds. Because that there exists higher return of financial instruments on the capital market, which will attract a large number of investors. The money can provide the market with a steady stream of huge amounts of long-term sources of funds (Rose and Marquis, 2008).

Capital market is also an efficient place to allocate resources rationally. Easily explain is that no everybody have millions, most of investors just have a small amount of money, if the requests are too high, most of them haven't enough money. But the capital market lets investors in the whole market no matter how much money they hold in their hands. So you can say that the capital market breaks the limits for individual or companies in the market. In this way, more and more investor come into the capital market with their investing money, and the resources in the markets can be allocated rationally to every sectors (Rose and Marquis, 2008).

Besides capital market is conducive to companies restructuring. Companies can achieve the company's reorganization and restructure through the transfer of shares, in order to adjust the company's management structure (Rose and Marquis, 2008).

Furthermore, capital market can provide opportunity of investment and can speed up the economic growth and development. It's obvious that the capital market can let people gather money to invest, and it can promote economic growth. The capital market not only reflects the condition of the whole economy, but also accelerates financial intermediaries (Rose and Marquis, 2008).

2.5 Capital Market Supervision

A well-regulated, credible and stable capital market is one of the basic preconditions for a functioning economy. In this sub chapter the capital market supervision will be introduced, due to capital market is a vital part of financial market, we will also mention supervision in financial market.

The United States was the first to establish the financial sub-sector regulatory system country, and the financial regulatory structure was relatively complex. In response 1929 - 1933 economic crisis, the U.S financial regulatory authorities chose the sub-sector regulatory system. In 1999, "Financial Services Modernization Act" was approved, and then the United States re-establish a mixed financial system. For a long time, the U.S financial regulation is considered the world's most efficient regulatory system. But things happened in a wrong direction. In 2007, the subprime crisis hit the U.S, and the U.S financial system had a severe impact. At that time, a large number of financial institutions was out of business, and gradually affect the international economy seriously. That kind of series effects exposed the deficiencies of the U.S. financial regulatory system (Cecchetti et al, 2011).

In this situation, in July 2010 the United States adopted the reform which is

called "Dodd - Frank Wall Street Reform and Consumer Protection Act", and it became the most far-reaching financial regulatory reform up to now. That action gives the global financial supervision an amazing impact (Cecchetti et al, 2011).

2.6 Main Instruments in Capital Market

In this part, the main instruments in capital market will be introduced. First, capital market instruments' aim is generating funds for companies, corporations and sometimes even national governments. These instruments are used by the investors to make money. For example, stocks, bonds and securities investment funds.

2.6.1 Bonds

Bond is an important instrument in capital market. Bonds are long-term debt obligations issued by corporations, municipalities and government units. The interest payment that the bondholders will receive is called coupon. Usually the bond issuers promise to pay a specified amount in the future on the maturity of the bond plus coupon. Because the coupon payment must be paid, coupon payment is less risky than the dividend of the stocks (Fabozzi et al, 2009).

The bonds can be traditionally divided into three types.

(1) Treasury notes and bonds;
(2) Municipal bonds;
(3) Corporate bonds.

Treasury notes and bonds are issued for financing the national debt and government other expenditures. In U.S, T-notes have original maturities from 1 to 10 years, and T-bonds from 10 to 30 years. In Europe, T-notes are equal to T-bonds. T-notes and T-bonds pay coupon interest annually or semi-annually.

Municipal bonds are securities issued by the state or local governments to fund temporary imbalances between operating expenditures and receipts or to finance long-term capital outlays for activities such as school construction, public utility construction, or the public transportation systems. Usually tax receipts or revenues generated from a project are the source of repayment on municipal bonds.

Corporate bonds are issued by the companies, and offer a higher yield than government bond because they carry a higher default risk. The risks associated with corporate bonds at the most time depend entirely on the issuing company. Purchasing bonds from well-established and profitable companies is much less risky than purchasing bonds from small firms or the firms in financial trouble. People usually are disposed to buy bonds from big and famous companies, because they are more trustful for the investors.

Comparing three kind of bonds, it is not hard to make conclusion that T-notes, T-bonds and municipal bonds are less risky than corporate bonds. Because corporate bonds are issued by the companies, and no one can ensure what will happen to the company in the future, but the rest are guaranteed by the state or the local government (Fabozzi et al, 2009).

2.6.2 Stocks

This thesis is focusing mainly on investing in stocks of different companies, so we will pay more attention on stocks, rather than bonds. Stocks are equity claims representing ownership of the net income and assets of a corporation. The income that stockholders receive is called dividends or the price of the rises over time. The stockholder owns a percentage interest in a firm. Sometimes, a firm sells part of itself when issuing stocks, so that the buyer becomes a part of owners (Fabozzi et al, 2009).

Stock markets are markets in which stocks are issued and traded. The secondary markets for corporate stocks are the most closely watched and reported of all financial

security markets. This is because mostly stock markets movements are considered as predictors of economic activity (Donald and Schinash, 2000).

Firms with a high stock-market value can easier finance their operations than those with low stock-market value. For instance, if the firm goes well, it's valuated by the market very well, then it's much easier for them to find new capital. The stock prices can be different, but fluctuate between their fundamental values (Fabozzi et al, 2009).

There are two kinds of stocks which are preferred stock and common stock. The preferred stock pays fixed dividends while common stock pays a variable dividend, because it depends on the profit left over after preferred stockholders have been paid and retained earnings set aside. The key distinction between these two forms of equity securities lies in the degree to which they participate in any distribution of earnings and capital and the priority given to each in the distribution of earnings. Common stock gives the stockholder to vote in the election of directors, and preferred stock usually does not offer voting rights to the stockholders. Besides, preferred stock is a kind of hybrid security that has characteristics of both bonds and common stocks. Preferred stock is very similar to common stocks because it represents an ownership interest in the issuing firm, but at the meantime, it's also like bonds because it pays a fixed periodic payment (Fabozzi et al, 2009).

The dividends can be paid in different forms, such as stocks, services, special benefits and cash. Generally, in a new small company, the shareholders usually choose "no dividends", and reinvest because they need funds for further. On the opposite, the shareholders in an old big company usually can receive cash (Fabozzi et al, 2009).

The difference between the stocks and bonds by comparison will briefly introduced. As we mentioned before, bond is less risky than stock in general. That is the first difference between the bonds and stocks. Because the stockholders have a lower priority than bondholders when the firms are in trouble, the returns to investors are less assured. When dividends can be easily changed, the stock price is not

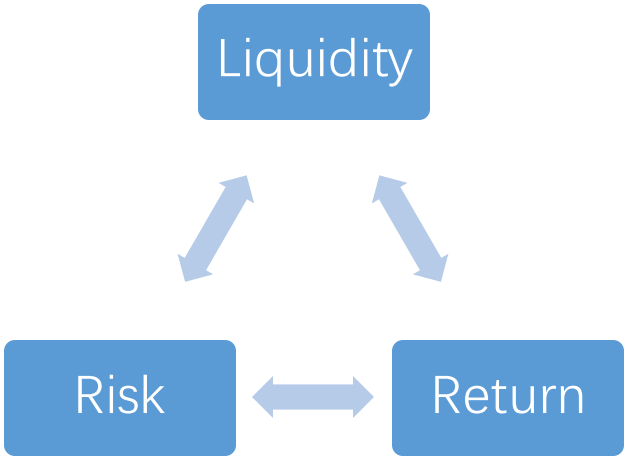
guaranteed. Another distinction between stocks and bonds is that stock does not mature, while bond has maturity. When the maturity comes, the bondholders will receive their money back for sure. But when you are a stockholder, if you want to receive your money back, you will either get dividends or have to sell your stocks. The stock price is the problem that you cannot predict precisely, you might lose your money if stock price is decreasing (Fabozzi et al, 2009).

2.7 Basic Principles of Investing

In this part some basic principles of investing will be mentioned, first the investment triangle will be introduced with figure by showing the relationships between three factors that influence the decision of the investors, and then we will concentrate on these three factors: return, risk and liquidity in details. Then some market indicators will be briefly mentioned in the last sub chapter.

The triangle of investing shows that three factors which will influence the investors' choice. The investor must choose among three factors, for example, the investor chooses to maximize the return then he or she will give up the other two factors, liquidity and risk. It's called return maximization at the given level of risk. Another example, the investor chooses to have the lowest risk when investing, then he or she will give up the high return or short maturity which represent return and liquidity. It's called risk minimization at the given level of return and liquidity. This whole process is called trade-off between risk and return, which means if we choose one, we have to give up the other. The triangle of investing can be shown in the figure 2.7 (Cecchetti et al, 2011).

Figure 2.4: Triangle of investing



Source: Cecchetti et al (2011); Author

2.7.1 Return

A return is the gain or loss of a security in a particular period. The return consists of the income and the capital gains relative on an investment. Usually it quoted as a percentage. The general rule is that the more risk you take, the greater the potential for higher return or loss.

There commonly have three situations when people earn money, they consume it, save it or invest it. There is no doubt that the money will be less if we consume it, and the money will be more if we save it. Investing money can be both results, positive or negative. For example, if we purchase stocks in Shanghai exchange or in New York exchange, the return is uncertain. The price of the stock will fluctuate, and we will lose money if the price goes down, or we will earn money if the price goes up.

There are three formulas to calculate the return of the investment.

(1) Holding period return.

$$HPR = \frac{P_1 - P_0}{P_0} \tag{2.1}$$

In formula 2.1 "P_1" means the ending value of the investment, and "P_0" means

the beginning value of our investment. So no matter how long is the holding period, the return is entirely depended on the difference between the prices. It's displayed as a percentage. If there is any dividend, the formula should be as followed.

$$HPR' = \frac{P_1 - P_0 + D}{P_0} \tag{2.2}$$

The only distinction between formula 2.1 and 2.2 is the dividend. Usually we use formula 2.1 to calculate the capital return, and use formula 2.2 to calculate the total return.

(2) Average return.

$$Average\ return = \frac{\sum_{i=1}^{n} P_i}{n} \tag{2.3}$$

When we calculate average return of a period of time, we just sum every prices and the divided by the times.

(3) Cumulative return.

$$Cumulative\ return = \frac{P_n - P_0}{P_O} \tag{2.4}$$

By using formula 2.4, we can calculate cumulative return for each period. For example, we consider the price at 2000 as a basic price called "P_0", and we can use the prices from 2001 to 2010, the final results show us which year after 2000 earned the return most, comparing to the year 2000.

2.7.2 Risk

Risk means the chance that an investment's actual return will be different than expected. The risk includes the possibility of losing some or all of the original

investment. As mentioned in chapter 2.7.1, in general, the greater the amount of risk that we are willing to take, the greater the potential return.

Take T-bonds as an example, it is regarded as the most risk-free financial investment. When we compare it to a corporate bond or a corporate stock, it's clear that the return will be lower than the latter two. The reason why the return is lower is that the government is much less likely to go bankrupt than a company. In turn, purchasing the corporate stock is an option for investor. The latter way to invest is much more risky, but we might gain higher potential return.

There are two main methods to help us calculate the risk by the variance of returns and the standard deviation of return.

(1) Variance of returns.

$$\sigma^2 = \frac{\sum_{i=1}^{n}(\mathrm{R}_i - \bar{R})^2}{n} \qquad (2.5)$$

In formulation 2.5 "R_i" means historical rates of return, "$\bar{R}$" means the average historical rate of return of investment, and "n" means number of time periods. Usually we use formulation 2.5 and 2.6 together.

(2) Standard deviation of returns.

$$\sigma = \sqrt{\sigma^2} = \sqrt{\frac{\sum_{i=1}^{n}(\mathrm{R}_i - \bar{R})^2}{n}} \qquad (2.6)$$

In formulation 2.6, every symbol means the same meaning as mentioned above. The higher the variance or the standard deviation of returns, the higher the level of risk.

2.7.3 Liquidity

Liquidity describes the degree that an asset or security can be quickly bought or sold in the market. Sometimes we consider that the abilities to convert to cash in a very

short period is very high degree of liquidity. In general, cash is the standard for liquidity because it can quickly and easily be converted into other assets. For example, if we want to buy an air condition, and the price is 3,000 dollars. The most common way is the buy it with cash or credit card. Suppose that we don't have 3,000 dollars today, instead we have a 3,000-dollars phone, it's really unlikely to find someone willing to trade us the air condition for our phone. In common, we will first sell the phone and use the cash to buy the air condition. The higher is the level of liquidity, the better for the investors.

2.7.4 Market Indicators

Market indicators are the indicators that show the basic information in the market, which are related to the prices, number of shares, dividend and so on.

(1) EPS

$$EPS = \frac{Net\ Income}{Numbers\ of\ Shares} \tag{2.7}$$

Earnings per share (EPS) is the portion of a company's profit allocated to each outstanding share of the stock. It serves as an indicator of a company's profitability. Net income of a company usually is considered as the income after tax or the earnings after tax. If EPS is very high, that means the company earned a huge amount of money, and it's very profitable.

(2) P/E Ratio

$$P/E = \frac{Market\ Share\ Price}{EPS} \tag{2.8}$$

P/E ratio is the ratio for valuing a company that measures its current share price relative to its per-share earnings.

(3) Dividend Payout Ratio

$$Dividend\ Payout\ Ratio = \frac{Dividend\ Per\ Share}{EPS} \tag{2.9}$$

Dividend payout ratio is displayed as the percentage of dividend per share allocated to the earnings per share of the company. It is an indicator of how well earnings support the dividend payment.

3 Description of the Selected Companies

Apple company and Google company are chosen to be the selected companies in this chapter. First, the history of the companies will be introduced. Then basic financial characteristics of both companies will be shown in the chapter 3.1.2 and chapter 3.2.2, and they measure the level of the company's profitability. The market indicators also will be mentioned to offer the investors another aspect of the companies.

The reason that we choose Apple company and Google company is that not only do Apple and Google have many differences, they also share lots of similarities. For example, they are both famous IT companies in the world, they are both developed at 90's and have grown bigger and bigger. There has been a hot area to invest in the technology field from the beginning of the 21st century.

3.1 Description of Apple Company

In this chapter, the history of how Apple started and how it developed in the last 40 years will be introduced, and it will show the ups and downs during the development period. Then the financial performance will be briefly shown in the chapter 3.1.2. At last, some market indicators will be shown to illustrate how profitable the company is.

3.1.1 History

In this chapter, the history of Apple company will be introduced as follow. Apple (Apple Inc.) is an American high-tech companies. On April 1, 1976, founded by Steve Jobs, Steve Wozniak and Ron Wayne (Ron Wayne) and the others, and was named the US Apple Computer Inc. (Apple Computer Inc.), January 9, 2007 changed its name to Apple's headquarters in Cupertino, California (Baike, 2015).

December 12, 1980, Apple company had its first public offering in the market, and in 2012 it had reached a record $ 623.5 billion in market capitalization. Apple

ranked in the 2014 *Fortune* 500 rankings for the first 15. September 30, 2013, at Omnicom Group's "Best Global Brands" report, Apple company had been assessed to be the world's most valuable brands which Coca-Cola once owned the assessment. In 2014, Apple brand had become the world's most valuable brand beyond Google.

Apple's core business is electronic technology product, and it has share of 7.96% in the current global PC market. It is one of the high-tech enterprises in innovation and is known for that.

In 1977, Apple officially registered as a company, and enabled the new Apple logo still in use. Meanwhile, Apple company also received its first investment of US $ 92,000 --Mike Markkula. (Baike, 2015).

Every beginning is not easy. The two Steves - Jobs and Wozniak - may have been Apple's most visible founders, but were it not for their friend Ronald Wayne there might be no iPhone, iPad or iMac today. After Jobs met Woz at the Homebrew Computer Club, Woz produced the first computer with a typewriter-like keyboard and the ability to connect to a regular TV. Later christened the Apple I, it was the archetype of every modern computer, but Wozniak wasn't trying to change the world with what he'd produced - he just wanted to show off how much he'd managed to do with so few resources (Baike, 2015).

Jobs saw the computer, recognized its brilliance, and sold his VW microbus to help fund its production. Wozniak sold his HP calculator, and together they founded Apple Computer Inc. on 1 April 1976, alongside Ronald Wayne - now making Apple a 40-year-old company.

Apple's IPO was at Dec. 12th, 1980, which issued 460 million shares of common stock ($22 per share). It's the biggest IPO since the 1956 Ford Inc. became a listed company. And there are 300 more millionaires in the world with the completion of the IPO simultaneously. At the end of day, Apple's market capitalization reached

$ 1.778 billion (Baike, 2015).

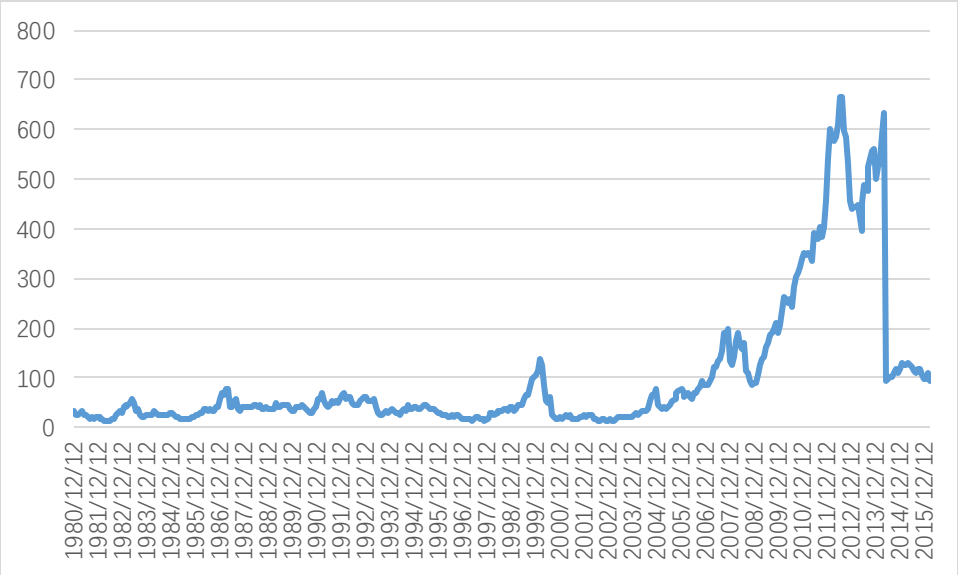
But things became out of control after Steve argued with the board of the Apple. So Steve Jobs has gone, and so has Jean-Louis Gassee, his successor as head of product development. All in all, the future isn't looking so bright for Apple at this point in his story. Apple's market started to shrink, and so did its retained earnings.

That wasn't its only problem, though. Because at that time, IBM had been out-earning Apple since the mid-1980s, when it established itself as the dominant force in office computing. With such strong competitor, Apple failed in that time. Apple was a very different company in the 1990s to the one we know today. It had a lot of products and a lot of stock, but not enough customers. There's only so long a company can survive like that. In all, Apple suffered for a long time (Baike, 2015).

Then 12 years passed, Steve came back and became the CEO of the Apple, and company seemed to go better since then. But its share price was declining, and over the next six months it fell still further, to a 12-year low. So Steve Jobs convinced the board of directors that the company's CEO, Gil Amelio, had to go and, when it agreed, it installed Jobs in his place as interim CEO. At that point, Apple began a remarkable period of restructuring that leads directly to the successful organization it is today (Baike, 2015).

Jobs recognized that if Apple was going to survive it needed to concentrate on a narrower selection of products. He slimmed down the range of computers to just four : two for consumers and two for businesses, and closed down a lot of supplementary divisions, including the one working on the Newton. The strategy paid off in the long run, though, and Apple's computers and operating system are holding their own in a world where rivals are seeing year on year stagnation or worse which is declining (Baike, 2015).

Figure 3.1: Apple company's stock prices (1980-2015)



Source: Yahoo; Author

Figure 3.1 shows the development of the Apple company's stock prices. The stock price was under 100 dollars until 1999, and in the following 10 years it grew rapidly, and at the end of 2011, it finally reached 400 dollars.

3.1.2 Basic Financial Characteristics

In this part Apple's basic financial characteristics will be shown, such as ROA and ROE. Calculating ROA and ROE over the past 5 to 10 years can give investors a better idea of the historical growth of returns.

(1) ROA

$$ROA = \frac{EAT}{A} \tag{3.1}$$

Return on assets (ROA) is a ratio that shows how profitable a company is relative to its total assets. It is calculated by dividing a company's annual earnings by its total assets, and it is displayed as a percentage. In formulation 3.1, "EAT" means

earnings after tax, and "A" means total assets of the company.

The higher the return, the more efficient management is in utilizing the assets of the company. The investors usually regard ROA as a standard to judge which company is much more profitable.

(2) ROE

$$ROE = \frac{EAT}{E} \tag{3.2}$$

Return on equity (ROE) is a ratio that shows how profitable a company is relative to its total equity. It is calculated by dividing the amount of net income by its total equity, and it is also displayed as a percentage. In formulation 3.2, "EAT" means earning after tax as we mentioned, and "E" means total equity of the company.

The higher the return on equity, the more profits a company generates with the money that shareholders have invested. For high growth companies, investors should expect a higher ROE.

The ROA and ROE by using formulas 3.1 and 3.2 from 2012 to 2015 of Apple company can be seen in the table 3.1.

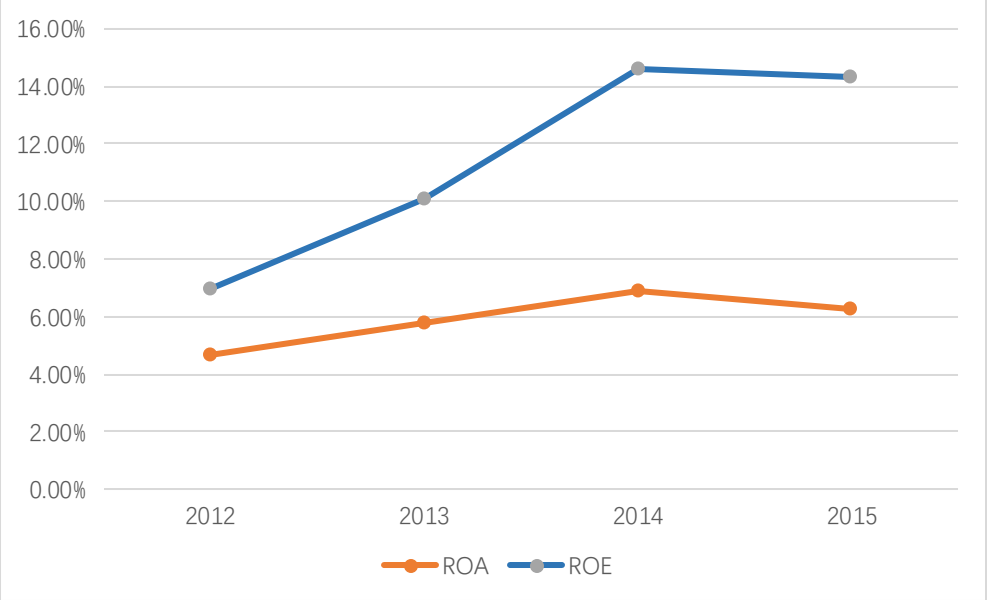
Table 3.1: Apple's ROA and ROE (2012-2015)

Year	ROA	ROE
2012	4.67%	6.96%
2013	5.81%	10.08%
2014	6.88%	14.61%
2015	6.26%	14.31%

Source: Yahoo; Author

It will be even obvious when turning the data in the table 3.1 into figure 3.2.

Figure 3.2: Apple's ROA and ROE (2012-2015)



Source: Yahoo; Author

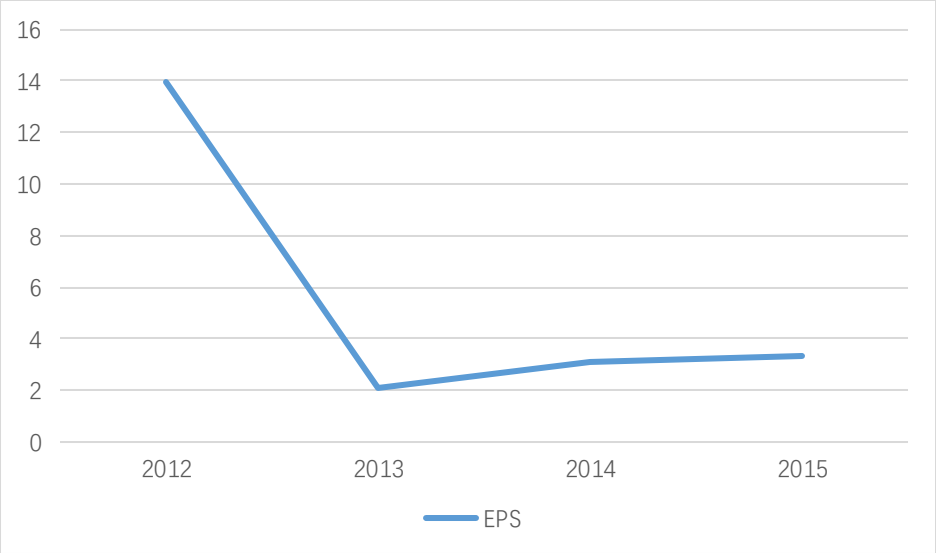
As shown in table 3.1 and figure 3.2, ROA increased from 4.67% to 6.88% until 2014, but there is a decline of ROA from 6.88% to 6.26% during 2015. It tells us the fact that from 2012 to 2014, the efficient of Apple company's management in utilizing the assets is increasing overall. ROE increased from 6.96% to 14.61% from 2012 to 2014, and also decreased to 14.31% during 2015. This means that the profits the Apple company earned with money that shareholders have invested is increasing in general. In all, Apple company is the kind of company that will earn lots of profits.

3.1.3 Market Indicators

In this part, market indicators will be calculated based on the market data. First the EPS will be calculated based on the net income and numbers of shares, and then P/E ratio based on market prices as well. Finally, dividend payout ratio will be calculated based on the dividend paid per share.

By using formula 2.7, the EPS in 2012 to 2015 is calculated, and the results are shown in the figure 3.3.

Figure 3.3: EPS (2012-2015)

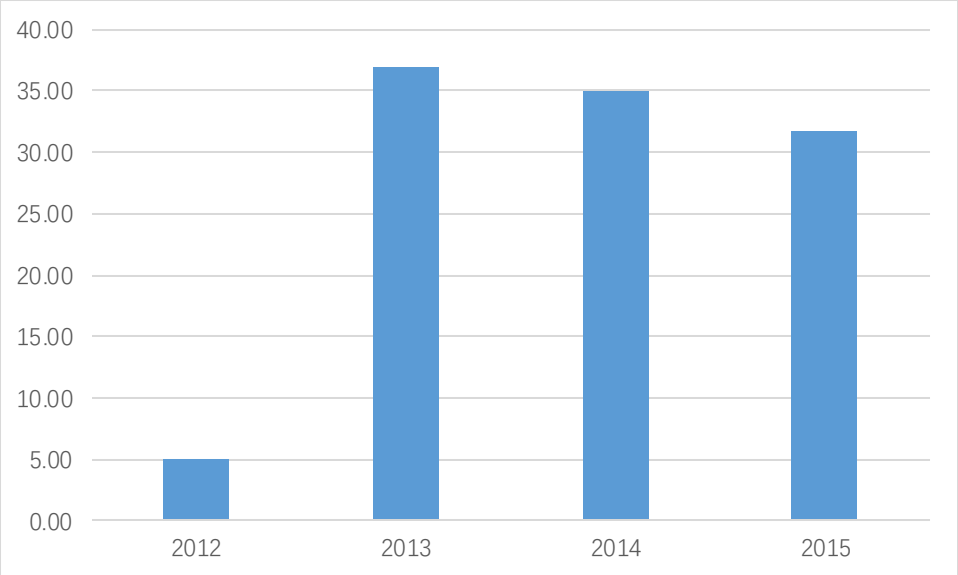


Source: Yahoo; Author

Statistics in the figure 3.3 had shown that in 2012 earnings per share was very high up to 13.93 dollars, and it shrank to 2.08 dollars in 2013. In 2014 and 2015, the level of earnings per share was about 3 dollars. The number of shares can be assumed to have been increased rapidly in 2013, that leaded to the shrink of earnings per share during 2013.

By using formula 2.8, we calculate the P/E ratio based on market prices from 2012 to 2015 and show the results in the figure 3.4.

Figure 3.4: P/E ratio (2012-2015)

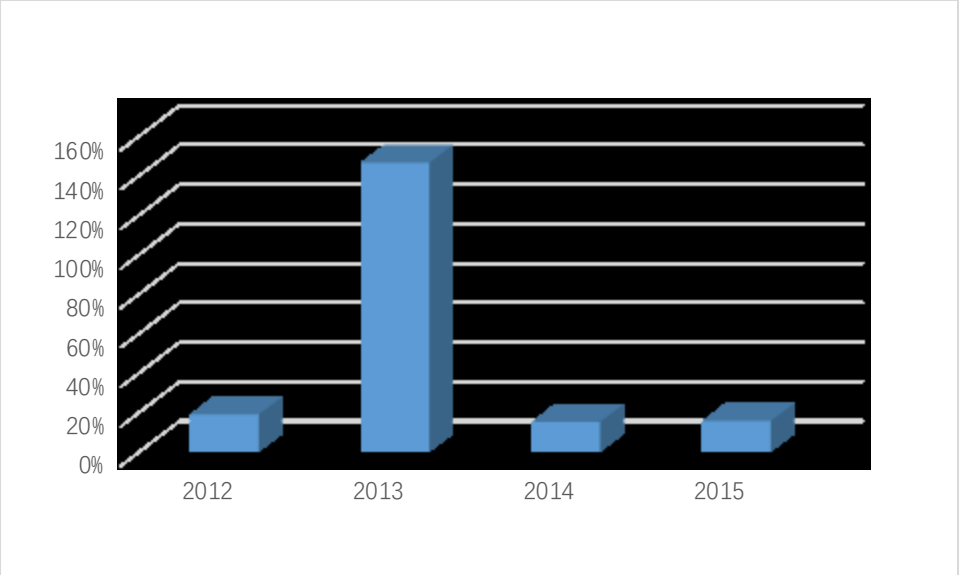


Source: Yahoo; Author

From figure 3.4 we find that the difference between 2012 and latter period is in 2012 the P/E ratio was 5, while P/E ratio was above 30 from 2013 and 2015. Because of the change of EPS, the P/E ratio changed the opposite way. P/E ratio shows how popular the company is in the market. Generally, the P/E ratio of the technology companies are very high, because that IT industry has been regarded as the most developing industry. In this situation, the investors' estimation is really positive, and they are willing to pay higher price to buy the stocks, that is why Apple's P/E ratio is higher than 30. But meanwhile, it won't last very long time for many reasons. The most common reason is that the growth of the sales is much lower than the prediction, the P/E can be very high and quickly turn down for a period of time. This explains why Apple's P/E turned down after 2013.

We calculated dividend payout ratio by using formula 2.9 on the basis of dividend per share from 2012 to 2015.

Figure 3.5: Dividend payout ratio (2012-2015)



Source: Yahoo; Author

As shown in figure 3.5, during 4 years from 2012 to 2015, dividend payout ratio was extremely high in 2013, but in the rest of the period dividend payout ratio seemed to be normal, usually from 10% to 20%. It is also owing to the great change of EPS in 2013.

These three market indicators are perfect evidence showing that Apple company is one of profitable companies, at least in the last 4 years it was the one.

3.2 Description of Google Company

In this chapter, the history of how Google was established and how it developed in the last 20 years will be introduced, and it will show some creative products that Google has made during the development period. Then the financial performance will be briefly shown in the chapter 3.2.2. At last, some market indicators will tell us how profitable the company is.

3.2.1 History

Google, which is an American multinational technology company, is committed to the field of Internet search, cloud computing, advertising technology, to develop and provide a large number of Internet-based products and services. Its aim is earning profits which come from AdWords and other advertising services. Google was founded by Stanford University to pursue Polytechnic Dr. Larry Page and Sergey Bloom, so they also referred to as "Google Guys" (Baike, 2015).

At Sep. 4th, 1998, Google in the form of a private company founded to design and manage an Internet search engine "Google Search". Google's mission is to organize the world's information and make it universally accessible and useful. Google is the first company that was recognized as the world's largest search engine, and has millions of users at worldwide. At Aug. 10th, 2015, Google announced the adjustment of the enterprise architecture, and founded a company called Alphabet of "umbrella company", and Google has become a subsidiary of Alphabet (Baike, 2015).

Just like Apple, every beginning of a brand new company is not easy. At 1999, there are just 8 employees in the company. At 2000, Google started in a Starbucks on 86th Street with a one-person sales "team", and more than 4,000 Googlers worked in New York office, a former Port Authority building at 111 Eighth Avenue. They started offering search in Chinese, Japanese and Korean—bringing total number of supported languages to 15. At 2001, Google had its first public acquisition, and they acquired Deja.com's Usenet Discussion Service, an archive of 500 million Usenet discussions dating back to 1995. They added search and browse features and launched it as Google Groups. Google also released their first annual Google Zeitgeist, a visual look at what millions of people searched for over the year just ending. At that time, it was a revealing look at the year that was, from "Harry Potter" to "Osama Bin Laden." After 2001, they continued to release Zeitgeist every year (Baike, 2015).

At August of 2004, Google had its IPO. The initial public offering had 19,605,052 shares of Class A common stock which took place on Wall Street. The opening price is $85 per share (Yahoo, 2015)

After Google was listed, itself changed a lot. In 2005, Google Maps went live. Just two months later, Google added satellite views and directions to the product. Google Maps even became a useful thing to mobile phones in the US, offering driving directions and local information to people on the go, and the first Google Maps which was released in Europe is geared to UK users. Then France, Germany, Italy and Spain followed in 2006. They offered driving directions in more than 190 countries around the world. The first video went up on YouTube, and more than 100 hours of video was uploaded every minute and people watched 6 billion hours of video per month. Personalized Homepage was designed for people to customize their own Google homepage with content modules. Google Mobile Web Search was released, specially formulated for viewing search results on mobile phones. Google unveiled Google Earth, a satellite imagery-based mapping service that lets us take a virtual journey to any location in the world. Google Earth maybe is the most popular product from that time (Baike, 2015).

During 2006 to 2010, Google kept moving to the leading place in the IT industry. “Google Finance” launches—complete with interactive charts and related headlines from “Google News”—to help people to find financial information more easily. They launched Google Calendar to help us keep track of events, special occasions and appointments, and to share schedules with others. When “Google Translate” launches, they offered translations between Arabic and English. They also released “Google Trends”, a way to visualize the popularity of searches over time, and G-mail launched in Arabic and Hebrew, bringing the number of interfaces up to 40.

In 2006, the Oxford English Dictionary added the word "Google" as a verb. In the end of 2006, Google announced their acquisition of YouTube. At Jan. 2007, the magazine "Fortune" announced its annual list of *Best Companies to Work For* and Google is top 1, and Google has been on the top of the list three other years since (Baike, 2015).

In Oct, 2010, Google announced that they’ve developed technology for cars that

can drive themselves, and they thought self-driving cars could help prevent traffic accidents, and free up people's time and reduce carbon emissions.

At Nov. 4th, 2015, Google revealed Worth UAV business executives, is expected to launch drone delivery service in 2017. According to industry authorities recently released 2015 annual "World Top 500 Brands", thanks to growth in the US search and advertising business, Google return to the list, Apple and Amazon were ranked second and third (Yahoo, 2015).

3.2.2 Basic Financial Characteristics

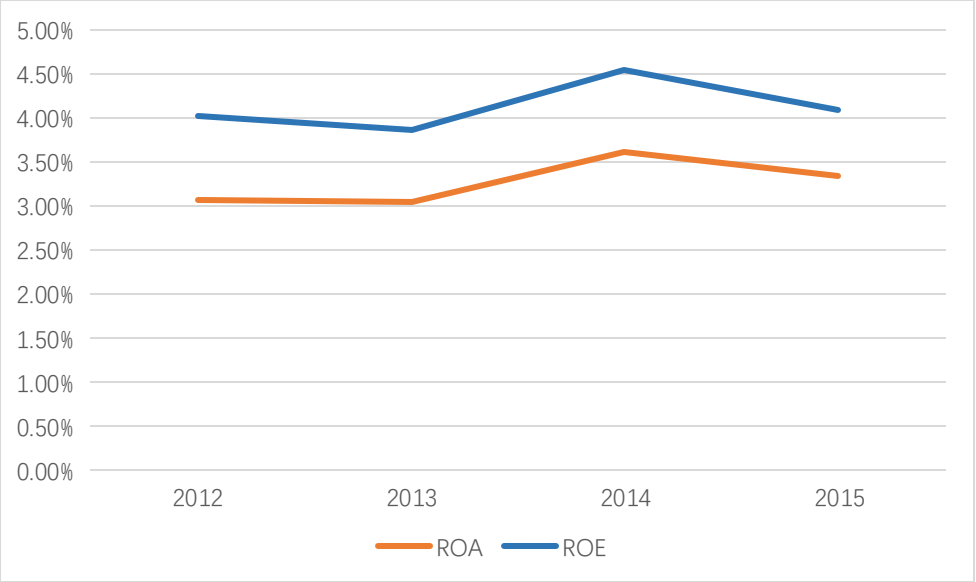
In this part Google's basic financial characteristics will be introduced, in the way that Apple company is introduced in the chapter 3.1.2. Firstly, the results of ROA and ROE will be studied and calculated by using formulas 3.1 and 3.2. The results from 2012 to 2015 of Google company can be seen in the table 3.2.

Table 3.2: Google's ROA and ROE (2012-2015)

Year	ROA	ROE
2012	3.08%	4.02%
2013	3.04%	3.87%
2014	3.63%	4.55%
2015	3.34%	4.09%

Source: Yahoo; Author

Figure 3.6: Google's ROA and ROE (2012-2015)



Source: Yahoo; Author

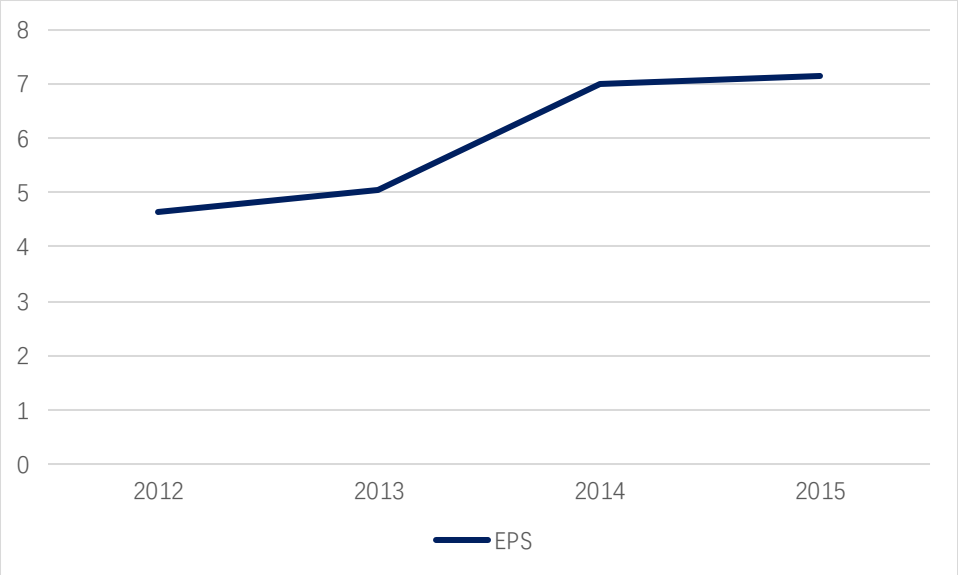
As shown in table 3.2 and figure 3.6, ROA increased from 3.08% to 3.34% from 2012 to 2015. Although it fluctuated in the four years, it's not hard to realize the development of ROA is much steady than Apple's. ROE increased from 4.02% to 4.09% from 2012 to 2015. That means that the profits the Apple company earned with money that shareholders have invested is increasing every year. To conclude, Google company's ROA and ROE are both lower than Apple's, but in last four years, Google's development is much more smoothly than Apple's.

3.2.3 Market Indicators

In this part, market indicators will be calculated based on the market data. First the EPS will be calculated based on the net income and numbers of shares, and then P/E ratio based on market prices as well. Finally, dividend payout ratio will be calculated based on the dividend paid per share.

By using formulation 2.7, we calculate the EPS during 2012 to 2015 and show the results in the figure 3.7.

Figure 3.7: EPS (2012-2015)

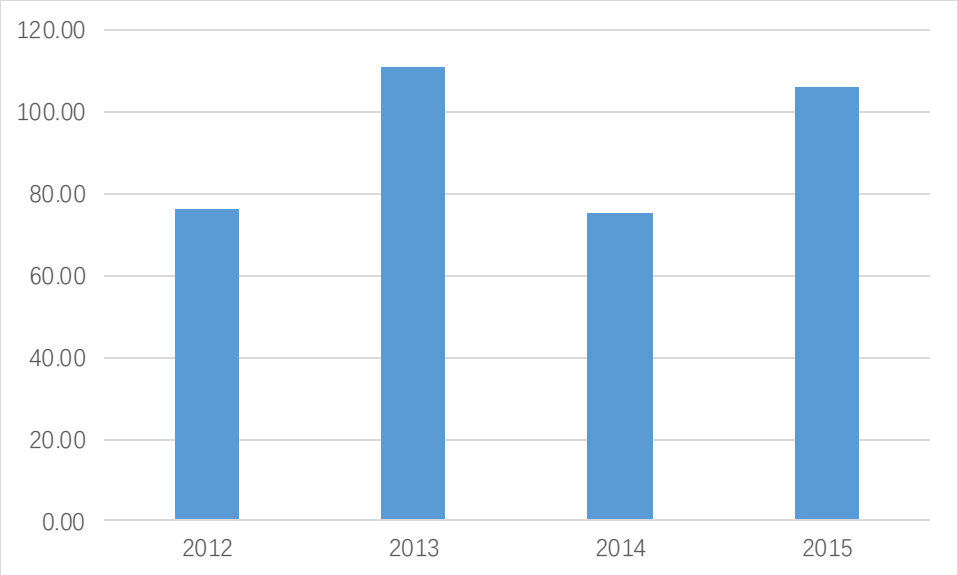


Source: Yahoo; Author

From the figure 3.7, it can be easy to figure out that EPS of Google was under 8 dollars during 2012 to 2015, which is different from Apple's. Opposite to Apple company, earnings per share of Google company raised stably in last four years.

The P/E ratio based on market prices from 2012 to 2015 is calculated by using formulation 2.8, and the results are shown in the figure 3.8.

Figure 3.8: P/E ratio (2012-2015)



Source: Yahoo; Author

As can be seen in figure 3.8, P/E ratio was higher than 70 in the last four years. It obviously shows the ability of Google's management and how profitable it is in this industry. As we mentioned in the chapter 3.1.3, the Apple's P/E ratio reached more than 30 which was already very high. But Google's P/E ratio is higher than 70, which is even higher than Apple's, from 2012 to 2015. The higher is the P/E ratio, the popular this company is in the market. High P/E ratio shows that the investors estimation is quite positive in the future. Only when the company that people invest goes very smooth, the sales will go up and P/E ratio can be very high. In other words, high P/E ratio is one of the evidence that show the steady development of the company if the sales increase.

Because the Google has never pay dividend to the shareholders, there was no dividend until now. There is no dividend payout ratio for Google in this part. But we will analyze the reason why Google did that.

Google has never pay its dividend to the shareholders, even until now. Google once explained that because Google itself needed a huge amount of cash to keep the company still sensitive to the market, in order to compete with other rapidly-developed companies in the IT industry. But according to the US magazine "Fortune", it said that there were people who used to be Google's shareholders were decided to buy

Microsoft's stock just because the dividend. Because Google's stock has no dividend to the shareholders, while its competitor in the same industry, Microsoft's stock has dividend to the shareholders. The people who were no longer Google's shareholders said that if there was no dividend, there was no point to invest in this stock. But on the opposite, the most shareholders of Google don't care the dividend of the stock, and they are more focusing on the yield of the stock. According to the US magazine "Fortune", the stock price was three time higher than the IPO price until 2009, and the difference between the prices is the only thing that those shareholders are care about in the long term.

As concluded in chapter 3.1.3, these three market indicators are perfect evidence showing that whether a company is a profitable company or not. Google never pay any dividend to the investors in the history, but it's still regarded as the one of the most profitable listed companies.

4 Evaluation of the Technology Stocks Performance

In this chapter the details of stock returns will be calculated based on the history stock prices of both companies, Apple and Google. First we will calculate returns of Apple and cumulative returns, and then do the same calculation of Google. At last part, we will compare these two results and analyze which one is better for the investor.

4.1 Apple Company

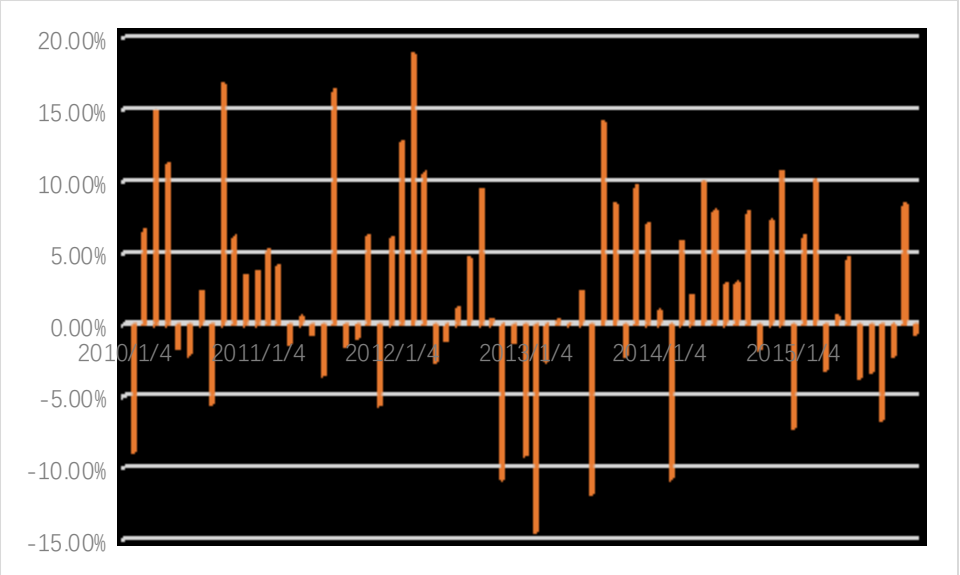
In this chapter the returns will be calculated based on the history stock prices in last 6 years. First the monthly returns will be calculated and the results will be shown as a figure form. Cumulative monthly returns will be noted as well. Then we use standard deviation to analyze the risk of Apple company. The liquidity will be introduced in the last part.

4.1.1 Returns

Owing to the importance of return to the investors, in this chapter we will make comments on monthly returns, average monthly returns and cumulative monthly returns. We will use 72-months history data from 2010 to 2015 to give the investors a better understanding of the Apple company.

First we make a figure that shows the monthly returns of Apple, by using formula 2.1.

Figure 4.1: Monthly returns (2010-2015)



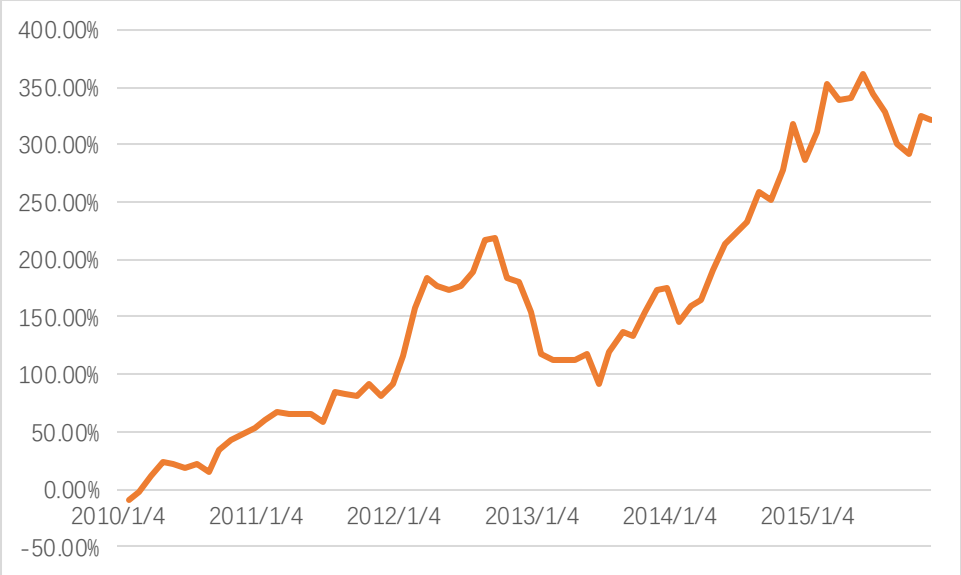
Source: Yahoo; Author

As can be seen in figure 4.1, there are monthly returns from 2010 to 2015, including ups and downs. The highest monthly return is 18.83% at Feb. 1st, 2012, and the lowest monthly return is -14.41% at Jan. 2nd, 2013.

Then we use formula 2.3 to calculate the average monthly return is 2.11%. Average monthly return will help us to estimate the future monthly return in a period. For instance, the average monthly return is 2.11%, if we invest this month, then according to the average monthly return, we can expect 2.11% return for next month on average.

Cumulative return is mentioned in the chapter 2.7.1, it's a rate showing that which period earned the most in the history. We calculate the cumulative monthly returns from 2010 to 2015 of Apple company.

Figure 4.2: Cumulative monthly returns (2010-2015)



Source: Yahoo; Author

As we can see in the figure 4.2, the lowest cumulative return was -8.86% in Jan. 4th, 2010, and the highest one was 352.39% in Feb. 2nd, 2015. Cumulative returns told us in the last six years, the February of 2015 was the period which earned the most in return.

4.1.2 Risk

Risk is one of the main factors that affecting the decision of the investor, and the main methods of calculating risk were mentioned in the chapter 2.7.2. We will calculate the standard deviation of the risk from 2010 to 2015 by using formula 2.6.

The result is 28.90 for Apple's prices standard deviation. The larger it is, the higher level the risk. Because it shows the volatility of the prices. If the prices change in a large range, there is harder to predict how it will change in the future, and standard deviation gives the investors a clear picture of how it changed in the history.

Table 4.1: Comparison of Apple Stock and NASDAQ

Name	Average Monthly SD
Apple's stock	28.90
NASDAQ	86.07

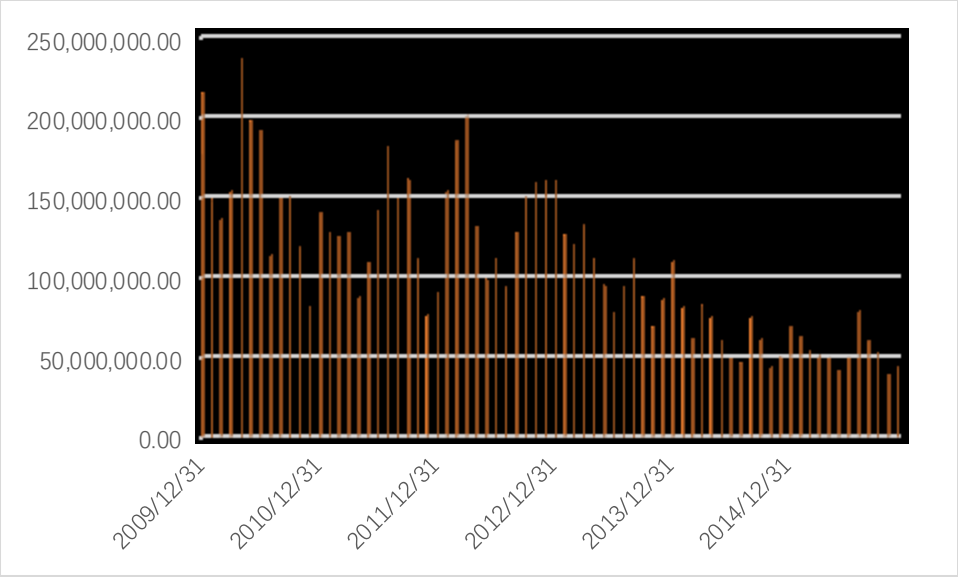
Source: Yahoo; Author

As can be seen in table 4.1, the standard deviation of Apple's stock and NASDAQ is 28.90 and 86.07. In general, the smaller is the standard deviation, the smaller is the difference between mostly data and the mean, and the fluctuation is smaller. If the fluctuation is smaller, then it means the lower risk it is. So in short, the smaller is the standard deviation, the lower the level of risk it is. That is one advantage of Apple, comparing to NASDAQ.

4.1.3 Liquidity

Liquidity is usually considered as the third factor that affect the choices of the investors. We usually take the stock's volume that traded in the market as account.

Figure 4.3: Volume (2010-2015)



Source： Yahoo; Author

In figure 4.3, it is not hard to find that the volume of Apple stock was decreasing in general during last 6 years. As we mentioned in chapter 2.7.3, the higher is liquidity, the more attractive to the investors. Although it was decreasing, the average

volume that traded every day was 111,154,865 which over 111 million. It's still a great number of volume.

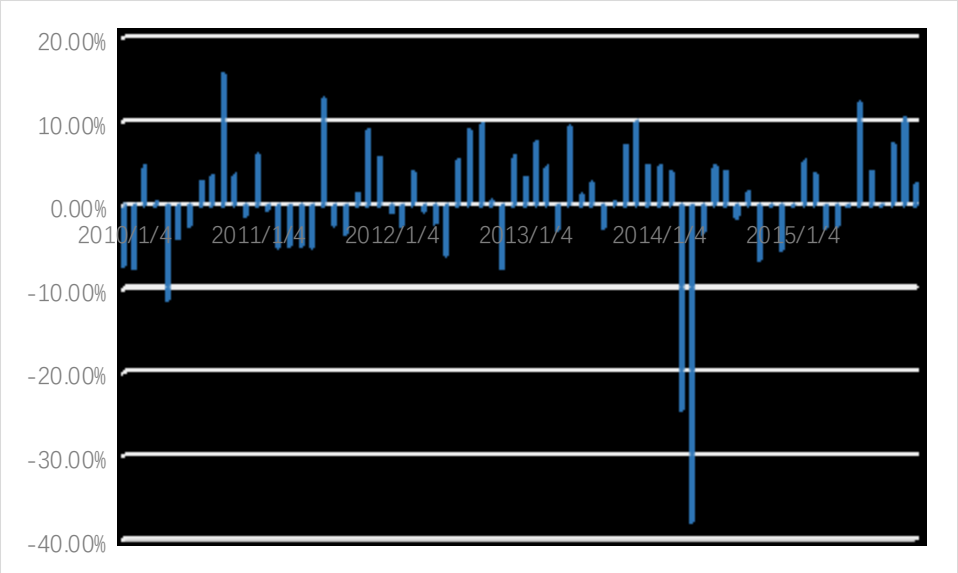
4.2 Google Company

In this chapter the monthly returns and cumulative monthly returns will be calculated and noted, and the results will be shown as a figure. The risk will be calculated by using standard deviation. The last part is liquidity which will be mentioned to illustrate the volume of the stock.

4.2.1 Returns

Because of the importance of return to the investors, in this chapter we will calculate monthly returns, average monthly returns and cumulative monthly returns. We will use 72-months history data from 2010 to 2015 to give the investors a better understanding of the Apple company.

Figure 4.4: Monthly returns (2010-2015)



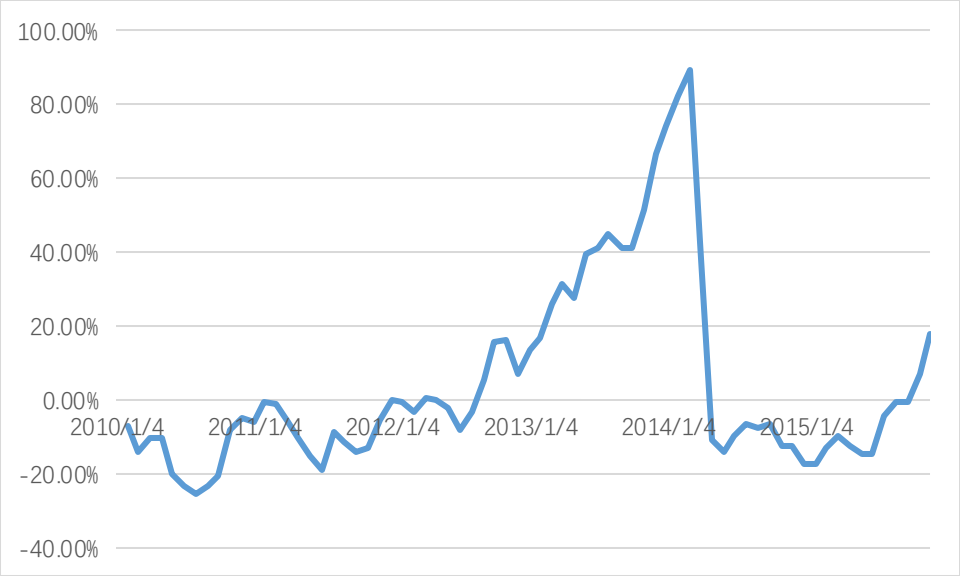
Source: Yahoo; Author

As can be seen in figure 4.4, there are monthly returns from 2010 to 2015. The highest monthly return is 15.59% at Oct. 1st, 2010, and the lowest monthly return is -37.77% at Apr. 1st, 2014.

Then we use formula 2.3 to calculate the average monthly return is 0.60%, which is much lower than Apple's. In this case, during the same period, if we invest this month in both Apple and Google, we can expect 2.11% average return for next month on Apple's stock, meanwhile we can expect just 0.60% average return for next month on Google's stock.

Cumulative return is mentioned in the chapter 2.7.1, it's a rate showing that which period earned the most in the history. We calculate the cumulative monthly returns from 2010 to 2015 of Google company.

Figure 4.5: Cumulative monthly returns (2010-2015)



Source: Yahoo; Author

As we can see in the figure 4.5, unlike the Apple's cumulative monthly returns, Google's cumulative monthly returns had a big fall at Apr. 1st, 2014. It's the same time when it had the lowest monthly return in the last six years. This mainly because of the split shares of Google in that period. Google decided to split shares at April, and then one share became two shares, the stock price fell a half naturally. The stock prices at

around Apr. 2014, were decreased which will be shown in chapter 4.3, and this leaded to the big fall of cumulative return. Although cumulative return is not exactly same with monthly return, they are linked with each other.

4.2.2 Risk

In this part, risk will be measured using the main methods of calculating risk were mentioned in the chapter 2.7.2. We will calculate the standard deviation of the risk from 2010 to 2015 by using formula 2.6.

The result is 159.74 for Google's prices standard deviation. Because it shows the volatility of the prices. The smaller it is, the lower level the risk. If the prices change in a small range, there is easier to predict how it will change in the future, and standard deviation can help the investors to know which investment is more risky than others.

Table 4.2: Comparison of Google Stock and NASDAQ

Name	Average Monthly SD
Google's stock	159.75
NASDAQ	86.07

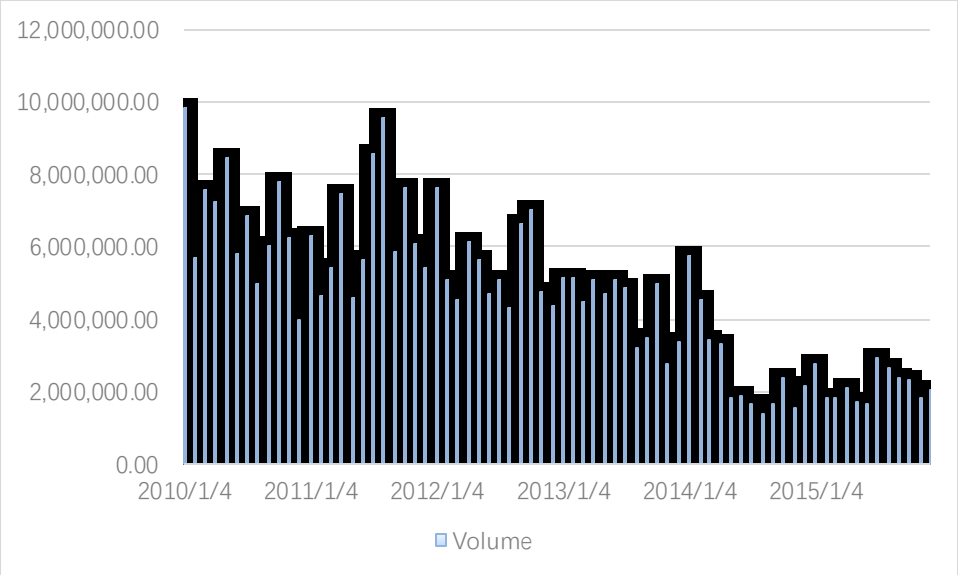
Source: Yahoo; Author

As can be seen in table 4.2, the standard deviation of Google's stock and NASDAQ is 159.75 and 86.07. Usually, if the fluctuation of prices is smaller, it means the lower risk it is. In this comparison, Google doesn't have any advantages comparing to NASDAQ.

4.2.3 Liquidity

As same as the analyze of Apple's liquidity, we take the stock's volume that traded in the market as account.

Figure 4.6: Volume (2010-2015)



Source： Yahoo; Author

In figure 4.6, we know that the volume of Google stock was decreasing in general during last 6 years as well. As we mentioned in chapter 2.7.3, the higher is liquidity, the more attractive to the investors. It was decreasing, the average volume that traded every day was 4,632,733 which over 4 million. Comparing to Apple's volume, which over 111 million, it was much lower, and it represents that the liquidity of Google is lower than Apple's.

4.3 Comparison of Apple Company and Google Company

After we introduced Apple company and Google company separately, now we put these two companies together and make comparison of two companies. First we select both Apple's and Google's stock prices with 6-years data, from Jan. 1st, 2010 to Dec. 31st, 2015.

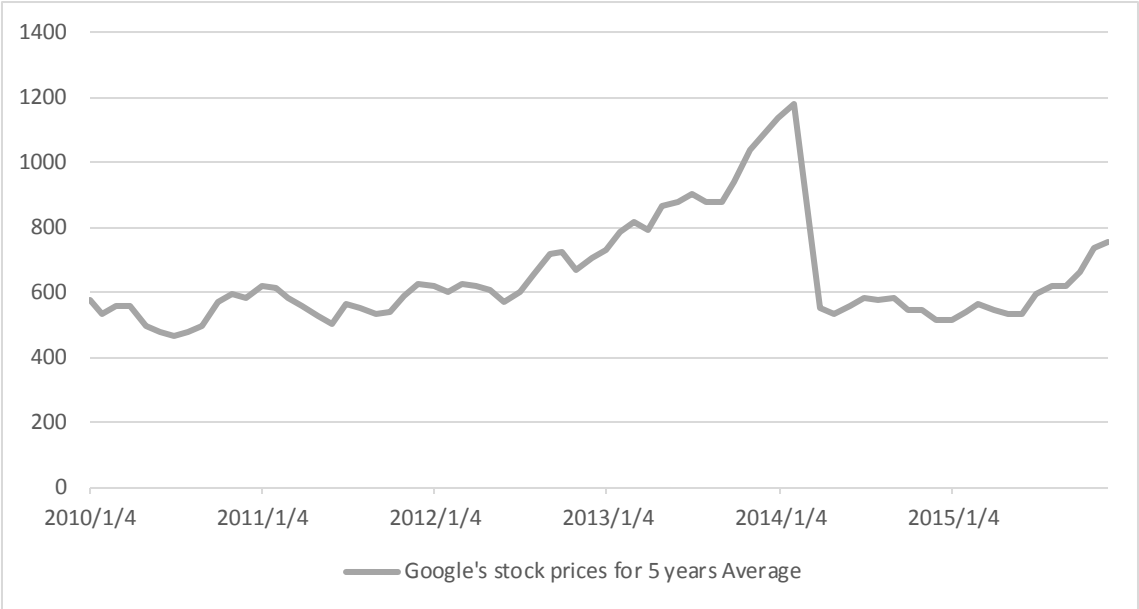
Figure 4.7: Apple's Stock Prices for 6 Years

Source: Yahoo; Author

As can be seen in figure 4.7, the Apple's stock prices had ups and downs, while its peak, nearly 700 dollars, was in the 2012, and its bottom, under 100 dollars, was in the 2014. The fact that it has been changing every day is because of the market. Market is depended on the supply and demand. If people want to buy a stock than sell it, which means the demand is higher than the supply in the market, so the price moves up. Oppositely, if people want to sell a stock than buy it, which means supply is more than demand, so the price falls down.

The Apple's stock price had two obvious fall during past 6 years. The first fall was from the middle of the 2012 to the beginning of 2013. After the whole year recover period, it fell the second time from April of 2014 to the middle of the 2014.

Figure 4.8: Google's Stock Prices for 6 Years

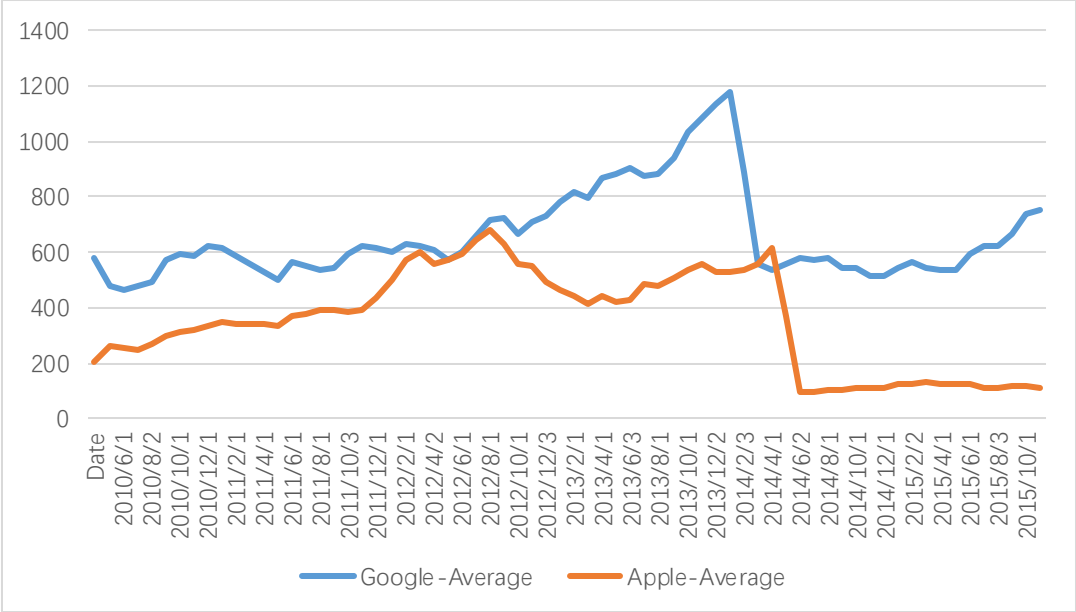


Source: Yahoo; Author

As can be shown in figure 4.8, the Google's stock prices also had the peak, nearly 1200 dollars, in the beginning of the 2014 and its bottom, under 500 dollars, in the 2010. The Google's stock price had one clear fall during past 6 years. The only one big fall was in the beginning of 2014 after its peak.

Then put Apple's stock prices and Google's stock prices together in figure 4.9, and compare the fluctuation of the stock prices during last 6 years.

Figure 4.9: Comparison of stocks prices



Source: Yahoo; Author

In figure 4.9, we can conclude that during the past 6 years, the Google's stock average price is usually higher than the Apple's, and they both had a big fall in 2014. As we introduced in chapter 4.2.1, the big fall is the verdicts of split shares. Google decided to split share in April, 2014, the stock price fell a half. Then Apple chose to split share in June, 2014, and its stock price also fell a lot.

We can compare the market value of Apple and Google. The results will tell us why people choose these two stocks in the technology industry of the market, we can use the data from the table 4.3, showing the top 10 IT companies' market value at the end of 2014.

Table 4.3: End of 2014 Top 10 IT Industry Enterprises' Market Value and Stock Prices

Rank	IT Industry	2014/12/31 Market value (Billion)	2014/12/31Stock price
1	Apple	647.36	110.38
2	Microsoft	382.88	46.45
3	Google	357.09	536.4
4	Alibaba	258.36	103.94

5	Facebook	217.51	78.02
6	Samsung	202.672	1100
7	Oracle	199.28	44.97
8	Intel	1754.6	36.39
9	IBM	1587.8	160.44
10	Amazon	1436.9	310.35

Source: Yahoo; Author

By the end of 2014, there are 14 enterprises that achieved their market value more than 100 billion US dollars all over the world. As can be shown in table 4.3, in the top ten technology companies, Apple is ranked at the first place, and it reached 647.36 billion US dollars. Then the second and third are Microsoft and Google. That is why people choose to buy these two stocks.

The principal theory to invest is that the price movement of the investment will go the direction which let investors feel worthy. It's the same for investing in stocks. It's not quite right to equate a company's value with the stock price. Because the value of a company is its market capitalization, which is the stock price multiplied by the number of shares outstanding. For example, company "A" that trades at $200 per share and has 1 million shares outstanding, and company "B" that trades at $50 that has 4 million shares outstanding. We can easily say that the stock price of company "A" is more than company "B""s. But actually the market value is same for both company ($200 x 1 million = $200 million while $50 x 4 million = $200 million).

Google and Apple are the perfect examples for this. In the figure 4.3, we know that at the most time, Google's stock price is higher than the Apple's from 2010 to 2015. But in the table 4.3 showing the top 10 IT companies' market value at the end of 2014, Google's market value is at the third place while Apple's is at the first place.

Therefore, for the investors, it's hard to suggest which factor is more important.

Because everyone has his or her own ideas and strategies. To further complicate, there are not just these 2 factors that will influence the choice of investors in the market, except the market value and price of the stock, investors should also notice and predict the growth of the price and development of company in the future. The return is one of the most important factor that affects the decision of the investors.

On one hand, Apple's stock has provided shareholders a lot of cash as the dividends, while Google has never pay any dividends to the shareholders. For this aspect, Google is not a good choice for investors. On the other hand, Google's average monthly return is higher than the Apple's, which will let investors draw more attention to the Google's stock.

From point of return, we already calculated monthly returns and cumulative monthly returns of Apple company and Google company. Now we use the annual data to calculate the annual return by using formulas 2.1 and 2.2.

Table 4.4: Annual capital returns and annual total returns of Apple company

Year	Annual capital returns	Annual total returns
2010	53.07%	53.07%
2011	25.56%	25.56%
2012	32.57%	33.28%
2013	8.07%	8.69%
2014	40.62%	41.23%
2015	-3.01%	-2.53%

Source: Yahoo; Author

From table 4.4, we notice that there are only small change of annual capital returns and annual total returns. This is because the dividend of Apple is not very much, the difference between annual capital returns and annual total returns are very little. As

we can see that in 2010 and 2011, the annual capital returns and the annual total returns are exactly same. This is owing to the policy of Apple company, and it gave the shareholders dividend until 2012. Before 2012, there was no dividend to the shareholders.

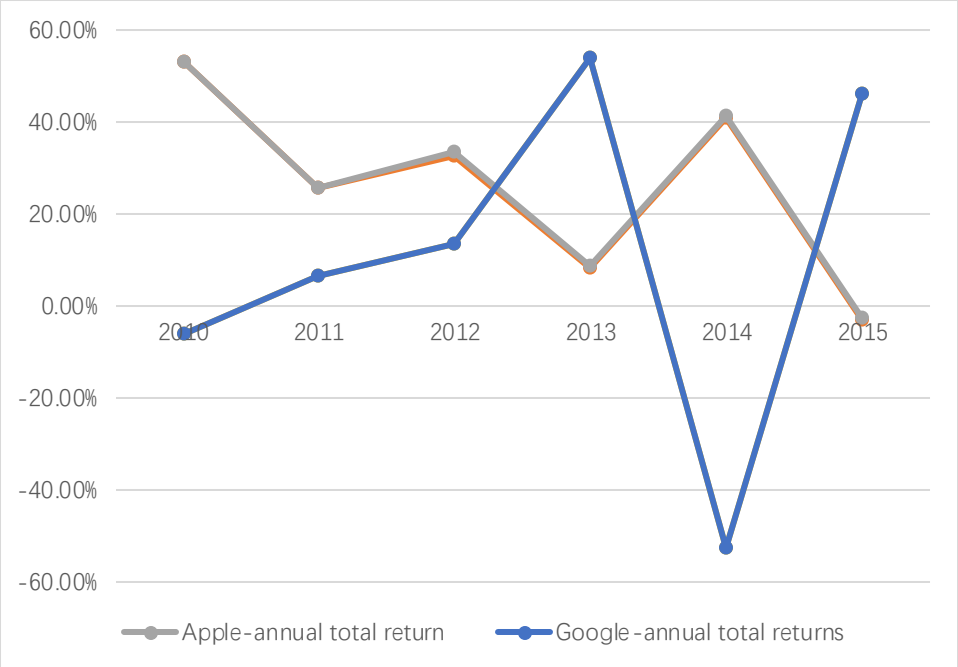
Table 4.5: Annual capital returns and annual total returns of Google company

Year	Annual capital returns	Annual total returns
2010	-6.10%	-6.10%
2011	6.53%	6.53%
2012	13.30%	13.30%
2013	53.75%	53.75%
2014	-52.52%	-52.52%
2015	45.98%	45.98%

Source: Yahoo; Author

From table 4.5, we find that there is no difference between the annual capital returns and annual total returns. As we know the policy of Google, it decided to be a company that has its own characteristic from the establishing period, there was no dividend to the shareholders even until now. So the annual capital returns and the annual total returns are entirely same.

Figure 4.10: Comparison of annual total returns



Source: Yahoo; Author

In figure 4.10, it's clear that Apple's annual total returns was decreasing in general, although it had a raise in 2014; while Google's annual total returns had two periods, the first period from 2010 to 2013, it was increasing steady in first 2 years then increasing rapidly in 2013, the second period from 2013 to 2015, it was declining rapidly in 2014 and recovered in just one following year. We also calculate the average annual return of both companies, and the results are 26.15% and 10.16% for Apple and Google from 2010 to 2015. This can be the evidence that the average annual return of Apple is higher than Google's.

Table 4.6: Differences between Apple and Google

Name	Average stock price	Market value	Dividend	Average annual return	Risk
Apple	Lower	Higher	Yes	Higher	Lower
Google	Higher	Lower	No	Lower	Higher

Source: Yahoo; Author

Table 4.6 that shows the differences between Apple company and Google company, including their average stock price, market value, dividend, average annual return and risk. The results are based on the data that we used in above chapter.

We can clearly notice that although Apple's average stock price is lower than Google's, the shareholders of Apple can get dividend. Apple's average annual return is higher than Google's, but the risk is lower than Google's. So the suggestion for the investors is to invest in Apple's stock rather than Google's, with high annual return and lower risk, and it also pay dividends.

To conclude, Apple company and Google company are both strong and well-developed companies in the IT industry all over the world. Apple was ranked as the top 1 IT company during 2014, and investors have confident with the further development of Apple which let Apple became the top 1 market value of the IT industry. By comparing these all aspects of both companies, including return, risk, liquidity, price, market value and dividend, we can suggest to invest Apple company rather than Google.

5 Conclusion

Financial market is the market that people buy or sell financial securities in general, and capital market is a part of it. Capital market has the maturity that more than one year, which is risky for the investors, because the uncertainty of the market. Owing to technology area became the hot area in the stock market, and this trend has already been popular for nearest five years, we choose Apple company and Google company which are the two leading companies in technology field to compare with each other. The aim is to evaluate the stock performance of these two companies.

According to the Yahoo's data, Apple started to be a listed company at 1980 and Google started at 2004. After decades of development, these two companies both had their ups and downs. But now there is no doubt that Google and Apple have already become the leading companies in the IT industry. At the end of 2014, Apple became the top 1 biggest market value of IT industry enterprises, while Google ranked the top 3.

The core objective of this thesis was to evaluate the stock performance of Apple company and Google company. According to the basic principles of investing, we analyze three aspects to evaluate these two companies: return, risk and liquidity. The return has been calculated on the basis of history stock prices of both companies, the risk has been calculated by using standard deviation method, and the liquidity has been measured by using the traded volume in the market. We also mentioned market values, dividends which also help us to assess the characteristics of Apple company and Google company.

In this thesis, the first part is to introduce mainly about capital market and principles of investing in general. The second part focus on the introduction of two companies, Apple company and Google company. This part includes the history, basic financial characteristics such as ROA and ROE, and some market indicators like EPS, P/E ratio and dividend payout ratio of two companies. The third part is the main part of my thesis. In this part, the comparison of Apple's and Google's stock performance has

been analyzed and noted using the stock prices from 2010 to 2015.

According to the comparison, we draw a conclusion: as for now, although Apple's average stock price is lower than Google's, the shareholders of Apple can get dividend. Apple's return is higher than Google's, but the risk is lower than Google's. Therefore, based on the used criteria we can suggest to invest in Apple's stock rather than Google's, with high dividend and lower risk.

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List of Abbreviations

CEO - Chief executive officer

EAT – Earning after tax

EPS - Earning per share

IT - Information technology

P/E - Price-earning ratio

ROA - Return on assets

ROE - Return on equity

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Ostrava dated: 03. 05. 2016

Weizhi Sun 孙维治

Student's name and surname

List of Annexes

Annexes

Annex 1 Apple income statement at March, 2015 (in million dollars)

Date	Dec-15	Sep-15	Jun-15	Mar-15
Total income	75,872	51,501	49,605	58,010
Total profit	30,423	20,548	19,681	23,656
Cost	45,449	30,953	29,924	34,354
Other assets	-	-	-	-
Expense on interest	276	238	201	163
Cost of sales	6,252	5,925	5,598	5,378
Cost of development	2,404	2,220	2,034	1,918
Administrative expenses	3,848	3,705	3,564	3,460
Revenue of sales	24,171	14,623	14,083	18,278
Other income	678	677	591	449
Profit before tax	24,573	15,062	14,473	18,564
Expense of tax	6,212	3,938	3,796	4,995
Profit for the year from continuing operations	18,361	11,124	10,677	13,569
Profits after tax	18,361	11,124	10,677	13,569
Earning per share - basic (dollars)	3.3	1.97	1.86	2.34
Earning per share - diluted (dollars)	3.28	1.96	1.85	2.33

Annex 2 Apple balance sheet at March, 2015 (in million dollars)

Date	Dec-15	Sep-15	Jun-15	Mar-15
Total assets	293,284	290,479	273,151	261,194
Current assets	76,219	89,378	70,953	67,891
Total cash	38,074	41,601	34,703	33,096
Cash	16,689	21,120	15,319	14,489
Short-term investment	21,385	20,481	19,384	18,607
Receivables	12,953	16,849	10,370	10,905
Inventory	2,451	2,349	2,042	2,396
Deferred taxes	-	5,546	5,010	5,141
Other current assets	22,741	23,033	18,828	16,353
Total long-term assets	217,065	201,101	202,198	193,303
Total fixed assets	22,300	22,471	21,149	20,151
Fixed assets	51,342	49,257	45,544	42,460
Accumulated depreciation	29,042	26,786	24,395	22,309
Stocks and other investments	177,665	164,065	168,145	160,443
Goodwill	5,202	5,116	5,044	4,711
Intangible assets	3,924	3,893	3,779	4,061
Other long-term assets	7,974	5,556	4,081	3,937
Total liabilities and shareholders' equity	293,284	290,479	273,151	261,194
Total liabilities	165,017	171,124	147,474	132,188
Total current liabilities	76,092	80,610	65,285	58,729
accounts payable	33,312	35,490	26,474	23,159
Payable	-	-	1,566	2,017
Accrued liabilities	24,032	25,181	8,339	7,781
Short-term borrowing	9,759	10,999	6,999	3,799
Other current liabilities	-	-	12,819	13,029
Total long-term liabilities	88,925	90,514	82,189	73,459
Long-term liabilities	53,204	53,463	47,419	40,072
Deferred tax liabilities	21,617	24,062	24,539	23,825
Deferred income	3,546	3,624	3,474	3,571

Annex 2 continued

Other long-term liabilities	10,558	9,365	6,757	5,991
Total shareholders' equity	128,267	119,355	125,677	129,006
Common Stock	28,253	27,416	26,327	25,376
retained earnings	101,494	92,284	98,252	100,920
Cumulative income	1,480	345	1,098	2,710

Annex 3 Google income statement at March, 2015 (in million dollars)

Date	Dec-15	Sep-15	Jun-15	Mar-15
Total income	21,329	18,675	17,727	17,258
Total profit	13,141	11,638	11,144	10,902
Cost	8,188	7,037	6,583	6,356
Other assets	-	-	-	-
Expense on interest	26	26	26	26
Cost of sales	7,761	6,930	6,319	6,455
Cost of development	3,510	3,230	2,789	2,753
Administrative expenses	4,251	3,700	3,530	3,703
Revenue of sales	5,380	4,708	4,825	4,447
Other income	154	209	157	183
Profit before tax	5,200	4,891	4,956	4,604
Expense of tax	277	912	1,025	1,018
Profit for the year from continuing operations	4,923	3,939	3,931	3,586
Profits after tax	4,923	3,939	3,931	3,586
Earning per share - basic (dollars)	7.16	5.80	4.99	5.27
Earning per share - diluted (dollars)	7.06	5.73	4.93	5.20

Annex 4 Google balance sheet at March, 2015 (in million dollars)

Date	15-Dec	15-Sep	15-Jun	15-Mar
Total assets	147,461	144,281	138,807	133,400
Current assets	90,114	88,103	84,164	80,313
Total cash	73,066	72,767	69,780	65,436
Cash	16,549	18,068	18,453	16,976
Short-term investment	56,517	54,699	51,327	48,460
Receivables	11,556	9,749	9,394	8,584
Inventory	3,139	2,688	3,049	3,720
Deferred taxes	251			
Other current assets	2,353	687	625	1,726
Total long-term assets	57,347	56,178	54,643	53,087
Total fixed assets	29,016	28,338	27,008	254,478
Fixed assets	40,146	38,908	37,112	34,843
Accumulated depreciation	11,130	10,570	10,104	9,395
Stocks and other investments	5,183	4,813	4,409	4,090
Goodwill	15,869	15,675	15,610	15,573
Intangible assets	3,857	4,023	4,213	4,380
Other long-term assets	3,181	3,329	3,403	3,596
Total liabilities and shareholders' equity	147,461	144,281	138,807	133,400
Total liabilities	27,130	28,040	27,024	24,952
Total current liabilities	19,310	18,457	17,362	14,336
accounts payable	1,931	1,549	1,315	1,688
Payable	302	215	948	123
Accrued liabilities	10,636	9,485	8,685	8,160
Short-term borrowing	3,225	3,237	3,008	2,009
Other current liabilities	2428	3266	2,694	1,657
Total long-term liabilities	7,820	9,583	9,662	10,616
Long-term liabilities	1,995	1,994	2,225	3,226
Deferred tax liabilities	189	1,976	1,754	1,845
Deferred income	151	133	108	93

Annex 4 continued

Other long-term liabilities	5,485	5,480	5,575	5,452
Total shareholders' equity	120,331	116,241	11,783	108,448
Common Stock	32,982	31,864	30,722	29,527
retained earnings	89,223	85,969	81,990	79,292
Cumulative income	-1,874	-1592	-929	-371