

Universidad ORT Uruguay
Facultad de Administración y Ciencias Sociales

**Desafíos y cambios en finanzas corporativas:
avances en el sector tecnológico, aplicación de
técnicas de valuación y estudio de la oferta
pública de acciones**

**Challenges and changes in corporate finance:
advances in the technology sector, application of
valuation techniques and the study of the initial
public offering process**

Entregado como requisito para la obtención del título Máster en Dirección Financiera
(Universidad ORT Uruguay) y Master of Science in Finance (Florida International
University)

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2018

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A handwritten signature in black ink, appearing to read 'Bruno Mauricio Minarrieta', with a large, stylized flourish above the name.

Agradecimientos

Agradecimientos especiales a Andrés Obando, Robert-Louis Jennings-Blanchet, Mads Axel Johansen, Tarik Nazih Saleh Abdel K Wehrmann y Jorge Maspons, mis compañeros de equipo en la elaboración de estos proyectos a lo largo de la duración del programa de estudios en Florida International University.

Sus contribuciones son parte integral de los trabajos aquí presentados.

Index

I)	Abstract	4
II)	Introduction	5
	II.I) Banking on the Cloud: 2020 Insights	5
	II.II) Initial Public Offering: The Case of Square, Inc.	5
	II.III) Hypothetical M&A: Netflix-Apple.....	6
	II.IV) Investment Recommendation: MCD Stock Valuation.....	6
III)	Chapter 1 - Banking on the Cloud: 2020 Insights.....	7
IV)	Chapter 2 - Initial Public Offering: The Case of Square, Inc.....	37
V)	Chapter 3 - Hypothetical M&A: Netflix-Apple.....	61
VI)	Chapter 4 - Investment Recommendation: MCD Stock Valuation.....	101
VII)	Final Comments, Mayor Giveaways, and Conclusion.....	133

I) Abstract

This portfolio gathers a selection of papers that were presented as final requirements for several courses as part of the Dual Degree program that Universidad ORT Uruguay (ORT) offers in conjunction with Florida International University (FIU).

The topics of said courses were greatly diverse, including, among others, commercial and investment banking, portfolio management, risk management through derivatives and valuation techniques. Regarding this last one, the entire program had a noticeable focus on corporate finance and the technological changes that are affecting the business world, such as cryptocurrencies, cloud computing, automation and multiple analysis tools for decision-making tasks.

The four papers that were chosen aim to represent that same tendency, starting with a research paper explaining the Cloud Computing phenomenon followed by a complete analysis of an Initial Public Offering of a technological company, a hypothetical acquisition of a media and video streaming company and a full valuation for investment purposes of a fast food multinational company.

Key words: Cloud Computing, Cloud Banking, Initial Public Offering, valuation, financial analysis, financial modelling, Mergers & Acquisitions, investment recommendation.

II) Introduction

II.I) Banking on the Cloud: 2020 Insights

Everything from the very basic concept of Cloud Computing to its inception back in the early 2000s when it first appeared in the same context as we know it today, this research paper aims to provide a better understanding of this new tool that continues to shape the way entrepreneurs and executives carry out their businesses.

Among other things, it includes a thorough analysis of the different deployment models and types, highlighting the advantages, disadvantages and possible uses of each of them.

Regardless, perhaps the greatest added value that this report brings to the table is its take on what the future may look like in the years to come. This part includes a brief understanding of the new technologies that are arising nowadays such as machine learning, artificial intelligence, and blockchain, the main technology behind the so-called cryptocurrencies. It also provides and ends with a “looking ahead” reflection in which the main purpose is to summarize and answer questions about the future, regarding prevailing models, adoption rates and competitive environments in banking and other sectors.

II.II) Initial Public Offering: The Case of Square, Inc.

Square, Inc. (Square) is a company embedded in the market of card payments in retail transactions that generate revenues every time one of their apps or card reading terminals are used to process a transaction. It went public in 2015, and it was one of the most anticipated IPO's of that year. Those anticipations were well-funded given that it shocked the investors as soon as it hit the market, with a soaring 45% return overnight.

The main objective of this report is to understand the mechanics of an IPO, the reasons why many companies seek to perform them and the many difficulties they imply.

Among those difficulties, the valuation of the company was the one that was addressed the most by the team. Many, if not all, of the people in the cohort, have been involved in a business valuation in one way or another, but in every case, historical information was easily obtained to be used as a starting point from which the valuation models were constructed. This was not the case with Square as it was defined as a Unicorn at the time of the IPO. A Unicorn is a company that does not have a historical record of steady revenues, dividend payments or positive cash flows to use as inputs in the valuation models, but still manages to get an estimated stock market valuation above \$1 billion.

The implications of this were huge, as it meant to forget everything that was learned so far about valuation and to start seeing things in a completely different way.

II.III) Hypothetical M&A: Netflix-Apple

Centered in the business valuation of Netflix, Inc. (Netflix) as a target company to be acquired by Apple, Inc. (Apple), this paper involves a complete set of techniques and abilities that every valuation expert should master in its career.

It starts with a historical research on the company's business involving its major strengths, weaknesses, opportunities, and threats (S.W.O.T. analysis) and its strategic situation and economic outlook.

The focus was given to the financial modeling requirements, including the identification of the possible synergies that could arise, which were crucial to perform an estimation of Netflix's value and to develop a feasible strategy to perform the negotiation.

Lastly, a negotiation exchange with the opposing team was performed in order to replicate an actual deal environment.

II.IV) Investment Recommendation: MCD Stock Valuation

As part of the Securities Analysis course, the complete assessment of a stock to be purchased with investment purposes was set as the final objective.

In this sense, the course covered an extensive array of valuation models and technical analysis to be used on historical and prospective information.

The analysis that was performed was quite extensive and included the assessment of the financial health of the company through a bankruptcy test that put together various financial ratios in order to provide a complete vision of the financial statements.

The Bloomberg platform was greatly used, providing an incredible amount of data and being especially useful to perform the technical analysis methodology.

The final decision was given in the form of a buy, hold or sell recommendation to anyone thinking about investing or having an interest in McDonalds Corp.

Chapter 1: Banking on the Cloud: 2020 Insights

Abstract

The Cloud Computing phenomenon and its adoption has been a critical variable all across the economic spectrum and, more recently, with special focus on the financial and banking industries.

One of the goals of this research paper is to provide a broad definition of “The Cloud” as a concept, how it came to be what it is today, the different models to implement it and provide an opinion about its possible future development.

Focusing on Cloud Banking, the main advantages and disadvantages of the Cloud Computing use are going to be discussed as well as an introduction into the journey that major banks and the industry in general are undergoing in the present day and the possible outlook for the short term.

The main objective will be to be able to answer some key questions about the future of the banking industry once the critical information is gathered. Those questions will include:

- *Given competition and technology, which model will prevail?*
- *Will Cloud Banking shift towards Public Cloud in the near Future?*
- *What should be the main objective for banks in this new digital era?*
- *How will the competitive environment change in the years to come?*

Table of Contents

1 – What is Cloud Computing?	10
1.1. – Concept.....	10
1.2. – History	11
1.3. – Future	13
2 – Models for Cloud Computing	14
2.1. – Deployment Models.....	14
2.2. – Types of Cloud Computing Models	15
2.2.1. – Infrastructure as a Service	15
2.2.2. – Platform as a Service.....	15
2.2.3. – Software as a Service.....	16
2.3. – Emerging Cloud Technologies	16
2.3.1. – Functions as a Service	16
2.3.2. – Machine Learning	17
2.3.3. – Blockchain	17
2.4. – Best model for Cloud Banking	17
3 – Advantages and Disadvantages of Cloud Banking	18
3.1. – Advantages	18
3.2. – Disadvantages	19
4 – Cloud Computing in the Banking Industry	22
4.1. – The Adoption of the Cloud	22
4.2. – Cloud, Banks and the Future	25
4.3. – DBS Bank – The world’s first cloud bank	26
5 – Looking ahead	28
6 – References	31

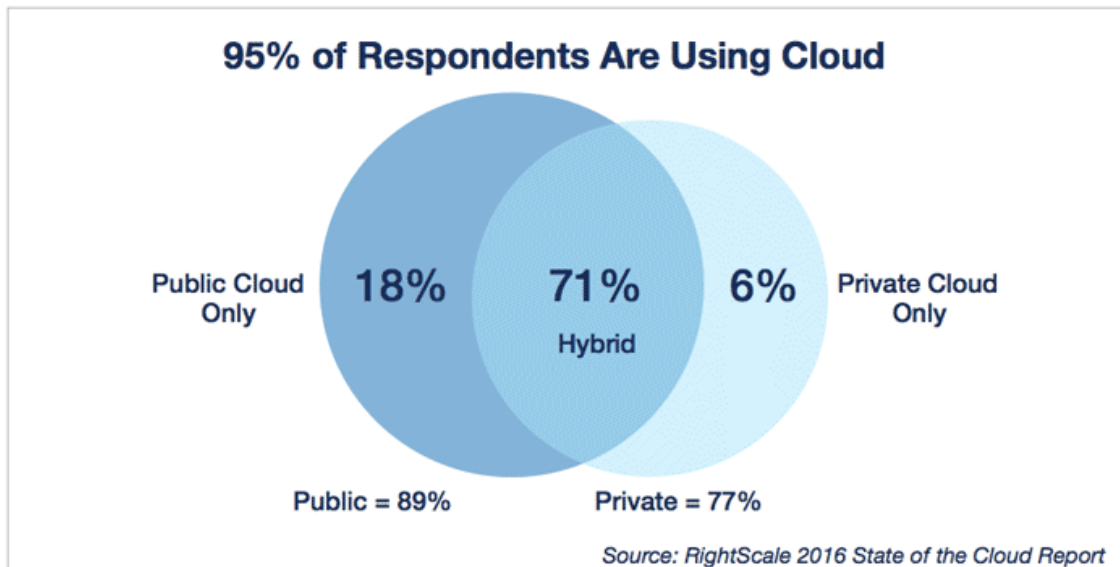
1 – What is Cloud Computing?

A brief introduction about the meaning and history of Cloud Computing is the first step in understanding the implications that that concept is having in the present and future of the banking industry.

1.1. – Concept

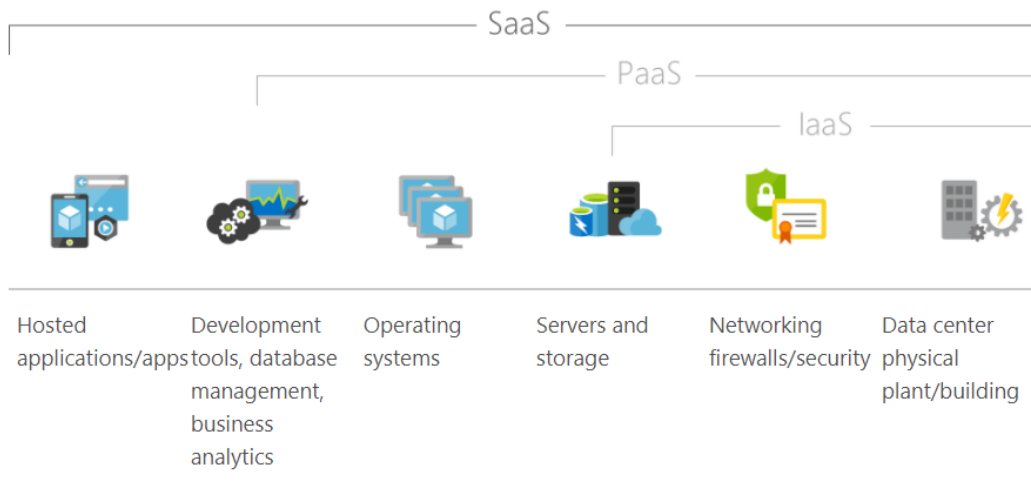
The basic concept of cloud computing is the delivery of computing services such as storage, databases or software, through the internet, which is commonly referred to as “The Cloud”. The main reason for this increasing adaptation of cloud computing software is the flexibility it provides, which is increasingly required for the modern business banking environment. There are four main different types of cloud deployments; public, private, community and hybrid.

The chart below shows the findings from a survey conducted with more than 1000 IT professionals, questioning them about the adaptation of cloud software in their company. It can be seen that 95% of the respondents have integrated cloud computing into their business and most of them use a hybrid version combining both the public and the private cloud, where only a few use either one of them individually.



Cloud computing is not just single piece of technology, but rather a system that can be offered through three main services; Infrastructure as a Service (IaaS), Software as a Service (SaaS) and Platform as a Service (PaaS). IaaS is the most basic form of cloud computing, where companies rent the IT infrastructure such as servers, storage, networks and operating systems from a provider. One of the main reasons firms decide to go with IaaS is that it allows companies to adapt cloud computing without the higher initial cost, as the company would only pay for the particular service needed.

The next level is PaaS which includes the prior mentioned services, but also has middleware, business intelligence services, database management system and more. It is designed to also enable the development of customized cloud-based application. Lastly, SaaS allows the companies or users to access cloud-based apps through the internet. In the figure below, the different levels and what they include can be seen.



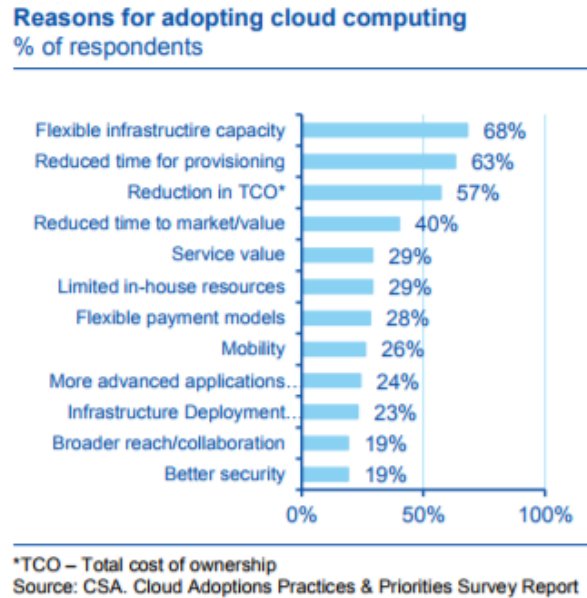
1.2. – History

The banking industry can be traced back to ancient Greece, where the temples conducted financial transactions such as loans, deposits and currency exchange. Since then, many of the principles have stayed the same, but the ever-changing demands from the market have forced bank to continue to evolve to stay alive. In the mid-20th century, banking technology was mostly manual, until the first computers in banking were introduced in 1955. It was introduced to process checks which automated and sped up the process. Since then banks began relying on in-house mainframes and servers for data processing.

The Personal Computer (PC) was introduced in the 1980s to 1990s, which could interact with the mainframes and quickly replaced the prior methods. The PC enabled access to external networks through the internet and was a major step towards the industry as it is known today. The rapid adaptation of the use of the internet and mobile phones by consumers led the banking industry to focus on the online segment, providing flexibility and convenience to the customers when they are using their services.

Network-based computing can be traced back to the 1960s, but most people believe that cloud computing was first used in 2006 by Google. Since then, the cloud has been implemented in many different industries and has now become an important part of the e-banking sector. The adaption of the cloud enables banks to redevelop their business models to ones that are more customer-centric and

able to respond quicker to changes in market and technological needs. On the chart below it can be seen that the main reason for adaptation of cloud computing is due to the flexible infrastructure capacity it provides.



A sign of this changing banking industry is that over 4,800 U.S. bank branches closed between 2009 and 2014. The main reason for this was that more customers are using technology for their banking needs instead of the traditional banking platform.

One of the first steps towards the development of what the cloud is today is the rising of SWIFT. The Society for Worldwide Interbank Financial Telecommunication (SWIFT) is a messaging platform used by banks and large corporations to handle payment and balance information. Historically, setting up a connection with SWIFT was very expensive, requiring specialized training and investment in purchasing their technology. Recently, SWIFT has been working to reduce the operating costs of its services, specifically for smaller multinational corporations and banks. As part of this effort, SWIFT introduced its cloud platform, which is called the SWIFT Community Cloud. Currently on the Community Cloud there are four products: Alliance Lite2, Alliance Lite2 for Business Applications, Alliance Lifeline, and Alliance Remote Gateway. Due to the highly sensitive nature of financial transactions, SWIFT had to develop a cloud platform for their clients' comfort.

In 2008, SAP started a conversation with their clients to determine if there were any areas where SAP could create a product to further aid their clients. These series of conversations led SAP to develop the Financial Service Network (FSN), whereby SAP would integrate their enterprise resource planning (ERP) with bank partners' networks. The goal was to aid the treasury departments in large multinationals to better manage their working capital, cash, and other similar needs. In 2010, SAP realized they were only one half of the equation and invited banks to help in the development of the

platform. The most notorious banks that participated were Citibank, JP Morgan, Bank of America, DBS Bank and Deutsche Bank. In 2013, SAP released FSN to be used by their clients. Citibank and DBS were the first two banks to officially start using FSN. They signed up within a week of each other.

1.3. – Future

The major driver of the change in banking industry's future is financial technology (FinTech). The investment in FinTech was \$3 billion in 2013 and is expected to increase to \$8 billion in 2018. Some of the main areas which companies are investing is artificial intelligence (AI), blockchain technology and cloud computing. According to research done by the consultant firm Forrester, the market for cloud computing is expected to reach \$191 billion by 2020. This growing market is going to be a huge target for fraud, reason why companies within the finance industry are trying to develop AI fraud prevention systems, which are able to scan large amounts of data and detect fraud in multiple forms.

Banks are already starting to implement (AI) technology in chatbots, which helps users to manage their money and savings. One of these chatbots is called Plum and is accessible through Facebook Messenger helping users saving money in small increments. The way it works is that customers give Plum access to their bank account and the (AI) technology analyzes the spending habits and gives recommendations on how much the customer should be saving. Currently, Bank of America is working on their own version called Erica.

Blockchain, also known as distributed ledger technology, is a decentralized public ledger that records transactions. It was originally used as an accounting method for Bitcoin and was designed so that the transaction could not be altered to ensure accountability of the system. Blockchain technology is also expected to have a big impact on the future of banking, where it will be used to create an alternative and convenient way of banking processing while reducing the impact of cyberattacks, as each block holds batches of data individually.

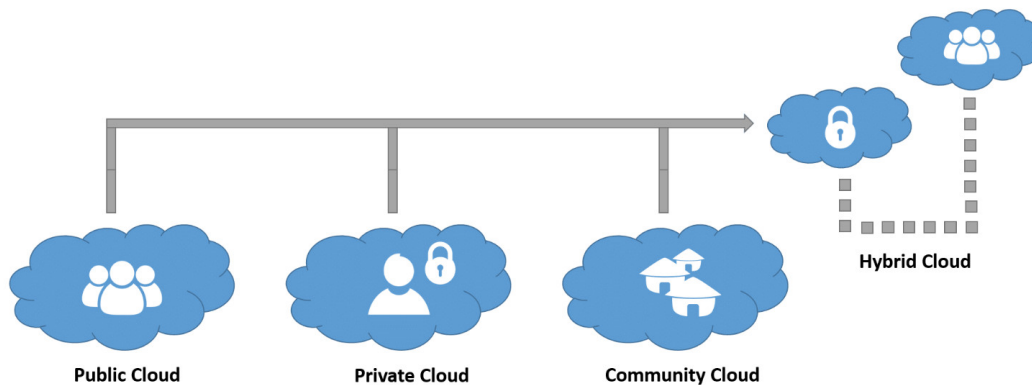
Another area is payments, where Blockchain would enable higher security and lower cost when banks process payments between organizations and their customers. Currently, there are many intermediaries, which would be eliminated with this technology. There are going to be many new opportunities from the new emerging technologies in the banking industry as well as threats, but cloud computing is expected to have a continuous large impact on the change in the industry.

2 – Models for Cloud Computing

Having set the foundation on the definition, the history and the potential uses of Cloud Computing, generally and within the banking industry, it's important to differentiate in more depth between the different cloud services offerings and the way they can be deployed.

2.1. – Deployment Models

First and foremost, there are four models that can be used for the deployment of cloud services:

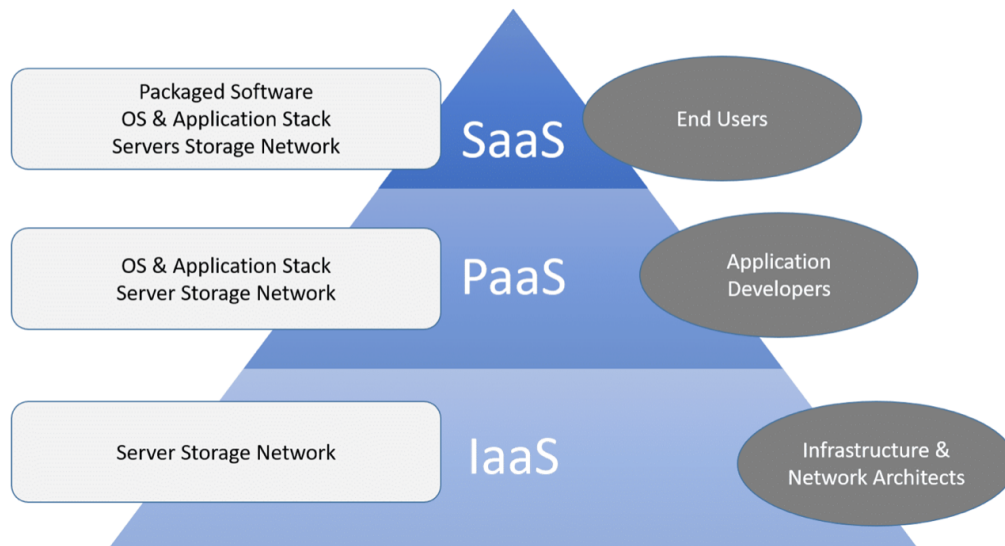


Source: *uniprint.net*

- Private Cloud: Cloud environment built, used and managed within a single corporation. The services end up being delivered from the company's own data centers and infrastructure for internal usage. This model offers some of the benefits of the cloud, such as versatility or convenience but preserves the power and control that the business has upon its local data.
- Public Cloud: The entire cloud service is given by a third-party provider that supplies the services entirely through the internet. This type of services is usually sold on demand, which means that the customers are billed according to specified metrics such as time, storage or bandwidth and their consumption of them.
- Hybrid Cloud: As its name indicates, it's a combination of the previous ones. It offers online public cloud services and on-premises private cloud services organized in an orchestrated fashion. The main goal of this model is to allow companies to run critical or sensitive information and applications with the security advantages of private cloud servers while being able to use the public cloud to deal with workloads and increases in demand.
- Community Cloud: The computing resources are shared between a number of organizations and managed either by an IT department within the community or third parties. Given that this model is rarely used in the market, the focus will be on the previous three.

2.2. – Types of Cloud Computing Models

As previously discussed, the service models in the Cloud can be roughly divided into three principal categories: Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS):



Source: *uniprint.net*

2.2.1. – Infrastructure as a Service

This type of services allows companies to move their physical infrastructure to operate in a cloud based environment while maintaining similar governance than in old-time on-premises data centers. Therefore, it is the closest that firms can get to the traditional in-house approach.

Basically, providers of IaaS offer storage or computing services on a pay-per-use basis, but there is a much broader array of options, including application monitoring, virtual private networks, developer tools, and more.

The main current vendors of this kind of services are Microsoft Azure, Google Cloud Platform, IBM Cloud and Amazon Web Services, which was the first IaaS provider and continues to be the leader.

2.2.2. – Platform as a Service

In this case, third-party providers host platforms within its own infrastructure, making them available through the internet for their customers. These customers tend to be developers that were targeted specifically due to their needs for powerful tools and processors to be able to compete with its competitors. Usually, this service is provided through an Application Programming Interface

(API), which serves as portal that provides direct and indirect cloud infrastructure and software, to accelerate, test and deploy applications products.

The main value brought to companies through this kind of services is the reduction of complexity and the needed maintenance of the infrastructure, allowing for increased focus in core software development.

Salesforce's Heroku, Force.com and Google App Engine are among the main current providers for this kind of services.

It's important to know that PaaS can be tailored to suit different kinds of business. An example of this is MBaaS (Mobile Back as a Service) which works specifically for mobile application developers.

2.2.3. – Software as a Service

The main difference between PaaS and SaaS vendors is that instead of providing the resources to produce software, they offer ready-made applications to business to use over the internet through the browser. This is in the form of on-demand online software subscription and as the other models, it offers the opportunity to minimize IT costs and shift the maintenance to the provider.

As seen in the illustration above, it is the simplest of the models and the one that provides the least capabilities to their customers. Nevertheless, it is the most widely used due to its simplicity and adaptability to a number of different types of businesses, the applications are completely customizable and configurable according to the needs of the client.

Currently, the main providers of this type of services are Google with its G Suite and Microsoft with its Office 365 for businesses and Salesforce for enterprises.

2.3. – Emerging Cloud Technologies

The competitive environment of the in which the cloud providers operate force them to be in constant expansion to differentiate themselves from the rest of the pack. This has led to the emergence of new technologies and adaptations of the basic models.

Some of the most notorious ones are listed below.

2.3.1. – Functions as a Service

This type of model is known to be the first installation of what is called serverless computing into the cloud service world. It provides another layer of complexity to the PaaS model and it allows businesses to run specific functions set to be triggered by specific events, which means that developers are only responsible for their code in the software building process.

A great advantage of FaaS is that reduces to zero the use of resources until the function is triggered, minimizing the pay-per-use costs. It is often offered on top of IaaS services.

The pioneers in this kind of offer are AWS Lambda, Azure Functions, Google Cloud Functions, and IBM OpenWhisk, among others.

2.3.2. – Machine Learning

Machine Learning is a type of Artificial Intelligence that is used to predict certain outcomes without the necessity of being specifically programmed. Understanding machines that are able to mimic human behavior as a response to changes in data in benefit businesses are being built and offered as cloud technology.

Amazon and Google are offering certain products that can be labeled as Machine Learning, such as Amazon Machine Learning or Google Cloud Machine Learning Engine.

2.3.3. – Blockchain

As an oversimplification, this technology allows users to keep “ledgers” with transaction data that can be updated to maintain integrity with each new transaction. Thanks to advances in encryption technology, users can accurately verify the reliability of the transactions, widely improving the security aspect of cloud computing.

2.4. – Best model for Cloud Banking

Currently, banks are more prone to implement PaaS services in a Private Cloud environment, which makes sense considering the characteristics of the business model for banks and their main concerns about data security.

Even though there is not a clear winner when it comes to compare between the cloud computing models that could allow banks to step into this kind of technology, we believe that IaaS should be the better option in the early stages.

As stated before, IaaS could allow banks to take advantage of every aspect of cloud computing while approaching the change in an old-fashioned way. Taking into account the stiffness of the banking industry, this could be a key aspect to drive bankers out of their comfort zone and join the cloud trend that has been a constant throughout most sectors.

3 – Advantages and Disadvantages of Cloud Banking

The banking industry is in a complicated state, with higher regulatory burdens, increased operational costs, and the emerging threat of FinTech companies. It is vital for banks to disrupt their business model by providing a faster and more customer centric business model, while at the same time reducing operating costs. With the mentioned ever-increasing use of smartphones and increased use of the internet, online banking has become a necessary feature which levels the playing field between all banks. While large banks have generally had a better competitive advantage by being able to offer more favorable rates and a greater variety of products, online banking is the space where the gap between the “have” and “have not’s” has been reduced. It is also through online banking that all banks are the most vulnerable from a security and competitive perspective. FinTech companies thrive in the online space, generally focusing on one product, offering it at a faster and in a more customer focused manner.

Cloud computing will allow banks to achieve their main goals quicker, faster, and more efficiently. By leveraging the cloud, banks will be in a position to potentially leapfrog current technology as well as futureproof themselves. Cloud computing is based on the premise of using the internet to connect a company’s network with that of a third party service provider. The data that sits on that cloud network may or may not be proprietary. Banks choosing to use the cloud will benefit from the technology, while at the same time giving up control. For this reason, it is important to understand and analyze the advantages and disadvantages of cloud technology.

3.1. – Advantages

In first place, banks will profit from a substantial cost saving achieved through the lower operating costs of cloud computing. As cloud computing is a service based platform, a bank will only pay for the capacity that it uses. This means that banks can customize how they integrate cloud computing but, due to the complexities of regulations and client confidentiality, banks may choose to only put certain services in the cloud or the entirety of them. Regardless of the choice, the costs on a unit basis will be lower than hosting that data on the banks own network.

Cloud computing also increases security through its wide network. Cloud service providers build large data centers that host thousands of servers. Through the use of these data centers, cloud service providers can send data across the network, which means data placed on the network is automatically backed-up. Additional features of having a wide network are increased speed and a reduced risk of hacking threats. Increased speed is achieved by placing data on the server closest to the end user. The wide network and bouncing of data means it is harder for hackers to locate where key pieces of it are located. For example, Flushing Bank in New York, got tired of using on-site magnetic tape backups and, working with cloud computing provider Zecurion, it is now able to send

its data over the internet to be store and backed up. According to the CEO, an important consideration for choosing Zecurion was that it would integrate the banks already developed encryption algorithm, showing the flexibility available in developing unique solutions to solve specific problems.

Another bright side of cloud computing is that it is highly scalable. This means that, regardless of the size of a bank or the service it chooses to move to the cloud, there will be sufficient capacity to handle any level of traffic. Banks have spent billions of dollars upgrading their existing IT services to provide a good product that customers have come to depend on. Therefore, banks do not want to move services to the cloud if it is going to encounter issues. Historically, when a bank faces constraints on its network, it has to purchase more servers to increase capacity. With cloud computing this process is seamless, which makes it easier for the bank to launch or move services without having to worry about capacity constraints, allowing the bank to focus on the product and not IT issues. DBS Bank is a relatively small bank in Singapore that is currently working with Amazon Web Services (AWS) to move to the cloud all of its online assets. AWS was specifically chosen due its large scale and large partner network. This proves that even for a smaller, more regional bank, scale was an important consideration in taking the big step of moving to the cloud.

Regarding efficiency, cloud computing allows for services to be deployed at a much quicker pace, compared to a bank using its own IT services. This is due to the wide compatibility of cloud services on computer and mobile platforms, its network of data centers, and the elimination of bureaucracy. The complex nature of banks' internal IT structure means it takes a lot of planning and resources to deploy projects, taking up valuable time that could be used to gain customers and a competitive advantage. Cloud computing solves the natural bureaucracy that is created in the bank and also allows other departments to work on the deployment to create good products for the customers.

Finally, cloud computing will allow banks to offer niche products that would have been unprofitable using a legacy IT system. Due to the on-demand nature of cloud computing, banks can take additional risks in developing niche products that can be deployed through the cloud at lower costs. This increases the potential profit of these products and allows banks to offer wider services. With today's customer being more demanding every day, banks have to adapt to survive. One way of doing that is to provide products on a more personal level.

3.2. – Disadvantages

Even though cloud computing offers distinct advantages to banks, it does come with some significant drawbacks. The main disadvantage for banks choosing to use cloud computing, is that they give up operational control. Banks have historically spent considerable amounts of money on bolstering their IT networks due to regulations and the confidential nature of their business. With cloud computing banks will have to rely on their cloud service provider to keep the system running at

optimal capacity and to protect their clients' information. Regardless, cloud computing has proven to be safer than on-premises IT networks and even though several vendors have had isolated incidents including Dropbox that was hacked in 2012, the world has yet to see a big cloud provider get hacked on a big scale. The cyber-attack on Dropbox was significantly small, affecting only a small number of European users, who's account information was hacked via a third-party site. This shows that, while the information was secure and undisturbed regarding Dropbox services, customers' accounts were still hacked as their information was released by a third-party site, proving that one attack, especially on email accounts, can have reverberating effects elsewhere on the internet.

Another important factor for banks to consider is the switching cost. Moving from one system to another is a learning curve from both an operational and monetary sense. In the interim periods while the transition is taking place, banks should expect elevate costs associated with the transition. This will also be the time when problems arise with more frequency, hence the importance of having a solid plan in place to help avoid disruptions. Usually, company's move small pieces of information that are not highly important to daily operations in order to eventually move more critical functions and operations as they feel more confident about the system. As mentioned in the DBS example, the bank currently has no timeline for their move to AWS, only indicating that it will take years.

Regulations are another important aspect to consider. The laws regulating banks may include boundaries as of where the data must be held. These laws could limit the potential of cloud computing to banks in such jurisdictions. In 2012, the Federal Financial Institutions Examination Council issued a press release with guidance for public cloud utilization by banks in the U.S., being the core guidance is that the public cloud risk management should follow current practices dealing with vendor risk management. However, the council did have some specific areas where regulated entities should pay more attention. These include:

- Due diligence: Placing data on the cloud does not excuse financial institutions from due diligence around data management.
- Vendor management: Cloud service providers are unfamiliar with the financial services industry and should face additional controls to provide an appropriate oversight.
- Audit: Cloud services must provide transparency and give regulators permission to audit.
- Information security: The security level of cloud providers must be analogous with the security levels within the firm.
- Legal and regulatory considerations: All applicable laws must be observed and applied.
- Business continuity planning: Plans must be in place for disaster recovery and data recovery.

While the benefits of cloud computing seem to outweigh the disadvantages, it is ultimately the business needs of the banks that will determine if it ends up using cloud computing or, more precisely, how much of its activities will be placed on the cloud.

With the clear operational advantages, cloud computing will likely be a mainstay of the industry and, as previously said, the decision if whether or not the core services will be moved to the cloud will depend on the particular bank and its needs. It is clear, however, that several banks are moving to the cloud to reap its rewards and that a great number of them are going to follow them down that path.

4 – Cloud Computing in the Banking Industry

4.1. – The Adoption of the Cloud

The next step for banking services has been developing over the last years, Cloud Banking has emerged as the next path towards the evolution in the banking industry. As previously stated, banks have found FinTech threatening their business models and have been obliged to innovate constantly to avoid losing market share.

This needs push the banking industry to find tools that provide the infrastructure required for development of new ideas and boosted innovation. In this sense, Cloud Banking provides a platform in which constant development of technological solutions are provided in real time to the institutions in the industry and their clients. Never before have the banks been presented with such a powerful tool since the creation of internet banking platforms at the beginning of the current century.

As stated by Capgemini in one of his research documents, *“Cloud computing is expected to be one of the fastest-growing technologies in the coming years. Business applications will be the largest market for cloud services-spending.”* (Capgemini, 2011. *Cloud Computing in Banking*).

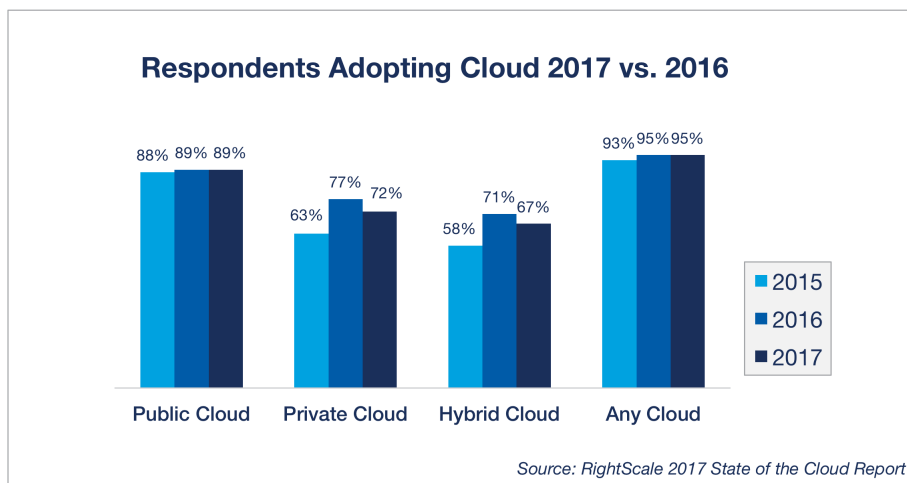
This applies perfectly to the banking industry in the sense that banks are in the need of boosting their innovation with a platform that provide enough resources.

It is important to mention that, while the adoption of the cloud is of massive importance to the industry, it is a decision that requires a great amount of analysis and testing. Banks have been slowly adopting cloud services with concerns in the security and regulation. There has been a widely-held belief that on-premises solutions are inherently more secure than the cloud because critical data lives in owned proprietary servers and systems, rather than a service provider’s platform or infrastructure. But Jon Debonis, Head of Security at Blend said that *“research shows that cyber-attacks affect both environments, with on-premises users experiencing over twice as many web application attacks as service provider customers, on average”* (Debonis, J., 2017. *Banking on the Cloud: Why Banks Should Embrace Cloud Technology*).

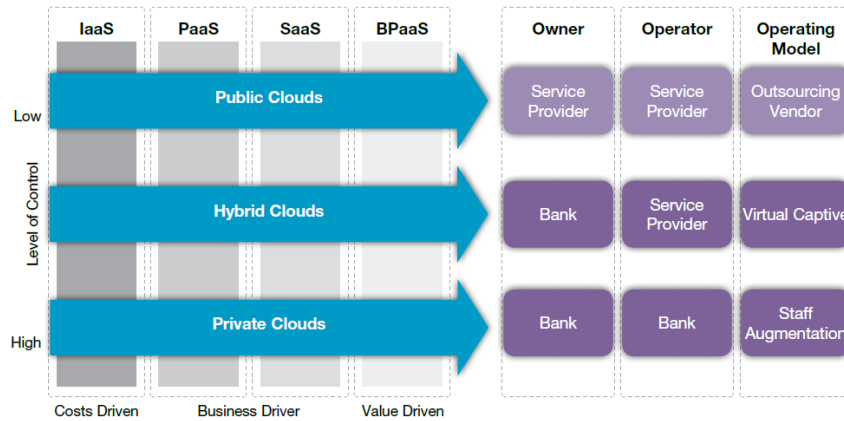
The main way the banking industry addressed their security concerns from cloud services has been through the adoption of Private Clouds. In a private cloud the banks are the owners and the operators, which gives them the certainty that they can have enough security to protect the information held in the cloud. Hybrid Clouds have emerged as a possibility for the banks and other big corporations to enjoy the benefits of having a private cloud mixed with the infrastructure development of public clouds. Hybrid Cloud is still the preferred enterprise strategy but that trend has started to change. According to a recent research done by The Wall Street Journal, Deutsche Bank states that big banks are expected to grow from as little as 0% public cloud adoption to 30% by 2019.

While some of that 30% may include in Hybrid Clouds, these are just bridges that bring the adoption to a full public cloud.

This is easily supported by the trend that is being established by other industries in the cloud adoption. According to the *Cloud Computing Trends: 2017 State of Cloud Survey* done by Rightscale the Private Cloud adoption of their respondents was 72% while the Hybrid Cloud adoption was 67%. Both of these numbers are going down compared to the 77% of Private Cloud adoption and the 71% adoption of Hybrid Cloud in 2016. Compared to that, Public Cloud adoption went from 88% in 2016 to 89% in 2017. The trend is starting to shift to public cloud and the banking industry can't stay behind.



The reason why the adoption of a Public Cloud is so important for the banking industry is because of the fact that the benefits of adopting the cloud are critical in the development and growth of the industry. These benefits are fully exhibited only if there is adoption of a public cloud where the cloud service provider can produce a state-of-the-art platform without the constraints of a private cloud.



Source: Capgemini Analysis 2011

Banks evolve every day with the need of their clients. This evolution has increased drastically the innovation and the use of IT infrastructure. The scalability of these new software solution developments would require banks to invest huge amounts on their IT infrastructure if the cloud services were not available. Public Clouds offer larger scalability in the development of new software since the infrastructure is not constrained to a private amount of hardware and software. The level of optimization reached in public clouds is based on its on-demand capacity available, compared to the limited or established capacity destined to a private cloud. Even though the public clouds may be seen as shared resource platforms, the magnitude of this platforms and the level of optimization provides a specific amount of infrastructure and resources when needed.

As mentioned before, banks use the cloud services to provide agility and flexibility to their IT infrastructure. Having a malleable IT infrastructure automatically assembles, integrates and configures technology resources to meet business goals such as the ones listed below.

- Development of new technological solutions
- Interconnection of applications
- Creation of new reports with different data sources
- Access to real time data
- Reachability of new markets
- Optimization of IT Structure capacity

All of these goals are in sync with the general benefits of the cloud reducing cost and boosting innovation, reducing system maintenance cost, offering a real time 360-degree view of the data and connecting the Customer Relationship Management (CRM) and the Enterprise Resource Planning.

4.2. – Cloud, Banks and the Future

In 2013 JP Morgan Chase announce that they had migrated all of its internal .NET and Java applications to a Platform as a Service (PaaS) model. This was a key announcement in that time given the size of JP Morgan Chase and its confidence in cloud services. That same year Citi Bank had signed a deal with SAP to use the Financial Services Network as a platform to cover corporate transactions. Again, a great step in the development of the symbiosis between the cloud and major banks of the world.

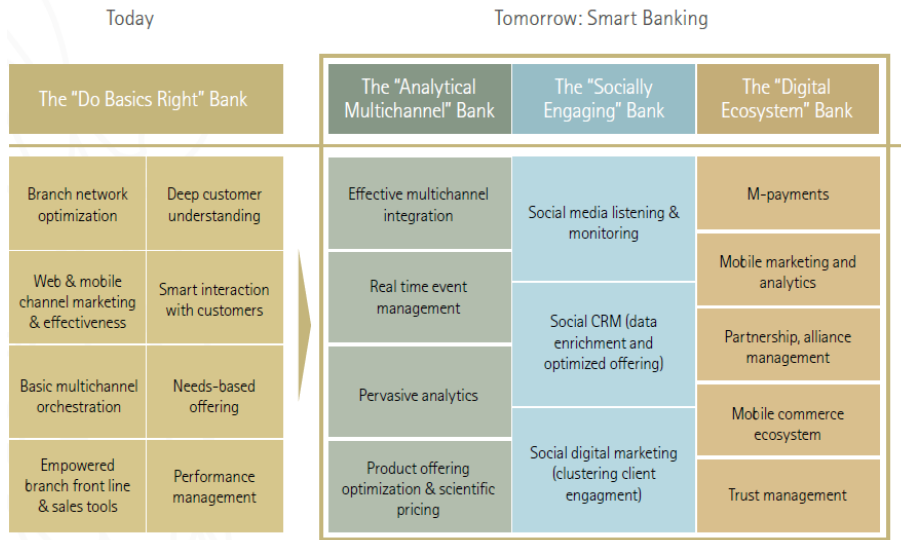
While these are considered major steps, it is important to point out that banks have been lagging the adoption of cloud services and have slowly adopted them by including non-critical systems such as email and Customer Relationship Management (CRM) as test for future developments.

According to John Schlesinger, a chief architect at Temenos, a banking software provider, *“The majority of new core banking projects launched by the end of this decade will be in the cloud”*. The cloud is definitely the future of the banking industry.

Core banking in the cloud means taking the heart of the operations of a financial institution and placing it on the optimized platform of the cloud. This brings a very ambitious project to the banking industry and their cloud service providers. The 2020 target has several potential drags from IT departments and mostly from the legal standpoint of regulators. The most complex question for these new projects is how to migrate the core completely into the cloud. It is definitely a process that will take some time develop but that will surely provide benefits far greater than any other technology right now. The other major drawback is how the regulators will grapple with the definitions, differences and similarities between the different public and private cloud infrastructures. A new challenge comes to the regulators while grasping the differences and knowing how to ensure safety across all the cloud configurations.

According to Thea George, Director of Research at Finextra, *“Small and new banks go to the cloud for 99% plus of their activities from the outset. Big banks are developing new stuff to be cloud native and are trying to use the cloud where they can – and though they have to eat the elephant one bite at a time, they are committed to doing it”*. The following exhibit show how banks are evolving with the cloud to provide better services tanking advantages of the cloud.

The smart banking revolution



The revolution of banking started several year ago with the integration of the cloud. Banks are committed to keep innovating to become more efficient in the competitive market they live in. The sky is the limit for the banking industry and the use of the cloud. The next step for a banks is merging fully with the cloud by migrating their hearts and their cores into this platform that has proven to provide efficiency across all of its alternatives.

4.3. – DBS Bank – The world’s first cloud bank

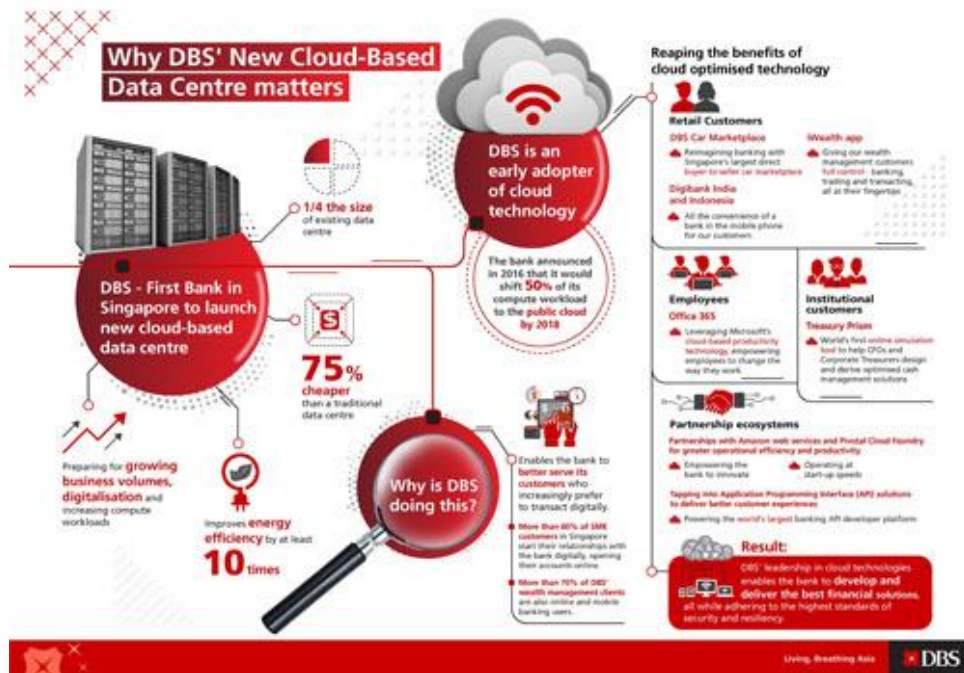
While it is very important to talk about the different aspects of cloud computing and how it affects banks in general, we felt it was as important to show a real world case. For much of its existence cloud computing in banking was very theoretical, however, there are several banks currently pushing the envelope in how they use cloud banking. As stated before, DBS Bank is the leader when it comes to that process.

DBS Bank is a multinational bank based in Singapore. It is considered to be southeast Asia’s largest bank with approximately \$333 billion in assets. In July 2016, DBS announced that they were working with Amazon to move their entire online presence to Amazon’s Web Services Cloud. This is a significant move considering that over 50% of the banks customer traffic comes from its online assets. Not only is the bank aiming very high, they expect to have over half of their online assets in the cloud by 2018. This is a very big decision, especially taking into account that the bank operates in 18 countries and has over 280 branches.

In November of 2017, DBS announced that it was migrating one of its data centers in Singapore to the cloud. Working with Equinix, DBS expects to reduce the size of the current data center by 75%, which would represent an interesting reduction in operating costs. This not only helps

to save precious operating resources; it also allows the bank to become more energy friendly. This is only possible through years of dedication learning and developing tools for further improving cloud technology and infrastructure usage. Due to these efforts, DBS has increased its storage and computing capacity by 7x since it began migrating to the cloud in 2014. DBS notes that over 60% of their customers open their accounts online, and as such want to have an entire digital process. DBS will be an example for other banks to follow when they look at moving into the cloud.

In 2016, Euromoney awarded DBS with the honor of being the world's best digital bank.



5 – Looking ahead

At this point we have enough information gathered to answer ourselves some questions about the future of the banking industry and its relationship with the Cloud Computing revolution that also serve as a summary and conclusion of this paper.

- *Given competition and technology, which model will prevail?*

It doesn't come as a surprise the fact that the banking industry is experiencing a major transformation that is still in its early stages. Given this, it's imaginable that 3 years down the line, in the short-term, we'll have a completely reinvented industry structure.

In order to do this, banks will have to choose between the different ways of implementing cloud services that we have already discussed. Just as it is happening with the emerging technologies, we believe that the trend will be to keep innovating over the basic models that are already installed and that none of them are going to succumb in the near future. Elaborating on this, the banking industry is expected to look remarkably like the software industry in the years to come, with players using IaaS, PaaS and SaaS according to their needs. Some of them will try to implement all three at the same time but those cases will be outliers in the same way Amazon is in the retail industry.

- *Will Cloud Banking shift towards Public Cloud in the near Future?*

Cloud Banking can only go so far with the use of private servers and, if they really want to embrace the cloud technology, they will have no choice but shifting to Public Cloud services. Banking is already moving towards API based systems and it should not be long until regulations appear that force banks to open their data to FinTech companies if their consumers give their consent.

Within this chain of thought, the rise of Open Banking as a connected ecosystem with multiple connected service providers one of the milestones towards the future of banking. An example of this is the Unified Payment Interface (UPI), launched by the National Payments Corporation of India in 2016, that opened the gates for payment services providers to innovate even more at the product level, giving the consumers the flexibility that they demand and a better overall experience with the interface itself.

The banking industry has lagged in the adoption of the cloud throughout the years. The adoption of new technology has never been the main interest of the biggest financial institutions as they prefer stability and security over uncertainty with innovation. Slowly but surely banks have integrated the cloud into their non-critical systems to improve efficiency and compete with the major threats posed by FinTechs. Although these are important steps it

is clear that the future of banks depends on an increased symbiosis between the industry and the cloud.

The next step in cloud banking comes with core banking in the cloud. The full integration of the financial institution and the service platform would take full advantage of the efficiency and the costs of the infrastructure of the cloud providing on demand real time data. From the smallest and simplest transaction to the most complicated one, core banking in the cloud will allow banks to open their minds to new types of reports and products. The massive interconnection of the core and all of its applications will bring a new definition to efficiency in banks.

We do acknowledge that banks work with a great volume of sensible data on a regular basis and that the transition must be smooth in order to be effective. That's why we predict that in the short-term the new trend for banks would be working on Hybrid Cloud servers.

– *What should be the main objective for banks in this new digital era?*

The banking model was never a customer driven business in its traditional form, on the contrary, it was always focused on risk and profitability. This approach is no longer valid in this digital era where customers are used to being pampered with choices and solutions across the entire business spectrum, from retail to real estate.

In this sense, banks need to put more effort in transforming their model with a more consumer driven approach without sacrificing profitability and risk management.

An example of this phenomenon is the mobile app splurge that reigned the past year. The digital capabilities of Smartphones and wearable technology is growing at an incredible pace and every business sector is taking advantage of that. Banks need to step away from their comfort zone and stop limiting themselves to application use only if they want to keep up with the trends.

The emerging technologies such as Artificial Intelligence or Blockchain can help banks in this endeavor as they try to solve security and profitability problems that have been the main obstacles in the Cloud Banking adoption process.

Blockchain, specifically, will work a booster to re-imagined processes as many leading banks are increasingly moving projects from the development face to actual production.

– *How will the competitive environment change in the years to come?*

Starting with the FinTech revolution a few years ago, the banking industry has found a new array of unusual competitors. In this sense, big corporations like Amazon, Google, Apple

or Facebook, that are dabbling in an extended range of industries, could soon become the main competitors for banks.

This enforces the previous statement as well, this companies work profusely with consumer driven approaches and banks will not be able to compete with them with their current priorities.

Summarizing, we believe that cloud computing is only becoming stronger every day, not only in the banking industry but in every aspect of the consumers' life. This trend is going to force banks to step in the cloud revolution and provide better, faster, and easiest ways of providing their services as they move towards a costumer based approach. The competitive environment is only going to speed up this process as the players become more aggressive in their methods.

Cloud Banking is no longer the best way of providing financial services, it is the only way.

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Chapter 2 - Initial Public Offering: The Case of Square, Inc.

Table of Contents

1 – Initial Public Offering.....	39
1.1. – Square, Inc.: Main Reasons to go Public	39
1.2. – Methods and Costs for Going Public	39
1.3. – Underwriting Process to Mitigate Informational Asymmetries	41
1.4. – IPO’s Main Risks and Rewards for Investors.....	41
2 – Business Model.....	42
2.1. – Square, Inc.’s Business Model.....	42
2.2. – Square Inc. Value Drivers	43
2.3. – Market Potential	43
2.4. – Square Inc. Comparative Advantage.....	44
3 – Valuation.....	44
3.1. – Unicorns and Growth Firms Valuation	44
3.2. – Square, Inc.’s Intrinsic Value	46
3.3. – Recommendation.....	47
4 – Pre-Square IPO History and Regulations	47
4.1. – IPO History.....	47
4.2. – IPO Regulation.....	48
5 – Conclusions.....	49
5.1. – Winners and Losers of Square’s IPO.....	49
5.2. – Square’s IPO Market Implications	50
5.3. – Square’s IPO Price Strategy	50
5.4. – Square’s IPO Profitability.....	50
5.5. – The Potential of Square, Inc.	51
6 – Valuation Model.....	51
6.1. – Narrative of the Company.....	51
6.2. – Results	52
7 – Appendix.....	53
8 – References.....	58

1 – Initial Public Offering

1.1. – Square, Inc.: Main Reasons to go Public

An Initial Public Offering (IPO) is a process through which a stock of a private firm is offered to the public for the first time. There can be several different reasons for a company to decide to do an IPO, it is a source of funding to attend capital needs to expand, provides exit strategies for current investors and it generates a lot of attention to the firm, helping to promote themselves. At the time, Square Inc. had been focusing on growth and therefore required a lot of capital to invest in new products and services, as can be seen in the company's Income Statement, showing losses for over \$300 million the three prior years. Going public would enable the company to acquire new capital and continue to pursue this growth strategy (Exhibit 1). With an originally estimated price of \$11 to \$13, the firm was expecting to raise between \$297 million to \$351 million excluding the spread, fees and other expenses.

Square has had five separate funding rounds from 2009 to October 2014, where the company had managed to raise more than \$520 million from private investors. Some of these investors included Sequoia Capital, Kleiner Perkins, Khosla Ventures, JPMC Strategic Investment and a subsidiary of Goldman Sachs & Co. After being invested in Square for multiple years these firms were eager to realize the return on their investment by cashing out through the IPO. Khosla Venture, for example, invested \$10 million in 2009 and expected to earn up to \$657 million on its investment, although being a large shareholder they would have to wait six months after the IPO to sell their shares due to the lock-up period.

Another reason for Square deciding to go public at the time they did was the Jumpstart Our Business Startups (JOBS) Act, which allowed “emerging growing companies” to confidentially file for IPO. The main benefit of this was less rigorous financial disclosure requirements relative to a normal IPO. To file under the JOBS act, the annual revenue of a company had to be under \$1 billion dollars and Square had a revenue of \$850 the prior year.

1.2. – Methods and Costs for Going Public

When a company decides to go public, the first step is to find an underwriter, usually an investment bank that helps them through the lengthy process that generally takes from three to twelve months. The IPO process is very expensive for a company, as the underwriter charges fees, usually ranging between 3% and 7% of the total amount raised of the IPO. Exhibit 2 shows the average underwriter fees for the United States from 2014 to 2016, by deal size. It can be seen that the percentage goes down as the total IPO value goes up. The fee was 6.8% in 2016 for deals below \$100 million and 4.7% when the value went above \$1 billion. Other expenses related to the IPO process such as auditors, incentive plans and stock exchange listing fees, are minor amounts relative to the underwriter fee.

The next step in the IPO process is to develop a preliminary prospectus, which includes the S-1 registration statement. The prospectus includes the company financials, shows the current shareholder structure, what the funds from the IPO are going to be used for, any legal concerns and, lastly, it identifies the risk of investing in the company. Square had to address a few risk factors when they filed their S-1 statement, such as their inability to generate profits, that most of their revenue was derived from their payment services platform and the increasing competition.

After filing with the Securities and Exchange Commission (SEC), the SEC reviews the statement to make sure that everything is in compliance with the requirements. If the company gets an approval from the SEC they can start what is called the “Road Show”, where the management of the IPO company and the lead underwriter travel around to large potential investors, such as pension funds and mutual funds. During this process the underwriter does what is called “Book Building”, which is basically pricing the stock based on the demand from the investors. After the stage is complete, the underwriter discusses the price they believe would be appropriate with the company and, if they come to an agreement, set the IPO date. There are three main different types of IPO’s, firm commitment, best-efforts and Dutch auction.

In firm commitment the underwriter purchases the entire issue of shares from the company going public and takes on all the risk by attempting to sell the shares to the public by themselves. The underwriter earns money by the spread between the purchase price and the sales price. Firm commitment is usually the most expensive IPO type for the firm because all the risk is shifted from the firm to the underwriter. If the underwriters price a company incorrectly, it can be truly expensive for them, as they will have to take a loss to get the shares sold. In this process the company going public usually picks the underwriter in one of two ways. The first be a negotiated underwriting, where the underwriter and company directly negotiate and agree on a price or it can be through competitive bids, where multiple underwriter submits bids to the firm and the firm picks the best offer.

In a best-effort agreement the underwriter promises to make a best attempt to sell as many of the stocks as possible and inventory any unsold ones, making the IPO firm to bear the risk. The fees in this type of IPO are a fixed percentage relative to the firm commitment, where there can both be huge upside and downside. This type of agreement is mostly used for riskier securities which are harder to sell or when the market conditions are uncertain.

In a Dutch auction the investors place their bid on the amount and price they are willing to purchase the stocks for. Thereafter the price is found as the one where the whole issue can be sold and every bidder ends up paying this price. This type of IPO is the least expensive but it is still rarely used. One of the reasons for this is the uncertainty in pricing, as it is solely based on the bids. The most known Dutch auction was when Google went public in 2004.

Once the stock has entered the secondary market and if the demand is high, the underwriter often has what is called a greenshoe option, also known as an over-allotment option, which gives it the right to sell investors more shares than originally issued. The greenshoe option varies in size, but is usually around 15% of the original issue. In Square's IPO the lead underwriter, Goldman Sachs, and its syndicate had secured an over-allotment option of 15 %, which they used five days after the original IPO and raised another \$36 million for the company.

1.3. – Underwriting Process to Mitigate Informational Asymmetries

Whenever an IPO comes to market there is asymmetric information between underwriter and the initial investors in the IPO. To account for this uncertainty, the underwriter has to underprice the company to give investors the incentive to take on the risk. The less liquid and less predictable the security is the more underpricing is generally required. Usually a successful IPO increases within the day by approximately 15% to 20%, giving the initial investors a reasonable return on their investment if they decide to sell. If the underwriter were to overprice the security, it would decline considerably when traded in the secondary market and the large institutional clients that were convinced it was a good investment would be unhappy and could not be interested in their service anymore. It would give the underwriter short-term profits, as they earned a larger spread than if they had underpriced the stocks, but a loss in clientele and reputation on the long-term.

In Square's IPO there was a lot of uncertainty in the initial price setting. At first the stock was expected to go for \$11 to \$13 per share, but ended up being priced at \$9 per share. The underwriter left a lot of money on the table as the share increased 45% the first day of trading to a price of \$13.07. The price of \$9 was 42% lower than what the Series E funding investors had to pay approximately a year earlier and, according to reporters, worried the management team about the much lower amount of capital the company would raise.

As mentioned earlier, one of the main reasons for going public is for current private investors to capitalize on their return. In order to avoid sending the wrong signal to the market, insiders of the company usually have a contractual restriction called the lock-up period. This prevents them from selling their shares for a specified period that usually goes from 90 to 180 days from the initial IPO, 180 days in Square's case. This is also helpful in dealing with asymmetric information related to the insiders, as they cannot act on insider information and it gives the stock time in the secondary market to find an equilibrium price. Even with the lock-up period in place, it is very common for the stock to drop from the negative signal of insiders selling their shares once it is over.

1.4. – IPO's Main Risks and Rewards for Investors

Investing in an IPO is risky for everyone because there is not any significant historical data on the stock to try to predict how the market is going to react until it begins trading in the secondary market. For

the institutional investors, getting the opportunity to invest in the company before the incursion in the secondary market will usually give them an advantage as prices tend to be underpriced and they will often be able to earn a quick profit. Regardless, is still a risky investment for the institutional investor as they have to rely on the underwriters pricing and the information provided from them to do their own analysis.

From an individual investor's perspective, an IPO is an even riskier investment as generally they will not have access to any relevant information about the company and cannot come up with a good price estimate. Also, the individual investor will generally not be able to buy the stock before it is already trading and by that time it might already have climbed a few points. The potential rewards for investing in an IPO are capital gains, which can come from the mispricing of the stock or from the efforts of the company pursuing a growth strategy aided with the newly acquired capital.

2 – Business Model

2.1. – Square, Inc.'s Business Model

Square's revenue model is based on card transactions. Just as any other company in the market for card payments in retail transactions, Square is able to generate revenues every time a square app or card reading terminal is used to process a transaction. These revenues come from fees that are percentages of the total value of a transaction. Square has two different pricing schemes: there are no flat fees, the app and card reading terminals are free and two different fixed fees are charged: a 2.75% fee for every card swipe that automatically detects the information from the card, or a 3.5% fee plus a fixed 15 cents for every manual transaction in which the information for the card is entered manually into the square app or terminal to process the payment. This business model is the common practice in the industry as card payment processors are focused on the volume of transactions that consumers process daily.

In order for Square to process the payments they have to incur in several charges for the services they receive in the payment processing network. Mainly there are three fees in the Square business model: an interchange fee, assessment fees and a merchant discount fee. The interchange fee is paid from the acquirer (Square in this case) to the card issuer (bank or institution that issues the credit card), and it ranges between a 1.5% to 2% fee of the total transaction amount. The assessment fees are typically less than 0.15% of the transaction amount and a merchant fee, that is not disclosed by Square, but is usually close to 0.05% of the total transaction amount. Square also has to pay a fee for clearing services by Automated Clearing Houses that is usually close to 0.1% of the total transaction amount.

To summarize the business model and taking into account all the fees that take part of Square's income and all the fees Square has to pay to keep its operations running. This transaction amount based model totalizes a 1.03% post fees income. To this 1.03% we would have to add the 15 cents Square charges over manual input transactions which are perceived to be a small amount if compared to the automatic swipe transactions. It is safe to say that the net revenue for square ranges a number close to 1.03%.

Square's business model is very similar to its competitors in the industry. It is completely based on the amount of money transacted in their terminals and applications. The main focus of Square is to bring the opportunity to small businesses of accepting credit and debit card as a payment option. This benefit both Square by processing the payments and the merchants by being able to increase their number of transactions.

2.2. – Square Inc. Value Drivers

Square's value is based on factors that are mainly dependent of the market it works in. They decided to get into a very competitive market and bring a fresh option to small businesses that couldn't afford or understand card payment processing. Even with that idea, the business model is very dependent on the market and its growth.

Square competes in the market of card payment processing for retail transaction. Its main focus is small businesses but it provides its service to anyone who needs it. The volume of this market grew from \$4,441 billion in 2014 to \$5,142 billion in 2017 as shown in the Nilson Report (Exhibits 7 and 8). Square is dependent on the growth of this market to increase its transaction amounts followed by an increase in the revenues from these transactions.

The company started operations in February 2009. Since then it has had 5 main competitors in the U.S. including: Global Payments, Verifone, NCR, Ingenico, SZZT and Paypal. Over the years, after Square started to operate, no major change has happened in this market. Square has been able to take a 1% market share that appears to have a limit of 15% if the market was distributed equally between Square and its competitors.

Assuming that only 10% of the transactions are manual, Square's business model reports a weighted average of 2.83% of gross revenue over the gross payment volume (GPV) and a net revenue of 1.03% that is observed to be stable and sustainable as it is very similar to the industry.

The reinvestment needs have to be considered as a value driver as growth doesn't come without a cost. It is necessary to keep track of the record of investments the company has done on its own operations to keep the growth constant.

Lastly, as a startup and as a growth company Square has a changing risk that has to be accounted for to discount the future cash flows and that reflects the cost of capital for the firm. As Square is not a mature company it is expected that this risk fluctuates over time and that it reaches a stable point in the future.

2.3. – Market Potential

As mentioned before, Square operates in the market for card payment processing in retail transactions. A market that has enormous competitors such as Global Payments and Paypal. This poses an important obstacle in the growth of Square in the market. Square's market share, as mentioned in section

2.2., is close to 1% following the 8 years after it started operations. It is evident that Square introduced itself to the market as an option for small businesses that were unsure about offering a card payment option either because it was too complicated to understand or too expensive. Even though Square offers very similar fees than its competitors it tries to offer more convenient options in the use of its services.

The market in the U.S. has 5 major competitors for Square. Added to this, the market and the services offered in it are very mature. Taking this into account makes the potential market share of Square to be bounded to a maximum of 15% distributed equally among all the market participants. Comparing this to the 1% market share they currently own, it can be expected that Square reaches a market share below the 15% limit.

To strengthen this hypothesis, we can also evaluate the fact that Square had entered a contract with Starbucks, under which, Starbucks would use Square terminals in its U.S. branches. Starbucks was roughly 10% of Square's core business revenues and decided to terminate the contract and switch to another operator, a very important impact to the growth in Square's market share.

2.4. – Square Inc. Comparative Advantage

Square's core business relies on the card payment processing, but this is a highly competitive and mature market. So how does Square add value to its clients over its competitors? Initially, they offered an easy to set and easy to use device that was adaptable to a smartphone to process card payments. Over the time this lost its competitive advantage and was not creating enough value to hold Square as the main option for its clients. After Square started to introduce itself into the market, they decided to create what they call the Square Ecosystem. They developed value-added services embedded in their own app or terminals that provide new ideas and information to their clients. Square offers services that range from inventory management, to customer relationship management, payroll, registry, employee tools and even loans for working capital of businesses.

Square decided to become the universal service provider for its clients. They analyze what their clients need and try to offer it through a seamless platform with their card processing terminals or applications. This is what creates the comparative advantage of Square over its competitor. It is clear that innovation is key in the growth of square in the highly competitive market it competes in.

3 – Valuation

3.1. – Unicorns and Growth Firms Valuation

By definition, a Unicorn is a company that does not have a historical record of steady revenues, dividend payments or positive cash flows to use as inputs in the valuation models, but still manages to get an estimated stock market valuation above \$1 billion.

Most of this companies are what is called growth firms and they often are start-up high tech companies for which, due to a combination of factors, the valuation is particularly difficult and very

uncertain. Many of these factors have their root in the very characteristics of this type of companies, some of which are listed below:

- No history: As obvious as it may seem, it is not trivial, young companies have little to no record at all, making the forecasting task especially tough.
- Small revenues and operating losses: Not only there is a limited amount of historical data, the brief history available is filled with expenses in order to get the business running and the revenues can even be non-existent, leading to operating losses that can't be used for valuation purposes.
- Dependent on private equity: At the early stages, new businesses are often tied to private sources of funding that do not include public markets offers.
- Survival: Many young companies are doomed to fail when tested in the commercial environment.
- Equity claims: Due to the constant demand for money, they tend to rise their equity quite often, which can expose the early-stage investors whom, in consequence, demand protection in different forms. This many equity claims can ultimately affect the value of the company.
- Illiquidity: Needless to say, private and non-standardized investments in young companies are much more illiquid than the publicly traded alternatives.

Oddly enough, with some variations, the Discounted Cash Flow (DCF) method of valuation is still the most reliable one for valuing high growth firms. A value of a company is a function of its cash flow's growth and risk, and this method does a good job in taking both into account. Nevertheless, there are clear difficulties when it comes to estimate the core components of the DCF method, such as the immediate cash flows that the assets are currently generating, the expected growth rate for both long and short term cash flows, the discount rate and the approximation of when the company is going to transform into a mature firm with stable growth to calculate the terminal value. In order to overcome this complications, certain things have to be done in a completely different way, drifting away from the traditional approach of the model.

According to Aswath Damodaran (AD), an NYU professor with extraordinary reputation and authority in equity valuation and corporate finance practice, says that the value of young growth firms is driven by the "narrative" of said firms. This means that the first step is to tell a story about the company, what it does, what it pretends to achieve in the future, how it creates revenues, etc. On a recent valuation of a well-known growth firm, AD stated that this story has to be told in terms of potential market, market growth, market share, operating margins, reinvestment needs and risk. The beginning of this tale starts from the future, thinking about how the industry and the company will look like 10 to 15 years down the road as the company evolves to a sustainable growth state and interpolate back to estimate the current performance.

Once determined the potential market and a growth rate to achieve a feasible future state, the market share is the next thing in line to be estimated. In its early stages, young businesses start with low market shares and large capital investments with the expectation of increasing their reach towards a target percentage of the future market. As stated above, the right thing to do is think about the aggressiveness of the company, its possibilities and the goals of the current market strategies to figure out where it is going to be positioned once it reaches a stable phase of growth. It goes without saying, this can't be done without accounting for current and future composition of the market, direct competitors or customer-penetration rates among other measures that help define and bound the future state.

To get from gross revenue to operating income, operating margins over time are needed. The best case scenario is the one where the company has an established structure and the current margins are sustainable and can be used as the expected ones in the long run. Unfortunately, the most common case for growth firms involves small or even negative current margins, most likely to change towards the future. This can happen due to the up-front fixed costs that have to be incurred in the early stages, the blending of growth and operating expenses or lags between expenses incurred and revenues generated. Once again, looking at averages from the industry and margins from mature companies, a target can be stated for the long term and, from there, it is easier to work the way back to the current situation.

After taking into consideration the tax effects, the next big thing to estimate are the reinvestment needs. In the business world, growing is never free and it cannot be done without reinvestments in the company. To estimate those capital needs, the best approach for growth firms is through the change in revenues and the Sales-to-Capital ratio ($\text{Reinvestment}_t = \text{Change in Revenues}_t / \text{Sales-to-Capital Ratio}$). There are some alternatives, but most of them need track records in order to estimate the reinvestments, which are not available for growth companies.

The last step is to account for risk, and that is done through an appropriate discount rate that reflects the cost of capital of the firm. Being realistic, even though it is possible to try and calculate the current Weighted Average Cost of Capital (WACC) for the firm, the truth is that that rate is going to change over time. The firm has not yet reach a mature state and factors like the financing mix or the tax effects can change on its way there. That is why the way to proceed is to look at the cost of capital of mature competitors and come up with an average to set up as the long term discount rate.

Now that everything is into place, the DCF model can be put into use to get an approximation of the intrinsic value for any growth firm, such as Unicorns or high tech companies.

3.2. – Square, Inc.'s Intrinsic Value

According to the valuation model at the end of this report, the approximated intrinsic value of the company for the year 2014, before the IPO, should have been between \$7.50 billion and \$13.18 billion. This value for 2017 goes up to be between \$8.51 billion and \$14.94 billion.

Prior to the IPO, the company was valued as high as \$6 billion by private investors and was aiming for a stock price between \$11 and \$13, seeking a valuation around the \$4 billion range. All those numbers are considerably higher than the \$2.9 billion valuation that the \$9 per share price gave them at the time of the IPO. Even though the valuation on this report shows higher numbers compared to the underwriters' price talk in 2014, both are significantly above the IPO price. Therefore, it can be concluded that the stock was being highly undervalued at the time of the IPO.

Going forward to present day, the tables have turned. As of November 29th, 2017, Square was trading at \$39.13 per share with approximately 388.5 million shares outstanding. This makes for a market value of around \$15.2 billion. Looking at the valuation in this report, this price puts the company in the "overvalued" zone, as it goes above the maximum price in the range.

3.3. – Recommendation

In 2014 Square was a company with a solid business model, a clear potential market and growth perspectives that was clearly undervalued at the price of \$9 per share as seen from the comparisons made in section 3.2. According to these statements, the recommendation would have been to buy the stock at the time of issue. This was proven to be right as the stock price closed at \$13 with a 45% increase as soon as it hit the market.

Nowadays, the company is in different circumstances, given that it seems to be overvalued as stated above. Furthermore, and as a point of comparison, the company Morningstar, Inc. stated the fair value for the stock as \$25.23 on its most recent Quantitative Equity Report. This price gives a valuation of almost \$10 billion, which is more aligned with the results from section 3.2. Even so, the consensus for the stock is between a hold and a buy, according to sites such as *reuters.com* or *investing.com*. Taking all of this into account, the current recommendation is to not buy the stock and pursue a hold strategy.

4 – Pre-Square IPO History and Regulations

4.1. – IPO History

As stated above in section 1.1., when a company decides to go public, it can be for several reasons. The company may be looking to expand its business and needs capital or the investors and founders want to get dividends or capital gains. This is especially true if the company has been private for a long time. These can be considered to be internal pressures, but it is also important to judge the external ones. The main external pressure that matters when doing an IPO is the demand. The market needs to be hungry enough to buy shares in the firm. As previously discussed, the business model and strategy of Square led the company to go public in 2015. However, if the timing was incorrect Square would have been leaving money on the table.

In order to judge the external pressures facing the Square IPO, it is important to look at two sets of additional data. First, the pricing of similar companies prior to the Square IPO and the performance of

these companies over the first four days, given that the fourth day of trading is said to be the official end of an IPO, according to the IPO Handbook. To analyze the historical performance during this day a sample size with the following characteristics was built using Bloomberg: first time IPO's in the prior two years, having an offering size of at least \$100 million, and being a company that operates in the technology sector. Using these criteria, twenty-three companies were found. Of these companies, two were price below its expected range, ten were priced within its expected range, and eleven were priced above its expected range. It's important to note that one of the two companies that were priced below its expected price range was First Data Corporation, which is the largest payment processor in the world.

Looking at the four-day performance of the selected firms, nine of them had closing prices on the fourth day that were below the initial prices, while eleven closed on the fourth day above their initial prices. With the average decline of -8.41% and the average increase being 7.64%.

First Data Corporation was founded in 1971 and was the first payment processor of Visa and MasterCard, having its IPO in 1994 after being spun off from American Express. It then merged with First Financial Management Corp., who was also owned Western Union. In 2006, First Data Corporation spun off Western Union and in 2007 private equity firm Kholberg, Kravis & Roberts (KKR) bought the company for \$29 billion. After being privately run, it was made public once again in October of 2015, one month before the Square IPO. Just like Square's case, First Data Corporation was expected to price at a range of \$18 to \$20 per share and ended up initially selling at \$16 per share. It is interesting to note that both firms are in the payment processing space and both had IPO's which were lower than initially priced.

The size of the IPO market through the first three quarter of 2015 was \$183.99 billion with the technology sector being responsible for \$8.06 billion of the offerings. For 2014, the IPO market was worth \$225.71 billion with the technology sector being responsible for \$10.29 billion of these offerings.

4.2. – IPO Regulation

As IPO's have to deal with equity securities and exchanges, the process in the United States is regulated by the SEC. More specifically they are governed by the Securities Act of 1933, which was created as a response to the crash of 1929 and is considered to be the first major piece of legislation surrounding securities trading. Before the Securities Act of 1933, states laws governed securities trading. The act requires that before a security is made public, investors are to be made aware of the financial condition of the company. This is achieved through a prospectus that details the financial state of the company and any risk factors associated with it. The law also states that the prospectus must be audited by an accountant.

Apart from the SEC, companies planning on having an IPO will also have to deal with the Financial Industry Regulatory Authority (FINRA), which is the self-regulator of the securities industry

and is charged with similar regulatory power within the financial industry. For instance, a person needs to hold a FINRA Series 7 license in order to be able to become a broker.

Prior to Square's IPO in 2015, the company faced a lot of pressure from state regulators due to the company not having money transmission licenses. In August 2013, it was reported that Square was fined \$507,000 by the Florida Office of Financial Regulation for failing to have this kind of license and in March 2013, it was served a cease and desist order in Illinois for failing to obtain a similar license. When PayPal had its IPO in 2002, it faced similar pressure from multiple state regulators and it eventually became licensed as a payment transmitter throughout the country. Amazon, Google and Facebook are also licensed as payment transmitters in the respective parts of their business that deal with payments. Unlike the Securities Act of 1933 which replaced states laws regarding securities, payment transfer laws are still controlled at the state level, which means that each state has different laws and interpretations. For internet startups, having decentralized laws means that adoption of technology will be slower than anticipated as the company must negotiate with each state. This is an area where lawmakers may want to introduce a national law or provide some kind of exemption.

Underwriters pricing the IPO may have considered this regulatory landscape being faced by the company, given that, as previously stated, this patchwork of state laws presents a hindrance on the growth prospects of the firm.

5 – Conclusions

5.1. – Winners and Losers of Square's IPO

As one of the most anticipated IPO's of 2015, Square's incursion into the public market gave a lot to talk about Unicorns, overvaluation of tech companies and discrepancies between public and private valuations. Behind those discussions, it's important to state which parties ended up being benefited and which ones had to suffer damage as Square finished its first day of trading with a 45% increase in its stock price.

On the winners' side, Jack Dorsey as a young CEO of two multibillion-dollar public companies is a clear example. With a current net worth of \$1.4 billion at that time, he had proven himself to be one of the lead entrepreneurs of his generation.

Some merchants that use Square products were also greatly benefited as they were able to buy shares at the IPO price through special programs. Even retail investors that bought early as the price was going up were able to make a good profit from the stock's rise.

Goldman Sacks stands on both sides. As an investor, they were protected by a full-ratchet anti-dilution provision and, even though they had bought the stock at a price of \$15.46, the company guaranteed them at least a 20% return. This was the late-stage Series E round for which Square had to issue almost 10.3 million additional shares to those investors. On the other hand, as an underwriter

alongside Morgan Stanley and JP Morgan, they clearly left some money on the table due to the low price of the stock.

Because of the aforementioned ratchet provision and the need to issue more stocks in order to make the Series E round happen, the entire share pool was diluted and some of Square's employees that had received equity packages were harmed as they saw themselves in a tougher position.

Finally, closing the losers side, there were two mysterious investors whose names were kept a secret. These investors bought 1.9 million Series E shares at a price of \$15.46 each and waived their right to the ratchet. With the trading value just above \$13 the days after the IPO, these investors saw losses in value as high as \$4.5 million.

5.2. – Square's IPO Market Implications

Square's IPO in 2015 was being monitored by the market because it was drawing a line for valuation of Unicorns with a long history of private funding seeking to go public for the first time. The concept that Square introduced was that the valuations for this type of companies were being too high.

Up until that point, private markets were being considered "smart money" due to their more disciplined nature. Even with this denomination, private investors were losing money due to "fair value" valuations of private investments. This was the case for Mutual Funds that could have up to 15% of their assets in this kind of investment.

The new developing trend after Square's IPO was trying to cut the price for Unicorns and private investments in general with the assumption that they would perform better in the public market.

5.3. – Square's IPO Price Strategy

The discussions about what are the characteristics of a good IPO is always on the table because of the trade-off between the benefits from a first-day stock rise to attract investors and obtaining as much cash as possible for the company. Given that the normal understanding that a 15% to 20% increase on the first day is a good balance for both ends, as it allows the investors to feel like they have made a good deal, and comparing that to the soaring 45% increase of Square's IPO, it is safe to say that the stock was undervalued at the time of issue. Even when the stock was trading near a \$13 price it was being attractive enough to keep being traded at a high rate. Taking this into account, if the price of the IPO ended up being \$12, mid-way between the company's estimates of \$11 and \$13, it would still have ensured a good demand and would have allowed Square to take \$77 million in additional cash.

5.4. – Square's IPO Profitability

Given that the company hasn't paid any dividends yet, the return on the investment will be determined only by the capital gains of the stock.

Assuming a \$10,000 investment at a price of \$9 back in 2014, the return on the investment would have been 35% on November 18th, 2016 (stock price of \$12.16) and an incredible 391% on November 18th, 2017 (stock price of \$44.18).

5.5. – The Potential of Square, Inc.

As previously stated in part 2 of this paper, Square has a generous amount of space to grow within the market of card payment processing for retail transaction. There's a long way between the 1% market share that it currently holds and the hypothetical limit of 15%. This makes the company a suitable investment for the long run given that the estimated growth is achievable if the strategy keeps working correctly.

Another topic to address as a potential of Square is the client-driven service line that they are choosing to pursue to differentiate from its competitors. They develop tailor-made solutions with value-added services to cover the majority of business necessities for their customers, evolving from the easy-to-set and easy-to-use approach.

6 – Valuation Model

In order to come up with an estimate of Square's intrinsic value, the main assumptions and results for a valuation model based on the DCF method is included below. A detailed calculation can be seen in Exhibits 5 and 6.

This model is built over the foundation set by Christian Rauch, a professor for the University of Oxford that attempted to make a valuation for Square back in 2016 and taking into account the guidelines explained on section 3.1.

6.1. – Narrative of the Company

- Potential Market: Square operates within the market for card payments in retail transactions. The volume of this market for 2014 and 2017 are \$4,441 billion and \$5,142 respectively, as shown in the Nilson Report for each corresponding year (Exhibits 7 and 8). For simplifying purposes and as conservative decision, it is assumed that the company will operate only in the U.S. for the time being.
- Market Growth: The market has grown at a rate between 5% and 10% for the last couple of years and is expected to keep growing at that pace for years to come given the new inventions that are coming into place. A recent study made by McKinsey & Co. puts the growth rate at 7% over the next few years and, given that it is within the aforementioned range, is the one used in the model (Exhibit 9). Logically, this growth will decline to more sustainable levels in the foreseeable future, assuming a normal economic growth of 3%, it is safe to assume that the long term rate will be close to that value.

- Market Share: According to Professor Rauch, the company has five main competitors in the U.S., Exhibit 10 shows a table with key financials used in this valuations for the year 2014. Given that the market conditions haven't change substantially, those financials are expected to remain unchanged for 2017. Due to the number of competitors, Square is inherently bounded to a 15% market share on the predictable future, percentage that doesn't seem to be realistic, considering that nowadays it is close to 1%. This factor seems to be the most sensible one, which is why is the one used as a pivot to calculate a range for Square's intrinsic value, with a best case scenario of 10% in 10 years and a worst case scenario of 5% in 10 years determining the upper and lower limits. Now that the future is set, it is time to work towards the current level. Square processed about \$35.9 billion in 2014 and recent news are showing that that value has grown to be \$50 billion in 2017. With that set up, a linear transition between the two numbers is the only thing needed to forecast the Gross Payment Volume (GPV) for Square.
- Operating Margins: As seen on section 2, the business model for Square states a 2.83% of the GPV as Gross Revenue and a 1.03% of said value as Net Revenues after the fees. These percentages are expected to stay constant throughout the life of the company. As for the Operating Margin, Exhibit X6 shows an average of 40% in the industry. Taking out PayPal as an outlier the new average ends up being close to 35%, which is a more feasible rate and the one used as a target for year 10 onwards.
- Reinvestment Needs: The Sales-to-Capital ratio is going to be used as explained in section 3.1. In 2014 Square showed a Sales-to-Capital ratio of 2.6 and is expected to decrease gradually towards an industry average of 1.3 as seen on Exhibit 10.
- Risk: Estimating the cost of capital of any growth company is very difficult and inaccurate, especially because, normally, there are not peers on the same stage to compare to them. In order to simplify things, and accounting for the high risk that every young company faces in its early years, Square is expected to move from a high WACC of 15% (above ninth decile of U.S. companies) to a sustainable WACC of 8% (median of U.S. companies) as it finds more reliable and cheaper ways of funding.

6.2. – Results

With the narrative of the company in place, it is only a matter of calculating the present value of the future cash flows and the terminal value for the company.

This results show a value between \$7.50 billion and \$13.18 billion for 2014 and a value between \$8.51 billion and \$14.94 billion for 2017.

Both valuations show an ROC between 18% and 20%, which is around the average of 19% within the main competitors (Exhibit 10), serving as a reasonability check for the models.

7 – Appendix

Exhibit 1

	Year Ended December 31			Nine Months Ended September 30,	
	2012	2013	2014	2014	2015
Revenue:					
Transaction revenue	\$ 193,978	\$ 433,737	\$ 707,799	\$ 501,468	\$ 751,929
Starbucks transaction revenue	9,471	114,456	123,024	86,508	95,199
Software and data product revenue			12,046	6,022	35,628
Hardware revenue		4,240	7,323	5,300	10,002
Total net revenue	203,449	552,433	850,192	599,298	892,758
Cost of revenue:					
Transaction costs	126,351	277,833	450,858	318,501	479,937
Starbucks transaction costs	12,547	139,803	150,955	107,889	118,542
Software and data product costs			2,973	1,032	13,820
Hardware costs		6,012	18,330	13,527	16,636
Amortization of acquired technology			1,002	602	2,886
Total cost of revenue	138,898	423,648	624,118	441,551	631,821
Gross profit	64,551	128,785	226,074	157,747	260,937
Operating expenses:					
Product development	46,568	82,864	144,637	104,967	140,452
Sales and marketing	56,648	64,162	112,577	81,704	107,170
General and administrative	36,184	68,942	94,220	68,585	97,743
Transaction and advance losses	10,512	15,329	24,081	17,826	40,840
Amortization of acquired customer assets			1,050	591	1,373
Impairment of intangible assets		2,430			
Total operating expenses	149,912	233,727	376,565	273,673	387,578
Operating loss	(85,361)	(104,942)	(150,491)	(115,926)	(126,641)
Interest (income) and expense	5	(12)	1,058	615	995
Other (income) and expense	(167)	(950)	1,104	737	1,390
Loss before income tax	85,199	(103,980)	(152,653)	(117,278)	(129,026)
Provision (benefit) for income taxes		513	1,440	(257)	2,502
Net loss	\$ (85,199)	\$(104,493)	\$(154,093)	\$(117,021)	\$(131,528)
Net loss per share:					
Basic	(\$0.71)	(\$0.82)	(\$1.08)	(\$0.84)	(\$0.88)
Diluted	(\$0.71)	(\$0.82)	(\$1.08)	(\$0.84)	(\$0.88)
Weighted-average shares used to compute net loss per share:					
Basic	119,220	127,845	142,042	140,024	149,058
Diluted	119,220	127,845	142,042	140,024	149,058
Pro forma net loss per share attributable to common stockholders (unaudited):					
Basic			(\$0.56)		(\$0.46)
Diluted			(\$0.56)		(\$0.46)

Exhibit 2

Average underwriter fee in the United States from 2014 to 2016, by deal size

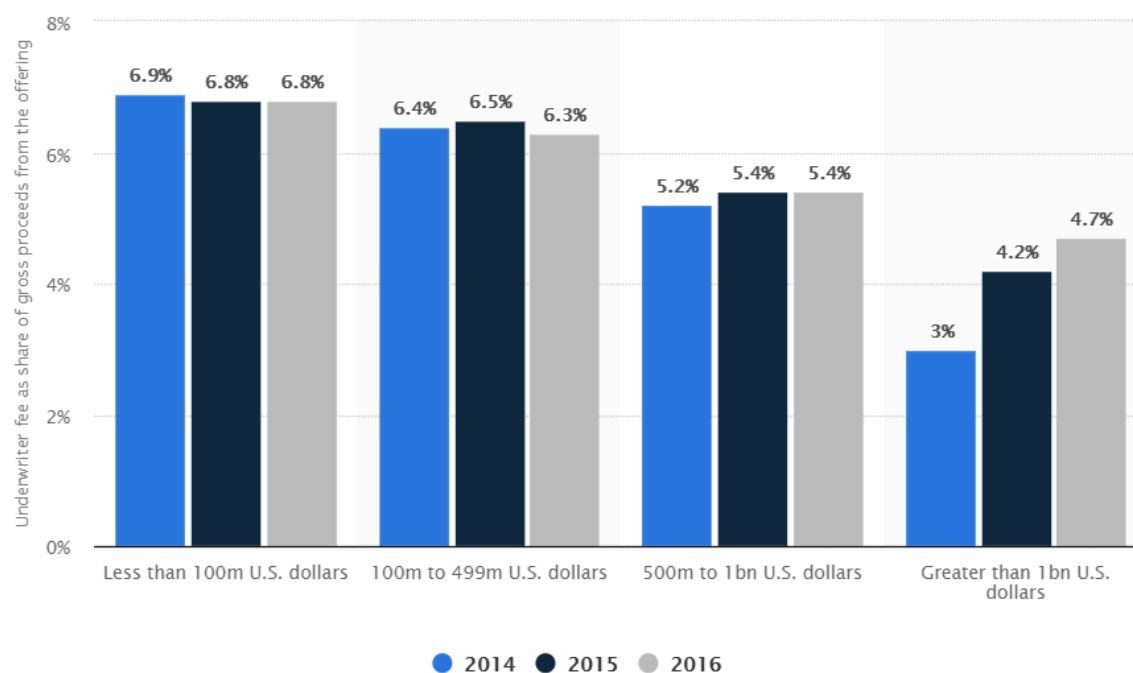


Exhibit 3

IPO Date	Issuer Name	Offer Size (M)	Offer Price	Expected Price Range	# of Shares Offered (M)
10/15/2015	First Data Corp	\$2,817.23	\$16.00	\$18.00-\$20.00	176.08
4/4/2014	IMS Health Holdings Inc	1,495.00	20.00	18.00-21.00	331.89
2/12/2015	Inovalon Holdings Inc	684.85	27.00	24.00-26.00	25.36
5/20/2015	Black Knight Financial Services	507.15	24.50	22.00-25.00	68.00
10/7/2015	Pure Storage Inc	488.75	17.00	16.00-18.00	28.75
1/16/2015	Exela Technologies Inc	350.00	10.00	10.00-10.00	35.00
5/21/2015	Press Ganey Holdings Inc	255.88	25.00	22.00-24.00	53.55
6/5/2015	Evolent Health Inc	224.83	17.00	14.00-16.00	41.45
3/14/2014	Castlight Health Inc	204.24	16.00	13.00-15.00	12.77
1/23/2015	Box Inc	201.25	14.00	11.00-13.00	14.38
12/13/2013	Nimble Storage Inc	193.20	21.00	18.00-20.00	71.48
5/20/2015	Rimini Street Inc	172.50	10.00	10.00-10.00	15.00
10/9/2014	HubSpot Inc	143.75	25.00	22.00-24.00	31.11
4/4/2014	OPOWER Inc	133.29	19.00	17.00-19.00	48.37
3/28/2014	2U Inc	133.07	13.00	11.00-13.00	40.19
12/12/2014	New Relic Inc	132.25	23.00	20.00-22.00	46.80
2/28/2014	Varonis Systems Inc	121.44	22.00	19.00-21.00	24.34
6/12/2014	MobileIron Inc	115.00	9.00	8.00-10.00	76.32
12/12/2014	Hortonworks Inc	115.00	16.00	12.00-14.00	42.56
5/15/2014	Paycom Software Inc	114.63	15.00	18.00-22.00	50.81
3/21/2014	Amber Road Inc	110.50	13.00	10.50-12.50	24.79
3/28/2014	Everyday Health Inc	100.10	14.00	13.00-15.00	29.68
6/19/2015	MINDBODY Inc	100.10	14.00	13.00-15.00	7.15

Exhibit 4

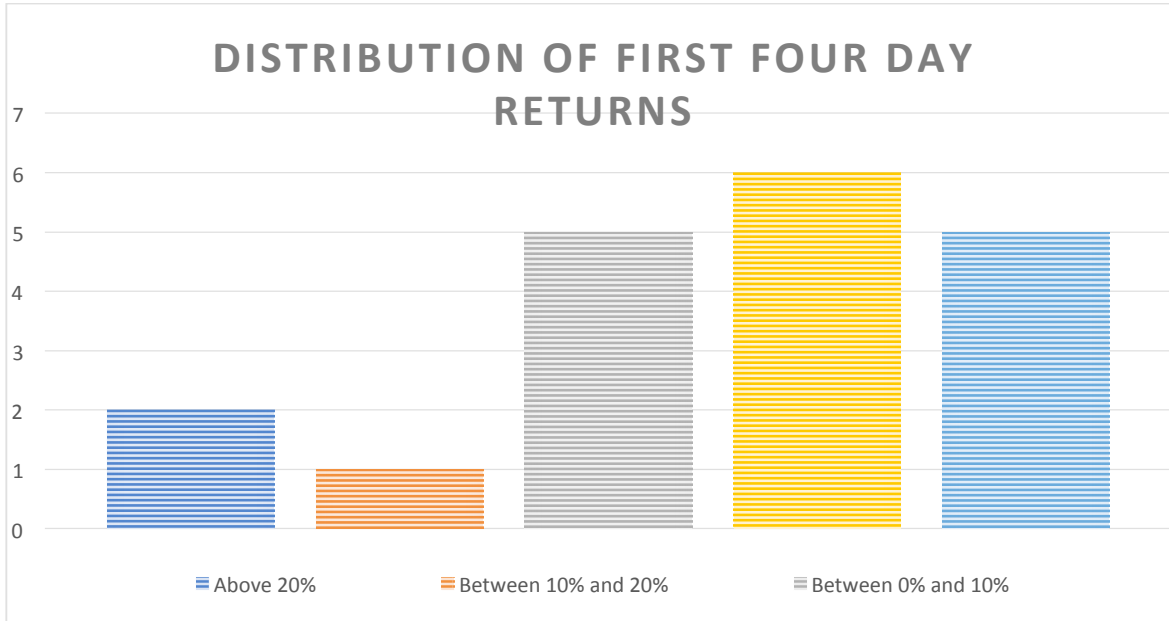


Exhibit 5

2014

Input Factors	Forecasting										Terminal	
	0	1	2	3	4	5	6	7	8	9	10	Year
Market Size (Value Card Payment U.S.) in \$bn	4,441.00	4,751.87	5,084.50	5,440.42	5,821.25	6,228.73	6,664.74	7,131.28	7,630.46	8,164.60	8,736.12	8,998.20
Gross Payment Volume (GPV) Square in \$bn	35.90	53.85	80.78	121.16	181.74	263.53	368.94	516.52	671.47	805.76	886.34	912.93
Implied Market share	0.81%	1.13%	1.59%	2.23%	3.12%	4.23%	5.54%	7.24%	8.80%	9.87%	10.15%	10.15%
Gross Revenues (2.83% of GPV) in \$bn	1.03	1.54	2.31	3.47	5.20	7.54	10.55	14.77	19.20	23.04	25.35	26.11
Net Revenues (1.03% of GPV) in \$bn	0.37	0.55	0.83	1.25	1.87	2.71	3.80	5.32	6.92	8.30	9.13	9.40
Operating Income (EBIT) in \$bn	(0.06)	(0.06)	(0.04)	-	0.09	0.27	0.57	1.06	1.73	2.49	3.20	3.29
Operating Income (EBIT) - Tax in \$bn	(0.06)	(0.06)	(0.04)	-	0.09	0.27	0.40	0.74	1.21	1.74	2.24	2.30
Sales-to-Capital Ratio	2.60	2.60	2.60	2.60	2.60	2.60	2.34	2.08	1.82	1.56	1.30	
Reinvestment in \$bn	0.14	0.20	0.30	0.44	0.67	0.90	1.16	1.80	2.13	2.11	1.48	0.58
FCF in \$bn	(0.20)	(0.25)	(0.34)	(0.44)	(0.57)	(0.63)	(0.76)	(1.06)	(0.92)	(0.37)	0.76	1.72
WACC	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.08	0.08	0.08	0.08
PV of FCF in \$bn	(0.20)	(0.22)	(0.26)	(0.32)	(0.38)	(0.39)	(0.45)	(0.62)	(0.50)	(0.18)	0.35	0.74
Implied Capital in \$bn	0.54	0.74	1.03	1.48	2.14	3.04	4.20	6.01	8.14	10.25	11.73	12.31
Return on Capital	-10.96%	-7.52%	-4.02%	0.00%	4.36%	8.92%	9.49%	12.40%	14.87%	17.01%	19.08%	18.71%
Sum of PV of FCF in \$bn	(2.01)											
Terminal Value in \$bn	35.41											
PV of Terminal Value in \$bn	15.19											
Estimated Value in \$bn	13.18											

Input Factors	Forecasting										Terminal	
	0	1	2	3	4	5	6	7	8	9	10	Year
Market Size (Value Card Payment U.S.) in \$bn	4,441.00	4,751.87	5,084.50	5,440.42	5,821.25	6,228.73	6,664.74	7,131.28	7,630.46	8,164.60	8,736.12	8,998.20
Gross Payment Volume (GPV) Square in \$bn	35.90	52.06	75.48	105.67	147.94	199.72	259.64	324.54	389.45	428.40	449.82	463.31
Implied Market share	0.81%	1.10%	1.48%	1.94%	2.54%	3.21%	3.90%	4.55%	5.10%	5.25%	5.15%	5.15%
Gross Revenues (2.83% of GPV) in \$bn	1.03	1.49	2.16	3.02	4.23	5.71	7.43	9.28	11.14	12.25	12.86	13.25
Net Revenues (1.03% of GPV) in \$bn	0.37	0.54	0.78	1.09	1.52	2.06	2.67	3.34	4.01	4.41	4.63	4.77
Operating Income (EBIT) in \$bn	(0.06)	(0.05)	(0.04)	-	0.08	0.21	0.40	0.67	1.00	1.32	1.62	1.67
Operating Income (EBIT) - Tax in \$bn	(0.06)	(0.05)	(0.04)	-	0.08	0.21	0.38	0.47	0.70	0.93	1.14	1.17
Sales-to-Capital Ratio	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.34	2.08	1.82	1.56	1.30
Reinvestment in \$bn	0.14	0.18	0.26	0.33	0.46	0.57	0.66	0.79	0.89	0.61	0.39	0.30
FCF in \$bn	(0.20)	(0.23)	(0.30)	(0.33)	(0.39)	(0.36)	(0.38)	(0.33)	(0.19)	0.31	0.74	0.87
WACC	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.08	0.08	0.08	0.08
PV of FCF in \$bn	(0.20)	(0.20)	(0.23)	(0.24)	(0.26)	(0.23)	(0.23)	(0.19)	(0.10)	0.16	0.34	0.37
Implied Capital in \$bn	0.54	0.72	0.98	1.31	1.77	2.34	3.00	3.79	4.69	5.30	5.69	5.99
Return on Capital	-10.96%	-7.47%	-3.98%	0.00%	4.30%	8.78%	9.36%	12.33%	14.98%	17.49%	19.94%	19.52%
Sum of PV of FCF in \$bn	(0.21)											
Terminal Value in \$bn	17.97											
PV of Terminal Value in \$bn	7.71											
Estimated Value in \$bn	7.50											

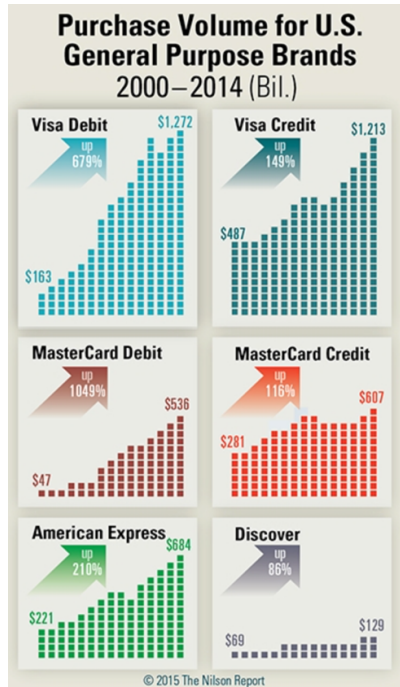
Exhibit 6

2017

Input Factors	Forecasting										Terminal Year	
	0	1	2	3	4	5	6	7	8	9		10
Market Size (Value Card Payment U.S.) in \$bn	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross Payment Volume (GPV) Square in \$bn	50.00	75.00	108.75	152.25	213.15	298.41	417.77	584.88	760.35	912.42	1,012.78	1,043.17
Implied Market share	0.97%	1.36%	1.85%	2.42%	3.16%	4.14%	5.41%	7.08%	8.61%	9.65%	10.01%	10.01%
Gross Revenues (2.83% of GPV) in \$bn	1.43	2.15	3.11	4.35	6.10	8.53	11.95	16.73	21.75	26.10	28.97	29.83
Net Revenues (1.03% of GPV) in \$bn	0.52	0.77	1.12	1.57	2.20	3.07	4.30	6.02	7.83	9.40	10.43	10.74
Operating Income (EBIT) in \$bn	(0.05)	(0.06)	(0.06)	-	0.11	0.31	0.65	1.20	1.96	2.82	3.65	3.76
Operating Income (EBIT) - Tax in \$bn	(0.05)	(0.06)	(0.06)	-	0.11	0.31	0.45	0.84	1.37	1.97	2.56	2.63
Sales-to-Capital Ratio	2.60	2.60	2.60	2.60	2.60	2.60	2.34	2.08	1.82	1.56	1.30	1.30
Reinvestment in \$bn	0.14	0.28	0.37	0.48	0.67	0.94	1.31	2.04	2.41	2.39	1.84	0.67
FCF in \$bn	(0.19)	(0.33)	(0.43)	(0.48)	(0.56)	(0.63)	(0.86)	(1.20)	(1.04)	(0.42)	0.72	1.96
WACC	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.08	0.08	0.08	0.08
PV of FCF in \$bn	(0.19)	(0.29)	(0.33)	(0.34)	(0.37)	(0.39)	(0.51)	(0.70)	(0.56)	(0.21)	0.33	0.84
Implied Capital in \$bn	1.20	1.48	1.85	2.33	3.00	3.93	5.25	7.29	9.70	12.09	13.93	14.60
Return on Capital	-4.29%	-3.92%	-3.03%	0.00%	3.66%	7.81%	8.61%	11.57%	14.13%	16.32%	18.34%	18.03%
Sum of PV of FCF in \$bn	(2.41)											
Terminal Value in \$bn	40.46											
PV of Terminal Value in \$bn	17.35											
Estimated Value in \$bn	14.94											

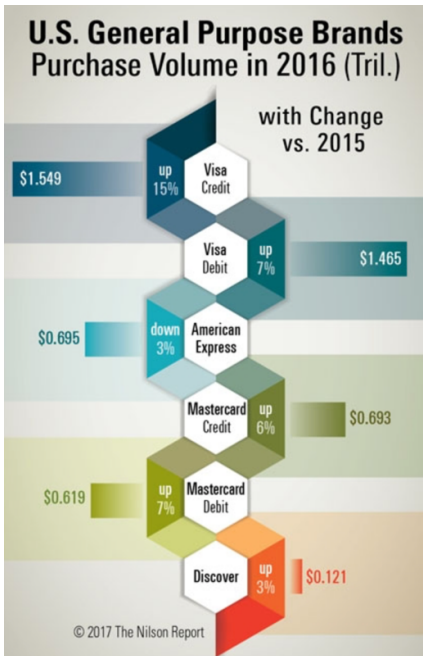
Input Factors	Forecasting										Terminal Year	
	0	1	2	3	4	5	6	7	8	9		10
Market Size (Value Card Payment U.S.) in \$bn	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross Payment Volume (GPV) Square in \$bn	50.00	75.00	108.75	152.25	205.54	267.20	334.00	400.80	460.92	483.96	508.16	523.41
Implied Market share	0.97%	1.36%	1.85%	2.42%	3.05%	3.70%	4.33%	4.85%	5.22%	5.12%	5.02%	5.02%
Gross Revenues (2.83% of GPV) in \$bn	1.43	2.15	3.11	4.35	5.88	7.64	9.55	11.46	13.18	13.84	14.53	14.97
Net Revenues (1.03% of GPV) in \$bn	0.52	0.77	1.12	1.57	2.12	2.75	3.44	4.13	4.75	4.98	5.23	5.39
Operating Income (EBIT) in \$bn	(0.05)	(0.06)	(0.06)	-	0.11	0.28	0.52	0.83	1.19	1.50	1.83	1.89
Operating Income (EBIT) - Tax in \$bn	(0.05)	(0.06)	(0.06)	-	0.11	0.28	0.36	0.58	0.83	1.05	1.28	1.32
Sales-to-Capital Ratio	2.60	2.60	2.60	2.60	2.60	2.60	2.34	2.08	1.82	1.56	1.30	1.30
Reinvestment in \$bn	0.14	0.28	0.37	0.48	0.59	0.68	0.73	0.82	0.83	0.36	0.44	0.34
FCF in \$bn	(0.19)	(0.33)	(0.43)	(0.48)	(0.48)	(0.40)	(0.37)	(0.24)	0.00	0.68	0.84	0.99
WACC	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.08	0.08	0.08	0.08
PV of FCF in \$bn	(0.19)	(0.29)	(0.33)	(0.34)	(0.32)	(0.25)	(0.22)	(0.14)	0.00	0.34	0.39	0.42
Implied Capital in \$bn	1.20	1.48	1.85	2.33	2.91	3.59	4.33	5.14	5.97	6.33	6.77	7.11
Return on Capital	-4.29%	-3.92%	-3.03%	0.00%	3.63%	7.66%	8.35%	11.24%	13.92%	16.53%	18.93%	18.58%
Sum of PV of FCF in \$bn	(0.20)											
Terminal Value in \$bn	20.30											
PV of Terminal Value in \$bn	8.71											
Estimated Value in \$bn	8.51											

Exhibit 7



Source: The Nilson Report

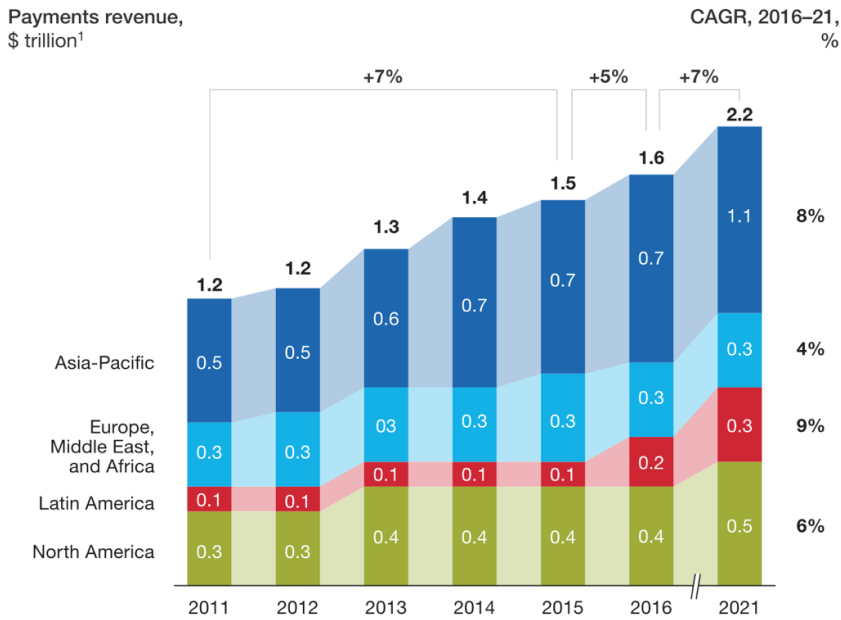
Exhibit 8



Source: The Nilson Report

Exhibit 9

Global payments revenues will average 7 percent annual growth through 2021.



Source: McKinsey & Co.

Exhibit 10

	Global Payments	Verifone	NCR	Ingenico	SZZT	PayPal	Averages	CapitalIQ Industry Avg.
Revenues	2,554.2	1,868.9	6,591	1,954.8	156.1	8,025	3,525	n/a
Gross Margin	36%	61%	75%	57%	68%	48%	58%	56.4%
Operating Margin	10%	-1%	4%	6%	7%	18%	7%	16.6%
Recalc. Operating Margin	14%	17%	10%	18%	9%	33%	17%	n/a
Op. Margin/Gross Revenues	22%	44%	39%	41%	27%	64%	40%	n/a
Return on Capital	28%	16%	16%	17%	11%	28%	19%	17.2%
Sales-to-Capital-Ratio	1.98	0.94	1.58	0.97	1.24	0.85	1.26	n/a
Avg. Reinvestment Rate	42%	81%	129%	133%	n/a	20%	81%	n/a
Imputed Growth Rate	12%	13%	20%	23%	-11%	6%	10%	10.8%
Revenue CAGR 2009-2014	12%	17%	7%	18%	12%	19%	14%	7.1%

Source: Rauch, Christian. (2016, January 16). Square, Inc. - Business Model, Venture Financing and Valuation

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Chapter 3 - Hypothetical M&A: Netflix-Apple

Abstract

Apple and Netflix have been on the verge of reaching an agreement for a merger or an acquisition for at least three years to date. Apple wants to position itself in the video streaming services industry and Netflix could benefit from Apple's international presence and vast amount of cash availability to continue to grow at extraordinary rates.

The main objective of this report is to provide an analysis of the main aspects that should be taken into account in a potential deal between the two companies, representing the target firm and under the assumption that Apple would be interested in buying the totality of Netflix.

From Netflix's point of view, this report will address the following points:

- Strategic situation and economic outlook.
- Netflix's rationale for wanting to make a deal with Apple.
- A detailed valuation of the target firm with and without possible synergies that could be developed.
- Recommendation and summary of the negotiation process between Netflix's and Apple's representatives.

It is important to mention that it was impossible to reach to an agreement due to critical valuation differences between the two teams and that, therefore, no deal was done.

Table of Contents

1 – Netflix’s Strategic and Economic Situation	65
1.1 – Porter’s Five Forces	66
1.1.1 – Bargaining Power of Suppliers: Moderate	66
1.1.2 – Bargaining Power of Buyers: Moderate	67
1.1.3 – Threat of Substitutes: Moderate	67
1.1.4 – Threat of New Entrants: Low	67
1.2 – S.W.O.T. Analysis	67
1.2.1 – Strengths.....	67
1.2.1.1 – Industry Leader	67
1.2.1.2 – Brand Recognition	68
1.2.1.3 – Recommendation Algorithm/User Data	68
1.2.2 – Weaknesses	68
1.2.2.1 – Suppliers becoming Competition.....	68
1.2.2.2 – Revenue Depends on Subscriptions.....	68
1.2.2.3 – Capital Expenditures	69
1.2.3 – Opportunities	69
1.2.3.1 – International Growth.....	69
1.2.3.2 – Technological Advances	69
1.2.4 – Threats.....	69
1.2.4.1 – Decreasing Subscription Growth	69
1.2.4.2 – Foreign Exchange Rates	69
1.2.4.3 – Price Hikes	69
1.2.5 – Table Summary	70
1.2.6 – S.W.O.T. Radar Graph.....	70
2 – Rationale for Possible Merger or Acquisition with Apple	71
3 – Valuation without Synergies	73
3.1 – Standalone Company	73
4 – Valuation with Synergies	75
4.1 – Cost of Capital	75
4.1.1 - Cost of Equity (ked)	75
4.1.1.1 – Risk-Free Rate (Rf).....	75
4.1.1.2 – Beta Levered (β_L)	75
4.1.1.3 – Market Risk Premium $R_M - R_f$	76
4.1.2 – Cost of Debt (kd)	76
4.1.3 – Weighted Average Cost of Capital (WACC)	76
4.1.4 – Summary	77
4.2 – Discounted Cash Flow Model (DCF)	77
4.2.1 – Discount Rate	77
4.2.2 – Cash Flows	78
4.2.2.1 – Revenue Growth	78
4.2.2.2 – Operating Current Assets and Current Liabilities.....	79
4.2.2.3 – Other Noncurrent Assets and Liabilities.....	79
4.2.2.4 – Net Operating Expenses / Revenues	80
4.2.2.5 – Fixed Assets and Depreciation Rate	81
4.2.2.6 – Program/Broadcast Rights and Amortization	82
4.2.2.7 – Long-Term Debt and Interest Expense	84
4.2.2.8 – Other Non-Operating Expense (Income).....	84
4.2.2.9 – Assumption Summary.....	85
4.2.2.10 – Forecast	85
4.2.3 – Terminal Value.....	86
4.2.4 – Equity Value.....	87
4.3 – Precedent Transaction Analysis	88

5 – Sensitivity Analysis	89
5.1 – Revenue Growth	89
5.2 – Short Term Growth Rate.....	89
5.3 – Long Term Growth Rate	90
5.4 – Program/Broadcast Rights Growth Rate	90
5.5 – Amortization Growth Rate.....	91
5.6 – Cost Saving Synergy	91
5.7 – WACC.....	92
5.8 – Revenue Based Ratios	93
5.9 – Depreciation Rate	95
5.10 – Interest Expense / Long Term Debt.....	96
5.11 – Output.....	97
6 – Negotiation.....	98
6.1 – Recommendation	98
6.2 – Negotiation Process.....	98
7 – References	100

1 – Netflix’s Strategic and Economic Situation

Economic conditions are looking favorable, according to the current and forecasted macroeconomic indicators, the economy is believed to have strong and steady growth for the near future and interest rates are expected to rise to control inflation.

Netflix is positioned as a leading streaming provider for international markets like Argentina, Brazil, Canada, Mexico and United Kingdom. Therefore, Netflix is seeing substantial growth in these regions, which is on pace to carry the company to the rank of the world’s biggest media streaming service. At the same time, domestic competition is something to take into account, due to the size and high growth of the competitors such as Amazon and Hulu. International competition is much lighter and will allow Netflix to expand into a truly global environment.

With increased competitors in the domestic marketplace, Netflix will be required to spend large amounts of money to finance the production of original content. This content creations and licenses have a great impact on the company’s financials. While the original content is the cornerstone of Netflix’s operations, the cost is not something that cannot be taken lightly. Netflix is expected to operate with negative free cash flow for 2018 as they spend more than \$8 billion on original content. This content will contribute additional growth to their subscriber base and fuel future earnings for the company.

Netflix has approximately 50% of the U.S. Video Streaming market share and it is currently the only publicly-traded company in the U.S. that exclusively focuses on such industry. Being the first-mover in this space, it has been able to capitalize on having the most extensive library of content. In 2017, it offered 1,157 TV shows and 4,593 movies on its platform. Additionally, it allowed them to compile an enormous data base of consumer information throughout the years, which provides an advantage in determining their preferences. This also gives Netflix the ability to spend money on programming that is in-line with said demands. Taking into account the billions of dollars that the firm is spending each year to acquire new content for their platform, it is safe to say that they will successfully maintain the majority of the U.S. market even as more competitors enter the industry.

Even though Amazon Prime did not begin as a video streaming service, in 2011, Amazon saw an opportunity to challenge Netflix and took it. Today, Amazon holds around 30% of the market share in the U.S., gaining this subscriber base by tacking-on their streaming service through their existing Amazon Prime subscription model. However, that does not mean their video service is second-rate, it’s business model follows Netflix's in the sense that they acquire other content and produce originals as well. Amazon has similar advantages in terms of consumer data, and it is able to leverage their tremendous spending power to add to their content library.

As a joint venture between Disney, 21st Century Fox, Comcast, and Time Warner, Hulu is somewhat different to its competitors in the industry. Their platform is positioned more as a vehicle to deliver existing television series already owned by its parent companies. While they are considered a major player at around 14% market share, they don't have the same advantages that Netflix and Amazon Prime do. They are not offered in nearly as many territories, and do not have that much ability to collect consumer data.

At first, companies in the industry didn't do much else but aggregate licensed content that already existed. Shows like AMC's *The Walking Dead*® or NBC's *The Office*® were the most popular and highest-rated shows that streaming services had on their platform. This model changed in 2013 when Netflix offered its first original series, *House of Cards*®. This changed the landscape of the streaming industry as streaming services were now focused on providing exclusive content on their platform. The addition of original content to services' lineups gave rise to the idea of watching a whole series at once with an entire season of new and exciting content being uploaded instantly, giving consumers even more freedom to stream on demand. Additionally, the quality of Netflix's original content speaks for its own, ranking second in total Emmy Award wins behind HBO.

As a result of said quality, the original content is among the most highly-demanded content across various streaming platforms, making it evident that there is a trend in consumer preference towards that type of product.

1.1 – Porter's Five Forces

As said before, Netflix faces high competitive rivalry in the streaming business. The main area of competition is in content aggregation as consumers want high-quality content. Even though Netflix has been the industry leader so far in production of original content, Amazon, Hulu, and others are projected to grow in 2018. It is predicted that the competition over content license and creation will increase the content costs for the near future. This increased expense will affect the company's financials but it has been essential to a strong subscriber base that will allow them to have the opportunity to spend the required amounts on the best content for their platform. Once Netflix has accumulated enough content they will be able to diminish the spending in this area and focus on improving the margins, revenues and cash flows.

1.1.1 – Bargaining Power of Suppliers: Moderate

Netflix has a dilemma when it comes to the time to decide whether to make or acquire content. Content licensing can cost a lot, for example, each episode of *The Walking Dead* in 2014 meant \$13.5 million. Netflix has benefited from a licensing agreement with Disney, but that is set to end in the near future as Disney recently announced that they will not renew the agreement and will instead pursue their own streaming platform in 2019 instead. Among all entertainment companies,

Netflix has been the second largest producer of original content, only behind Disney. The good news is that streaming companies can also produce their own content at a lower cost, which includes its own risks as original content is unproven and must succeed on its own.

1.1.2 – Bargaining Power of Buyers: Moderate

Consumers are able to choose from a variety of streaming services. With competition to create content being as high as it is, customers have the final say in deciding what type of content to purchase and consume.

Prices are another factor, subscriptions to services can range from about \$8 to \$25 a month, which is much cheaper than most regular cable or satellite services and consumers are left with the choice of which streaming service to subscribe to with no strings attached. It is also common for customers to subscribe to multiple streaming services based on what content they enjoy. It is important to notice that the company recently raised its prices across national subscription options and it demonstrated their pricing power over their current subscriber base.

1.1.3 – Threat of Substitutes: Moderate

Each one of the streaming platforms offers a unique line-up of content that cannot be duplicated. So, consumers are free to choose which streaming platform they subscribe to and the choice is based primarily on the content provided by the service. Looking at the relatively cheap monthly fee for these services it is quite common for people to subscribe to several services to fulfill their content wishes. This means that consumers do not feel the need to drop a streaming service to add another, minimizing the threat of substitutes.

1.1.4 – Threat of New Entrants: Low

The barriers to enter the streaming business are quite high. Purchasing or producing content is expensive, so only companies that already have sizable content libraries or large amounts of capital will be able to get inside. Additionally, the investment required to create a streaming platform and either rent or own the necessary servers is very capital intensive. This limits the number of entrants into the streaming industry to companies with a distribution platform or large library of original content.

1.2 – S.W.O.T. Analysis

1.2.1 – Strengths

1.2.1.1 – Industry Leader

Netflix was the first company in the streaming scene and it is the largest media provider in the industry. It is the largest company in video streaming, able to provide targeted content to over 190

countries. It is also currently the only pure-play video streaming company that is publicly traded in the United States.

1.2.1.2 – Brand Recognition

Since launching its streaming business, Netflix has become a phenomenon. Their content lineup includes hits like House of Cards®, Narcos®, Stranger Things®, Orange is the New Black®, and more.

To boost that lineup towards success, they have built a strong following through social media and traditional advertising. The following of those shows has largely spread through word-of-mouth and social media.

1.2.1.3 – Recommendation Algorithm/User Data

As previously said, since the launch of its streaming service, Netflix has been able to collect vast amounts of data on its users' viewing preferences. This fact pushed the company to create a recommendation algorithm to make their extensive library of content more accessible and user-friendly to subscribers. Due to this algorithm, Netflix's user experience is seen as friendlier than the ones of its competitors. Having its hands on endless amounts of quantifiable usage data puts Netflix's fingers on the heart of consumer preferences. From all that data, Netflix knows exactly what shows are being watched, by who, where, when, and for how long. This information is very valuable when deciding what type of content should be added to its library.

1.2.2 – Weaknesses

1.2.2.1 – Suppliers becoming Competition

In the beginning, the content behind Netflix's streaming service was all licensed as they would sign contracts with content creators to have rights to offer said content to its subscribers. Now, those companies have decided to compete with Netflix. The biggest company aiming to do this would be Disney, who declined to renew their contracts with Netflix earlier this year. Netflix is trying to remedy this growing problem by expanding their library of original titles. However, this increased competition may become more of a problem if Netflix is unable to retain market share against their new competitors.

1.2.2.2 – Revenue Depends on Subscriptions

Netflix faces a potential problem with subscription fatigue. As more and more streaming services emerge, consumers may be reluctant to subscribe to all the additional services. Revenue growth depends on subscription growth, and domestic growth has slowed recently. Netflix will have to look to the international markets to continue growing its base. This has led to a major problem with

customers illegally sharing accounts with family and friends. Netflix already offers the option to have more screens with its premium package, but could stand to increase revenues if they found a way to cut down on account sharing.

1.2.2.3 – Capital Expenditures

Netflix's new strategy is essentially a race to expand their content library. It has announced that they plan to spend \$8 billions in 2018 on new content, with the goal of having a library with 50% original programming. These enormous up-front costs have taken a toll on the company's free cash flow, but it is expected that this investment will result in better margins for the future.

1.2.3 – Opportunities

1.2.3.1 – International Growth

Netflix has an enormous opportunity to become the dominant video streaming platform across the entire world and they have already taken steps toward this goal by tapping into foreign markets, tailoring content towards foreign tastes, and providing foreign language support. They are close to becoming the world standard streaming service.

1.2.3.2 – Technological Advances

Technology is crucial to Netflix's evolution. Almost 64% of the world's population currently uses a mobile device and as more and more people uses technology, that just creates more screens for Netflix to stream to. Especially since mobile broadband and data connections are becoming faster and more reliable. This creates an interesting opportunity to expand as technology offers more ways for subscribers to consume content.

1.2.4 – Threats

1.2.4.1 – Decreasing Subscription Growth

Netflix currently relies exclusively on subscriptions as its sole source of revenue. If it does not find another source of revenue, like advertising, it could theoretically reach an upper limit for subscriptions, and be starved of the growth it needs to pay for its ever-increasing expenses.

1.2.4.2 – Foreign Exchange Rates

With an international business growing at increasing rates, Netflix will be exposed to increasing amounts of currency risk.

1.2.4.3 – Price Hikes

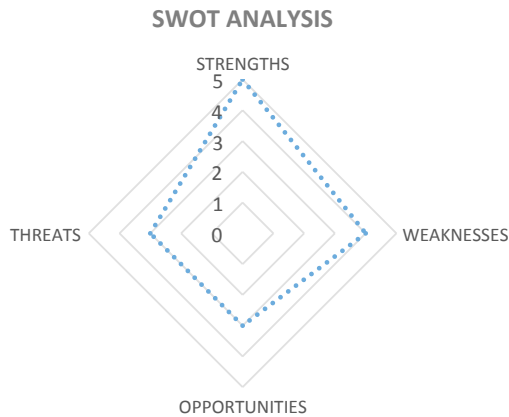
If subscriber growth does not prove to be great enough to support the increasing capital expenditures, Netflix may be forced to implement more price hikes on their subscription costs. This

move would have the potential to reduce customers, and could possibly price out some subscribers from being able to afford Netflix's services. Losing large amounts of subscribers could be disastrous for growth forecasts.

1.2.5 – Table Summary

S	Strengths <ul style="list-style-type: none"> •Industry Leader •Brand Recognition •Recommendation Algorithm/ User Data •Original content 	W	Weaknesses <ul style="list-style-type: none"> •Suppliers becoming Competition •Revenue Depends on Subscriptions •Capital Expenditures
O	Opportunities <ul style="list-style-type: none"> •International Growth •Technological Advances •New Revenue Streams 	T	Threats <ul style="list-style-type: none"> •Decreasing Subscription Growth •Foreign Exchange Rates •Price Hikes

1.2.6 – S.W.O.T. Radar Graph



2 – Rationale for Possible Merger or Acquisition with Apple

Netflix revenue has been growing consistently over the last five years at rate of approximately 30%, where, as previously mentioned, some of the main value drivers have been the company's ability to develop original content as well as acquiring content from other providers. Growing at this pace within the streaming industry is expensive and Netflix has been relying on debt to finance it.

When analyzing Netflix balance sheet over the prior five years, it can be seen that in 2013 the company had \$500 million of long-term debt, where in 2017 this number had increased to \$6,499.4 million. This is an increase in long-term debt of 1,300% in only five years and the company needs to continue to have stable source of financing to grow at the same pace. Netflix will still be able to continue to raise capital, but the question is for how long.

Based on this analysis it would be beneficial for Netflix to be acquired by Apple, as Apple has the ability to purchase Netflix and the liquidity strength to invest the necessary funds to continue its growth. Examples of this strength is that the company has approximately \$268,895 million in cash, cash equivalents and marketable securities listed on its 2017 balance sheet. Also, during the tax holiday, when the tax rate was reduced to 15.5%, Apple moved approximately \$200 billion dollars back into the United States. Tim Cook, Apple's CEO, stated publicly that the company was planning to use the money for dividends, repurchases of shares and potential acquisitions.

As mentioned before in the S.W.A.T analysis, another imminent threat for Netflix is the fact that Disney is not planning to renew their contract when it expires at the end of 2018. Disney is currently planning to create two new streaming platforms, one for entertainment and one for sports. The entertainment platform is going to have most of the content which used to be on Netflix, but also plenty of new content not yet released. Investors took this information negatively as the stock price declined approximately 5% after it was made public. This puts increased pressure on Netflix, as the company will have to create its own content within this category to stay competitive. Netflix recently acquired a comic book publisher called Millarworld, but it also signifies the increased need for liquidity.

Apple has never been known for large acquisition but on a normal year it could be involved in approximately 16 to 20 deals. The largest acquisition in the company's history was in 2014 when it acquired Beats Music for \$3 billion. The company has been gradually focusing more on the streaming market and is reportedly planning to spend \$1 billion in 2018 to create their own original content. Netflix has the knowledge and experience with creating successful original content, which means that the money that Apple is planning to spend would be used more efficiently with its expertise.

Another major synergy for both companies would be the possibility of bundling the products, an example of this would be a 3-month Netflix subscription included in the purchase of specific Apple

products. This would help increase the revenue for Apple, as well as possible new subscription customers for Netflix across the world. It would be especially attractive for markets where Netflix still has large growth possibilities and on which Apple is already strongly implanted in. One example of this is China where Apple has 14 stores and is currently planning to open more.

3 – Valuation without Synergies

3.1 – Standalone Company

In the same way as with any fast-growing stock, attempting to value Netflix as a standalone company offers many difficulties. The industry in which it is embedded is still growing and fairly new, which means that it doesn't offer much history to build expectations upon. On top of that, and despite the exponential growth that Netflix has achieved on its revenues over the past 10 years, the company is still generating negative cash flows, which means that the Discounted Cash Flow Method of valuation based on the Pro Forma Model falls short when capturing the investors' expectations for future performance.

A Comparable Companies Analysis (COMPS) was conducted instead but the results were no different. This ad-hoc method of valuation looks at firms in the same business and of a similar size as the target one. In the case of Netflix this would mean being viewed as an internet or media company. It is believed that Netflix is more inherently a media company rather than an internet business and therefore should be valued as such, but when using Standard & Poor's Capital IQ, their default setting is to value Netflix as an internet company.

Regarding the media industry, seven companies were chosen based on their market capitalizations. The Enterprise Value (EV), which is the price offered to acquire the equity stake and any additional equity positions plus net debt, is analyzed as a multiple of three metrics, last twelve-months (LTM) Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA), Earnings Before Interest and Taxes (EBIT) and Revenues. The average EV to LTM EBITDA turned out to be 10.46x and the same relationship was 16.09x for LTM EBIT and 2.74x for LTM Revenues. Applying these multiples to Netflix gives a value range between \$9,521.42 million and \$32,089.93 million. This implies a valuation 93% to 76% below the current EV of Netflix. The main reason behind this could be the soaring difference between Netflix's ratios and these so-called comparable companies, which can be summarized looking at its sky high P/E ratio of 229.29, more than twelve times the average of the industry.

Looking through the lens of an internet company, the average EV to LTM EBITDA becomes 25.16x, while the EV to LTM EBIT increases to 148.82x and the EV to LETM revenue becomes 5.79x. When these multiples are applied to Netflix, the implied value range becomes \$9,771.87 to \$47,599.09 billion. The main reason for the higher multiples using internet companies is the inclusion of Amazon within the comparable universe, given that its P/E ratio is considerably similar to Netflix's.

As can be derived from the previous analysis, this model completely fails to incorporate the real value drivers and market expectations for the target firm and are not relevant at the current moment for a truthful valuation of the target company.

Regardless, there is no doubt that the market has strong faith in Netflix's future growth, which with can be witnessed through a stock that traded as high as \$331.44 on March 9th, 2018.

Following this line of thought is that the Standalone Value used in this report as a comparison point will be the Market Value based on the stock price as of March 31st, 2018.

Netflix's stock was trading at \$295.95 and had 433,948,461 shares outstanding, achieving an Equity Value of around \$128,427 million.

4 – Valuation with Synergies

4.1 – Cost of Capital

4.1.1 - Cost of Equity ($k_{e,d}$)

The cost of equity for the firm after the takeover from Apple is calculated using the Capital Asset Pricing Model (CAPM), which formula is exposed below.

$$k_{e,d} = R_f + \beta_L(R_M - R_f)$$

This model gives a $k_{e,d}$ of 9.56%, all the assumptions and calculations for the different elements of the formula are explained below.

4.1.1.1 – Risk-Free Rate (R_f)

Given that the projections for this valuation have a long-term horizon between five and ten years, the proxy used for the Risk-Free Rate is the 10-year Treasury Bond Constant Maturity Rate, that was 2.74% as of March 31st, 2018.

4.1.1.2 – Beta Levered (β_L)

It is a measure of the systematic risk of the particular stock in relation to the systematic risk of the market, taking into account the debt structure of the firm. As extracted from Bloomberg, the β_L of Netflix is about 1.52, which is too high to use it in a valuation under the assumption of a take over from Apple, whose β_L is not higher than 1.07.

This difference between the systematic risk of one company and the other makes up for the perfect scenario for a financial synergy. This type of synergy appears when the combination of the two firms results in the creation of a greater value than if they operate on their own. In this case, this is manifested as an improvement in the cost of capital.

The first step to come up with a feasible β_L to use in the valuation is to calculate the weighted average β_U (Unlevered Beta) of both firms. The process to calculate the β_U is through the following formula.

$$\beta_U = \frac{\beta_L}{[1 + (1 - t)(D/E)]}$$

The tax rates (t) used for Netflix and Apple were 19.20% and 16.63%, respectively, and they were calculated applying a reduction of 38.24% over the corresponding averages over the last ten years (29.25% for Netflix and 26.92% for Apple).

As for the Debt-to-Equity Ratio (D/E), this one was calculated using the Net Debt (*Long Term Debt – Cash*) of both firms, to account for the massive amount of cash that Apple has overseas and that could easily reduce the debt portion of the balance sheet. According to the capital structure extracted from Bloomberg, the value used was 0.08 for Netflix and 0.14 for Apple.

After applying the formula, the results were a β_U of 1.4303 for Netflix and 0.9561 for Apple. Using the market cap of the companies as weights, the weighted average of both values gives a result of 1.02.

The next step is to use the formula again to get a new β_L for the company under the assumption of a takeover. Given that Netflix would be incorporated into Apple, the (t) and the (D/E) are the ones previously calculated for the later.

This process gives a β_L of 1.1368, much lower than the one of Netflix alone.

4.1.1.3 – Market Risk Premium ($R_M - R_f$)

When plotting the Security Market Line (SML), the graphical approach of the CAPM, the slope is portrayed as the Market Risk Premium (MRP), which is nothing more than the expected return of the market portfolio after subtracting the risk-free rate to get the difference.

This element was determined using data from a survey conducted by professor Pablo Fernandez of the IESE Business School in Barcelona, Spain. According to his findings, the average MRP used for valuation purposes in the United States during 2017 was 5.7%.

Expecting an increase of this estimations for 2018 and to be more conservative, a 6% is used for the calculation of the $k_{e,d}$ of Netflix.

4.1.2 – Cost of Debt (k_d)

The Cost of Debt for this valuation was determined using the figures and predictions from Bloomberg. Given that the company that is going to be issuing new debt to finance the operations after the acquisition is Apple, its cost of debt is used.

This element is therefore 2.26%.

4.1.3 – Weighted Average Cost of Capital (WACC)

Finally, the WACC of the firm is calculated using the following formula.

$$WACC = w_e k_{e,d} + w_d k_d (1 - t)$$

As it was stated before, the (D/E) of Apple was 0.14 which corresponds to a structure with a $w_e = 87.50\%$ and a $w_d = 12.50\%$.

The tax rate, to calculate the After-Tax Cost of Debt, was also stated before as 16.63%.

With all the inputs in place, the WACC formula gives a Cost of Capital of 8.60% to be used in the valuation model.

4.1.4 – Summary

A table with all the rates used and calculated in this section is included below.

Netflix		Apple	
β_L	1.52	β_L	1.07
Tax Rate	19.20%	Tax Rate	16.63%
D/E	0.08	D/E	0.14
β_U	1.4303	β_U	0.9561
Market Cap	125.38	Market Cap	870.75
Weighted Average β_U		1.02	
New β_L for Netflix		1.1368	
Risk-Free Rate		2.74%	
Market Risk Premium		6.00%	
k_e^d		9.56%	
k_d		2.26%	
Tax Rate		16.63%	
w_e		87.50%	
w_d		12.50%	
WACC		8.60%	

4.2 – Discounted Cash Flow Model (DCF)

The value of a company is a function of its cash flows growth and risk, and since this model does a great job in taking both into account, it is considered the most reliable one in this type of valuations. Therefore, the target value of Netflix plus the synergies to be negotiated during the acquisition deal is going to be calculated based on the DCF method.

The core components to be estimated for this model are the discount rate, the immediate cash flows that the company's assets are going to generate in the short term and the growth rate for both short and long-term performance to calculate the terminal value of the firm.

4.2.1 – Discount Rate

Calculated before as the Cost of Capital of the firm as part of Apple's structure, the rate at which every cash flow is going to be discounted is 8.60%.

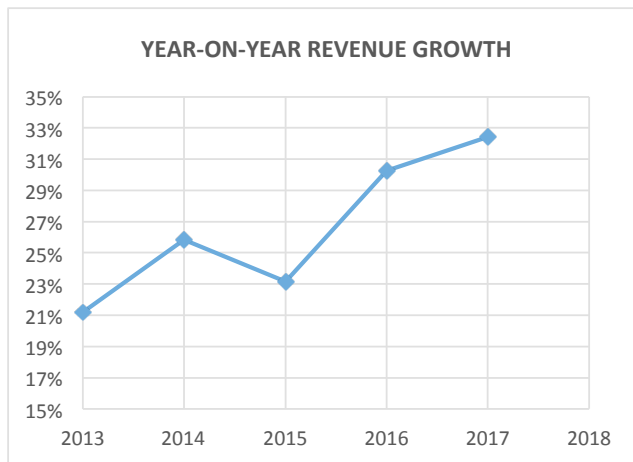
4.2.2 – Cash Flows

Perhaps the most difficult element to estimate in the DCF model addresses the differential cash flows that Netflix is going to contribute to Apple in the years to come after the acquisition.

This challenge is faced with the Pro Forma model which provides tools and procedures to forecast the financial statements of the firm based on past and predicted performance. This is done by establishing assumptions and ratios to calculate the different components of both, the Income Statement and the Balance Sheet over a five-year period.

4.2.2.1 – Revenue Growth

As almost every financial model, this one is “sales driven” which means that as many variables as possible are going to be assumed to be a function of the company’s revenues. This makes this assumption one of the most important ones to make, if not the most critical one.



Year	Year-on-Year Revenue Growth
2013	21.20%
2014	25.83%
2015	23.16%
2016	30.26%
2017	32.41%
Geometric Mean	26.24%

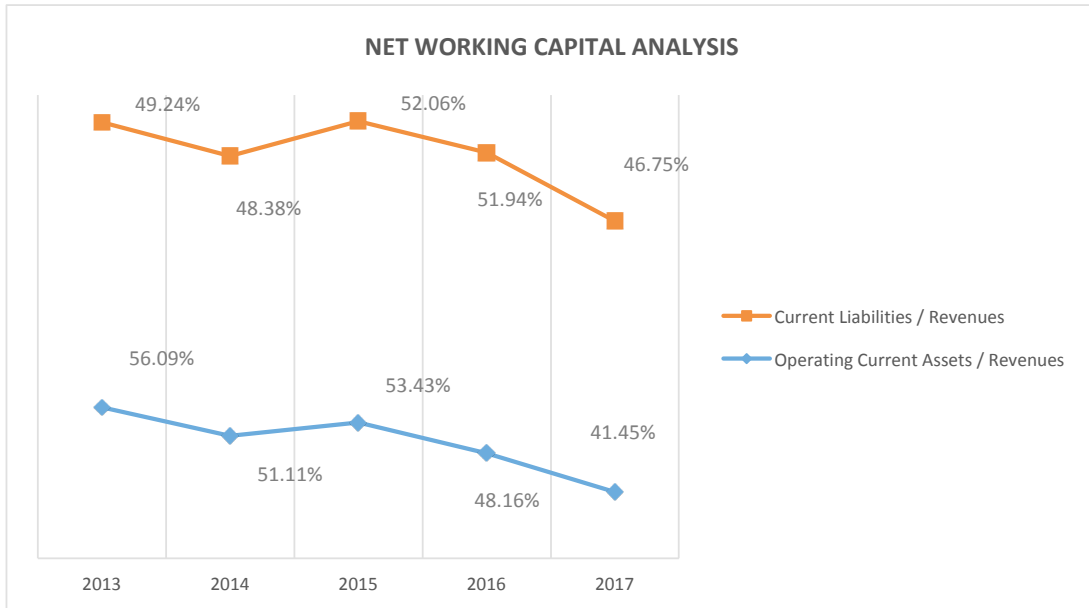
According to the past performance of Netflix for the past five years, and as can be seen in the graph above, their revenues have been growing at a Geometric Mean (GM) of 26.24%, which sustainability can be argued. The subscribers base has also been growing exponentially, but the only way for the company to keep up with that trend is to go worldwide and think about the international market. Now, it is unlikely that Netflix, on its own, would be able to succeed in this task, but it would easily be a feasible outcome after Apple’s takeover.

In other words, there is a possible synergy in the form of revenue enhancement using Apple’s international presence and cash availability to boost or maintain Netflix’s ability to grow its revenues at such a high pace.

Because of this, the growth rate that it was used to forecast Revenues for the income statement was 26.24%.

4.2.2.2 – Operating Current Assets and Current Liabilities

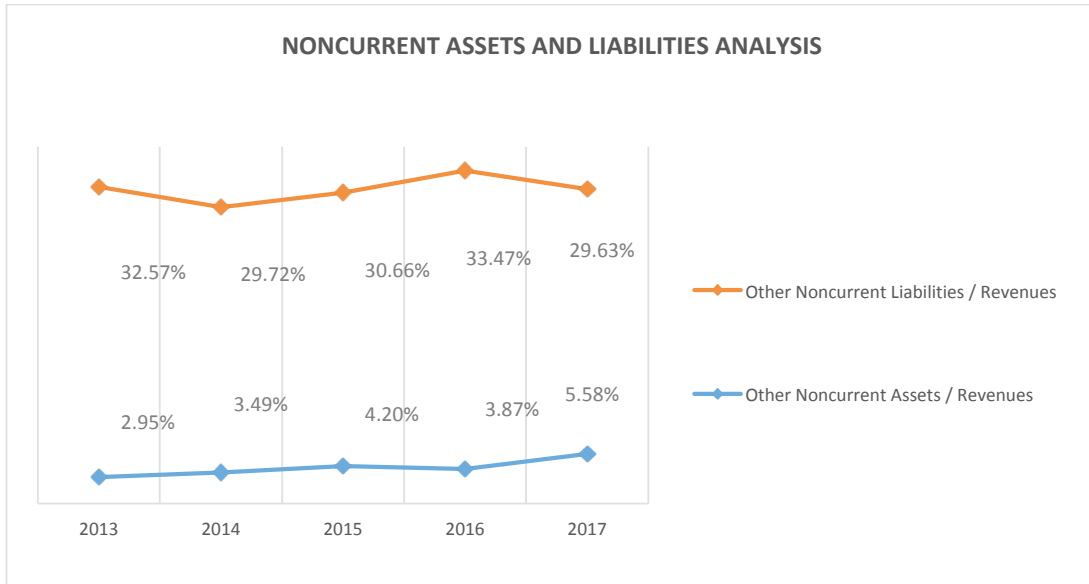
Given that both ratios, Operating Current Assets / Revenues, and Current Liabilities / Revenues, have shown stability over the past five years, the average is chosen as a forecasting parameter. Those average are calculated to be 50.05% and 49.68%, respectively.



4.2.2.3 – Other Noncurrent Assets and Liabilities

The same criteria as used above is applied for these residual items of the balance sheet. Showing a stable behavior, the average is used to represent the relationship with revenues over the next five years.

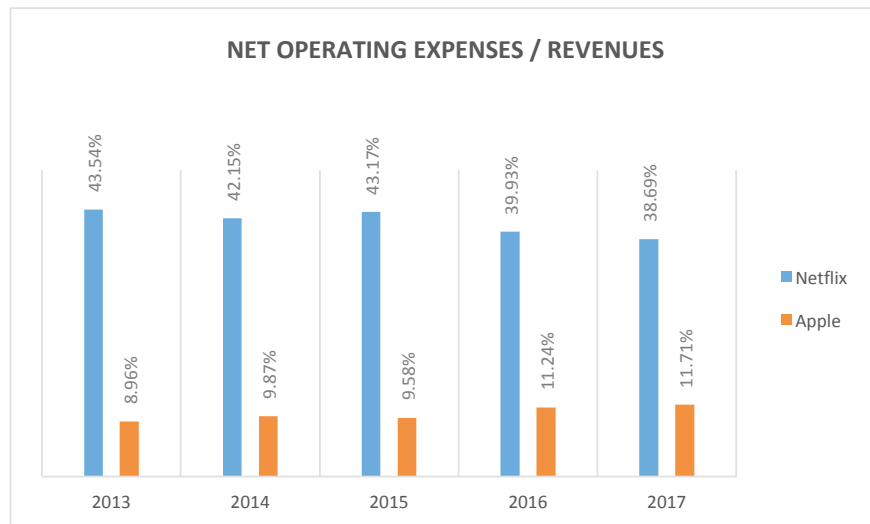
The assumptions are a 31.21% for the Other Noncurrent Liabilities / Revenues ratio and a 4.02% for the Other Noncurrent Assets / Revenues ratio.



4.2.2.4 – Net Operating Expenses / Revenues

This item of the Income Statement is a summation of the expenses related to sales, marketing, advertising, technology, and software development along with costs categorized as “others” for reporting purposes.

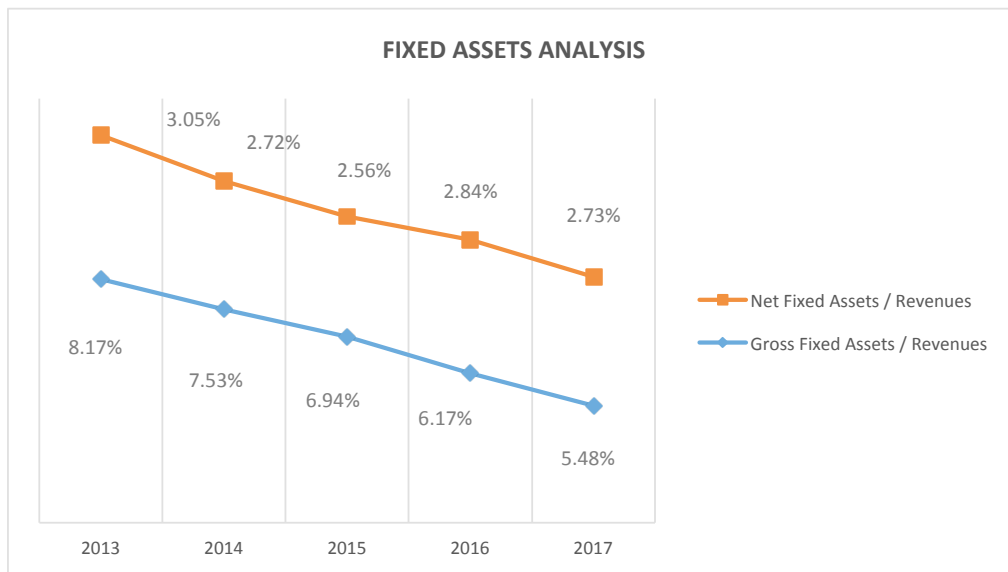
As a percentage of revenues, the ratio analysis shows a declining GM of around 2.91% ending in a 38.69% for 2017. This relationship is considerably high when compared to Apple’s, whose Net Operating Expenses (NOE) add up to be only 11.71% of its revenues in 2017.



Judging by this results, there is a possible cost reduction synergy which would make Netflix's NOE / Revenues ratio to be reduced at a higher GM until it gets to the relationship showed in Apple's financial statements. Of course, this is not something that can be achieved overnight or even over the five-year period forecasted using the Pro Forma model. To establish a more conservative approach, the NOE / Revenues ratio of Netflix will be reduced at a rate of 7.64% to attain Apple's 11.71% gradually over a fifteen-year period.

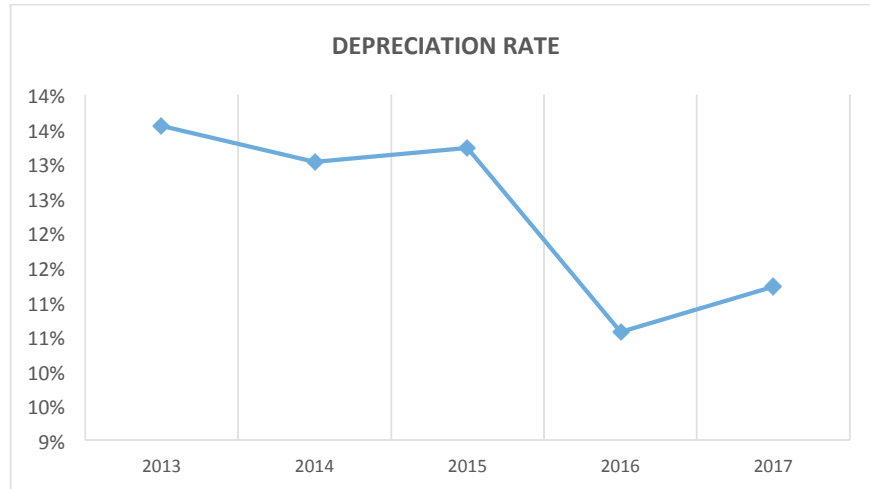
4.2.2.5 – Fixed Assets and Depreciation Rate

The first question when forecasting the fixed assets of any company is whether to set the assumptions to be linked to the net or the gross line of this item of the balance sheet.



As can be seen in the graph above, both lines behave in a similar manner, showing a slight downward trend. Given that the changes in Net Fixed Assets seem to be somewhat smoother than the gross line, this is the one used in this section. The average Net Fixed Assets / Revenues ratio of 2.78% is used for forecasting purposes.

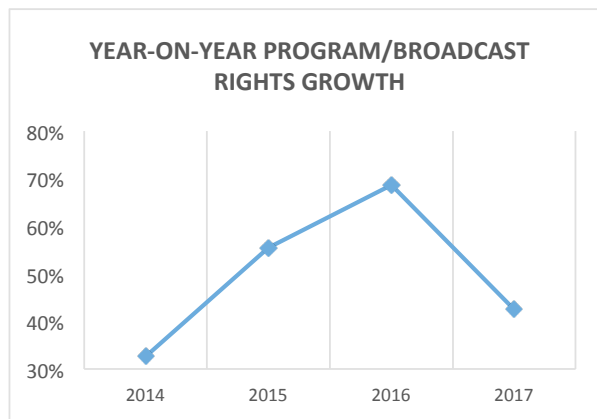
The second question is about finding an appropriate depreciation rate to calculate the Income Statement counterpart of this chapter.



Given that a clear trend cannot be pinpointed in this case, the average of 12.32 is used as the expected Depreciation Rate.

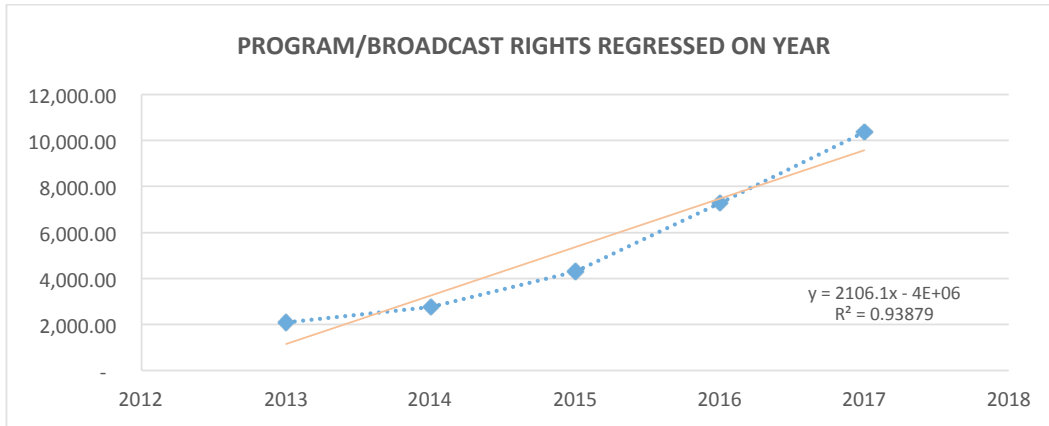
4.2.2.6 – Program/Broadcast Rights and Amortization

This item of the Balance Sheet has been growing exponentially alongside the revenues for the past five years with a decline in 2017. Despite this statement, going back to the Revenue Growth, it is now expected to be driven primarily by Apple’s international presence and cash availability, leaving the dependency to Program/Broadcast Rights behind.



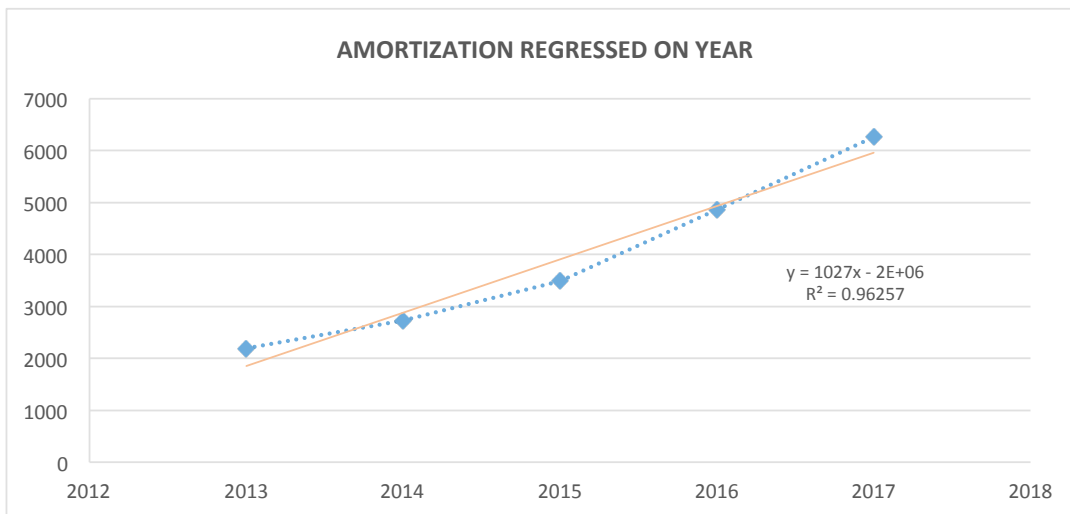
Year	Year-on-Year Program/Broadcast Rights Growth
2014	32.63%
2015	55.51%
2016	68.67%
2017	42.57%
Geometric Mean	47.97%

Trying the same approach here than with the Revenues is not as effective, providing that there isn’t a clear trend and that the GM yields a soaring 47.97%, too high to even consider using it as a forecasting assumption.



Regressing the values over the years often provides a better estimation of a possible growth rate for the future. In this case, this result provides that the Programs/Broadcast Rights are going to grow by approximately 2,106.1 every year, as seen by the slope in the displayed equation. Dividing this number by the actual value of the variable in 2017 gives a growth rate of 20.31%, which is a much satisfactory estimate and thus the one used as the assumption for the model.

The Income Statement counterpart is the so-called Amortization, the closest thing a business as Netflix's can have to a cost of goods sold. Given that this is intrinsically tied to Program/Broadcast Rights, the same approach is going to be used.

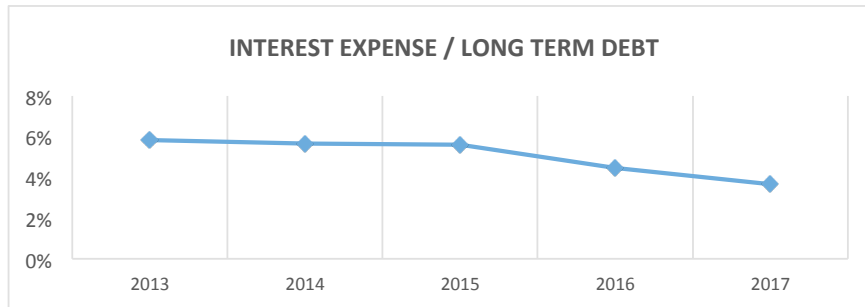


This result indicates that the Amortization is expected to grow by approximately 1,027 annually. After taking the ratio between this number and the Amortization value for 2017, the estimated growth rate ends up being 16.41%.

4.2.2.7 – Long-Term Debt and Interest Expense

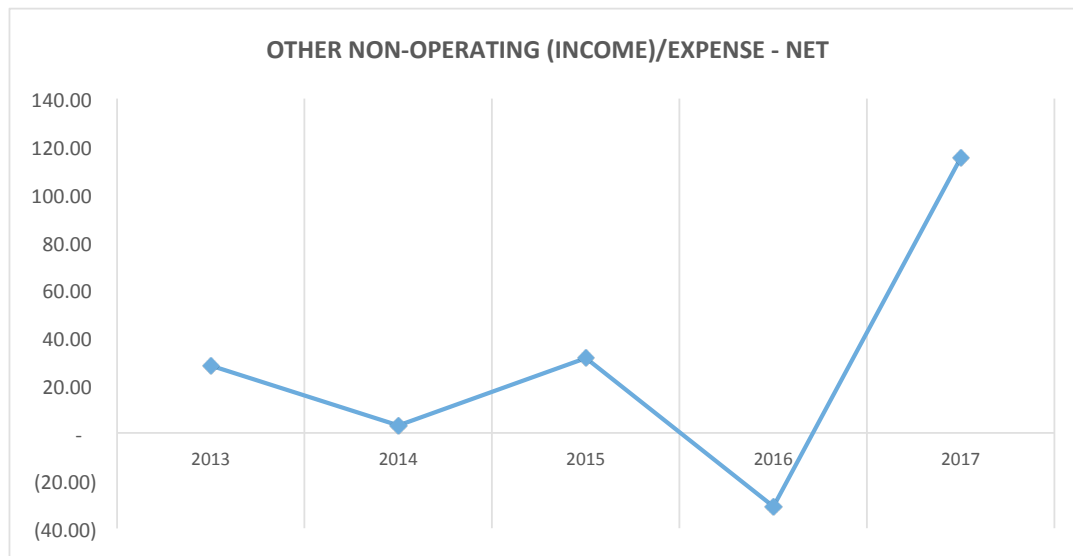
Another heavily increased item in Netflix’s Balance Sheet for the past five years, the Long-Term Debt has reached an all-time high of \$6,499.4 million.

As explained during the estimation of the revenue’s growth rate, the necessity for new debt in order to continue to grow vanishes due to Apple’s cash availability, reason why it is going to be kept constant in the Pro Forma Model.



As for the Interest Expense, when studied as a proportion of the Long-Term Debt, it is showed as really stable, with an average of 5.04%, rate used in the model.

4.2.2.8 – Other Non-Operating Expense (Income)



As the graph above shows, this residual line of the Income Statement didn’t develop a trend over the years and its distribution appears to be somewhat random.

For lack of a better method, this item will be kept constant on its value for 2017 as a conservative approach.

4.2.2.9 – Assumption Summary

A table with all the assumptions calculated in this section is included below.

Revenue Growth	26.24%	Net Operating Expenses / Revenues	38.69%
Abnormal Growth Rate (g_s)	15.36%	Depreciation Rate	12.32%
Stable Growth Rate (g_n)	4.20%	Program/Broadcast Rights Growth Rate	20.31%
Op. Current Assets / Revenues	50.05%	Amortization Growth Rate	16.41%
Current Liabilities / Revenues	49.68%	Interest Expense / Long Term Debt	5.04%
Noncurrent Liabilities/Revenues	31.21%	Cost Saving Synergy	7.64%
Net Fixed Assets / Revenues	2.78%	Other Non-Operating (Income)/Expense - Net	\$ 115.15
Noncurrent Assets / Revenues	4.02%	Tax Rate	16.63%

4.2.2.10 – Forecast

Millions USD	2017	2018	2019	2020	2021	2022
Income Statement						
Revenues	11,693	14,761	18,634	23,523	29,696	37,488
Total Revenue	11,693	14,761	18,634	23,523	29,696	37,488
Net Operating Expenses	4,524	5,274	6,150	7,171	8,361	9,749
Depreciation Expense	72	90	115	146	185	235
Amortization	6,258	7,285	8,481	9,873	11,493	13,379
Operating Income	839	2,111	3,888	6,334	9,657	14,125
Non-Operating Expenses						
Interest Expense	238	328	328	328	328	328
Other Non-Operating Expense	115	115	115	115	115	115
EBT	485	1,668	3,445	5,891	9,214	13,682
Income Tax Expense (Benefit)	(74)	277	573	980	1,532	2,275
Net Income	559	1,390	2,872	4,911	7,682	11,407
Balance Sheet						
Current Assets						
Cash and Equivalents	2,823	2,543	3,812	6,850	12,348	21,216
Operating Current Assets	4,847	7,388	9,326	11,773	14,863	18,763
Total Current Assets	7,670	9,930	13,138	18,624	27,211	39,979
Noncurrent Assets						

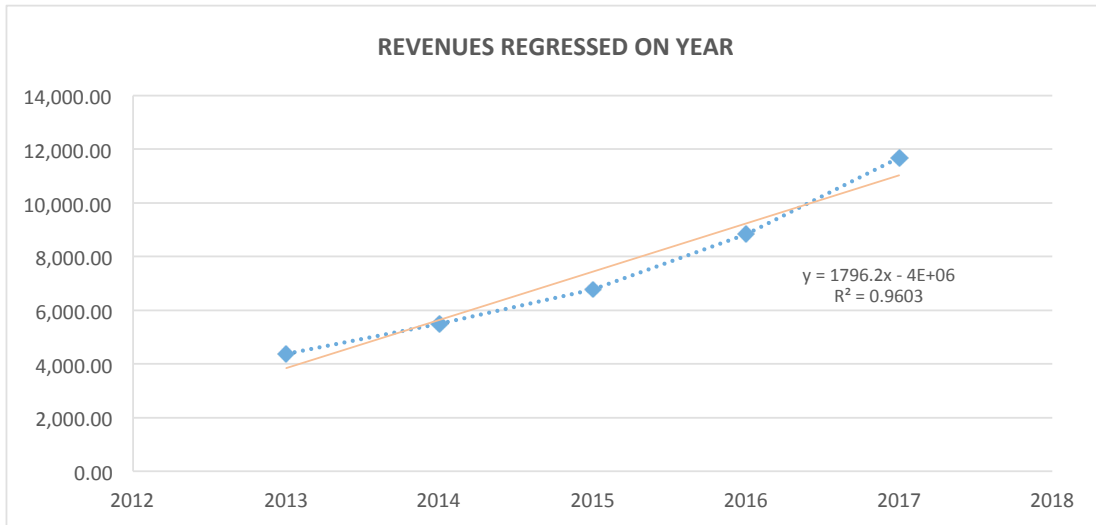
PP&E - Gross	641	822	1,045	1,327	1,684	2,136
Accumulated Depreciation	322	412	527	673	858	1,094
PP&E - Net	319	410	518	654	826	1,042
Other Noncurrent Assets	652	593	749	945	1,193	1,506
Program/Broadcast Rights	10,371	12,477	15,011	18,059	21,727	26,139
Total Assets	19,013	23,411	29,416	38,282	50,956	68,666
Current Liabilities	5,466	7,332	9,257	11,685	14,752	18,622
Long Term Debt	6,499	6,499	6,499	6,499	6,499	6,499
Other Noncurrent Liabilities	3,465	4,607	5,816	7,342	9,268	11,700
Total Liabilities	15,431	18,439	21,572	25,527	30,519	36,822
Retained Earnings	1,711	3,101	5,973	10,884	18,566	29,973
Common Stock & APIC	1,871	1,871	1,871	1,871	1,871	1,871
Total Shareholders' Equity	3,582	4,972	7,845	12,756	20,437	31,844
Total Liabilities and Equity	19,013	23,411	29,416	38,282	50,956	68,666
Free Cash Flow	2017	2018	2019	2020	2021	2022
Profit After Tax		1,390	2,872	4,911	7,682	11,407
Depreciation & Amortization		7,376	8,596	10,019	11,678	13,614
Increase in Current Assets		(2,541)	(1,939)	(2,447)	(3,089)	(3,900)
Increase in Current Liabilities		1,866	1,924	2,429	3,066	3,871
Increase in Fixed Assets at Cost		(181)	(223)	(282)	(357)	(452)
Increase in Program/Broadcast Rights		(9,392)	(11,015)	(12,921)	(15,160)	(17,791)
After Tax Interest on Debt		273	273	273	273	273
Free Cash Flow		(1,208)	489	1,982	4,093	7,022

4.2.3 – Terminal Value

When valuing growth companies like Netflix, the terminal value tends to be one of the most critical value drivers. For this valuation, the 2-Stage Gordon Discount Model, which formula is stated below, is going to be used.

$$TV_t = \left[FCF_{t+1} \left[\frac{1 - \left(\frac{1 + g_s}{1 + WACC} \right)^N}{(WACC - g_s)} \right] \right] + \left[\frac{FCF_{t+1}(1 + g_s)^{N-1}(1 + g_n)}{(WACC - g_n)(1 + WACC)^N} \right]$$

The short-term abnormal growth rate (g_s) calculated based on the forecasted cash flows was unrealistically high to use in this model, reason why it was estimated using the slope method over the revenues of the company instead, as seen in the next graph, to smooth the growth change towards perpetuity.



This result indicates that the growth rate is expected to be $\frac{1,796.2}{11,692.7} = 15.36\%$, being five years of abnormal growth a rational value for the parameter N .

As for the long-term stable growth rate (g_n), an outlook forecast made by PwC puts the Entertainment & Media Industry's compound annual growth rate (CAGR) for the near future to be about 4.2%, which seems to be a good estimate.

The result of the model with the previous data is a Terminal Value in the year 2022 of \$261,100.06 million.

4.2.4 – Equity Value

Putting all the results together, the total cash flows are as follows.

Millions USD	2018	2019	2020	2021	2022
Free Cash Flow	(1,207.80)	489.46	1,982.00	4,092.70	7,022.29
Terminal Value					267,100.06
Total Cash Flows	(1,207.80)	489.46	1,982.00	4,092.70	274,122.35

Discounting every cash flow at the WACC of the firm gives a Net Present Value of \$ 185,248.46 million.

After subtracting the net debt of \$3,676.64 million on the year 2017, the result is an Equity Value of \$181,571.82 million that compared against the standalone value of \$128,427 million provides a 41.56% premium in a potential deal between Apple and Netflix.

4.3 – Precedent Transaction Analysis

In order to understand the climate surrounding the prospective acquisition, a Precedent Transactions Analysis (PTA) is conducted to provide additional information regarding a merger or acquisition, specifically on how much a potential acquirer would be willing to pay based on multiples of past or pending deals. In this case, previous large (greater than \$1 billion) media deals over the past four years were used.

Nine transactions were analyzed spanning from May 18th, 2014 to January 12th, 2018. The largest of these deals is the pending AT&T-Time Warner merger with an Enterprise Value of \$107 billion.

As seen in the previous COMPS analysis, traditional multiples such as EBITDA or Revenues are pointless to value a company like Netflix. Instead, the premium paid over the Equity Value was calculated to set a starting point to develop a strategy for the negotiation.

In this sense, the average premium paid 14.91%, which applied to Netflix would give an Equity Value of \$147,386.51 million which would be the lowest value accepted for a deal to be achieved.

5 – Sensitivity Analysis

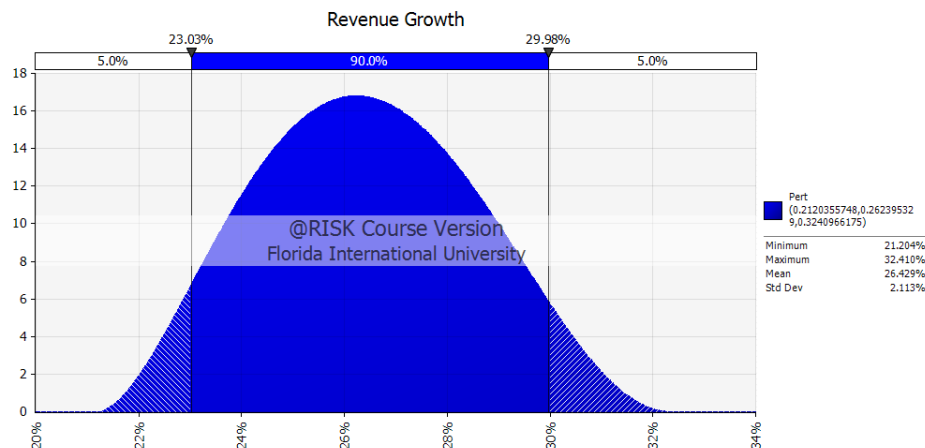
Given that a set of assumptions were introduced into the valuation model it is necessary to evaluate a range of combinations that could provide several outcomes for the value of Netflix. In order to compute the possible outcomes, the @Risk software was used under the following parameters:

- 1,000 iterations
- Random Initial Seed
- Latin Hypercube Sampling Type
- No Convergence

The following fifteen assumption values were sensitized by assigning distributions such as Normal, Uniform or Pert.

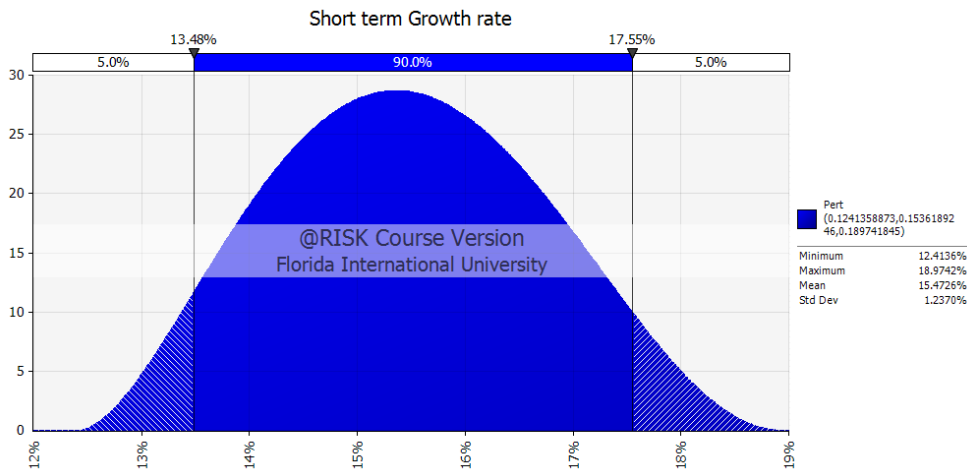
5.1 – Revenue Growth

As mentioned before in the assumptions section, the geometric mean for the Netflix’s year-on-year growth for the last 5 years was 26.24%. This assumption was assigned a Pert distribution with a range of 21.20% as the minimum value, 32.41% as the maximum value and 26.24% as the most likely. The minimum and maximum value were determined from the 5-year growth rates used to determine the GM.



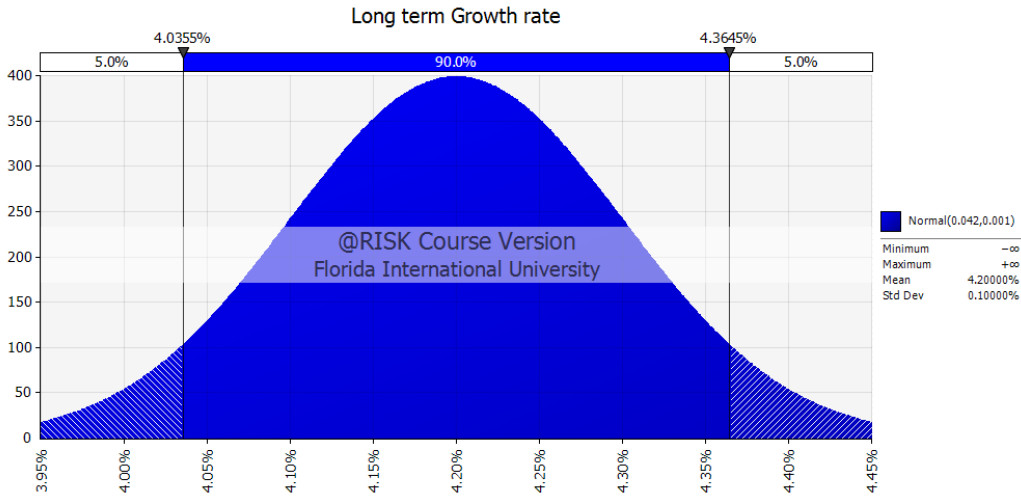
5.2 – Short Term Growth Rate

The short-term growth rate was defined using the slope method for the past 5 years of revenues in Netflix. A 15.36% 5-year growth rate was determined as the most likely value for the Pert distribution assigned to this assumption. Given that the value was based on the same 5-year stream of revenues as for the revenue growth, the same proportions were applied to the minimum and maximum value with an outcome of 12.41% as the minimum and 18.97% as the maximum.



5.3 – Long Term Growth Rate

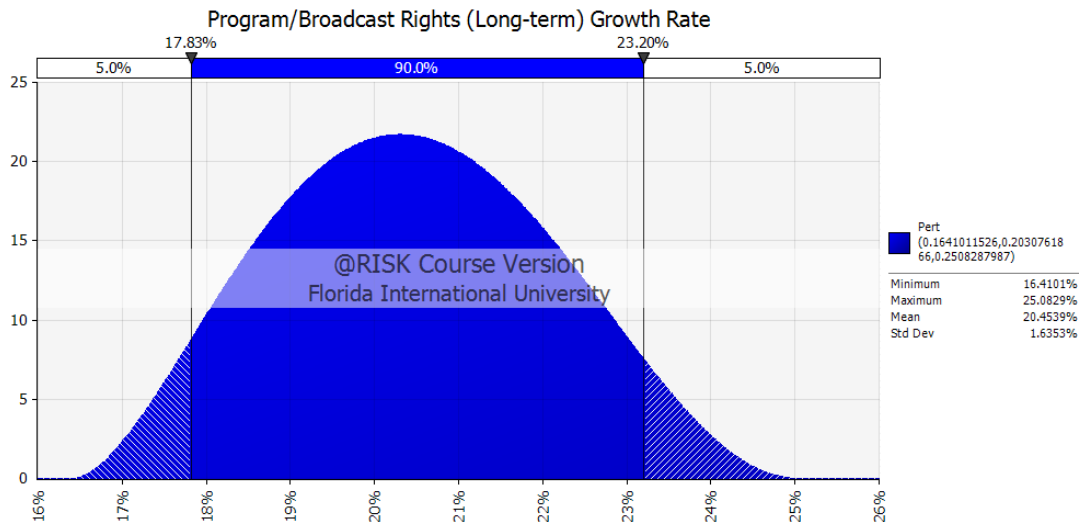
As mentioned before, an outlook forecast made by PwC puts the Entertainment & Media Industry’s CAGR for the near future to be about 4.2%. This value was determined to as a mean on the normal distribution assigned to this assumption. Given that a long-term growth rate is projected to be stable into the future, a low value of 0.10% was assigned as the standard deviation, approximately 95% of the values would then lie between 4% and 4.4%.



5.4 – Program/Broadcast Rights Growth Rate

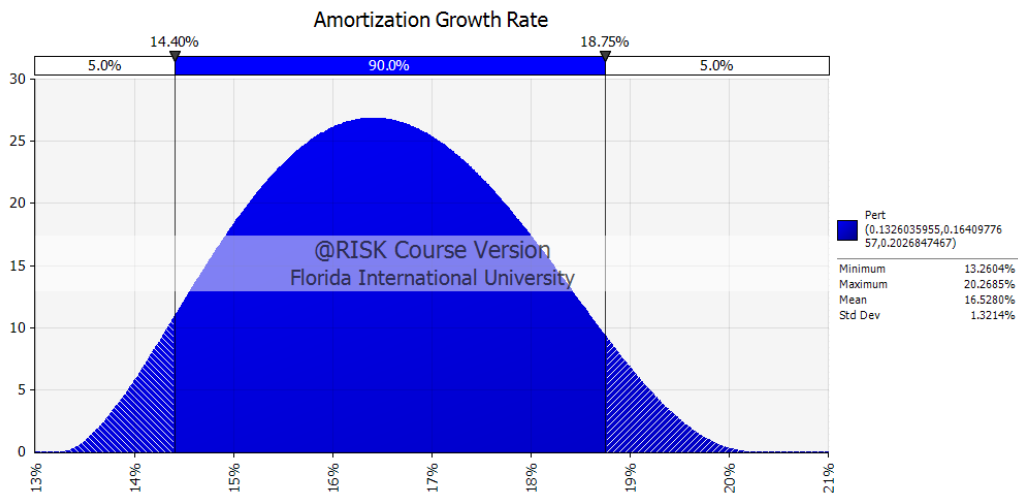
Program Broadcast Rights is a very important element in the operation of Netflix as this is one of the most important assets under which Netflix can provide its services. The growth rate over the las 5 years using the slope of Program Broadcast rights is 20.31%. This was determined as the most likely value for a Pert distribution and a minimum and maximum value were determined using

the same proportions as for the Revenue Growth given that this element is of such importance to the revenues. These values were 16.41% and 25.08%, respectively.



5.5 – Amortization Growth Rate

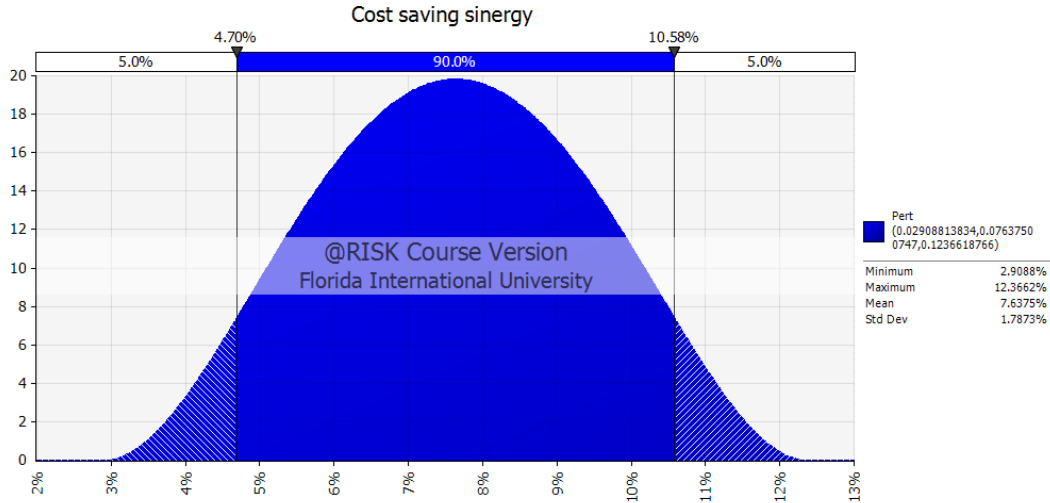
Amortization growth rate was determined under the same approach as the program broadcast rights given that these elements are directly correlated. The slope of the amortization values for the last 5-years determined a growth rate of 16.41% which was assigned to the most likely value of the Pert distribution. The minimum and maximum value taking the same proportion as the revenue growth are 13.26% and 20.27% respectively.



5.6 – Cost Saving Synergy

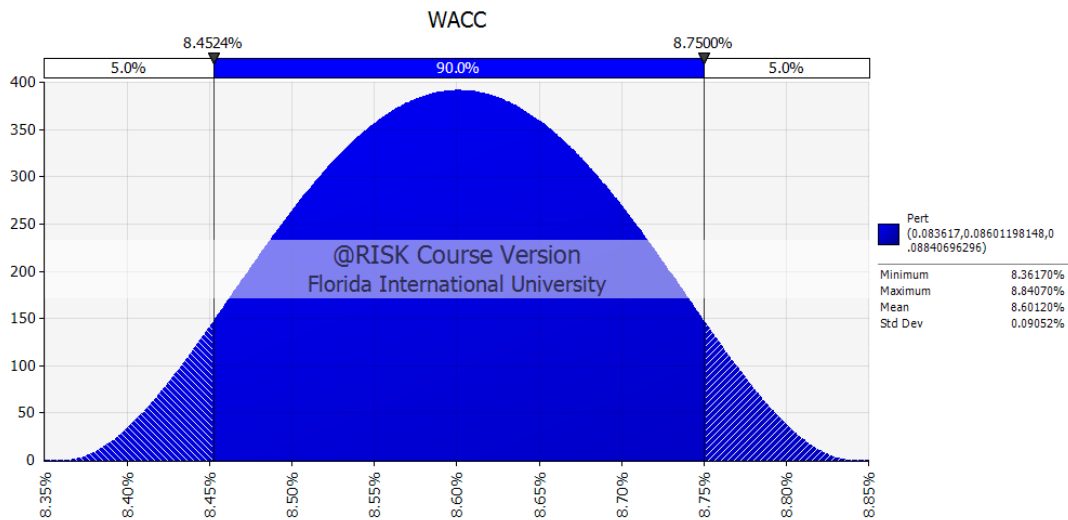
As mentioned before in the assumptions, a cost synergy of 7.64% was determined as a linear approach to a final 11.75% target of net operating expenses to revenues. With this efficiency

improvement approach 7.64% was assigned under a Pert distribution with 2.91% being the minimum value obtained from the average ratio over the last 5 years of Netflix operations and 12.37% as the maximum with the same deviation from the most likely value as the minimum.



5.7 – WACC

The weighted average cost of capital was estimated to be 8.60% once Netflix was acquired by Apple. Under this assumption, a full adoption of the structure of Apple would reduce the WACC to 8.36% as a minimum. Applying the same deviation to the maximum we have an upper limit of 8.84% with a balance Pert distribution.

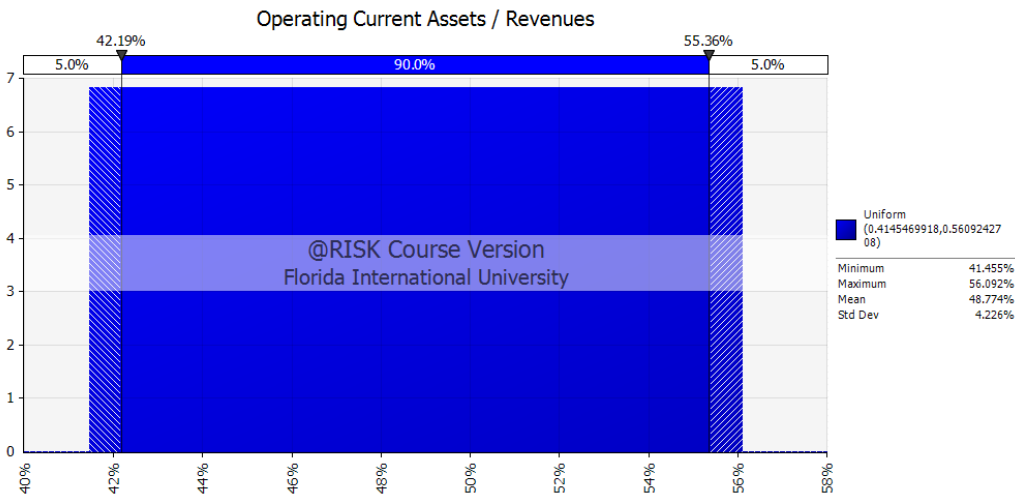


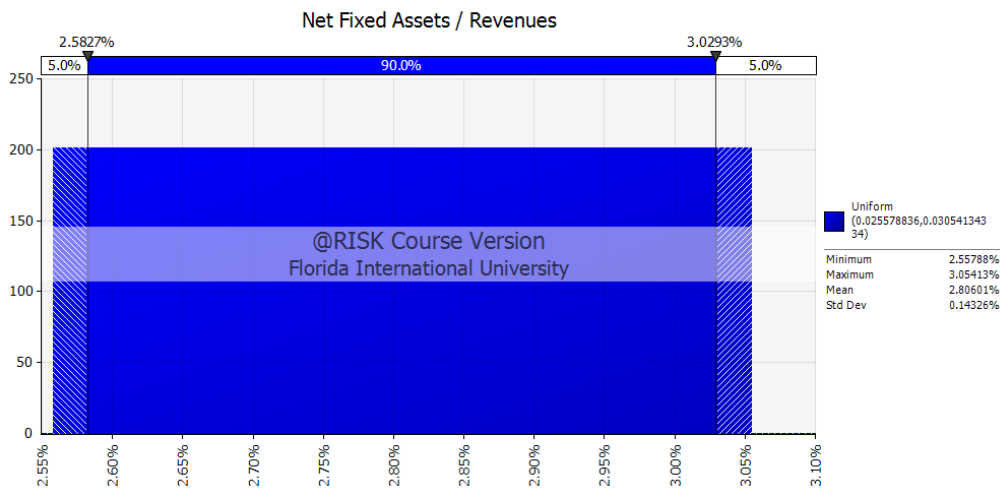
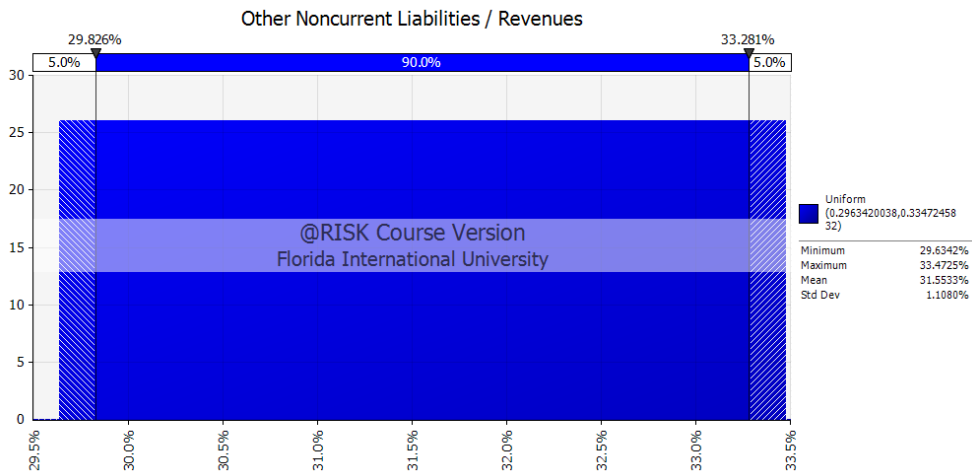
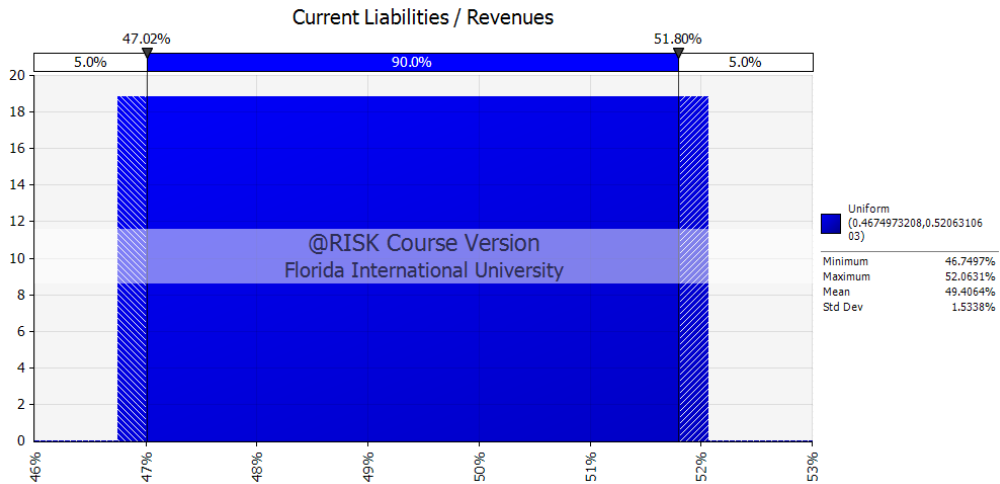
5.8 – Revenue Based Ratios

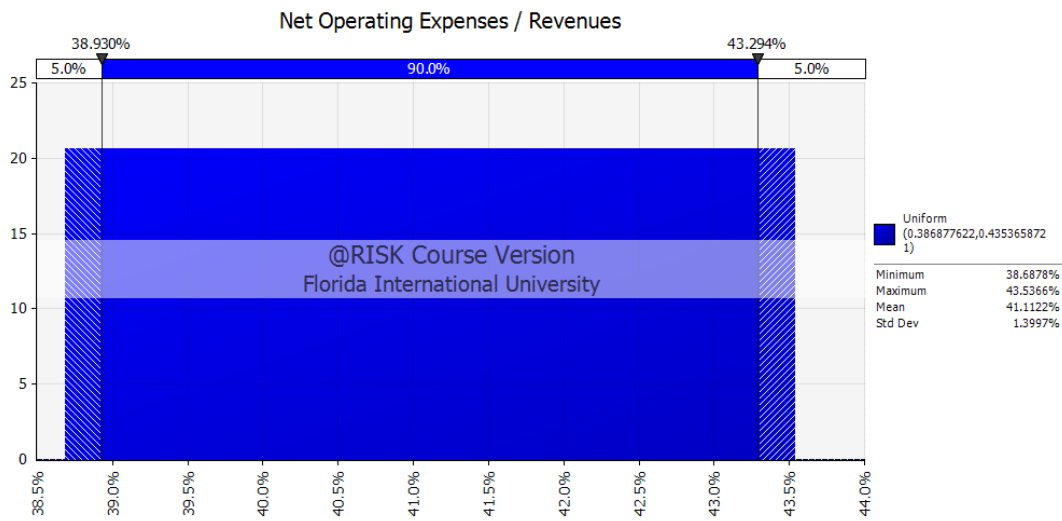
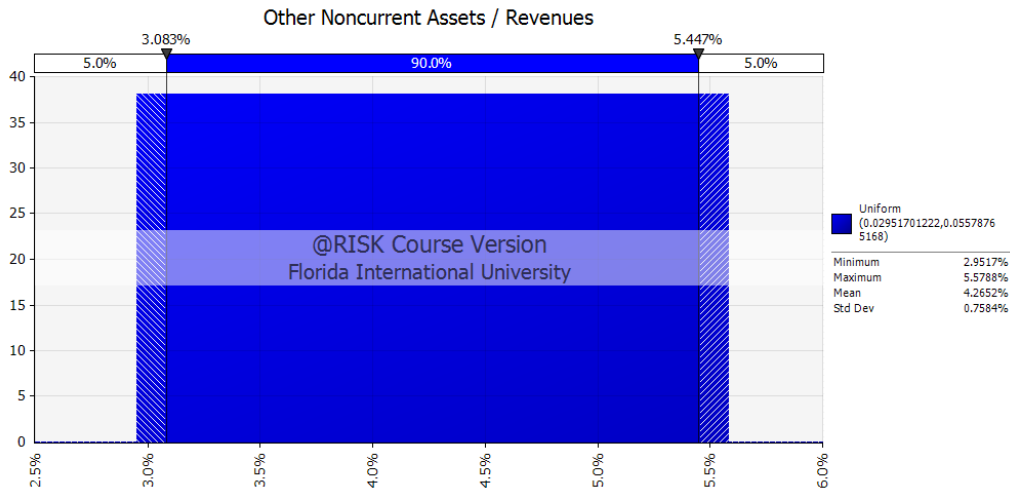
Six assumptions were determined as a proportion of the revenues given that the accounts are related to the operations of the company and, as a result, have a direct connection to the revenues. Among these assumptions we find the following ratios:

- Operating Current Assets / Revenues
- Current Liabilities / Revenues
- Other Noncurrent Liabilities / Revenues
- Net Fixed Assets / Revenues
- Other Noncurrent Assets / Revenues
- Net Operating Expenses to Revenues

All of these ratios have shown a stable trend for the past over the last 5 years of Netflix operations. A uniform distribution was assigned to these assumptions with the minimum value being the lowest ratio and in the last 5 years and the maximum value being the highest in the last 5 years.

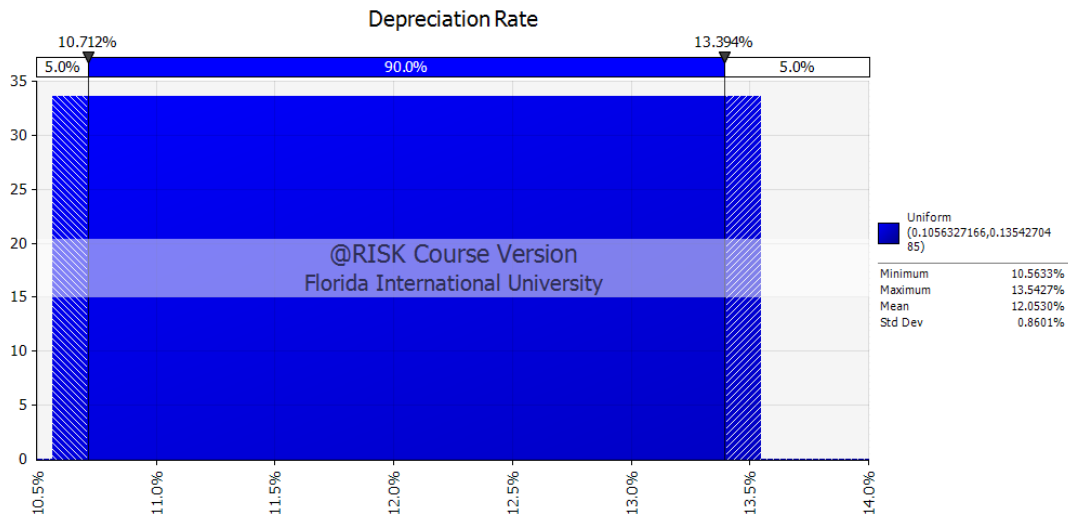






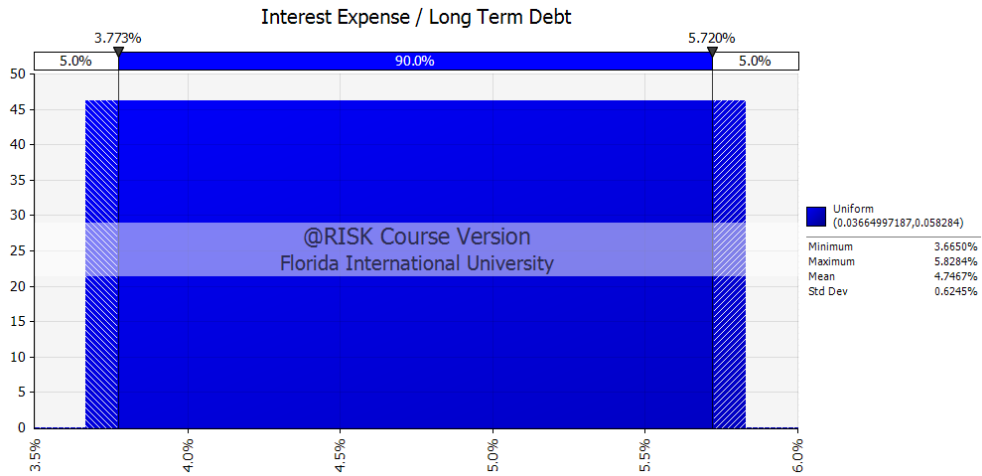
5.9 – Depreciation Rate

Depreciation rate was determined as a ratio of the depreciation expense to the gross assets for the past 5 years. Very stable depreciation rates were held over the last 5 years for Netflix with an average of 12.32%. A uniform distribution was assigned to this assumption given the stable trend with a minimum value of 10.56% and a maximum 13.54%, the 5-year low and high respectively.



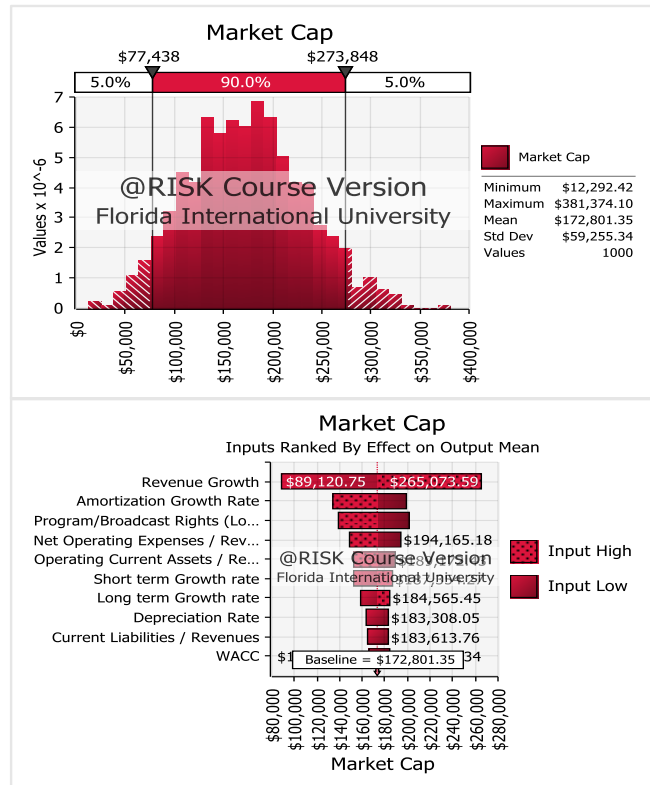
5.10 – Interest Expense / Long Term Debt

Interest rate as a ratio of interest expense to long term was assigned a uniform distribution as it showed a stable trend over the last 5 years. The minimum and maximum values determined by the 5-year low and high were 3.66% and 5.83% respectively.



5.11 – Output

Summary Statistics for Market Cap			
Statistics	Percentile		
Minimum	\$12,292.42	5%	\$77,437.72
Maximum	\$381,374.10	10%	\$97,649.96
Mean	\$172,801.35	15%	\$109,640.60
Std Dev	\$59,255.34	20%	\$121,067.86
Variance	3511195363	25%	\$131,611.51
Skewness	0.164010766	30%	\$138,634.84
Kurtosis	2.785760481	35%	\$146,245.85
Median	\$172,111.23	40%	\$155,871.22
Mode	\$141,010.48	45%	\$163,793.78
Left X	\$77,437.72	50%	\$172,111.23
Left P	5%	55%	\$180,102.62
Right X	\$273,847.68	60%	\$186,958.26
Right P	95%	65%	\$194,293.78
Diff X	\$196,409.96	70%	\$202,030.70
Diff P	90%	75%	\$211,532.49
#Errors	0	80%	\$223,559.89
Filter Min	Off	85%	\$235,828.56
Filter Max	Off	90%	\$252,349.56
#Filtered	0	95%	\$273,847.68



After 1,000 iterations the simulation determined a mean equity value of \$172,801.35 millions, which represents a 34.72% premium over the current market capitalization value. The highest sensitivity is related to the Revenue Growth Rate and the Amortization Growth rates given that these are two key elements in the operations of Netflix.

The percentiles range from \$77.4 billion dollars (5%) to 273.8 billion dollars (95%) showing a wide variation.

Going back to the previously calculated value of \$147,575.46 million from the PTA, it is concluded that it is a fair low limit, given that looking at the output table, there is only around a 35% probability for the Equity Value to be below it, taking the synergies into account.

6 – Negotiation

6.1 – Recommendation

Addressing every piece of information that has been provided so far, it is important to set the rules by which the negotiation should be conducted and under which terms an agreement could be achieved.

In first place, the open bid price will be the mean of the sensitivity analysis simulation, which seems to be a robust estimate that incorporates the main value drivers of Netflix as part of Apple. This is equal to an Equity value of \$172,801.35 million, which is equivalent to a stock price of \$398.72 and a premium of 34.72%.

Researchers have said over the last two years that Apple should pay a 20% premium at a minimum and even then would be unclear if Netflix would accept the deal or not. From this point of view, it is fair to say that this price is within a reasonable range to start of the negotiation.

Similarly, the walk-away price would be the Equity Value of \$147,386.51 million calculated using the PTA method. This is equivalent to a 14.91% premium based on what was achieved in deals of similar characteristics, and a price per share of \$340.08 (i.e. minimum acceptable exchange ratio in a cash-for-share deal). This is already below the aforementioned 20% but still creates a fair amount of value for the shareholders.

As for the method of payment that would be accepted, it would be allowed to go as far as to accept a 50% cash and 50% Apple stocks to conduct the deal. This has its foundations in the fact that the stock of the acquirer would benefit greatly after the deal and it would be appreciated in the years to come because of it.

6.2 – Negotiation Process

The meeting to proceed with the negotiation took place on April 13th, 2018 at approximately 6:30 P.M. Eastern Time.

Unfortunately, no deal could be achieved due to immense differences in the estimated Equity Value calculated by both parties. In this sense, the open bid of Apple was a share price of about \$180, which would have meant a discount over the current market cap of 61% and a 53% over the walk-away threshold.

Evidently, Apple failed to see the potential synergies and value drivers that could arise from an acquisition, stating that Netflix was overvalued by the market at the moment.

That does not seem to be the case, given that, as an update, on Tuesday 17th, 2018 and after the earnings for the first quarter were released, the stock closed at a price of \$336.06, reaching an

equity value 13.6% over this report's base standalone value and establishing a new all-time high for the company.

Regardless, the negotiation continued and the price offered by Apple could be rose to \$250 a stock. Still below the reference stock price and the walk-away value.

In sight that Apple was not willing to increase its offer, both teams left the negotiation room empty handed.

This is not necessarily a bad thing taking into account that, even though Apple's structure could have made things easier for Netflix's business model, Netflix is not doing bad on its own and it will continue to grow as an independent firm, as witnessed by the aforementioned price hike.

Apple was the one that needed this deal the most if they want to step inside the video streaming services industry, but if they are not willing to pay the price for it, there is nothing that Netflix can do about it.

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Chapter 4 - Investment Recommendation: MCD Stock Valuation

Table of Contents

1 – Introduction.....	103
1.1. – Company Description.....	103
1.2. – Economy and General Trends.....	104
2 – Financial Analysis.....	107
2.1. – Primary Ratios.....	108
2.2. – Secondary and Tertiary Ratios.....	108
2.3. – Summary and Conclusion.....	111
3 – Pro-forma Income Statement.....	111
4 – Valuation.....	113
4.1. – Capital Asset Pricing Model (CAPM).....	113
4.2. – Weighted Average Cost of Capital (WACC).....	115
4.3. – Growth Rate.....	115
4.3.1. – Short-term Growth Rate.....	115
4.3.2. – Long-term Growth Rate.....	116
4.4. – 2-Stage Discounted Free Cash Flow to Firm (FCFF) Model.....	116
4.5. – 2-Stage Dividend Growth Model.....	118
4.6. – Simple P/E Ratio Model.....	119
5 – Sensitivity Analysis.....	120
6 – Financial Health.....	121
6.1. – Value at Risk (VaR).....	121
6.2. – Altman Z-Score.....	122
7 – Technical Analysis.....	122
8 – Conclusion.....	125
9 – Appendix.....	127

1 – Introduction

1.1. – Company Description

McDonald's Corporation is the world's largest quick service restaurant (QSR) operator with 36,976 stores as of September 30, 2017. McDonald's segments its business into four categories:

- United States
- International Lead Markets
- High Growth Markets
- Foundational Markets & Corporate

McDonald's went from a standard geographic segmentation system to this new system because it wanted to group territories by growth and operating prospects rather than by geographical likeness. This is evident by the diversity present in each group. This new segmentation policy was also put in place at the same time McDonald's presented a new turn-around plan to drastically change its corporate structure. In 2015, McDonald's hired a new CEO, Steve Easterbrook, who focused on turning around the business, lackluster sales and improving its cost structure. McDonald's ultimately decided to reduce its operational portfolio as well as additional costs found within the corporate business unit. The company also embarked on a new plan to win back customers by focusing on quality and diversity.

In order to better understand McDonald's turnaround plan, one has to understand how the company fundamentally operates as well as its four business structures:

1. Company-operated stores: Stores owned and operated by McDonald's itself.
2. Conventional franchisees: Franchises who operate with McDonald's, in which the land and building were bought or leased by McDonald's Corp. The franchisee's major responsibility is to purchase the products from McDonald's as well as the equipment, signage, and décor needed for the location.
3. Developmental licensee: These are franchises in which the franchisee is responsible for everything included in the conventional franchisees model and the real estate assets.
4. Foreign affiliate: markets where McDonald's Corp. has provided equity to support the stores and records royalties from the investment, mainly present in the Japanese market.

As of the most recent quarter, McDonald's operates about 10% of the total amount of stores. The company has stated that it is a long-term goal to operate only 5% of its system-wide stores, and during the 2015 "Investors Day" meeting it laid out its turnaround plan. It stated that by fiscal year (FY) 2018, it wants to operate only 6% of its system-wide stores.

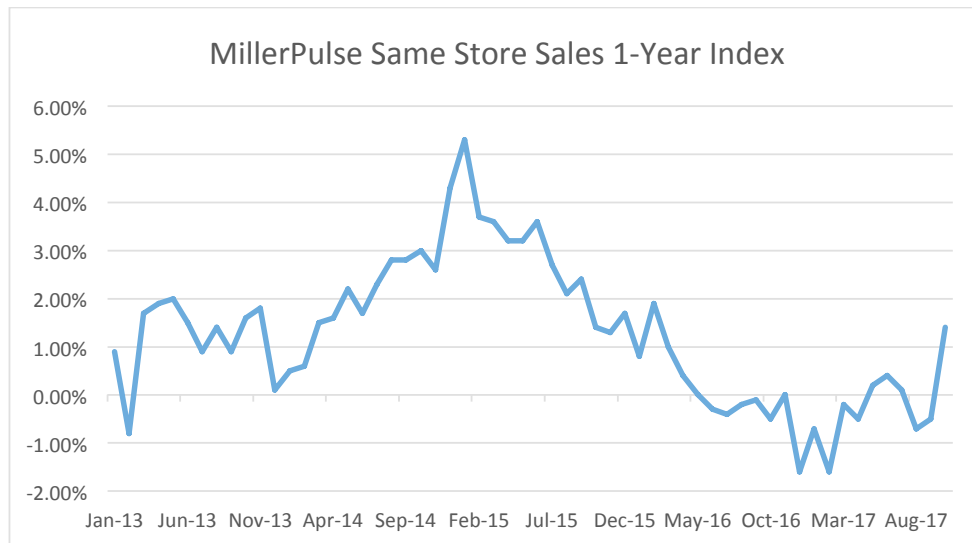
McDonald's is set to embark on its next greatest hit, which is called Experience of the Future (EOTF). EOTF will transform the fast food industry to a more consumer-focused business providing customers with more choices and control. Customers will be able to get McDonald's products in multiple ways—delivery, curbside pickup, in store, and drive-through. Stores will implement changes

that include new touchscreen monitors, updated aesthetics and new uniforms. With the focus on shifting from operator to customer, McDonald's wants to give customers new choices such as signature burgers with fresh beef, so that the meat will no longer be frozen, this is expected to happen in 2018. EOTF is expected to cost between \$150,000 and \$700,000 per store. This is expected to be completed by 2020, with the majority of upgrades taking place in 2017 and 2018.

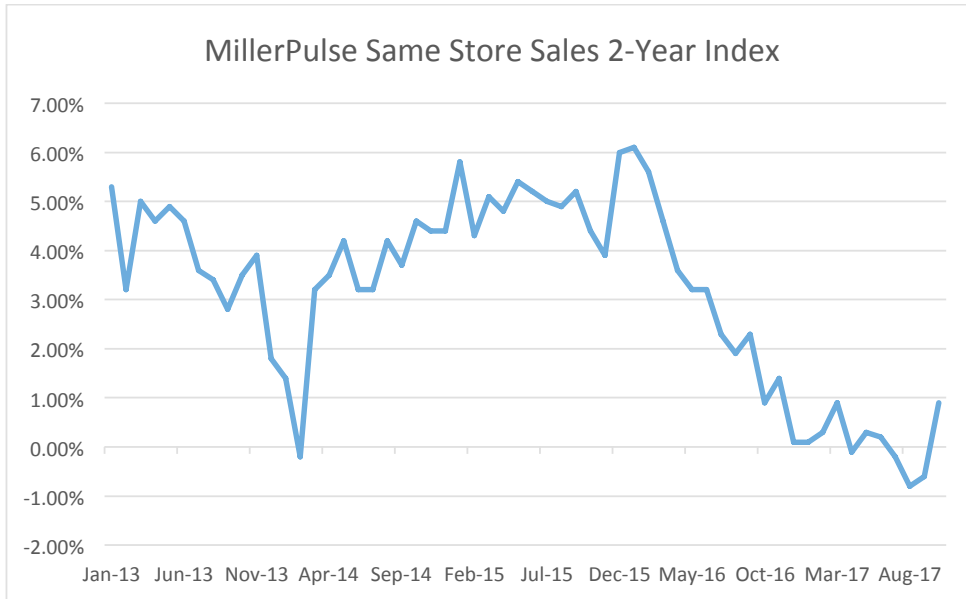
1.2. – Economy and General Trends

To better judge the performance of MCD, one must understand the economic environment in which it is currently operating. The economic indicators which apply to McDonald's the best are the Miller Pulse Same Store Sales (MPSSS) 1-year and 2-year Indexes and the United States Department of Labor's Food Away from Home (FAFH) and Food at Home (FAH) Inflation Indexes. The MPSSS Index measures the performance of restaurants that have been open for over a year and two years. Therefore, it represents the growth of the industry at large as it measures their older restaurants, which operate at more normal level than newer stores.

We decided to look at the prior four years of data, to gain a better understanding of the changes that the industry has undergone. The MPSSS 1-year Index indicates that restaurant industry experienced a boom from the mid-2013's to mid-2016's. After this boom the industry entered a down period, which they seem to be exiting based on the MPSSS reported in September 2017. As for the MPSSS 2-year Index, there is a similar pattern apparent except for its recessionary period which is very brief versus the 1-year index. This would indicate that these restaurants that have been opened longer were less susceptible to shocks in the industry.

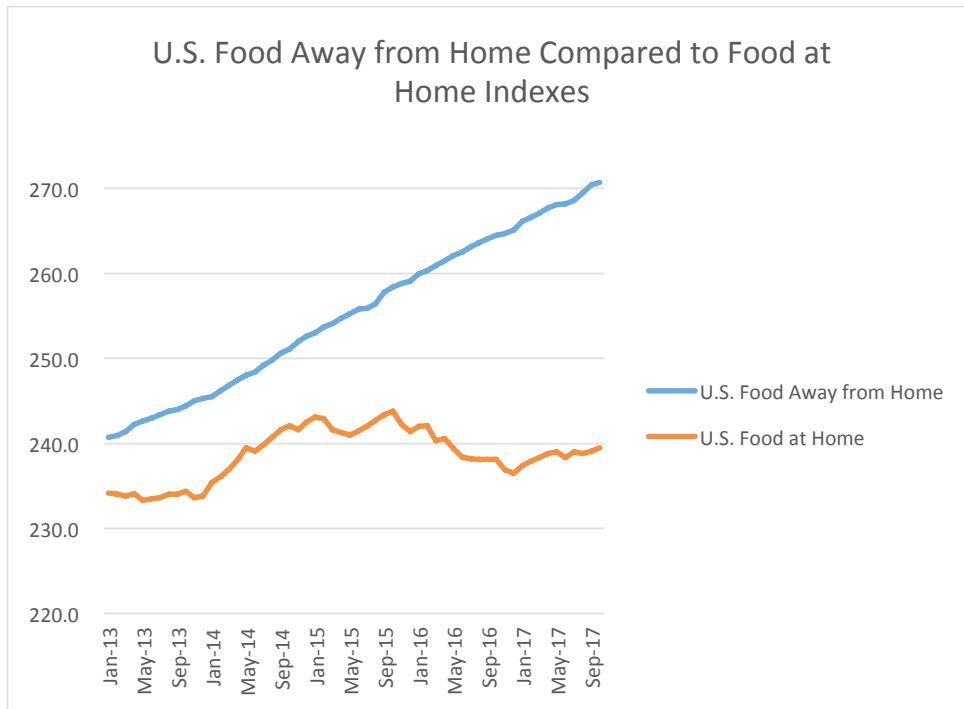


Source: Bloomberg



Source: Bloomberg

The performance of the food away from home has far outpaced the performance of food at home. These indicators tell economists how families are spending their money as it relates to their eating habits. For the period covered, which is from January 2013 to September 2017 saw a compounded monthly growth rate of 0.20% and an annualized compound growth rate of 2.46%. Food at home has grown at a monthly compound growth rate of 0.04% and an annualized compound growth rate of 0.46%. As can be seen by the chart below, US Food Away from Home has grown at a consistent pace while Food at Home has had lackluster growth. This would indicate that people are spending more of their money away from home than at home. This makes sense when looking at the overall performance of the economy which has been quite strong during the period.

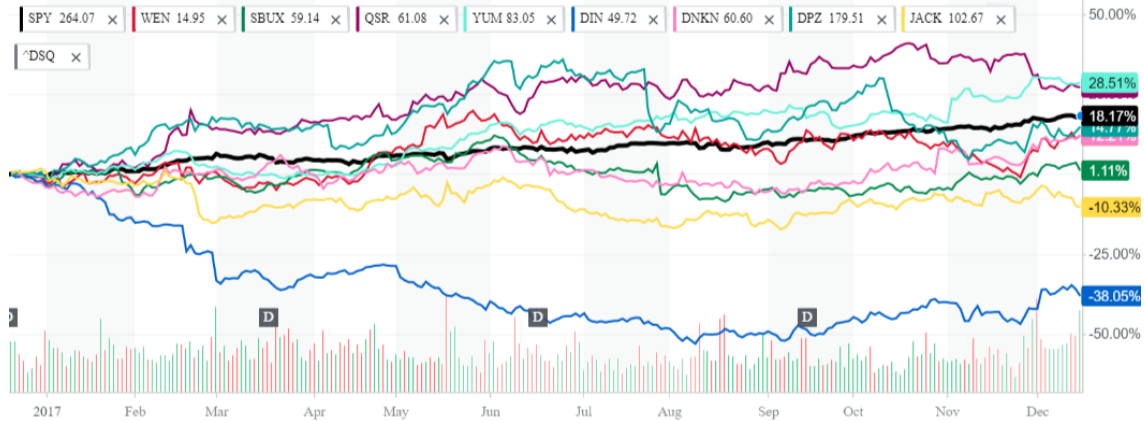


Source: Bloomberg

McDonalds competes in the quick service restaurant (QSR) sector which is part of the restaurant sector which itself is in the consumer discretionary sector. MCD's peer group includes Starbucks, Restaurant Brands International, Yum Brands, Dine Equity, Sonic, Dunkin Brands Group, Domino's Pizza, The Wendy's Company, and Jack in the Box. Apart from Dine Equity these companies operate in the QSR sector. Therefore, we felt these companies provide the best group of publicly traded companies that could be compared with MCD.

The restaurant industry has faced a rough 2016, with sluggish sales and low same store sales growth. Further more, the industry is controlled by a few large companies, with 70.70% of the market being controlled by the top 10 companies. The peer group's price to earnings (P/E) ratio is 28.04. Looking at the stock market performance we can see that only two of the companies have outperformed the S&P 500, Restaurant Brands International and Yum Brands. The Wendy's Company, Dunkin' Brands Group, and Domino's Pizza have had positive returns for the year but have slightly underperformed the S&P 500. Starbucks has a relatively flat year with stock price growth of 1.11%. DineEquity and Jack in the Box have had a poor year when it comes to their stock,

posting negative double digit stock returns of -38.06% and -10.33%, respectively.



Source: Yahoo

2016 Market Share Data

Quick Service Restaurants

Total Size of Market (millions):	\$192,585.80	(in USD millions)
Size of Top Ten:	70.70%	\$ 136,158.16
McDonald's Corp	20.10%	38,709.75
Restaurant Brands Int.	7.90%	15,214.28
Yum! Brands Inc	7.60%	14,636.52
Doctor's Associates Inc. (Subway)	6.50%	12,518.08
The Wendy's Co.	5.10%	9,821.88
Dunkin' Brands Group Inc.	4.40%	8,473.78
Chik-fil-A Inc.	4.10%	7,896.02
Panera Bread Co	2.50%	4,814.65
Chipotle Mexican Grill Inc.	2.30%	4,429.47
Sonic Corp	2.30%	4,429.47

Source: Bloomberg

2 – Financial Analysis

The return on equity (ROE) for McDonald's remained relative stable (from a low of 34.9% to a high of 37%) during the period of 2012 to 2014. The following year (2015), however, the company's return on equity nearly doubled to 64 percent. A closer look of the impacts on the ROE can be achieved by applying the DuPont System.

McDonald's Corp.

Return on Equity					
2012	2013	2014	2015	2016	
35.73%	34.89%	37.02%	63.90%	(212.61%)	

Net Profit Margin		Total Assets to Equity		Asset Turnover	
2012	2013	2014	2015	2016	
19.82%	19.87%	17.34%	17.82%	19.03%	
2.31	2.29	2.67	5.35	(14.07)	
0.78	0.77	0.80	0.67	0.79	

Capital Structure Impact		Tax Ratio		PPE/Capital Asset Turnover		Working Capital Turnover			
2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
0.94	0.94	0.93	0.92	0.89	67.64%	68.08%	64.54%	69.09%	68.26%
1.12	1.09	1.12	1.10	1.16	77.63	78.62	59.10	48.49	31.69

EBIT Margin		Gross Margin		SG&A		Payable Turnover		Inventory Turnover	
2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
31.21%	31.18%	28.97%	28.12%	31.45%	39.24%	38.79%	38.10%	38.52%	41.45%
8.91%	8.49%	9.07%	9.58%	9.68%	14.67	15.84	19.75	17.86	19.07
137.64	139.07	154.41	156.08	244.77					

Dep. & Amort.		Receivable Turnover		Cash Turnover	
2012	2013	2014	2015	2016	
5.40%	5.64%	5.99%	6.12%	6.16%	
20.04	21.30	22.60	19.57	16.70	
11.80	10.04	13.21	3.31	20.13	

Source: Company Financial, Sec.gov

2.1. – Primary Ratios

- Net profit margin decreased in 2014 by almost 2.5% from a high of 19.9% during the previous year. By 2016, net profit margins moved closer to pre-2014 levels. This positive turnaround in profitability performance was credited to higher operating (EBIT) margins, which surpassed by 24 basis points the last four -year period high of 31.2% achieved in 2012.
- Except for 2015, when the company ended the fiscal year with massive amounts of cash, the asset turnover ratio has remained steady at levels close to 0.80; and, thus, this operating efficiency ratio has had minimal impact on ROE.
- Leverage has increased significantly. By looking at the total assets to equity (leverage) ratio, there is clear evidence that the 2015 large increase in ROE is primarily due to a major equity reduction, while long-term debt financing has soared. In 2015, a \$6-billion share buyback program—that increased the accumulated treasury stock level to more than \$41 billion—resulted in the leverage ratio doubling from 2.67 to 5.35. By 2016, the company closed the year with \$2.2 billion of negative shareholder's equity, \$52.1 billion in treasury stock and \$26 billion in interest-bearing debt.

Looking back at the three primary drivers, there is sufficient evidence to conclude that the increase in the leverage ratio was the main cause of the significant increase in ROE. Both the net profit margin and the asset turnover ratio underperformed compared to their previous three-year average, specifically as they relate to 2015 results.

2.2. – Secondary and Tertiary Ratios

Profitability:

- Gross margin: The gross margin decreased from 39.2% in 2012 to 38.1% in 2014, and started to improve in 2015, leading to a major rise in 2016, when it set a new record level and surpassed the 40% mark by 145 basis points. Reading the financial reports for McDonald's confirms that the company has been executing a major turnaround program, introduced in 2015, which includes re-

franchising efforts of about 4,000 restaurant locations in a three-year period (ending in 2017) in order to get closer to its target of becoming 95% franchised. Even though the revenue stream coming from company-owned stores has decreased by almost 18%, and total revenues are down by more than 10%, total gross profits have stayed within the \$10 billion range in the last five years (2012-2016). This is the result of a 4% increase in total sales coming from franchised stores, as well as a more beneficial sales mix structure. Franchised revenue margins are in the 82% level compared to lower company-operated revenue margins in the 17% level.

- EBIT margin: Except for 2014 and 2015, the EBIT, or operating margin, has remained relatively consistent within a 31.2 to 31.5% range. It appears that improvements in gross margins were countered by other factors. We can look into additional secondary ratios and tertiary ratios to find where the inefficiencies are.
- Tax ratio: Except for 2014, the trend in the tax expense indicates that management has been efficient in managing taxes.
- Selling, general & administration (SG&A): In the last three years, beginning in 2013, SG&A expenses have increased by almost 1.20% of total revenues, getting closer to the 10% mark. For this reason, and in connection to the turnaround plan, the company announced a net target savings plan of \$500 million in selling, general & administration expenses to be achieved by the end of 2018. This would represent an approximate 20% reduction in SG&A compared to 2015 base levels (\$2.4 billion).
- Amortization: The amortization-to-sales ratio shows that this amount has been growing slightly year over year by an average of 15 basis points per year.

Efficiency

As noted before, total asset turnover has stayed at a consistent level. From our analysis of the secondary and tertiary ratios below, we see that this was the result of a net effect between an increase in the asset turnover ratio and a decrease in the working capital ratio.

- Property, plant & equipment/Capital asset turnover: This turnover ratio has had small changes over the last five years, except for the last calendar period when it went from 1.10 in 2015 to 1.16 in 2016. This supports the discussion above, in that the increase of overall asset efficiency is likely partly due to the selling of company-owned stores and the transitioning towards a less capital-intensive business model.
- Working capital turnover: We can see that working capital turnover has eroded over the past five years, from a high of 77.6 in 2012 to its current level of 31.7 in 2016. We looked further into the tertiary ratios to see where the erosion was occurring.
- Inventory turnover: Given that inventory represents a small portion of the company's working capital assets, the reported improvements on this ratio does not have a major impact on the overall working capital turnover results.

- Receivable turnover: This turnover has gone down from 19.6 to 16.7 in the last one-year period. Again, this is likely to be partly due to the re-franchising of stores, in that account receivables from franchised stores—resulting from royalty and rent payments—tend to have a longer collection period compared to over-the-counter (mostly cash) sales of operating company-owned restaurants.
- Payable turnover: There is an increase in payable turnover as account payables have had a larger percentage decrease than cost of goods sold. Again, this is likely the result of the company’s re-franchising efforts.
- Cash turnover: It appears that the company has been carrying excess cash from the issuance of long-term debt to fund its share repurchase program.

In summary, the combination of a decrease in receivable turnover and an increase in payable turnover has fueled the need for investment in net operating working capital (calculated as Inventory + A/R - A/P), which has grown from \$355 million in 2012 to \$777 million in 2016.

Leverage

Finally, it is important to analyze in further detail how solvency and liquidity have been affected given the major restructuring of the company’s balance sheet.

Solvency ratios:

- Interest-bearing debt to total assets: This debt ratio has skyrocketed from 38.5 percent in 2012 to a high of 83.7 percent in 2016. During this period, the company has received total net inflows from financing activities of \$15.7 billion, which combined with cash inflows from operating activities of \$33.4 billion, have provided the necessary funds to compensate shareholders with \$24.9 billion of share buybacks and with \$15.5 billion of dividend payments.
- Total liabilities to total assets (and capitalized leases): Including all balance sheet liabilities and off-balance sheet operating lease obligations—discounted to present value—this total debt ratio presents an even more leveraged scenario where the percentage of total obligations has increased from 66.5% to more than 105% of total assets.

Liquidity ratios:

- Current ratio and quick ratios: The current ratio is below the “rule of thumb” of 2:1, but it has stayed in a consistent range of 1.50 in all five years, except during 2015. When inventory is removed from this equation, the quick ratio stays practically at the same level; which reveals that the company has maintained a very liquid asset position, since holdings in cash and receivables have surpassed current liabilities in all years (except 2016).
- Interest coverage ratio: As the company has become more highly leveraged, the interest coverage ratio has decreased significantly from 16.2 to 8.7 in the last five years. This is the cumulative result of rising interest expenses and declining EBIT by 67% and 10%, respectively, during this same five-year period.

- Cash Flow-Long Term Debt Ratio (and operating lease obligations): This ratio has dropped by almost half from a strong ratio of 29.1% to just above an acceptable level in the 15-20% range.

2.3. – Summary and Conclusion

The company has undertaken significant financial risk during the last five years, and similar to many large corporations, has embraced the current opportunity to raise long-term funding at historic low rates in order to lower its cost of capital. Also, it has undertaken a significant turnaround effort to transition into a business model with more predictable earnings, higher profits and lower capital demands. The economic fundamentals appear to remain strong as the business has generated sufficient operating cash flow to cover for all capital requirements, debt-obligations, and dividend payments combined. Some key areas of concern need to be addressed if the company expects to maintain high levels of ROE supported by operating performance.

3 – Pro-forma Income Statement

McDonald's revenue is expected to have a compound annual growth rate of 0.10% over the projected five years. This is due to McDonald's selling its corporate-owned stores to franchisees. We are currently expecting McDonald's to reduce the percentage of owned stores from approximately 15% in 2016 to 6% in 2018, with a long-term goal of 5% that we believe will be achieved in 2019. According to McDonald's they will arrive at 6% operational capacity in 2018, with a further decline to 5% in either 2019 or 2020. At the projected Capex levels, it is expected for McDonald's to add approximately 400 new stores of the Conventional Franchisee variety, with an additional 400 stores being of the Developmental Licensee variety. The costs for building a new store are assumed to be between \$1.1 million and \$2.2 million. These costs were provided by an industry source, which has proven to be truthful throughout the years as the 400 number projected for 2017 has been backed up by the information McDonald's presented in its most recent quarterly report. As McDonald's is not only an operator but also a provider of services for franchisees, the company feels it is important for investors to understand the health of its system-wide sales. We have found that system-wide sales is a more predictable model for projecting major segments of the income statement. Therefore, we have tied system-wide sales growth to several line items on the income statement. For those line items that are not linked to system-wide sales, further analysis indicated that these items were linked to company-operated store sales. McDonald's has indicated that it expects system-wide sales to grow between 3-5% over the medium to long-term; therefore, we have grown system-wide sales at 4%. For our growth rate of revenue linked to McDonald's corporate entity segment, see our growth rate section.

Historical analysis indicates that rent, royalties, and initial fees were closely tied with system-wide sales and have had very little volatility in the five years prior to the forecasting period. Therefore, these items were held constant over the reporting period. There is no indication from McDonald's as to how it plans on selling the stores. Therefore, we felt it would not be wise to change

the percentages associated with any of these line items. McDonald's calls these three items "Franchise Revenue". It is expected that franchise revenue will go from 42.39% overall revenue to 49.33% by 2021. Nominal operating costs are expected to decrease from \$10.5 billion in 2017 to \$9.3 billion in 2021. The reduction in savings is due to McDonald's selling its corporate-owned stores. As for selling, general and administrative costs we expect them to grow during the forecasted period with a CAGR of 3.19%. This is possible due to the stable nature of historical SG&A costs as a percentage of system-wide sales. Therefore, we felt that this level should be maintained throughout the forecasting period.

	2016A	2017E	2018E	2019E	2020E	2021E
Systemwide Sales	\$85,002.0	\$86,431.3	\$89,888.5	\$93,484.1	\$97,223.4	\$101,112.4
Revenue	\$24,621.9	\$21,547.5	\$19,857.8	\$19,785.3	\$20,675.9	\$21,658.4
Company-operated Store Revenue	15,295.0	12,414.2	10,359.1	9,906.7	10,402.2	10,973.7
Rent	6,107.6	5,991.6	6,231.3	6,480.6	6,739.8	7,009.4
% of Systemwide	7.19%	6.93%	6.93%	6.93%	6.93%	6.93%
Royalty	3,129.9	3,062.0	3,184.5	3,311.9	3,444.4	3,582.1
% of Systemwide	3.68%	3.54%	3.54%	3.54%	3.54%	3.54%
Initial Fee	89.4	79.7	82.9	86.2	89.6	93.2
% of Systemwide	0.11%	0.09%	0.09%	0.09%	0.09%	0.09%
Cost of Goods Sold	(14,417.2)	(10,572.2)	(8,822.1)	(8,436.8)	(8,858.7)	(9,345.4)
Food & Paper	(4,896.9)	(4,148.7)	(3,461.9)	(3,310.7)	(3,476.3)	(3,667.3)
% of Company-operated Store Revenue	32.02%	33.42%	33.42%	33.42%	33.42%	33.42%
Payroll & employee benefits	(4,134.2)	(3,246.8)	(2,709.4)	(2,591.0)	(2,720.6)	(2,870.1)
% of Company-operated Store Revenue	27.03%	26.15%	26.15%	26.15%	26.15%	26.15%
Occupancy & other operating expenses	(3,667.7)	(2,940.9)	(2,454.0)	(2,346.9)	(2,464.2)	(2,599.6)
% of Company-operated Store Revenue	23.98%	23.69%	23.69%	23.69%	23.69%	23.69%
Franchised restaurants-occupance expenses	(1,718.4)	(235.8)	(196.8)	(188.2)	(197.6)	(208.5)
% of Systemwide	2.02%	1.90%	1.90%	1.90%	1.90%	1.90%
Gross Profit	10,204.7	10,975.3	11,035.7	11,348.5	11,817.2	12,312.9
Operating Expenses	(2,460.2)	(2,528.2)	(2,625.3)	(2,726.2)	(2,831.2)	(2,940.4)
Selling, General & Administration	(2,384.5)	(2,427.0)	(2,524.0)	(2,625.0)	(2,730.0)	(2,839.2)
% of Systemwide	2.81%	2.81%	2.81%	2.81%	2.81%	2.81%
Other Operating Expenses	(75.7)	(101.2)	(101.2)	(101.2)	(101.2)	(101.2)
Operating Income (Loss)	7,744.5	8,447.1	8,410.4	8,622.3	8,985.9	9,372.5
% of Systemwide	9.11%	9.77%	9.36%	9.22%	9.24%	9.27%
Interest Expense, Net	(884.8)	(899.7)	(935.7)	(973.1)	(1,012.0)	(1,052.5)
% of Systemwide	1.04%	1.04%	1.04%	1.04%	1.04%	1.04%
Nonoperating Income (Expense)	6.3	18.0	18.0	18.0	18.0	18.0
Pretax Income (EBT)	6,866.0	7,565.4	7,492.8	7,667.2	7,991.9	8,338.0
% of Systemwide	8.08%	8.55%	8.55%	8.55%	8.55%	8.55%
Income Tax Expense (Benefit)	(2,179.5)	(2,457.0)	(2,433.4)	(2,490.1)	(2,595.5)	(2,707.9)
Tax Rate	31.74%	32.48%	32.48%	32.48%	32.48%	32.48%
Net Income Available to Common Shareholders	4,686.5	5,108.4	5,059.3	5,177.1	5,396.4	5,630.1

Operating income is expected to grow at a CAGR of 2.10% over the forecasted period. This is due to McDonald's reorganizing its operations into a more customer-focused entity versus an operator-focused entity, with operating income going from \$10.2 billion in 2016 to \$12.3 billion in 2021. Interest expenses were held as a percentage of system-wide sales at the 2016 level of 1.04%. This is due to a spike in interest expenses in 2016, which were abnormal versus the previous four years. McDonald's added approximately \$11 billion in debt during 2015 and 2016. Therefore, we felt

that this elevated level would be a better reflection of the interest expenses. Other operating income or expenses are held as an average of the three previous historical periods.

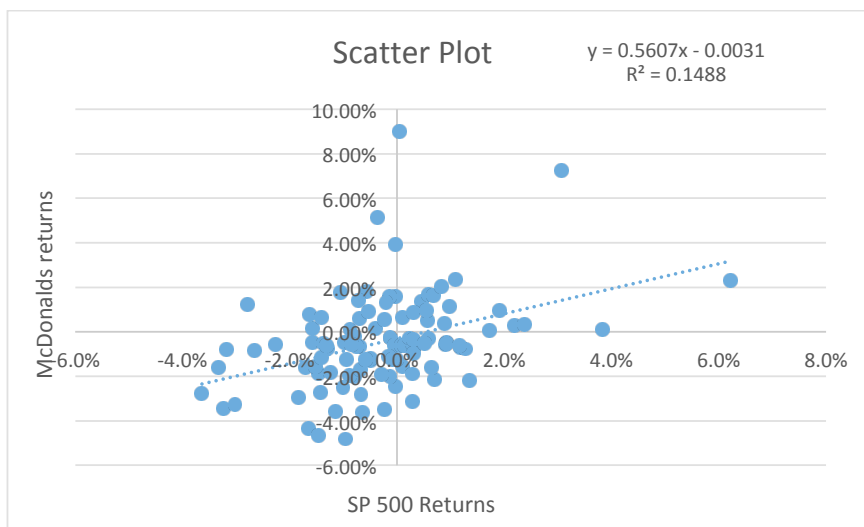
Pretax income is expected to go from \$6.8 billion in 2016 to \$8.3 billion in 2021. This represents a CAGR of 3.29% over the forecasted period. EBT margin is expected to increase from 35.11% of revenue in 2016 to 38.50% of revenue in 2021. We used a tax rate of 32.48%, which is a historical average of the previous five years. Therefore, we expect income taxes to increase from \$2.1 billion in 2016 to \$2.7 billion in 2021. Net income is expected to increase from \$4.7 billion in 2016 to \$5.6 billion in 2021 and a CAGR of 3.10%. This represents an increase in net income margin of 2 percentage points, going from 23.71% in 2016 to 25.99% in 2021.

4 – Valuation

4.1. – Capital Asset Pricing Model (CAPM)

To estimate the cost of equity, we used the capital allocation model (CAPM), where we needed to estimate the risk-free rate, the market risk premium and beta. For the risk-free rate we used the six-month treasury bill, which currently has a yield of 1.44%. The reason for using the six-month treasury bill rather than using a treasury security with a longer maturity is that the six-month is closer to the true risk-free rate as it is not considered to having maturity risk. For the market risk premium, we used 6%, which is the expected return on the market after subtracting the risk-free rate.

The systematic risk of a stock is represented by beta and it's the risk related to the entire market and therefore cannot be diversified away. To estimate McDonald's systematic risk, we used the S&P 500 index for the proxy of the overall market. We used the prior 104 weekly returns adjusted for dividends for both McDonald's and S&P 500, and the data set for the regression can be seen in Exhibit 5. In the regression model, S&P 500's returns represent the independent variable and McDonald's returns represent the dependent variable. The reason we decided to use weekly returns rather than monthly returns is because we were able to obtain more data for a more recent period of time compared to using the monthly returns. The coefficient of determination, represented by R^2 , was also higher compared to the other regression models. The graph below shows the scatter plot for the data set and the equation for the best-fit line (upper right corner).



The table below shows the result of the regression model, using the data analysis tool in Excel. The regression model calculated a raw beta of 0.5607 and an R^2 of 0.1488, meaning that 14.88% of McDonald's returns can be explained by the returns of the market. We then used the raw beta to calculate the adjusted beta for McDonald's, which is an estimate of the security's future beta under the assumption that the beta moves toward the market average overtime. The calculation we used to find the adjusted beta was $0.67 * \text{raw beta} + 0.33 * 1$, which gave us an adjusted beta of 0.7057. The beta of the overall market is equal to 1 and a beta below 1 indicates that the price of McDonald's will move less than the overall market and therefore be classified as a defensive stock.

<i>Regression Statistics</i>	
Multiple R	0.385749329
R^2	0.148802545
Adjusted R^2	0.140457472
Standard Error	0.019432753
Observations	104
<i>Coefficients</i>	
Intercept	-0.003077954
X Variable 1	0.560698008
Adjusted Beta	0.705667666

The equation to calculate the expected cost of equity using the CAPM formula is as follows:

$$E(K_e) = R_f + \beta(R_M - R_f)$$

Through the formula, we estimated the cost of equity for McDonald's to be 5.68%, which we have used throughout our calculations for the different models of valuation.

4.2. – Weighted Average Cost of Capital (WACC)

The weighted average cost of capital (WACC) is the firm's cost of capital when taking all the different sources of financing and weights into consideration. The formula to calculate the cost of capital for a firm is as follows:

$$WACC = \frac{\text{Equity}}{\text{Market value of firm's financing}} * K_e + \frac{\text{Debt}}{\text{Market value of firm's financing}} * K_d * (1 - t)$$

This formula is used when the company is only financed by common equity and debt. The current capital structure in McDonald's is 81.40% common equity financed and 18.60% debt financed. The cost of equity was calculated in the prior section using the CAPM formula, which estimated 5.68% cost of equity for McDonald's. To estimate the cost of debt for McDonald's, we used the company's seven U.S. denominated 10-year bonds and took a weighted average of the seven based on the amount of outstanding debt. Through the calculation, we estimate the cost of debt for McDonald's to be 3.70%. Applying the different inputs to the WACC formula gave the company an overall cost of capital of 5.09%.

4.3. – Growth Rate

4.3.1. – Short-term Growth Rate

To determine the growth rate to be used to forecast McDonald's sales, we decided to calculate the sustainable growth rate. The sustainable growth rate is the maximum rate of growth that a firm can sustain without having to increase financial leverage or require outside financing.

$$g = ROE * (1 - \text{Payout Ratio})$$

	2010	2011	2012	2013	2014	2015	2016
Net Income		5,503.10	5,464.80	5,585.90	4,757.80	4,529.30	4,686.50
Equity	14,634.20	14,390.20	15,293.60	16,009.70	12,853.40	7,087.90	(2,204.30)
Average Equity		14,512.20	14,841.90	15,651.65	14,431.55	9,970.65	2,441.80
ROE		37.92%	36.82%	35.69%	32.97%	45.43%	191.93%
Payout Ratio		47.42%	53%	55.76%	67.60%	71.30%	65.25%
Retention Ratio		52.58%	47.00%	44.24%	32.40%	28.70%	34.75%
		19.94%	17.31%	15.79%	10.68%	13.04%	66.70%

In order to calculate our growth rate we used data from 2011 to 2016. To get the ROE we used the net income for the company at the end of each year and divided by the average equity of two years. After getting all the growth rates by using the sustainable growth formula we averaged five years excluding 2016 since this year's presents itself as an outlier due to its negative equity. The average sustainable growth rate from 2011 to 2015 is 15.35%.

4.3.2. – Long-term Growth Rate

For the long-term normal growth rate, we decided to evaluate the projections for the fast food industry in 54 different countries using Euromonitor’s Passport database. The data presented growth rates of 2.68% (2018), 2.45% (2019), 2.30% (2020) and 2.13% (2021). Using a simple average for the forecasted years, the long-term normal growth of the fast food industry is 2.39%.



Market Sizes Historical/Forecast		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
54 Countries	Fast Food	568,222.60	586,754.00	605,871.50	626,950.60	641,213.80	660,867.30	678,567.00	695,207.40	711,220.00	726,354.50
			3.26%	3.26%	3.48%	2.28%	3.07%	2.68%	2.45%	2.30%	2.13%
											2.39%

Source: Euromonitor.com *For complete data refer to Exhibit X

4.4. – 2-Stage Discounted Free Cash Flow to Firm (FCFF) Model

Our primary model is the Free Cash Flow to the Firm (FCFF) model. We are using a 2-stage model featuring a supernormal growth phase, followed by a normalized phase. The growth rate used for the supernormal growth phase was calculated in Section X. The earnings before interest and tax (EBITDA), were calculated from the proforma income statement. Due to the variability in the amount of working capital in the four years prior to our projection phase. We felt that we should calculate free cash flow to the firm without taking out changes in working capital. We have also not projected a balance sheet, which would have been necessary for deriving projected changes in working capital.

FCFF (\$ millions)	2016A	2017E	2018E	2019E	2020E	2021E
EBITDA	\$8,974.8	\$9,033.6	\$9,141.7	\$9,547.2	\$10,140.4	\$10,673.5
Depreciation & Amortization	1,516.5	1,792.9	1,864.6	1,939.2	2,016.7	2,097.4
EBIT	\$7,458.3	\$7,240.7	\$7,277.1	\$7,608.1	\$8,123.7	\$8,576.1
Taxes	2,179.5	2,354.0	2,365.8	2,473.4	2,641.0	2,788.1
EBIAT	\$5,278.8	\$4,886.8	\$4,911.3	\$5,134.7	\$5,482.7	\$5,788.0
Plus: Depreciation & Amortization	1,516.5	1,792.9	1,864.6	1,939.2	2,016.7	2,097.4
Less: Capital Expenditures	1,821.1	2,240.1	2,329.7	2,422.9	2,519.8	2,620.6
Free Cash Flow	\$4,974.2	\$4,439.5	\$4,446.2	\$4,651.0	\$4,979.6	\$5,264.8

Terminal Value - Perpetuity Growth Method

Terminal Year FCF (2021E)	5,265
Perpetuity Growth Rate	2.39%

Terminal Value	\$199,898.5
Discount Factor	0.78
PV of Terminal Value	\$155,980.7

	2017E	2018E	2019E	2020E	2021E
Unlevered Free Cash Flow	4,439.5	4,446.2	4,651.0	4,979.6	5,264.8
Discount Factor	0.95	0.91	0.86	0.82	0.78
Present Value of Free Cash Flow	4,224.6	4,026.2	4,007.7	4,083.2	4,108.1
Cumulative Present Value of FCF	20,449.9				
Plus: Present Value of Terminal Value	155,980.7				
Enterprise Value (2016)	\$176,430.7				

Implied Equity Value and Share Price	
Enterprise Value (2016)	\$176,430.7
Less: Total Debt	25,955.7
Less: Preferred Securities	-
Less: Noncontrolling Interest	-
Plus: Cash and Cash Equivalents	1,223.4
Implied Equity Value	\$151,698.4
Fully Diluted Shares Outstanding	797.2
Implied Share Price	\$190.29

The discount factor formula used to determine the present value of FCFF is as follows:

$$Discount\ Factor = \frac{1}{(1 + g_s)^{ith\ year}}$$

Therefore, the present value of each free cash flow to the firm is calculated as:

$$PV\ FCFF = Free\ Cash\ Flow\ to\ the\ Firm \times Discount\ Factor$$

The terminal value is calculated as follows:

$$Terminal\ Year\ PV = \frac{2021E\ FCFF (1 + g_n)}{WACC - g_n}$$

The discount factor for the terminal value works in the same way as the discount factor for FCFF except the growth is changed to reflect the perpetuity growth rate. This generates a present value of terminal value of \$155,980.7 million. This terminal value represents approximately 88.29% of the Enterprise Value of McDonald's in 2016, based on our growth rates and WACC estimates. Taking the present value of terminal FCFF and adding the cumulative present value of FCFF, an enterprise value for 2016 of \$176,430.7 million is obtained. When adjusted for debt and cash, an implied equity value of \$151,698.4 million is obtained. This is the market capital of McDonald's according to our model, taking into account 797.2 million shares outstanding which was reported in the company's most recent 10-Q, an implied share price of \$190.29 was obtained.

4.5. – 2-Stage Dividend Growth Model

The next model used in the valuation of the firm is the 2-Stage Dividend Growth Model. This model calculates the target price of a stock based on the present value of the future dividends that are going to be paid by a stock. The 2-Stage variation works under the assumption that the dividends are going to grow at an elevated growth rate in the short-term and converge to a stable long-term growth rate in a period of N years.

This model can be explained by the formula below:

$$P^* = \left[D1 \left[\frac{1 - \left(\frac{1 + gs}{1 + k} \right)^N}{(k - gs)} \right] \right] + \left[\frac{D1(1 + gs)^{N-1}(1 + gn)}{(k - gn)(1 + k)^N} \right]$$

A number of terms are used in this formula, for which the meaning and computed value are explained below:

- P^* : Target price or intrinsic value of the stock.
- gs : Short-term abnormal growth rate as calculated in section 3.3. (15.35%).
- gn : Long-term stable growth rate as calculated in section 3.3. (2.39%).
- $D1$: Expected dividend for next year. Applying gs to the current dividend of \$3.61 paid in 2016, the result is an expected dividend in 2017 of approximately \$4.16.
- k : Cost of equity for the company as calculated in section 3.1. (5.68%)
- N : Number of years of abnormal growth. In order to be coherent with the forecasting made in the previous section, a period of five years of abnormal growth is also used for this model.

The result of the model with the use of the previous data is an intrinsic value of \$197.52, which compared to the current price of the stock of \$172.44, indicates that the stock is undervalued.

4.6. – Simple P/E Ratio Model

This is a method that is not based on the fundamental theorem of valuation and explains the target price of a stock based on an estimated value of the P/E of a company and its current Earnings Per Share (EPS). The model can be explained by the formula below:

$$P^* = (P/E)^* \times \text{current EPS}$$

The terms used in this formula and their computed value are explained below:

- P*: Target price or intrinsic value of the stock.
- P/E*: Target P/E Ratio computed for this model. Out of the different methods for computing this term, the historical average and the industry average were selected.
- Historical average: Using the formula $\frac{(P/E_{high} + P/E_{low})}{2}$ to compute the P/E for a specific period and gathering information from the last 3 years, P/E* is estimated with a value of 22.58.

Year	2017	2016	2015
P/E High	27.25	24.92	24.05
P/E Low	21.32	19.81	18.12
Average	24.29	22.37	21.08
P/E*	22.58		

Source: Bloomberg

- Industry average: With this method, P/E* is computed as the average P/E of firms of similar size and within the same industry (peers). Gathering information from Bloomberg on nine different corporations, P/E* is estimated with a value of 28.13.

Peer Name	Current P/E
Dunkin' Brands Group Inc.	26.66
Restaurant Brands International Inc.	36.60
Yum! Brands Inc.	29.77
Sonic Corp.	21.62
Domino's Pizza Inc.	35.09
The Wendy's Company	39.71
Jack in the Box Inc.	24.53
DineEquity Inc.	10.72
Starbucks Corp.	28.52
P/E*	28.13

Source: Bloomberg

Given the two different values calculated above, a range for the target price will be constructed instead of a single value.

- Current EPS: The last reported EPS for the company. According to Bloomberg, this value as of 2016 was 6.37.

The result of the model with the use of the previous data is an intrinsic value between \$143.82 and \$179.21. The current price of \$172.44 indicates that the stock is within the target range and therefore it is fairly valued.

5 – Sensitivity Analysis

A sensitivity analysis taking into account possible variations in the critical variables of each model was performed to better understand the accuracy of the target prices. The results are presented below.

2-Stage Discounted FCFF Model

		Short-term Growth Rate				
Target Price (2-Stage FCFF)	190.29	13.85%	14.58%	15.35%	16.12%	16.92%
WACC	4.59%	233.74	236.98	240.49	244.12	248.05
	4.83%	207.44	210.33	213.48	216.74	220.27
	5.09%	184.84	187.45	190.29	193.22	196.40
	5.34%	166.14	168.51	171.09	173.76	176.65
	5.61%	149.68	151.85	154.20	156.64	159.28

The most sensible variables estimated in this model are the short-term growth rate and the WACC of the firm. From the table, it can be seen that small changes in the short-term growth rate do not seem to affect the target price on a large scale, given that it jumps from \$184.84 to \$196.40 while keeping the WACC constant with the narrow yellow range. On the other hand, small changes in the WACC of the company have a tremendous impact over the target price going from a low of \$154.20 to a high of \$240.49. Therefore, if the WACC is not calculated using strong assumptions and the correct criteria, this model could be giving inaccurate results.

2-Stage Dividend Growth Model

		Short-term Growth Rate				
Target Price (2-Stage DGM)	197.52	13.85%	14.58%	15.35%	16.12%	16.92%
Cost of Equity	5.13%	224.12	231.12	238.67	246.42	254.77
	5.40%	203.57	209.89	216.73	223.74	231.30
	5.68%	185.58	191.32	197.52	203.89	210.75
	5.97%	170.45	175.70	181.38	187.20	193.48
	6.27%	156.95	161.77	166.98	172.32	178.07

The most sensible variables estimated in this model are the short-term growth rate and the cost of equity of the firm. Small changes in these variables have a similar behavior in this model, with the Cost of Equity being by far the most sensible one. Regardless, the effect of the short-term growth rate seems greater in comparison with the effect on the FCFF model, as seen by the wider range. On the contrary, the range for changes in the cost of equity seem to be narrower than the one with changes in the WACC in the FCFF model. The conclusion of the analysis is analogous to the one from the previous model.

Simple P/E Ratio Model

		Historical Average P/E Ratio (MCD)				
Target Price (P/E Model - Hist Avg)	143.82	21.73	22.87	24.08	25.28	26.54
EPS	5.75	124.92	131.49	138.41	145.33	152.60
	6.05	131.49	138.41	145.70	152.98	160.63
	6.37	138.41	145.70	153.36	161.03	169.08
	6.69	145.33	152.98	161.03	169.08	177.54
	7.02	152.60	160.63	169.08	177.54	186.41

		Average P/E Ratio (Industry)				
Target Price (P/E Model - Industry Avg)	179.21	25.39	26.73	28.13	29.54	31.02
EPS	5.75	145.97	153.65	161.74	169.83	178.32
	6.05	153.65	161.74	170.25	178.77	187.70
	6.37	161.74	170.25	179.21	188.17	197.58
	6.69	169.83	178.77	188.17	197.58	207.46
	7.02	178.32	187.70	197.58	207.46	217.84

In this case, both sensitivity analyses are displayed, the one using the historical average of the company and the one using the average of the industry along with the EPS of the company. Given that the target price is calculated as a simple product of the variables, it is not a surprise that both of them ended up being equally sensible in both cases. This fact, along with the wide range of prices, makes this the most inaccurate model.

6 – Financial Health

6.1. – Value at Risk (VaR)

The VaR is defined as the maximum probable loss of an investment over a given period of time for a given probability of error, and it gives an estimate of the worst-case scenario. To calculate VaR with α percent probability of error, we used Z statistics from the standard normal table to get Z_α , where Z_α is the number of standard deviations from the return R_α .

Using the following formulas, we were able to determine the VaR:

$$R_\alpha = Z_\alpha * \sigma + R_{0.5}$$

$$VaR = R_\alpha * V_p$$

V_p is equal to the value of the investment. In this case the investment would be the total market value for McDonald's. For this model, the VaR is applied at the 95% and 99% confidence levels. The results were the following:

95% Confidence			99% Confidence		
Price Stock	\$	172.44	Price Stock	\$	172.44
Shares Outstanding		797.2 Million	Shares Outstanding		797.2 Million
Market Value (V _p)	\$	137,469.17 Million	Market Value (V _p)	\$	137,469.17 Million
R _{o,s}		-0.46%	R _{o,s}		-0.46%
σ		2.10%	σ		2.10%
Z _α		(1.64)	Z _α		(2.33)
VaR	\$	(5,366.37) Million	VaR	\$	(7,330.04) Million

- With 95% confidence, the maximum loss would be \$5,366.37 million with a 5% chance of having a higher loss.
- With 99% confidence, the maximum loss would be \$7,330.04 million with a 1% chance of having a higher loss.

6.2. – Altman Z-Score

Studies have compared financial ratios of failed and non-failed firms and have concluded that stable ratios may exhibit the health of a company before bankruptcy. Thus, decline in key ratios may signal imminent failure. Edward Altman's Z-Score intends to measure health of the company by using key ratios as follows:

$$Z \text{ Score} = 1.2 * \frac{\text{Working Capital}}{\text{Total Assets}} + 1.4 * \frac{\text{Cumulative RE}}{\text{Total Assets}} + 3.3 * \frac{\text{EBIT}}{\text{Total Assets}} + 0.6 * \frac{\text{MV of Equity}}{\text{BV of Debt}} + 1 * \frac{\text{Sales}}{\text{Total Assets}}$$

Using this model, the prediction rule states that if $Z < 1.81$ the firm will go bankrupt, if $Z > 2.5$ the firm will stay healthy and if $1.81 < Z < 2.65$ the firm can go either way.

When the Z-Score model is applied to McDonald's, the results are:

Altman Z-Score					Financial Data 2016	
A = Working Capital ÷ Total Asset	0.04	1.20	0.05	Current Assets	\$	4,848.60
B = Retained Earnings ÷ Total Assets	1.49	1.40	2.09	Current Liabilities	\$	3,468.30
C = Profit Before Interest And Tax ÷ Total Assets	0.25	3.30	0.82	Net Working Capital	\$	1,380.30
D = Capitalization ÷ Total Debt	5.30	0.60	3.18	Total Assets	\$	31,023.90
E = Sales ÷ Total Assets	0.79	1.00	0.79	Retained Earnings	\$	46,222.70
				Sales	\$	24,621.90
				EBIT	\$	7,744.50
				Total Debt	\$	25,955.70
				Market Capitalization	\$	137,469.17
Z = 1.2*A + 1.4*B + 3.3*C + 0.6*D + 1.0*E						
McDonald's Z - Score			6.93			

The results show what is expected from a solid and stable company such as McDonald's. The Z-Score of 6.93 is much higher than the 2.5 parameter to determine that the company is healthy and with no risk of failure.

7 – Technical Analysis

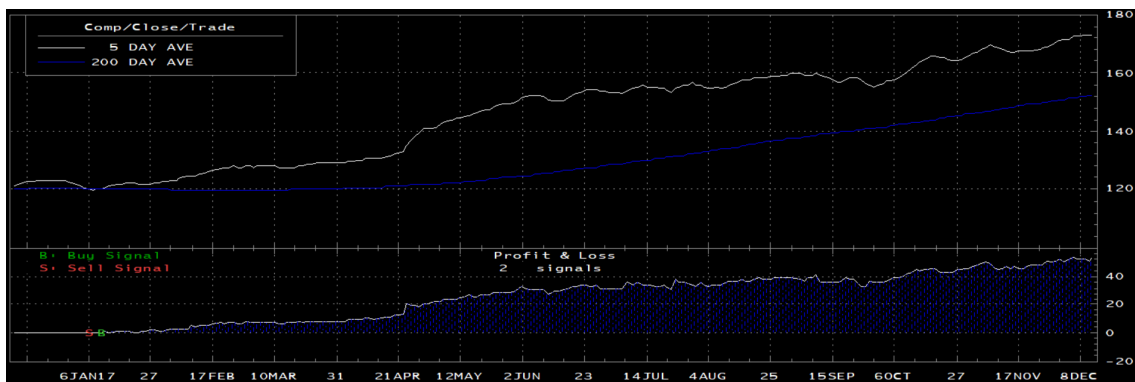
Technical analysis is a method used to evaluate securities and attempt to forecast the movement in future prices by looking at historical trends such as price and volume. In this type of analysis, the belief is that there is no need to do a top down approach where you look at the economic,

industry and company variables to estimate an intrinsic value of the company. Instead, technical analysis believes that the market is the best predictor of prices.

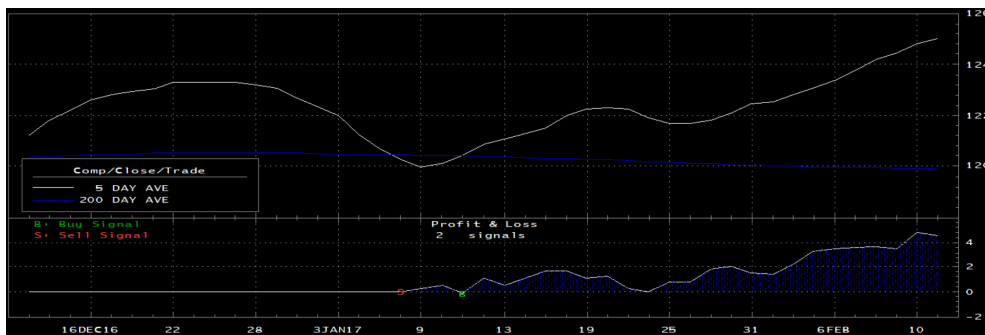
7.1. – Moving Average

The first technical analysis indicator we used to predict movement in future prices of the stock was the moving average (MA), which gives a smooth line and removes minor fluctuations. For this analysis we used the 200-day MA as our long-term MA, which is represented by the blue line in the two graphs below. For the short-term moving we used a five-day MA, which is represented by the white line in the graphs below. The general rule for this analysis is that when the short-term MA crosses the long-term MA from below it is a buy signal, as the stock is expected to continue to rise. When the short-term MA crosses the long-term MA from above it is a sell signal, as the stock is expected to continue to decline.

In the first graph below, the two MA for McDonald's over a one-year period is shown. It can be seen that there have not been many signals according to the MA indicator during the one-year period. During the period, there was only one sell and one buy signal, which can be seen more clearly in the second graph. The 8th of January, the five-day MA crossed the 200-day MA from above, which indicates a sell signal. The 11th of January, the five-day MA crossed the 200-day MA from below, which indicates a buy signal. Since then, the five-day MA has remained above, giving no other signals based on this model.



Source: Bloomberg.



Source: Bloomberg.

7.2. – Support and Resistance Analysis

In the support and resistance model, there are support and resistance lines applied to the chart showing the price trend of the security, which gives signals where the price is going to move. The support level is the lower line of the model, and when this line is breached it signals a new downward trend and is therefore a sell signal. The resistance level is the upper line of the model and when this line is breached it signals an upward trend and therefore is a buy signal. Below in the graph different support and resistances levels can be seen. Looking at the most recent trend of the stock price, the stock is currently between its red resistance level and grey support level indicating no strong upward or downward trend currently.

The price chart of McDonald's is shown by candlestick charting, which displays the high and low opening and closing prices for the security. The bigger the candlestick, the bigger the price movement during the day; and when the candle stick is black, it closed at a higher price relative to the opening price, and the inverse if the candle stick is blue. Consecutive long black candlesticks indicate that there is a strong buying pressure in the market and the price is bullish, whereas consecutive long blue candlestick indicates that there is a strong selling pressure and the market is bearish. The most recent candlestick indicates a bullish market, but as there is no trend to this pattern a prediction of price movement cannot be concluded from this signal.

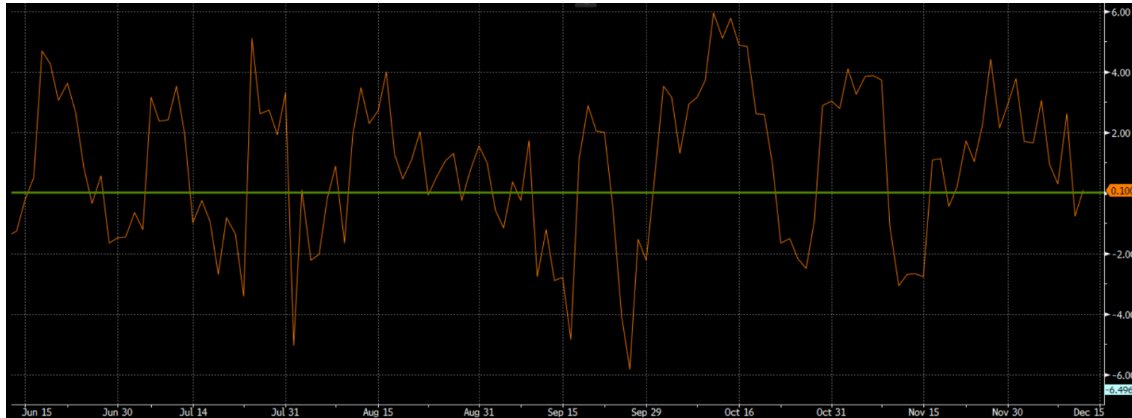


Source: Bloomberg.

7.3. – Momentum Oscillator

The last indicator we used for our technical analysis was the momentum oscillator (MO), which measures the acceleration in a stock's price. In the graph below, the five-day MO can be seen by the orange line, which is calculated by the price today subtracted by the price five days ago. The MO is plotted around the zero x-axis point and shown by the green line, to determine if the trend of the line is up, down or flat. When the MO crosses the midpoint from below, it is a bullish signal. When it crosses it from above, it is a bearish signal. As it can be seen on the graph below, the five-day MO just crossed the zero point from below, indicating a bullish market and the start of a possible new trend. However, it is currently just around the x-axis, making it hard to accurately predict the future

price movement based on this technical indicator. The reason for the chart showing high volatility in the five-day MA is due to the very short period the graph depicts.



Source: Bloomberg.

8 – Conclusion

A summary compiling all the results from the different models is shown below:

Model	Target Price		Stock Price	Valuation	Recommendation
2-Stage FCFF	\$ 190.29		\$ 172.44	Undervalued	Buy
2-Stage DGM	\$ 197.52			Undervalued	Buy
P/E Ratio	Upper Limit	\$ 179.21		Fairly Valued	Hold
	Lower Limit	\$ 143.82			

As it can be seen in the table, the 2-Stage FCFF model and the 2-Stage DGM give target prices that are significantly higher than the current market price of the stock. This entails that the stock is undervalued and therefore a good investment to buy. Regardless of that, the P/E ratio is giving much lower results, stating that the stock price is within a feasible range and, therefore, fairly valued.

To converge to a single target price, two averages of the three models were performed, taking into consideration the upper and lower limits of the P/E Ratio model, \$189.01 and \$177.21, respectively. This way, the P/E Ratio model is used as a reasonability check for the other two models, bringing down their high value. Finding the mid-point between the two averages gives a Target Price of \$183.11. This result implies that the stock is undervalued, but before giving a final recommendation, a recapitulation of the financial health of the company and its technical analysis is in place.

The calculated Value at Risk for the company is showing a 99% probability of losing only an approximate 5.33% over the investment within the next year, which entails a low associated risk for the stock overall. The Z-Score calculated in section 5 gives a result of 6.93, which is much higher than the 2.65 limit, meaning that the company bears almost no bankruptcy risk showing a stable financial health. Even though the Moving Average and the Support and Resistance study in the

Technical Analysis section failed to provide concrete evidence of a trend, the Momentum Oscillator did provide the subtle hint that the stock may become bullish in the near future.

This result, along with the last buying signal from the Moving Average study, indicates a certain probability that the stock will continue increasing its price. Furthermore, based on the financial stability of the company, the probable bullish behavior of the market and the results from the valuation model, we give McDonald's Corporation a buy recommendation.

9 – Appendix

Exhibit 1

McDonald's Corp.		CONSOLIDATED INCOME STATEMENT				
USD millions	2012	2013	2014	2015	2016	
Revenues	27,567.0	28,105.7	27,441.3	25,413.0	24,621.9	
Sales by Company-operated restaurants	18,602.5	18,874.2	18,169.3	16,488.3	15,295.0	
Revenues from franchised restaurants	8,964.5	9,231.5	9,272.0	8,924.7	9,326.9	
Cost of Sales	(16,750.7)	(17,203.0)	(16,985.6)	(15,623.8)	(14,417.2)	
Gross Profit	10,816.3	10,902.7	10,455.7	9,789.2	10,204.7	
SG&A	(2,455.2)	(2,385.6)	(2,487.9)	(2,434.3)	(2,384.5)	
Other operating income/expense, net	243.5	247.2	(18.6)	(209.4)	(75.7)	
EBIT	8,604.6	8,764.3	7,949.2	7,145.5	7,744.5	
Interest Income	15.9	15.5	14.7	9.4	7.1	
Interest Expense	(532.5)	(537.4)	(591.1)	(647.7)	(891.9)	
Other Income/Expenses	(9.0)	(37.9)	(0.8)	48.5	6.3	
Income Before Taxes	8,079.0	8,204.5	7,372.0	6,555.7	6,866.0	
Taxes	(2,614.2)	(2,618.6)	(2,614.2)	(2,026.4)	(2,179.5)	
Net income	5,464.8	5,585.9	4,757.8	4,529.3	4,686.5	

Exhibit 2

McDonald's Corp.		CONSOLIDATED BALANCE SHEET				
USD millions	2012	2013	2014	2015	2016	
Assets						
Current assets:						
Cash	2,336.1	2,798.7	2,077.9	7,685.5	1,223.4	
Short term investments						
Accounts receivable	1,375.3	1,319.8	1,214.4	1,298.7	1,474.1	
Inventories	121.7	123.7	110.0	100.1	58.9	
Prepaid expenses	1,089.0	807.9	783.2	558.7	565.2	
Assets of businesses held for sale					1,527.0	
Total current assets	4,922.1	5,050.1	4,185.5	9,643.0	4,848.6	
Non-current assets						
Investments in and advances to affiliates	1,380.5	1,209.1	1,004.5	792.7	725.9	
Property, plant and equipment	24,677.2	25,747.3	24,557.5	23,117.6	21,257.6	
Goodwill and intangible assets	2,804.0	2,872.7	2,735.3	2,516.3	2,336.5	
Other non-current assets	1,602.7	1,747.1	1,798.6	1,869.1	1,855.3	
Total assets	35,386.5	36,626.3	34,281.4	37,938.7	31,023.9	
Liabilities and shareholders' equity						
Current liabilities:						
Accounts payable	1,141.9	1,086.0	860.1	874.7	756.0	
Accrued liabilities	1,591.8	1,485.4	1,391.0	1,611.9	1,406.8	
Deferred revenues						
Current maturities of long-term debt				-	77.2	
Liabilities of businesses held for sale					694.8	
Other short term liabilities	669.4	598.6	496.8	463.8	533.5	
Total current liabilities:	3,403.1	3,170.0	2,747.9	2,950.4	3,468.3	
Non-current liabilities:						
Long-term debt	13,632.5	14,129.8	14,989.7	24,122.1	25,878.5	
Deferred income taxes	1,531.1	1,647.7	1,624.5	1,704.3	1,817.1	
Other long term liabilities	1,526.2	1,669.1	2,065.9	2,074.0	2,064.3	
	16,689.8	17,446.6	18,680.1	27,900.4	29,759.9	
Shareholder's equity:						
Common stock in issuance	5,795.5	6,010.7	6,255.7	6,550.0	6,774.5	
Other movements	796.4	427.6	(1,519.7)	(2,879.8)	(3,092.9)	
Common stock in treasury, at cost	(30,576.3)	(32,179.8)	(35,177.1)	(41,176.8)	(52,108.6)	
Retained earnings	39,278.0	41,751.2	43,294.5	44,594.5	46,222.7	
Total shareholders' equity	15,293.6	16,009.7	12,853.4	7,087.9	(2,204.3)	
Total liabilities and shareholders' equity	35,386.5	36,626.3	34,281.4	37,938.7	31,023.9	

Exhibit 3

McDonald's Corp.					
USD millions	2012	2013	2014	2015	2016
Operating activities					
Net income	5,464.8	5,585.9	4,757.8	4,529.3	4,686.5
Depreciation and amortization	1,488.5	1,585.1	1,644.5	1,555.7	1,516.5
Net change in operating working capital	(123.1)	(191.4)	(63.6)	167.9	167.0
Other operating cash flow adjustments	135.9	141.1	391.6	286.2	(310.4)
	<u>6,966.1</u>	<u>7,120.7</u>	<u>6,730.3</u>	<u>6,539.1</u>	<u>6,059.6</u>
Investing activities					
Capital expenditures	(3,049.2)	(2,824.7)	(2,583.4)	(1,813.9)	(1,821.1)
Purchases of businesses	(158.5)	(181.0)	(170.5)	(140.6)	(109.5)
Sales of restaurant businesses and property	394.7	440.1	489.9	554.2	1,058.5
Net capital asset acquisitions	(2,813.0)	(2,565.6)	(2,264.0)	(1,400.3)	(872.1)
Other investing cash flows	(354.3)	(108.2)	(40.9)	(19.7)	(109.5)
	<u>(3,167.3)</u>	<u>(2,673.8)</u>	<u>(2,304.9)</u>	<u>(1,420.0)</u>	<u>(981.6)</u>
Financing activities					
Net short-term borrowings	(117.5)	(186.5)	510.4	589.7	(286.2)
Net long-term debt	1,322.1	721.8	992.5	9,165.5	2,956.6
Other debt movements					
Treasury stock purchases	(2,615.1)	(1,777.8)	(3,198.6)	(6,099.2)	(11,171.0)
Common stock dividends	(2,896.6)	(3,114.6)	(3,216.1)	(3,230.3)	(3,058.2)
Other equity movements	470.9	325.9	306.3	368.3	299.4
Other financing cash flows	(13.6)	(11.8)	(12.8)	(58.7)	(3.0)
	<u>(3,849.8)</u>	<u>(4,043.0)</u>	<u>(4,618.3)</u>	<u>735.3</u>	<u>(11,262.4)</u>
Change in cash	(51.0)	403.9	(192.9)	5,854.4	(6,184.4)
Cash balance of businesses held for sale at end of year			-	-	(174.0)
Effect of exchange rates on cash and equivalents	51.4	58.7	(527.9)	(246.8)	(103.7)
Cash at beginning of year	<u>2,335.7</u>	<u>2,336.1</u>	<u>2,798.7</u>	<u>2,077.9</u>	<u>7,685.5</u>
Cash at end of year	<u>2,336.1</u>	<u>2,798.7</u>	<u>2,077.9</u>	<u>7,685.5</u>	<u>1,223.4</u>

Exhibit 4

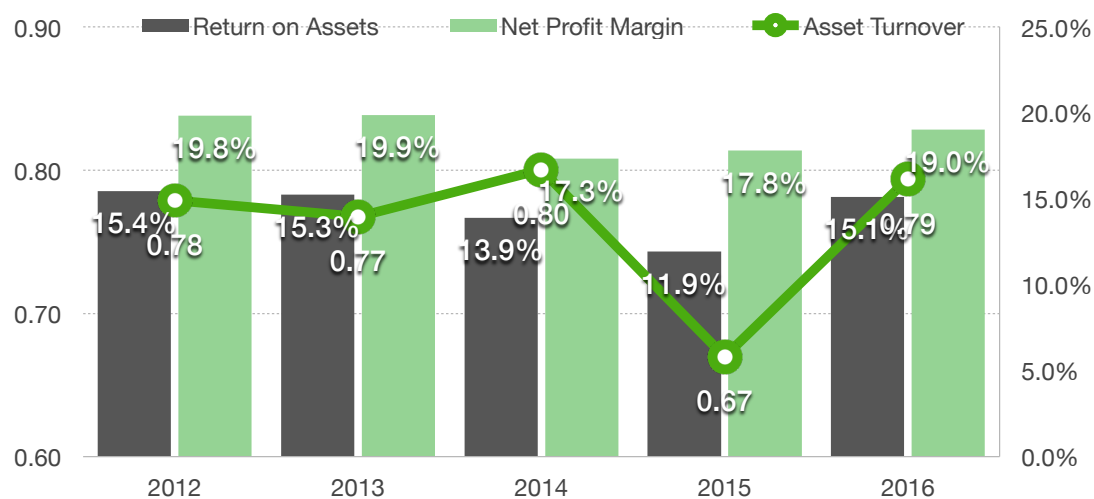


Exhibit 5

Raw Data – Beta Calculation

S&P 500			
Week	Date	Adj. Close	Return
0	11/9/2015	194.34	
1	11/16/2015	200.83	-3.2%
2	11/23/2015	201.07	-0.1%
3	11/30/2015	201.13	0.0%
4	12/7/2015	193.71	3.8%
5	12/14/2015	191.92	0.9%
6	12/21/2015	198.53	-3.3%
7	12/28/2015	196.78	0.9%
8	1/4/2016	185.24	6.2%
9	1/11/2016	181.28	2.2%
10	1/18/2016	183.89	-1.4%
11	1/25/2016	186.98	-1.7%
12	2/1/2016	181.41	3.1%
13	2/8/2016	180.14	0.7%
14	2/15/2016	185.32	-2.8%
15	2/22/2016	188.30	-1.6%
16	2/29/2016	193.46	-2.7%
17	3/7/2016	195.71	-1.1%
18	3/14/2016	197.27	-0.8%
19	3/21/2016	197.07	0.1%
20	3/28/2016	200.75	-1.8%
21	4/4/2016	198.40	1.2%
22	4/11/2016	201.59	-1.6%
23	4/18/2016	202.74	-0.6%
24	4/25/2016	200.18	1.3%
25	5/2/2016	199.59	0.3%
26	5/9/2016	198.66	0.5%

S&P 500			
Week	Date	Adj Close	Return
27	5/16/2016	199.37	-0.4%
28	5/23/2016	203.97	-2.3%
29	5/30/2016	204.01	0.0%
30	6/6/2016	203.81	0.1%
31	6/13/2016	200.36	1.7%
32	6/20/2016	198.21	1.1%
33	6/27/2016	204.72	-3.2%
34	7/4/2016	207.38	-1.3%
35	7/11/2016	210.49	-1.5%
36	7/18/2016	211.86	-0.6%
37	7/25/2016	211.74	0.1%
38	8/1/2016	212.78	-0.5%
39	8/8/2016	213.05	-0.1%
40	8/15/2016	213.13	0.0%
41	8/22/2016	211.91	0.6%
42	8/29/2016	212.96	-0.5%
43	9/5/2016	208.00	2.4%
44	9/12/2016	208.09	0.0%
45	9/19/2016	211.71	-1.7%
46	9/26/2016	212.01	-0.1%
47	10/3/2016	210.77	0.6%
48	10/10/2016	208.89	0.9%
49	10/17/2016	209.74	-0.4%
50	10/24/2016	208.32	0.7%
51	10/31/2016	204.41	1.9%
52	11/7/2016	212.13	-3.6%

S&P 500			
Week	Date	Adj Close	Return
53	11/14/2016	214.17	-1.0%
54	11/21/2016	217.13	-1.4%
55	11/28/2016	215.32	0.8%
56	12/5/2016	222.02	-3.0%
57	12/12/2016	220.58	0.7%
58	12/19/2016	222.54	-0.9%
59	12/26/2016	220.39	1.0%
60	1/2/2017	224.02	-1.6%
61	1/9/2017	223.86	0.1%
62	1/16/2017	223.55	0.1%
63	1/23/2017	225.75	-1.0%
64	1/30/2017	226.12	-0.2%
65	2/6/2017	228.26	-0.9%
66	2/13/2017	231.79	-1.5%
67	2/20/2017	233.41	-0.7%
68	2/27/2017	235.07	-0.7%
69	3/6/2017	234.35	0.3%
70	3/13/2017	233.70	0.3%
71	3/20/2017	231.58	0.9%
72	3/27/2017	233.44	-0.8%
73	4/3/2017	232.90	0.2%
74	4/10/2017	230.24	1.2%
75	4/17/2017	232.30	-0.9%
76	4/24/2017	235.75	-1.5%
77	5/1/2017	237.36	-0.7%
78	5/8/2017	236.65	0.3%

S&P 500			
Week	Date	Adj Close	Return
79	5/15/2017	235.98	0.3%
80	5/22/2017	239.35	-1.4%
81	5/29/2017	241.79	-1.0%
82	6/5/2017	241.03	0.3%
83	6/12/2017	240.27	0.3%
84	6/19/2017	241.93	-0.7%
85	6/26/2017	240.61	0.6%
86	7/3/2017	240.91	-0.1%
87	7/10/2017	244.35	-1.4%
88	7/17/2017	245.66	-0.5%
89	7/24/2017	245.69	0.0%
90	7/31/2017	246.19	-0.2%
91	8/7/2017	242.91	1.3%
92	8/14/2017	241.51	0.6%
93	8/21/2017	243.35	-0.8%
94	8/28/2017	246.62	-1.3%
95	9/4/2017	245.36	0.5%
96	9/11/2017	247.96	-1.0%
97	9/18/2017	249.44	-0.6%
98	9/25/2017	251.23	-0.7%
99	10/2/2017	254.37	-1.2%
100	10/9/2017	254.95	-0.2%
101	10/16/2017	257.11	-0.8%
102	10/23/2017	257.71	-0.2%
103	10/30/2017	258.45	-0.3%
104	11/6/2017	258.67	-0.1%

McDonalds			
Week	Date	Adj. Close	Return
0	11/9/2015	103.81	
1	11/16/2015	107.53	-3.5%
2	11/23/2015	107.83	-0.3%
3	11/30/2015	110.55	-2.5%
4	12/7/2015	110.43	0.1%
5	12/14/2015	110.99	-0.5%
6	12/21/2015	112.80	-1.6%
7	12/28/2015	112.39	0.4%
8	1/4/2016	109.86	2.3%
9	1/11/2016	109.58	0.3%
10	1/18/2016	112.64	-2.7%
11	1/25/2016	117.76	-4.3%
12	2/1/2016	109.79	7.3%
13	2/8/2016	112.19	-2.1%
14	2/15/2016	110.86	1.2%
15	2/22/2016	111.37	-0.5%
16	2/29/2016	112.33	-0.9%
17	3/7/2016	116.51	-3.6%
18	3/14/2016	118.94	-2.0%
19	3/21/2016	118.18	0.6%
20	3/28/2016	121.76	-2.9%
21	4/4/2016	122.66	-0.7%
22	4/11/2016	122.49	0.1%
23	4/18/2016	120.30	1.8%
24	4/25/2016	121.25	-0.8%
25	5/2/2016	125.17	-3.1%
26	5/9/2016	123.49	1.4%

McDonalds			
Week	Date	Adj Close	Return
27	5/16/2016	117.48	5.1%
28	5/23/2016	118.14	-0.6%
29	5/30/2016	116.32	1.6%
30	6/6/2016	118.15	-1.5%
31	6/13/2016	118.07	0.1%
32	6/20/2016	115.33	2.4%
33	6/27/2016	116.26	-0.8%
34	7/4/2016	117.14	-0.8%
35	7/11/2016	119.36	-1.9%
36	7/18/2016	123.85	-3.6%
37	7/25/2016	113.61	9.0%
38	8/1/2016	115.11	-1.3%
39	8/8/2016	115.41	-0.3%
40	8/15/2016	111.06	3.9%
41	8/22/2016	110.51	0.5%
42	8/29/2016	111.85	-1.2%
43	9/5/2016	111.50	0.3%
44	9/12/2016	112.18	-0.6%
45	9/19/2016	114.02	-1.6%
46	9/26/2016	112.26	1.6%
47	10/3/2016	110.40	1.7%
48	10/10/2016	111.02	-0.6%
49	10/17/2016	110.87	0.1%
50	10/24/2016	109.09	1.6%
51	10/31/2016	108.06	1.0%
52	11/7/2016	111.15	-2.8%

McDonalds			
Week	Date	Adj Close	Return
53	11/14/2016	116.77	-4.8%
54	11/21/2016	117.42	-0.5%
55	11/28/2016	115.06	2.0%
56	12/5/2016	118.92	-3.2%
57	12/12/2016	120.86	-1.6%
58	12/19/2016	120.76	0.1%
59	12/26/2016	119.37	1.2%
60	1/2/2017	118.43	0.8%
61	1/9/2017	119.15	-0.6%
62	1/16/2017	119.90	-0.6%
63	1/23/2017	120.49	-0.5%
64	1/30/2017	121.84	-1.1%
65	2/6/2017	123.39	-1.3%
66	2/13/2017	125.33	-1.5%
67	2/20/2017	126.17	-0.7%
68	2/27/2017	125.43	0.6%
69	3/6/2017	126.43	-0.8%
70	3/13/2017	127.08	-0.5%
71	3/20/2017	127.78	-0.5%
72	3/27/2017	128.04	-0.2%
73	4/3/2017	128.39	-0.3%
74	4/10/2017	129.18	-0.6%
75	4/17/2017	131.80	-2.0%
76	4/24/2017	138.24	-4.7%
77	5/1/2017	142.22	-2.8%
78	5/8/2017	143.60	-1.0%

McDonalds			
Week	Date	Adj Close	Return
79	5/15/2017	146.36	-1.9%
80	5/22/2017	148.05	-1.1%
81	5/29/2017	151.88	-2.5%
82	6/5/2017	150.59	0.9%
83	6/12/2017	151.09	-0.3%
84	6/19/2017	153.73	-1.7%
85	6/26/2017	152.26	1.0%
86	7/3/2017	155.35	-2.0%
87	7/10/2017	154.36	0.6%
88	7/17/2017	153.01	0.9%
89	7/24/2017	154.93	-1.2%
90	7/31/2017	152.91	1.3%
91	8/7/2017	156.37	-2.2%
92	8/14/2017	156.83	-0.3%
93	8/21/2017	157.88	-0.7%
94	8/28/2017	158.87	-0.6%
95	9/4/2017	159.71	-0.5%
96	9/11/2017	156.92	1.8%
97	9/18/2017	158.91	-1.3%
98	9/25/2017	156.68	1.4%
99	10/2/2017	159.60	-1.8%
100	10/9/2017	165.37	-3.5%
101	10/16/2017	166.30	-0.6%
102	10/23/2017	165.39	0.6%
103	10/30/2017	168.65	-1.9%
104	11/6/2017	170.77	-1.2%

Week	Date	S&P 500	MCD	Week	Date	S&P 500	MCD	Week	Date	S&P 500	MCD	Week	Date	S&P 500	MCD
1	11/16/2015	-3.23%	-3.46%	27	5/16/2016	-0.36%	5.12%	53	11/14/2016	-0.95%	-4.82%	79	5/15/2017	0.28%	-1.88%
2	11/23/2015	-0.12%	-0.28%	28	5/23/2016	-2.26%	-0.56%	54	11/21/2016	-1.36%	-0.55%	80	5/22/2017	-1.41%	-1.14%
3	11/30/2015	-0.03%	-2.46%	29	5/30/2016	-0.02%	1.57%	55	11/28/2016	0.84%	2.05%	81	5/29/2017	-1.01%	-2.52%
4	12/7/2015	3.83%	0.10%	30	6/6/2016	0.10%	-1.55%	56	12/5/2016	-3.02%	-3.24%	82	6/5/2017	0.31%	0.86%
5	12/14/2015	0.93%	-0.50%	31	6/13/2016	1.72%	0.07%	57	12/12/2016	0.65%	-1.61%	83	6/12/2017	0.32%	-0.34%
6	12/21/2015	-3.33%	-1.61%	32	6/20/2016	1.09%	2.37%	58	12/19/2016	-0.88%	0.08%	84	6/19/2017	-0.69%	-1.71%
7	12/28/2015	0.89%	0.36%	33	6/27/2016	-3.18%	-0.80%	59	12/26/2016	0.98%	1.17%	85	6/26/2017	0.55%	0.97%
8	1/4/2016	6.23%	2.30%	34	7/4/2016	-1.28%	-0.75%	60	1/2/2017	-1.62%	0.79%	86	7/3/2017	-0.13%	-1.99%
9	1/11/2016	2.19%	0.26%	35	7/11/2016	-1.47%	-1.86%	61	1/9/2017	0.07%	-0.61%	87	7/10/2017	-1.40%	0.64%
10	1/18/2016	-1.42%	-2.72%	36	7/18/2016	-0.65%	-3.63%	62	1/16/2017	0.14%	-0.62%	88	7/17/2017	-0.53%	0.88%
11	1/25/2016	-1.65%	-4.35%	37	7/25/2016	0.06%	9.02%	63	1/23/2017	-0.97%	-0.49%	89	7/24/2017	-0.01%	-1.24%
12	2/1/2016	3.07%	7.26%	38	8/1/2016	-0.49%	-1.31%	64	1/30/2017	-0.16%	-1.11%	90	7/31/2017	-0.20%	1.32%
13	2/8/2016	0.71%	-2.15%	39	8/8/2016	-0.13%	-0.26%	65	2/6/2017	-0.94%	-1.26%	91	8/7/2017	1.35%	-2.21%
14	2/15/2016	-2.80%	1.20%	40	8/15/2016	-0.04%	3.92%	66	2/13/2017	-1.52%	-1.55%	92	8/14/2017	0.58%	-0.29%
15	2/22/2016	-1.58%	-0.45%	41	8/22/2016	0.58%	0.50%	67	2/20/2017	-0.70%	-0.66%	93	8/21/2017	-0.76%	-0.67%
16	2/29/2016	-2.66%	-0.85%	42	8/29/2016	-0.49%	-1.20%	68	2/27/2017	-0.70%	0.59%	94	8/28/2017	-1.32%	-0.62%
17	3/7/2016	-1.15%	-3.60%	43	9/5/2016	2.39%	0.31%	69	3/6/2017	0.31%	-0.79%	95	9/4/2017	0.51%	-0.53%
18	3/14/2016	-0.79%	-2.04%	44	9/12/2016	-0.04%	-0.61%	70	3/13/2017	0.28%	-0.51%	96	9/11/2017	-1.05%	1.78%
19	3/21/2016	0.10%	0.64%	45	9/19/2016	-1.71%	-1.61%	71	3/20/2017	0.92%	-0.54%	97	9/18/2017	-0.59%	-1.25%
20	3/28/2016	-1.84%	-2.94%	46	9/26/2016	-0.14%	1.57%	72	3/27/2017	-0.80%	-0.21%	98	9/25/2017	-0.71%	1.42%
21	4/4/2016	1.18%	-0.73%	47	10/3/2016	0.59%	1.68%	73	4/3/2017	0.23%	-0.27%	99	10/2/2017	-1.23%	-1.83%
22	4/11/2016	-1.58%	0.14%	48	10/10/2016	0.90%	-0.56%	74	4/10/2017	1.16%	-0.61%	100	10/9/2017	-0.23%	-3.49%
23	4/18/2016	-0.57%	1.82%	49	10/17/2016	-0.40%	0.14%	75	4/17/2017	-0.89%	-1.99%	101	10/16/2017	-0.84%	-0.56%
24	4/25/2016	1.28%	-0.78%	50	10/24/2016	0.68%	1.63%	76	4/24/2017	-1.47%	-4.66%	102	10/23/2017	-0.23%	0.55%
25	5/2/2016	0.30%	-3.13%	51	10/31/2016	1.91%	0.95%	77	5/1/2017	-0.68%	-2.80%	103	10/30/2017	-0.29%	-1.93%
26	5/9/2016	0.47%	1.36%	52	11/7/2016	-3.64%	-2.78%	78	5/8/2017	0.30%	-0.96%	104	11/6/2017	-0.09%	-1.24%

Exhibit 6

Regression Output – Beta Calculation

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.385749329
R Square	0.148802545
Adjusted R Square	0.140457472
Standard Error	0.019432753
Observations	104

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.006733625	0.006733625	17.83118537	5.25434E-05
Residual	102	0.038518455	0.000377632		
Total	103	0.045252079			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.003077954	0.001937591	-1.58854653	0.115257864	-0.006921157	0.000765249	-0.00692116	0.000765249
X Variable 1	0.560698008	0.132781908	4.222698825	5.25434E-05	0.297325723	0.824070294	0.297325723	0.824070294

Raw Beta

Adjusted Beta = (0.67) * Raw Beta + (0.33) * 1 = 0.705667666

Exhibit 7

Raw Data Long Term Normal Growth Rate



Market Sizes Historical/Forecast											
Geography	Category	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
USA	Fast Food	213,718.50	216,832.00	222,931.50	232,763.70	237,745.60	245,951.80	252,569.30	258,893.50	264,973.60	270,615.40
China	Fast Food	108,980.60	114,070.00	119,514.00	122,795.30	125,463.40	128,641.00	131,541.00	134,139.30	136,576.70	138,835.80
Japan	Fast Food	39,488.50	41,787.30	42,021.70	42,759.80	44,770.60	45,988.90	47,093.90	47,846.90	48,293.60	48,600.10
Brazil	Fast Food	20,991.40	23,080.80	24,605.30	24,819.80	23,988.30	24,046.10	24,288.80	24,622.70	25,055.60	25,629.80
India	Fast Food	15,568.20	16,075.40	16,747.10	17,771.50	18,901.40	20,075.70	21,241.70	22,419.90	23,616.00	24,777.20
United Kingdom	Fast Food	20,650.60	20,558.80	20,682.20	21,314.50	21,756.30	22,337.80	22,853.30	23,315.20	23,723.00	24,089.90
Canada	Fast Food	17,760.30	18,224.80	18,603.30	19,110.80	19,155.00	19,586.30	19,820.60	19,942.90	20,079.40	20,272.90
Australia	Fast Food	11,564.10	11,682.20	11,905.90	12,394.40	12,858.60	13,285.90	13,735.70	14,212.10	14,715.40	15,238.10
Germany	Fast Food	12,525.70	12,625.70	12,552.40	12,873.60	13,159.00	13,354.10	13,523.10	13,672.10	13,802.40	13,915.60
France	Fast Food	10,883.60	11,163.20	11,436.40	11,589.70	11,862.70	12,169.30	12,526.40	12,887.80	13,244.80	13,600.60
South Korea	Fast Food	7,997.30	8,458.40	9,103.00	9,753.80	10,411.50	10,868.20	11,279.40	11,638.20	11,961.70	12,245.10
Mexico	Fast Food	9,156.70	9,411.00	9,563.80	9,872.10	10,050.00	10,441.30	10,800.60	11,134.20	11,455.70	11,774.10
Saudi Arabia	Fast Food	5,633.90	5,930.60	6,237.10	6,411.40	6,614.50	6,884.20	7,177.70	7,476.50	7,784.30	8,029.40
Russia	Fast Food	6,254.90	6,990.30	7,296.10	6,999.40	6,939.20	7,043.10	7,195.90	7,393.50	7,643.40	7,933.50
Philippines	Fast Food	2,879.60	3,075.40	3,349.50	3,687.40	4,073.90	4,495.60	4,890.70	5,256.20	5,575.20	5,829.70
Spain	Fast Food	3,629.40	3,573.90	3,842.50	4,128.10	4,451.00	4,752.10	5,032.40	5,276.00	5,509.50	5,729.20
Taiwan	Fast Food	4,296.60	4,559.80	4,741.00	4,899.30	4,981.50	5,034.30	5,078.90	5,112.90	5,137.10	5,153.30
Italy	Fast Food	4,235.50	4,152.60	4,136.80	4,248.20	4,356.00	4,437.00	4,514.00	4,579.00	4,633.70	4,685.50
Argentina	Fast Food	2,772.10	3,196.60	3,542.10	3,875.40	3,638.80	3,759.30	3,927.10	4,134.00	4,374.70	4,642.30
Thailand	Fast Food	2,383.90	2,650.10	2,942.70	3,197.70	3,494.90	3,728.30	3,949.40	4,167.90	4,382.40	4,588.90
United Arab Emirates	Fast Food	2,291.10	2,456.30	2,678.20	2,870.40	2,964.20	3,104.60	3,265.50	3,434.70	3,619.30	3,786.20
Netherlands	Fast Food	3,257.80	3,258.20	3,302.00	3,394.60	3,471.80	3,523.50	3,569.40	3,606.20	3,639.50	3,675.00
Hong Kong, China	Fast Food	2,870.10	3,021.20	3,086.90	3,184.90	3,284.70	3,345.20	3,422.20	3,496.60	3,565.60	3,630.50
Sweden	Fast Food	2,497.40	2,565.40	2,624.00	2,685.90	2,726.10	2,777.30	2,819.30	2,862.10	2,905.40	2,949.10
South Africa	Fast Food	2,228.60	2,296.20	2,336.90	2,388.60	2,459.80	2,534.90	2,613.10	2,686.10	2,761.50	2,839.90
Poland	Fast Food	1,713.50	1,866.30	1,994.90	2,187.40	2,358.00	2,461.40	2,544.00	2,610.40	2,668.60	2,719.10
Turkey	Fast Food	1,394.90	1,567.10	1,730.60	1,904.80	2,012.10	2,126.70	2,252.60	2,368.80	2,472.60	2,567.00
Peru	Fast Food	1,644.60	1,892.50	2,051.50	1,979.30	2,036.30	2,117.50	2,202.00	2,285.90	2,365.90	2,441.80
Belgium	Fast Food	2,458.50	2,465.60	2,388.80	2,395.30	2,342.10	2,340.80	2,340.50	2,333.90	2,329.00	2,315.20
Egypt	Fast Food	2,006.70	2,023.70	2,038.90	2,048.90	2,024.00	2,026.50	2,055.80	2,106.90	2,188.20	2,253.50
Switzerland	Fast Food	1,776.20	1,820.70	1,869.10	1,897.20	1,948.60	1,975.10	2,005.00	2,035.10	2,066.50	2,099.30
Chile	Fast Food	1,262.80	1,400.00	1,393.40	1,390.00	1,478.80	1,572.30	1,679.20	1,795.40	1,909.80	2,034.90
New Zealand	Fast Food	1,459.60	1,543.20	1,627.80	1,699.10	1,771.10	1,817.90	1,858.90	1,895.00	1,924.80	1,953.10
Indonesia	Fast Food	1,453.70	1,560.90	1,562.90	1,553.60	1,592.80	1,638.30	1,691.00	1,751.20	1,819.40	1,895.30
Finland	Fast Food	1,716.10	1,682.70	1,691.80	1,734.40	1,779.30	1,791.50	1,803.20	1,820.30	1,851.50	1,881.90
Malaysia	Fast Food	1,175.90	1,177.60	1,215.80	1,275.00	1,375.20	1,449.20	1,533.90	1,631.00	1,742.10	1,870.40
Austria	Fast Food	1,647.80	1,632.10	1,627.30	1,673.70	1,706.70	1,737.80	1,764.00	1,786.70	1,805.20	1,822.20
Israel	Fast Food	1,640.80	1,665.90	1,656.70	1,686.20	1,702.10	1,710.90	1,720.30	1,731.80	1,742.30	1,752.40
Colombia	Fast Food	1,248.40	1,391.80	1,490.00	1,510.60	1,492.00	1,510.00	1,555.30	1,595.90	1,631.70	1,662.40
Ireland	Fast Food	1,137.00	1,168.00	1,218.00	1,285.00	1,349.40	1,401.10	1,439.10	1,467.60	1,489.90	1,507.90
Denmark	Fast Food	1,264.30	1,269.60	1,279.20	1,358.70	1,406.70	1,422.10	1,439.90	1,455.10	1,471.00	1,482.20
Norway	Fast Food	1,326.60	1,300.20	1,344.10	1,382.30	1,385.60	1,411.20	1,429.70	1,444.10	1,455.50	1,463.90
Vietnam	Fast Food	604.90	654.80	724.10	781.00	815.80	902.50	976.10	1,067.60	1,178.80	1,233.40
Morocco	Fast Food	642.90	704.60	753.10	799.30	845.10	903.10	965.20	1,032.00	1,103.90	1,180.90
Greece	Fast Food	1,277.10	1,146.10	1,181.20	1,147.00	1,177.20	1,182.90	1,185.10	1,181.90	1,164.20	1,141.50
Portugal	Fast Food	799.90	778.80	815.40	853.60	890.00	925.60	959.50	990.90	1,019.00	1,044.30
Singapore	Fast Food	893.00	917.80	908.80	922.60	940.30	958.00	975.80	993.90	1,012.10	1,031.00
Hungary	Fast Food	493.20	505.10	535.00	572.90	616.40	672.70	727.40	787.30	848.60	912.60
Czech Republic	Fast Food	575.90	584.00	594.00	617.60	652.10	689.40	720.70	752.90	779.60	805.50
Romania	Fast Food	435.90	437.90	467.80	504.50	537.70	562.40	588.00	612.60	635.90	658.80
Ukraine	Fast Food	371.50	417.60	379.20	409.20	480.20	492.10	512.20	536.60	565.50	588.30
Venezuela	Fast Food	763.20	969.10	1,026.70	1,051.80	376.00	327.20	327.00	332.90	340.30	349.60
Bulgaria	Fast Food	276.80	268.20	271.50	278.30	292.40	299.20	306.00	311.80	317.00	321.90
Slovakia	Fast Food	244.50	245.90	251.50	261.00	271.00	276.10	280.20	285.40	291.60	297.10
54 Countries	Fast Food	568,222.60	586,754.00	605,871.50	626,950.60	641,213.80	660,867.30	678,567.00	695,207.40	711,220.00	726,354.50
			3.26%	3.26%	3.48%	2.28%	3.07%	2.68%	2.45%	2.30%	2.13%
											2.39%

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VII) Final Comments, Mayor Giveaways, and Conclusion

The required research in *“Banking on the Cloud: 2020 Insights”* enhanced the abilities of every member of the team to look for and process information. That process gave access to technical information about Cloud Computing that could not normally be obtained through a traditional career in finance. Additionally, the need to look forward opened the minds of every teammate and provided a better understanding of what’s to come in the years to come. It also required sharp presentation skills, given that a brief introduction to the project was presented to people with expertise in the industry.

“Initial Public Offering: The Case of Square, Inc.” provided the understanding of the meaning and the mechanics of an IPO in the United States, its implications, advantages, and regulation. The need to think “out of the box” in terms of value drivers and to construct a narrative to value a company that was described as a Unicorn provided invaluable additions to the way the valuation process is traditionally assessed.

Financial analysis and modeling was greatly improved by *“Hypothetical M&A: Netflix-Apple”* through the learning of new tools and models that allowed for a better valuation of the target firm in an M&A deal. The need to get historical data and to analyze it was crucial to be able to come up with possible synergies that could arise once the acquisition was done. As a bonus, the team’s negotiation skills were obviously enhanced through this project, given that the negotiation lasted almost two hours and, although the deal could not be done, it was a wonderful experience.

“Investment Recommendation: MCD Stock Valuation” facilitated the study and selection from the immense array of valuation and technical analysis tools that were provided in the course, which increased the team’s repertoire and analytical capabilities. The use of Bloomberg terminals as a tool to get the information was certainly beneficent and greatly complemented by the Bloomberg Capital Markets course that was taken as a graduation requirement. Additionally, giving an investment decision and then track the results later on provided an opportunity to self-check the work that was done in the project.

The papers here presented act as a first look into the corporate track that was performed in the Master of Science in Finance of FIU and highlight the major abilities that were needed and learned to be able to carry out the work.

They were undoubtedly helpful in building the professional profile of the people in the cohort and provided a rich exchange with the professors.