



Have Fintech companies higher values than their traditional financial peers?

Master in Corporate Finance

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Leiria, September of 2020



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Leiria, September of 2020

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Dedication

“When everything seems to be going against you, remember that the airplane takes off against the wind, not with it.”

Henry Ford

To my family, son, mom, dad, and sister.

Acknowledgements

This dissertation was a huge challenge to me, and there are people who supported assertively to its achievement, to all of them: thanks.

Especial thanks to my Professors Maria João Jorge and Elisabete Fernanda Mendes Duarte, for the patience and encouragement.

I would also like to thanks to my old friends in Cuba and the new ones I meet in Portugal.

Finally, I express my deepest gratitude to my sister and my parents because through the years have been my support, my strength, and my motivation.

Abstract

The main objective of this paper is to prove that fintech companies have more value than traditional financial companies. To achieve that, we selected a sample of 13 fintech firms from the KBW Nasdaq Financial Technology Index plus 93 firms from the NASDAQ Financial-100 Index, all of them listed on the NASDAQ Composite Index. We created three portfolios: fintech firms (13); traditional financial firms (93) and the full market portfolio (106). Using the three-factor model of Fama and French, we compared the weekly returns of the fintech portfolio with the two others as benchmarks. Our empirical results showed statistically significant evidence that the fintech portfolio outperform both benchmarks portfolios, and so we can prove our hypothesis that the fintech companies create more value than traditional financial companies.

Keywords: Financial technology, Fintech, Fama and French model.

Resumo

O principal objetivo deste trabalho é provar que as empresas Fintech têm mais valor do que as empresas financeiras tradicionais. Para isso, selecionamos uma amostra de 13 empresas fintech pertencentes ao KBW Nasdaq Financial Technology Index, 93 empresas pertencentes ao Índice NASDAQ Financial-100, todas elas pertencentes ao Índice NASDAQ Composite. Foram criadas três carteiras: empresas Fintech (13); as empresas financeiras tradicionais (93) e a carteira do mercado (106), e utilizando o modelo de três fatores da Fama e French foram comparadas as rendibilidades semanais da carteira das Fintech com as outras duas carteiras de referência. Os resultados de estimação das series temporais exibem evidencia estatisticamente significativa de que o portfólio das empresas Fintech supera ambas as carteiras, pelo que corrobora a nossa hipótese de que as empresas Fintech criam mais valor do que as empresas financeiras tradicionais.

Palavras-chave: Tecnologia Financeira, Fintech, modelo de Fama e French

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List of Acronyms

APIs	Application Programming Interfaces
BCBS	Basel Committee on Banking Supervision
FSB	Financial Stability Board
GDPR	General Data Protection Regulation
Gretl	Gnu Regression, Econometrics and Time-series Library
IoT	Internet of Things
KPMG	Klynveld Peat Marwick Goerdeler International Limited
M&A	Mergers and Acquisitions
NASDAQ	National Association of Securities Dealers Automated Quotation
NFC	Near Field Communication
P2P	Peer-to-Peer
PE	Private Equity
POS	Point-of-Sale
PSD2	Second Payment Services Directive (European Union)
QR	Quick Response Code
S&P500	Standard & Poor's 500 Index
SMEs	Small and Medium-Sized Enterprise
US	United States of America
VC	Venture Capitalist

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1. Introduction

There is no doubt that technological development has played a major role in the economic and social life of humanity, reshaping it, and defining it throughout history. The financial industry has been no exception to this phenomenon.

Due to the recent boom in fintech startups investments and all the attention they have had lately, fintech is often perceived as an exclusively recent symbiosis of financial services and information technology, but the truth is that this marriage between finance and technology has a long journey, intertwining and reinforcing each other over decades.

In their study, Arner, Barberis and Buckley (2016) divide the evolution of fintech into three stages: (1) Fintech 1.0, from 1866 to 1987, a period of financial globalization supported by technological infrastructure such as transatlantic transmission cables and characterized by going from analog to digital; (2) Fintech 2.0, from 1987-2008, during which financial services firms increasingly digitized their processes and consolidated it; and (3) Fintech 3.0, from 2009 to the present, characterized by the emergence of new players in the financial landscape due to the global financial crisis of 2008 and the loss of credibility of traditional banks and financial institutions.

Gomber, Kauffman, Parker and Weber (2018) argue that this resurgence of financial technology is due, among other factors, to the new abundance of data and the increasing maturity of data infrastructures and integrated systems, that have been deployed to process it, as well as the emergence of pattern recognition, data mining, machine learning, and other digital-sensing tools used in the financial services environment.

With the internet revolution in the 90s and the development of the electronic finance (e-finance) and mobile technologies, fintech innovation emerged combining both of them with internet technologies, social networking services, social media, artificial intelligence, and big data analytics. Because of this, fintech startups began to differentiate themselves from the traditional financial firms with personalized niche services, data-driven solutions, an innovative culture, and a nimble organization (Lee & Shin, 2018).

Given the fact that the Fintech topic is relatively new, there are still few studies that analyze it in depth. The aim of this work is not to delve into conceptualizations and theoretical definitions of Fintech, but to demonstrate what hundreds of non-scientific articles and practitioners already suspect and speculate when observing the dizzying development of this phenomenon in the stock exchanges: that in fact, investments in Fintech will generate more value than their traditional counterparts, as it seems that the future of financial services is inevitably linked to them.

So, this work has as its main purpose the analysis of whether fintech companies generate more value than traditional financial companies or not. To do that, we will compare the weekly returns of a portfolio of fintech companies to the ones of two others benchmark portfolios, one of them composed of “traditional financial companies” from the Nasdaq Stock Market, and we will use the Fama and French three-factor model.

This work is divided in four more chapters. In Chapter 2 is made a literature review of the main concepts related to financial technology, traditional financial companies, and models of performance measurement. In Chapter 3 is presented the main objectives of the work and a detailed description of the sample selection, portfolios creation, data collection and the construction of the variables used in the three-factor Fama and French model. The empirical results are presented in chapter 4. The conclusions of the entire work are given in chapter 5 along with some limitations and future possible lines of investigation related to the present study.

2. Literature Review

2.1. Financial Technology

2.1.1. Fintech Concept

The concept of Fintech is very wide-ranging and there is not an universal definition yet. According to Schueffel (2016) who reviewed more than 200 scholar articles, Fintech is a new financial industry that uses technology to improve financial activities.

Varga (2017) argues that even when all the definitions capture some important feature of Fintech, there is still no consensus about where the limits of the sector are, and refers to Fintech as non- or not fully regulated ventures whose goal is to develop novel, technology-enabled financial services with a value-added design that will transform current financial practices.

Arner et al. (2016) refer to fintech as technology-enabled financial solutions. In the same way Putri, Nurwiyanta, Sungkono and Wahyuningsih (2019) define it as the implementation and utilization of technology to increase banking and financial services while, for Thakor (2019) it is the use of technology to provide new and improved financial services.

Following that line of thought, the Financial Stability Board¹ considers fintech as a technology-enabled innovation in financial services that could result in new business models, applications, processes, or products with an associated material effect on the provision of financial services. This last definition has also been adopted by the Basel Committee on Banking Supervision².

Regardless of who conceptualizes the term, the two main elements are the development and use of technology by firms and the financial services/products that are provided.

Puschmann (2017) considers that the technological development of information induced transformation in the financial system, and among the drivers of this transformation are the changing role of information technology, consumer behavior, ecosystems, and regulation.

¹<https://www.fsb.org/2019/02/fintech-and-market-structure-in-financial-services-market-developments-and-potential-financial-stability-implications/> (Jun 3, 2019).

²<https://www.bis.org/bcbs/publ/d431.htm> (Jun 1, 2019).

The author also argues that customer behavior has changed due to the rise of the native digital generation, who have a closer relationship with the technologies and seek more transparency in the provision of financial services.

There is an important and useful clarification that must be made to get the concept of Fintech straight, and for that, we will use the view of Gimpel, Hosseini, Huber, Probst, Röglinger and Faisst (2018), who distinguish between Fintech and fintech startups. For the authors, Fintech represents the use of digital technology, like Internet, mobiles, data analyses, etc. to facilitate financial solutions; fintech startups on the other hand, are new technology-based companies that offer financial services based on financial technology.

2.1.2. Categories, Key Areas, and Business Models

Ng and Kwok (2017) divided Fintech organization into four different categories: efficient payment process, robo-advisor, peer-to-peer loan and deposit platform and crowdfunding.

Meanwhile, Global Fintech Adoption Index's report³ of 2019 divided it into four broad categories: banking and payments, financial management, financing, and insurance. Also, Thakor (2019) describes the areas that Fintech covers as: (1) credit, deposits, and capital-raising services; (2) payments, clearing and settlement services, including digital currencies; (3) investment management services (including trading); and (4) insurance.

To those areas mentioned above we can add other segments of the financial industry such as: data collection, cryptocurrency, credit scoring, cybersecurity for finance, thematic investing, algorithmic asset management, private securities transactions and others.

Osterwalder, Pigneur, and Tucci (2005) cited by Visconti (2020) identified nine common business model elements: value proposition, target customer, distribution channel, relationship, value configuration, core competency, partner network, cost structure, and revenue model. The author also synthesized the Fintech's main typologies and business model (see Table 1).

³ https://www.ey.com/en_gl/ey-global-fintech-adoption-index (Jun 3, 2019).

Table 1:
Fintech Typologies and Business Models

Typology:	Business Model:
Financing solutions	Pure equity crowdfunding (retail); club deals; funding from institutional investors.
Blockchain	The blockchain is a decentralized and distributed digital ledger that corresponds to an open database with a pattern of sharable and unmodifiable data that are sequenced in chronological order. The main applications are cryptocurrencies; banking and payments; cyber-security; supply chain management; forecasting; networking & Internet of things (IoT); insurance; private transport & ridesharing; cloud storage; charity; voting; healthcare; crowdfunding.
Payment systems and processing (PayTech)	Credit cards; mobile payments through apps; virtual POS (Point-of-Sale); online wallet; money transfers. Payment innovations throughout the year have been largely all about mobile e-wallets and contactless payments. PayTech firms also focused on ensuring the security of transactions leveraging artificial intelligence and machine learning technologies. Global consumers have grown less reliant on cash, enhancing the growth profile of mobile payments firms.
P2P loans	Peer-to-peer (P2P) lending is the practice of lending money to individuals or businesses through online services that match lenders with borrowers. Peer-to-peer lending companies often offer their services online and attempt to operate with lower overhead and provide their services more cheaply than traditional financial institutions.
Open Banking	In October 2015, the European Parliament adopted a revised Payment Services Directive, known as PSD2. The new rules included aims to promote the development of neo-banks or challenger-banks use of innovative online and mobile payments through open banking.
Big Data & Analytics	Big data analytics is the often-complex process of examining large and varied data sets, or big data, to uncover information - such as hidden patterns, unknown correlations, market trends, and customer preferences - that can help organizations make informed business decisions. Big data based on payment transaction data provide insight into customer retention, identification of criminal activities, or future customer behavior.
Insurtech	Insurtech refers to the use of technology innovations designed to squeeze out savings and efficiency from the current insurance industry model.

Table 1:

Fintech Typologies and Business Models (cont.)

Typology:	Business Model:
RegTech	Regulatory technology, in short, RegTech, is a new technology that uses information technology to enhance regulatory processes. With its main application in the Financial sector, it is expanding into any regulated business with an appeal for the Consumer Goods Industry. Regtech, post-financial crisis - with MiFiD II, Basel III, and General Data Protection Regulation (GDPR) - may have been the initial external driver to ensure full compliance, and this has ensured a dramatic rise in technological solutions, and crucial in increasing efficiency, for example, by reducing gap-analysis time.
SupTech	Use of innovative technology (big data, artificial intelligence, blockchains, etc.) by supervisory agencies to support supervision. Suptech will help authorities to become more data-driven
Micro Fintech	Fintech applications to microfinance activities (microcredit; microdeposits; microinsurance; micro-consulting). M-banking boosts volumes and fosters marginality gains. Improved sustainability positively affects the outreach of the unbanked
Banking as-a-Service	End-to-end process ensuring the overall execution of a financial service provided over the web.
Artificial Intelligence	Artificial Intelligence (AI) will transform nearly every aspect of the financial service industry. Automated wealth management, customer verification, and open banking all provide opportunities for AI solution providers.
PropTech	Property technology (PropTech), sometimes called Real estate technology, encompasses the application of information technology and platform economics to real estate markets.

Note. Source: Visconti (2020)

On the other hand, Lee and Shin (2018) divided fintech in six business models. These models are summarized in Table 2.

Table 2

Fintech Business Models

Business models	Observations
Payment	It refers to mobile payments that include: near field communication (NFC), barcode or QR (Quick Response) code, a credit card on mobile websites, a mobile phone card reader, and direct mobile payment. Nowadays the most popular NFC-based mobile payment applications are Google Wallet, Apple Pay, and Samsung Pay. Other very use payment business model is P2P where users pay each other with apps like PayPal and Venmo.

Table 2

Fintech Business Models (*cont.*)

Business models	Observations
Wealth management	Wealth management refers to automated wealth managers (robo-advisors), a very cheap way to obtain financial advice in comparison to real-life advisers. The robo-advisors use very sophisticated algorithms to recommend assets to invest based on a customer's investment characteristics. Some examples are Betterment, Wealthfront, Motif, and Folio.
Crowdfunding	Crowdfunding allows the entrepreneur who needs funding match the contributors who support the project, this happens normally through a moderating organization that facilitates this engagement. This crowdfunding is an attractive option for small and medium-sized companies (SMEs) usually not prioritized by the traditional banks. Equity-based crowdfunding companies include AngelList, Early Shares, and Crowdcube.
Lending	P2P lending Fintech's enables individuals to obtain loans directly from other individuals, cutting out the financial institution as the middleman, offering low interest rates. These types of Fintech are not engaged in the lending themselves, just matching lenders with borrowers, and accumulating fees of users. Some examples are Lending Club, Prosper, SoFi, Zopa, and RateSetter.
Capital market	This kind of market for long term investments that Fintech are involved are among others: foreign exchange, trading, risk management, foreign currency transactions and research. Fintech lower barriers and costs for individuals and SMEs facilitate users to invest on capital markets, using the new technology on phones to do so, users can see live pricing and send/receive funds in various currencies securely in real time. Capital market Fintechs include Robinhood, eToro, Magna, Estimote, and Xoom.
Insurance services	With the use of data analytics to calculate and match risk, Fintechs ensures more direct relationship between the insurer and the insured regarding their needs offered products (e.g., car, life, healthcare, or causality insurance). The new technology available allows insurers to expand their data collection to non-traditional sources to supplement their traditional models, improving their risk analysis. Insurance services Fintech that are disrupting the insurance industry include Censio, CoverFox.

Note. Adapted from Lee and Shin (2018).

2.1.3. Fintech Ecosystem

According to Lee and Shin (2018), the fintech ecosystem elements (Figure 1) symbiotically contribute to the innovation, to economic stimulation, to facilitate collaboration and competition in the financial industry, and ultimately to benefit consumers in the financial industry.

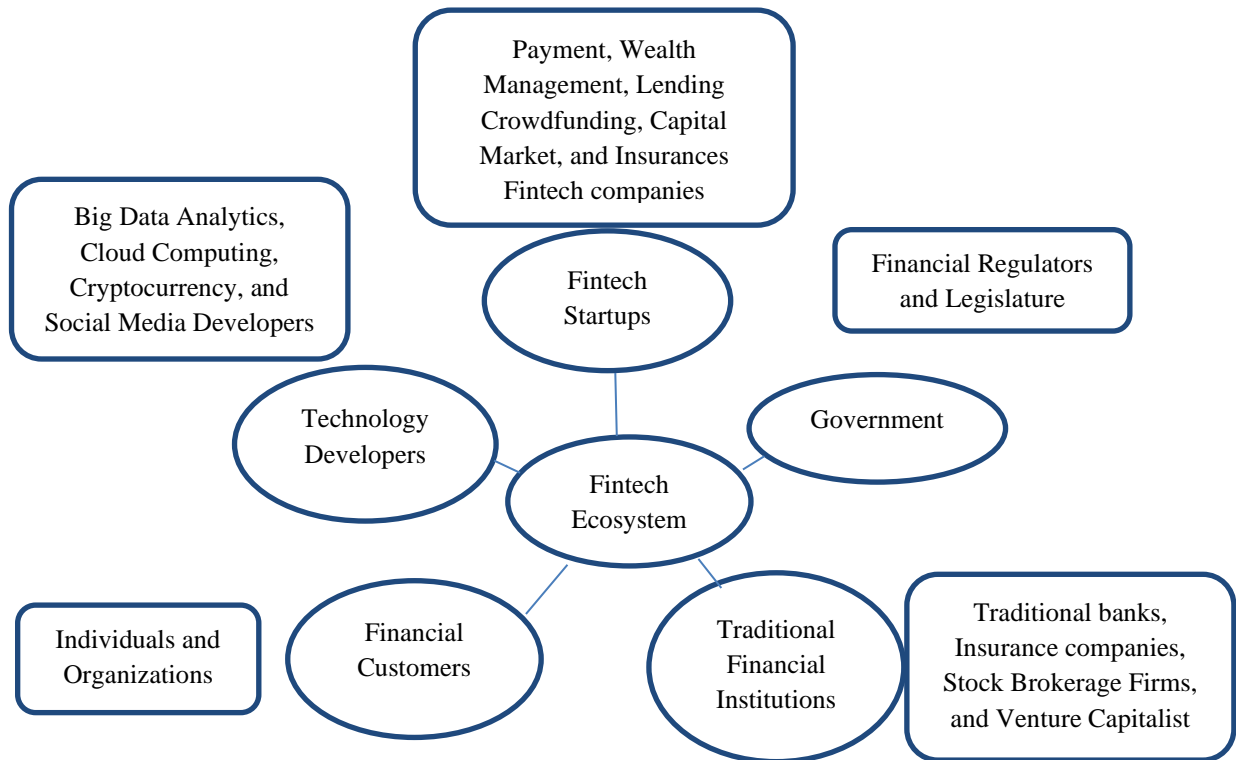


Figure 1 - The Five Elements of a Fintech Ecosystem
Source: Lee and Shin (2018)

2.1.4. Disrupting Effects of Fintech

The market has certainly recognized the potential of fintech innovation as, according to Klynveld Peat Marwick Goerdeler International Limited (KPMG)⁴, the total fintech investment activity globally: mergers and acquisitions (M&A), private equity (PE) and Venture Capitalist (VC) deals has grown from \$51.2 billion in 2014 to \$135.7 billion in 2019, with the highest peak in 2018 with \$141.0 billion invested.

According to the Global Fintech Adoption Index⁵ Adoption of fintech services has moved steadily upward, from 16% in 2015 (the year the first Fintech Adoption Index was published) to 33% in 2017, to 64% in 2019. Awareness of Fintech, even among non-adopters, is now very high. Worldwide, for example, 96% of consumers know at least one alternative Fintech service available to help them transfer money and make payments.

Nowadays some practitioners and academics consider Fintech as a disruptive force about to revolutionize the financial services industry with major repercussions and improvements in

⁴ <https://home.kpmg/au/en/home/insights/2020/02/pulse-of-fintech-h2-2019.html> (Jun 3, 2019).

⁵ https://www.ey.com/en_gl/ey-global-fintech-adoption-index (Jun 3, 2019).

efficiency; it is also assertively considered that this new approach will be the future model to work with in the industry.

Gomber et al. (2018) considered fair to say that the entire financial services industry has been disrupted in fundamental ways. Some of this disruptive effect comes from new business models, new market mechanisms, shared tech infrastructures, disintermediation of banks, segment-of-one marketing and cross-border innovations. Following this logic, there are also complementary effects such as: enhanced business models, extended access by customers, hybridized services by firms, shared tech infrastructures and Open APIs (Application Programming Interfaces).

Lee and Shin (2018) ensure that Fintech is touted as a game changing, disruptive innovation capable of shaking up traditional financial markets and also the technological developments in infrastructure, big data, data analytics, and mobile devices, allowing fintech startups to disintermediate traditional financial firms with unique, niche, and personalized services. For those authors, Fintech is beyond the stage of hype and has become a major player in the financial world.

In another perspective, Mention (2019) talks about how increasingly the faster/cheaper/better service models offered by fintech startups are disrupting the incumbent banking system. The author points out that financial products that customarily have been the exclusive domain of traditionally licensed credit institutions —payment services and loans, among others— are now being offered by fintech firms.

Technology is transforming financial services and creating competitors outside the traditional sectors, for example, there is evidence that fintech lenders increased their market share of U.S. mortgage lending, but not targeting borrowers with low access to traditional finance. Evidence also suggests that they are mostly competing with the traditional mortgage lenders rather than the ones with broadening access. (Fuster, Plosser, Schnabl, & Vickery, 2019; Tang, 2019; Vallee & Zeng, 2019)

Regardless of the impact that Fintech has had on the Financial Industry, opinions are divided. While there are those who claim that such companies have had a disruptive impact (Brătășanu, 2017; Gomber et al. (2018); Lee & Shin, 2018; Mention, 2019; Iman, 2019); others consider it a changing and evolving phenomenon, but not a sui generis one (Arner et al., 2016) These last authors argue that fintech agents have not created new markets or

financial ecosystems with their product/service offerings and so, FinTech should be considered as change agents rather than disruptors.

2.1.5. Collaboration with Incumbents

Instead of considering Fintech as a dreadful competitor to the established financial services industry we believe they should be perceived as potential partners. A collaborative approach between Fintech and the financial services industry is key, because, while banks can provide the distribution and regulatory infrastructure, Fintech can align with the strategic objectives of financial institutions and develop innovative solutions to the needs of the sector, which translates in a win-win solution.

While Fintech is generally considered a threat to traditional financial firms, it also provides a myriad of opportunities for these firms to gain a competitive advantage over competitors. Most major financial firms have begun to take Fintech seriously and are developing strategies to compete, coexist, and collaborate with fintech startups (Brătășanu, 2017; Lee & Shin, 2018). In his study, Iman (2019) points out the possibilities of collaboration and partnership between them, focusing on each core capabilities and ensuring that incumbent banks find the common ground between partnering with fintech startups versus building or investing on their technology internally.

A hopeful view of this collaboration suggests that it is time for financial institutions to “embrace disruption” and prepare for the development of more effective organizational strategies in financial services by leveraging the breakthrough fintech innovations of our time. (Gomber et al., 2018)

According to the Global Fintech Adoption Index⁶ instead of competing between them, Fintech and traditional financial companies should be focusing and dealing with a new phenomenon that is occurring for a while now. Challengers and incumbents alike face a new competitive threat that comes from outside the financial industry altogether. Non-financial services companies such as retailers, technological platforms, and automotive industry are increasingly developing their own technology-enabled financial services offerings. These organizations are building on existing relationships with customers to offer holistic

⁶ https://www.ey.com/en_gl/ey-global-fintech-adoption-index (Jun 3, 2019).

propositions accompanied by complementary services, including activities such as insurance and lending that were once the exclusive purview of financial providers.

2.1.6. Trust, Legitimacy, and Regulations

According to Varga (2017) today's users were placed at the center of design in new business models and services, resulting in more user-friendly services, such as the systemic use of prototyping and design created services that offered a faster, cheaper, and frictionless experience for users. These new designs enable services to succeed, and many times expand virally to new users.

However, will future costumers of financial services trust fintech platforms to the degree that previous generations have trusted traditional banks? (Gomber et al., 2018). This will be a key question that will have to be followed closely and we will have to see how the generational factor behaves.

Lee and Shin (2018) argue that regulation challenges both traditional financial institutions and fintech startups in capital requirements, anti-money laundering, and privacy and security, with both kind of companies facing different regulatory requirements based on the type of financial services/products provided. For example, most banks operate on some form of fractional-reserve banking system with strict and complex procedures for the kind of lending that can be done, based on the capital held by a traditional financial institution. This may not be applied to a lending fintech startup that does not technically lend (e.g., a P2P lending firm). So, the regulation approved in the sector may pose an advantage or a barrier for one of the two kind of players in the financial industry.

The joint accomplishments from partnering would provide a consequential legitimacy for both actors on the eyes of private and corporate customers, investors, shareholders, regulators, and employees, as well as other fintech startups and incumbents (Svensson, Udesen, & Webb, 2019). On one hand the incumbents get the necessary technological modernization to keep up with the times and, on the other hand, the new fintech companies get the support of very well-structured and knowledgeable institutions of the entire regulatory part of the business.

Iman (2019) considers that Fintech will be greatly influenced by the existing regulatory regime. When regulation tends to lean towards Fintech rather than conventional banking, then the detrimental effect for incumbent banks will be increasingly felt. Thus, maintaining close relationships with central authority body should not be neglected.

The entry of nonbank competitors in the banking industry is going to be a clash between these new entrants and the labyrinth of laws and regulations surrounding the business of banking. The success of many fintech firms will be tied to the firm's ability, not only to be ahead of the technological curve, but also to have the flexibility to adapt to an evolving set of laws and compliance obligations (Douglas, 2016).

As Fintech grows, it is more difficult for countries legislators to deal with them, heading to uncertainty and potentially create hazardous loopholes in the financial legal system. Legislators impose strict rules on banks in the areas of risk, liquidity, and balance-sheet management, as well as legal compliance, and require them to set aside large pools of money to hedge credit default events. Meanwhile they cannot do the same with the new fintech firms. In many cases they are struggling to fit Fintech into existing legal frameworks, that were designed for large traditional financial institutions. This creates a competitive disadvantage for banks but generating unforeseeable threats for customers in the form of cyber-attacks, bankruptcies, or data-leakages (Douglas, 2016).

We agree with Varga (2017) when he says that too much regulation can burden innovation efforts, while under-regulation can impose an unfair advantage on new entrants due to their lower legal costs and overheads. Under-regulation creates higher social costs due to fraudulent activity and non-existent customer protection.

The challenge of Goldstein, Jiang and Karolyi (2019) about what the new equilibrium in the financial industry will be, is to think about the banks future with the entry of this new fintech technology and startups. Maybe banks could be replaced by the new fintech firms and the big-data e-commerce firms or could achieve a "new equilibrium of coexistence" based in activities already mastered by banks like providing safe assets via their deposit taking. Also it can be possible that banks assimilate the new technology, and the industry structure will not change much, with the exception that banks will be more technologically developed.

2.2. Traditional Financial Companies

According to Investopedia⁷ “the financial sector is a section of the economy made up of firms and institutions that provide financial services to commercial and retail customers. This sector comprises a broad range of industries including banks, investment companies, insurance companies, and real estate firms”.

For decades and at least until the 2008 financial crisis, the financial services industry and the firms that compose it were traditionally a bastion of corporate stability and safe employment. Nowadays the industry is being buffeted by new forces of technological innovation, process disruption, and business transformation, resulting in a new economy playbook for the services produced and the operational capabilities that are built (Gomber et al., 2018).

2.3. Models of Performance Measurement

2.3.1. Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) is the best-known asset valuation model, although it is not only used for asset valuation. It relates profitability to risk and is also widely used to calculate a company's capital cost.

The model was developed by William Sharpe (1964) and Lintner (1965) and is based on several assumptions, for example: investors optimize mean and variance, markets are perfect. All investors have the same estimates, and a certain number of risky assets and only one risk-free asset are traded.

The line that forms between the risk-free asset and the market portfolio forms the CML or Capital Market Line, which characterizes the profitability of the set of efficient portfolios and indicate the expected returns of an efficient portfolio by linking it to its standard deviation. However, it does not tell how those returns are related to the individual risk. It is CAPM that helps to express this relationship.

So, the model is presented as follow:

$$E(R_i) = R_f + \beta_i[(R_m) - R_f] \text{ (equation 1)}$$

⁷ Investopedia by Will Kenton Updated Jun 3, 2019.

where,

$E(R_i)$: is the expected return in portfolio/stock i ;

R_f : is the risk-free rate;

β_i : is the systematic risk in portfolio/stock i ;

R_m : market return.

The CAPM is a single-factor model, based on the excess of market returns and on risk-free assets as the only factor in explaining the variation in stock returns.

2.3.2. Three Factor Model of Fama and French

Banz (1981) empirically analyze the “size effect” and concludes that stocks with smaller market capitalization have higher average returns than stocks with larger market capitalization, which is apparently inconsistent with the traditional single-period CAPM.

In his work, Basu (1983) establishes the presence of a significant earnings in yielding effect on the NYSE, confirming that the common stock of high earnings-price ratio (E/P) firms earn, on average, higher returns than the common stock of low E/P.

Rosenberg, Reid and Lanstein (1985) determined a positive relationship between the average returns and the ratio of a firm’s book value to market equity which is a market “inefficiency”, which is impossible to explain in the CAPM.

Based on the existence and broad empirical use of CAPM, Fama and French (1993) developed a three-factor model; concluding that the cross-section of average return on U.S. common stock shows little relation to the market Beta of the CAPM model, when compared to the paper of Reinganum (1981) and Breeden, Gibbons and Litzenberger (1989).

Also, based on the Banz (1981), Basu (1983) and Rosenberg et al. (1985) findings, Fama and French (1993) explain that variables like size (stock price times number of shares), leverage, earnings/price, and book-to-market equity (the ratio of the book value of a firm’s common stock, to its market value) show more reliable power to explain the cross-section of average returns than the market factor. The factors they identify for the stock market are three: a market factor, which is the one already stated by the CAPM ($R_m - R_f$), the size factor,

that is, represented by the company's market capitalization, and finally a book to market equity factor, that is, the company's carrying value compared to its stock market valuation.

To sum up, it is expected that Fama and French present a three-factor model for asset valuation that best captures average stock returns. The model shows us that the expected return on an asset or portfolio is determined by the sensitivity of its profitability to three factors:

1. Excessive market profitability against a given risk-free asset;
2. The difference in the return on small-cap shares minus the return on the most capitalized shares;
3. The difference in the return of companies with a high book to market equity (division between book value and stock value) and companies with a low book to market equity.

So, the expected return on an asset or portfolio is presented as it follows:

$$R_{it} - R_{ft} = \alpha_{it} + \beta_{iM}(R_{Mt} - R_{ft}) + \beta_{iSMB} * SMB_t + \beta_{iHML} * HML_t + \varepsilon_{it} \quad (\text{equation 2})$$

where:

$R_{it} - R_{ft}$: is the excess return on portfolio/stock i in month t ;

α_{it} : is the intercept term;

$R_{Mt} - R_{ft}$: is the market risk factor in month t ;

SMB_t : is the size risk factor in month t ;

HML_t : is the book to market risk factor in month t ;

β_{iM} : is the market Beta, this coefficient is related to the market risk or systematic risk;

β_{iSMB} : is the size Beta, related to the size risk factor;

β_{iHML} : is the “value” Beta, related to the book-to-marked risk factor.

ε_{it} : is the random disturbance.

The most important aspect of the model, with the objective of comparing the performance of portfolios, is the intercept term (α_{it}) and the market beta (β_{iM}). Given that, when the α is positive and statistically significant, that means the portfolio has higher returns when compared to its benchmark with the same risk level. Contrarily, a negative and statistically significant α means that the portfolio has underperformed its benchmarks.

In the case of the market beta when, in a specific portfolio, this coefficient is equal to one, it means that the returns of the portfolio perform at the same risk level than the market. Lower market beta means less risk than the market and bigger than 1 means more risk than the market.

In this chapter we saw some existing criteria about this relatively new phenomenon that are Fintech. We highlighted several visions of various authors about what these types of companies are, the fields and areas in which they are performing, as well as the impact they already have and could have on the financial industry. Similarly, we addressed the three-factor model of Fama and French (1993) that will be used to evaluate our hypothesis that Fintech companies generate more value than their traditional peers. The next chapter presents in detail the methodology used in this work.

3. Methodology

As it was said before, the main purpose of this work is to know if the Fintech firms have systematically higher value than traditional financial firms. So, in order to achieve that goal, we will compare the weekly returns of a portfolio of Fintech companies with the ones from two others benchmark portfolios in the Nasdaq Stock Market; the objective is to establish if the Fintech portfolio after being controlled for risk and using the Fama and French methodology earns abnormal returns over the benchmark portfolios.

This chapter presents the methodology used and is divided for better understanding into four main sections: sample selection, portfolios creation, data collection and the construction of the variables.

3.1. Sample Selection

To select our sample, we chose the National Association of Securities Dealers Automated Quotations Stock Market, simply known as NASDAQ, an American stock exchange ranked second on the list of stock exchanges by market capitalization of shares traded, behind the New York Stock Exchange.

With the purpose of the market analysis we chose the NASDAQ Composite; a stock market index of common stocks and similar securities listed on the Nasdaq stock market with a total of 2 850 companies⁸ listed, that along with the Dow Jones Industrial Average and S&P 500 is one of the three most-followed indices in United States (US) stock markets.

We selected our “traditional financial companies” from the firms registered on the NASDAQ Financial-100 (a specialty index operated by NASDAQ that follows stocks in the financial services, formed by 100 firms) which integrated NASDAQ Composite index. This gives us a total of 95 companies.

⁸ <https://indexes.nasdaqomx.com/Index/Overview/COMP> (20/11/2020).

For the selection of our Fintech companies, we choose the firms that belongs to the KBW Nasdaq Financial Technology Index⁹ that are also part of the NASDAQ Composite index, which leaves us with a total of 13 companies.

Summing up, we started with a sample of 108 companies (95 of them were considered traditional financial companies and 13 were considered Fintech companies) and the final sample was constituted by 106 companies (93 “traditional financial firms” and 13 Fintech firms). In the Table 3 we summarize the selection criteria.

Table 3:
Sample Selection

Criterion	Number of firms
Initial sample	108
Firms listed in (NASDAQ Financial-100 or KBW Nasdaq Financial Technology) and NASDAQ Composite Indexes	108
Firms without the needed data on the Datastream database	2
Final sample	106

3.2. Portfolio Creation

To achieve the specific objectives of this work, we created three portfolios as described below:

(1) Full Market portfolio: constituted by financial companies on the NASDAQ Financial-100 Index that also integrate the NASDAQ Composite Index plus Fintech firms on the KBW NASDAQ Financial Technology Index that also integrate the NASDAQ Composite Index. This portfolio is composed by 106 firms and we will refer to it as FM portfolio.

(2) Fintech Companies portfolio: constituted by Fintech firms on the KBW NASDAQ Financial Technology Index that also integrate the NASDAQ Composite Index. This portfolio is composed by 13 firms and will be referred to as FT portfolio.

(3) Reduced Market portfolio: integrated by the FM portfolio with the exception of the FT portfolio leaving us with 93 firms. We will refer to it as RM portfolio.

⁹ Index designed to track the performance of financial technology companies that are publicly traded in the U.S., integrated by 49 firms.

3.3.Data Collection

The data used in this study was collected from the Datastream database; one of the world's most comprehensive financial historical database, a global financial and macroeconomic data platform providing data on equities, stock market indexes, currencies, company fundamentals, fixed income securities and key economic indicators for 175 countries and 60 markets. The data of the companies is collected with a weekly frequency and we used all the data from October 2018 to December 2019. The collected data includes:

- Closing stock prices (USD);
- Number of shares (Units);
- Free float number of shares (percentage);
- Book value per share (USD).

The proxy that represents the risk-free rate on the model is the U.S. Treasury bill yield,¹⁰ was obtained from the Board of Governors of the Federal Reserve System.

After we collected all the secondary data from Datastream, we proceeded to calculate, for all the firms: stock weekly returns¹¹, market capitalization and book to market ratio as follow:

The stock returns according to Fama and French (1993) are not continuously compounded, so, they were calculated using the formula below:

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \text{ (equation 3)}$$

Where:

$R_{i,t}$: is the cumulative return of stock i in week t ;

$P_{i,t}$: is the price of the stock i in week t ;

$P_{i,t-1}$: is the price of the stock i in week $t - 1$.

The market capitalization (MC) of each firm was calculated multiplying the number of outstanding shares by its price (P). To obtain the number of outstanding shares it was taken into consideration the free float number of shares (FFNOSH) that is the percentage of total

¹⁰ Four-week Treasury bill secondary market rate expressed in percentage per year.
<https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15> (September 5, 2020).

¹¹ These weekly returns where annualized.

shares in issue available to ordinary investors (the total number of shares less the strategic holdings) and the total number of ordinary shares (NOSH) that represent the capital of the company:

$$MC = \left(\frac{FFNOSH}{100} \right) \times NOSH \times P \quad (\text{equation 4})$$

The book to market ratio (B/M) was calculated multiplying the book value per share (BVSH) by the number of outstanding shares $\left(\left(\frac{FFNOSH}{100} \right) \times NOSH \right)$ and the result divided by the multiplication of the share price (P) by the number of outstanding shares:

$$B/M = \frac{\left(\frac{FFNOSH}{100} \right) \times NOSH \times BVSH}{\left(\frac{FFNOSH}{100} \right) \times NOSH \times P} \quad (\text{equation 5})$$

3.4. Construction and Analysis of the Risk Factors

To be able to compare the Fintech companies' portfolio with the other two benchmark portfolios we used the Fama-French model explained in chapter 2.3.2. In the mentioned section we described how to calculate the dependent variable (excess return) and the three risk factors of the model (market, size, and book-to-market) that are the independent variables.

3.4.1. Excess Return Variable

The excess returns $(R_{i,t} - R_{f,t})$ of the three created portfolios are the difference between the portfolio returns and the risk-free rate. The portfolio returns correspond to the value-weight weekly returns of each stock in the respective portfolio, calculated as it follows:

$$R_{p,t} = \sum_{i=1}^n W_{i,t} * R_{i,t} \quad (\text{equation 6})$$

where:

$R_{p,t}$: is the value – weight weekly return of portfolio p in week t ;

$R_{i,t}$: is the weekly return of stock i in week t ;

$W_{i,t}$: is the weight of the stock i in portfolio p in week t ;

n : is the number of stocks in portfolio p .

The weight of the stocks in each portfolio is calculated by dividing the market capitalization of the stock i by the total sum of the market capitalization of the portfolio p .

The risk-free rate ($R_{f,t}$) as mention in chapter 3.3, is the U.S. Treasury bill.

3.4.2. Size and Book to Market Factors

Identical to the study conducted by Fama and French (1993), this study is based on portfolios that aim to collect the risk factors of returns related to market, size and book-to-market. To do this, the companies of the sample were divided into two groups: small (S) and big (B) firms, obtained by taking in consideration the median market capitalization value.

Similarly, the companies of the sample were divided into three book-to-market groups: Low (L) - lower 30%, Medium (M) - average 40% and High (H) - higher 30%. The decision made for the distribution of the groups is based on the evidence of Fama and French (1993) which shows that the book to market has a greater presence in the explanation of the average returns of the shares than the size of the company. Six portfolios were built, i.e. all possible combinations between the groups of the two variables. In this way we obtain the following six portfolios:

- SL (Small and Low): firms with small market capitalization and low B/M ratio;
- SM (Small and Medium): firms with small market capitalization and medium B/M ratio;
- SH (Small and High): firms with small market capitalization and high B/M ratio;
- BL (Big and Low): firms with big market capitalization and low B/M ratio;
- BM (Big and Medium): firms with big market capitalization and medium B/M ratio;
- BH (Big and High): firms with big market capitalization and high B/M ratio.

Consequently, and to reflect these two factors of the model, we proceeded as it follows:

Size Factor: The small minus big portfolio (SMB) is created to reflect the size risk factor and is the weekly difference in the average return of the three portfolios with small capitalization firms and the average return of the three portfolios with big capitalization. Thus, the SMB reflects the difference in returns in small and big capitalization companies, away from the influence of the book to market on the variable.

The value-weighted weekly returns of the SMB portfolio are obtained as it follows:

$$SMB = \frac{(SL+SM+SH)}{3} - \frac{(BL+BM+BH)}{3} \text{ (equation 7)}$$

Book-to-Market factor: The high minus low (HML) portfolio is created to reflect the book to market equity risk factor and is the weekly difference in average yields between the two high BE/ME portfolios and the two BE/ME low portfolios. As in the previous case, the returns of these portfolios are far from the influence of the size variable.

The value-weighted weekly returns of the HML portfolio are obtained as is follows:

$$HML = \frac{(SH+BH)}{2} - \frac{(SL+BL)}{2} \text{ (equation 8)}$$

3.4.3. Market Factor

For the market factor ($R_t - R_{ft}$), the proxy used was the market risk premium, that is the market profitability minus the profitability of the asset without risk; R_t represents the returns of the six portfolios formed above, while R_{ft} , in the case of the study, represents the return of the American Treasury bill to four weeks.

In this chapter, we presented in detail the methodology used in this work to achieve the objective of verifying whether or not Fintech companies generate more value than their traditional peers. This is based on both the literature review and the three-factor model of Fama and French (1993). In this chapter the sample, the portfolios, the secondary data used, the dependent variable and independent variables were defined, as well as the necessary formulas of the model. Having explained in detail the methodology followed in this work, the next chapter presents the empirical results obtained.

4. Empirical Results

In this chapter the main results of the work will be presented and analyzed after the statistical treatment of the variables involved in the study. We aim to compare the returns of the Fintech portfolio with the other two portfolios, considering the intercept term and betas to determine the nature of Fintech firm's performance compared to their traditional peers.

After the presentation of the results achieved in this work, they will be confronted with the main criteria set out in the literature review to present our conclusions in Chapter Five.

4.1. Evolution of the Yields of Portfolios

On a first approach to analyze whether the Fintech firm's portfolio outperformed the two benchmarks, we compare the average annual returns of each one of the three portfolios as the Figure 1 shows.

On average, the Fintech portfolio outperformed the other two in 2018, but in 2019 is the reduce market portfolio the one with the best profitability. Contrary to our hypothesis, the Fintech portfolio performed worse than the two benchmarks portfolios in 2019, being the decrease in the average profitability of the Fintech portfolio more accentuated than in the other two portfolios.

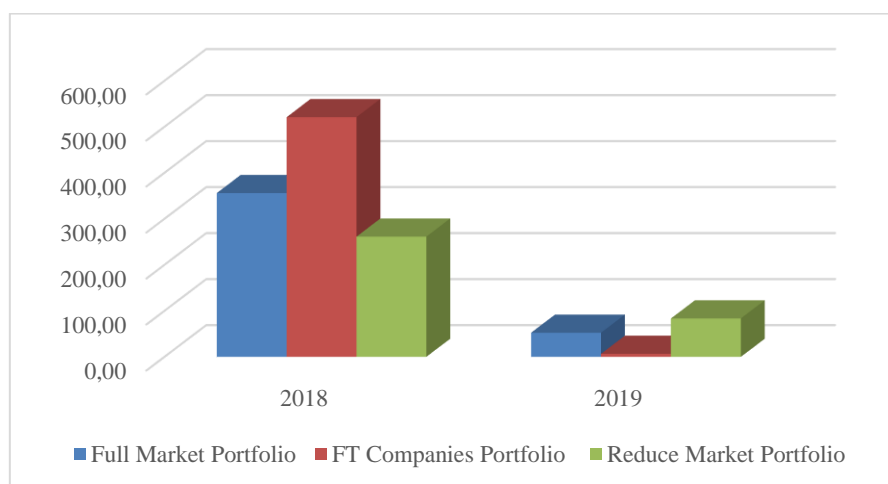


Figure 2. Average Weekly Returns by Year

According to the average weekly returns we cannot conclude that the Fintech portfolio outperformed the other two benchmarks portfolios. The next section shows the estimation results of the three-factor model of Fama and French (1993).

4.2. Results of Fama and French Regression Model

For our empirical evaluation we use the three-factor model regression described in chapter 2.3.1. The parameters were estimated implementing a time series analysis in the Gretl (Gnu Regression, Econometrics and Time-series Library) software. The Table 4, show the summarized results of the regression.

Table 4:

Fama and French Regression

$$R_{it} - R_{ft} = \alpha_{it} + \beta_{iM}(R_{Mt} - R_{ft}) + \beta_{iSMB} * SMB_t + \beta_{iHML} * HML_t + \varepsilon_{it}$$

Dependent variable: $R_{it} - R_{ft}$ (Excess Returns)

Number of observations: 69

Variables	Portfolios		
	Fintech	Full Market	Reduce Market
α	6,767 ***	0.0	-4,364 ***
Market β	0,021	1.0 ***	1,637 ***
SMB β	0,074 **	0.0	-0,069 **
HML β	-0,028	0.0	0,002
R^2	0,999		0,999
Adjusted R^2	0,999		0,999

Note. The estimates reported here are obtained through the Gretl software. The table summarizes the Fama-French regression for the three portfolios. SMB is the difference in returns of small and big firms; HML is the difference in the returns of high and low book-to-market firms and α is the interception term of the regression. The significance levels are indicated by *, ** and *** that represent 10%, 5% and 1% level, respectively.

4.2.1. Fintech Firms Portfolio

The intercept term (alpha) in the Fintech firms' portfolio was positive and statistically significant, the value of 6,767 per week tells us that the Fintech firms returns, taking in consideration the three risk factors (Market, SMB and HML), have a weekly return much higher than their peers' returns in the same period of time. Looking at these results, we conclude that the Fintech firms have performed much better than the rest of the traditional financial firms.

The Market and HML betas are not statistically significant, meaning that no statistical returns were obtained as compensation for these risks.

In the case of SMB beta, the result was positive and statistically significant, which means that the Fintech portfolio returns are sensible to size factors. This tells us that the returns of the Fintech firms' portfolio, when compared to the other two portfolios are explained by the firms with small capitalization, which means that the risk in the variation in returns

associated with small capitalization firms is higher. For every 1% of variation in the SMB factor the excess returns of the Fintech firms are going to increase in 7,41% per week¹².

To complete the regression analysis of the Fintech portfolio, we have a R^2 equal to 0,9996; this means that 99,96% of the variation in the excess returns ($R_{it} - R_{ft}$) of Fintech portfolio firms are explained by the variation of the factors exposed in the model (Market, SMB and HML).

4.2.2. Reduce Market Portfolio

The intercept term (alpha) in the Reduce market portfolio was negative and statistically significant, with the value of -4,3635 per week telling us that the traditional financial firms returns taking in consideration the three risk factors (Market, SMB and HML) have a weekly return of 436.35% below the Fintech firms portfolio in the same period of time. This means that the traditional financial firms have performed much worse than the Fintech firms.

The HML beta is not statistically significant, meaning that no statistical returns were obtained as compensation for this risk.

The market beta obtained was positive and statistically significant, with the value of 1,6372 meaning that when the full market exceeds the return on risk-free assets by 1%, the traditional financial firms exceed it by 63.72%

In the case of SMB beta, the result was negative and statistically significant, which means that the Reduce market portfolio returns are sensible to size factors, showing that the returns of the Fintech firms portfolio compared with the others two portfolios are explained by the firms with bigger capitalization, telling us that the risk in the variation in returns associated with bigger capitalization firms is higher. For every 1% of variation in the SMB factor the excess returns of the Reduce market firms are going to decrease in 6,92% per week.

To complete the regression analysis of the Reduce Market portfolio, we have a R^2 equal to 0,999710; this means that 99,97% of the variation in the excess returns ($R_{it} - R_{ft}$) of the traditional financial firms portfolio are explained by the variation of the factors exposed in the model (Market, SMB and HML).

¹² The weekly returns where annualized.

4.2.3. Result Comparison of the Portfolios

After obtaining and comparing the intercept term or alfa of the models, that as it was said earlier in this work, captures the excess returns that the Fintech firms portfolio earn over and above their benchmark portfolios, it has allowed us to confirm our hypothesis that the Fintech firms have more value than the traditional financial companies. Both alfas are statistically significant, in the FT portfolio positively (6,767) and the RM portfolio negatively (-4,363).

In the case of the market risk, the excess returns are only sensible to the market risk in the RM portfolio case, whereas in the FT portfolio the market beta is not statistically significant, implying that no statistical returns are obtained as compensation for this risk.

The SMB beta in both cases is statistically significant, therefore returns are sensible to size factors affecting positively the Fintech firm's portfolio and negatively the traditional financial firms' portfolio.

The HML beta is in both cases not statistically significant, meaning that no statistical returns were obtained as compensation for this risk in either of the portfolios.

The last point of this analysis is the goodness of fit of the model. In both cases we have R^2 higher of 0.99; that means that in both cases the 99% variation in the excess returns ($R_{it} - R_{ft}$) of the two portfolios are explained by the variation of the factors exposed in the models (Market, SMB and HML).

5. Conclusions

The way technology influenced the financial industry is not a new phenomenon and most researchers agree to define financial technology as the implementation and utilization of technology to increase banking and financial services (Putri et al., 2019). They have since, attributed its development to factors such as (1) the increasing maturity of the data infrastructures and integrated systems that have been deployed to process it, the emergence of pattern recognition, data mining, and machine learning (Gomber et al., 2018), (2) consumer behavior, ecosystems, and regulation (Puschmann, 2017). This issue of Fintech has resurfaced in recent years mainly due to the rise and dizzying development of Fintech startups on the global stage.

Using the three-factor model of Fama and French (1993), that can be considered an expansion of the capital asset pricing model by adding risk factors of size and value to market risk, we analyze the historical returns of a Fintech portfolio against two benchmark portfolios.

Our results show that the Fintech Portfolio outperforms both benchmark portfolios (full market and the traditional finance companies). The alfa or intercepts of the Fintech portfolio is positive and statistically significant with a value of 6,767 per week, meaning that the Fintech firms returns, taking in consideration the three risk factors (Market, SMB and HML), have a weekly return much higher than their peers in the same period of time. We also found that SMB beta is positive and statistically significant, which means that the Fintech portfolio returns are sensible to size factors.

Our empirical results using the three-factor model of Fama and French allow us to consider accomplished the objective of our paper, as we confirmed our hypothesis that Fintech companies generate more value than traditional financial companies on the sample selected of the NASDAQ Composite Index in the period of time in evaluation.

Our work has limitations that need to be taken into account to consider its results and that can be improved in future research on this topic. The size sample of companies used in our research was limited to its classification in "Fintech" (13) or "financial firms"(93) by the respective Indexes (KBW Nasdaq Financial Technology and NASDAQ Financial-100)

listed in the Nasdaq Composite Index. So, we limited our work to companies publicly traded in the U.S. stock market.

We believe that following the outline of this research we could increase the sample and carry out this type of study in other markets such as the European or the Asian one.

Another possible interesting line of research that could follow our work is, for example, whether or not the most innovative Fintech companies have more value; or if Fintech companies in a particular market tend to create more value than those in another economic zone. All of this to afterwards trying to identify the causes that make that possible.

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7. Appendices

7.1. Appendix 1 – Composition of Portfolios.

7.1.1. Composition of Fintech Firms Portfolio.

- 1 ACI WORLDWIDE
- 2 CARDTRONICS 'A'
- 3 CME GROUP
- 4 EURONET WWD.
- 5 FISERV
- 6 JACK HENRY AND ASSOCIATES
- 7 MARKETAXESS HOLDINGS
- 8 NASDAQ
- 9 PAYPAL HOLDINGS
- 10 SEI INVESTMENTS
- 11 SS&C TECHNOLOGIES HDG.
- 12 VERISK ANALYTICS CL.A
- 13 VIRTU FINANCIAL CL.A

7.1.2. Composition of Reduced Market Portfolio.

- 1 AGNC INVESTMENT REIT
- 2 AMERICAN NATIONAL GROUP
- 3 AMERIS BANCORP
- 4 ARCH CAP.GP.
- 5 ATLANTIC UNION BANKSHARES
- 6 BANK OZK
- 7 BANNER
- 8 BGC PARTNERS CL.A
- 9 BOK FINL.
- 10 BRIGHTHOUSE FINANCIAL
- 11 BROOKFIELD PROPERTY REIT A
- 12 CAPITOL FED.FINL.
- 13 CARETRUST REIT
- 14 CATHAY GEN.BANCORP
- 15 CINCINNATI FINL.
- 16 COLLIERS INTL.GP. (NAS)
- 17 COLUMBIA BKG.SYS.
- 18 COMMERCE BCSH.
- 19 CREDIT ACCEP.
- 20 CVB FINANCIAL
- 21 CYRUSONE
- 22 E TRADE FINANCIAL
- 23 EAST WEST BANCORP
- 24 ENSTAR GROUP
- 25 EQUINIX REIT
- 26 ERIE INDEMNITY 'A'
- 27 FIFTH THIRD BANCORP
- 28 FIRST CTZN.BCSH.A
- 29 FIRST FINL.BKSH.
- 30 FIRST FINL.BANC.
- 31 FIRST HAWAIIAN
- 32 FIRST MERCHANTS
- 33 FIRST MIDWEST BANC.
- 34 FIRSTCASH
- 35 FIRSTSERVICE (NAS)
- 36 FULTON FINANCIAL
- 37 GAMING AND LEIS.PROPS.
- 38 GCI LIBERTY A
- 39 GLACIER BANCORP
- 40 HANCOCK WHITNEY
- 41 HOME BANCSHARES
- 42 HOPE BANCORP
- 43 HUNTINGTON BCSH.
- 44 INDEPENDENT BANK GROUP

- 45 INDEPENDENT BANK
- 46 INTERNATIONAL BCSH.
- 47 INVESTORS BANCORP
- 48 LAMAR ADVERTISING 'A'
- 49 LENDINGTREE
- 50 LPL FINANCIAL HOLDINGS
- 51 NATIONAL GENERAL HDG.
- 52 NAVIENT
- 53 NEWMARK GROUP CL.A
- 54 NORTHERN TRUST
- 55 OLD NATIONAL BANCORP
- 56 PAC.PREMIER BANC.
- 57 PACWEST BANCORP
- 58 PEOPLES UNITED FINANCIAL
- 59 PINNACLE FINANCIAL PTNS.
- 60 POPULAR
- 61 POTLATCHDELTIC
- 62 PRINCIPAL FINL.GP.
- 63 REGENCY CENTERS
- 64 RENASANT
- 65 RETAIL OPPOR.INVS.
- 66 SABRA HEALTHCARE REIT.
- 67 SBA COMMS.
- 68 SELECTIVE IN.GP.
- 69 SERVISFIRST BANCSHARES
- 70 SIGNATURE BANK
- 71 SIMMONS 1ST.NAT.'A'
- 72 SLM
- 73 SOUTH STATE
- 74 SVB FINANCIAL GROUP
- 75 T ROWE PRICE GROUP
- 76 TCF FINANCIAL
- 77 TD AMERITRADE HOLDING
- 78 TEXAS CAPITAL BANCSHARES
- 79 TFS FINANCIAL
- 80 TOWNEBANK
- 81 TRUSTMARK
- 82 UMB FINANCIAL
- 83 UMPQUA HOLDINGS
- 84 UNITED BANKSHARES
- 85 UNITED COMMUNITY BANKS
- 86 UNITI GROUP
- 87 VALLEY NATIONAL
- 88 WASHINGTON FEDERAL
- 89 WESBANCO
- 90 WINTRUST FINANCIAL

- 91 WSFS FINANCIAL
- 92 ZILLOW GROUP CLASS A
- 93 ZIONS BANCORP.