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## Underpricing in the FinTech Industry Compared to Non-FinTech IPOS

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# UNDERPRICING IN THE FINTECH INDUSTRY COMPARED TO NON-FINTECH IPOs

by

KELSEY ANN GOSS

A thesis submitted in partial fulfillment of the requirements  
for the Honors in the Major Program in Finance  
in the College of Business Administration  
at the University of Central Florida  
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Thesis Chair: Melissa Frye, PhD

## **ABSTRACT**

In this thesis, I investigate the amount of underpricing in FinTech companies compared to non-FinTech companies. Both data sets contain thirty companies spanning from 1993 to 2018. Each FinTech company is matched to a non-FinTech company by year and comparatively similar revenue. Prior research explores underpricing on different industries, but it hasn't yet explored underpricing in the FinTech segment. The variables considered in this paper are offer price, close price, shares offered, number of banks involved, fees per share, and money left on the table. I find some evidence that the average amount of underpricing in both dollars and by percent is higher with non-FinTech companies than FinTech companies. However, difference in means tests show statistically significant differences only for the number of shares offered. It cannot be reliably said whether investors perceive a higher risk in FinTech companies or non-FinTech companies.

For my mom, who supports me unconditionally

## **ACKNOWLEDGEMENTS**

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## INTRODUCTION TO THE FINTECH INDUSTRY

As technology has improved in the last few decades, new opportunities to compete in an “internet-based economy” (Gomber et al. 2) have allowed FinTech companies to emerge.

FinTech companies are those that operate in the financial technology industry, often replacing a more traditional way of performing a financial service. The FinTech industry is widely regarded as “the digitalization of the financial industry” (3). Services the companies in this sector offer can be separated into seven distinct categories: cybersecurity, mobile transactions, data analytics, blockchain, peer-to-peer, robo-advising, and internet of things (Chen et al. 2063). To offer these types of services companies often have a lot of research and development costs associated with developing their technology. Businesses in this sector handle a *large* amount of data beyond the traditional financial industry. FinTech is bridging a previously unknown gap as a “marriage of financial services and information technology” (Arner et al. 3). Companies in this category are unique to the time, and they are changing the entire financial world.

There is an increasing amount of opportunity in the FinTech industry as it allows for lower service costs, increasing efficiency, and time saved. However, there is also inherent risk present with these relatively new companies. For one, since this industry is so new little is known about the future of the industry. Market capitalization is growing rapidly as many FinTech companies are in the growth stage. This brings into question both the future profitability and costs associated with running a FinTech business. Companies in this industry may possess more trade secrets than patents, which could be a risk to their intellectual property (Chen et al. 2098). It is especially important to note that research costs are high to start and maintain a FinTech company. Much of the value of companies in this sector is in their intellectual property such as

algorithms. However, courts have difficulty defining whether computer related ideas are eligible for a patent or if the idea is too abstract. In one case, the use of a regular computer to execute an escrow services for a financial transaction was denied a patent (Covington 3). Many of the companies in the FinTech industry face these challenges. Yet, there is also a risk to the consumer that makes the risk of this industry double-sided. Since this industry is so new, FinTech regulation isn't currently well covered and could hurt consumers. The traditional financial services industry has some of the strictest regulations of any industry, but not all of these rules apply to FinTech companies. The complicated technology of the financial technology industry makes current rules hard to apply as it "change[s] and proliferate[s] far more quickly than new rules are written" (Knight 3). Regular consumers have access to services that once might have been previously too expensive for the average customer as technology allows for lower costs.

Without regulation on FinTech companies, consumers are at risk for fraud and there's less transparency available. It creates uncertainty in the market and there is a lack of trust. Different FinTech companies can operate under different rules and methods, bringing a lack of consistency across the industry (23). As the industry continues to grow, regulation for Fintech is receiving increasing intention. However, laws are slow to be made and the complexity of the industry complicates jurisdiction. There continues to be a chasm between traditional financial services and financial technology services in regulation, technology, and overall risk. Consumers gain convenience and lower costs through FinTech, but they are also taking on a higher degree of risk. Risk is elevated for several reasons. There is ease of access into the industry, despite higher research costs than what the average business might have. Innovation and adaption make financial technology easy to spread quickly and widely. Technology also allows FinTech services to circumvent intermediaries that traditional financial servicers must go through. There

are also significantly less barriers as physical technology becomes cheaper and geographic distance becomes inconsequential (23-24).

The possibilities of the FinTech industry offer excitement but also risk. Investors have an opportunity for a high amount of growth in this industry, yet the unknown brings a great degree of risk. In finance, one of the main principles is that risk requires reward. For this reason, it is likely that the IPOs of the FinTech industry will be affected by underpricing.

## **POSSIBLE EFFECT OF UNDERPRICING ON IPOs**

In order for a company to go public, they sell equity through the markets. To do this, companies often need the help of a bank to execute this. Banks work to set the price of the stock with the company who is offering it. In return, banks receive a set fee on all shares, which is called a spread. The degree of “money left on the table” that the company doesn’t receive is called aggregate underpricing. Almost every company is affected by this to a certain degree. In 2018 alone of the 134 companies that went public, the average degree of underpricing was 19.1% (Ritter 3). This means that, on average, companies could’ve received 19.1% more money for their stock than they agreed upon. The reasoning for this is that banks want to guarantee enough investors bid so they don’t lose money. Underpricing may ensure that demand of institutional investors is high. There are further complexities to the reason behind underpricing that go beyond the scope of this paper. When pricing a stock, there is a degree of uncertainty. However, there is a lesser degree of underpricing when more information about the company offering the stock is available (Solomon). George Akerlof’s well-known lemon theory is applicable to underpricing as well. When an investor is uncertain of the quality of a car, they are unwilling to pay as much for it. The same can be true for stock as investors face a degree of uncertainty when a company first goes public.

With this logic, companies that have a higher degree of uncertainty will face a higher degree of underpricing. As the FinTech industry is relatively new and there is a lack of regulation, this brings a high degree of uncertainty to investors. However, there is a high amount of predicted growth with this industry as well. This teetering balance between innovation and the unknown calls into question the amount of underpricing these FinTech companies will face.

Additionally, the amount of underpricing will affect their proceeds based on their number of shares. If they have more shares, they're leaving more "money on the table." Money left on the table is the amount of underpricing per share times the number of shares. It is then possible for companies to have a lower percentage of underpricing, but they may still miss out on more money if they have more shares.

## **MOTIVATION FOR WRITING**

Jay Ritter is a prolific researcher on IPOs and their resulting underpricing. His research spans decades of IPOs, showing a steady increase in the percentage of underpricing over the years, with a few anomalies like 2008 (3). While he has studied the effect of underpricing in the technology industry, he has not researched underpricing in the FinTech industry. There are currently no studies on the effect the FinTech industry has on its IPOs by Ritter or any other researchers. There is a gap here in knowledge that can be quantified numerically through a study of IPOs of FinTech companies.

In addition, little research has been done in general on the FinTech industry itself. Much of the research that has been done explores what a FinTech company constitutes of, the effect of FinTech on consumers, and the lack of regulation in the industry. Gomber et al. covers the current research on FinTech characterizing the industry as a whole. Gomber et al. proposes that FinTech companies can replace traditional services, tend to involve data analytics and a technology focus, and are able to make more agile decisions (2-6). Much of the paper focuses on defining what FinTech is which is needed to understand the industry. Other researchers like Zetsche et al. explore the benefits of what FinTech can offer like efficiency and lower costs, yet they also consider that consumers aren't protected from risks (423-425). Much of the foundation of FinTech research involves classifying it, as technology creates a complex nature for these types of firms.

However, as this industry starts to grow, there is a knowledge gap on how these industries truly affect the economy and investors. Now that studies have informed the community on what FinTech is, it's time to define its effects. The high degree of uncertainty in

this industry will affect investors, but we do not yet understand in what way. There is value in understanding how stock prices may fluctuate from the starting price, as it will help determine the amount of risk investors feel there is in the industry. It also helps FinTech companies better understand their position in the economy.

## **RESEARCH QUESTION & HYPOTHESIS**

The purpose of this study is to test if there's a higher degree of underpricing on FinTech IPOs than there is on IPOs as a whole. While the percentage of underpricing is high on average at 19.1% on average in the last year (Ritter 3), it is possible the FinTech industry may see a higher or lower average than this. The intention of this study is to find the percentage of underpricing on the FinTech companies that had an IPO and compare it to the percentage of underpricing on companies in other industries. The study considers FinTech companies that fall into one of seven categories: cybersecurity, mobile transactions, data analytics, blockchain, peer-to-peer, robo-advising, and internet of things (Chen et al. 2063). This will allow for FinTech companies to be clearly defined and differentiated from other industries.

I hypothesize that there will be a higher degree of underpricing on FinTech companies as opposed to other industries. I expect that a large amount of uncertainty attributed to a number of sources will make underwriters price the stock at a lower price. The lack of regulation of FinTech, the complexity of the industry, and the lack of mature companies in the business will lead to uncertainty. In turn, I predict this uncertainty will cause a lower starting price for FinTech stocks. Yet, this also means I expect the first day closing price to be higher to reflect the market's consensus about the true value of the firm. I predict due to the future growth of the industry, the high potential reward, and the possibility of new services will entice consumers to pay more for the stock.



## **DATA AND METHODS**

To test this hypothesis, this study looks at 30 FinTech IPOs. The research includes offer price, closing price, the degree of underpricing, the year it happened, number of banks involved, amount left on table, number of shares offered, fees per share, and the company's revenue the year before the IPO. My study matches these FinTech IPOs to companies in other industries by year and revenue the year before the IPO. Each FinTech company has a pairing of a non-FinTech company matched by year and similar relative revenue the year before the IPO. All information on company IPOs was sourced from Bloomberg and Net Advantage databases.

With these variables, I compare them in an Excel table and use formulas to calculate the percent of underpricing. To better analyze and understand these numbers, I use these tables to create visuals in Tableau. These tables depict underpricing percentage in chronological order, and the bigger dots represent more banks involved in the IPO. I used t-tests to test for difference in means of FinTech versus non-FinTech companies in terms of underpricing in dollars, underpricing by percent, offer price, closing price, fees per share, and the number of banks involved. The study calculates the difference in underpricing of a FinTech company versus a company in another industry. The variables of offer price, closing price, fees per share, number of banks involved, shares offered, revenue the year before the IPO, and a dummy variable (representing FinTech or non-FinTech) are used to build regression models for money left of the table, underpricing in dollars, and underpricing percent.

## RESULTS

*Table 1: Side by Side Comparison of Underpricing in Dollars*

FinTech	Underpricing \$	Non-FinTech	Underpricing \$	Year	Difference \$
INTU	\$11.75	SANM	\$0.75	1993	\$11.00
ACIW	\$2.88	WSTL	\$10.25	1995	-\$7.37
FDS	\$3.50	NUVA	\$0.40	1996	\$3.10
EEFT	\$1.50	RMBS	\$18.25	1997	-\$16.75
NNI	\$0.80	CONN	\$1.04	2003	-\$0.24
CRM	\$6.20	NILE	\$7.90	2004	-\$1.70
WEX	-\$0.90	UARM	\$12.01	2005	-\$12.91
MA	\$7.00	JCG	\$5.55	2006	\$1.45
G	\$2.75	CNK	-\$0.09	2007	\$2.84
VRSK	\$5.22	VSI	\$0.95	2009	\$4.27
NTSP	\$2.00	TSLA	\$6.89	2010	-\$4.89
GDOT	\$7.99	SODA	\$4.12	2010	\$3.87
ENV	\$1.23	MXL	\$4.70	2010	-\$3.47
SSNC	\$0.08	JKS	\$0.01	2010	\$0.07
FLT	\$4.25	GNRC	-\$0.16	2010	\$4.41
RATE	\$0.34	LNKD	\$49.25	2011	-\$48.91
PFMT	\$1.60	LOCK	-\$0.64	2012	\$2.24
GWRE	\$4.12	PRSS	\$0.03	2012	\$4.09
WP	\$2.50	RH	\$7.10	2012	-\$4.60
LC	\$8.43	LOCO	\$9.03	2014	-\$0.60
ONDK	\$7.98	FRPT	\$4.11	2014	\$3.87
SYF	\$0.00	MIK	\$0.05	2014	-\$0.05
TNET	\$3.10	VA	\$7.00	2014	-\$3.90
QTwo	\$2.17	RUBI	\$5.09	2014	-\$2.92
SQ	\$4.07	MTCH	\$2.74	2015	\$1.33
FDC	-\$0.25	PFGC	\$2.18	2015	-\$2.43
VIRT	\$3.18	FIT	\$9.68	2015	-\$6.50
BL	\$6.70	MRAM	\$0.02	2016	\$6.68
ELVT	\$1.26	FNKO	-\$4.93	2017	\$6.19
PAGS	\$7.70	DBX	\$7.48	2018	\$0.22
<b>Average</b>	<b>\$3.64</b>		<b>\$5.69</b>		<b>-\$2.05</b>

Table 2: Side by Side Comparison of Underpricing by Percentage

FinTech	Underpricing %	Non-FinTech	Underpricing %	Year	Difference %
INTU	58.75%	SANM	7.50%	1993	51.25%
ACIW	19.20%	WSTL	78.85%	1995	-59.65%
FDS	20.59%	NUVA	3.64%	1996	16.95%
EEFT	11.11%	RMBS	152.08%	1997	-140.97%
NNI	3.81%	CONN	7.43%	2003	-3.62%
CRM	56.36%	NILE	38.54%	2004	17.83%
WEX	-5.00%	UARM	92.38%	2005	-97.38%
MA	17.95%	JCG	27.75%	2006	-9.80%
G	19.64%	CNK	-0.47%	2007	20.12%
VRSK	23.73%	VSI	5.59%	2009	18.14%
NTSP	18.18%	TSLA	40.53%	2010	-22.35%
GDOT	22.19%	SODA	20.60%	2010	1.59%
ENV	13.67%	MXL	33.57%	2010	-19.90%
SSNC	0.53%	JKS	0.09%	2010	0.44%
FLT	18.48%	GNRC	-1.23%	2010	19.71%
RATE	2.27%	LNKD	109.44%	2011	-107.18%
PFMT	17.78%	LOCK	-7.11%	2012	24.89%
GWRE	31.69%	PRSS	0.16%	2012	31.53%
WP	14.71%	RH	29.58%	2012	-14.88%
LC	56.20%	LOCO	60.20%	2014	-4.00%
ONDK	39.90%	FRPT	27.40%	2014	12.50%
SYF	0.00%	MIK	0.29%	2014	-0.29%
TNET	19.38%	VA	30.43%	2014	-11.06%
QTWO	16.69%	RUBI	33.93%	2014	-17.24%
SQ	45.22%	MTCH	22.83%	2015	22.39%
FDC	-1.56%	PFGC	11.47%	2015	-13.04%
VIRT	16.74%	FIT	48.40%	2015	-31.66%
BL	39.41%	MRAM	0.25%	2016	39.16%
ELVT	19.38%	FNKO	-41.08%	2017	60.47%
PAGS	35.81%	DBX	35.62%	2018	0.19%
<b>Average</b>	<b>21.76%</b>		<b>28.96%</b>		<b>-7.20%</b>

*Table 3: Sample Summary Medians*

	<b>FinTech Stocks Median</b>	<b>Non-FinTech Stocks Median</b>
Underpricing \$	\$2.99	\$4.12
Underpricing %	18.84%	25.12%
Money Left on Table	\$41,904,600	\$29,916,635
Offer Price	\$16.00	\$15.00
Closing Price	\$18.49	\$19.60
Fees Per Share	\$0.91	\$1.01
Shares Offered	14,420,000	8,468,039
# of Banks Involved	6.00	6.00

Table 4: Sample Summary Means

	FinTech Stocks Mean	Non- FinTech Stocks Mean	FinTech Stocks Standard Deviation $\sigma$	Non- FinTech Stocks Standard Deviation $\sigma$	T-Statistic	P-value
Underpricing \$	\$3.64	\$5.69	\$3.12	\$9.52	-1.12	0.27
Underpricing %	21.76%	28.96%	17.12%	38.79%	-0.93	0.36
Money Left on Table	\$112,007,660	\$61,948,369	\$216,545,231	\$102,944,469	1.29	0.21
Offer Price	\$17.15	\$16.62	\$7.06	\$6.83	0.30	0.76
Closing Price	\$20.79	\$22.31	\$8.81	\$15.36	-0.47	0.64
Fees Per Share	\$1.01	\$1.09	\$0.43	\$0.47	-0.67	0.51
Shares Offered	33,941,000	12,502,059	43,316,139	3,536	2.64	0.01
# of Banks Involved	7.53	6.80	6.06	3.60	0.57	0.57

*Table 5: Regression Model for Money Left on Table*

	<b>Coefficients</b>	<b>T-Statistic</b>	<b>P-value</b>
Intercept	(2,025,241.89)	-0.0386	0.9693
Shares Offered	2.71	2.9395	0.0049
Offer Price	34,764,204.71	3.4459	0.0011
# of Banks Involved	(14,445,520.96)	-3.0397	0.0037
Fees Per Share	(387,976,317.97)	-2.5418	0.0140
Revenue Year Before IPO in Millions	(24,648.50)	-3.4097	0.0013
Dummy FinTech or Non-FinTech	(39,772,263.15)	-1.1956	0.2372
<b>R-Square</b>	<b>56.37%</b>		

*Table 6: Regression Model for Underpricing in Dollars*

	<b>Coefficients</b>	<b>T-Statistic</b>	<b>P-value</b>
Intercept	-4.34	-1.86	0.07
Shares Offered	0.00	1.68	0.10
Offer Price	0.02	0.05	0.96
# of Banks Involved	-0.37	-1.76	0.08
Fees Per Share	10.59	1.56	0.12
Revenue Year Before IPO in Millions	0.00	-0.74	0.46
Dummy FinTech or Non-FinTech	-2.38	-1.61	0.11
<b>R-Square</b>	<b>50.75%</b>		

*Table 7: Regression Model for Underpricing by Percentage*

	<b>Coefficients</b>	<b>T-Statistic</b>	<b>P-value</b>
Intercept	0.21	1.62	0.11
Shares Offered	0.00	0.83	0.41
Offer Price	0.00	0.17	0.86
# of Banks Involved	-0.02	-1.78	0.08
Fees Per Share	0.13	0.35	0.73
Revenue Year Before IPO in Millions	0.00	-0.66	0.51
Dummy FinTech or Non-FinTech	-0.09	-1.07	0.29
<b>R-Square</b>	<b>17.55%</b>		



## FinTech Stocks Underpricing

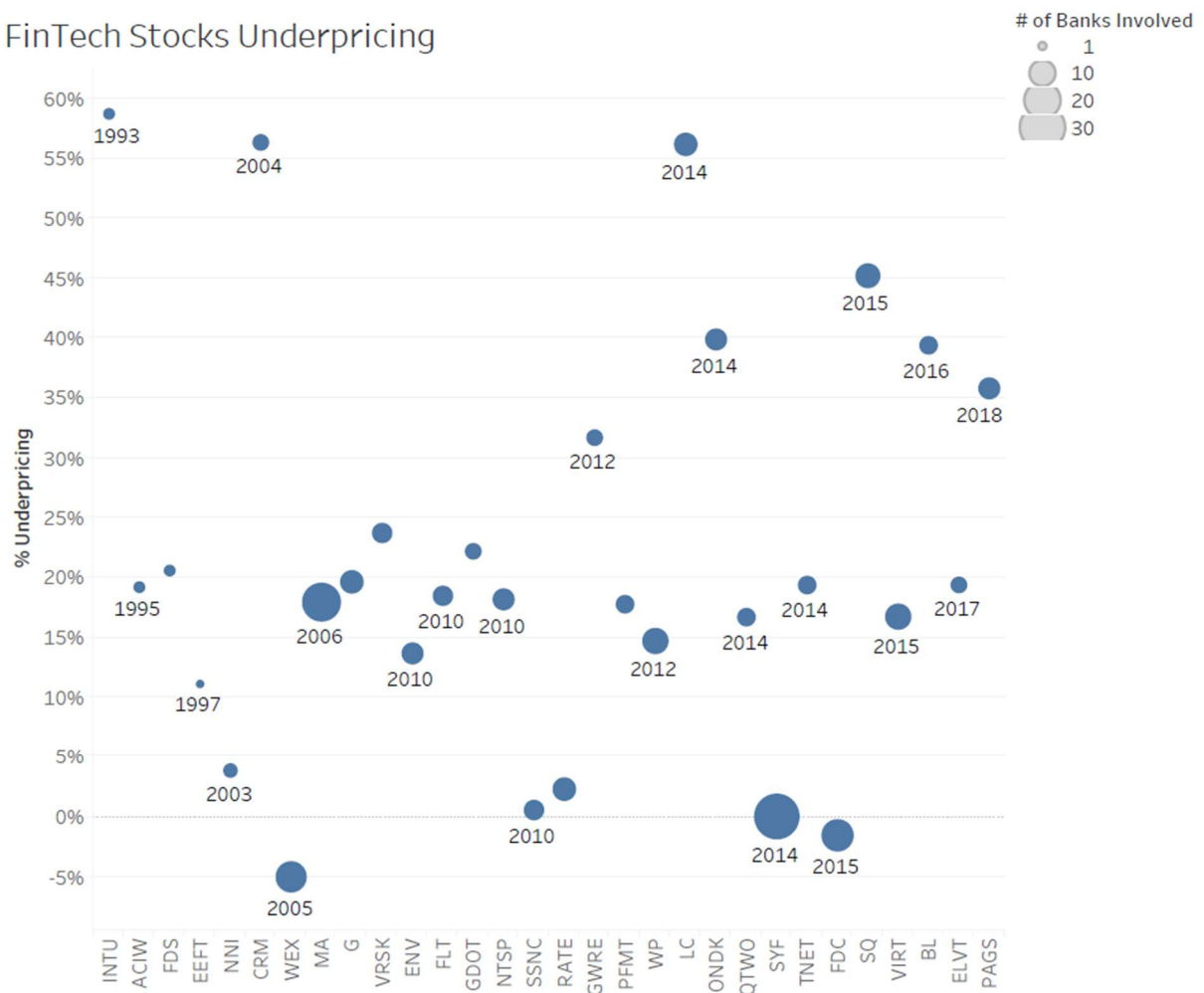


Figure 1: Underpricing on FinTech Stocks with # of Banks Involved Filter

## Non-FinTech Stocks Underpricing

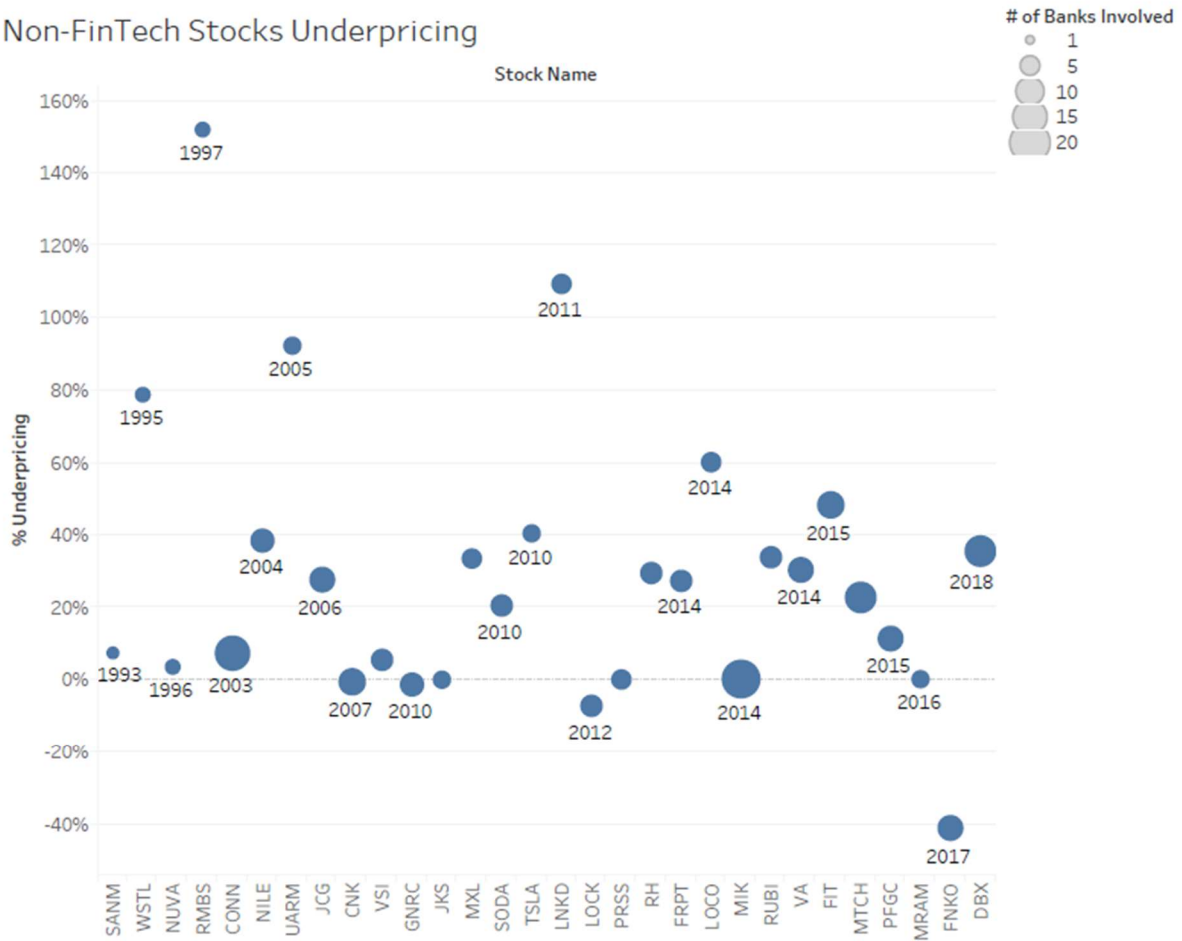


Figure 2: Underpricing on Non-FinTech Stocks with # of Banks Involved Filter

Table 1 shows a side by side comparison of each FinTech company matched to its non-FinTech company pairing. It depicts a higher average underpricing in dollars of non-FinTech companies at \$5.69. Despite Fin-Tech companies having a lower average of \$3.64 underpricing holistically, on an individual basis half of FinTech companies are more underpriced than their Non-FinTech pairing. The same is true in table 2, with non-FinTech companies having a higher percentage of underpricing at an average of 28.96%. However, half of the FinTech companies are more underpriced by percentage on their individual paired basis. These higher underpricing averages may convey that when non-FinTech stocks are underpriced, they are underpriced to a higher degree. As a sample, the study shows a more even split as half of FinTech stocks are more underpriced than their non-FinTech counterparts.

Table 3 displays the medians of all of the variables collected. In every case for both FinTech and non-Fintech stocks, the median is lower than the mean. It is possible this represents that there are outliers that are bringing the averages up of the data. However, the medians also show higher underpricing in both dollars and percent on non-FinTech stocks than FinTech stocks. This may act as a reinforcement that when non-FinTech stocks are underpriced, they are underpriced to a higher degree.

The means depicted in Table 4 may offer some insight to the variables that affect underpricing. FinTech companies have a higher average offer price and a lower closing price. They also have lower fees per share, which is interesting to note as fees are usually a set percentage based on offer price. FinTech companies also have more banks involved in their IPO. Figure 1 and 2 show a possible negative correlation with more banks causing less underpricing. It's important to note that my data didn't show any statistical significance in the difference of

means except for shares offered. FinTech companies tend to sell more shares in their IPO than their non-FinTech counterparts. In turn, this likely leads to the reason that FinTech companies on average have more money left on the table despite lower average underpricing. As mentioned, the t-tests don't show any statistically significant difference between means except for the shares offered variable. The means of the other variables shouldn't be dismissed though, as there is a high amount of variance affecting these means. It is still useful to consider them, and it is important to consider the relatively small sample size.

Table 5, 6, and 7 are regression models using the same independent variables with different dependent variables. I used a dummy variable to differentiate between FinTech stocks and non-FinTech stocks in the model, which shows my dependent variables are not significantly different for FinTech companies after adding control variables. In turn, this reconfirms the results of the t-tests performed. Table 5 is a regression model to predict money left on the table. The variables account for 56.37% of the money left on the table. This regression model has the highest R square of the models tested. Table 6 has an R square of 50.75% predicting underpricing in dollars. Table 7 predicting underpricing by percentage has the lowest R square at 17.55%. The best fit may be improved with more variables or a larger sample size. Stock markets are volatile and investor preferences are hard to account for, which may explain some of the unexplained variance.

Figure 1 shows underpricing by percentage in chronological order for FinTech stocks. It appears that the majority of stocks are underpriced between 10-25%. There are some outliers above and below this range. Some correlation may be seen between the number of banks involved and the percentage of underpricing. A similar pattern may be discerned in Figure 2

looking at the non-FinTech stocks. Figure 2 also shows a more widespread range of underpricing than the FinTech stocks in Figure 1. FinTech stocks appear to be more consistent in the amount of underpricing they have. This is also evident in the standard deviation of underpricing in both dollars and percentage seen in table 4.

Overall, there is some limited evidence that underpricing is higher on non-FinTech stocks than FinTech stocks. It would be valuable to expand this study to include a larger sample size, especially as more FinTech stocks go public. Investors and banks may be more aligned in the amount of risk they perceive in FinTech stocks than non-FinTech stocks. It's possible that investors are aware of the risks mentioned previously in this paper and are unwilling to pay more for it. My hypothesis is contradicted by this data which may be attributed to a number of reasons including investor preference, sample size, and variables considered.

## **CONCLUSION**

This study's intent was to test the amount of underpricing present on FinTech stocks. For this information to have value, it was compared to matched non-FinTech companies by year and similar revenue in the year before the IPO occurred. Previous studies haven't explored underpricing on FinTech stocks, and my research could be farther expanded to include a larger sample size. In my study, none of the variables I considered were statistically significant different except for shares offered. However, the high level of variance may skew this information. Farther research with more matched companies could provide a larger sample size to create a more accurate regression model with a higher R square. FinTech stocks were significantly higher in number of shares offered compared to their non-FinTech counterparts. Other studies have shown that larger IPOs are less underpriced. As more FinTech companies go public, this size effect could be more fully explored in research.

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