

FIN 608 Final Project

Analysis Report on Robinhood Markets

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Introduction to the Robinhood Markets: the leading Internet broker in the U.S.

The Robinhood Markets company was founded in 2013 and built its product structure within two years. As a zero-commission stock trading agent in the United States, Robinhood was established in 2013 and advocated the realization of national financial democratization. At the beginning of its startup, it attracted retail investors with zero commission slogans.

In March 2015, the company launched Robinhood APP to provide customers with “zero commission” stock trading services. The company claims to build the “most trusted, lowest-cost and most culturally attributed financial App in the world.” Benefiting from the crazy pursuit of young investors, the company has achieved rapid expansion. During the COVID-19 outbreak in 2020, it has grown even more rapidly and has become the largest retail stock trading platform in the United States. As of Jun. 30th, 2021, the company has approximately 22.5 million deposit accounts and 21 million monthly active users.

Management and Business Analysis Part

Investors and Finance: Held by Leading Hedge Funds.

Since its establishment, Robinhood has completed 13 rounds of financing, with a total financing amount of U.S. \$ 7.612 billion. At present: The company mainly has four famous venture capital investors. Among them, DSTGLOBAL was established in 2009 and focused on venture capital, private equity, and financial services. It currently mainly provides funds for the later risk investment in the Internet industry. Indexventures is a European venture capital company. It has cooperated with many outstanding entrepreneurs since 1996 and founded many companies such as Adyen, Deliveroo, and Dropbox. RibbitCapital was founded in 2012. It is a venture capital company in Silicon Valley with a unique business sense and mainly focuses on coverage and innovative brands in the financial field. Robinhood did not overlook the expansion while funding. On Mar. 25th, 2019, the company acquired the media startup Marketsnacks and renamed it Robinhoodsnacks. Robinhoodsnacks mainly provides customers with financial news. On Mar. 15th, 2021, the company acquired Binc to enhance the technical teams. Benefiting from financing and acquisitions, the company has expanded and currently has 2,100 full-time employees. In July 2021, Robinhood was listed on Nasdaq. Based on the issue price of \$38, the company's market value reached \$ 32 billion.

Boarder and Management Team: Excellent Backgrounds and Great Decision-Making Power

The company's co-founder Vlad Tenev has a master's degree in mathematics from Stanford

University. His outstanding vision made him recognize the importance of public participation in financial investment. Vladtenev, the co-founder, president, and CEO, holds 40.2% of Class B Stock, and Baijubhatt, the co-founder and chief creative officer, holds 59.8% of Class B shares. Besides, four other investment institutions hold more than 5% of the company's Class A shares, which are DST Global, Index Ventures, New Enterprise Associations (NEA), and Ribbit Capital. The remaining shareholders hold less than 5% shares of the company.

The company has Class A and B stocks. Class A shares correspond to one voting right per share. And Class B shares correspond to 10 voting rights per share. The setting of the dual shareholding structure makes the founder Vladimir Tenev have 23.87% of the voting rights, and Baiju Bhat has 35.49% of the voting rights. The co-founder team has nearly 60% of the voting rights, ensuring the company's decision-making efficiency.

Lawsuit: Potential Negative Attitude in terms of Morality

The business model aiming at long-tail customers also brings law and moral risks to Robinhood. In 2020, Massachusetts regulators accused Robinhood of exposing users to unnecessary trading risks and failing to meet strict fiduciary standards that require broker-trading firms to act in the best interests of their clients. The indictment alleges Robinhood's duty to protect its clients and their money. However, Robinhood allows inexperienced clients to make unlimited transactions without prior screening.

Robinhood used the promise of free stock trading to attract new users and used tactics such as 'gamification' to encourage and entice them to use its app, 'treating it as a game to lure younger and inexperienced customers into more deals, which is not only unethical, but nowhere near the standards we require in Massachusetts.' Such words from the indictment showed that the society may feel really negative for Robinhood to expand its service to the long-tail customers, who provide most of the companies' revenue and are the core competitiveness of the company.

Another famous lawsuit about the company is about the trading of GameStop (GME). GameStop stock price surged during January 2021. On Thursday, Jan. 28th, 2021, Robinhood CEO, Vlad Tenev, decided to halt the trading of GameStop stock on his company's stock trading app. Such orders, no matter what reason for it, bring an accusation to the company. Although Robinhood has handled this obstacle, the company will continue to face the negative impact of this event, doubting the companies' position and credit at a financially risky time.

Service: Three Sectors Support Growing Speed

As the fastest-growing financial institution in the United States, Robinhood's revenue comes from three major sectors: stocks/ETFs/options/cryptocurrencies trading business, net interest income of financing funds and bonds, and the subscription of service business. Robinhood mainly plays the "middleman" role in the trading business, creating income from sending users' purchase orders to the market makers and matching them with transactions. Among the net

interest income, Robinhood provides customers with funds and bond financing services to obtain 2.5% of the interest income from the customer's margin accounts. At the same time, Robinhood earns from the interest rate spread from users' idle funds. We can see the revenue situation and trend of different parts of the revenue in Figure 1 and Figure 2.

The subscription service is a member service launched by the company, charging monthly membership subscription fees. In 2020, the company's net interest income increased dramatically, from \$71 million in 2019 to \$177 million in 2020, with a year-on-year increase of 151%. From the perspective of quarterly data, the platform's net interest income was in a stable growth state. In the fourth quarter of 2019, it was \$ 12 million, which increased to \$ 68 million in the third quarter of 2021. The overall growth rate in two and a half years reached 467%. The high-speed rise in net profit is mainly due to the two aspects of fund and bond financing. We can check the change in the revenue distribution for this period in Figure 3.

Firstly, the demand for financing has increased significantly. The financial customers with margin accounts increased from 100,000 in 2019 to 700,000 in the first half of 2021, and the average financing amount increased from \$ 6,373 to \$7,735. Secondly, The year-on-year bond financing balance growth rate has achieved 245%, and the interest rates of popular stocks have increased. However, the interest rate of the margin deposit was reduced to 2.5%, and the interest-free policy has been published for the financing activities, which is lower than \$1000. The interest income proportion fell slightly, from 20% in the fourth quarter to 12%, with a decrease of 40%. And we can see the trend of different interest income revenue in Figure 4.

Although the total subscription service income has increased, the proportion has declined significantly. In the first quarter of 2019, the platform income obtained from the subscription service was \$ 11 million, accounting for 19%. In the second quarter of 2021, other income had increased to 46 million dollars, which was increased by 318%, while the proportion decreased to 8%. The company's steady subscription income cannot be divorced from the increase in the number of members. In the first half of 2020 and 2021, the company's subscribers increased by 700,000, eventually reaching 1.6 million. The increase is dramatic compared with the number of 200,000 in 2019. We can check the trend of different business revenue in Figure 5.

Market Trend: From Offline to Online

In the 1990s, the financial and computer industries were encountered, and a spark of change was generated. The era of Internet financial companies came. In the 21st century, the mobile Internet became the business focus when smartphones and mobile devices were widely popularized. Users' mobile-first living habits promote financial service companies to change their business models and make technological innovations. The efficient and digital ways to invest are filtering into people's minds. Simple and efficient online account opening is the trend. In traditional financial services, the account opening process is complicated and inefficient. Customers need to go to the offline business department for the stock account opening to conduct stock transactions on the P.C. side. From the application to success usually takes several weeks, which is not conducive to seizing the best investment opportunities. In the

Internet environment, investors can quickly complete the account opening operation without leaving the house. The emergence of Internet financial services has brought a lot of impact on traditional financial services. It breaks the geographical restrictions of securities transactions, expands the scope of service and potential customer markets, reduces marketing costs, and makes real-time transmission of information. The transaction methods of financial products have been completely changed. Traditional financial service companies must quickly conform to Internet development and reach online financial services to seek survival and development.

Internet convenience brings an increase in stock line transactions. In 2018, the online transaction volume of the global securities market was U.S. \$ 37.3 trillion, with an increase of 8.3% compared to U.S. \$ 34.8 trillion in 2017. From 2012 to 2018, the online transaction volume increased from 12.3 trillion to 37.7 trillion, with a CAGR of 20.6%. From the proportion of retail transactions of financial service companies, offline is gradually replaced by online, with the online proportion of 20% in 2012 to 47% in 2017. It was expected to grow in the future continuously. In 2012, the U.S. securities market's regulations were only \$ 5.5 trillion, rising to 11.6 trillion in 2018 with a growth rate of 110% and 13.24% of CAGR. If it maintains a stable 5% growth rate, it will reach U.S. \$ 14.9 trillion in 2023. The stable growth over many years has shown the crazy development of the online financial service market. The growth space of Internet financial services is very considerable.

Core Competitiveness: Zero Commission into a New Business Model

The design of zero commissions and zero shares directly hit the demand for retail investments. Unlike professional institutional investors, ordinary individual investors use fewer funds for investment. The commission system of \$ 5-10 per traditional broker has increased transaction costs and suppressed individual investors' investment needs. Different from the traditional financial service model, Robinhood jumped out of the restrictions on commissions and the minimum threshold of accounts, entered the capital market with zero commission slogans, enhanced the enthusiasm of retail investments, and instantly released the transaction needs of younger generations of investors. "Zero commission" allows investors to perform short-term operations without worry. For investors with lower earnings and less principal, Robinhood provides free stock trading business, and cost pressure has been greatly reduced. At the same time, Robinhood's zero-stock design reduces the investment door of high-priced stocks. The smallest unit of stock transactions is no longer a share but can buy less than one share. Users can buy Facebook stocks at \$ 1. The extremely low transaction threshold has expanded ordinary investors' investment target so they can buy more value stocks and build a better investment portfolio. The "double zero" model aims at the lower market investors, promotes young people, students, and other groups to conduct stock transactions, and prompts the company to become the main portal of American retail investments.

However, the zero commission model resulted in no commission income, so the company focused on the income brought by the order flow created by sending the options, shares, and cryptocurrency orders to market makers. The income depends on the scale of the transaction

volume and the bid-ask spread. Because the small order flow is not easy to affect the market price, it has greater value for the payment party. Robinhood regards retail investments as the core, most of its order flows are less than 100 shares. The pricing risk is small, so it is more likely to be favored by the market makers. In the first half of 2021, 69% of the company's total revenue came from five market makes, of which 21% came from Citadel Securities.

In February 2018, Robinhood officially launched cryptocurrency transactions, allowing users of five states to conduct two types of cryptocurrency transactions on the platform. In 2019, Robinhood obtained Bitlicense (digital currency license) in New York State. As of Mar. 31st, 2021, the platform has expanded the coverage areas to 46 states and Washington Special Administrative Regions, supporting seven different cryptocurrency transactions, such as BTC, ETH, and Doge.

At the same time, the increase in platform income cannot be divorced from the increase in the scale of trustee assets. The size of the asset scale reflects the user's dependence on and trust in the platform. In recent years, Robinhood's trustee assets have been steadily rising. Until the end of 2021, Robinhood's assets of assets are 102 billion U.S. dollars, including \$ 72.6 billion in stocks, \$ 2.4 billion in options, \$ 22.7 billion in cryptocurrency funds, and \$ 9.9 billion in cash. In recent years, the performance of cryptocurrencies has been very eye-catching. From US \$ 415 million in 2019 to \$ 22.7 billion in 2021, it has doubled by more than 50 times in two and a half years.

Opponents: no obvious opponents at Robinhood's level

As we discussed above, Robinhood relies on a zero-commission business model and makes most of its profit by sending trading flow to market makers. We can hardly see any company that totally complicates Robinhood's business model, especially at the company's scale. If we need to pick one, then Charles Schwab can be viewed as one of the most powerful opponents of Robinhood. In some ways, Charles Schwab and Robinhood are similar: Both brokers will allow you to trade stocks and exchange-traded funds with no commission, and both offer fractional shares so investors can buy slices of public companies with small amounts of money. However, where they differ is in the level of service provided. Charles Schwab is a well-rounded broker with offerings for every type of investor. Retirement savers will find a large selection of no-transaction-fee mutual funds, active traders will get access to powerful trading platforms and advanced trading strategies like futures, and those who want to be completely hands-off can turn to Schwab's financial advisor services. Robinhood, on the other hand, caters more to active investors who want to trade stocks, options, ETFs and cryptocurrency through mobile. But the company did roll out IRAs with a 1% match in December 2022. Robinhood also stands out for providing initial public offering access and free trades — particularly on options and crypto, where other brokers still charge fees. The focus of Robinhood's service is why Charles Schwab will not be able to take market share in this certain area.

Risks Analysis

1. The company focuses on PFOF revenue, but the U.S. Congress, the U.S. Securities and Exchange Commission, and other institutions supervise the profit strategy. The company's future operating income is uncertain.
2. Most of the company's transaction revenue comes from cryptocurrencies, and the price volatility of cryptocurrencies is large, leading to an increase in income uncertainty.
3. The competition in the industry has intensified, the number of U.S. commission-free securities firms is gradually increasing, and fierce industry competition will affect the company's profit.

Quantitative Analysis Part

Historical Stock Data Analysis

The historical raw stock price and returns of Robinhood Markets(HOOD) are shown in Figures 7 & 8. We can see that the Price of HOOD shows a downward trend after it is listed on the NASDAQ. And the statistical features of HOOD's stock return are shown in Table 1.

From Table 1, we can see that the mean stock return of HOOD is -0.002044, which is negative and consistent with the downward stock price trend during the period. Furthermore, from Figure 8, the distribution of it is heavily fat-tailed on both sides. So the likelihood of volatility greater than expected should be considered when we build our investment strategies. The three different betas of it during this period are all positive and greater than 1. This means it has greater volatility than the stock market, and its prices generally move in the same direction as the market. These features also should be considered when we put Robinhood Market into our investment portfolio.

As for the Sharpe ratio of HOOD and its competitors during the same period, we can compare them in Table 2. The risk-free rate we use is the 10-year treasury rate, approximately equal to 0.0000687 after converted into the daily base. For the yearly Sharpe Ratio, we calculate it using the following formula.

$$\text{Sharpe Ratio} = (R_p - R_f) / \sigma_p \times \sqrt{252}$$

From Table 2, we can see that the yearly Sharpe Ratio of Robinhood Markets is significantly lower than the yearly Sharpe Ratio of its competitors, which is -0.56. This is mainly because of the following reasons. First, the stock price of it kept the trend of going downward after it was listed on the NASDAQ. And second, the stock price remained low in the recent quarter while others recovered with the economics in the recent quarter. From the result of the Sharpe ratio comparison, we can see that Robinhood Market may not be a good choice for investment when compared to its competitors unless it is highly undervalued in the present.

Financial Statements

Based on the financial reports shown in FactSet, we can see that the financial statement of Robinhood is reported in both non-GAAP standards and GAAP standards. And because of the clear structure of its business activity and company structure, the financial reports do not seem to have any tricky or smoke-and-mirror in them.

DCF Analysis

The full process of Unleveraged DCF Analysis of Robinhood Markets is shown in Tables 3, 4, 5 and 6. As there is no debt for Robinhood, the WACC is 12.06% after calculation. Based on the result of the DCF analysis results, we can have that the predicted stock prices of Robinhood Markets are \$46.81, \$47.58, and \$53.80 for future 1-year, 3-year and 5-year. Therefore, we can see that Robinhood Markets are highly undervalued now. So we can have the investment thesis of Robinhood should be buying it now and waiting to sell it later.

Debt Analysis

In terms of debt, we found that Robinhood Markets has no short-term or long-term debt issued. And therefore, there are no bond ratings of the company from both Moody's or S&P. Its liabilities mainly come from the current liabilities, including the following four sectors: Accounts payable and accrued expenses, Payable to users, Securities loaned and other current liabilities. Their long-term liabilities are relatively small and mainly come from Operating lease liabilities. Detailed information for the above liabilities is shown in Tables 7 & 8. This might be because Robinhood Market is a newly listed company, their business is in stable operation, and the business revenue is in rapid growth. So with the sufficient amount of cash they have, there is no need for them to issue the company bond to raise money. This means Robinhood Markets can keep expanding in the future with a strong debt-paying ability and a relatively healthy business environment. So, we think Robinhood Markets might be an undervalued stock, and the stock price will increase with the expansion of the company in the future five years.

Relative Valuation

As Robinhood Market is in the Business Segments of Trading & Brokerage Activities, its key competitors in this e-Broker business field are Global Brokerage Inc A, LPL Financial, Raymond James Financial, Ameriprise Financial, Charles Schwab, and China Fin Sp ADR. We can have the relative valuation metrics of Robinhood Market and its competitors in Table 9.

However, we can only use the company Charles Schwab to use the relative evaluation method on the Robinhood Market. The first reason is that, for companies Global Brokerage Inc and China Fin Sp ADR, these two companies are going to be delisted, no longer suitable for the relative valuation. And in the rest of the companies, only the company Charles Schwab can be used for relative valuation. This is because the Robinhood Market's business nature differs from traditional brokers, which is illustrated in the previous sectors. And Robinhood Market and

Charles Schwab, both brokers will allow their clients to trade stocks and exchange-traded funds with no commission, and both offer fractional shares so investors can buy slices of public companies with small amounts of money. So their business natures are the most relevant.

Therefore, based on Charles Schwab's and Robinhood Markets' relative evaluation metrics, we can see that we should use the P/B ratio and P/S ratio to do the relative evaluation. As Robinhood Markets have a negative P/E ratio and the PEG ratio is equal to 0, these two ratios are no longer suitable for it to do the relative valuation. Therefore the evaluated prices of the Robinhood Market are:

$$\text{Price}_{\text{PB}} = \text{Current Price}_{\text{HOOD}} \times \text{PB}_{\text{SCHW}} \div \text{PB}_{\text{HOOD}} = 9.52 \times 3.29 \div 2.1 = \$ 14.91$$

$$\text{Price}_{\text{PS}} = \text{Current Price}_{\text{HOOD}} \times \text{PS}_{\text{SCHW}} \div \text{PS}_{\text{HOOD}} = 9.52 \times 8.40 \div 8.36 = \$ 9.57$$

Therefore, from both relative valuation methods, we can have that the company Robinhood Market is undervalued.

Insider Trading Activity

Based on the SEC official website, we can see that for Robinhood Markets, from Forms 3, 4, and 5 listed on it, there does exist insider trading, and most of the trading activities are in Form 4. And there are outstanding options for the insiders, and a summary of their option exercise information is listed in Table 10.

And to check if insiders made any timely purchases or sales in the past, we listed their purchases and sales dates in Figure 9. The determination of purchases and sales is based on the aggregated position change from all the traded insiders. From the figure, we can see that there is no significant evidence of insiders making any timely purchases or sales in the period before March 2022. However, after that, there looks like some of the insiders' tradings are purchased at relatively low prices and sold at relatively high prices. But the stock prices of HOOD are relatively stable in that period of time, so there is no strong evidence for insider trading for Robinhood Markets.

Comparison with Benchmark

Here, we chose S&P 500 index as our benchmark to do the comparison. And use Fama-French three-factor model to adjust HOOD's stock price to check if there is abnormal performance after adjusting for market performance, firm size, and book-to-market factors.

In order to adjust HOOD's stock price and for the three above factors, we use regression of market performance, firm size, and book-to-market factors on excess return of HOOD. The formula is shown in the following equation.

$$R_{it} - R_{ft} = \alpha_{it} + \beta_1 (R_{Mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t$$

Here, we have that R_{it} is the daily return of the HOOD, R_{ft} is the daily risk-free rate, R_{Mt} is the daily return of the S&P 500, SMB_t is the factor for firm size, and HML_t is the factor for book-to-market. Because of the limitation of the Fama-French three-factor data, our comparison is done for the period 2021-07-29 to 2022-10-31.

The regression results are shown in Tables 11 & 12. From the tables, we can see that all the coefficients are significant, and the R-square is 0.26, which means these three factors approximately explain 26% of the excess return of the HOOD. The residuals' distribution is approximately normal (Figure 10), and the alpha is not significantly different from 0. This means that there is no significant anomaly in this model, so there is no abnormal performance after we adjust for market performance, firm size, and book-to-market factors. The regression equation is shown in the following.

$$R_{HOOD_t} - R_{ft} = 0.0001 + 1.1073(R_{S\&P500_t} - R_{ft}) + 0.0168SMB_t - 0.0113HML_t$$

From the comparison between the HOOD and S&P500 in Figure 11, we can have that they have moved in the same direction in the selected period, but HOOD has greater volatility. This can be explained by HOOD's beta being greater than 1. And with the economy recovering in the future, the price of Robinhood Markets will also go up.

Conclusion

Based on our overall findings shown above, we can have the result that based on the DCF analysis and relative valuation, the stock of Robinhood Company is undervalued now and going to raise in the future five years. Besides, based on the analysis of its business activity, Robinhood will continue its high-speed growth and dominate the competition among the new type e-Brokers. It also has an excellent management board with good backgrounds and great decision power. Therefore, our analysis from multi-aspect shows that Robinhood Markets is a company that is worth investment.

However, there are also risks related to the company. Its revenue structure can be highly affected by the regulation. If the regulations change in disadvantaged ways, its business activity can be harmed seriously. Moreover, cryptocurrencies, which are the main income sector of it, also have an unclear future, and the volatility of it is really large. The company should increase its business lines and make its revenue less dependent on certain types of assets. Besides, the management board should also learn from the past lawsuit and keep a good reputation among the users. In this way, Robinhood can increase its user stickiness and build a solid foundation for further growth.

So, as Robinhood Markets stock is underpriced now, our investment thesis for Robinhood Market is to buy it now and wait for its price to get to over \$14.91 for investors whose investment horizon is less than one year. And for investors whose investment horizon is greater than that, our investment thesis for Robinhood Market is to buy it now and wait for its price to get to over \$46.81.

Appendix

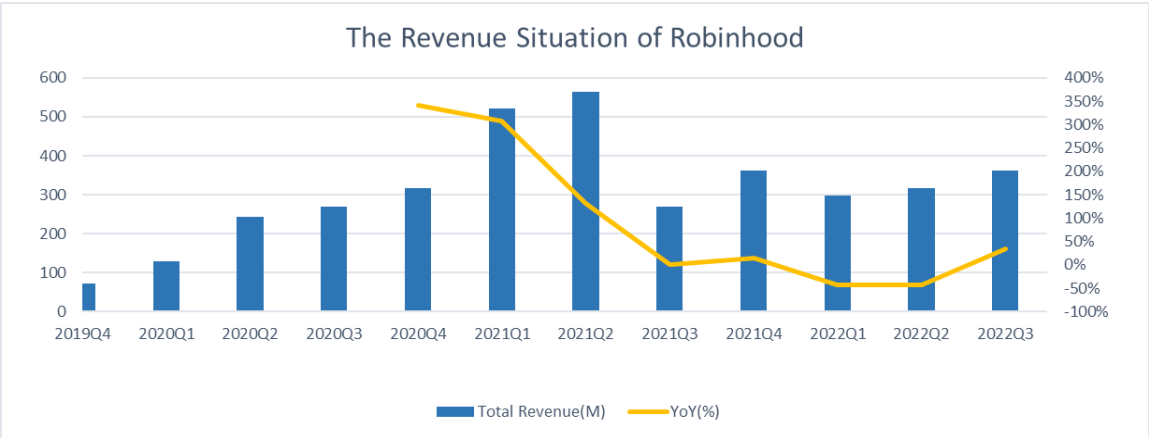


Figure 1: The Revenue Situation of Robinhood

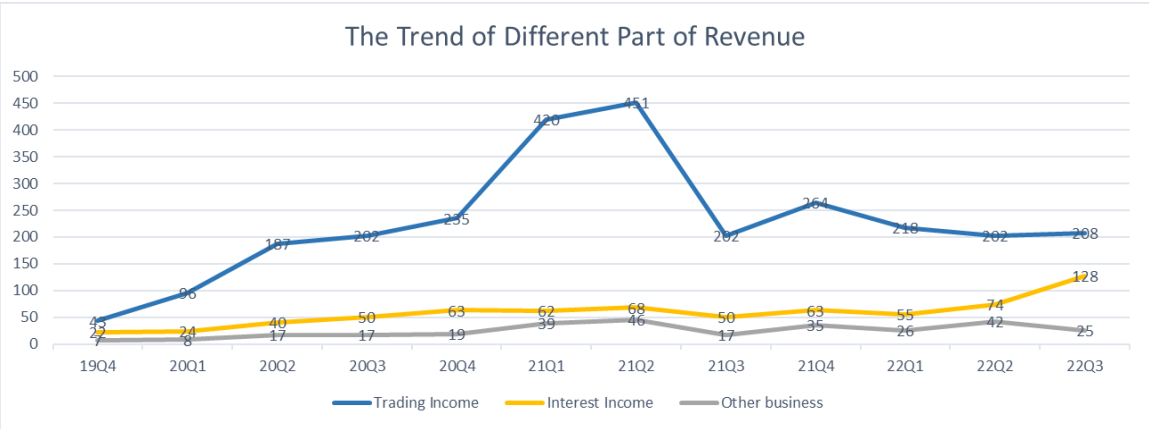


Figure 2: The Trend of Different Part of Revenue of Robinhood

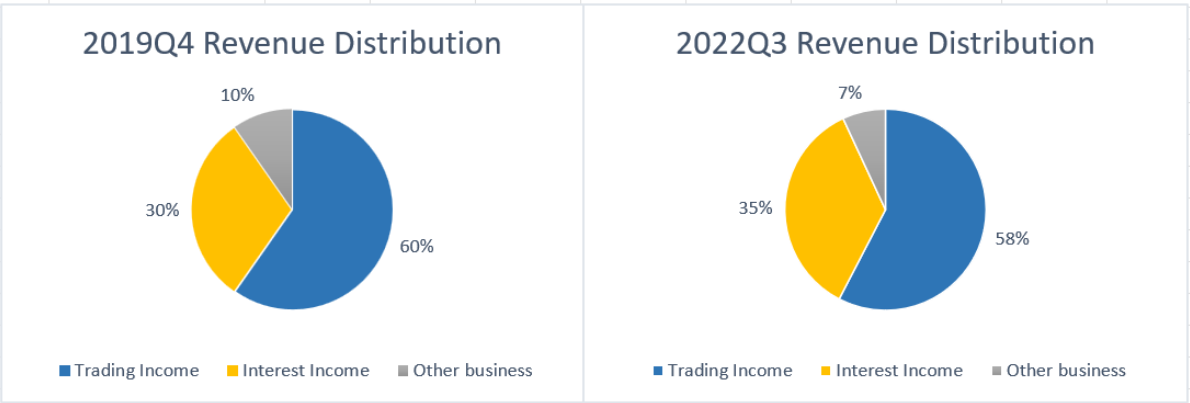


Figure 3: The Comparision of Revenue Distribution between 2019Q4 & 2022Q3

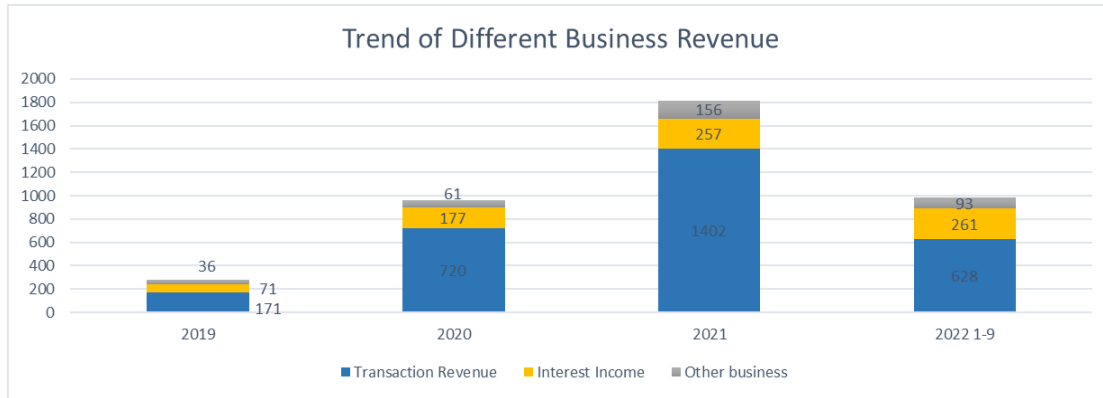


Figure 4: Trend of Different Business Revenue of Robinhood

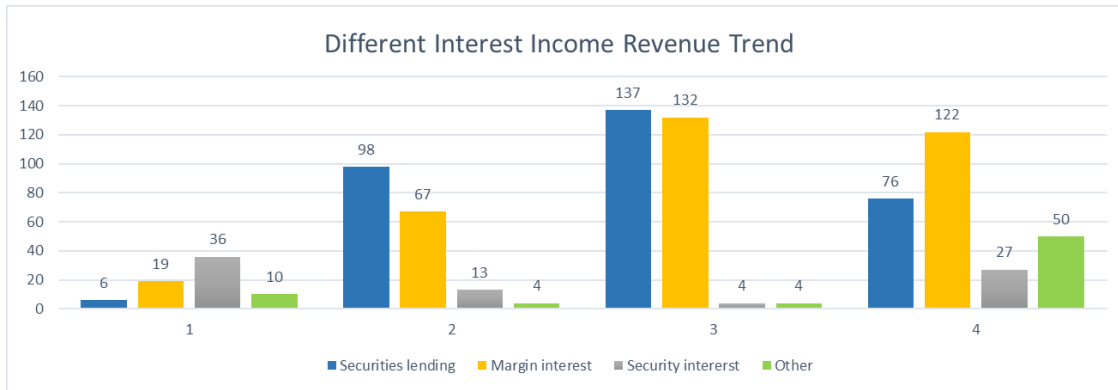
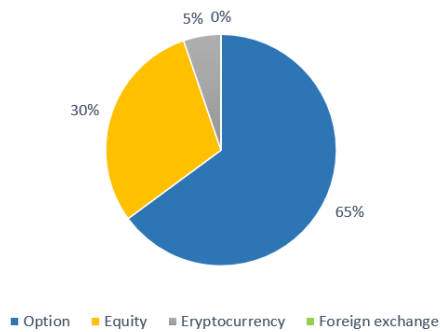


Figure 5: Trend of Different Interest Income Revenue of Robinhood

2019 Distribution of Transaction Revenue



2022 Distribution of Transaction Revenue

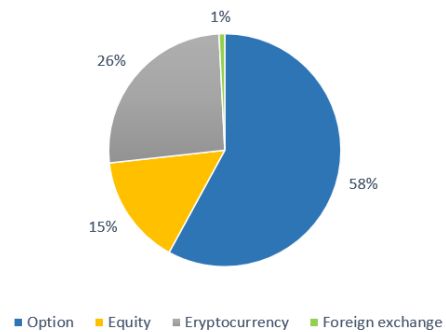


Figure 6: The Comparison of Transaction Revenue between 2019 & 2022

Mean	Std	Beta (Raw)	Beta (Adjusted)	Beta (unlevered)
-0.002044	0.06030361	1.8	1.53	1.26

Table 1: Statistical Feature of Stock Price of Robinhood

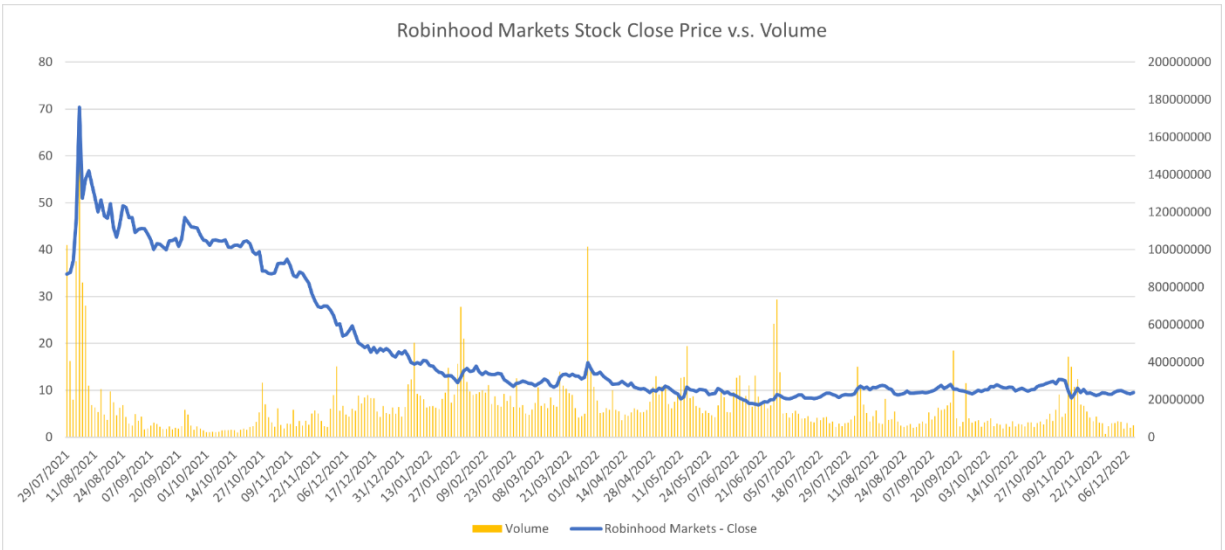


Figure 7: Historical Stock Price And Volume of Robinhood

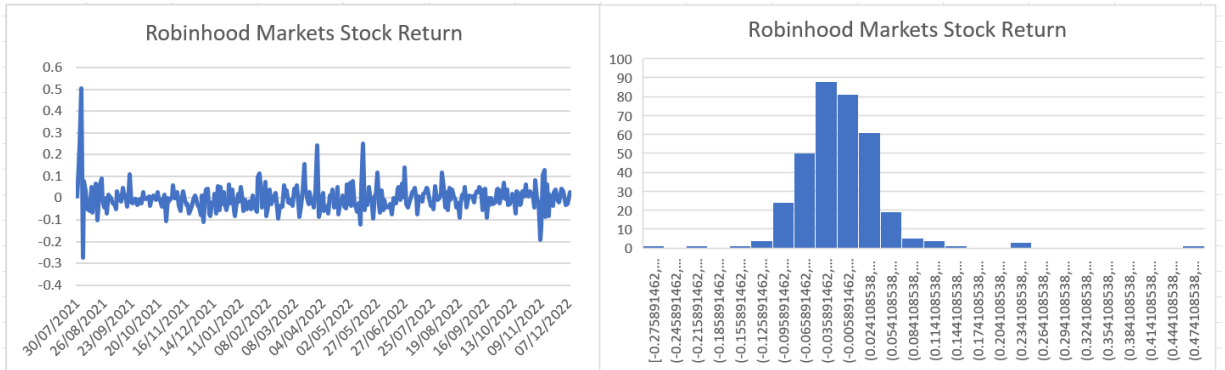


Figure 8: Historical Stock Return and its Distribution of Robinhood

Company	Time Period	Sharpe Ratio (yearly)
Robinhood Markets A	29/07/2021 - 08/12/2022	-0.56
Global Brokerage Inc A	29/07/2021 - 08/12/2022	1.46
LPL Financial	29/07/2021 - 08/12/2022	0.97
Raymond James Financial	29/07/2021 - 08/12/2022	0.71
Ameriprise Financial	29/07/2021 - 08/12/2022	0.60
Charles Schwab	29/07/2021 - 08/12/2022	0.46
China Fin Sp ADR	29/07/2021 - 08/12/2022	0.81

Table 2: Annual Sharpe Ratio of Robinhood and its Competitors

Free Cash Flow								
Year A/P	2019 Actual	2020 Actual	2021 Actual	2022 Projected	2023 Projected	2024 Projected	2025 Projected	2026 Projected
Revenue	277533000.00	958833000.00	1815143000.00	4853618356.60	12978377544.67	34703652268.58	92796150877.35	248133123021.45
Revenue (%)		245.48	89.31	167.40	167.40	167.40	167.40	167.40
Operating Cash Flow	1260085000.00	1876254000.00	-884773000.00	9722893002.51	25998619368.44	69519247912.15	185891633774.15	497066647655.48
Operating Cash Flow (%)	454.03	195.68	-48.74	200.32	200.32	200.32	200.32	200.32
Capital Expenditure	-12453000.00	-32330000.00	-83653000.00	-201707622.55	-539357956.63	-1442221179.87	-3856440618.11	-10311964938.97
Capital Expenditure (%)	-4.49	-3.37	-4.61	-4.16	-4.16	-4.16	-4.16	-4.16
Free Cash Flow	1247632000.00	1843924000.00	-968426000.00	9521185379.96	25459261411.80	68077026732.28	182035193156.04	486754682716.51

Build Up Free Cash Flow								
Year A/P	2019 Actual	2020 Actual	2021 Actual	2022 Projected	2023 Projected	2024 Projected	2025 Projected	2026 Projected
Revenue	277533000.00	958833000.00	1815143000.00	4853618356.60	12978377544.67	34703652268.58	92796150877.35	248133123021.45
Operating Cash Flow	1260085000.00	1876254000.00	-884773000.00	9722893002.51	25998619368.44	69519247912.15	185891633774.15	497066647655.48
Capital Expenditure	-12453000.00	-32330000.00	-83653000.00	-201707622.55	-539357956.63	-1442221179.87	-3856440618.11	-10311964938.97
Free Cash Flow	1247632000.00	1843924000.00	-968426000.00	9521185379.96	25459261411.80	68077026732.28	182035193156.04	486754682716.51
WACC	-	-	-	12.06	12.06	12.06	12.06	12.06
PV LFCF	-	-	-	10669725972.35	25459261411.80	60748888332.71	144954222118.50	345878370562.18
SUM PV LFCF					40487227132	1.08564E+11	2.71004E+11	658605982200.33

Table 3: Cash Flow build up for Unleverged DCF

Weighted Average Cost Of Capital	
Share price	9.31
Beta	1.80
Diluted Shares Outstanding	884700000.00
Cost of Debt	5.00
Tax Rate	21.00
After-tax Cost of Debt	3.95
Risk-Free Rate	3.57
Market Risk Premium	4.72
Cost of Equity	12.06
Total Debt	-
Total Equity	8236557000.00
Total Capital	8236557000.00
Debt Weighting	-
Equity Weighting	100.00
WACC	12.06

Table 4: Weighted Average Cost of Capital

Terminal Value	
Growth in perpetuity method:	
Long-term growth rate	5.00
WACC (%)	12.06
Free cash flow (t + 1)	511092416852.34
Terminal Value	7236194490334.63
Present Value of Terminal Value	4094482392801.53

Table 5: Terminal Value Estimation

Intrinsic Value	
Enterprise Value (5Y):	4753088375001.87
Enterprise Value (3Y):	4203046646666.11
Enterprise Value (1Y):	4134969619933.83
Net Debt	-6253477000.00
Equity Value (5Y)	4759341852001.87
Equity Value (3Y)	4209300123666.11
Equity Value (1Y)	4141223096933.83
Shares Outstanding	88470000000
Equity Value Per Share (5Y)	53.80
Equity Value Per Share (3Y)	47.58
Equity Value Per Share (1Y)	46.81

Table 6: Intrinsic Value and Stock Price Estimation

As-Reported	31 DEC '21	31 DEC '20	31 DEC '19
	RECAP		
Total liabilities, mezzanine equity and stockholders' deficit / equity	19769.18	10988.47	3944.40
Total liabilities	12476.09	8864.06	3129.04
Total current liabilities	12347.34	8816.04	3101.38
Accounts payable and accrued expenses	252.31	104.65	37.59
Payables to users	6475.73	5897.24	2365.15
Securities loaned	3651.03	1921.12	674.03
User cryptocurrencies safeguarding obligation	-	-	-
Other current liabilities	1968.27	893.04	24.61
Fractional shares repurchase obligation	1834.48	802.48	-
Other current liabilities excluding fractional shares repurchase obligation	133.79	90.55	-
Operating lease liabilities	-	-	-
Other current liabilities excluding operating lease liabilities	-	-	-
Convertible notes	-	-	-

Table 7: Debt Analysis of Robinhood (As reported)

GAAP/IFRS Standardized	DEC '21	DEC '20	DEC '19
Liabilities			
Total Debt	5636.61	1975.22	711.83
ST Debt & Curr. Portion LT Debt	5507.91	1927.22	684.43
Long-Term Debt	128.70	48.00	27.40
Capital and Operating Lease Obligations	128.70	48.00	27.40
Other Liabilities	6839.47	6888.84	2417.21
Other Liabilities (excl. Deferred Income)	6838.32	6888.84	2417.21
Deferred Income	1.15		
Total Liabilities	12476.09	8864.06	3129.04

Table 8: Debt Analysis of Robinhood (GAAP/IFRS Standard)

	P/E ratio	P/B ratio	PEG ratio	P/S ratio
Robinhood Markets A	-6.43	2.10	0.00	8.36
Global Brokerage Inc A	0.00	0.00	0.00	0.00
LPL Financial	28.46	7.67	0.20	1.69
Raymond James Financial	14.17	2.28	1.14	1.90
Ameriprise Financial	13.12	5.88	1.36	2.61
Charles Schwab	29.76	3.29	0.85	8.40
China Fin Sp ADR	0.00	0.00	0.00	0.00

Table 9: Relative Valuation Metrics of Robinhood and its Competitors

Name	Title	Amount	Date	Description
Rubinstein Jonathan Jake	Director	2649	09/30/2022	Restricted Stock Units
Quirk Steven M	Chief Brokerage Officer	406091	09/07/2022	Restricted Stock Units
Gallagher Daniel M	Chief Legal Officer	609137	09/07/2022	Restricted Stock Units
Rubinstein Jonathan Jake	Director	3056	06/30/2022	Restricted Stock Units
Rubinstein Jonathan Jake	Director	30040	06/22/2022	Restricted Stock Units
Zoellick Robert B	Director	30040	06/22/2022	Restricted Stock Units
Malka Rais Meyer	Director	30040	06/22/2022	Restricted Stock Units
Frei Frances X	Director	30040	06/22/2022	Restricted Stock Units
Loop Paula D	Director	30040	06/22/2022	Restricted Stock Units
Treseder Oluwadara J	Director	30040	06/22/2022	Restricted Stock Units
Rubinstein Jonathan Jake	Director	1859	03/31/2022	Restricted Stock Units
Sandell Scott D	Director	1387	03/31/2022	Restricted Stock Units
Gallagher Daniel M	Chief Legal Officer	462963	03/24/2022	Restricted Stock Units
Gallagher Daniel M	Chief Legal Officer	192901	03/24/2022	Restricted Stock Units
Chennapragada Aparna	Chief Product Officer	192901	03/24/2022	Restricted Stock Units
Chennapragada Aparna	Chief Product Officer	385802	03/24/2022	Restricted Stock Units
Howard Gretchen	Chief Operating Officer	385802	03/24/2022	Restricted Stock Units
Howard Gretchen	Chief Operating Officer	77160	03/24/2022	Restricted Stock Units
Warnick Jason	Chief Financial Officer	385802	03/24/2022	Restricted Stock Units
Warnick Jason	Chief Financial Officer	77160	03/24/2022	Restricted Stock Units
Malka Rais Meyer	Director	17201	03/23/2022	Restricted Stock Units
Malka Rais Meyer	Director	3723	03/23/2022	Restricted Stock Units
Rubinstein Jonathan Jake	Director	1395	12/31/2021	Restricted Stock Units
Nea Management Co. LLC	Director	1075	12/31/2021	Restricted Stock Units

Table 10: Insider Stock Option Exercise Information



Figure 9: Insider Trading Time v.s. Stock Price of HOOD

Regression Statistics	
Multiple R	0.51
R Square	0.26
Adjusted R Square	0.26
Standard Error	0.05
Observations	317

Table 11: F-F Three-Factor Model Regression Result 1

	Coefficients	Standard Error	t Stat	P-value	Lower-95%	Upper-95%
alpha	0.0001	0.0029	0.0360	0.9712	-0.0047	0.0049
Market	1.1073	0.2417	4.5820	0.0000	0.7085	1.5060
SMB	0.0168	0.0047	3.5540	0.0004	0.0090	0.0246
HML	-0.0113	0.0030	-3.8180	0.0002	-0.0162	-0.0064

Table 12: F-F Three-Factor Model Regression Result 2

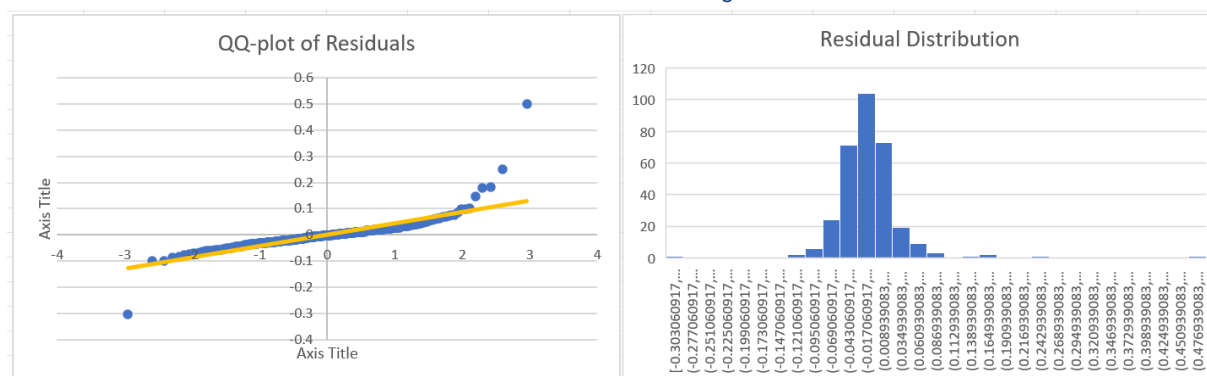


Figure 10: Distribution Check of Regression Residuals

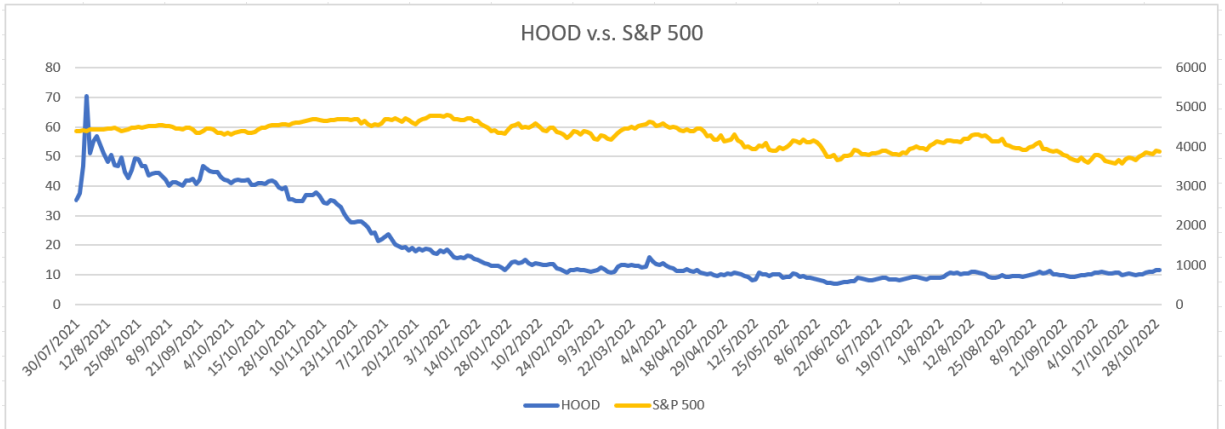


Figure 11: Comparison Between HOOD and S&P 500

Data Source: FactSet