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Herding and Financial Markets: The case of REDDIT daytraders versus Hedge funds

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Introduction

The whole world was shocked. On January 28, 2021, the Financial Times reported that a group of small investors beat the hedge funds (Wigglesworth, 2021). These investors made 300% returns in one day, and about 1500% in 2 weeks, while the hedge fund Melvin Capital lost more than $4.5 billion in January (Schroeder, 2021). The question is, what happened?

It may be good to provide a small introduction for a non-financial audience as a background to the case. As you know, the stock market trades in shares that represent ownership in a company. After obtaining shares from a company, investors buy and sell these shares in the secondary market. They pay a commission to the broker who gets the shares for them. Supply and demand establish the price as shown in the top panel of Figure 1. If demand increases, the price goes up; if supply increases, the price goes down; and there is some equilibrium price. As seen in the bottom panel of figure 1, investors can make profits by buying low and later selling high, hoping that price will go up from P0 to P1 in the figure. But one could also sell high and later buy low. Hedge funds backed by high net worth investors do this, hoping the price would go down from P0 to P2.

One problem with the system is that the commission per share charged to big investors is much smaller. If a broker is given a deal of €1 million, he could ask for a commission of €1000, which is 0.1%. But if a small investor wants to make a deal of €1000, the broker may ask for at least €10, which is 1%. The point is that the commission percentage is higher for small investors, and the game is biased in favor of the rich. To compete effectively, small investors get together in mutual funds. Once their collective trades are larger, they get the advantage of smaller fees, but they have to pay fund management fees. Besides reducing the commission costs, investors in mutual funds also have lower risk since they can diversify into many stocks.

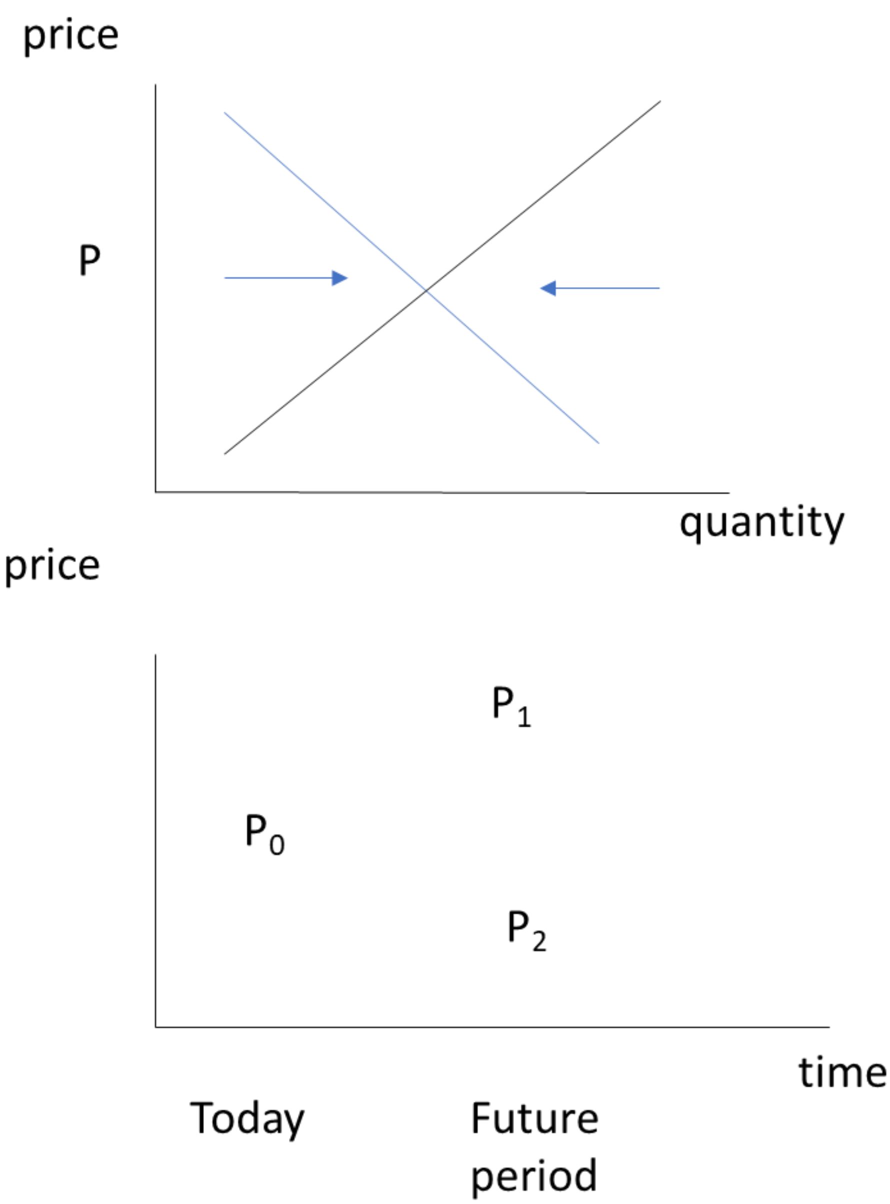

Figure 1: The first panel is a reminder of microeconomics, the lower panel is a reminder of financial economics.

To get higher returns, you need to take high risk, and for this, big investors group into hedge funds. Hedge funds may be managed aggressively or make use of derivatives and leverage to generate higher returns. Hedge fund strategies include long-short equity. For some shares, they sell them before buying.

How do people decide whether the stock price is expected to go up or down? For this, some people do technical analysis. They look at how the stock price has been behaving. They make fancy curves, and based on these, they decide the expected trend. If the price is over this trend curve, they would like to sell. Others do fundamental analysis where they look at the industry, the economic conditions, the past performance of the company itself, and then they try to project future cash flows and decide what should be the expected fair value.

But not everybody is a long-term investor. The stock market has many participants who are speculating, and these speculators realize the role of sentiments. If the market sentiment is optimistic, everybody wants to buy; when it is pessimistic, everybody wants to sell. Speculators try to buy before others when they feel the market will be optimistic and will sell later. Today, market sentiment is gauged by big data analyzed with artificial intelligence tools.

The case study: Gamestop in the News

We now have the tools to study the case of GameStop, which has been the center of attention. GameStop is a video game, consumer electronics, and gaming merchandise retailer based in Texas. It was founded 37 years ago in 1984 and is the world's largest video game retailer. It has about 5500 retail stores. This company's history shows that it was growing very fast, but it started declining in 2010 due to the shift of video game sales to online channels. It experimented with diversification in selling smartphones, but it didn't work out. However, with the advent of the pandemic, all the tech stocks started booming, people were buying more and more games, which ushered in hope. But no extraordinary change in 2020 justified a dynamic price increase (Badkar, 2021).

From the technical analysis, you can see in figure 2 that prices followed an almost a flat line from February 1, 2016 till recently. Actually, the price was going down to about till January 2020, remaining at this level till July,

Gamestop prices, downloaded from Yahoo Finance 01/02/2020

Figure 2: Gamestop Price trends: 5 years and 1 month.

and then in the last few months of 2020, it started going up till December. There was certainly no reason for it to suddenly boom to €300. Technical analysis cannot explain this increase.

What about the fundamentals? As we mentioned before, there is no significant change in strategy. As shown by the income statement (Figure 3), the business was down. It picked up a little bit in 2020 compared to 2019, but total revenue and profits remained below previous years. Therefore, fundamentals can explain a slight price rise but not a significant shift.

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Income Statement All numbers in thousands

Breakdown	TTM	1/30/2020	1/30/2019	1/30/2018
> Total Revenue	7,334,900	6,466,000	8,285,300	9,224,600
Cost of Revenue	5,274,700	4,557,300	5,977,200	6,184,500
Gross Profit	2,060,200	1,908,700	2,308,100	3,040,100
> Operating Expense	1,963,500	1,922,700	1,994,200	2,513,700
Operating Income	96,700	-14,000	313,900	526,400
> Net Non Operating Interest Inc...	-31,200	-27,200	-51,100	-55,300
> Other Income Expense	-803,600	-385,600	-1,015,900	-390,800
Pretax Income	-738,100	-426,800	-753,100	80,300
Tax Provision	19,700	37,600	41,700	45,600
> Net Income Common Stockhold...	-679,600	-470,900	-673,000	34,700
Diluted NI Available to Com Stock...	-274,800	-470,900	-673,000	34,700
Basic EPS	-	-0.0054	-0.0066	0
Diluted EPS	-	-0.0054	-0.0066	0
Basic Average Shares	-	87,500	102,100	101,400
Diluted Average Shares	-	87,500	102,100	101,500
Total Operating Income as Reported	-706,900	-399,600	-702,000	135,600
Total Expenses	7,238,200	6,480,000	7,971,400	8,698,200
Net Income from Continuing & Dis...	-679,600	-470,900	-673,000	34,700
Normalized Income	-171,172	-182,912	-53,193	319,984
Interest Income	13,500	11,300	5,700	1,500
Interest Expense	44,700	38,500	56,800	56,800
Net Interest Income	-31,200	-27,200	-51,100	-55,300
EBIT	-693,400	-388,300	-696,300	137,100
EBITDA	-593,800	-	-	-
Reconciled Cost of Revenue	3,753,600	4,557,300	5,955,900	6,183,300
Reconciled Depreciation	99,600	96,200	126,900	151,900
Net Income from Continuing Oper...	-270,000	-464,400	-794,800	34,700
	-803,600	-385,600	-1,015,900	-390,800

Figure 3: Gamestop Income statements2018-2021, downloaded from Yahoo Finance

Would sentiments and irrational exuberance have provided such a big boost? We can see that the whole market has been optimistic during the pandemic. This optimism is owing to several factors. First, interest rates are low, which means your discount rate of future cash flows is low, so the firm value goes up. More consumer interest in technology leads to high expected growth, and again the expected value of future cashflows goes up. Public money is pouring in, and so people's income constraint is disappearing. You know there are many new trading platforms like Robinhood that are charging zero commission. So, there's no friction to buying and selling of shares. All these reasons explain the market optimism (Fletcher, 2021; Mackenzie, 2021).

While this is true about technology stocks, what about Gamestop? Should the price go up further? To understand the analysis of the hedge funds, you can look at the monthly and weekly data presented in Figure 4. From the beginning of February 2020 till July, there was almost no change, and the price was close to $4. Then the price goes up reasonably fast and by January 2021, you can see that it increased by 300% to $18. This is a huge increase. So hedge funds at this time said no, they should sell. Since they were confident of their analysis, this time they started placing puts expecting that the price would indeed go down.

Figure 4: monthly and weekly average prices of Gamestop

Monthly data	Close $	Volume
01/02/2020	3.60	55790000
01/03/2020	3.50	100476400
01/04/2020	5.73	99735200
01/05/2020	4.06	53528000
01/06/2020	4.34	100281700
01/07/2020	4.01	55497200
01/08/2020	6.68	117270800
01/09/2020	10.20	254864200
01/10/2020	10.47	359871700
01/11/2020	16.56	161490800
01/12/2020	18.84	251298000
01/01/2021	325.00	1261585100
01/02/2021	272.168	21159973

Weekly data	Close $	Volume
07/12/2020	13.31	62920200
14/12/2020	15.63	48878800
21/12/2020	20.15	72621300
28/12/2020	18.84	31060600
04/01/2021	17.69	33634000
11/01/2021	35.50	306959600
18/01/2021	65.01	362057800
25/01/2021	325.00	558933700
01/02/2021	247.04	23088822

Gamestop, downloaded from Yahoo Finance 01/02/2020

But everything changed this week (11-01-2021). Instead of price going down, it doubled, and then it doubled again, and then it went up five times before coming down. So, hedge funds like Melvin Capital and Citron capital lost money (Aliaj & Platt, 2021).

What can explain this reversal of fortune? It is attributed to social media (Stafford, Kantor, & Lewis, 2021). One of these social media is REDDIT, which is a social networking website with many forums for discussion. One of these forums is a community called WallStreetBets. There were about 7.5 million people in the community (as on January 31, 2020). These members include individual investors, ex-bankers, and traders who exchange their experiences. Together, they decided to do the inverse of what bankers and hedge funds were doing. No small trader could have succeeded in what they did, but with a million small traders buying the same share, their power becomes as much as that of the hedge funds. When hedge funds thought they would make money by selling and then buying later at a low price, the WallStreetbets investors decided to purchase shares or calls options and the price went up, instead of going down. Some of these small investors made extraordinary profits. One person bought and turned $50,000 of GameStop call options into nearly $23 million (Wigglesworth, 2021). Another bought shares worth $4,000, and these were worth $124,000 before he cashed $20,000 out (Platt, Smith, Darbyshire, Kantor, & Wigglesworth, 2021).

This situation is called a gamma squeeze. An investor buys a call, in effect building pressure that the underlying stock price will move higher, which happens because call option sellers must buy the stock to hedge their risk. Furthermore, the bank or other firms that have sold the shares have to deliver the shares. This need for delivery means they need to buy, which raises the demand for shares even more, and the price goes up even more. The short sellers lose their money (Smith & Wigglesworth, 2021). As a result, Melvin Capital lost 53% of its value (Aliaj & Platt, 2021).

There's another angle to this story, which is on margin rules. The margin account is used when an investor buys from a broker on credit, hoping to gain a leveraged effect. However, if there is a loss, then there is a leveraged negative effect, and the broker may be worried that the investor will not pay up. The margin rules protect the Stock Exchange from liquidity problems of an investor so that if they think that you're going to make a loss, they will take your margin and buy or sell shares to make sure that they have enough liquidity. The investors who are losing money would need to sell their positions to ensure their commitments. A clearinghouse keeps this margin money. Each day, members of the clearinghouse must put in the margin as insurance for their trades. The killing bit is the limited time to make any shortfall. For example, a clearinghouse ordered one US Bank to find $10 billion of margin within an hour! In our case, hedge funds had to liquidate all their stocks at market prices because their margin had been eaten. Even platforms, such as Robinhood, feared that they would be disbarred from being a broker, and they halted trading in an attempt to curtail the price increase (Stafford & Rennison, 2021).

A third complication is that people who are not just buying shares and selling shares, they're buying options (Wigglesworth, 2021). Options are like leveraged stock. For example, you can buy an option for $1.00 on a share priced at $100. Instead of buying ten shares of $100, with the same budget, you can buy a thousand options of

(Wigglesworth, 2021, January 28).

Figure 5: A boom in options trading during the pandemic

$1.00. And if the price goes up, you buy the shares for the price you had agreed on, called the exercise price. What we've seen is that when the markets are going up, people start taking risks. Figure 5 shows that the number of people buying call options is going up for all the shares, but not necessarily for GameStop.

Alternative Issues

These news stories open the way for broader questions. The first question is a kind of political debate: can the small investors win against the rich hedge funds and usher in greater equality? People on one side of the discussion are invoking the Occupy Wall Street movement, indicating that the group of small investors is seeking economic justice (FT, 2021b). The other side replies that such a fight is useless because the rich platforms, banks, and traders make money every time they buy and sell through the trading commissions. Moreover, only a few small investors make money: those who are smart enough to sell once the price goes up (Webb, 2021). Many small investors even lose money because they would have bought the shares at a high price, and the price will eventually fall to its fair market value. A quick "back of the envelope" kind of calculation by the FT (2021a), based on prospective future earnings of $100 million and a price-earnings ratio of 20, values the share at $28.

The second issue is about smart money versus dumb money. Smart money is people who invest in research and development before they buy or sell. Hedge funds have colossal research and analysis departments, and they act in an informed way. Retail investors do not have access to such research and follow the smart. But a study of the blogs on Reddit shows that there are intellectual analysis and discussion taking place before the action by the group of small investors. The smart guys are now joining these websites to learn from the dumb. They're using AI and big data collection techniques and then analyzing them (Wigglesworth, 2021).

A third is whether speculation is legal. Certainly, we have the freedom to lose and win our money, but can we manipulate others? Can we induce others to buy and sell? Certainly, you cannot tell lies. But what if you don't lie and you say "I am doing this" or "Lets do this"? When is it called manipulation? The reason the State may want to control speculation is that if it seems that the Stock Exchange is only a gambling den, then maybe companies won't be able to finance their investments. Therefore, the State wants to show that the stock exchange is a fair long-term investment platform and that returns are based on a company's fundamental value. Watchdogs like the SEC in the USA are examining whether this herding was manipulative (Armstrong, 2021; Martin & Platt, 2021).

A fourth issue is whether platforms like Robinhood have the right to close down and keep retail speculators from making money. In examining this issue, one has to keep in mind that the margin money requirement also extends to platforms that have chosen to net the margins of all their members. The trading platforms would have gone bankrupt if they had not stopped trading (Armstrong, 2021; Martin & Platt, 2021).

Concluding Remarks

We could make a few concluding remarks. In retrospect, with the benefit of hindsight, it is clear that the prices would fall back towards their fundamentals, as we can see in figure 6, and the best strategy is to be a short-seller or buy puts when prices rise so high.

Figure 6: Gamestop prices fall back. Source: Yahoo finance, downloaded on February 11, 2021

We can see that the press has made a lot of noise about a few small investors making a lot of money. This noise makes people think that they have a chance to win the lottery, and that encourages speculation. As a result, many new people start joining the market. And that boosts the market further, already pumped with the helicopter money that the governments are throwing in to boost the economy.

References

Aliaj, O., & Platt, E. (2021, February 1). Melvin assets drop 53% in January after Reddit assault. *Financial Times (Europe)*, p. 6.

Armstrong, R. (2021, January 30). Redditors throw down challenge to watchdogs. *Financial Times (Europe)*, p. 12.

Badkar, M. (2021, January 29). Retail chain dragged into amateur traders' war games on Wall Street: Co-ordinated effort by army of lay investors pushes GameStop to a 28bn market capitalisation. *Financial Times (Europe)*, p. 8.

Fletcher, L. (2021, January 29). Tech rally pits old-school investors against followers of digital dream. *Financial Times (Europe)*, p. 9.

FT. (2021a, February 13). Lex: GameStop: eye of the beholder. *Financial Times (Europe)*, p. 20.

FT. (2021b, January 30). The wave of populism shaking Wall Street: Retail investors are using social media to take on the short sellers. *Financial Times (Europe)*, p. 6.

Mackenzie, M. (2021, January 30). Army of small traders rages at the short-sellers. *Financial Times (Europe),* p. 18.

Martin, K., & Platt, E. (2021, January 29). Overheated Online brokers slam the brakes on extraordinary Reddit-fuelled stock rally. *Financial Times (Europe)*, p. 1.

Platt, E., Smith, C., Darbyshire, M., Kantor, A., & Wigglesworth, R. (2021, January 30). Reddit traders take on Wall Street's elite: WallStreetBets trade tipping forum rocks investment establishment with dizzying rise in GameStop stock. *Financial Times (Europe)*, p. 10.

Schroeder, S. (2021, Feb 1). Hedge fund Melvin Capital is down $4.5 billion after epic squeeze by Reddit traders, report says. *Mashable.com*.

Smith, I., & Wigglesworth, R. (2021, January 30). Day traders learn to 'weaponise' dynamics. *Financial Times (Europe)*.

Stafford, P., Kantor, A., & Lewis, L. (2021, January 29). Reddit battle drives trading volumes past 2008 peak. *Financial Times (Europe),* p. 9.

Stafford, P., & Rennison, J. (2021, January 30). Betting mania puts clearing houses in the spotlight. *Financial Times (Europe),* p. 11.

Webb, M. S. (2021, January 30). Reddit investors' real power is over WallStreet's future behaviour. *Financial Times (Europe),* p. 7.

Wigglesworth, R. (2021, January 28). 'Weaponised' options trading turbocharges equity rally: Unloved shares are being propelled to record highs, raising fears of wider impact. *Financial Times (Europe),* p. 10.

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