

Title: GameStop Critical Margin Theory

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Created 2022-06-24 00:12:40 UTC

Permalink: /r/TheGloryHodl/comments/vjb29z/gamestop_critical_margin_theory/

Url: /r/Superstonk/comments/v6cwds/gamestop_critical_margin_theory/

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I first saw this theory in a post by u/-einfachman- and this is my adaptation.

#

Introduction

When you short a stock, you need assets to maintain that position. If the price of that stock goes up, the person you borrowed it from needs to know that you're still good to buy that stock back and return it.

For example if I short a stock at \$100 and it goes up to \$150, I need to prove that I have \$50 in assets I can sell to cover the short with.

I also need to pay a borrow fee for the service the lender is offering me.

For example if I short a stock at \$100 on a 1% borrow fee and it stays at \$100 for the next year, I now need an additional \$1 to maintain my position. This is the classic theory behind "we can stay retarded longer than they can stay solvent".

I can also plot this decay mathematically.

$$A = P(1 + rt)$$

$$A = 100 (1 + (0.01 \cdot 1))$$

$$A = \$101$$

*A=Net Liability, P=Initial Short Price, r=Rate of Growth/Decay, t=Time

And from this we know that the maintenance margin has increased $\$101 - 100 = \1 . So I need an additional \$1 in assets to keep my position open.

Critical Margin Theory

u/-einfachman- has theorized that the resistance we have seen on GameStop over the last 1.5 years is a safe guard against margin calls.

<https://preview.redd.it/a1euckdd52491.png?width=2038&format;=png&auto;=webp&s;=3ff43275b5f02febd2355c31e2717947093bf18e>

There's just one thing.

This line isn't going down with the borrow rate. Not even close.

<https://preview.redd.it/tx4yl7cf52491.png?width=1618&format;=png&auto;=webp&s;=e377a0476fe21416d15a26d2fb2b596e273de99c>

I'm going to work with 2 dates for this next section (circled above)

<https://preview.redd.it/ixi1zneh52491.png?width=942&format;=png&auto;=webp&s;=4f44dde13f20d4fcb6038f4c280db7332afa9948>

The time between these 2 points is 204 trading days or 294 calendar days. 294 days over the 365.25 days in a calendar year is 0.80. Or 294 days is 80% of a calendar year.

So back to the borrow equation.

$$A = P(1 + rt)$$

$$A = 344.66 (1 + (0.01 \cdot 0.8))$$

$$A = \$347.42$$

And from that we know that the maintenance margin has increased $\$347.42 - \$344.66 = \$2.76$.

Um... Hey u/scienceissexy, if the maintenance margin only increased \$2.76 per share over that period why did we bounce off resistance at \$199.41?

Great question u/scienceissexy.

I'm about to speculate, but I'm speculating based on real data so stick with me.

If the Critical Margin theory is true - that is to say that the bounces off the blue line highlighted above are HFs trying to save their ass - the critical margin is deteriorating WAY faster than the borrow rate.

How much faster? This is the cool part. I'm going to use the same dates as above.

$$A = P(1 + rt)$$

***quick algebras*

$$r = ((A/P) - 1)/t$$

$$r = ((199.41/344.66) - 1)/0.8$$

$$r = -0.53$$

Holy shit. So the maintenance margin is going up 53% every year...

But hold onto your seats because there's a catch. The stock price from June 2021 -> March 2022 went down. -42.5% from peak to peak to be exact. So someone made 42.5% on their short position but the maintenance margin is STILL up 53%. I want to hammer this home. The 53% increase in maintenance margin INCLUDES the 42.5% profit that was made. That means the actual rate of decay on the critical margin line is 95.5%.

I'm going to round up to 100% and you'll see why in a second.

And just one more time because this is crucial. I short a stock at \$100 on a 100% borrow rate. The stock goes to \$50. I have made +\$50 from my short position but lost -\$100 due to the borrow fee. So I'm \$50 closer to being margin called. This is why the blue line has a negative slope.

The average borrow rate of GME is 1% over that period, but the critical margin is increasing as if the borrow rate was 100% (95.5% to be exact). That doesn't make sense. Is there some sort of financial tool out there that would give you 100x leverage on a stock? Hmm...

Well, option contracts get sold in groups of 100. What a coincidence.

Back to our \$100 stock example - let's say that instead of borrowing and selling a stock, I borrow an ITM Put contract, which gives me the ability to sell 100 shares at a given strike price. I exercise it, and sell those shares.

100 shares in a contract, 1% borrow fee per share. Well look at that, $1\% \times 100$ is 100%...

It might not be Puts but some other financial tool like swaps. But the leverage is undeniable.

Today, the critical margin is at \$169.10 (nice). One +30% day and hedges are potentially fuk. There's more research to be done here and maybe a way to size the real short position - I will post updates accordingly.

tldr: Critical Margin Theory says that the maintenance margin for GME shorts is increasing at a crazy high pace. From circle 1 to circle 2; the price at which someone will be margin called (the blue line) has gone down 53%. I.e. where I would have been margin called at \$344 now I'm margin called at \$199. Which is crazy because I made money on my short position. If I exclude that profit the real decay is close to 100%. The only way I can see this being possible is if shorts are leveraged through options.