

ECON 337901

FINANCIAL ECONOMICS

Peter Ireland

Boston College

February 23, 2021

These lecture notes by Peter Ireland are licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) License. <http://creativecommons.org/licenses/by-nc-sa/4.0/>.

Consumer Optimization: The Time Dimension

At first glance, Fisher's model seems unrealistic, especially in its assumption that the consumer can borrow at the same interest rate r that he or she receives on his or her savings.

A reinterpretation of saving and borrowing in this framework, however, can make it more applicable, at least for some consumers.

Investment Strategies and Cash Flows

Investment Strategy	Cash Flow at $t = 0$	Cash Flow at $t = 1$
Saving	-1	$+(1+r)$
Buying a bond (long position in bonds)	-1	$+(1+r)$

Investment Strategies and Cash Flows

Investment Strategy	Cash Flow at $t = 0$	Cash Flow at $t = 1$
Borrowing	+1	$-(1 + r)$
Issuing a bond	+1	$-(1 + r)$
Short selling a bond (short position in bonds)	+1	$-(1 + r)$
Selling a bond (out of inventory)	+1	$-(1 + r)$

Consumer Optimization: The Time Dimension

Someone who already owns bonds can “borrow” by selling a bond out of inventory. In fact, theories like Fisher’s work better when applied to consumers who already own stocks and bonds.

Greg Mankiw and Stephen Zeldes, “The Consumption of Stockholders and Nonstockholders,” *Journal of Finance*, 1991.

Annette Vissing-Jorgensen, “Limited Asset Market Participation and the Elasticity of Intertemporal Substitution,” *Journal of Political Economy*, 2002.

Investment Strategies and Cash Flows

Investment Strategy	Cash Flow at $t = 0$	Cash Flow at $t = 1$
Buying a stock (long position in stocks)	$-P_0^s$	$+P_1^s$
Short selling a stock (short position in stocks)	$+P_0^s$	$-P_1^s$
Selling a stock (out of inventory)	$+P_0^s$	$-P_1^s$

The 2021 GameStop “Short Squeeze”



The graph shows closing prices. During the day on January 28, GME shares traded as high as \$483!

The 2021 GameStop “Short Squeeze”

Consider a simple balance sheet for an investor who sells a share GameStop stock short at price $P_0^s = 20$:

Assets

Cash 20

Liabilities

One Share GME 20

The 2021 GameStop “Short Squeeze”

The problem is that if GME's stock price rises above 20, the investor will have negative net worth:

Assets

Cash 20

Liabilities

One Share GME 21

Net Worth -1

The 2021 GameStop “Short Squeeze”

To guard against this possibility, the investor's broker will insist that the investor deposit some more cash when taking the initial short position:

Assets

Cash 25

Liabilities

One Share GME 20

Net Worth +5

The 2021 GameStop “Short Squeeze”

But suppose after the investor takes the short position, GME's share price moves sharply higher:

Assets	Liabilities
Cash 25	One Share GME 25
	Net Worth 0

The broker will ask the investor to deposit more cash as collateral. If the investor can't or doesn't want to deposit the additional cash, the broker will immediately use the \$25 cash on hand to buy back the GME share.

The 2021 GameStop “Short Squeeze”

Of course, if you thought GME was overvalued at \$20, you think it's even more overvalued at \$25. But do you really want to take the risk of doubling down on a losing bet?

In a “short squeeze,” share prices can rise very sharply over very short periods of time, as investors who had taken short positions willingly or unwillingly buy borrowed shares back.