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1. Introduction

1.1. **Investment.** Why do we invest? Or why is investment important? Look at the following charts:

Figure 1. SPY500

Figure 2. USD index

Theoretically, the stock market will represent the Economy. Although the stock market might be volatile in a short term, but in the long term, the stock market will grow as the whole Economy grows. The above chart is the weekly chart of the famous ETF SPY500, you can see even though it has ups and downs, in a long run it is still an uptrend. So investment can make you benefit from the economic growth.

In the meantime, because of the COVID-19 pandemic, Fed (Federal Reserve System) starts buying corporate bonds, which creates massive liquidity to the stock market. This is called Quantitative Easing (QE). As more and more money flows in, the inflation happens, which declines the buying power of USD. Roughly speaking, "Cash is trash."

If you don't invest, your money becomes less and less valuable.

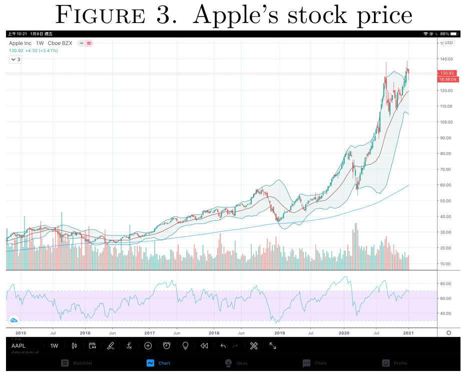
1.2. **Financial Derivatives.** A financial derivative is a financial security with a value that is reliant upon or derived from, an underlying asset or group of assets—a benchmark. The derivative itself is a contract between two or more parties, and the derivative derives its price from fluctuations in the underlying asset.

The most common underlying assets for derivatives are stocks, bonds, commodities, currencies, interest rates, and market indexes. These assets are commonly purchased through brokerages. For example, futures, options, credit default swap (CDS), etc., all belong to financial derivatives.

Why do we need them? Mostly we use them to hedge our position or to speculate. We use financial derivatives to
-Risk management: Derivatives are a tool for companies and other users to reduce risks.
-Speculation: Derivatives can serve as investment vehicles.
-Reduce transaction costs: Sometimes derivatives provide a lower cost way to undertake a particular financial transaction.
-Regulatory arbitrage: It is sometimes possible to circumvent regulatory restrictions, taxes, and accounting rules by trading financial derivatives.

The following is the chart of the Apple company's weekly chart

FIGURE 3. Apple's stock price



You can see that the stock price of Apple company in a long term is going up, despite sometimes it will drop due to various reasons. If you sell the stock when the stock price goes down, making you panic, it is likely that you might buy it back at a higher price when it bounces back. Of course, it all depends on your judgement, if you think this is a good company to keep their stock, then hedging your position might be a good idea. That how financial derivatives come into play, in this case, you can either short futures, buying Apple's put option, or selling Apple's call option to reduce your loss. If you short more than you have, you can also have a profit.

But keep in mind that the leverage of these financial derivatives are high, do not overleveraged. History tells us that if things do not meet your expectations or even worse if black swan happens, then you are screwed. See Long-Term Capital Management (LTCM), the members are all professionals and also have two winners of Nobel Memorial Prize in Economic Sciences, but overleveraged made them having a tremendous \$4.6 billion loss.

History Repeats Itself.

The market won't always rocket up, a little wariness prevents great weariness.

2. Terminologies

Bid: The maximum price that a buyer is willing to pay.

Ask: The minimum price that a seller is willing to take.

Long: Buy, you are optimistic outlook about the company.

Short: Sell, you are pessimistic outlook about the company.

Market Order: If you are a buyer, market order is the price that you can buy the stock immediately. If your order is filled, the price will be greater than or equal to the ask price. If you are a seller, market order is the price that you can sell the stock immediately. If your order is filled, the price will be less than or equal to the bid price.

Limit Order: If you are a buyer, limit order is the fixed price that you are willing to pay. If your order is filled, the price will be less than or equal to your fixed price. If you are a seller, limit order is the price that you are willing to take. If your order is filled, the price will be greater than or equal to the fixed price.

Figure 4. Apple's price

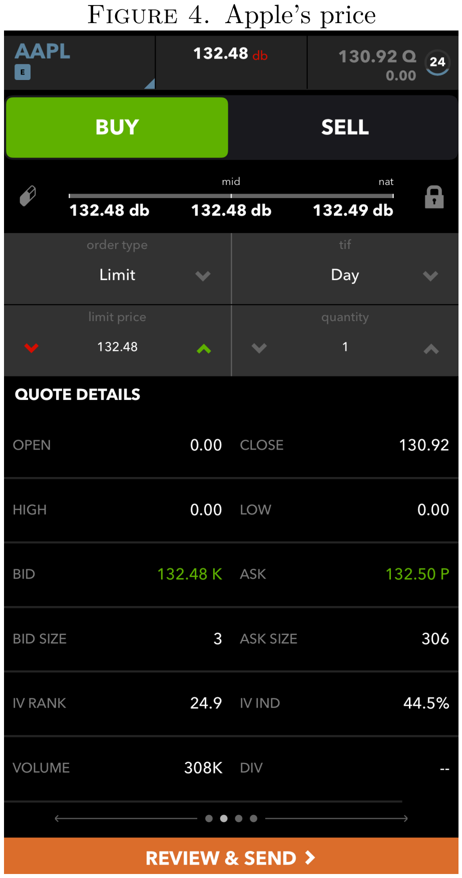
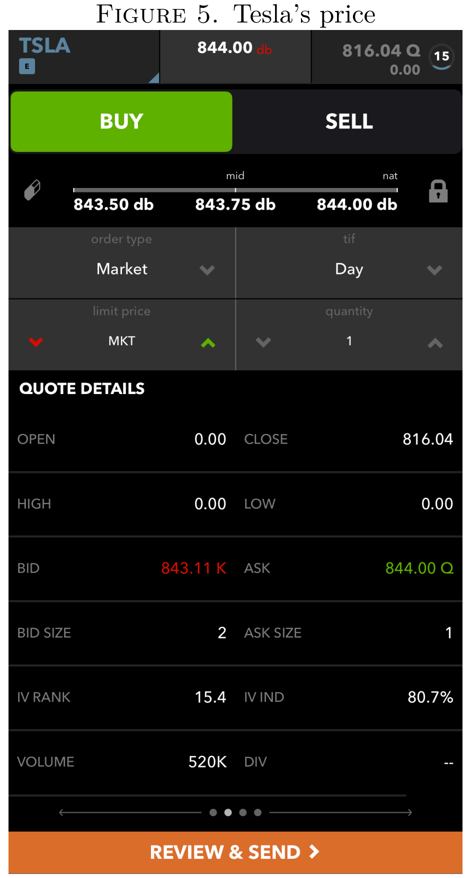


Figure 5. Tesla's price



You can see the Bid/Ask spread of Apple is small comparing to the Bid/Ask spread of Tesla. If you use market order on Tesla, then your orders will be filled at \$844, but if the trading volume is low, then some of your orders will be filled at a price more than \$844.

References

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