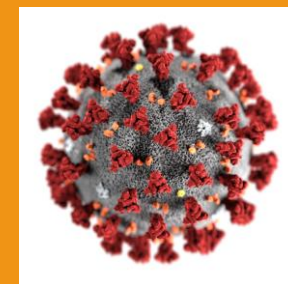




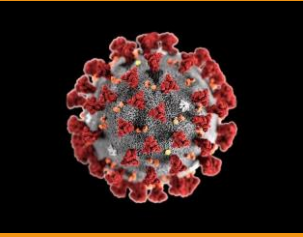
# COVID-19 Vaccines



Investment Overview

By Tin Hang

# COVID-19 Vaccines Companies



## 1. BioNTech SE (BNTX):

- Background: BioNTech SE is a German biotechnology company focused on developing immunotherapies for cancer and other infectious diseases. They are particularly known for their collaboration with Pfizer in developing one of the first COVID-19 vaccines.
- Market Cap: As of my last update, the market cap of BioNTech SE was approximately \$81 billion USD.

## 2. Johnson & Johnson (JNJ):

- Background: Johnson & Johnson is an American multinational corporation that develops medical devices, pharmaceuticals, and consumer packaged goods. It's one of the largest healthcare companies globally.
- Market Cap: As of my last update, the market cap of Johnson & Johnson was approximately \$448 billion USD.

## 3. Moderna, Inc. (MRNA):

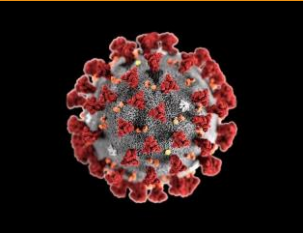
- Background: Moderna, Inc. is an American biotechnology company that focuses on drug discovery, development, and vaccine technologies based on messenger RNA (mRNA). They gained significant attention for developing one of the COVID-19 vaccines.
- Market Cap: As of my last update, the market cap of Moderna, Inc. was approximately \$89 billion USD.

## 4. Pfizer Inc. (PFE):

- Background: Pfizer Inc. is an American multinational pharmaceutical corporation that develops and produces medicines and vaccines for a wide range of medical disciplines. Pfizer was involved in developing one of the first COVID-19 vaccines in partnership with BioNTech.
- Market Cap: As of my last update, the market cap of Pfizer Inc. was approximately \$279 billion USD.



# BioNTech SE (BNTX) SWOT



## Strengths:

- Pioneering mRNA technology in the field of vaccines, especially notable with the success of the COVID-19 vaccine.
- Strong partnerships, particularly with Pfizer, enhancing distribution and market reach.
- Diverse pipeline of vaccine candidates and potential for applications beyond infectious diseases.

## Weaknesses:

- Relatively smaller scale compared to some competitors like Pfizer and Johnson & Johnson.
- Dependency on partnerships for manufacturing and distribution.
- Vulnerability to regulatory hurdles and public perception regarding mRNA technology.

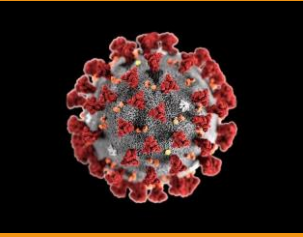
## Opportunities:

- Expanding applications of mRNA technology beyond infectious diseases into areas like cancer therapeutics.
- Increasing demand for personalized medicine, where mRNA technology holds promise.
- Potential for partnerships with governments and organizations for pandemic preparedness and response.

## Threats:

- Competition from other mRNA vaccine developers and traditional vaccine manufacturers.
- Regulatory challenges and public skepticism regarding new vaccine technologies.
- Supply chain disruptions impacting production and distribution.

# BioNTech SE (BNTX) SWOT



## Strengths:

- Diversified portfolio spanning pharmaceuticals, medical devices, and consumer health products.
- Strong brand reputation and global presence.
- Robust research and development capabilities across multiple therapeutic areas.

## Weaknesses:

- Recent controversies and legal challenges related to some of its products, such as talc-based baby powder.
- Reliance on some older blockbuster drugs facing patent expiration.
- Vulnerability to regulatory changes and pricing pressures in the healthcare industry.

## Opportunities:

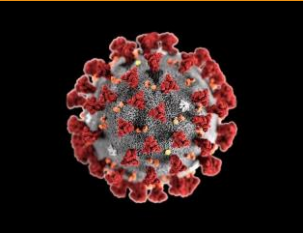
- Expansion into emerging markets and untapped therapeutic areas.
- Increasing demand for healthcare products and services globally.
- Potential for acquisitions or partnerships to enhance innovation and market presence.

## Threats:

- Intense competition in the pharmaceutical and healthcare sectors.
- Regulatory hurdles and potential litigation risks.
- Disruptions in the supply chain affecting production and distribution.



# Moderna, Inc. (mRNA) SWOT



## Strengths:

- Successful development of mRNA-based COVID-19 vaccine.
- Innovative technology platform with potential applications beyond vaccines.
- Strong investor confidence and financial backing.

## Weaknesses:

- Limited track record compared to more established pharmaceutical companies.
- Dependency on mRNA technology, which is still relatively new and not yet widely adopted.
- Challenges in scaling up production and distribution to meet global demand.

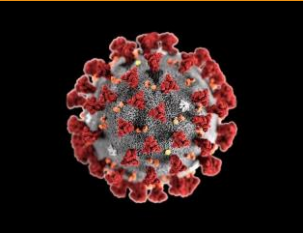
## Opportunities:

- Diversification of mRNA technology into other therapeutic areas like oncology and rare diseases.
- Potential for partnerships and collaborations to enhance research and development efforts.
- Growing interest and investment in mRNA-based therapeutics.

## Threats:

- Competition from other vaccine developers and traditional pharmaceutical companies.
- Regulatory uncertainties and public skepticism regarding mRNA technology.
- Supply chain disruptions impacting manufacturing and distribution.

# Pfizer Inc. (PFE) SWOT



## Strengths:

- Successful development of mRNA-based COVID-19 vaccine.
- Innovative technology platform with potential applications beyond vaccines.
- Strong investor confidence and financial backing.

## Weaknesses:

- Limited track record compared to more established pharmaceutical companies.
- Dependency on mRNA technology, which is still relatively new and not yet widely adopted.
- Challenges in scaling up production and distribution to meet global demand.

## Opportunities:

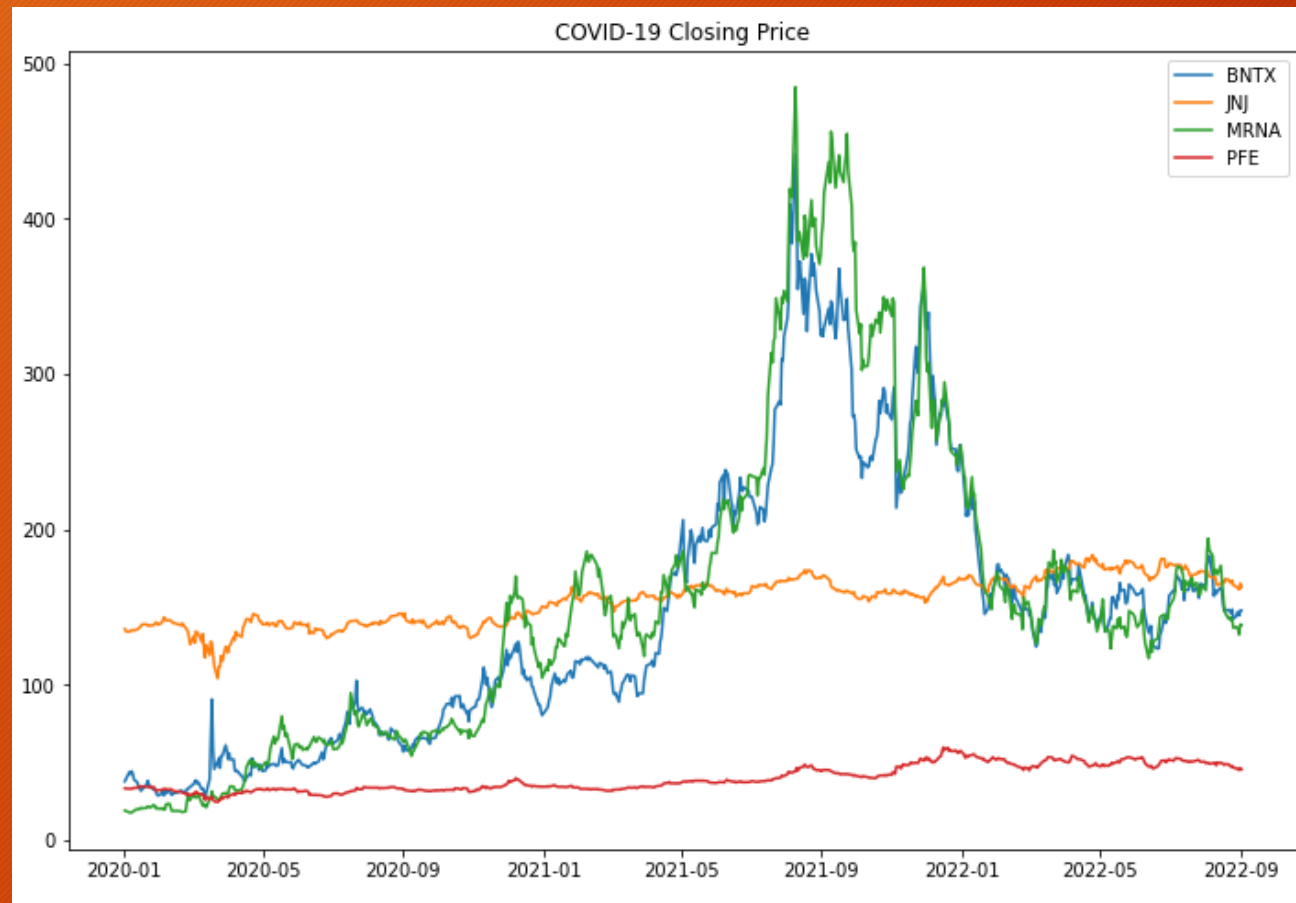
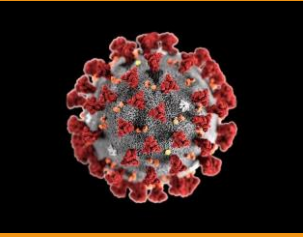
- Diversification of mRNA technology into other therapeutic areas like oncology and rare diseases.
- Potential for partnerships and collaborations to enhance research and development efforts.
- Growing interest and investment in mRNA-based therapeutics.

## Threats:

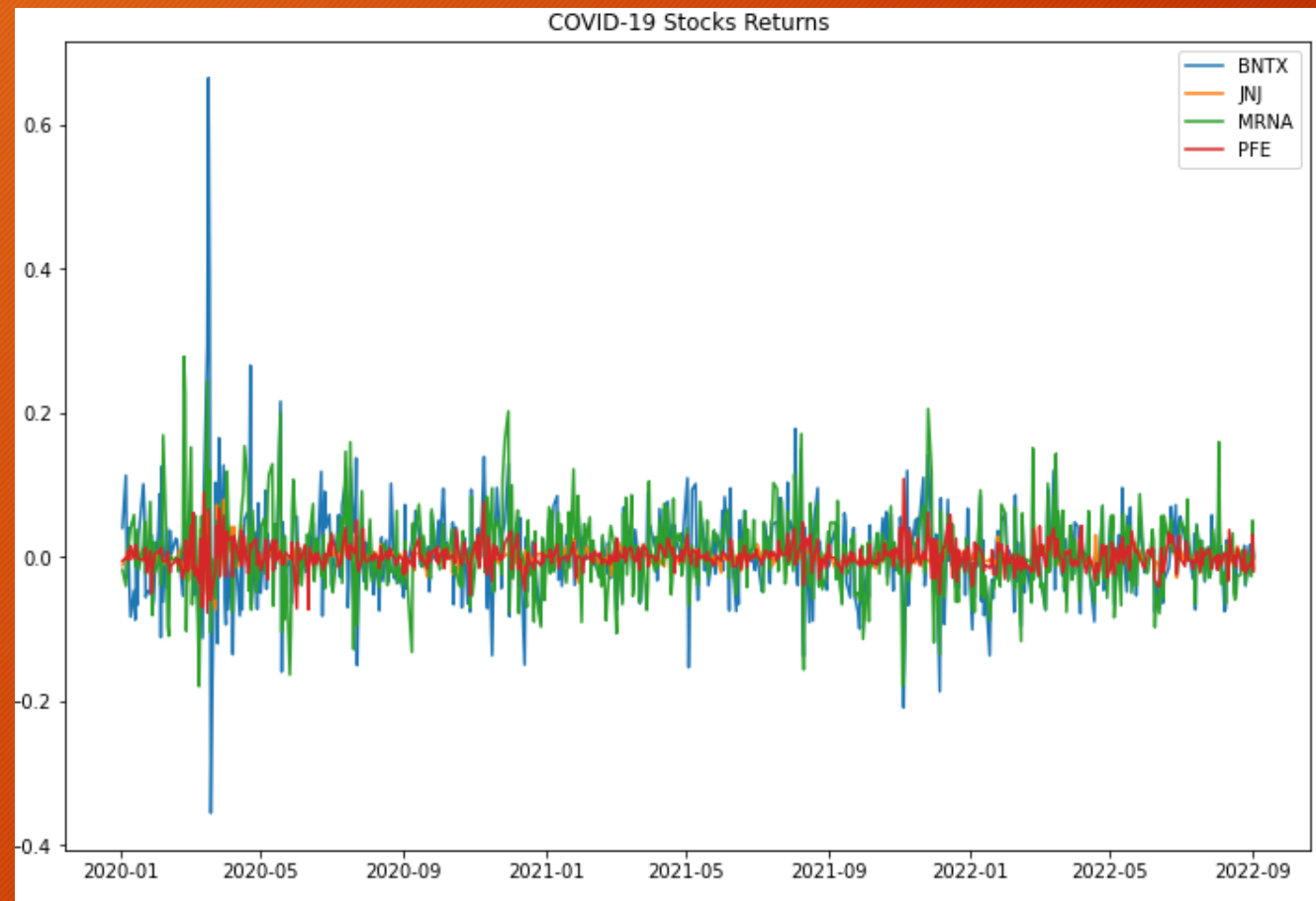
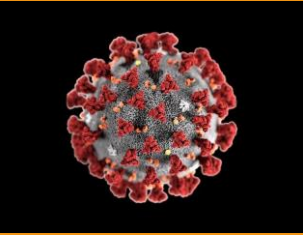
- Competition from other vaccine developers and traditional pharmaceutical companies.
- Regulatory uncertainties and public skepticism regarding mRNA technology.
- Supply chain disruptions impacting manufacturing and distribution.



# COVID-19 CLOSING PRICE

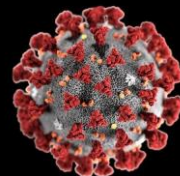


# COVID-19 STOCKS RETURNS

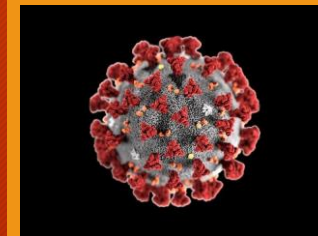




# COVID-19 STOCKS RETURNS CUMULATIVE SUM



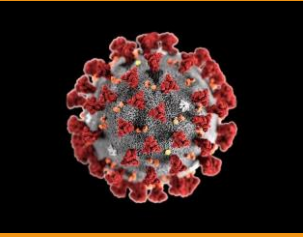
# RISK AND RETURNS



	Return	Risk
BNTX	0.997714	1.012772
JNJ	0.092552	0.224831
MRNA	1.117387	0.877046
PFE	0.162228	0.305414

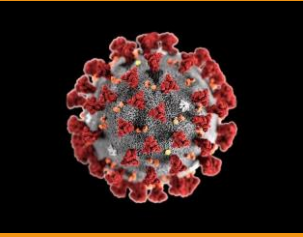


# COVID-19 RETURNS TABLE



	Returns	Risk	Sharpe Ratio	Max Returns	Min Returns	Median Returns	Total Return	Average Return Days	CAGR
PFE	0.000644	0.019239	-0.486310	0.108552	-0.077346	-0.000548	-1.994425	-2.068338e-05	0.083339
JNJ	0.000367	0.014163	-0.680131	0.079977	-0.072984	0.000000	-1.572512	-1.627304e-05	0.047663
MRNA	0.004434	0.055249	-0.100743	0.278107	-0.179669	-0.000540	-0.273472	-2.811565e-06	0.666892
BNTX	0.003959	0.063799	-0.094686	0.665000	-0.355435	0.001770	0.060887	6.249281e-07	0.421367

# FINAL THOUGHTS



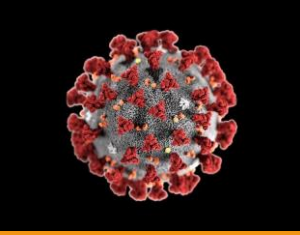
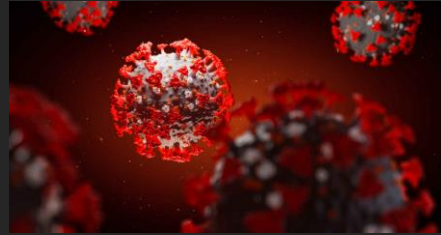
In conclusion, investing in companies such as BNTX (BioNTech), JNJ (Johnson & Johnson), MRNA (Moderna), and PFE (Pfizer) during the COVID-19 pandemic has proven to be a strategic move with significant potential for growth and stability. These companies have been at the forefront of developing and distributing vaccines to combat the global health crisis, which has not only positioned them as key players in the fight against the pandemic but has also led to substantial financial gains.

Throughout the pandemic, the demand for vaccines has remained high, driving revenue and profitability for these companies. Their innovative technologies and research capabilities have enabled them to swiftly develop and produce effective vaccines, garnering trust and confidence from governments, healthcare professionals, and the general public worldwide.

Furthermore, the ongoing need for booster shots, potential vaccine modifications to address new variants, and the possibility of future pandemics highlight the continued relevance and growth prospects for these companies in the pharmaceutical and biotechnology sectors.

While past performance is not indicative of future results, the resilience and adaptability demonstrated by BNTX, JNJ, MRNA, and PFE during the COVID-19 crisis underscore their potential for long-term success. Investors looking to diversify their portfolios and capitalize on opportunities in the healthcare sector may find these companies to be compelling investment options, given their track record of innovation, market leadership, and contribution to global public health. However, as with any investment, thorough research, careful consideration of risks, and consultation with a financial advisor are recommended to make informed decisions tailored to individual investment goals and risk tolerance.





Thank you for taking the time to read through this slide. Your attention and consideration are greatly appreciated!

