

1. Investment Policy and Stock Selection

1.1: Feature of Index S&P500:

The S&P 500 Index, or Standard & Poor's 500 Index, is a market-capitalization-weighted index of 500 leading publicly traded companies in the U.S. It is not an exact list of the top 500 U.S. companies by market cap because there are other criteria to be included in the index. The index is regarded as one of the best gauges of large-cap U.S. equities. Another common U.S. stock market benchmark is the Dow Jones Industrial Average (DJIA).

The S&P only uses free-floating shares when calculating market cap, meaning the shares that the public can trade. The S&P adjusts each company's market cap to compensate for new share issues or company mergers. The value of the index is calculated by totaling the adjusted market caps of each company and dividing the result by a divisor. Unfortunately, the divisor is proprietary information of the S&P and is not released to the public.³

However, we can calculate a company's weighting in the index, which can provide investors with valuable information.

$$\text{Company Weighting in S \& P} = \frac{\text{Total of all market caps}}{\text{Company market cap}}$$

If a stock rises or falls, we can get a sense as to whether it might have an impact on the overall index. For example, a company with a 10% weighting will have a greater impact on the value of the index than a company with a 2% weighting.

The S&P 500 is one of the most widely quoted American indexes because it represents the largest publicly traded corporations in the U.S. The S&P 500 focuses on the U.S. market's large-cap sector and is also a float-weighted index (a type of capitalization weighting), meaning company market capitalizations are adjusted by the number of shares available for public trading.

31/3/2020: Total risk adjusted return = 19.31 Beta= 18.44

1.2: Choice of investment policy

- An investment policy statement (IPS) is a document drafted between a portfolio manager and a client that outlines general rules for the manager. This statement provides the general investment goals and objectives of a client and describes the strategies that the manager should employ to meet these objectives.
- An investment policy statement essentially acts as a business plan for your portfolio. Developing a solid IPS is not a typical exercise for most investors. It requires a lot of thought. It also requires an understanding of how the market works as well as familiarity with investment principles and practices.

There are three main types of investment styles as follows:

1. Value fund:

A value fund is a pooled investment that follows a strategy focusing on shares that are undervalued based on fundamental analysis. The premise behind a value investing strategy is that once the market realizes the true value of these stocks, the share price will increase and the value fund investor will gain from this increase. Value funds are typically used as long-term investing allocations that have the potential to grow steadily over time, which is thus often associated with investment due diligence and patience.

2. Growth fund:

A growth fund is a diversified portfolio of stocks that has capital appreciation as its primary goal, with little or no dividend payouts. The portfolio mainly consists of companies with above-average growth that reinvest their earnings into expansion, acquisitions, and/or research and development (R&D). Most growth funds are high-risk, high-reward, and are therefore best suited to market participants with a long-term investment horizon and a healthy risk tolerance.

3. Blend fund:

A blend fund (or blended fund) is a type of equity mutual fund that includes a mix of both value and growth stocks. The goal of a blend fund is to create a diversified portfolio that takes advantage of the capital gains potential of the growth segment and the dividend income and stability of the value segment. Investors should seek to clearly understand the allocation determinations of blend funds since they can be managed with various strategies

1.3: Sectors and Industries

a) Computer and Technology

1. Choice of sector/industry:

The Computer and Technology Sector consists of computer components, software, wireless and network equipment, internet services/software, land and satellite comm infrastructure, and semiconductor companies. It is a rapidly developing sector and a lot of growth opportunity lies even in these mature companies. Plenty of investors remain bullish on big tech-focused stocks, citing their strong earnings and history of dynamic growth.

Computer and technology sector is important in our lives because it helps to deal with every day's dynamic things. Technology offers various tools to boost development and to exchange information. Both these things are the objective of IT to make tasks easier and to solve many problems.

More than anything, technology companies are associated with innovation and invention. Investors expect considerable expenditures on research and development by technology companies, but also a steady stream of growth fueled by a pipeline of innovative new products, services, and features. The Technology sector continues to play a pivotal role in advances in robotics and automation, the transformation toward big data and cloud computing, the software and artificial intelligence that make it work, and

smartphones, tablets, and network interfaces to enable us to use it. In the wake of the COVID-19 pandemic, higher wages, labor shortages and input inflation has resulted in Some important Features of Computer and Technology sector:

- The development of Information Technology has made the education system simpler, easier, and widespread. ...
- Diffusion of e-governance on a large scale.
- Participation of public in governance and policy making.
- Fast economic development.
- Development of remote areas.

Key Metrics for COMPUTER & TECHNOLOGY

Sector Earnings

	Sector	IVV(iShares-SP500)
PE (F1)	27.68	20.53
PEG (Ratio)	2.33	2.00
Proj EPS Growth	22.95%	20.64%
Hist EPS Growth	10.43%	9.79%
Net Margin	3.40%	12.72%
Hist Sales Growth	6.63%	4.84%
Hist Dividend Growth	0.00%	3.85%

Financial Ratios

	Sector	IVV(iShares-SP500)
Beta	1.05	1.06
ROE	7.09	18.55
ROA	3.21	7.06
ROI	5.44	11.08
Debt-to-Equity	0.08	0.62
Current Ratio	2.06	1.34
Cash Flow (\$/share)	33.46	1,780.74
Price to Book	3.87	3.85
Price To Sales	3.25	3.35
Dividend Yield	0.00%	1.34%

2. Blue chips stocks in Information Technology:

a. Advanced Micro Devices (AMD): Growth stock (A for growth)

Advanced Micro Devices has strengthened its position in the semiconductor market on the back of its evolution as an enterprise-focus company from a pure-bred consumer-PC chip provider. AMD has emerged as a strong challenger to NVIDIA's dominance in the graphic processing unit or GPU market based on its Radeon technology.

Launch of 7 nanometer (nm)-based AMD Radeon RX 5700-series gaming graphics card family featuring RDNA architecture, high-speed GDDR6 (Graphics Double Data Rate type 6) memory and support for the PCIe 4.0 interface, has helped the company increase presence among gamers.

b. Fortinet (FTNT): Growth stock (A for growth)

Headquartered in Sunnyvale, CA, Fortinet, Inc. is a provider of network security appliances and Unified Threat Management (UTM) network security solutions to enterprises, service providers and government entities worldwide.

Its solutions are designed to integrate multiple levels of security protection, including firewall, virtual private networking (VPN), antivirus, intrusion prevention (IP), web filtering, anti-spam and wide area network (WAN) acceleration.

Through its products and subscription services, the company provides integrated protection against dynamic security threats while simplifying the IT security infrastructure. Its solutions incorporate application-specific integrated circuits, hardware architecture, operating system, and associated...

c. Cisco system (CSCO): Blend stock (B for value and A for growth)

Headquartered in San Jose, CA and founded in December 1984, Cisco Systems Inc. is an IP-based networking company offering products and services to service providers, companies, commercial users and individuals.

Cisco is rapidly expanding its presence in the network security domain. Security includes products and services preventing unauthorized access to system resources and protecting from worms, spam, viruses and other malware. The Data Center product category includes Cisco Unified Computing System (UCS) and Server Access Virtualization. It also comprises of The Other products segment and Related Services.

d. Corning (GLW): Value stock (A for value)

New York-based Corning Incorporated started out as a glass business that was reincorporated in 1936. The company has since developed its glass technologies to produce advanced glass substrates that are used in a large number of applications across multiple markets. Currently, Corning reports results under five operating segments.

The Display Technologies segment (28.7% of total sales in third-quarter 2021) includes glass substrates that are commonly found in liquid crystal display (LCD) TVs, notebooks and flat-panel desktop personal computer (PC) monitors. The company's specialty, active-matrix substrates improve the brightness and sharpness of images.

e. DXC Technology (DXC): Value stock (A for Value)

Tysons, VA-based DXC Technology Company was formed by the merger of Computer Sciences Corporation ("CSC") and Enterprise Services Division of Hewlett Packard Enterprise ("HPE") which completed on Apr 1, 2017. While CSC was founded in 1959, HPE came into existence after the split of former Hewlett Packard Company in Nov 1, 2015.

Post-merger, the combined entity has become the world's second largest end-to-end IT services providing company after Accenture plc. The firm offers a broad array of professional services to clients in the global, commercial and government markets.

Stock	Purchase price	Dividends	Quantity traded	Beta	P/B	P/E	PEG
AMD	155.76	0.00%	50,047,209	2.01	26.30	47.94	1.37

			Style Score				
Communication services:			Value	Growth	Momentum		
AT&T (T)			A	C	C		
Charter Communications (CHTR)			A	B	C		
Comcast (CMCSA)			A	C	D		
Discovery (DISCA)			A	D	D		
DISH Network (DISH)			A	B	A		
FTNT	346.86	0.00%	903,403	1.12	50.09	103.10	4.28
CSCO	53.24	2.78%	30,030,780	0.90	5.80	19.80	2.94
GLW	38.22	2.55%	4,253,268	1.10	2.65	37.50	0.91
DXC	31.67	0.00%	1,654,626	2.40	1.70	20.64	0.31

b) Communication services:

1. Choice of investment policy:

2. Choice of sectors/industries:

→The communication/telecommunication services is a big sector that lists under the S&P 500. The telecommunication sector is made up of companies that make communication possible on a global scale, whether it is through the phone or the Internet, through airwaves or cables, through wires or wirelessly. These companies created the infrastructure that allows data in words, voice, audio, or video to be sent anywhere in the world. The largest companies in the sector are telephone (both wired and wireless) operators, satellite companies, cable companies, and internet services providers. Generally speaking,

→The Communication Services sector includes cutting-edge companies with which nearly all people have contact on a daily basis. However, companies in the sector are standing at an inflexion point faces a lot of risks and opportunities. The biggest growing factors are video streaming which is still one of the primary growing forces for the sector.

The development of new technology provides potential of growth for the communication service sector. The demand for wireless technology has been increased since the development of wireless media and device. In addition, the ramp up of 5G's implementations brings more opportunities for the industry, as 5G can increase speed and 5G applications can be applied to different industries such as manufacturing, healthcare (telemedicine solutions), transportation, etc.

On the other hand, building the infrastructure of 5G also bring challenges to the industry. First, the companies will be potential unable to combat the growing capex burden for building the 5G networks. While 5G technology is at the starting stage with uncertain future return, its global mobile capex is expected to grow continually and reach 168.8 billion in 2024. The huge capital input might be a huge burden in the future if the company not able to achieve a comparable rate of return. Second, the unexpected regulatory for 5G adoption might bring negative impact to the industry. States and cities need supportive policies to back 5G infrastructure deployments. In this case, if the regulators decide to go against the new technology in some areas, it will definitely disrupt the companies in the communication service sector.

The expected growth for telecommunication services in the next 5 years is 6.90%. says http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/pedata.html .

<https://www.thewrightstar.com/single-post/2020/02/20/the-trends-and-prospects-of-the-communication-service-sector-in-2020>

→Key financial ratios:

Dividends yield: 3.2%

Price to Earning Ratio: The Communications Systems (JCS) price-to-earnings (PE) as of May 2021 was zero, according to Macrotrends. However, in September 2020 it was 25.53%.

Price to Book Ratio: 2.92%

Price to Earnings Growth Ratio: 2.17%

→The average Beta is 0.66 says

https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/Betas.html?fbclid=IwAR2NEXHMPnCxws-vNR5tsl2ld2O06Gbsr5SgjzRKjUmlrTuXaCyWrUMOPgg

3. Stock selection

	P/E	P/B	PEG	Purchase Price	Dividend	Beta
AT&T (T): Based in Dallas, TX, AT&T Inc. is the second largest wireless service provider in North America and one of the world's leading communications service carriers. Through its subsidiaries and affiliates, the company offers a wide range of communication and business solutions that include wireless, local exchange, long-distance, data/broadband and Internet, video, managed networking, wholesale and cloud-based services. With assets like HBO, CNN and TNT, AT&T's acquisition of Time Warner has created new kinds of online videos and opened up avenues for targeted advertisements. The company is also focusing on streaming services with AT&T TV and HBO Max. This is likely to create other avenues to monetize content as it expands 5G coverage across the country. The current segments of the company are Communications, WarnerMedia and Latin America.	201,08	1,05	1,95	24,34	2,08	0,7
Charter Communications (CHTR):	31,09	7,18	0,88	682,34	0	0,96

<p>Charter Communications is the second largest cable operator in the United States and a leading broadband communications company providing video, Internet and voice services. The company served approximately 31.1 million residential and small and medium business customers as of Dec 31, 2020.</p> <p>Charter's high-capacity, two-way telecommunications network passes over 53 million households and small and medium businesses across the United States. The company also estimates that more than 400 million devices are wirelessly connected to its network through WiFi.</p> <p>Charter also sells video and online advertising to local, regional and national advertising customers and fiber-delivered communications and managed information technology ("IT") solutions to large enterprise customers. The company also own and operate regional sports networks and local sports, news and community channels and sell security and home management services in the residential marketplace.</p>						
<p>Comcast (CMCSA): Comcast Corporation is a global media and technology company with three primary businesses: Comcast Cable, NBCUniversal and Sky.</p> <p>The Philadelphia, PA-based company reported revenues of \$103.56 billion in 2020. The company reports in three revenue generating segments:</p> <p>Cable Communications (58% of total</p>	16,75	2,48	1,06	52,79	1	0,96

<p>revenues): It consists of the operations of Comcast Cable. This segment offers broadband, video, voice and wireless in the United States individually and as bundled services at a discounted rate over its cable distribution system to residential and business customers.</p> <p>Cable Communications generates revenues primarily from residential and business customers that subscribe to Comcast's cable services and from the sale of advertising. The company also offers a wireless phone service (Xfinity Mobile brand) as a component of its bundled services, which is reported in Corporate and Other.</p> <p>NBCUniversal Segment (27.1% of total revenues): This segment comprises four reportable segments – Cable Networks, Broadcast Television, Filmed Entertainment and Theme Parks.</p> <p>Cable Networks consists primarily of Comcast's national cable networks. Broadcast Television comprises NBC and Telemundo broadcast networks.</p> <p>Filmed Entertainment consists primarily of the operations of Universal Pictures. Films are also produced under the Illumination, DreamWorks Animation and Focus Features brands.</p> <p>Sky (17.9% of total revenues): Acquired in 2018, Sky includes a direct-to-consumer business that provides video, high-speed Internet, voice and wireless phone services, and a content business. The business, one of Europe's leading</p>						
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entertainment companies, also operates the Sky News broadcast network and Sky Sports networks. Sky has 23.99 million customers.						
Discovery (DISCA): Discovery Communications is now known as Discovery, Inc. following the completion of the acquisition of Scripps Networks Interactive on Mar 6, 2018. The company offers original and purchased content as well as live events to 3.8 billion cumulative subscribers plus viewers worldwide. Discovery distributes content in the United States and to 220 other countries plus territories in more than 50 languages. The company's global portfolio of networks includes non-fiction television brands, such as Discovery Channel, HGTV, Food Network, TLC, Animal Planet, Investigation Discovery, Trvl Channel, OWN, Science Channel and MotorTrend (previously known as Velocity, domestically and currently known as Turbo in most international countries). Moreover, the company's international portfolio constitutes Eurosport, a leading sports entertainment provider and broadcaster of the Olympic Games across Europe, TVN, a Polish media company, as well as Discovery Kids, a leading children's entertainment brand in Latin America. Discovery also participates in joint ventures including Group Nine Media. The company is a participant in the multi-platform venture with Chip and Joanna Gaines, which plans to launch linear networks,	13,44	1,1	0,83	26,82	0	1,32

<p>SVOD and TV Everywhere (TVE) products in 2020.</p> <p>Discovery reported revenues of \$10.67 billion in 2020. It operates through two reportable segments: U.S. Networks and International Networks.</p> <p>U.S. Networks segment owns and operates 18 national television networks. In 2020, the segment contributed to 65.1% of the company's total revenues. Moreover, advertising, distribution and other revenues were 57.7%, 41% and 1.3%, respectively, of the total segmental revenues.</p> <p>International Networks segment primarily consists of the national pan-regional TV networks of the company. In 2020, the segment accounted for 34.8% of the company's total revenue stream. Moreover, advertising, distribution and other revenues were 42.3%, 54.2% and 3.4%, respectively, of the total segment revenues.</p>						
<p>DISH Network (DISH): DISH Network Corporation offers pay-TV services under the DISH brand and Sling brand. As of Dec 31, 2020, DISH had 11.290 million Pay-TV subscribers in the United States, including 8.816 million DISH TV subscribers and 2.474 million Sling TV subscribers.</p> <p>DISH offer a wide selection of video services under the DISH TV brand, with access to hundreds of local, regional and national broadcast network channels, depending on the level of subscription. The company's Latino and international</p>	8,05	1,19	1,49	34,34	0	2,33

programming packages allow subscribers to choose from over 270 channels in 28 languages.

DISH also offers products like DVRs (including Hopper whole-home HD DVR), multiple tuner receivers, 1080p video on demand, and external hard drives. Additionally, the company offers streaming access through DISH On Demand to thousands of movies and TV shows to DISH TV subscribers.

Sling TV services require an Internet connection and are available on multiple streaming-capable devices. DISH also offers add-on extras, pay-per-view events and a cloud-based DVR service.

DISH reported revenues of \$15.49 billion in 2020. The company reports operations through two reportable segments – Subscriber-Related revenues (96% of revenues in 2020) and Equipment Sales & Other revenues (4%).

The company's wireless business operates in two business units - Retail Wireless and 5G Network Deployment. Markedly, DISH entered retail wireless business through the acquisition of Boost Mobile (Jul 1, 2020) and Ting Mobile (Aug 1, 2020). As of Dec 31, 2020, DISH had 9.055 million retail wireless subscribers.

Notably, DISH has invested over \$11 billion to acquire certain wireless spectrum licenses and related assets since 2008. The company also has non-controlling investments in certain entities.

Boost Mobile faces significant competition from Metro PCS (owned by T-Mobile), Cricket Wireless (owned by AT&T) and Tracfone Wireless (acquired by Verizon).						
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c. Financials:

1. Choice of investment policy:

Company	Style scores		
	Value	Growth	Momentum
1, MetLife (MET)	A	D	D
2, Prudential Financial (PRU)	A	D	D
3, Citigroup (C)	A	B	B
4, The Travelers Companies (TRV)	A	C	B
5, Willis Towers Watson (WLTW)	B	B	D

2. Choice of industry:

- Financial sector is a section of firms and institutions that provide financial services to commercial and retail customers. The economy's health is dependent upon the efficiency of finance services. According to Investopedia, financial sector is one of the largest portions of the S&P 500.

https://www.investopedia.com/terms/f/financial_sector.asp



- As it plays an

important role in the global economy, financial sector has changed significantly especially in the post-pandemic world. Due to Yahoo!finance, “According to the [Financial Services Global Market Report 2021](https://finance.yahoo.com/news/top-10-financial-stocks-invest-101317595.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLnNvbS8&guce_referrer_sig=AQAAAG91WQVGOKUWEVX_0Q4tGSSPmw_ud9TOmo4VqXa-1YvWJ3R5T0G7WzcAsAAjVtZ7OtPPRuadFCZ8Ai2LqMJaTWmJ08xqm3Uv5pWRilzwyI4XaCESNPC9VbgZroh4OQoaQ6B53rFHxubKRxB-sYS0F34gQnPTwGPgQrOeWSOOvla), the financial services market is likely to reach \$22.5 trillion, growing at a compound annual growth rate (CAGR) of 9.9% from the previous year, and further expected to reach \$28.5 trillion by 2025. With global Gross Domestic Product (GDP) expected to reach \$93 trillion in 2021, financial services comprise about 24% of the world's economy.”

https://finance.yahoo.com/news/top-10-financial-stocks-invest-101317595.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLnNvbS8&guce_referrer_sig=AQAAAG91WQVGOKUWEVX_0Q4tGSSPmw_ud9TOmo4VqXa-1YvWJ3R5T0G7WzcAsAAjVtZ7OtPPRuadFCZ8Ai2LqMJaTWmJ08xqm3Uv5pWRilzwyI4XaCESNPC9VbgZroh4OQoaQ6B53rFHxubKRxB-sYS0F34gQnPTwGPgQrOeWSOOvla

- There are 5 main features of financial sector:
 1. Customers oriented: these financial services are fixed to be aligned with the requirement of people trying to avail them. Financial institutions will have all in needed information about their customers; thus, designing essential factors, such as cost, liquidity...in order to match with clients' specific needs.
 2. Inseparable: production and delivery of these services function at the same time simultaneously.

3. Funds Intermediary: financial services are deemed as the link between investors and borrowers in the market.
 4. Intangible: As a result, they can't be standardized or duplicated in the same way. Firms that supply these services therefore should construct good images and create client's liability for their own success.
 5. Perishable: financial services can not be stored. They have to be supplied when customers need them.
- Financial ratios of Financials:

Ratios	Result	Sources of information
Dividend yield	4.17%	CFI- https://corporatefinanceinstitute.com/resources/knowledge/finance/dividend-yield-formula/
Price to Earnings Ratio (P/E)	7.60%	Investopedia- https://www.investopedia.com/ask/answers/032315/what-average-pricetoearnings-ratio-financial-services-sector.asp
Price to Book Ratio (P/B)	2.76%	Gurufocus- https://www.gurufocus.com/term/pb/DFS/PB-Ratio/Discover-Financial-Services
Price to Earnings Growth Ratio (PEG)	1.08%	NYU Stern- http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/pedata.html

- Due to Investopedia, the **average annual historical return** since 1926 is approximately 10%.
<https://www.investopedia.com/ask/answers/042415/what-average-annual-return-sp-500.asp>
- **Average beta** is 0.08 based on [Betas \(nyu.edu\)](http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/Betas.html)
http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/Betas.html

3. Stock selection: Based on [Growth Stocks versus Value Stocks \(zacks.com\)](http://www.zacks.com)

These stocks are being traded in S&P500 stock market

Company	P/E (Price-Earnings ratio)	P/B (Price-to- Book ratio)	PEG (Price-to- Earnings- to- Growth ratio)	Purchase price (\$)	Dividend	Beta (5Y monthly)	Quantity traded
MetLife (MET) - MetLife, Inc. is an insurance-based global financial services company providing	10.10	0.76	0.82	61.15	1.92	1.27	4.29M

protection and investment products to a range of individual and institutional customers. In addition to offering individual insurance, annuity, and investment products, the company provides group insurance, retirement and savings products, and services. MetLife is organized into five segments: U.S.; Asia; Latin America; Europe, the Middle East and Africa ("EMEA"); and MetLife Holdings.							
Prudential Financial (PRU) - Headquartered in Newark, NJ, Prudential Financial Inc. was founded in 1875. Through its subsidiaries and affiliates, this financial services leader offers an array of financial products and services including life insurance, annuities, retirement-related services, mutual funds, investment management and real estate services. These are offered to individual and institutional customers across United States, Asia, Europe and Latin America. Prudential's principal operations are comprised of five divisions, which together encompass seven segments, and Corporate and Other operations.	5.80	0.67	0.81	106.53	4.60	1.65	1.64M
Citigroup (C) - Headquartered in New York, Citigroup Inc. is a globally diversified financial services holding company providing a	6.39	0.73	0.50	66.54	2.04	1.83	12.59M

range of financial products and services including consumer banking and credit, corporate and investment banking, securities brokerage and wealth management to consumers, corporations, governments and institutions. Citigroup has around 200 million customer accounts in over 160 countries and jurisdictions.							
The Travelers Companies (TRV) - Established in 1853 and is based in New York, NY, The Travelers Companies Inc., a holding company, is principally engaged, through its subsidiaries, in providing a wide variety of property and casualty insurance and surety products and services to businesses, organizations and individuals in the United States. and select international markets.	10.70	1.35	1.92	152.53	3.52	0.75	1.19M
Willis Towers Watson (WLTW) - Willis Towers Watson plc, formerly known as Willis Group Holdings plc, is a leading global advisory, broking and solutions company. With the merger of Willis Group and Towers Watson, the merged entity adopted its new name and began trading under the symbol WLTW on the stock exchange in January 2016. However, London, United Kingdom based Willis Towers Watson was formed in 1828. The much-awaited merger between Willis	13.12	2.49	NA	232.80	3.20	0.74	1.7M

Towers Watson and Aon has been terminated.							
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d. Healthcare

- Health care: The healthcare sector consists of businesses that provide medical services, manufacture medical equipment or drugs, provide medical insurance, or otherwise facilitate the provision of healthcare to patients.
- In general, it can be said that the view on the US health care system is one of the most controversial one's in the world. On the one hand, some people argue it is 'the best health care system in the world' due to high-tech facilities and freely available medical sources, but on the other hand it can be argued that the system is highly inefficient as the country spends more than any other country on health care but still has high proportions of uninsured and uneven quality. (Lalasz, 2007)

The US health care system offers both, private and public insurers, but the private element dominates over the public. Public Health insurances, financed by the federal income taxes, are for example *Medicare* which covers individuals aged 65 and over, or *Medicaid*, covering low-income and disabled people. Additionally, there exist several other public systems, like *S-CHIP*, the State Children's Health Insurance Program, designed for children whose families make too less money to purchase private healthcare, but too much to qualify for Medicaid.

Furthermore, there exist the private non-group insurances or individual market for the people who are self-employed or retired. Contrasting to the group-market (employer-sponsored insurances), "*the individual market allows health insurance companies to deny people coverage based on pre-existing conditions.*" (Chua, 2006)

Diversification:

Drugs

Drug manufacturers can further be broken down into biotechnology firms, major pharmaceutical firms, and makers of generic drugs. The biotech industry consists of companies that engage in research and development to create new drugs, devices, and treatment methods.

Many of these companies are small and lack dependable sources of revenue. Their market value may depend entirely on the expectation that a drug or treatment will gain regulatory approval, and FDA decisions or rulings in patent cases can lead to sharp, double-digit swings in share prices. Examples of (larger) biotech firms include Novo Nordisk (NVO), Regeneron (REGN), Alexion (ALXN), Vertex (VRTX), Gilead Sciences Inc. (GILD), and Celgene Corp. (CELG).

Major pharmaceutical firms also engage in research and development but tend to focus more on manufacturing and marketing an existing portfolio of drugs than the typical biotech firm. These companies tend to have more dependable streams of revenue and a more diversified "pipeline" of drugs in the research and development stages, making them less dependent on make-or-break drug trials and their shares less volatile. Examples of major pharmaceutical firms include Johnson and Johnson, Roche, Pfizer, Eli Lilly, Novartis AG, GlaxoSmithKline, and AstraZeneca.

Some pharmaceutical firms specialize in generic drugs, which are identical to name-brand drugs but no longer enjoy patent protection. As a result, there is often competition to manufacture identical drugs, leading to lower prices and thinner profit margins. An example of a generic drugs firm is Teva Pharmaceutical Industries Ltd.

Medical Equipment

Medical equipment makers range from firms that manufacture standard, familiar products—scalpels, forceps, bandages, and gloves—to those that conduct cutting-edge research and produce expensive, hi-tech equipment, such as MRI machines and surgical robots. Medtronic PLC is an example of a medical equipment maker.

Managed Healthcare

Managed healthcare companies provide health insurance policies. The "Big Five" firms that dominate the managed Medicaid industry are UnitedHealth Group Inc., Anthem Inc., Aetna Inc., Molina., and Centene.²

Growth: Employment in healthcare occupations is projected to grow 16 percent from 2020 to 2030, much faster than the average for all occupations, adding about 2.6 million new jobs. Healthcare occupations are projected to add more jobs than any of the other occupational groups. This projected growth is mainly due to an aging population, leading to greater demand for healthcare services.

The median annual wage for healthcare practitioners and technical occupations (such as registered nurses, physicians and surgeons, and dental hygienists) was \$69,870 in May 2020, which was higher than the median annual wage for all occupations in the economy of \$41,950.

Healthcare support occupations (such as home health aides, occupational therapy assistants, and medical transcriptionists) had a median annual wage of \$29,960 in May 2020, lower than the median annual wage for all occupations in the economy.

Common risks for healthcare organizations

- Laws, regulations, standards, corporate compliance
- Medicare conditions of participation
- Privacy, confidentiality (data breach)
- Medical records and discovery
- Human resources, credentialing, staffing
- Patients' rights
- Medication management
- Infection prevention and control
- Abuse reporting
- Environmental safety

Important ratios of the healthcare sector:

ROE	14.35%
ROA	9.18%
ROI	10/01%
Debt-to-equity	0.74
Current ratio	1.66
Cash flow	0.66
Price to book	6.12
Price to sales	4.64

1.4: Stock selection

All the firms below are traded in S&P500 stock market:

Stock	Purchase price	Dividends	Quantity	Beta	P/B	P/E	PEG
ABBV	\$117.07	\$1.3	3.16M	0.83	15.27	27.90	2.48
ABMD	\$340.20	Does not pay	175.8K	1.26	11.18	104.45	4.20
ALGN	\$162.16	Does not pay	1.32M	1.57	15.31	73.65	2.84
ABC	\$120.52	\$1.84	1.53M	0.49	42.85	16.31	1.04
A	\$162.16	\$0.78	1.48M	0.98	15.31	51.22	2.64

1. AbbVie (ABBV) (A for Value and Growth)

North Chicago, IL-based AbbVie has become one of the top-most pharma companies after it acquired Botox maker Allergan in a cash-and-stock deal for \$63 billion in May 2020. The deal has transformed AbbVie's portfolio by lowering its dependence on Humira, its flagship product, which has already lost patent protection in Europe and is due to face biosimilar competition in the United States in 2023. AbbVie has one of the most popular cancer drugs in its portfolio, Imbruvica and its newest immunology drugs Skyrizi (risankizumab) and Rinvoq

(upadacitinib) position it well for long-term growth.

AbbVie came into existence on Jan 1, 2013, after Abbott Laboratories divested its pharmaceutical division. It announced a definitive agreement to buy Allergan on Jun 24, 2019. AbbVie paid Allergan a price of \$120.30 in cash and 0.8660 AbbVie shares per Allergan share. The deal closed in May 2020. In June 2016, AbbVie acquired cancer drugmaker, Stemcentrx in a cash-and-stock deal worth \$5.8 billion.

AbbVie enjoys leadership positions in key therapeutic areas including immunology, hematologic oncology, neuroscience, aesthetics, eye care and women's health.

Humira is approved for several autoimmune diseases like rheumatoid arthritis (RA), active psoriatic arthritis, active ankylosing spondylitis, Crohn's disease and others. Imbruvica (hematological cancers – approved for five distinct disease areas) became part of the company's portfolio following the Pharmacyclics acquisition. Humira and Imbruvica accounted for 58% and 11.6%, respectively, of AbbVie's total revenues in 2020.

Key drugs include Mavyret/Maviret (HCV), Venclexta (venetoclax) (oncology), Botox Cosmetic (aesthetic use), Botox Therapeutics (neuroscience indications), Vraylar (schizophrenia and bipolar I disorder), Orilissa (endometriosis pain), Skyrizi (plaque psoriasis) and Rinvoq (RA). The company also has partnerships with companies like Roche and J&J.

AbbVie reported total sales of \$45.8 billion in 2020, up 37.6% on a reported basis and 3.3% on a comparable operational basis..

2. Abiomed (ABMD) (B for growth)

Headquartered in Danvers, MA and founded in 1981, Abiomed Inc. is engaged in developing, manufacturing and marketing of medical products, designed to assist or replace the pumping function of the failing heart. Abiomed's main product line - Impella - comprises Impella 2.5, Impella 5.0, Impella LD, Impella CP and Impella RP.

Impella 2.5 is primarily used by interventional cardiologists to support patients in the cardiac catheterization lab (cath lab) for partial circulatory support for up to six hours.

The Impella 5.0 and Impella LD received 510(K) clearances for circulatory support for up to six hours. These devices are primarily used in the heart surgery suite and support patients who require higher levels of circulatory support as compared to the Impella 2.5. This equipment can pump up to 5 liters of blood per minute. Impella CP provides blood flow of approximately one liter more per minute than Impella 2.5. Impella RP is a catheter-based axial flow device that can pump more than four liters of blood per minute during right heart failure.

Fiscal 2021: For fiscal 2021, EPS came in at \$4.94 which improved 11.5% year over year. For fiscal 2021, revenues came in at \$847.5 million which improved 0.8% year over year

3. Align Technologies(ALGN) (A for growth)

Align Technology, based in California, manufactures and markets a system of clear aligner therapy, intra-oral scanners and CAD/CAM (computer-aided design and computer-aided manufacturing) digital services used in dentistry, orthodontics, and dental records storage. The clear aligner system corrects malocclusion using nearly invisible and removable appliances that gently move the tooth to a desired final position.

Align presently has 2 operating segments, Clear Aligner (85.01% of total revenues in 2020), known as the Invisalign system and the CAD/CAM Services (14.98% of total revenues in 2020) which is known as the iTero intra-oral scanners and OrthoCAD services (which we earlier referred to as Scanner and CAD/CAM Services). In 2020, the Clear Aligner segment registered revenue growth of 3.7 % from 2019, while the latter registered revenue decline of 2.8% from 2019.

Product portfolio:

Invisalign System – An exclusive method to treat malocclusion based on a series of doctor-prescribed, custom manufactured, clear plastic removable orthodontic aligners. The Invisalign system offers a range of treatment options, specialized services, and proprietary software for treatment visualization and comprises several phases.

The Clear Aligner products are Invisalign Full, Teen and Assist (Full Products), Express/Lite (Express Products), Vivera retainers, along with training and ancillary products for treating malocclusion.

4. AmerisourceBergen(ABC) (A for Value and Growth)

Chesterbrook, PA-based AmerisourceBergen is one of the world's largest pharmaceutical services companies, which focuses on providing drug distribution and related services to reduce health care costs and improve patient outcomes.

The company reports through two segments – Pharmaceutical Distribution and Other. The Pharmaceutical Distribution business includes the operations of AmerisourceBergen Drug Corporation (ABDC) and AmerisourceBergen Specialty Group (ABSG). The segment services healthcare providers in the pharmaceutical supply channel. The ABSG division provides pharmaceutical distribution and other services mainly to physicians, who specialize in a variety of diseases, especially oncology, and to other health care providers, including dialysis clinics. The ABDC division is involved in the distribution of branded pharma drugs and generic drugs, over-the-counter healthcare products, home healthcare supplies and equipment and related services to a range of healthcare providers.

The "Other" segment consists of AmerisourceBergen Consulting Services (ABCS), World Courier and MWI Veterinary Supply. The ABCS business provides commercialization support services to pharmaceutical and biotech

manufacturers.

Agilent Technologies (A) (B for growth)

Palo Alto, CA-based Agilent Technologies, Inc. was originally a spin-off from Hewlett-Packard. The company is an original equipment manufacturer (OEM) of a broad-based portfolio of test and measurement products serving multiple end markets.

On Nov 1, 2014, Agilent completed the spinoff of its electronic measurement segment into a new company named Keysight Technologies, making it an independent, publicly traded company.

Over the last three years, the company has diversified into new end markets, namely industrial, chemical and electronics markets. The company has three business segments, including Life Sciences & Applied Markets Group (LSAG), Diagnostics and Genomics Group (DGG) and Agilent Cross Lab Group (ACG).

The company uses a direct sales model for the distribution of its products, which is supplemented by distributors, resellers, manufacturers' representatives, telesales and electronic commerce, as necessary.

Agilent reported revenues of \$6.3 billion in fiscal 2021, up 18% from fiscal 2020. The company generated 62% of revenues from markets outside the United States. 35% were derived from Asia-Pacific region in the fiscal 2021.

LSAG accounted for 45% of fiscal 2021 revenues (up 18% from fiscal 2020), DGG contributed 20% (which increased 24% from fiscal 2020) and ACG represented the remaining 35% (improving 16% from fiscal 2020).

Most of the competition for these three segments comes from Bruker Corp., Danaher Corp, Affymetrix, GE Healthcare, Life Technologies Corp., Thermo Fisher Scientific, Waters Corp., Illumina, Inc., Life Technologies Corp., Abbott Laboratories, Sakura, Roche, Perkin Elmer Corp., Shimadzu Corp, Heidenhain Corp., Malvern Instruments, Seiko Instruments, Veeco Instruments and Zygo Corp.

- The portfolio should be **value-weighted** because an equal-weighted investment means a portfolio has a higher representation of smaller, cheaper companies. If those small companies have dramatic gains, the investor can make more money on those stocks than on the larger stocks, whereas cap weighted is safer if we pour our money into large cap firm (they account for a big slice in the pie and they work like a money safe box). Our portfolio investment are chiefly composed of blue chips company so our go-to strategy should be the latter one: value-weighted.

2. Analysis

a. Return

b. Risk

○ Variance & Standard Deviation:

Many facets of the financial services business depend heavily on the ability to accurately assess and manage risk. The effect of proper or incorrect risk assessment may be seen most clearly in the investment industry, despite its importance in economics and accounting.

When investing in stocks, options, or mutual funds, knowing the likelihood that an asset may move unexpectedly might be the difference between a successful deal and financial ruin. Many indicators are used by traders and analysts when evaluating the risk and volatility of possible investments, but standard deviation is by far the most popular. The smaller the standard deviation, the less risky an investment will be, meanwhile the more volatile a security is, the greater its variance and standard deviation. Followings are the max and min respectively correlated to the stock regarding the risk level when investing in that firm.

Stock	Max	Min
Communication services	AT&T \$211.27	DISH Network \$133.06
Health Care	ALGN \$211.13	ABBV \$185.34
Financials	WLTW \$218.59	MET \$175.40
Computer & Technology	AMD \$212.49	FTNT \$190.91

More details in the excel file : “ Variance and Standard deviation”.

○ Beta

Beta is a measure of a stock's volatility in relation to the overall market. We choose the S&P 500 as benchmark. Since our stocks have a really small beta it means that our stocks are less volatile and have fewer price swings. Therefore small beta usually means less risky stocks we do get less of a return out of them because of that

More details in the excel file : “ BETA ”.

○ **Correlation and covariance matrix**

- Most of them have a small correlation since none of them has almost a value of 0.5 or 1.
- Nevertheless we can say that the negative correlated stocks move in a sort of opposite directions in the market
- Agilent Technologies and Comcast have a medium positive correlation of 0.38
- Corning and Dish Network have a negative medium correlation of -0.38, same goes for Advanced Micro Devices and AT&T
- Discovery and Charter Communications have such a small correlation of 0.003 which indicates that the two stocks really aren't correlated.

More details in the excel file : “ Correlation and Covariance ”

c. Risk adjusted return (at a portfolio level)

Risk adjusted return is a way to analyze performance. More specifically, there is an amount of risk inherent in every type of investment and every investor has their own risk appetite that determines portfolio allocation. When an investor takes on a risk, they expect that it will lead to excess returns that beat the market. Calculating this can impose better understanding of the level of risk that investments assume, which helps them make more inform portfolio allocation decisions.

Risk adjusted return is the profit an investment generates over a specific period in context of risk it assumes. One of the most common ways to calculate *risk adjust return* is by computing **sharpe ratio**.

Formula:

$$\text{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p}$$

R_p = Return of portfolio

R_f = Risk-Free rate

σ_p = Standard deviation of portfolio's excess return

In this report, we will compute the **sharpe ratio** of 20 institutions we already chose above within 3 months (from September to December of 2021). The result came out like this:

	AT&T	CHTR	CMCSA	DISCA	DISH	MET	PRU	C
CAGR	- 38.18 %	- 66.58 %	- 65.11 %	89.21 %	- 72.41 %	32.63 %	30.22 %	- 73.10 %
Risk free rate	27.00 %	27.00 %	27.00 %	27.00 %	27.00 %	27.00 %	27.00 %	27.00 %
Annual deviation	24.50 %	31.62 %	27.51 %	38.42 %	38.73 %	26.24 %	24.82 %	22.29 %
Sharp ratio	-2.66	-2.96	-3.35	1.62	-2.57	0.21	0.13	-4.49

	ABBV	ABMD	A	ALGN	ABC	FTNT	GLW	CSCO
CAGR	-14%	38%	-57%	-85%	1%	-49%	-39%	93%
Risk free rate	- 48.96 %	27.00 %	27.00 %	27.00 %	27.00 %	27.00 %	27.00 %	27.00 %
Annual deviation	13.39 %	34.46 %	25.77 %	34.78 %	31.02 %	45.37 %	26.24 %	23.40 %
Sharp ratio	2.60	0.32	-3.26	-3.22	-0.83	-1.67	-2.53	2.83

We took S&P500 as the benchmark. Currently, the sharp ratio of the benchmark is 2.3, a really good ratio. In comparison, only ABBV and CSCO have higher sharp ratio than the benchmark, which have the ratio at 2.6 and 2.83, respectively. This means that these 2 organizations are better at risk adjusted performance. Other companies including: MET, PRU, ABMD, and AMD have the sharpe ratio in between 0 and 1.0. This is the market-beating performance if achieved over the long run. The remaining are lower, even have negative ratio. It means that these companies need to be invested in risk free asset more.

More details in the excel file : "Risk adjusted return".

3. Conclusion :

Throughout this financial analysis and report of a variety of stocks from many different sectors/industries of the S&P 500, viewers should gain a clearer perspective about its past performance. It can still be witnessed during a water the stable upward trend of most of the companies belonging to the Technology sectors. This could be easily explained by the escalation in the demand for online services during the pandemic which has strictly hinder social gatherings and in-person activities. Nonetheless, investors start to grow favorable perspective towards the Healthcare

sectors such as Pharmaceuticals that boosts the market capital partially. They would deem it as a temporary and spontaneous investing portfolio depending on the contingent strategy toward the complexity of the epidemic.

Warren Buffet once said: "Investing is easy but not simple", investors might see it as a real bargain and a profitable mine to dig deeply but they should never take it for granted. As volatile as the market has always been, the best one is not who make the most but rather stays the longest. For that to happen, any investors should take these followings into deep consideration. First and foremost, a diverse portfolio of investments should be highly recommended. It means that: "Do not put all the eggs into one basket". There will be inevitable periods when you might lose your money which then can be feasibly offset by the other investments. Besides, it also help prevent your asset from heavily polarizing towards one company or once sectors. Secondly, investors should nurture a habit of reasonable take-profits and cut-losses. In fact, it largely depends on the style if they are a swing trader or position trader to select the right timing goal, thus no ideal result. Nonetheless, having a goal can contribute a lot to their investment since it works as the identification of their investing style and as a measurement of their profit. If everything goes as planned, nothing might need discussing here, but in the opposite unwanted scenarios, investors still need to make the most as possible through finding proper exit points in lieu of leaving their assets demolished. Last but not least, every investor, especially new enters, should equip themselves carefully with knowledge and ground-based understanding of this sphere so as to maintain a balanced perspective and well-prepared mentality towards contingent circumstances.