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Full Length Research

Analytical review of the financial performance of AstraZeneca PLC and a detailed assessment of its macroeconomics, microenvironment, and justification of its market structure

Mary Eke Donald

University of Bradford

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This paper provides insightful knowledge onthe reasons why pharmaceutical companies that produce and sell generic drugs make more profits compared to innovative pharmaceutical companies that produce branded drugs. The result of the comparative analysis carried out on the published annual report of AstraZeneca Plc and Hikma Pharmaceutical Plc showed that due to innovative drugs and patents, innovative pharmaceuticals make more profits from the cost of goods sold. However, generic drug manufacturers have higher returns on capital employed due to low operating expense associated with producing generic drugs whosepatents have either expired or has been invalidated.

Keywords: AstraZeneca, Generic drugs, branded drugs, financial analysis, financial ratio, Hikma, pharmaceutical, NHS, covid-19, vaccine

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INTRODUCTION

The pharmaceutical industry is primarily focused on the development of innovative medicines to cure diseases or alleviatetheir symptoms.

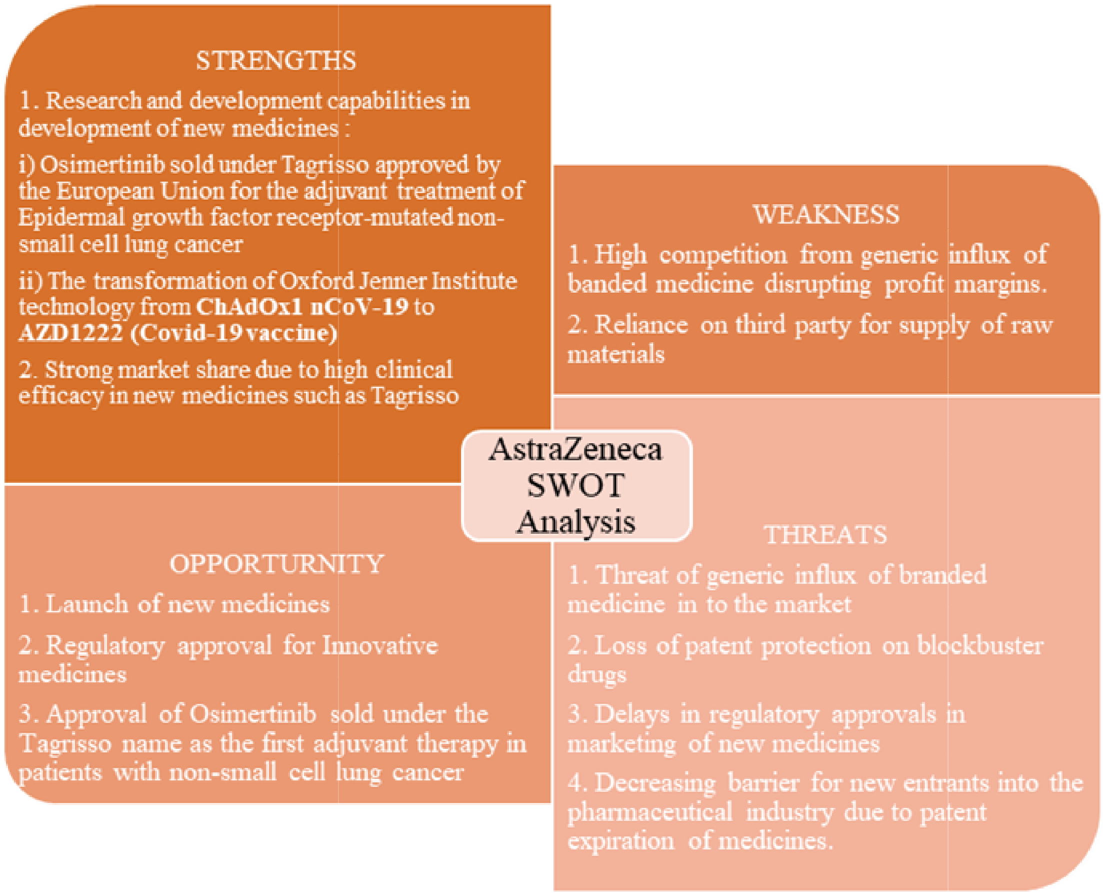
This study aims to use financial ratios such as profitability ratio, efficiency ratio, gearing ratio, and investment ratio to analytically review the financial performance of AstraZeneca Plc (AZN), a multinational biopharmaceutical company headquartered in Cambridge, United Kingdom focused on research and development (R&D) of branded medicine.

The financial performance of AstraZeneca across three prior years (2018 / 2019/ 2020), will be compared to the financial performance of an industry competitorHikma Pharmaceutical Plc (HIK) based in London United Kingdom, focused on the production of branded generic medicine.

PESTLE and PORTER's Five Forces will be used to analyse AstraZeneca's macroeconomic and microeconomic environment, to make a justification for its market structure and competitive strategy.

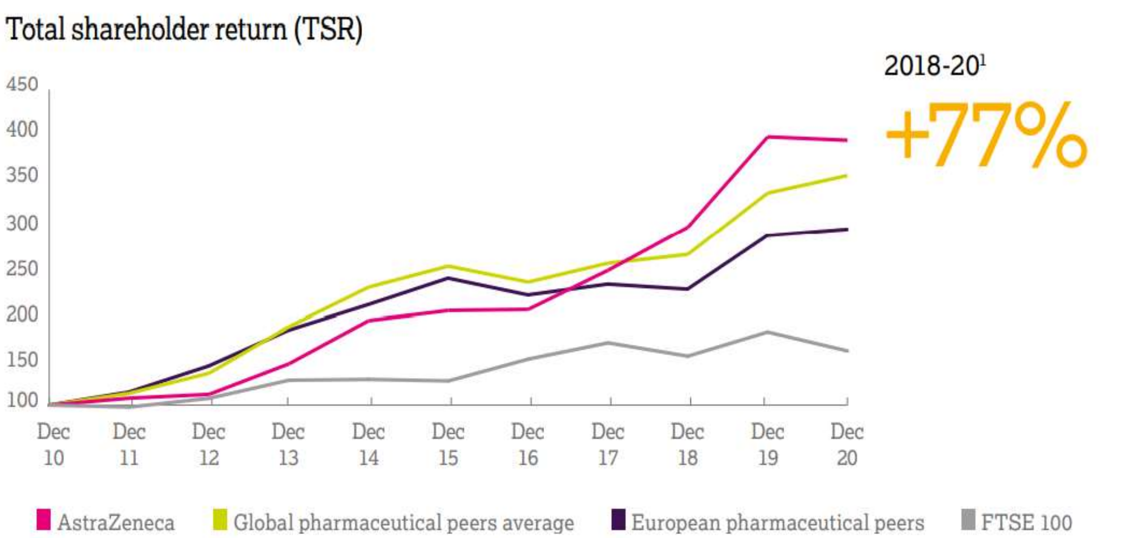
SWOT Analysis

Swot analysis is a framework used in assessing the internal and external factors that affect the competitive position of a business.



Source: compiled by author AstraZeneca 2020 annual report

AstraZeneca's Market share



Source: compiled by author AstraZeneca annual report 2020

Financial Ratio:

Financial ratios are used to assess the financial performance of a business with the end goal of helping the user make an informed decision(Atrill and McLaney 2019).

I. Profitability ratio
II. Efficiency ratio
III. Financial gearing ratio
IV. Investment ratio

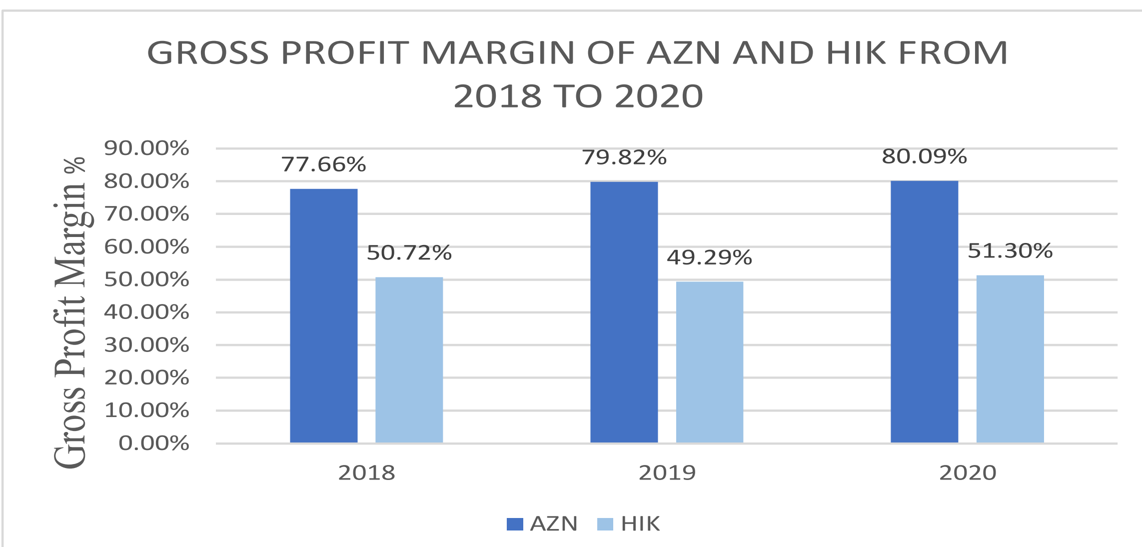
Profitability ratio

This ratio is used to measure the ability of a business to generate returns for its shareholders with capital invested in the business.

Ratio	**Formular**	Source
Gross Profit Margin	Gross profit / Sales revenue x 100	(Atrill and McLaney 2019)
Operating Profit Margin	Operating profit / Sales revenue x 100	
Net Profit Margin	Net Profit / Sales revenue x 100	
Return on Capital Employed	Operating profit / share capital + reserves + non-current liabilities x 100	

Gross Profit Margin(GPM)

This ratio is used to measure profit from sales of products and services before any expense is deducted

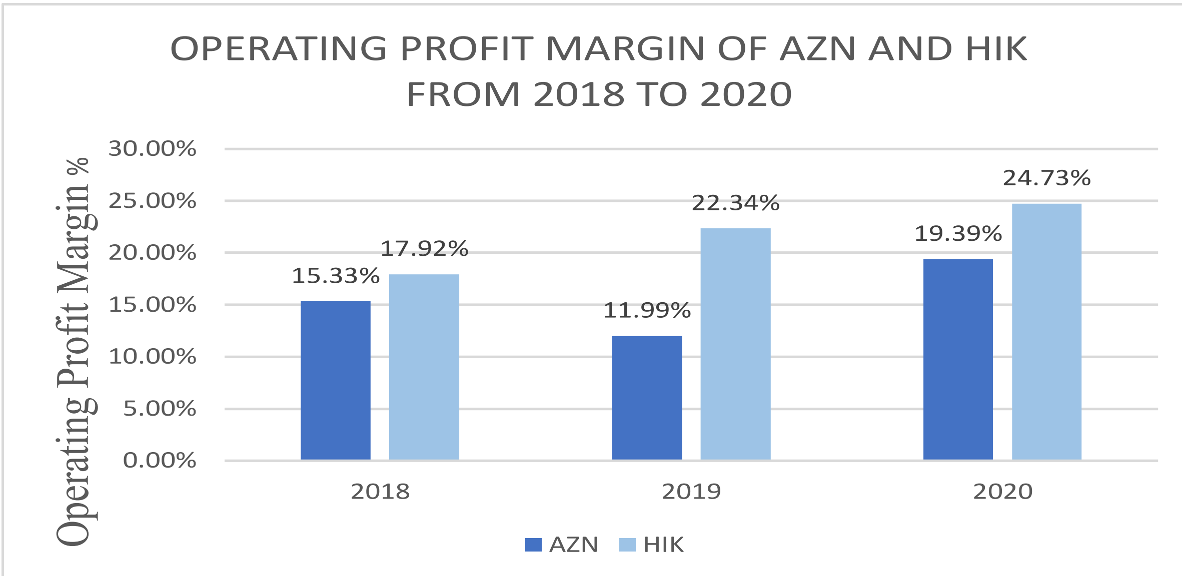


Compiled by author AZN annual report 2018 to 2020, compiled by author HIK annual report 2018 to 2020.

AstraZeneca's GPM increased by 2.78% in 2019 and 0.34% in 2020.This shows that AstraZeneca was more profitable in 2019 than in 2020 due to lowercost of sales (COGS).
Hikma's GPM declined by 2.82% in 2019 due to an increase in COGS from $1,020million in 2018to $1,119million in 2019 with a constant revenue of $2,070million for both years.But in 2020, it increased by 4.08% due to anincrease in revenue of $2,341millionwith a low cost of sales. This shows that Hikmamade more profitin 2020 than in 2019.
However, AstraZenecamaintaineda higher GPM across the years compared to Hikma.Indicatingthat AstraZeneca makes more profit from COGScompared to Hikma.

Operating Profit Margin (OPM)

This ratio measures the ability of a business to manage its operating expense.

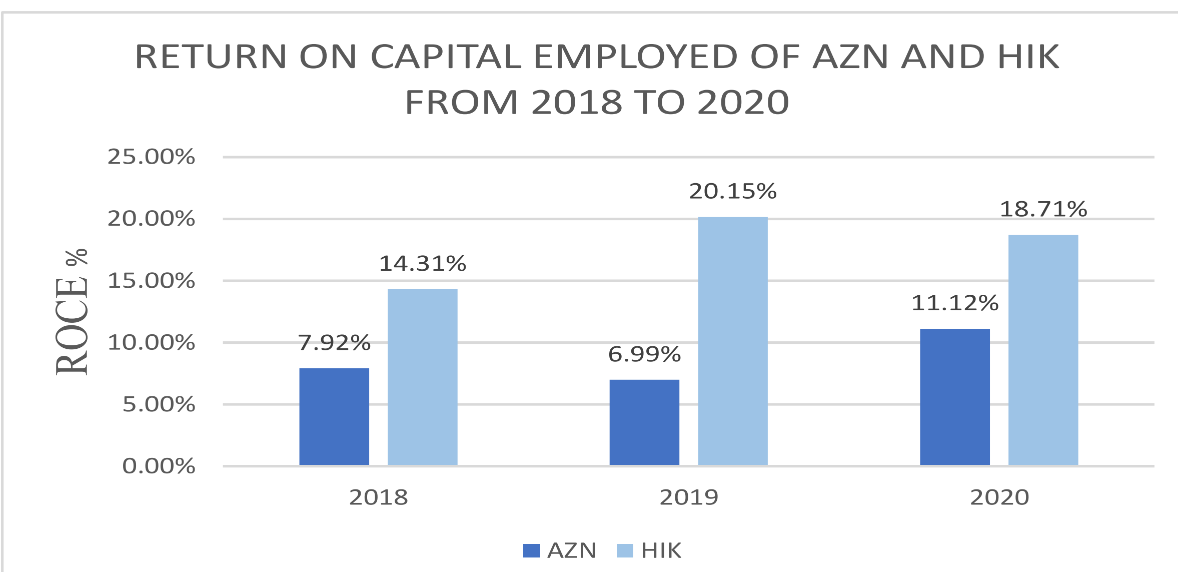


Compiled by author AZN annual report 2018 to 2020, compiled by author HIK annual report 2018 to 2020.

AstraZeneca's OPM declined by 21.79% in 2019due to increase in operating expenses from $16,294millionin 2018 to $18,080millionin 2019.However,in 2020its operating expenseswere reducedto $17,684million. This shows that the operating expenseswere managed better in 2020 than in 2019.
Hikma maintained a higher OPM across the years compared to AstraZeneca.Thisimplies that Hikmais more efficient in managing its operating expense.

Return on Capital Employed (ROCE)

This ratio gives a clear view of how much profit was generated with capital invested in the business before deductionof tax and finance cost.



Compiled by author AZN annual report 2018 to 2020, compiled by author HIK annual report 2018 to 2020.

AstraZeneca'sROCE declined by -11.74% in 2019 due to high operating costs. However,in 2020, there was a 59.08% increase in ROCE due toreduced operating expenses. This shows that AstraZeneca was more profitable in 2020 thanin 2019.

Hikma maintained a higher ROCE acrossthe years compared to AstraZenecadue to the low operating cost associated with generic drug production(Hoffman 2017).However, in 2020 its ROCE declined by -7.5% due to high finance costs and tax from $4million in 2019 to $128million in 2020 (Hikma, Annual report 2020).This implies that Hikma was more profitable in 2019 than in 2020.

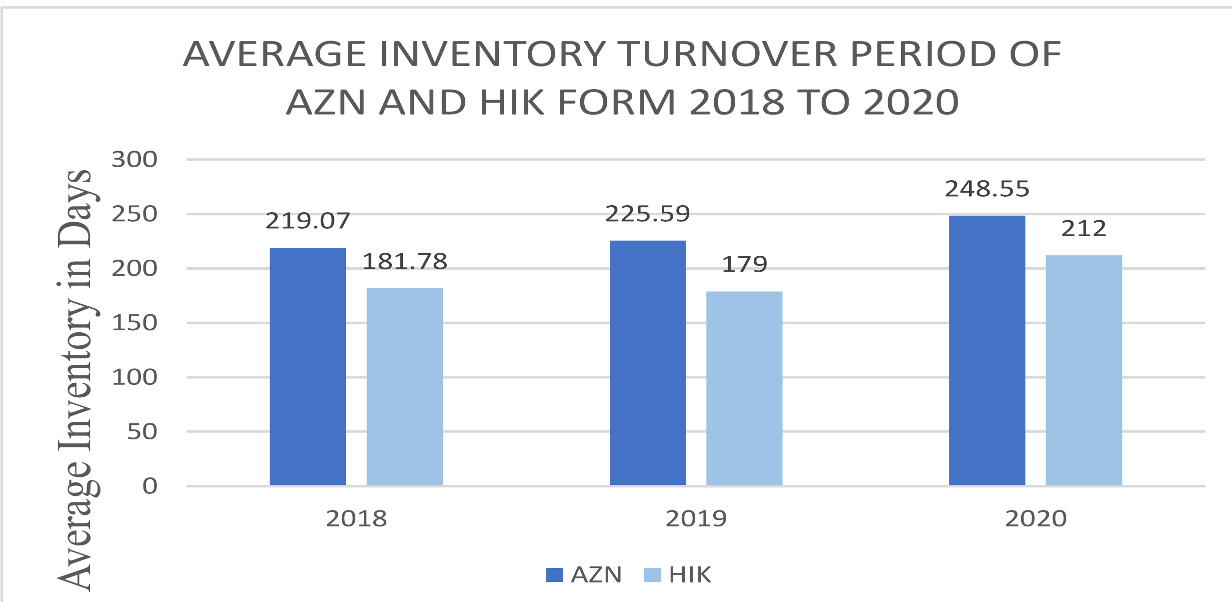
Efficiency ratio

Measures how efficiently a business uses its resources to generate wealth for shareholders.

Efficiency Ratio	Formular	Source
Average inventory period	Average inventory / Cost of sales x 365 days	(Atrill and McLaney 2019)

Average Inventory Turnover Period (AITP)

AITP period measures how long an inventory is held before being sold.



Compiled by author AZN annual report 2018 to 2020, compiled by author HIK annual report 2018 to 2020.

AstraZeneca's AITPincreased from 225.59days in 2019 to 248.55days in 2020.Similarly,Hikma's AITP increased from 179days in 2019 to 212days in 2020. This indicates that both pharmaceutical companies maintain a low AITP. This implies that they do not have a strong sales performance.

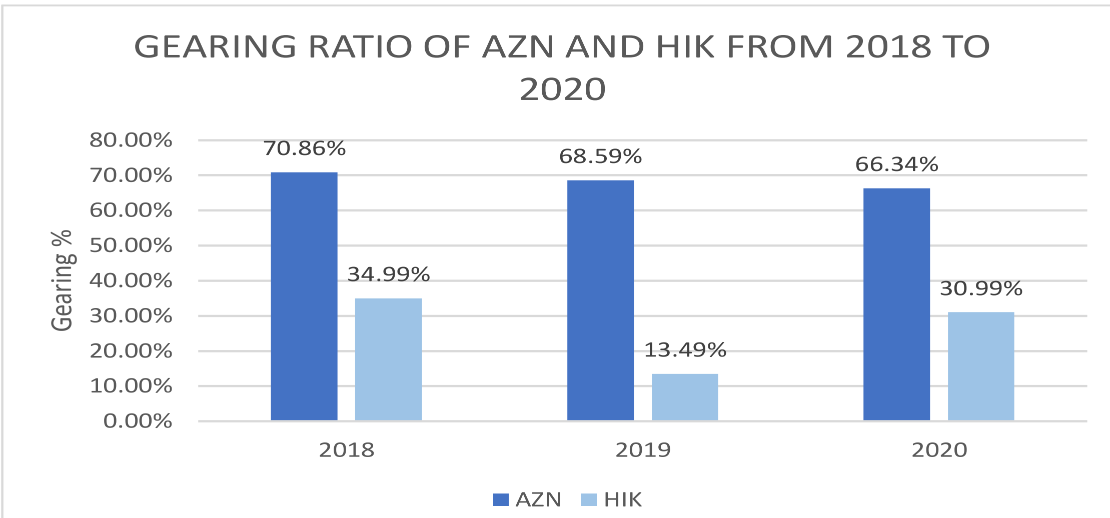
Although Hikma also maintains a low turnover period, its turnover period is higher than that of AstraZeneca.This indicates that Hikma has a stronger sales performance due to higher demand for its product in the market than that of AstraZeneca.

Research has shown that in the United Kingdom,generic drugs account for two-thirds of all medicine dispensed by the National Health Service. And its average cost is less than £5, while branded drugs are sold for approximately £20 (Harry Dee, 2021).

Gearing ratio

The gearing ratio measures the level of debt used in financing a businessand shows the level of risk the business is exposed to.

Gearing Ratio	Formular	Reference
Gearing	Non-current liabilities / share capital + reserves + non-current liabilities x 100	(Atrill and McLaney 2019)



Compiled by author AZN annual report 2018 to 2020, compiled by author HIK annual report 2018 to 2020.

AstraZenecahas showna steady decrease in gearing across the years reviewed. However, it is still geared above 50%. This indicates that AstraZeneca is largely funded by debt and consequently, a large portion of its profit will be exposed to high finance costs.

Hikma maintained a lower gearing ratio across the years compared to AstraZeneca, thisindicates that Hikma is largely funded by equity and incurs lower finance costs.

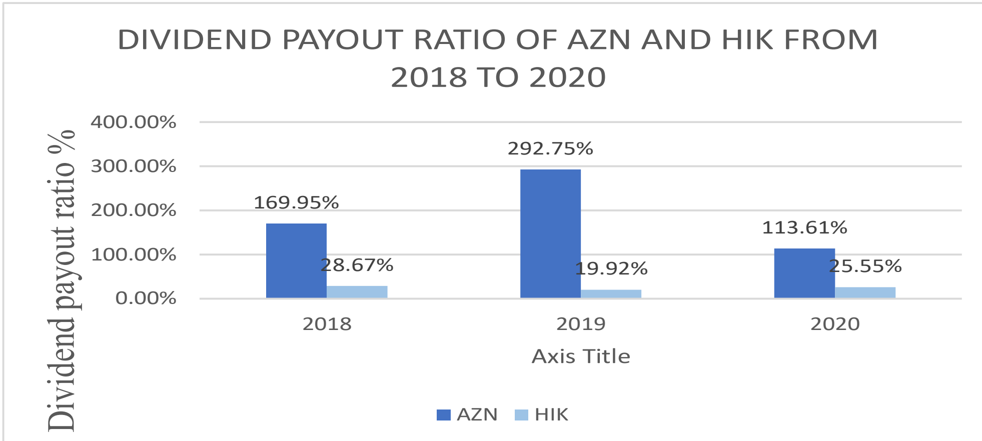
Investment ratio

This ratio is used by shareholders to assess returns ontheir investments.

Ratio	**Formular**	**Source**
Dividend payout ratio	Total dividend per share / Net income x 100	(Atrill and McLaney 2019)
Price per earning ratio	Market value per share / Earning per share	

Dividend pay-out Ratio

This ratio is used to calculate the amount of the business earnings that are paid to the shareholders in form of dividend

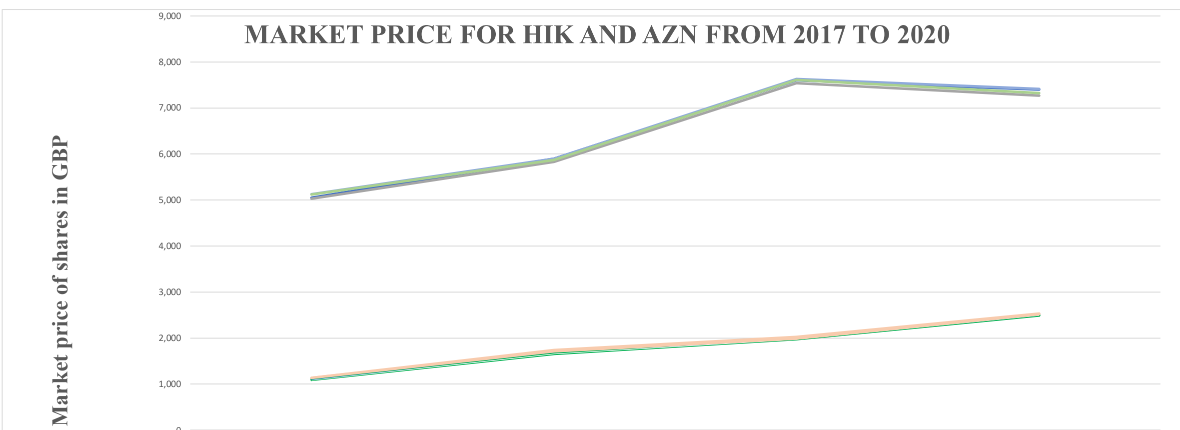


Compiled by author AstraZeneca annual report 2018 to 2020, compiled by author Hikma annual report 2018 to 2020.

AstraZeneca'sdividend paid increased by 72.25% in 2019 and reduced by 61.19% in 2020. Indicating that earnings were retained in 2020 than in 2019.

However, the graph above shows that AstraZeneca paid a high dividend across the years compared to Hikma which paid a lower dividend across the years. This indicates that Hikma retains more of its earnings for reinvestment purposes compared to AstraZeneca.

Market Price of AstraZeneca and Hikma

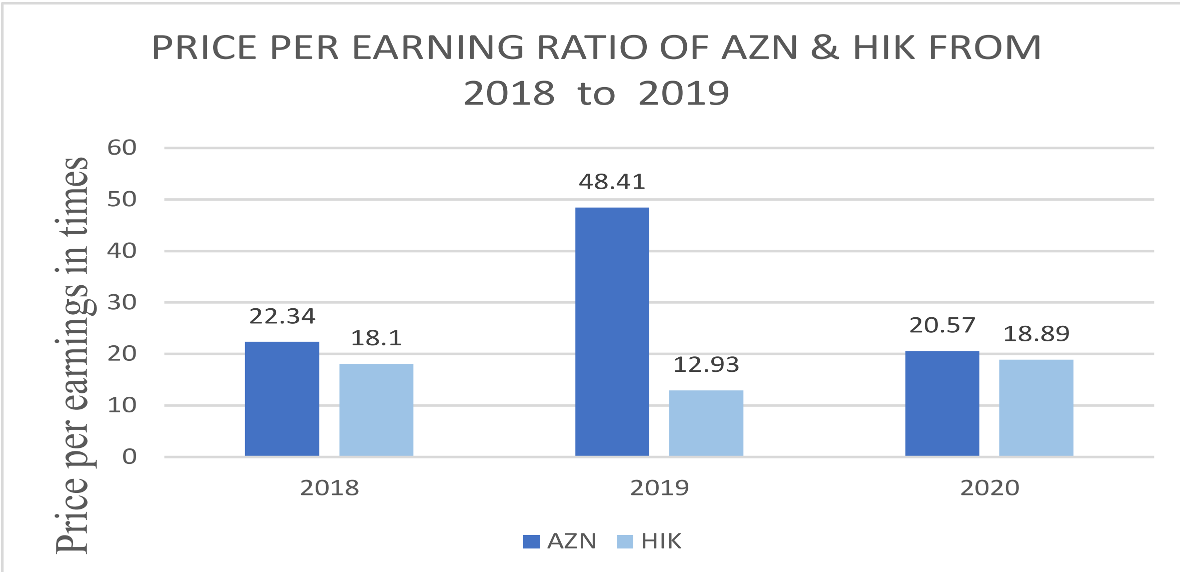


	2017	2018	2019	2020
AZN opening price	5,049	5,898	7,603	7,400
AZN high price	5,125	5,898	7,630	7,409
AZN low price	5,031	5,830	7,535	7,269
AZN close price	5,121	5,873	7,607	7,324
HIK opening price	1,112	1,700	2,001	2,518
HIK high price	1,137	1,738	2,026	2,530
HIK low price	1,091	1,658	1,974	2,491
HIK close price	1,134	1,716	1,991	2,518

Compiled by author Yahoo Finance AZN market price 2017 to 2020, compiled by author Yahoo Finance HIK market price 2017 to 2020.

Price / Earnings (P/E) Ratio

The P/E ratio is used by investors to relate the market value of a share to a business earning power.



Compiled by author AZN annual report 2018 to 2020, compiled by author HIK annual report 2018 to 2020.

Given the market price graph above of AstraZeneca, it shows arise in market share price from GBP5,873 in 2018 to GBP7,607 in 2019 and a fall toGBP7,324 in 2020.

The P/E ratio shows an increase of over 100% in 2019 and a reductionof 57.51% in 2020. This indicates that investors had more confidence in the earning power of AstraZeneca in 2019.Therefore,they paid more for its share price in 2019 than in 2020.

Hikma'sP.E ratio reduced by 28.56% in 2019 and increased 46.09% in 2020. This indicatesthat investors paid more for its share price in 2020 than in 2019.

Market Perception

AstraZeneca's share plummeted on **24/6/2020** after an official press reporton**20/6/2020** on mild side effects of its covid-19 vaccine which are lessened by painkillers (Jim, 2020).

AstraZeneca stock price movement from Motley Fool

Source: Compiled by the author (Jim, Halley 2020) from Motley Fool.

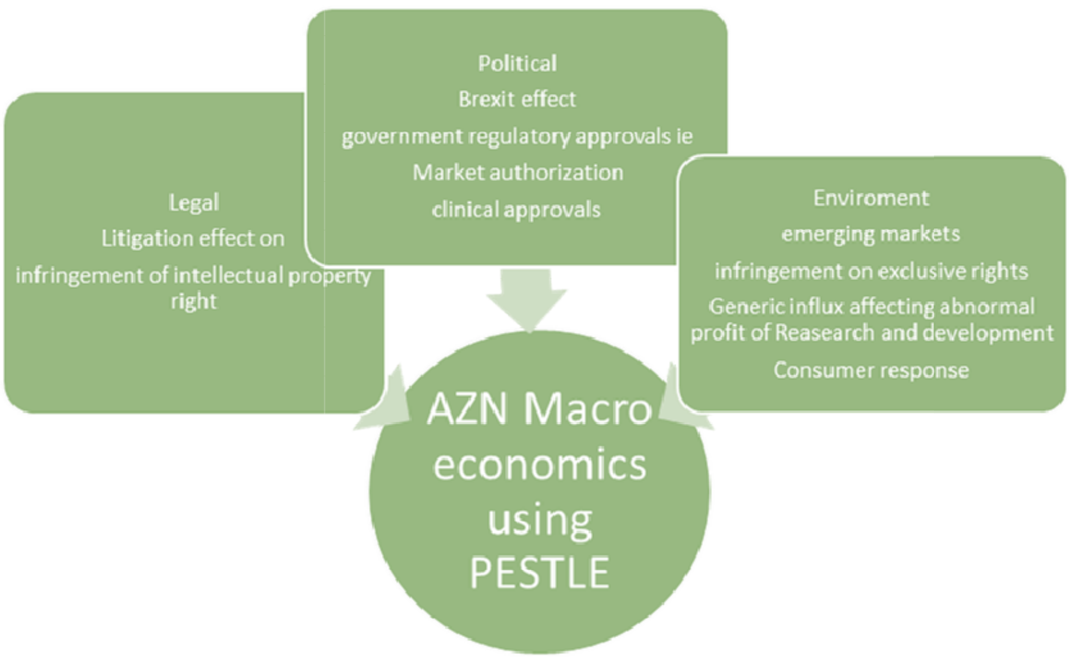
AstraZeneca shares price fell on **23/11/2020** after reporting 90% efficacy on the covid-19 vaccinewhich is low compared to Pfizer and Moderna's 95% efficacy report (Julia, 2020).
AstraZeneca's share price fell on **14/12/2020** by more than 8% after the acquisition of Alexion Pharmaceutical a rare disease specialist at the sum of $39billion (Ortenca et al, 2020).

Analyst Market Review

Analysts still recommend AstraZeneca's stockas a good buy with or without the covid-19 vaccine due to its successful years in R&D and drug efficacy (Jim, 2020).

The analyst also recommends the purchase of AstraZeneca's stock during the stock price fall after the acquisition of Alexion Pharmaceutical. Because Oncology is an attractive investment in the pharmaceutical industry insurance companies tend to pay a high price for patients who suffer from rare diseases (Jim, 2020).

Macroeconomics



Political

The referendum to exit the European Union (EU) widely referred to as Brexit, has been foreseen to create macroeconomics trade barriers between the United Kingdom (UK) and the (EU). On 23rd June 2016, 52% of votes were in favour of Brexit.The post-Brexit election result, withdrawal terms negotiations commenced between the EU and UK with trade agreements being one of them (Haritini, 2020). The trade chain disintegration from the EU which serves as its single largest export market (Latorre et al. 2020), Is foreseen to increase operating costs for AstraZenecadue to the increased cost of clinically testing drugsand securing market authorization. In addition, delay in regulatory approvals will hinderthe timely marketing of its product which may adversely affect the company's revenue

Environment

Emerging markets not enforcing proper regulatory data protection will prompt early entry of generic drugs intothe market.

Developing countriesencourage generic branded drugs which are 20-90% cheaper to improve medical access fortheir citizens(Yousefi et al. 2015). Even though generic drugs are considered safe and cost-effective, consumers have concerns abouttheir effectiveness and risk (Alam et al. 2019).

Although generic influx births pricing competition,evidence has shown that brand manufacturers do not bow to pricing pressure. Rather they focus on brand loyalists(Iacocca et al. 2015).The brand also plays a huge role in consumer preference.Studies have shown that western products are more preferred in emerging markets (Smaoui et al. 2016).

Legal

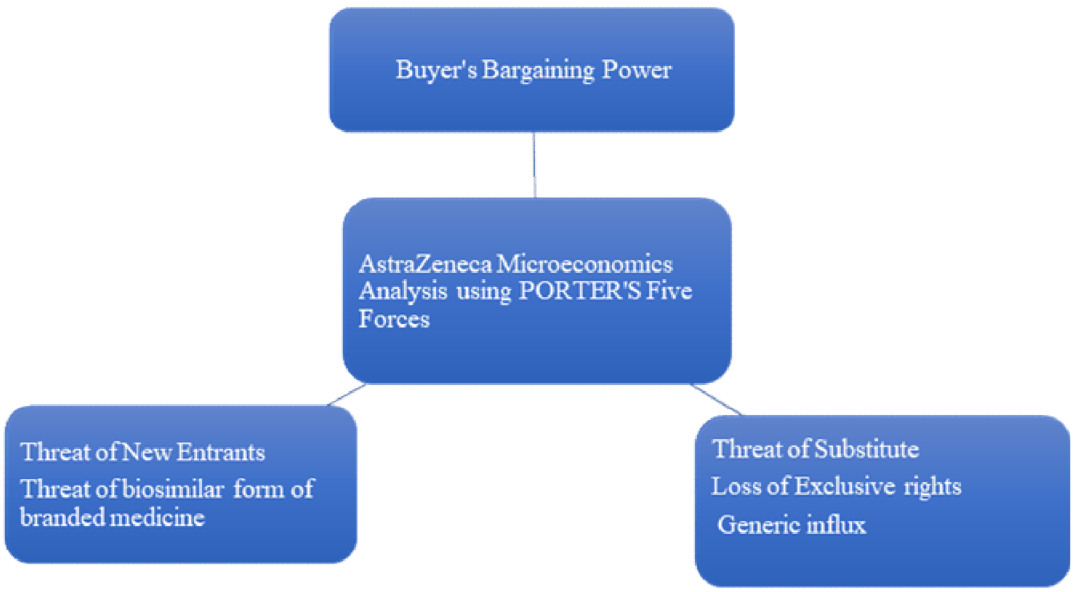
Unfavourable litigations adversely affect the financial position of pharmaceutical companies.

AstraZeneca claimed that the Abbreviated New Drug Application onSymbicort and Farxiga by Mylanand Zydus Pharmaceutical is an infringement because the drugs are under patent protection.(AstraZeneca; Annual report, 2020).

Following the above, AstraZeneca won the lawsuit against Mylan on infringement of Symbicort (Allie, 2021) (Adrian2021), and Zydus on farxiga infringement (Blake 2021).

The retention of exclusive rights to market the products will enhance the financial position of AstraZeneca,by eliminating generic competition. However, an Unsuccessful lawsuit could have given rights to new entrantswhich will affect its financial position,due to the availability of generics of the aforementioneddrugs (Peelish 2020).

Microeconomics



Buyer's Bargaining Power

Buyers' bargaining power is relatively low because consumers of branded medicine have no negotiating power on prices, even though there is a generic influx of branded medicine, branded medicine manufacturers do not bow to price concession(Iacocca et al. 2015).

Threats of New Entrants

AstraZeneca hassignificant strength in the R&Dof new medicines,The launch of its patented product Tagrisso used in the treatment of cancer grew its market share by 59% in the emerging market and generated $4.328 million from global sales.

Similarly, the launch of Symbicort grew by 23% in the United States market and generated a revenue of $2.721 million from global sales (AZN: Annual report, 2020).

AstraZeneca also has significant strengthin the goodwill of its brand which is valued at $11.845million (AZN, annual report 2020).

Pharmaceutical companies compete on quality and brand image which is built on years of successful R&D and drug efficacy.Therefore,AstraZeneca has a higher competitive advantageover new entrants due to its brand image.Studies have shown that brand image influences consumer behaviour by making the brand more desirable to the consumer (Negara et al. 2020).

However, the threat of new entrants is lowdue to the high cost associated with R&D, high risk of clinical trial inefficacy, and lengthy review process by regulatory authorities which disrupt timely marketing and launch of new products(Lee and Choi 2015).

Threats of Substitutes

AstraZenecais faced withthe threat ofan unfavourable lawsuit in defending and maintaining the exclusive rights of itshighest revenue-generating drug Tagrissoused for cancer treatment in May 2022 (AstraZeneca, 2020).

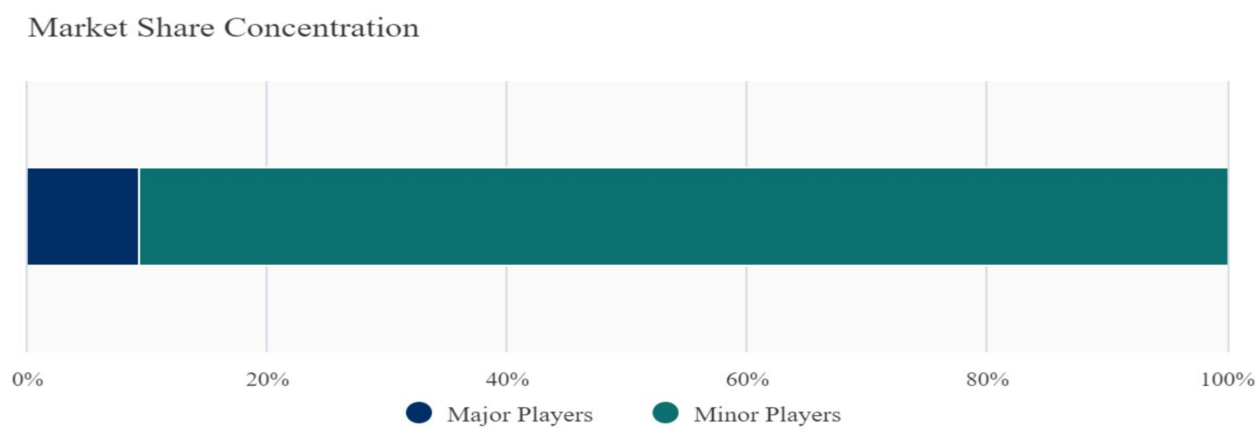
Thethreat of substitutes is high becausea generic influx will cause a decline in sales. Studies have shown that the generic influx reduces the demand forbranded drugs(Choi and Choi 2018).

Furthermore,studies havealso shown that doctors change prescriptions from branded medicines to theirgeneric equivalents due to lower costs based on consumer income (Colgan et al. 2016).

Even though patients have acknowledged the economic benefit of generic drugs, research has shown that patients consider branded drugs more effective and reliable comparedtotheir generic form(Yousefi et al. 2015).

Competitive Strategy

AstraZeneca's significant skills in R&D translate into new medicines,Tagrisso(Osimertinib)wasthe first Adjuvant treatment for non-small cell lung cancer whose tumours have a specific genetic mutation (FDA, 2020). Tagrisso is also the first to receive authorization from the UK Medicines and Healthcare Products Regulatory Agency (Gov. UK, 2021).
AstraZeneca uses science and innovative technology to be among the top five pharmaceuticals providing treatment for lung cancer (business wire, 2019). Pharmaceuticals providing cancer treatment are few making it an oligopoly market with a high entrant barrier due tothe high cost of R&D and risk of clinicalinefficacyof new drugs.



Source: compiled by authorGeatanaMakIBISWorld (2021)

Furthermore, the threat of new entrants in the production of branded medicine is low,Because the large players endogenized the cost of entering the market.AstraZeneca's competitive strategyis itsbrand name,which was built on years of successful R&D, high clinical test results, and drug efficacy.Therefore,entry and exit are difficult for new entrants due tothe possibility of the sunk cost associated withbrand development.

AstraZeneca also adopts monopolistic competition through product differentiation. Even though genericsof branded drugsare available ata cheaper rate, productdifferentiation and consumerpreferencewill lock in brand loyalistsinto choosing branded medicine over its generic form (Begg and Ward 2020).

S/n	AstraZeneca's Planned Operations	Strategy to Achieve Planned Operation
1	AstraZeneca aims to use CRISPR libraries to achieve the following: • Analyze 2million Genomes by 2026 by upregulating Gene in a cell to understand the role of Gene in disease biology.	AstraZeneca is Collaborating with BenevolentA1, in the research and development of biomedical knowledge graphs for the contextualization of scientific data and identifying how they relate to each other. AstraZeneca is also investing in multi-omic technologies such as transcriptomics, proteomics, and metabolomics to scrutinize complex and transient molecular changes that strengthen the course of the diseases and their response to treatment.
2	• identify rare genetic variants and uncover new diseases. AstraZeneca is working with mRNA "mRNA transfers instructions stored in DNA to produce protein required by living cells" to create the next generation of therapeutics.	AstraZeneca is collaborating with Moderna Inc, to advance its understanding of disease biology. The aim of working with mRNA with Moderna is to pinpoint the novel drivers of these diseases and proffer solutions to unmet medical needs.

Source: Compiled by the author, AstraZeneca annual report (2020)

CONCLUSION

The gross profit margin showed that AstraZeneca (branded drug manufacturer),was more profitable from the cost of goods sold under the years reviewed compared to its competitor Hikma (generic manufacturer). This shows that companies who operate in the oligopoly market enjoy a high profit due tothe high entrantbarrier.

The market perception ofAstraZeneca's clinical result onthe covid-19 vaccine,suggests thatfor AstraZeneca to remain in the market, it must ensure its clinical results and R&D capabilities level is higher or the same as its market competitors. This also indicates that entry into the Oligopoly market is limited because new entrants have to build their brand on successful R&D with high clinical ratings.

It has previously been observed under the years reviewed in this study,that the ROCE of Hikma (branded generic manufacturer)was much higher compared to AstraZeneca (branded drug manufacturer).This is due to the low cost associated with generic drug manufacturing, which enables themto make more profits because they invest a lesser amount of money in R&D compared to branded drug manufacturers.

In addition,generic manufacturers brand their medicines and invest in marketing and promotionsto boost salesin the emerging market. Studies showed that in India branded generic accounted for 63% of drugs sold in the market andin China, it accounted for 55%.(Roland 2017).

RECOMMENDATION

I. Following Brexit and new government regulations, AstraZeneca and its competitors are likely to incur more operating expenses in clinically testing drugs and securing regulatory approvals. hence AstraZeneca needs to focus on strategies like the development of new production plantsin the EU to help reduce its cost of operation.

II. Following the acquisition of Alexion in 2020which caused AstraZeneca'sstock price to fallon 14 December 2020, it is recommended that AstraZeneca retains more of its profit for investment in R&D to roll out more blockbuster medicines in oncology. The roll-out of a blockbuster medicine in rare disease area havebeen foreseen by analystto drive its stock price up again.

III. Analysis showed that AstraZeneca's stock price fell after it announced a result lower than its competitors on the covid-19 vaccine. Hence AstraZeneca needs to improve its R&D skills by sending itsstaff for further research studies

IV. To improveprofitability,AstraZenecaneeds to reduce the amount of dividends paid and debt used infinancing the business.This will make moreprofit availablefor the R&D of new medicines with Alexion.

V. Evidence has shown that marketing is a fundamental factor in boosting sales. AstraZeneca needs to focus more on marketing, create proper awareness before the launch of a new product by sending out free samples and organize conferences for medical practitioners who are considered the first customers of an innovative pharmaceutical company, in other to keep the public informed and promote sales.

Research has shown that pharmaceutical companies consider medical practitioners as key customers, therefor incentives such as free samples, financing of international conferences, and honorariums are used to influence prescription behaviour towards their brand(Srivastava and Bodkhe 2020).

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APPENDIX

Note: To this work, only equity attributable to the equity holders of the parent company was considered while making this analysis (Share capital, Reserves and Non-current liabilities). Therefore, funds from non-controlling interest were not considered as part of capital employed by the shareholders.

Liquidity Ratio	Formular	Source
Current ratio	Current asset / Current liabilities	(Atrill and McLaney 2019)

Liquidity ratioof AstraZeneca	**2020**	**2019**	**2018**
Current ratio	19,544 / 20,307 = 0.96: 1	15,563 / 18,117 = 0.85:1	15,591 / 16,292 = 0.96

Liquidity ratio of Hikma	2020	2019	2018
Current ratio	1,922 / 1,028 = 1.87: 1	1,848 / 1,471 = 1.26: 1	1,668 / 893 = 1.87

Profitability Ratio	**Formular**	Source
Gross Profit Margin	Gross profit / Sales revenue x 100	(Atrill and McLaney 2019)
Operating Profit Margin	Operating profit / Sales revenue x 100	
Net Profit Margin	Net Profit / Sales revenue x 100	
Return on Capital Employed	Operating profit / share capital + reserves + Non- current liabilities x 100	

Profitability ratio of AstraZeneca	**2020**	**2019**	**2018**
Gross Profit Margin	21,318 / 26,617 x 100 = 80.09%	19,463 / 24,384 x 100 = 79.82%	17,154 / 22, 090 x 100 =77.66%
Operating Profit Margin	5,162 / 26,617 x 100 = 19.39%	2,924 / 24, 384 x 100 = 11.99%	3,387 / 22,090 x 100 = 15.33%
Net Profit Margin	3,196 / 26,617 x 100 = 12.01%	1,335 / 24,384 x100 = 5.47%	2,050 / 22,090 x 100 = 9.28%
Return on Capital Employed	5,162 / 46,406 x 100 =11.12%	2924 / 41,791 x 100 = 6.99%	3,387 / 42,783 x 100 = 7.92%

Profitability ratio of Hikma	**2020**	**2019**	**2018**
Gross Profit Margin	1,201 / 2,341 x 100 = 51.30%	1,088 / 2,207 x 100 = 49.29%	1050 / 2070 x 100 = 50.72%
Operating Profit Margin	579 / 2,341 x 100 = 24.73%	493 / 2,207 x 100 = 22.34%	371 / 2,070 x 100 = 17.92%
Net Profit Margin	430 / 2,341 x 100 = 18.36%	487 / 2,207 x 100 = 22.07%	285 / 2070 x 100 =13.77%
Return on Capital Employed	579 / 3,094 x 100 = 18.71%	493 / 2,447 x 100 = 20.15%	371 / 2,592 x 100 = 14.31%

Gearing ratio	Formular	Reference
Gearing	Non-current liabilities / share capital + reserves + Non- current liabilities x 100	(Atrill and McLaney 2019)

Gearing ratio of AstraZeneca	**2020**	**2019**	**2018**
Gearing	30,784 / 46,406 x 100 = 66.34%	28,664 / 41,791 x100 = 68.59%	30,315 / 42,783 x 100 =70.86%

Gearing ratio of Hikma	**2020**	**2019**	**2018**
Gearing	2,341 / 3,094 x 100 = 30.99%	330 / 2,447 x 100 = 13.49%	907 / 2, 595 x 100 = 34.99%

Investment Ratio	**Formular**	**Source**
Dividend pay out ratio	Total dividend per share / Net income x 100	(Atrill and McLaney 2019)
Price per earning ratio	Market value per share / Earning per share	

Investment ratio of AstraZeneca	**2020**	**2019**	**2018**
Dividend pay out ratio	3,572 / 3,144 x 100 = 113.61%	3,592 / 1,227 x 100 = 292.75%	3,484 / 2050 x 100 =169.95%
Price per earning ratio	49.99 / 2.43 = 20.57	49.86 / 1.03 = 48.41	37.98 / 1.70 = 22.34

Investment ratioof Hikma	**2020**	**2019**	**2018**
Dividend pay out ratio	109 / 430 x 100 = 25.35%	97 / 487 x 100 = 292.75%	84 / 293 =28.67%
Price per earning ratio	34.38 / 1.82 = 18.89	25.85 / 2.00 = 12.93	21 / 1.16 = 18.10