

The Concoction Competition: A Covid-19 Case Study

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Abstract

Major countries stood at the brink of recession in 2020. The primary assumption of this paper is that, in a world affected by a pandemic, adjustments in the competition policy by the government, to regulate market efficiency, led to a shift in the form of market competition in the pharmaceutical sector during the COVID period. According to the website Market Insider, The shift in the market competition can also be credited to the various mechanisms like price, rejectability, externalities for consumers and incentives for sellers that interacted freely in the market. These transitions can be analysed in detail by studying the features that they impact, thus leading to rapid transition from one form of competition to the other, adding to the existing uncertainty.

Through this paper, we will be addressing the descriptive and relational research problem of the form of market competition that existed in the pharma market during the COVID-19 pandemic in 2020. The article contends that the market had to transition at breakneck speed to be able to sail through the crisis. However, this transition included the pharmaceutical industry rapidly switching between different types of competition. The industry became the price taker due to price gouging by the government. It was also seen that companies followed cooperation despite intense competition. Thus, this article supports the need for an umbrella term to highlight the market form seen during unprecedented times such as the COVID-19 pandemic.

Secondary data from books, journals and reports from think tanks including McKinsey was analyzed for research in this paper. Data published after various field works in this economic domain has been used to construct our paper.

Acknowledgement

As we begin to pen down the economic research that we have conducted on the basis of our knowledge, qualification and research , we would like to express our gratitude to all those who have helped us to complete and compile this study within the specific time frame. We would like to specially thank Mrs. Radha Bahuguna, who has been an essential part of our journey into the field of economics not just as a teacher but also as a constant source of reference through her book "Introductory Microeconomics - A textbook for class XI".

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Lastly, we would like to thank all researchers whose study has helped us form clear understanding about the topic in consideration. We would also like to express our gratitude to our family and friends who have supported us throughout the process of the paper.

This paper has not just been written for competitive purposes, it has also helped us to stimulate our minds and learn from our surroundings, in order to become capable enough to conduct such research in future. Thus, this paper has been an integral part of our evolution as future scholars who try to create content that could help the society.

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Introduction

As major countries stood at the brink of recession in 2020, industries and financial markets suffered due to the ongoing COVID-19 pandemic. In this dire situation, a factor that cultivated the productive and allocative efficiency in the market was 'competition'.

The question that this paper endeavours to answer is, "What form of market competition flourished in the pharmaceutical market in India, during the COVID-19 pandemic?" The primary assumption of this paper, on the basis of alike historical and anecdotal circumstances (SARS) is that adjustments in the competition policy by the government, to regulate market efficiency led to a shift in the form of market competition in the pharmaceutical market during the COVID period. To create a lucrative market for both entities, which include buyers and sellers, the government modified all policies related to factors including entry and exit of firms to price mechanism to homogenous products. These efforts of the government (injecting funds in the essential sectors of the economy, influencing the price mechanisms) were not concentrated in a specific direction, thus leading to a situation where no single form of market competition stood out and features of different competition types co-existed. This article will examine the aforementioned hypothesis by analysing the pharmaceutical market during different phases of the pandemic. Through the case study of the pharmaceutical industry, which saw unusual alterations in the demand and supply chain, we try to intuit the form of competition that existed in the market during the covid crisis.

According to Sandeep Garg, an economist, market refers to "the whole region where buyers and sellers of a commodity are in contact with each other to effect the purchase and sale of the commodity." The various market forms referred to in this paper include Monopoly, Monopolistic, Oligopoly, and Perfect competition. The type of competition for an industry is defined using multiple parameters including limited entry and exit barriers for companies, number of sellers and buyers, homogeneity in products, mobility of goods and factors of production.

A monopoly can be seen in India's pharmaceutical industry, as "branded generics dominate, making up for 70 to 80 percent of the retail market". In addition to that, "price levels are low" and are "driven by intense competition." India is the largest provider of generic drugs

globally. Indian pharmaceutical sector supplies over 50% of global demand for various vaccines, 40% of generic demand in the US and 25% of all medicine in the UK. The pharmaceutical market includes intermediates, drug formulations, AYUSH and herbal products, surgical and bulk drugs. Its technology contemporary biopharmaceuticals is expected to contribute to US \$100 billion by 2025, with an average growth rate of 30%. The domestic pharmaceutical market shows promise as it attained a turnover of 1.4 lakh crore in 2019. While generic brands dominate the market, local companies have been deemed important players, and prices have remained low. Thus, due to the nationwide lockdown and global shutdown of transport and shipping in March, India faced disruptions in supply of about 70% active pharmaceutical ingredients (APIs) which it otherwise would have obtained from China, and exported to the United States.

This paper analyzes the trends in the personal protective equipment (PPE) market in India. The industry went from producing 0 PPE kits initially to 2.06 lakh PPE kits per day by May 5 to 4.5 lakh kits by May 18, within two months of the lockdown in 2020. The paper argues that the escalation in supply chain, followed by a de-escalation within the same year, shows signs of various market forms, while not falling under the category of any single form. Another instance is that of vaccine development, where it was noticed that despite functioning in a competitive environment, companies showed signs of cooperation.

Background

According to Eichenbaum *et al.* (2020), “people’s decision to cut back on consumption and work reduces the severity of the epidemic, as measured by total deaths”. In the paper titled “The Macroeconomics of Epidemics”, Eichenbaum *et al.* proposed a SIR-macro model which resulted in sharp recession and few deaths. Countries including India followed a complete lockdown in the initial period since COVID-19 was deemed a pandemic.

The first major coronavirus outbreak had originated in 2002-03 in China. However, the scale of SARS 2002-03 pandemic was smaller than the SARS-COV-2 outbreak, given that “Covid-19 has killed more people than SARS had infected”, as reported by India Today. However, the impacts of both outbreaks share a resemblance. Firstly, SARS and SARS-COV-2 belong to the family of Coronaviridae, and are able to cause severe respiratory diseases. In addition, the early symptoms including “fever, cough, headache, shortness of breath and

breathing difficulties”, are shared by both. Given the geographical and biological similarities in both the pandemics, Caldaria *et al.* recommend that COVID-19 pandemic must be compared with the SARS outbreak of 2002-03 to “analyse infection trends and to find the right prevention and treatment measures”. The former had taught a lesson to provide PPE kits to protect frontline and essential workers. Interestingly, India found itself on a shortage of PPE kits during the COVID-19 pandemic, which affected the country on a much larger scale than the SARS pandemic.

Economic repercussions of the 2002-03 pandemic include a “substantial decline in consumer demand, especially for travel and retail sales service”. It also increased the costs of disease prevention, especially in the most affected industries” including the aforementioned sectors. Limiting international travel affects transportation of labour. The likelihood of getting infected was closely tied to the distance between two persons, thus one had to be careful while consuming as well as working. Thus, limitations were faced in international shipping due to lockdowns of work space and unsafe proximity and contact during transport of shipping of goods. It reduced international dependency and pushed the government to actively interfere in the pre-existing competition to support supply chains in various industries including retail and, travel and tourism. According to Lai and Tan, the government played an instrumental role in mitigating disease control through three measures, namely, “adaptive governance”, “moral suasion” and “network partnership”. Setting up a taskforce, communicating and building trust in the population, quick but steady steps to equip the healthcare sector, are some of the actions taken by the Singapore government during the SARS outbreak.

Given the crucial role played by the government during pandemics, and the lack of dependency on other countries, this paper presumes that the government actively adjusts the competition policy to regulate market efficiency, while the interest lies in reducing the number of deaths caused by the outbreak.

Literature Review

While venturing across the economic literature, attempting to answer our self constructed research question, we realised that prior to the observation of trends for the identification of the market form during COVID, we need to study about the markets and the factors determining market structure in some more detail.

Varied definitions of the term 'Market' are celebrated and acknowledged in the economic domain. One such definition that provides us with a wider perspective to understand the working of a market is by French economist Cournot , according to whom

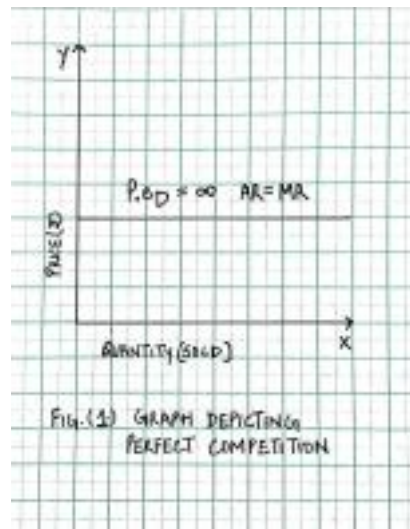
“market is not a place in which things are bought and sold, but the whole of any region in which buyers and sellers are in such free intercourse with one another that the prices of the same goods tend to equality easily and quickly.”(Cournot,1877)

This definition by Cournot highlights the significant way in which Buyers and Sellers (and their motives) dictate the market. Buyers' motive of maximising their utility and Sellers aim of maximising their profits are like the two sides of a see-saw that create a sort of competition in the market. This competition in the market may arise due to factors like profit motives, rejectability (availability of choices), externalities for consumers, incentives for producers or sellers. In addition to this, the website Marketing insider considers factors like concentration of the industry, structure of the costs, rate of market growth and entry and exit barriers as powerful drivers of competition in the market. Countless efforts of producers or sellers towards achieving this balance and competing with rival firms results in the formation of different forms of market structures, which are dependent on the factors that the firm deals with to secure its position.

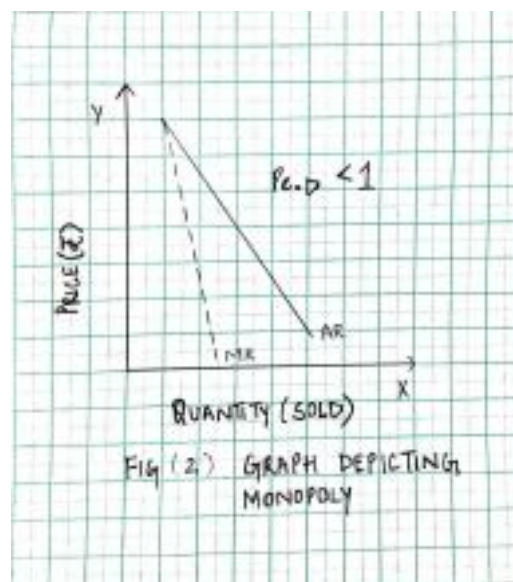
The combined effects of the four main factors which are number of buyers and sellers, nature of commodity, mobility of goods and factors of production, and price determination determine the form of market structure and indicate the degree of competition in the market (Bahuguna,2018).

In our paper, we will also be comparing these market forms with the help of graphical representation of various market structures. For this the shape of the AR and MR curves will be the major tool for constructing and studying the market structures. On the basis of

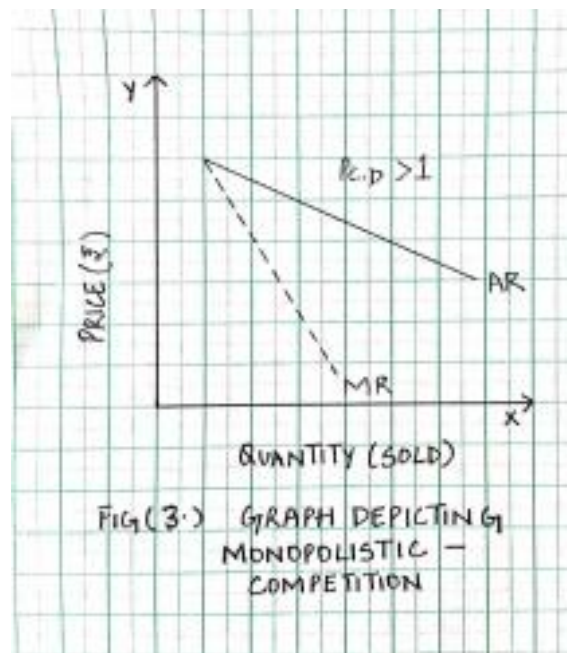
the aforementioned factors the forms of competition that we will try to identify are perfect competition, monopoly, monopolistic competition, and oligopoly.



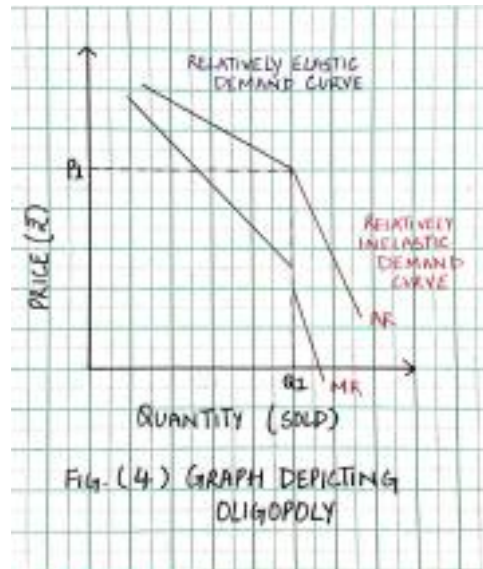
D.S Watson defines perfect competition as "a competition in which the number of firms is large, their products are homogeneous in addition, the firms have perfect knowledge of the market and resources are perfectly mobile. Some of the unique characteristics of perfect competition, that we extracted by studying the trends in the market are the perfectly elastic demand curve of the firm, equivalence of AR and MR curves (Check Figure 1.), firms are recognised as price takers rather than price makers.



A slight variation to this market form is presented by Prof. Chamberlin, who distinguishes pure competition from perfect competition on the basis of degree and not kind. In contrast to this market structure is Monopoly (figure 2.). The book 'Introductory MicroEconomics', defines monopoly as "a market condition in which there is a single producer of a commodity with no close substitutes and there are institutional, legal and natural barriers for entry and exit of firms" (Bahuguna, 2018). Example of this structure is the DeBeers company in South Africa that dominates 80% of world's diamond production, such vast control over resources is a sufficient condition for a firm to create a monopoly to dictate its terms and quote their own prices (price maker).



On a similar line, lies Monopolistic competition (Check Figure 3.), a form of market structure which is described as a "mixture of mini monopoly and tough competition" by the official website of Pressbooks. It resembles monopoly structure in the sense that firms have control over trade marks and is sort of a tough competition because firms are in a neck to neck competition between large numbers of firms which sell differentiated products. Special characteristics of firms under monopolistic competition are that the firms compete with each other without changing the price of commodities, this is known as Non price competition and such firms are neither price takers nor price makers.



Another form of market structure which is a combination of two forms is Oligopoly(Figure 4.). Markets for automobiles, cement, steel in india are examples of such structure. This form of market lies between monopoly and monopolistic competition. Radha Bahuguna, an economics teacher, in her book 'Introductory MicroEconomics' writes, "Oligopoly is a market form of imperfect competition with few firms operating on a big scale of a commodity and producing a substantial part of total output of the industry". In this form of market firms are interdependent and price and policy decisions are taken according to rival firms or competitor sellers.

While the study in the paper specifically involves the Pharmaceutical sector, its results may also apply to other goods which experienced a rise in demand during the pandemic. Our research paper contends that the market had to transition in the supply and demand chains, export and import volumes, direct communication to tele-communication or tele-medicine at breakneck speed. However, this transition included the pharmaceutical industry rapidly switching between different types of competition. The industry became the price taker due to price gouging by the government. It was also seen that companies followed cooperation despite intense competition. Thus, this article supports the need for an umbrella term to highlight the market form seen during unprecedented times (period in which competition and cooperation coexist, no form of competition exists in isolation, exports and imports are declining, demand and supply chain disrupted, influencing the price of products depending on demand is restricted, government intervention in play

rather than natural equilibrium determined by factors of demand and supply, homogenous products rather than differentiated ones and no definite shape of the AR and MR curves can be analysed) such as the COVID-19 pandemic The goods might belong to industries including Fast Moving Consumer Goods (FMCG) and others which cater to necessities of the people or might also include giffen goods. This paper is limited to the study of those products that were essential during COVID like masks, sanitisers, PPE kits and the paper excludes the effects on market competition of those products which are not required for use during pandemic, for example, the usage of automobiles decreased and even luxury items like jewellery had a decreased demand. This might be because people tried to minimise their expenditure and increase their savings during the pandemic. So, they tried to optimally utilise their funds through prioritizing their needs and spending accordingly.

Methodology

The descriptive and relational research problem that our paper attempts to solve is identification of the form of market competition that flourished in the pharmaceutical industry during the pandemic and ensuing economic crisis. The qualitative and quantitative data used to introduce the new form of competition is from secondary sources including books, journals and articles that were published on official websites of Biopharmaceutical companies like Mckinsey and Deloitte. From a research point of view the analysis of the market is done by dint of gathering observations without our personal intervention in the topic related to our study and field work. The basic approach to answer our research question would be a thematic and content analysis of the market trends by observing shifts in market forms during various phases of the COVID crisis.

Conclusion and results of field studies conducted using triangulation method which is 'concoction' of various types of field work methods have also helped us to introduce the new form of market using tabular and graphical representations.

Initially we had planned to identify the forms of market in each phase of the pandemic independently but lack of official data due to the recency of the issue, as COVID 19 pandemic is very novel and recent.

Analysis

While the country and its economy lay with exhaustion and agony under the shackles of one of the worst biological crises witnessed by human kind, it was the pharmaceutical sector that brought India back to its feet. The pre- eminent position that pharma has secured in the pandemic is not just based on the necessary medication that it provided but also because it has acted as a booster for the economy. However, this sector also experienced some surprising movements when it comes to the type of competition in the pharmaceutical market. To demystify these movements, we would consider two examples from the pandemic.

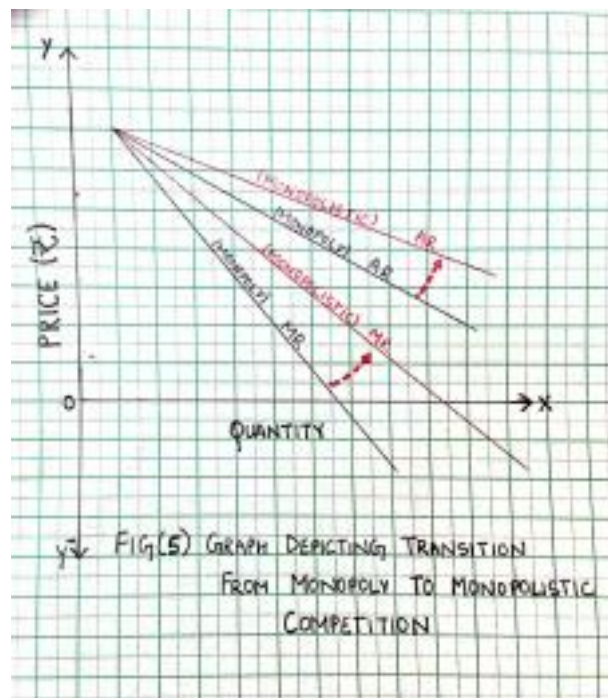
The first is a case study of the production of PPE kits in India during COVID. This case study aims to depict how the market transitions rapidly from one type of competition to another, during uncertain times. The second case study covers the phase of vaccine production in India, in the context of the buyers and the sellers. This case study throws light on the market condition when features from various types of market competitions come together simultaneously within the same industry. It shows how a concoction or a mix of competition can be observed during the COVID-19 vaccine research.

(i) Production of PPE kits in India- (The rapid transition of the forms of competition)

When the pandemic began unleashing its wrath on the country, India was medically ill equipped and the lack of PPE kits worsened the problem. Even the disruption of foreign supply of PPE pushed India towards the spike in PPE cases. However, due to government intervention through investment, within two months of the lockdown in 2020, from producing 0 personal protective equipment (PPE) kits, India went on to produce 2.06 lakh PPE kits per day by May 5 to 4.5 lakh kits per day by May 18. The suppliers grew from 52 certified companies to 600 certified companies in the same duration, marking a huge spike in the supply chain. Being an industry that was born due to, and in the duration of the pandemic, personal protective equipment (PPE) industry shows the impact of the pandemic on industries with government support. By July, India had exceeded domestic demand, followed by an excess supply in December that caused more than 100 manufacturers to shut down. While increased competition led to innovation as cheaper alternatives and varying quality products emerged, suppliers also faced a rapid decline in demand. It can be inferred that from a single seller in the market and a large number of buyers, the industry

moved to a market that has both a large number of buyers and sellers, within a few months. Thus, this transition can be economically analysed to see the number of buyers and sellers involved in the market, conveying a transition from a monopoly to a monopolistic style of competition.

The figure (5) depicts the transition from monopoly to monopolistic style of competition using AR and MR curves. These are downward sloping curves as they depict how the price is reduced in order to sell more. The difference between the monopoly and monopolistic graph is that the latter is more elastic as compared to the former, because in a monopolistic style of competition close substitutes of the products are available. Hence, $PED < 1$ in a monopoly but $PED > 1$ in monopolistic style of competition. (PED stands for Price elasticity of Demand).

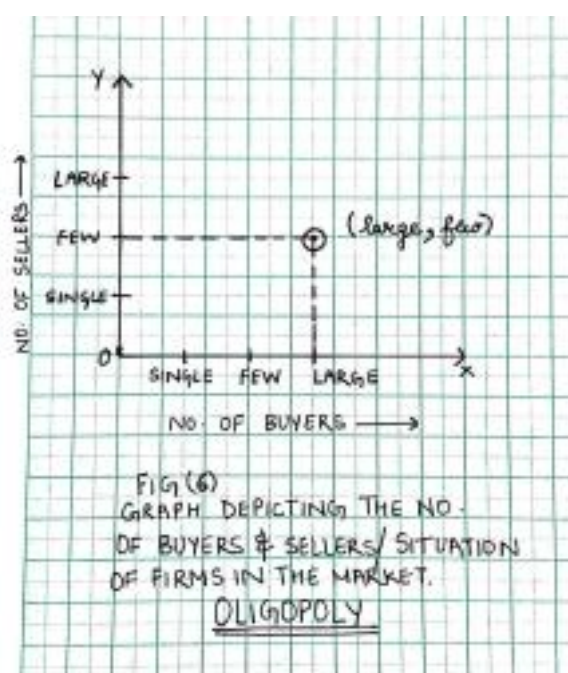


(ii) The production and development of vaccines – (Co-existence of several types of competition)

Apart from the market trend of transitioning to different types of competition, the pandemic also witnessed co-existence of features of different competition types. This means that a single industry, within a particular period of time, witnessed intermingling of several competition types. The detailed analysis of the market during the production and development stage of the vaccine will help to prove the aforementioned hypothesis.

To understand the type of competition we study the following features:

Entry and exit of firms: The whole nation was going berserk with the anxiety, awaiting the invention of a vaccine but we observed that only a limited number of firms could experiment in the field of vaccine invention. This was mainly due to the huge amount of investment required. The perturbing concern was also the uncertainty of success that made such exorbitant expenditure risky during the existing crisis. Thus, the limited entry and exit of firms in the market makes it an “**oligopoly**” type of market competition. Where only a few large players with enough funding and licenses can enter the market. Refer to graphical presentation in Figure 6.

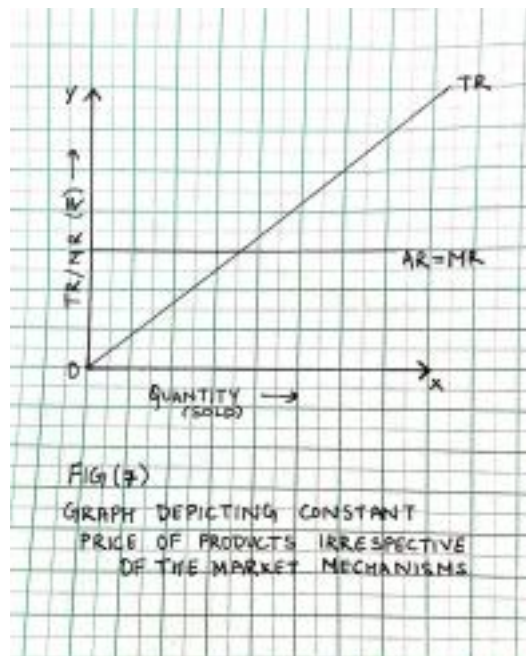


Type of product: Since the decision of the type of competition existing in the market requires analysis of various features, when we study another feature that is the type of product that the market is selling, namely the vaccine, we see that the product is differentiated (i.e. slight variations in the successful vaccines) but there are close substitutes available for the same. Hence this kind of product is a feature of the **monopolistic** market.

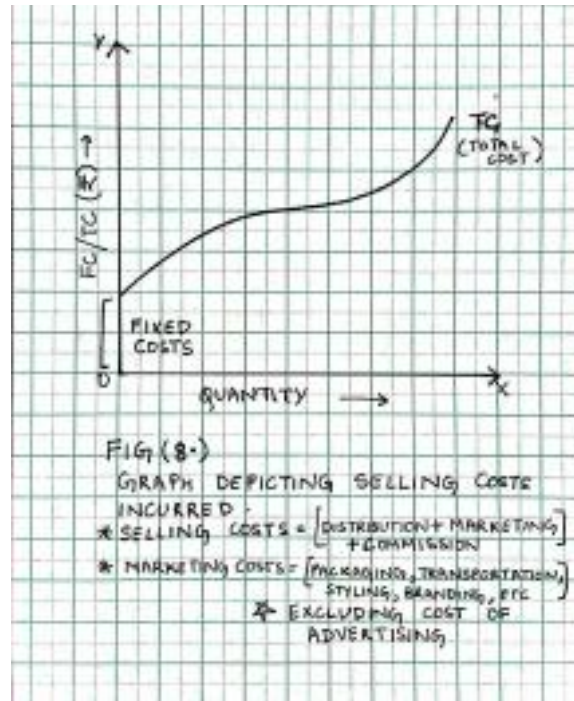
Price: The study of the pricing policy presents yet another dilemma, where we could say that again two competitions co-exist:

(a.) The firms during a crisis try to avoid price wars, so firms follow the policy of price rigidity. Therefore, irrespective of conditions created by the market mechanisms, the price tends to remain more or less fixed. This means that the firms keep the price of their product within close range of the price of other rival products i.e. its close substitutes, in order to avoid price wars. This comes under the **feature of oligopoly** where there are a few large firms in the market and each firm's contribution is significant for the market.

(b.) Though the claim of constant prices, stated above seems to be true in this case too, the reason for it is different. It is because the reason for fixed prices can also be government intervention that is through price gouging. Hence in this case the firm becomes a price taker rather than a price maker. This is a **feature of perfect competition** that can be witnessed during uncertain times, as a move of the government to avoid price surging. Refer to the Graphical Presentation in Figure 7.

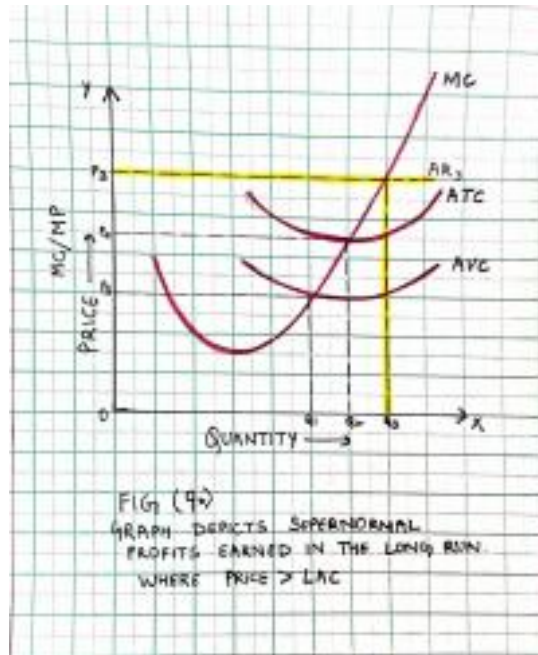


Selling Costs involved: If we continue to analyse, yet another feature i.e. the selling costs involved in the market, the result is still a new form of competition. Because the limited or somewhat zero cost involved in selling the vaccine shows that the market experienced **monopoly**, because the very limited costs were just for the purpose of informing the buyers, and none of the firms considered spending money for advertising. While the selling expenses = (Distribution + Marketing costs + Commission), the marketing costs here in our case are assumed to be the packaging, transportation, styling, branding, etc excluding the cost of advertising. Refer to Figure 8.



Knowledge about the market: Buyers and sellers in the vaccine market possess perfect knowledge. Both of them were aware of the price gouging measures being enforced with the intent of keeping the growing monopoly inclined towards **perfect competition**. Thus, no buyer offers a higher price or no seller proposes a higher selling price than the one which has been agreed upon through government regulation or through the cooperation among the pharma fraternity.

Profit in the long run: The large firms involved in vaccine invention and production earn supernormal profits in the long run. This means that profit would be over and above the normal profit i.e. **AR Average revenue = ATC Average total cost**. So the supernormal profit is calculated as **Total Revenue – Total Costs**, where the costs include the minimum income required by the seller. This is also a feature of **oligopoly**. Refer to the graphical presentation in Figure 9.



Thus, the above ' Feature by Feature study of the vaccine situation shows how in uncertain times different features of the market react differently, thus leading to a situation where no single form of market competition stands out.

The following is a tabular presentation to summarise the analysis of the market competition during the phase of vaccine development and production:

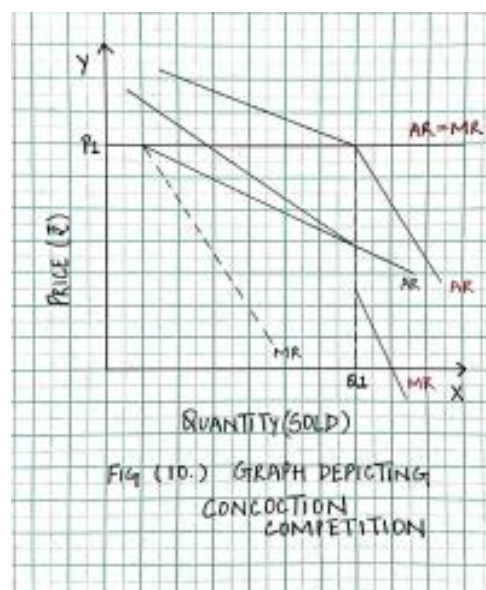
Number of Buyers and Sellers	Few Sellers, Large no. of Buyers	Oligopoly
Product	Homogeneous/close substitutes	Monopolistic

Knowledge about market	There is no concept of consumer preference	Perfect
Price	a.) Price gouging b.) Price Rigidity	Perfect Oligopoly

Entry and Exit of Firm	Restricted due to huge investment required and licensing procedures	Monopoly
Selling Costs	Negligible advertising costs involved, if involved it is only for the purpose of informing the buyers not for promotion	Monopoly
Profit in the Long Run	Supernormal profits, $\text{Price} > \text{LAC}$	Oligopoly

Results and Explanations

Efforts of sellers, government and competition agencies to improve the market condition in face of the pandemic ensuing economic crisis were not in a specific direction which did not allow any one form of market structure to exist in isolation. This resulted in what we have coined "Concoction Competition" (Refer to Figure 10.), a form of market structure in which large no of buyers and sellers (oligopoly) compete to sell differentiated yet close substitutes of products at prices which do not change depending on the demand as they are fixed due to price rigidity and price gouging. Additionally we have analysed that in this form of competition entry and exit of firms is restricted due to huge capital investments required, limited availability of strategic resources required for production of goods and limited patents and licences being provided to firms.



Conclusion

From the above analysis, the paper finds that not only did various forms of competition co-exist and form a Concoction Competition, but also the market rapidly transitioned between various market competition structures in a short span of time of 2020. The term concoction competition is more than an alliteration, it refers to a form of competition existing in unprecedented times of a pandemic. Unprecedented times refer to a context where demand and supply chains are disrupted and sellers are trying to squeeze opportunities to gain profit but taking into consideration the cost of inconvenience that might be caused to the buyers. Further research may be done to determine the market type in other unprecedented and unique situations including wars and financial crises. While there is no straight jacket solution or strategy to crisis modified market, the establishment of a pattern may guide governing bodies both nationally and internationally to equip the economy to be able to face a future pandemic.

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