

# Price Discrimination in the Steel Industry: Evidence from Egypt

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**Abstract:** This paper studies and enlightens mainly price discrimination; which is simply selling products for differentiated prices. First, a literature framework is detailed with all the theories and types of price discrimination throughout the years. It is a strategy that is used worldwide by so many companies and firms, but this paper studies specifically the activity of the major player in the Egyptian steel industry; Ezz steel. The research resulted in; that there is no price discrimination, activities are implied in the industry currently by the companies due to the interference of the government. However, before that, the company applied some strategies that are illustrated in the paper in detail.

**Keywords:** Price discrimination; monopoly; dominant strategy; elasticity, steel market

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## 0 Introduction

Ezz steel is considered the major and dominant producer of steel in the MENA region and is the pioneer of the steel market in Egypt. The organization's production facilities are deliberately situated in the port urban cities of Alexandria and Suez and in the Egyptian inside at Sadat City and tenth of Ramadan City, where its long and flat productions are manufactured and pitched to clients around the globe. The foundation of the company was on April 2, 1994, by Eng. Ahmed Ezz the chairman and managing director of the company<sup>[1]</sup>. As stated, the company exports its products to clients in the district and around the globe as its principal line of business is the

creation, exchange, and appropriation of different steel items utilized in an extensive variety of uses. However, to complete its business process of production and exporting its product Ezz Steel imports crude materials, gear, and extra parts to help address the company's requisites. The organization is recorded on the Egyptian Exchange and in addition on the London Stock Exchange through a global depository receipts program, as it manipulates 43% of the flat product market and 45% of the long product market. In addition, to facilitate the exporting and importing processes of the company; Ezz steel's plants are situated idyllically adjacent to some of Egypt's major ports at Alexandria and Suez, at which the process of transportation and distribution of both crude materials and finished products is accelerated<sup>[2]</sup>.

The plants of Ezz steel are four and are distributed in past three entities; they signify the company's structure. These four plants are Al Ezz Dekheila Co. at Alexandria, Ezz Steel reports - Sadat City, Al Ezz Rolling Mill (ERM) at 10<sup>th</sup> of Ramadan City, and Ezz Flat Steel (Sokhna/Suez). To start with, EZDK (Al Ezz Dekheila Co.) as it stands for the leading steel venture for Ezz steel. The organization is a completely incorporated steel unit comprising three direct decrease units for creating sponge iron, four 80-ton electric circular arc furnaces, combined with nonstop throwing machines for billet generation and moving plants, and a privately maneuvered port. The organization works through a small-scale process and has some expertise in a nonstop procedure from steel soften to rolled flat sheets. The office depends on the settled small-scale process idea, delivering fluid steel by dissolving scrap in an electric circular segment heater. The Danieli-constructed plant incorporates a thin piece ceaseless caster, enabling the plant to create thin measures of steel sheets, down to a base thickness of 1 mm. As of late, EFS added a billet caster to have

the capacity to change over its 1.3 mtpa ability to make semi-completed long items, giving the organization the adaptability to change to long items as and when required. Finally, both ERM and ESR are mainly rolling mills factories and are approximately 98.9% owned by Ezz steel<sup>[3]</sup>. This paper analyzes the strategies of price discrimination implemented by the company and whether they are still implemented or not. In section one, the company's history will be introduced, while section two will analyze all the types and strategies through classical theories from 1844 to 2007. Section three will explain all the previous and current price discrimination practices done by Ezz steel company and what are the constraints implemented either by rivals in the market or government interventions. The market structure and conditions of the steel industry are deliberated in section four, while the case of the steel market in Egypt as a monopoly or an oligopoly is discussed and analyzed in section five. Finally, section five concludes the findings of the paper.

## 1 Literature review

Economists and researchers throughout the years and from different eras have argued over what is the definition of price discrimination and how it works, some categorized it into classifications and classes, then in each class there are essential types, later on, others classified it into degrees and for each different degree there are different divisions. These types and classifications also differ in terms of the point of view from which it is sorted into categories, the two main points of views are the consumer point of view and of course the producer point of view.

### 1.1 Machlup's theory of monopoly, 1955

Price discrimination is simply defined every so often as the act of vending a specific commodity at altered prices to different consumers simultaneously<sup>[3]</sup>. Furthermore, Machlup stated that the phrase "at altered prices" has diverse meanings under its umbrella, there is always something that is different in the criteria of setting prices using price discrimination strategy, whether that is in terms of the product itself or the prices. For demonstration, if it is in terms of the product, it is the act of setting the same price for products that are dissimilar or that are similar but with differentiated qualities or efficiency having the same marginal cost also. On the other hand, in terms of price, it is as mentioned setting several prices for the same product.

As there are different definitions for price discrimination throughout the years, there are also various beliefs of various economists and researchers also about what is the purpose of price discrimination strategies and what is its effect on the market. Machlup, furthermore, believed that there is the fact that firms' concern or interest of averting the growth of vulnerable rivals or even destroying them has been the main purpose of the utilization of price discrimination every so often. Which in result, strengthened Machlup's belief that price discrimination is considered a weapon-wise vital method to initiate monopoly. However, he also believed that the shriller the competition is, the higher the chance that the suppliers will block out the good orders and pursue the good ones, reaching the maximum level where the inferior ones are more enhanced, and the good ones are less beneficial.

### 1.2 Robinson's theory of perfect and imperfect markets, 1933

Although Robinson in the early 30's had an opponent point of view, in which he lay emphasis on the anticipation that the only condition that could be depicted to have a slight hint of price discriminatory prices in a perfect competition market is when dealers can exploit the obstruction between one piece of a market, as natural barriers, and another to charge discriminatory prices for a similar thing if and just if all merchants are consolidated or are acting in understanding. He insisted that this is the only circumstance under which sellers in a perfect competition market can charge different prices as the demand would be perfectly elastic in each segment of the market, each dealer would like to sell his entire production in the segment of the market where he could acquire the most elevated prices. Consequently, there would be just a single price over the entire market as the endeavor to do as such would drive the price down to the competitive level<sup>[4]</sup>. He also claimed that the chance of existence of price discrimination in a market is whenever there is also a chance of imperfection in the market and that the reason behind the market imperfection is the consumer's willingness. Another reason that can pledge the existence of discriminatory prices is on the off chance that it is feasible for an individual dealer to isolate his market into discrete parts. Finally, he also pointed out that the act of discrimination can take place, even there are natural barriers in the market, through several maneuvers to divide the market.

### 1.3 Pigou's classification of degrees, 1920

The price discrimination was early introduced by Pigou's in the 1920. This classification categorized price discrimination into three different degrees where the first-degree discrimination, also known as perfect price discrimination, in which simply the differentiation in prices is between individuals, where the producer sells, with different prices, and different quantities. Conversely, second-degree discrimination is in terms of the quantity purchased, meaning that yes, the producer sells different quantities, but it does not depend on who is buying the quantity, as every consumer buys, the same quantity has it for the same price. Volume discounts can illustrate a commonly known example of second-degree pricing. Finally, the most common type of discrimination strategies, third-degree pricing, which takes place when output is sold for different charged prices to different groups of people, yet each person is charged the same price for every unit of output.

### 1.4 Dupuit versus Pigou

However, surprisingly it was agreed on by several economists and researchers, including Ekelund in 1970 and 1973, in association with Hook in 1973, and another association with Herbert in another book of his, that the origin of the classification of degree theory is by the French economist-engineer Jules Dupuit's pure theory of price discrimination and welfare in 1844 which was mainly built on the basis of his earlier theory of the profit-maximizing monopoly firm<sup>[5-7]</sup>. In which he found out, what is now called third-degree price discrimination, through certain qualities of transport and utility firms gave solid motivators to the act of price discrimination. He also deduced that to intensify the utilization of certain plant size, price discriminatory is likely to be induced in such industries due to the presence of high fixed or common costs. He debated that there is no industry in which this phenomenon could not exist, but it was most obvious, and grabbed his attention, in the railroads. He as well knew that the market structure relates strongly to the cost conditions, and that monopoly power permits price discrimination of some degree, yet that monopoly power is insufficient for discrimination, and there are two other factors should be taken into consideration; these are the diversity in consumers' estimates, commonly now referred to as elasticity, in addition to, the ability to secede the market. Finally, he also added that what is renowned now as first-degree discrimination should be the basis of price setting acting as the "foremost-principle"<sup>[5]</sup>.

### 1.5 Stole's direct and indirect classification, 2007

Recently, Stole simply classified price discrimination types or strategies as direct versus indirect, where direct discrimination is practiced based on perceptible attributes of the purchasers, for example, restriction or employment. In contrast to indirect discrimination which sorts purchasers by offering menus of items that contrast in quality or amount.

### 1.6 Behavior-based price discrimination (BBPD)

It was approved that there is a different type of price discrimination that is being commonly applied recently in several markets such as long-distance telecommunications, mobile telephone service, magazine or newspaper subscriptions, credit cards, labor markets, supermarkets, web-retailers, air travel, financial services, electricity, gas, and insurance companies. These new techniques are essentially based on consumer behavior; subsequently, the strategy is called behavior-based price discrimination, shortly BBPD. This technique takes into consideration of pricing products and services the history of purchases of consumers. There are two aspects of behavior-based price discrimination; one is where purchasing histories of consumers are only used as information value rather than unswervingly fluctuating consumer preferences; this is called "pure behavior-based price discrimination." While the other aspect is the adverse of the first one, where information collected is directly affecting pricing strategies. In a setting of "standard" price discrimination, higher adaptability in setting costs is normally connected with higher profits in restraining monopoly or when the adversary sets a uniform price, yet it is related to declining profits, in the case where all rivals are invested with a similar capacity in setting adaptable prices<sup>[8]</sup>. Due to the importance of buying behavior on setting prices to evaluate the consumers' willingness to pay for the product or service, economists, and marketers initiated this strategy of price discrimination or setting. It can never be declared if there is a negative or positive relation between prices and consumer behavior generally, as it will differ based on the type of market and number of competitors in it, the significance of the product or service to the consumer, by other means the product's elasticity, and the segments targeted, Table 1.

The figure illustrates that the steel is an inelastic commodity, and nevertheless the fluctuations of prices or price discrimination strategies applied in the past by the company itself or by retailers and wholesalers only

currently due to the implementation of the antitrust law and the political situation mentioned in the paper previously, the steel industry will remain inelastic and that prices set by the makers is only affected by the cost of production, fluctuations in the prices globally and the intervention of other competing imports from abroad.

## 2 Price discrimination in the steel industry: The case of Ezz Steel company

It was always assumed that the steel industry in Egypt is a monopoly market and that mainly Ezz is the monopoly market player and the one who uses price discrimination as a tool for monopolistic activities. However, after looking into it, it was realized that the steel market was never a monopoly. To investigate the case, as there was no sufficient information leading to an answer if there is or there is not price discrimination or monopolistic activities in the steel industry in Egypt especially by Ezz steel companies as it has the largest market share of almost more than 50%, Figure 1a.

Figure 1a proves that Ezz steel company has the lion's share of the steel market in Egypt; nevertheless, the competitiveness with other company's products.

Figure 1b similar to the previous one shows that Ezz steel has the largest share nevertheless that for the flat products in the Egyptian steel market there is a large portion of imports and even larger currently, but yet Ezz steel manages to be the largest producer in the market.

It was decided to contact someone from inside the core of the company. Primary research through focus group provided the information needed and answered all the confusing questions strictly to the point to clear out the wide-spread misunderstanding concerning the issue. He pointed out that currently there is no price discrimination of any kind not only by the company but also in the whole industry and that is for several reasons including.

### 2.1 "Cash-up front" method

"Cash-up front" method, which is an activity performed by Ezz steel company to preclude any kind of loss in addition to any kind of suspiciousness. The method is simply collecting the money of the transaction in advance of supplying the buyer. In which they are strict about the prices, and there is no differentiation between consumers of any kind, it can be expressed as a "take-it-or-leave-it"

Table 1. Elasticity of demand and supply

Year	Qd/Tonnes	Qs/Tonnes	Prices (\$)	Change in Qd	Change in Qs	Change in prices	Elasticity of demand	Elasticity of supply
2009	1,799,428	1,806,025	580.39	0	0	0	0	0
2010	1,816,257	1,847,866	645.93	0.009308886	0.0229021	0.106884611	0.087092857	0.214269958
2011	1,886,099	1,858,069	647.50	0.037728409	0.0055063	0.002432291	15.51147275	2.26383428
2012	1,922,937	1,962,292	716.66	0.019342427	0.0545618	0.101392789	0.190767282	0.538123667
2013	2,074,954	2,042,927	787.37	0.076048597	0.0402649	0.094029141	0.808776891	0.42821793
2014	1,863,247	1,976,894	702.37	-0.107514573	-0.032853	-0.11412017	0.942117182	0.287886897
2015	1,836,419	1,684,859	616.13	-0.014502931	-0.159505	-0.13080672	0.110872976	1.219398862
2016	1,824,049	1,771,058	333.73	-0.006758699	0.049884	-0.59462161	0.011366386	-0.083893484
2017	2,343,517	2,081,790	545.90	0.249290833	0.1612999	0.482406151	0.516765453	0.334365348
2018	624,286	462,836	696.01	-1.158588356	-1.272449	0.241740297	-4.792698491	-5.263704414

Source: Ezz Steel and NBK capital. Data retrieved from: Ezz steel financial reports<sup>[12,13]</sup>

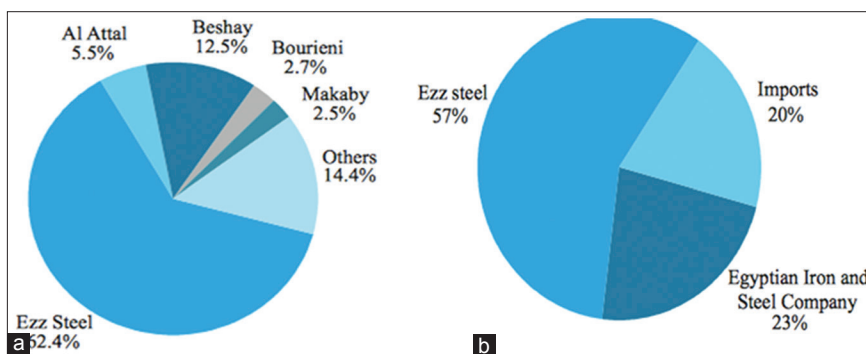


Figure 1. (a) Market shares of long products in Egypt's steel market. (b) Market shares of flat products in Egypt's Steel Market. Source: Ezz Steel 2008 Presentation and Global Research.

deal. In which they also make sure, there is no chance of any negotiations regarding the price.

## 2.2 “X-works” method

“X-works” method, another activity performed and agreed on by all of the company’s branches or locations, as Mr. Kamel insisted that no transactions of the company took place somewhere else than the company’s land. That is what the method implies for; all transactions take place on the company’s territory and this method was also made up for the same reason, which is avoiding any use of price discrimination, as there are no transportation costs involved in the transactions. Transportation costs can be the formation of price discrimination as there will never be fixed charge for delivery for all locations there must be differentiation of some kind.

## 2.3 Antitrust law

Antitrust law represents the intervention of the government or the government role. Antitrust law forbidden any approach to discriminate any kind of price policy followed by any companies. Meaning it also bans any kind of agreements or negotiations that can be held between competitors as in the case of an oligopoly market. This makes the market a regulated market in which there is no manner of any price discrimination or competition rather than a non-price competition. According to the American Chamber of Commerce in Egypt<sup>[9,10]</sup>, strict amendments in the antitrust law of protecting competition and prohibiting monopolistic practices in Egypt made by the Ministry of Trade and Industry merging with the Egyptian Competition Authority was released on 3/2005. In case of violation of the law, articles 6, 7, and 8 would upsurge forfeits to LE 50 million from maximum LE 10 million or correspondent to a percentage of 10% of the sales revenue of the products that the monopolistic performs are applicable to, if the parliament sanctioned. Furthermore, in the case of persisting the act of violation, the penalization will be doubled.

However, before the antitrust law was applicable, Mr. Kamel confirmed that there were sorts of price discrimination practices implemented. There was a policy of contracts by the company that was implemented until 2004. The company implies contract with a specific quantities to supplier at specific times. Regardless of what may be the conditions, this minimum amount is forced by the contract on the consumers and paid for in advance even if it is of no use to them at time. This policy guarantees to the company that they are and will

be the only supplier for those specific consumers for a period of time and no other company can interfere within the contracted quantity yet; other competing companies can have agreements with those distributors other than that of Ezz steel’s. This policy of contracts is considered to be second-degree price discrimination practices and Ezz steel is contemplated to have a dominant strategy among distributors, those practices are specifically called “block-pricing.” However, Harbord and Von der Fehr<sup>[10]</sup> have another opinion and labeling for this practice, they label it as “quantity forcing” and crediting that the company’s distribution arrangement falls under the theory of vertical restraints arrangement. Not just that, they also believe that allowing the company to participate in debarring and competition-diminishing such as price discrimination, Ezz steel does not have a dominant market position. In addition to, the belief that this contract strategies do not create any kind of jeopardy to the policies and regulations such as the antitrust law of competition, even if the company had a dominant market position, and would probably be effaced, for instance, under the European Commission’s Guidelines on Vertical Restraints. As a sequel to Harbord and Von der Fehr, another credence was mentioned by them, and that is; that Ezz steel’s strategies or activities do not leave any negative impact on the competition in the Egyptian steel market as the market is composed of a substantial overindulgence capacity. They also stated that in an indication of dearth of any kind of distortion to competition, the prices of long steel products in the Egyptian market is comparatively low to other countries in the near East and Europe.

Another policy that continued to be instigated by Ezz steel’s companies until 2001 was the bonus policy. From a point of view of promotion the company policy was to provide flexible quantities for the first class customers. At present, due to the role of government interventions mentioned previously that regulated the activities of price discrimination among the market players, any kind of price discrimination practices will occur through the tunnel between the suppliers and the buyers which are the distributors, including the retailers and the wholesalers. Retailers apply second-degree discrimination through promotions. The company is not involved by any means in those practices. Furthermore, in contrast with the policy of the minimum quantity applied until 2004, there is now a policy of maximum quantity, in which the company identifies a maximum quantity for each distributor that they cannot exceed.

### 3 Steel industry market structure and conditions

There are now, as mentioned by Mr. Kamal, 32 market players in the steel industry but the leading companies are first Ezz steel, second place Beshay, and Suez steel takes third place.

Ezz steel contributes more than 50% of the market, which was last reported in 2008 by Global Research and Ezz steel to be 62.4%, which makes it the market leader and gives it the advantage opportunity, though also its advanced technologies utilized to produce the best quality compared to all of its other rivals in the market, to set its own prices automatically all other companies in the market abide with the prices set by Ezz steel<sup>[11]</sup>. For instance, according to a reporter for Mubasher news portal, in August 2018, Ezz steel reduced its prices from LE 12,527 per ton to a range of 12,190-12,200, which is by almost LE 325 per ton, as he reported from the head of the construction materials department in the Federation of Egyptian Chambers of Commerce<sup>[12,13]</sup>. Yet, this was stated to be still the highest prices in the market due to its comparative advantage due to the advanced technology covering for them the best qualities in the entire market. However, the trend of decrease or increase in the prices of steel in the whole market is neither under the control of the market leader nor any of the other rivals; recently, it has been abiding by the global trend as it has been declining, so the market also has to abide with the global market. Despite that, the trend of decline in the prices of steel in the Egyptian market is associated with the increased imports of steel from other countries including Turkey and China which is with lower prices, so the local companies in the market are trying to compete by lowering their prices too.

Moreover, the political issues that Ezz steel is involved with a lead that they, it cannot price discriminate, despite that it has the right to do so as it is the leader as declared. However, he also stated that smaller companies can change in its prices in the market, yet the market might not abide with the changes, as it is also risky for this company since buyers will normally go to the less-priced rivals and the leading with the proficient quality company, which in this case us Ezz steel for sure, and consequently its sales and revenues may possibly fall. If the situation was reversed and the company lowered its prices against the leading rival, it will still be risky, as in case it will be based on preferences and still buyers might be looking for the high-tech supply in the market

no matter what the prices are, so the high-tech leading supplier in the market will still achieve its sales targets as its marginal cost is relatively low due to the technology it preserves so only; in this case, prices can be considered monopoly because all its rivals in the market and all buyers know that Ezz steel preserves technology that no other company of market preserves.

### 4 Oligopoly rather than monopoly

Three local players catch a consolidated share of the overall industry of around 80% of long products; the primary steel composes utilized in Egypt, inferring a profoundly focused industry, which justifies that those main steel producers or market players have this colossal weight on the market and in particular on the prices. However, this does not prove that the steel market in Egypt is a monopoly rather than being an oligopoly. Into depth; oligopoly is defined to two types, where one of those types is somehow similar to monopoly and this is the type of oligopoly defining the Egyptian steel industry. These two types include one where there is a dominant producer among other powerful producers which represents the Egyptian steel market type and the other where there are several dominating players in the market who agree together on prices<sup>[14]</sup>. In the first type of oligopoly, Ezz steel represents the dominant producer, yet there are likewise great makers, for example, Beshay and Suez Steel as previously mentioned. Due to the abnormal state of fixation inside the market and the shortage of elective products to rebars in the construction business in Egypt, purchasers have low bargaining force, while dealers have a high enormous impact over the prices of steel. Likewise, the steel business is a capital escalated industry, which implies that obstructions of passage are high. In addition, the prevailing position of Ezz Steel, combined with the way that since 2000 steel limits have surpassed utilization, disheartens new investors to enter the market, which additionally fortifies the situation of the steel making cartel. Due to all of what is mentioned above and to the description of the steel market in Egypt, and since that Ezz steel is the dominant producer in the market, the company appreciates estimating power due to the organization's prevailing market share. The organization possesses the uncommon status of a value producer in the domestic rebar showcase. The rebar prices are set in the local market toward the start of consistently by the company, which fills in as a benchmark cost for the neighborhood business. Ezz Steel's residential rebar prices are ordinarily set at a slight premium to worldwide costs.

## 5 Conclusion

This paper is mainly focused on the topic of price discrimination, which has several types and theories based on, but the simple definition can be that it is differentiating the prices set for different groups of consumers too. As it was elaborated previously that Ezz Steel company, the Egyptian's steel industry's prime player in the market was accused of controlling the market by performing price discrimination activities, this paper was mainly oriented for investigating the truth about the case. It was expressed that there was actually price discriminatory activities performed by the company that was eliminated by the role of government intervention in 2004 and 2001, as the antitrust law was implemented in 2008. Yet, due to the political situation the company is associated with, it is now implementing some methods to eliminate any apprehensive accusations of price-discriminating activities, including the "X-works" and the "cash-up front" methods. There is a diversification in the types as illustrated in detail throughout the years from 1844 to 2007 in the theoretical literature framework of the paper. It was concluded that any kind of price discrimination in the steel industry is through the tunnels between the suppliers and buyers, which are the wholesalers and retailers; they apply second-degree price discrimination strategies, specifically promotions. Furthermore, it was concluded that the pricing strategy of the steel in the Egyptian market is not affected by the elasticity of demand of the product or the buying behavior; however, adversely it is affected by the global steel prices and prices of imported goods.

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