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Some New Microeconomics Concepts of Economy Pricing System

Marin Muzhani

Department of Economics, University of Florence, Italy.

*Corresponding Author: Marin Muzhani, Department of Economics, University of Florence, Italy.

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Abstract

TIn an Economy Pricing System competitive firms use different pricing and marketing strategies to offer customers a variety of multi-products classified as premium and non-premium. The introduction of premium and non-premium commodities concept is the core of the economy pricing which make the firm survive in a very competitive environment. An important characteristic of an economy pricing is that by using the push-demand-to-customers strategy, reaching the maximum profit, is not the main objective of the firm. The main objective of the firm is to hold the market share by reaching the desired sales target which does not always equal to maximizing profit for every unit sold. It guarantees a net monetary position (NMP) greater than one and a reasonable desired profit which is a key parameter for many firms operating in economy pricing.

Keywords: Economy Pricing System, Premium and Non-Premium Products, Net Monetary Position (NMP), Supply Chain Pricing, Microeconomic Pricing Strategy.

Introduction

Economy pricing is commonly known as a volume-based pricing strategy where commodities are priced low, so firms can gain revenue based on the large volume of goods sold. This is like a cost-plus pricing strategy where products have lower selling price due to low production costs and offers a small profit. The economy pricing strategy allows firms to price their goods according to their production value as they don't require extra costs of advertising or marketing. This strategy involves shifting high volume of the commodities being sold for low price by attracting large numbers of customers to make a purchase based on the affordability of the products to ensure a healthy cash flow and reliable income stream for firms using this strategy. This strategy is mainly used for commodity goods, like generic-brand groceries, clothing, shoes, accessories, or medications, that don't have the marketing and advertising costs of their premium name-brand counterparts.

The scope of this paper is to analyze the economics of the economy pricing strategy at microeconomic level. In fact, the main objective of this article is to explore a new theory in economics called "Economy Pricing System (EPS)" at micro level based on the evolution of the global economy in the 21st century. At the microeconomic level, competitive firms use different pricing and marketing strategies to offer customers a variety of multi-products classified as premium and non-premium. The introduction of the concept of premium and non-premium commodities is the basic of the economy pricing at it creates the condition for a firm to survive in a very competitive environment. The paper is divided into six parts. The first segment takes into consideration some of the characteristics of economy pricing. The second one will talk about the New Theory of the Firm using the Product-Mix Profitability concept. The third part will discuss the Multi-Product Pricing Strategy in the contest of the Net Monetary Position Theory. The fourth segment will talk about how the concept of Capacity Utilization is used in economy pricing. The fifth part is about the Three-levels of Demand Push-Promotion Concept and the last part will shed more light in the Competitive-Pricing approach versus marginal Cost approach.

Some Characteristics of Economy Pricing System

Many companies operating in economy pricing are considered multi-product firms and product switching. In fact, one of the characteristics of economy pricing is to have firms producing both premium and non-premium products. Therefore, it is necessary to have a distinguishment between premium and non-premium products [1]. Premium products are normally those high-quality products which are related primarily to customer's self-esteem and perception status. It makes consumers feel good, confident and shows other people that they have knowledge of

the product. Premium products have high manufactured quality, durability and robustness, quality design, brand experience, packaging, customer service and all the expectations that makes achieve a high price point set. If the brand of the premium products exceeds the consumer expectations for a certain period, then the brand generates a premium equity [2].

Non-premium brands are normally referred to those products that highlight other elements and characteristics, such as price discounts, affordability, and reliability, which tend to be more important for value conscious consumers, offered at different low and medium price-ranges. They are also offered at different degree of discounts during sales events. Different range of product's pricing, quality ratings, and market share may impact the utility and attitude of consumers toward non-premium products versus premium products [3].

A viable firm producing both premium and non-premium commodities will charge a higher price for premium products sold to consumers with a less elastic demand and will offer low price to majority of customers whose demand is more elastic for the category of non-premium products and further discounts during several sales events [4].

Another characteristic of an economy pricing is that by using the push-demand-to-customers strategy, reaching the maximum profit, is not the main objective of the firm operating in a multi-product market: a high-quality premium product and a mass consumption non-premium product. The pricing strategy for this type of firm is intended to reach not the best pricing strategy for both products but rather a satisfactory net monetary position of the firm's balance sheet. The net monetary position is the current ratio of current assets over current liabilities to demonstrate the ability of the firm to cover current working capital needs with available working capital. Therefore, the main objective of the firm is to retain the market share by reaching the desired sales target which does not always equal to maximizing profit for every unit sold. However, it guarantees a net monetary position (NMP) greater than one and a reasonable desired profit which is a key parameter for numerous firms operating in economy pricing.

The introduction of production capacity utilization for a given firm is another microeconomic metric of the economy pricing system. Lower capacity utilization for firms selling non-premium products is viewed as a not-good-sign of the health of economy, instead higher capacity utilization selling substantial volumes of non-premium products above the trend rate is considered a leading indicator of a healthy economy pricing. For a manufacturer, the higher the unutilized production capacity the higher the number of sales promotions offered on non-premium products and eventually premium goods to break-even and start making a coherent profit.

Another interesting characteristic of economy pricing is the competitive pricing approach. The marginalist approach analysis says that a necessary condition for profit to be maximized is when the firm set its quantity in such a manner that the difference between firm's marginal revenue and its cost equals to zero, or when marginal revenue equals its marginal cost. However, the new competitive pricing approach based on economy pricing system, put a different prospective for a multi-product firm which manufactures a combination of premium and non-premium products to help reach a positive net monetary position (NMP) and hit the desired target profit as required by management.

New Theory of The Firm in Product-Mix Profitability

To study the microeconomics of Economy Pricing system we take into consideration the theory of the firm and the Product Quantity (PQ) method that separates into segments the product mix based on the annual production volume of each product. The product quantity (PQ) method has identified two distinct segments in a typical manufacturing product mix: the products that belong to the high-mix, but low-volume (HMLV) segment, and products that belong to low-mix, but high volume (LMHV) segment. A production system that is designed for one segment will not be optimal for the other segment due to the structure of the product [5]. The analysis of PQ encourages the utilization of different products systems and value stream mapping for each segment, HMLV and LMHV. The HMLV segment which includes high-mix low-volume premium products requires short production runs, while the LMHV segment including low-mix high-volume non-premium products calls for long production runs, two to three shifts a day affecting several manufacturing parameters [6].

The low-mix high-volume (LMHV) non-premium products are relatively few product numbers being produced in large quantities. These non-premium products are normally mass produced on single or multiproduct production lines in quite large quantities. Meanwhile, the high-mix low-volume (HMLV) premium products are being produced in small quantities that tend to be manufactured in a process, often referred as a job-shop-layout. The Product Quantity analysis implies that different products being produced in similar quantities will have a process and a functional layout able to manufacture the entire product mix. A high variety of quantities can be grouped into two or more product segments committed to separate production areas with different layouts [7].

Product Quantity analysis can be explained better if we introduce a New Theory of the Firm in Product-Mix Profitability. This theory consists of taking into consideration a competitive firm that uses a multi-product mix strategy to reach its desired overall profitability. Let's assume that the production plan chosen by a manufacturing company consist of 4 products (2 premium and 2 non-premium). The firm, in order to maximize its profit should increase the quantity produced of both non-premium products 1 and 2, which have a low and competitive selling price and at the same time produce limited volume of premium products 1 and 2, which sell at much higher price, as shown in the equation below,

$$Y'_{np1} + Y'_{np2} + Y''_{p1} + Y''_{p2} = Y'_{np} + Y''_{p} = \pi_{j(p)} \quad (1.1)$$

where Y' and Y'' are the respective outputs of non-premium and premium products and np1, np2, p1, p2 are the respective sales prices of the non-premium1, non-premium2, premium 1 and premium 2 products manufactured by the firm. We also assume that output Y' of the non-premium products counts for 70-8% of the total sales and output Y'' of the premium products counts for 20-30% of the total sales. The two non-premium product sales prices np1 and np2 for simplicity can be represented by one output sales price, np. The sales prices of the premium two products p1 and p2 can also be represented by output price, p. We use a constrained optimization solution for equation 1.1, where the variables are required to satisfy certain conditions in order for the firm to keep a steady market share for its products.

By using Lagrangian function we have that in 1.1 output quantities for non-premium products, defined as Y' must be maximized but not their non-premium prices, np, and for the premium products the sales prices defined as p must be maximized but not their output quantities given by Y'' to defend the market share of the company given as Ms. Therefore, we have that non-premium and premium outputs are given as Y' and Y'' respectively, and the price of the premium and non-premium products are given as p and np respectively, subject to the following condition:

$Y'+p$ subject to constraint $(Y'np+Y''p=Ms)$ (1.2)

The Lagrangian function is given as,

$L(\Pi j(p))=Y'+p-\lambda 1(Y'np+Y''p-Ms)$ (1.3)

The first-order conditions require that,

$\delta L/\delta Y' = 1-\lambda 1 Y'np=0$ (1.4)

$\delta L/\delta p = 1-\lambda 1 Y''p=0$ (1.5)

$Y'np+Y''p=Ms$ (1.6)

Equation (1.4) and (1.6) implies that

$$\lambda_1 = \frac{1}{Y'_{np}} \text{ and } \lambda_1 = \frac{1}{Y''_{p}} \quad (1.7)$$

$Y'' = p$ (1.8)

Inserting the above expressions into (1.6) and rearranging, yields,

$Y' = [Ms/(np)] - p$ (1.9)

Multiplying both sides above by np, we get the solution for Y' and p respectively as,

$Y' = (Ms/np) - p$ (1.10)

$p = (Ms/np) - Y'$ (1.11)

The solution for the equation (1.10) above implies that the selling price of non-premium products, np, has to be decreased during promotion events in order for the quantity of the non-premium products, Y', to be increased. In the same way, the equation (1.11) indicates that the selling price of the premium products, p, needs to be maximized in order to maximize the profitability of premium products to cover the lower profitability of non-premium products. Using this strategy, the firm can defend the market share, Ms, despite having a lower overall profitability due to mix of non-premium and premium products.

Multi-Product Pricing Strategy and the Net Monetary Position Theory

A firm will earn profit if the marginal revenue (selling price for the price taker) is greater than or equal to marginal cost of that unit. Profit will continue rising as long as manufacturing and selling of one unit add more revenue to the firm than cost. The modern pricing theory in microeconomics tell us that an additional unit produced will add more to cost than it adds to revenue and the firm's profit will be reduced if the unit is produced [8]. However, in an economy pricing system the things seem to be working differently based on a financial accounting concept called the Net Monetary Position that will be introduced to the theory of the firm in microeconomics.

The Net Monetary Position Theory considers a firm that sells 2 products: a high-quality premium product that sell at high price and low-end mass consumption (non-premium) product that sells at a low price. The particularity of these products is that the premium product is produced and sold always at a price to reach the maximum profit that is when marginal profit is zero or where the marginal cost equals the marginal revenue. Meanwhile, the non-premium product may sell at a price where marginal revenue is greater or equal to the marginal cost reaching maximum profit (marginal profit is zero) for about 20-40 percent of the times during the year, and at a price where marginal revenue is less than marginal cost and marginal profit is negative for about 60-80 percent of the times during the year. If marginal profit is negative for the non-premium product does not mean that a lesser quantity should be produced. On the contrary, the quantity of non-premium product continues to rise to meet the demand for selling at discounted price.

We have three different scenarios in economy pricing based on the characteristics and marketing strategy of product-mix sold as premium product at regular price, as non-premium product sold at regular price and as non-premium product sold at discount price.

The first scenario is when the markup price or firm's optimal price for a premium product is solved when for any chosen price p, the firm expects to have a demand q= D (p). The cost depends on the price of inputs materials and on the cost of direct and indirect labor and fixed cost. We have that a simplified form of markup price for a premium product can be written as,

$\max [P(D(Pp)) - C(D(Pp))]$ (1.12)

where P(D(Pp)) is the price demand and C(D(Pp)) is the cost related to demand D(Pp) of the premium product. The first-order necessary optimality condition is given as,

$P(D'(Pp)) + D(Pp) - C'(D(Pp)D'(Pp) = 0$ (1.13)

Therefore, the optimal markup rule is,

(1.14)

where MC(P)=C'(D(P)) is the marginal cost and ψ=-PD'(P)/D(P) is the own-price demand elasticity for the premium product. The second scenario is when the non-premium product sold

at regular price has a markup price, Pnp, given as,

$$\max [Pnp(Dnp(Pnp)) - Cnp(Dnp(Pnp))] (1-Ɛ) \quad (1.15)$$

where Dnp is the demand for non-premium product and (1-Ɛ) is the probability that the non-premium product is sold at regular price (normally at around 20-40 percent of the times) and Cnp is the total cost. The first-order necessary optimality condition for non-premium product is given as,

$$[Pnp(Dnp'(Pnp)) + Dnp(P) - Cnp'(Dnp(Pnp)Dnp'(Pnp))] (1-Ɛ)=0 \quad (1.16)$$

The price per unit sold for marginal revenue is equal to the marginal cost at a probability of (1-Ɛ) times non-premium product, written as,

$$Pnp\,(1-Ɛ)= Cnp'\,(Dnp) \quad (1.17)$$

The own-price demand elasticity does not apply to the non-premium product as it has already been determined to be sold at regular price, Pnp, when there are no promotions available and Pnps, when there are promotions.

The third case scenario is when the non-premium product is sold at discount price which has a markup price given as,

$$[(Pnps) (Dnps(Pnps)) - Cnp(Dnps(Pnps))] (1-ν) \quad (1.18)$$

where (Pnps) is the non-premium price discounted at s , when the non-premium product is sold at discounted price and Dnps is the new demand for the discounted price and (1-ν) is the probability that non-premium product is sold at discounted price (normally at about 60-80 % of the times during a fiscal year). If we consider the condition of maximizing profit for non-premium product sold at discounted price S, we get the marginal revenue equal to marginal cost plus the discount rate S, written as,

$$Pnps\,(1-ν)= Cnp'\,(Dnps) + S \quad (1.19)$$

The equation above means that every time the firm sells a non-premium product at price Pnps, it loses [Cnp' (Dnps') + S] because it has to give up steep discounts to loyal customers during sales events to be competitive and keep the existing market share. Firms producing large volumes of non-premium products will use mass-production methods and effective supply chain management that will normally lead to lower per-unit cost. By using the total revenue/cost approach rather than marginal approach we have that the first equilibrium condition of pricing strategy for a firm operating in an economy pricing system given the demand for each of the 3 scenarios: premium, non-premium and non-premium discounted products is written as,

$$\left[P(D(P_p)) - C(D(P_p))\right] + \left[P_{np}\left(D_{np}\left(P_{np}\right)\right) - C_{np}\left(D_{np}\left(P_{np}\right)\right)\right](1-\varepsilon) + \left[\left(P_{nps}\right)\left(D_{nps}\left(P_{nps}\right)\right) - \left(C_{np}\left(D_{nps}\left(P_{nps}\right)\right)\right)\right](1-\nu) = NMP(cr) > 1 \quad (1.20)$$

where P(D(Pp)) is the price demand and C(D(Pp)) is the cost related to demand D(Pp) for premium product sold at regular price, and Pnp(Dnp)(Pnp) and Cnp(Dnp)P(np) are respectively price demand and cost related to demand for non-premium product sold at regular price, and Pnps(Dnps)(Pnps) and Cnps(Dnps) P(nps) are respectively price demand and cost related to demand for non-premium product sold at discount price. NMP is the Net Monetary Position of the Balance Sheet of the firm and cr, stands for current ratio. The NMP is normally measured by liquidity ratios such as current ratio and is supposed to be always > 1 (current ratio >1) for a firm to cover current liabilities with the current assets, or quick ratio which excludes inventory because inventory is not always considered liquid. This comparison allows us to assess the firm's ability to meet its short-term debts [9].

A second equilibrium condition of the pricing strategy for the firm given the demand (or the push demand) for premium, non-premium and non-premium discounted products is to meet the sales target to competitively retain the market share, which is given as,

$$Dp(Pp) + Dnp(Pnp) + Dnps(Pnps) = \text{Sales Target} = \text{Market share} \quad (1.21)$$

where Dp, Dnp, Dnps, Pp, Pnp and Pnps are the respective demand (push demand) and price of premium, non-premium and non-premium discounted products sold by the firm to keep the sales target and at the same time meeting the first condition, NMP >1. By satisfying the second condition - meeting the sales target - does not mean that a firm is maximizing the profit.

However, in economy pricing with push-demand-to-customers strategy reaching the maximum profit is not the main objective of the firm. The main goal is to keep the market share by reaching the desired target output which does not always equal to maximizing profit for each unit sold. There are chances when a competitive firm operate at loss because of business loss or capital loss for one or more quarters or even years, until the balance sheet gets 'repaired' and grow in strength to become a profitable business. Based on accounting theory, if NMP > 1, the firm is assumed to sell all its current assets to pay for its current liabilities. However, if NMP < 1, then the firm won't be able to cover the current liabilities with current assets and will operate at loss.

The Capacity Utilization in Economy Pricing System

Another aspect of economy pricing is capacity utilization which is the potential output representing the maximum amount of output that can be produced in the short-run by a company, industry or country with the existing installation of capital [10]. In an economy pricing, any plant operating in a range with short-run scale economies would reach a higher NMP (Net Monetary Position) curve for the non-premium products by increasing capacity utilization and pushing down prices as it moves along a downward sloping region of the supply curve. Therefore, in the presence of market competition there is a possibility of negative correlation between capacity utilization and price changes for non-premium products. Lowering the prices of non-premium products during the sales event will increase the volumes of

sales orders received by manufacturing plants from the retailed stores, which translates into increased plant capacity utilization. Increasing returns suggests that changes in industrial output mainly reflect changes in the capacity of industry to produce. Based on the second equilibrium condition of the pricing strategy of a firm, given in equation (1.21), which takes into consideration the demand for premium, non-premium and non-premium discounted products and sales target to make a desired profit, will have to reach normally an average production capacity utilization of 70-80 percent. Denominating by Uc the production capacity utilization, we have that the linear demand function that meets the production capacity utilization condition is given as,

Dp(Pp) + Dnp(Pnp) + Dnpd(Pnpd) = Sales Target= Uc (1.22)

where Dp, Dnp, Dnpd, Pp, Pnp and Pnpd are the respective demand (push demand) and price of premium, non-premium and non-premium discounted products.

What happens if a manufacturing firm does not reach the production capacity utilization of 70-80%? It means that the capacity is under-utilized, and the firm is not selling enough to cover fixed cost. It is barely covering the variable costs. As a result, average fixed costs per unit of output increase, so profitability falls, and prices might increase, which means that average costs increase due to falling levels of efficiency. The firm will be less competitive. For a competitive firm, the higher the unutilized production capacity the higher the promotions offered during sales events on non-premium products and eventually premium goods. In fact, if the unutilized production capacity is under 70-80% the output of non-premium products (Qnp) ↑↑ could increase and eventually the quantity of premium products (Qp)↑ must be increase as well, through different promotions, to reach the budgeted sales target which will ensure competitiveness and steady market share for its products.

Three-levels of Demand Push-Promotion Concept in Economy Pricing

Large discount superstores like Walmart, Costco, Amazon, or discount outlets put considerable pressure to their suppliers to keep the price down so they can give more discounts to final customers and have more return liberal policies for their loyal customers to remain competitive. This section will be focused on a new microeconomic model called, the Three-levels Push Demand model, where each level of the supply chain of the final product is designed to push the demand onto final customer.

Let's assume that a discount superstore sells a non-premium product (unit) denominated as Un at discount price rather than at regular price. And here it starts the first level of demand push-promotion; the superstore pushes their products (mostly non-premium) onto customers using different marketing tactics and strategies. The discount price denominated as P(Us)np of the non-premium product Un is given as a function of profit margin denominated as Pa, direct + indirect labor denominated as L, variable and fixed overhead costs denominated as VOH+FOH, selling and administrative cost denominated as A, and lastly the Pm, which represents the price the superstore buys the units from the manufacturer. The relationship, including all these variables, is given as a linear function to produce the non-premium product Un and can be written as,

P(Us)np = Pa +L+ VOH + FOH + A+ Pm for P(u)np < Pnp (1.23)

where Pnp is the regular price of the non-premium product which is always higher than the discount price P(u)np during sales events.

The second level of demand push-promotion happens when the giant superstores ask their suppliers, which are the manufacturers of a non-premium unit, Un, to reduce their selling price during the sales event. The manufacturers agree to reduce the prices if the superstores agree to buy the unit Un in large batches or volumes. Therefore, the price of non-premium product Unp manufactured by the manufacturer and sold to the discount superstore is given as,

PU(m)np = PMm +Lm+VOHm+FOHm+ Am+ P(r)npQ r (1.24)

where PMm, Lm, VOHm, FOHm and Am are respectively the profit margin, direct+ indirect labor, variable and fixed overhead, selling and administrative cost of the manufacturer to produce a unit of Un and lastly P(r)npQr represents the price the manufacturer buys raw materials (Pr)np and quantity Qr of raw materials from mining industry to produce one non-premium unit Unp.

The third level of demand push-promotion occurs when the manufacturers ask their suppliers of the raw materials or intermediate subassemblies to reduce the price of the raw materials used to produce the non-premium products, so they can support the sales event of the superstores. The mining firms or the producers of the raw materials will accept to reduce the price of their raw materials if the manufacturer buy them in large volumes. Therefore, we have that Pr*Qr represents the price of raw materials and quantities used in production to produce the unit Un. The selling price of a raw material unit, P(r)np, for the mining company which is sold to the manufacture to produce the non-premium unit Un, is given as,

P(r)np = PMr +Lr+VOHr+FOHr+ Ar+ Pl if Vlrun> Vrun (1.25)

where PMr, Lr, VOHr, FOHr and Ar are respectively the profit margin, direct+ indirect labor, variable and fixed overhead, selling and administrative cost of the extraction or mining company. Meanwhile, Pl is the price to buy land to extract minerals including the mining rights or loyalties and Vlrun is the large volume of raw material sold at discount price and Vrun is the volume of raw materials sold at regular price [9].

By putting together equations (1.23), (1.24) and (1.25) we get a new equation that indicates the final price of the buy-product, Un, sold to final customer in the superstore based on three levels of discounts or push-demand for high-volume of non-premium products which is written as,

$$PU_{(s)np} = [P_a + L + VOH + FOH + A] + [PM_m + L_m + VOH_m + FOH_m + A_m] + [PM_r + L_r + VOH_r + FOH_r + A_r + \boldsymbol{PI}] \quad (1.26)$$

where the final sale price PU(s)np of non-premium product sold to final customer is a combination of three-levels of discounted

prices coming from the discount superstore, manufacturer and raw-material supplier.

At the first level of demand-push the supply chain manager of the superstore will 'push' to reduce the cost of product U(s)np, so the store can sell it at discount price by reducing the only variable he can control in the short-run, that is the price of the non-premium unit, Pm, which is purchased from the manufacturer. Other variables such as profit margin, labor, variable and fixed overheads, selling and administrative costs are controlled by the superstore corporate management which may get reduced in the long-run through restructuring, reorganization, investment in research & development, new technologies, mergers, etc., but not in the short-run.

At the second level of demand-push, the supply manager of the manufacturer firm will try to reduce the cost of the non-premium unit manufactured U(m)np by reducing the only variable he can control in the short-term, which is the price of the raw materials Pr(np) used to produce U(m)np, purchased from the extraction/mining company in large volumes to support the superstore sales event. He will 'push' to reduce the only price/variable he controls in the short term which is the price of raw materials purchased from the outsourcing companies producing raw materials to sell the final product at discount price to the superstore.

At the third level of demand-push, the sales team of the extraction/mining company will reduce the price of raw material P(r)np sold to manufacturer in large volumes in order to produce the non-premium unit U(s)np that will be sold to superstore if in the short-run the supply chain manager will 'push' to reduce the price of component, PI in equation (1.25) which is the price to buy new land, open new mines or increase the capacity of existing mines to speed up the extraction of minerals (including mining rights or loyalties) in enough large volumes to support the sales events of the superstore for that particular non-premium product unit U(s)np.

Therefore, the discount price of non-premium product U(s)np in the short run is controlled by the price of these three core variables of the superstore supply chain given as, PU(s)np =Pm +P(r)np+PI, (1.27)

where Pm is the price of manufactured unit, Pr(np) is the price of raw materials to produce this unit, and PI is the price of mineral extraction including landing right and royalties to produce the raw materials to manufacture unit U(s)np.

The price of raw materials, P(r)np, with its all components including the price of land, mining rights, etc., in equations 1.24 through 1.26, is the main variable that guarantees the discount price in an economy pricing, based on the whole supply chain of the product. The extraction of raw materials is controlled by large corporations that have their operations located in third world countries where the varies component of the selling price of a raw material, P(r)np, such as direct and indirect labor, profit margin, variable and fixed overhead, mining rights, etc., are much cheaper compared to industrialized countries, otherwise there will be very difficult to support the three-level push-demand that is the base of the economy pricing of the large discount superstores. Below we have a graphical presentation of the push-demand on the supply side and NMP curve.

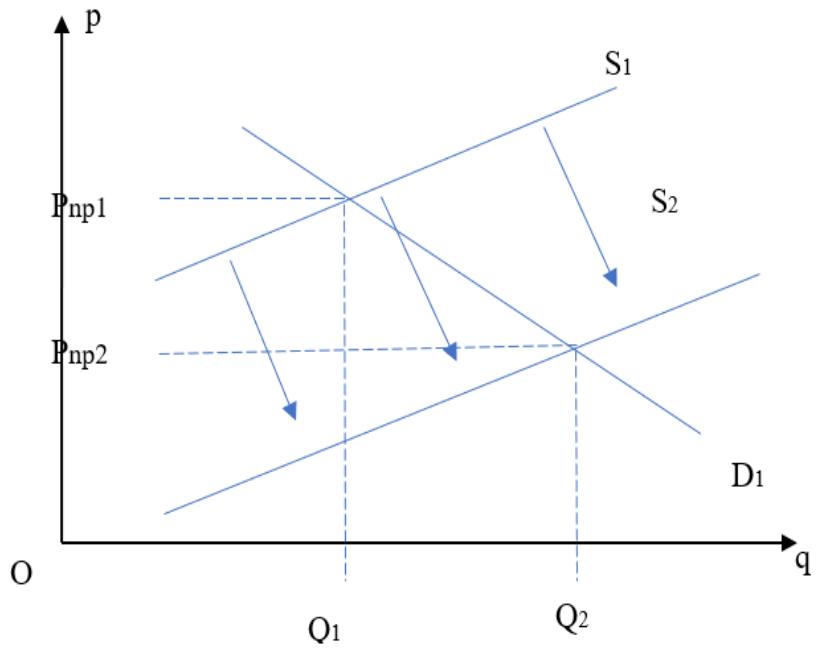

Fig.1.1 The Demand-Push on The Supply Side in Economy Pricing of Non-Premium Products

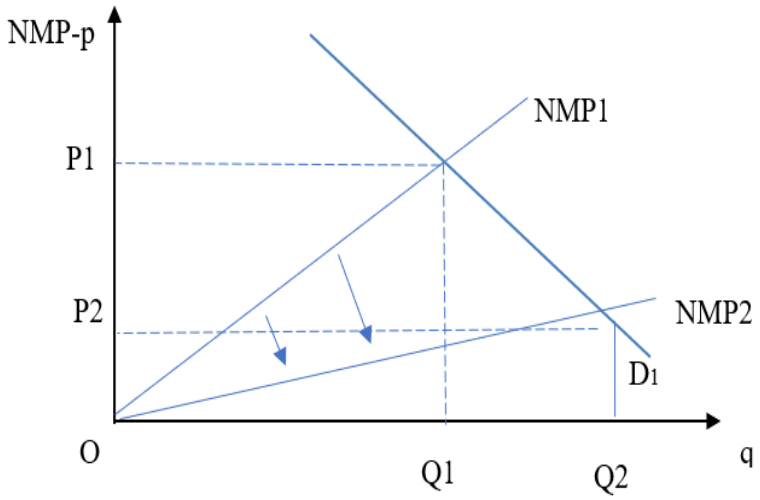

Fig. 1.2 NMP Curve and The Demand-Push on Supply Side in Economy Pricing

Figure 1.1 above illustrates the push-demand on the supply side which consist of using the push marketing strategy to promote non-premium products by pushing them onto consumers at discounted prices. A manufacturing company that sells non-premium products to big box superstores during sales events will reduce the price from Pnp1 to Pnp2 and move the supply curve from S1 to S2, increasing substantially the quantity of non-premium products offered from Q1 to Q2. In addition, reducing price of non-premium products from Pnp1 to Pnp2 will also help reach the volume sales target that use the push market strategy as far as it keeps current ratio >1 and NMP > 1 in the company's balance sheet.

Figure 1.2 instead, illustrates the (Net Monetary Position) NMP-p curve and the demand push-promotion on the supply side in economy pricing. The company will be pushing the demand curve D1 onto customers to buy the non-premium product at discount price P2 (compared to regular price p1) so it can reach the volume sales target Q2 where the slope of the NMP2 is much lower than the NMP1 with a lower current ratio and lower profitability, to stay competitive in the market. If the firm does not lower the price of non-premium goods from P1 to P2 during sales events, then there is no guarantee that this firm will be competitive as other firms may jump in to offer their own sales events to try increase their market share. Therefore, the equilibrium point to guarantee competitive pricing for non-premium product is at the intersection of NMP2 curve with demand curve D1 at price P2.

The three-levels of demand push-promotion model is in a certain way dissimilar to Target Costing approach where a company plans for the price points, product costs, and margins that it wants to achieve for a new non-premium product, specifically designed using lower grade raw materials and meeting the minimum government requirement standards to sell in a very competitive market. The three-levels of demand-push model instead uses the existing non-premium designed product and try to save on cost at different levels of supply chain by pushing the suppliers to reduce the price of raw materials if the product is produced and sold in large volumes.

Competitive-Pricing Approach vs Marginal Cost approach

Marginalism outlines both an economic method of analysis and a theory of value. Based on this theory, rational individuals can make economic decisions "on the margin". This economic behavior, as explained by marginalists, is based on the value of the commodity, and is determined by how much additional utility an extra unit of a good or service provides [11]. Marginalism tries to explain the inconsistency in the value of goods and services by referring to another concept which their secondary value is, or marginal utility.

The interpretation of marginal utility has been commonly described by economists as utility being quantifiable, which means that different levels of utility could be compared along a numerical scale. We have a positive marginal utility when the consumption of an additional item increases the total utility, and a negative marginal utility when the consumption of an additional item reduces the total utility. Part of the marginalism theory is also the marginal cost, that is, the change in the total cost that arises when the quantity produced is increased by one unit. In simple terms, the marginal cost is the cost of producing one more unit of a finished good.

At each level of production, marginal cost includes variable costs such as the cost of inputs, labor, and variable overheads to produce the next unit of the finished good [12]. At a given production technology, at each level of production and during a certain accounting period, the marginal costs include all costs that vary with the level of production, meanwhile other costs that do not vary with the level of production are fixed costs and hence not part of marginal cost.

In a marginalism world we have that profit is a function of revenue and cost. Therefore, the necessary condition for profit maximization is by setting the derivate of $\Pi(q) = R(q) - C(q)$ with

respect to output equal to zero, and we get the following:
(dπ(q'))/dq=(R(q'))/dq-C(q^')/dq=MR(q^')-MC(q^')=0 (1.28)
The derivate of cost with respect to output, dC(q)/dq=MC(q), is its marginal cost. Equation (1.28) says that a necessary condition for profit to be maximized is when the firm set its quantity at, q', where the difference between firm's marginal revenue and its cost is equal to zero, or when marginal revenue equals its marginal cost. The profit will be maximized at q', if the second-order condition holds,

$$\frac{d\pi^2(q')}{dq^2} = \frac{d^2R(q')}{dq^2} - \frac{d^2C(q')}{dq^2} = MR(q') - MC(q') < 0 \qquad (1.29)$$

which means that for profit to be maximized at q', the slope of the marginal curve, dMR/dq, must be less than the slope of marginal cost curve, dMC/dq.
There is also a more realistic approach than the marginal cost approach which is more associated with management accounting. Determining the cost of a product or service is an important approach in management accounting as it allows management to determine how profitable a product or a job is. In management accounting world instead, we have that Operating income (OI) is given as the difference between firm's total revenue and firm's total cost composed of different components and is written as,
OI = R – DM – DL – (VOH+VExp) –(FOH+FExp) = NMP (cr) > 1 (1.30)
where R is the revenue, DM is the direct material, DL is the direct labor, VOH is the variable overhead, VExp is the variable expense, FOH is the fixed overhead, and FExp is the fixed expense. In addition, NMP is the Net Monetary Position of the Balance Sheet of the firm and cr, stands for current ratio.

The operating income of the firm (OI) will also equal the quantity of units sold to break-even plus an estimated target profit. Equation (1.30) can be written as,
OI = R – VC-FC = NMP (cr) > 1 = (Qbt)Break-even+Target profit (1.31)
where VC= DM – DL – (VOH+VExp) include all variable costs with direct material (DM), direct labor (DL), variable overhead (VOH) and variable expenses (VExp), and FC=(FOH+FExp) include all fixed costs with fixed overhead and fixed expenses and Qbt is the quantity of units sold to break-even plus a target profit to achieve an estimated positive budgeted operating income as required by management.

In a competitive and multi-product market where the economy pricing is dominated by a competitive number of players that sell premium and non-premium products, we have two cases 1-) In the first case scenario, a firm that produces multi products such as one non-premium product which is sold at discount most of the times (higher frequency, between 50-90%) and one premium good sold at much higher price for a determined segment of the market. The firm will maximize the operating income by covering variable costs with the revenue generated mostly from non-premium product and cover the rest of variable costs and fixed cost with the revenue generated mostly from the premium product, during a regular fiscal period. Therefore, the (high frequency) operating income (OIhf) of a multi-product firm manufacturing premium and non-premium goods, with high frequency of discount price of non-premium products is given as.
OIhf = (Rnp –VCnp-FCnp)+(Rp-VCp-FCp) = NMP (cr) > 1 = Qbt for 60% <Pdisc=NPprob < 90% and 10% <Preg=NPprob < 30% (1.32)
where Rnp is the revenue generated from non-premium product that cover its variable costs indicated as VCnp, and Rp is the revenue generated from the premium product that cover its variable costs VCp and the fixed cost of the whole company given as FC. The NMP is the net monetary position and Qbt is the chosen output for the firm to break-even for both premium and non-premium products to reach a desired target profit for the operating income to be positive as required by management.

The firm operates on a very competitive market and is assumed to have a relatively small volume of the premium product and a large volume of mass manufactured non-premium product, denominated as NPprob in equation above which is part of revenue Rnp and has a high frequency, between 60% and 90%, of selling at discount price, Pdisc, during the year bringing a much lower operating income and profit. The high frequency of discount price of the non-premium product is the price to pay if the company is a new entrant or wants to survive in a very competitive market made of new aggressive entrants seeking to capture the market share.

2-) In the second case scenario, we have a firm producing multi product-mix composed of premium and non-premium. The non-premium output is sold at discount price with much less frequency (between 10-30%) and the premium commodity is sold at higher price for a high-end segment of the market, bringing in a high level of operating income which covers variable costs and part of the fixed costs with the revenue generated from non-premium products and cover the rest of the fixed cost with the revenue generated by high-end premium products. Hence, we have that the operating income (OIlf) of a multi-product firm manufacturing premium and non-premium goods, with low frequency of discount price of non-premium products is given as,
OIlf = (Rnp –VCnp - FCnp)+(Rp-VCp-FCp) = NMP (cr) > 1 = Qbt for 10% <Pdisc=NPprob < 30% and 70% <Preg=NPprob < 90% (1.33)
where Rnp is the revenue generated from non-premium product covering its variable costs given as VCnp and fixed costs given as FCnp. Meanwhile, Rp is the revenue generated from the premium product which is able to cover its variable costs, VCp, and the other portion of the fixed cost, FCp. In this case, the non-premium product NPprob, which is part of the revenue Rnp will sell less frequently at discount price Pdisc in the range of 10% -30% and will be able to cover both, its variable and fixed cost. The regular price of non-premium product NPprob, (included in Rnp) will have a higher frequency of regular price Preg in the range of 70% -90% and which help cover all costs.

The firm in the second scenario will have a higher profitability than the firm in the first case scenario which was operating in a much more competitive and dynamic market. In the second scenario the market is less competitive and there are less new

entrants due to higher fixed costs and investments. The marginalism approach says that a necessary condition for a firm to maximize its profit is to set its quantity at, q', where the difference between firm's marginal revenue and its cost is equal to zero, or when marginal revenue equals its marginal cost. Instead, using the competitive-pricing approach, the condition for a firm to stay competitive (not always maximizing profit) is to have multi product-mix setup categorized by premium and non-premium products to help reach a positive net monetary position (NMP) and choose the quantity of output of both premium and non-premium product-mix to break-even and hit the desired target cost and profit.

Conclusion

In a globalized world, the economies of advanced countries have entered a new phase called "economy pricing", where most of the mass commodities are sold at low price during certain periods of the year, called 'sales events', due to decreased production cost thanks to enormous technological progress, high capital mobility, huge improvements in transportation and infrastructure, a better global supply chain management and low commercial barriers. An increasing number of push and pull demand/supply strategies used for different mass-produced commodities have helped many economies stay on the economy pricing phase.

The theory of the firm is one of the main concepts in modern microeconomics. We have been dealing with different concepts of the firm theory related to the economy pricing, where a firm operates in a very competitive market and produces multi-outputs. A firm effectively can use the production capacity utilization in a dynamic and competitive market. A firm can a reach a production capacity utilization of about 70-80% if it uses tactically the sales-event pricing strategy of the non-premium products in a combination with the pricing strategy of the premium products. In fact, by reaching the threshold of 70-80 % production capacity utilization the firm will be able to easily cover all total variable and fixed costs and reach the sales target which makes it generates a stable cash flow and stay competitive in the market.

We have also seen that in the volume-based analysis and profitability the strategy chosen by companies to sell their products differ in many ways, depending if the output is intended for the low-end, high-end market or in between. The strategy of manufacturing and selling non-premium products is to increase the volume and production capacity utilization to generate enough cash and accounts receivables that would be used to produce premium products at a higher cost, and which are more profitable.

On the supply side the firms operating in economy pricing must adjust to the multi-product pricing strategy and the rules of discounts and promotions to survive in a competitive market. These firms must manufacture two types of products - premium and non-premium - to make them competitive and at the same time profitable. The firms will maximize the value of the company if their Net Monetary Position (NMP) during intra-periods and at the fiscal year is greater than 1, by using a combination of different pricing strategies during sales events for their premium and non-premium products.

The three-level of demand push-promotion model is another effective strategy used in economy pricing by large discount superstores to make their non-premium products competitive. This model shows how each level of the supply chain of the final product is designed to push the demand onto final customer by reducing the price at each stage of production, from the superstore to the manufacture of non-premium products and to the supplier of intermediate subassemblies and raw materials used to manufacture the non-premium products. The system of three-level demand-push creates significant discounts for final consumers during the sale events keeping at the same time inflation at low levels.

We have also seen that in a competitive and multi-product market the economy pricing is dominated by a competitive number of players that sell mostly non-premium products. There are two case scenarios depending on the frequency of the discount price of the non-premium product. In the first case scenario there is a firm operating in a competitive market which has a non-premium product (or a range of non-premium products) sold between 60% and 90% of the times at discount price generating a much lower operating income and profit. In the second case scenario there is a firm that commercializes non-premium product which sells less frequently at discount price (between 10% and 30%) and will be able to cover both, its variable and fixed cost. This firm will have a higher operating income and profit than the firm in the first case scenario which was operating in a much more competitive and dynamic market. The firms competing in a cannibalized marked will be successful if they are able to have the right combination of premium and non-premium products to generate enough profits to have a current ratio > 1.

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