Mark-up Mechanism

Subjects: Others
Contributor: Kah Seng Lee

A mark-up is defined as the additional charges and costs that are applied to the price of a product for the purpose of covering overhead costs, distribution charges, and profit.

Keywords: mark-up mechanism ; pharmaceuticals pricing ; health economics ; pharmacoeconomics

1. Introduction

the implementation of pricing policies in the pharmaceutical distribution chain might include the regulation of wholesale and retail mark-ups and pharmaceutical remuneration. The manufacturer's selling price is the price of a product defined by its producer, and this is also the initial price of the whole supply chain. Distribution costs and the wholesaler's mark-up are the overhead costs applied on top of the manufacturer's selling price. Following that, retailers add their own expenses to cover procurement and marketing costs. The add-on price is then known as the retailer's mark-up. The reason for putting mark-ups at various levels is to measure the supply and demand of a product in the market. When the price is higher, producers are motivated to produce more, hence boosting product sales. However, unchecked mark-ups could bring the flow of supply to a standstill if the majority of end-users cannot afford to buy the products. If mark-ups are regulated, countries are highly recommended to use regressive mark-ups rather than fixed percentage mark-ups [1][2]. Regressive mark-ups mean lowering the mark-ups for higher-priced products. The fixed percentage mark-ups are less favourable, as they might contribute to a higher net margin for the higher-priced products and increase the price of low-cost drugs. The procedures for calculating and regulating the size of mark-ups range from 0% mark-up allowed until more than 100% mark-ups. This proves that a single model does not suit all countries and must be modified according to the setting. With the implementation of regressive mark-ups policy, many countries found it beneficial to stop excessive charges being added to medicines as they pass along the supply chain. However, this policy requires a strong strategy of enforcement by the government as well as high-level political support to make sure it is efficient to control the drug price [3][4][5].

Pharmaceutical price control measures are the mechanism used by low- and middle-income countries to keep drug prices in check while increasing affordability. In fact, analysis shows that even with the same policy, market differences between low-, middle-, and high-income countries can lead to significantly different results. According to economic theory, if the marginal cost does not change, the market reaction to price cap adjustments is an increase in supply. The cost of supply chains to rural areas is particularly high due to the lack of densely populated towns and cities, paved roads and other necessary infrastructure. However, increasing marginal costs can obscure the market's reaction to price cap adjustments and reduce market supply. The impact is especially severe if the law significantly reduces market-level supply, as in this case companies are most likely to withdraw their products from rural areas, and so health services become unavailable in these areas. Nevertheless, every policy has advantages and disadvantages once it has been implemented. The regulation of mark-ups in the absence of any price control strategy causes medicine prices to drop. Plus, the implementation of this policy is less complicated as compared to the other available options because it only needs minimal information about the price of goods and the supply chain along with some enforcement capacity [6]. On the other hand, this policy may have a negative effect on availability and access through price fluctuation. Other than that, there would be a risk of higher prices if the development of the mark-up structure lacked transparency.

2. Interplay of Medicine Pricing and Supply Chain Mechanism

2.1. Pharmaceutical Price Components

The final selling price of a drug is made up of several price components, one of them being the manufacturer's selling price (MSP). MSP comprises freight costs, tariffs and taxes by the local government, overhead costs, procurement costs, and other expenses. These processing fees are significant; in certain cases, they can even exceed 100% of the production cost of a drug. Other than MSP, each level in the pharmaceutical supply chain has its own costs which

ultimately accumulate on the price of the medicine. In this context, each and every price component overlaps on the base (MSP) on which the subsequent costs are levied. When a small price component is imposed, its effect is multiplied across the supply chain, contributing to a significant price increment. Therefore, it is crucial for governments, non-government organisations (NGOs), and social insurance scheme providers to revise a plan to regulate these price components. Actions should be taken to reduce the selling price of medicines, increase the efficiency of medicine distribution systems, and ensure the reliability of international price comparisons if external reference pricing is used.

As every country has its own pharmaceutical policies, the price components vary as well. In some countries, policies that restrict price mark-ups on certain types of drugs are in place to ensure affordability. Others might introduce tax exemptions or tariff discounts, or distribute originator brand and generic drugs through different channels. In general, a pharmaceutical supply chain could consist of the following price components:

- MSP
- Insurance and freight
- Port and inspection charges
- Pharmaceutical import duties
- Mark-ups by importers, wholesalers and retail distributors
- Value Added Tax (VAT)/Goods and Services Tax (GST)
- Dispensing fees

Five stages in a pharmaceutical supply chain can be identified in order to clarify the impact of price components:

Stage 1 focuses on MSP, which includes insurance and freight costs. For locally produced medicines, Stage 1 cost is the MSP for the recommended or surveyed pack size, coupled with the logistic costs when the medicine is transported using domestic transport to the procurement unit. For imported medicines, the Stage 1 cost is the MSP plus international cost, insurance, and freight (CIF).

Stage 2 discusses the landed price, which is the sum of all other price components charged on procurement and delivery. The landed price comprises banking fees for foreign currency transactions, inspection costs (either pre-or post-shipment), port fees (docking, storage, handling, in-port insurance), customs clearing, import tariffs and importer’s mark-up. Any fees collected by the central authorities are included in the landed price. The landed price also includes logistic costs such as local transport charges to the purchasing warehouse, the importer or the wholesaler. However, when the stock leaves the purchasing warehouse, the landed price does not take domestic storage and distribution costs into account.

Stage 3 involves the wholesale price, which is compounded on the landed price. The additional costs come from the wholesaler’s overheads such as quality control fees, storage and warehousing costs, handling costs, profit margins, and distribution costs to retailers. Many of the price components might already be included in the wholesale mark-up, so they should not be counted twice.

Stage 4 highlights the retail price. The retailers’ (hospitals, GP clinics, pharmacies) selling price is based on the wholesale selling price, added with the retailers’ expenses: storage, handling, overhead expenses and profit margin. Similarly, care should be taken so that these price components are not duplicated.

Stage 5 is the dispensed price. The dispensed drug price is the sum of Stage 4 price and dispensing fees and taxes (VAT or GST), whichever are applicable. Where there is no dispensing fee or sales tax, Stage 5 costs will be voided and the Stage 4 price will be the final selling price [7].

2.2. Pharmaceutical Supply Chain

A typical pharmaceutical supply chain is formed by one or more of the following:

- Primary manufacturing (possibly including contractor sites);
- Secondary manufacturing (possibly including contractor sites);
- Market warehouses/distribution centres;
- Wholesalers; and
- Retailers/hospitals.

The majority of the constitution of a pharmaceutical supply chain can be studied through three main processes: manufacturing, distribution, and retailing [8].

Manufacturing of the medicine: The supply chain begins at the manufacturing stage. Before a pharmaceutical company is allowed to produce a drug, sufficient research and development work has to be performed prior to regulatory approval. After going through a series of manufacturing and quality assurance processes, a medicine is eventually ready to be commercialised and released into the market. Each type of drug has to comply with specific steps and requirements, which differ according to country, before it can be launched into production.

Distribution to the dispensing point: The second process involves the transportation and handling of the medicine from the manufacturer to the retailer. A retailer can be a hospital dispensary, retail pharmacy, hospital or dispensing doctor. In some cases, the ministry of health (MOH) can be the sole retailer of drugs in the whole country. The distribution of drugs can be complicated as it largely depends on the manufacturing company's location, the urgency of the drugs, handling requirements, and most importantly the location of the retailer since the difficulty to access the area can vary between cities and more rural areas.

Dispensing to the end-user: After the drugs are transported to the retailer, a retailer has the responsibility to dispense the proper dosage and form of drugs to the end-users. The act of providing medicine supply is the final step of a pharmaceutical supply chain. In addition to dispensing drugs, this final step also involves after-sales services such as providing the correct information to the end-users and processing reimbursement claims, so as to ensure the end-users fully benefit from the product they purchased.

2.3. Private Sector Supply Chain

The traditional private sector pharmaceutical supply chain is illustrated in Figure 1, whereby the supply chain starts off with the manufacturer or importer of the drug, who is responsible for producing the drug locally, or importing the drug from other countries. The drug will later be sold in bulk to a wholesaler, who also functions as a distributor. A wholesaler sources a wide range of drugs from multiple manufacturers/suppliers. In cases where the drugs are originated from other countries, a wholesaler sometimes conducts the drug imports themselves. The next step of the supply chain is followed by retailers who obtain the drugs from wholesalers in smaller quantities. Retailers can be private hospitals and clinics, private pharmacies, or other government-approved sellers.

Figure 1. Traditional supply chain for medicines in the private sector.

The private sector supply chain functions the same way as the general pharmaceutical supply chain. However, to meet current market conditions and marketing strategies, many countries have taken the initiative to modify the traditional distribution model. The alternative supply chain model is shown in Figure 2 where only one and/or two may be in operation, depending on the market situation. As shown in Figure 2, manufacturer a sells directly to the retailer and manufacturer B has an exclusive distribution agreement with Wholesaler 1, who is a dedicated short-line wholesaler which carries limited products from manufacturer A. Manufacturer C does not make products available to wholesalers, unlike manufacturers D and E who welcome most wholesalers. Wholesaler 2 may sell on to other wholesalers or on to retailers whereas Wholesaler 4 not only sells to retailers but also directly to patients. To further elaborate this, some manufacturers have made their products exclusive to certain wholesalers or distributors. Likewise, some wholesalers may carry the full range of available stock (full-line or fully-sorted wholesalers) while others may only be able to access certain products or certain manufacturers (short-line wholesalers). Full-line wholesalers may require assistance from primary stockholders and/or short-line wholesalers to make sure they are able to procure and manage the large inventory that full-line wholesalers would have to carry and put into distribution. When facing geographically challenging distribution lines, a series of wholesalers may have to come together in order to supply the products to retailers and end-users.

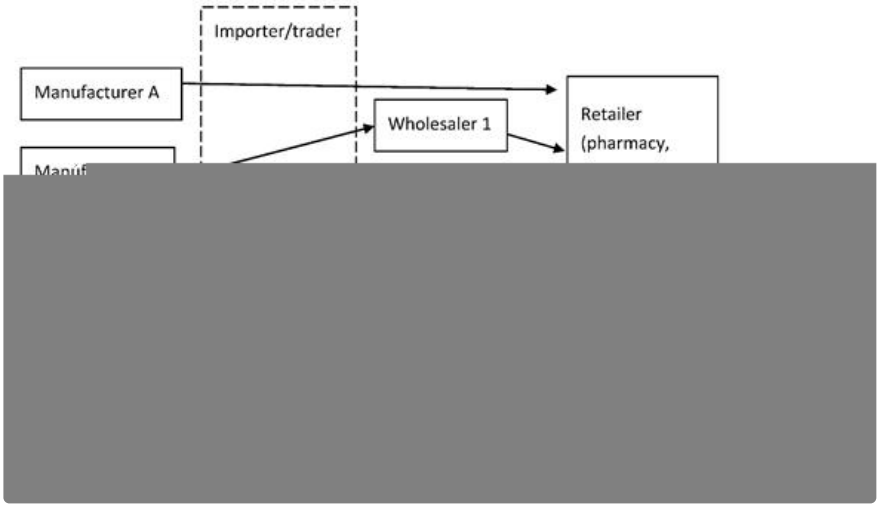

Figure 2. Pharmaceutical supply chain models in private sector.

The mark-up mechanism usually appears in retailer-dispenser and dispenser–end-user relationships. A mark-up fluctuates whenever commercial practices involving discounts and rebates are in place. The presence of price mark-ups creates competition between supplier and buyer weighing on the quantity purchased or sold. To stimulate more purchases by wholesalers or retailers, suppliers often use various marketing mechanisms such as cash rebates, volume discounts, and bundle sales. When the buyer offers to make their sales data available for suppliers' access, or make early payments, additional discounts may be provided in order to increase the margin of the buyers. However, the discounts could be recovered by the supplier through improved sales, higher cash flow or improved business intelligence. By doing so the supplier also decreases the transparency of the actual selling cost of a product, especially with rebates where the invoiced price does not equal the actual payment that will be made back to the buyer by the seller [9].

Within the healthcare industry, the pharmaceutical supply chain has to be properly managed to ensure the smooth operation of health services. Cost-wise, drug supply is estimated at 25% to 30% of the overall operational costs for hospitals. The primary manufacture is in charge of the active ingredient present in the product. When producing different products, the production line has to go through long downtime in order to perform decontamination procedures. Therefore, mass production is effective to offset the lost time. In secondary production, the manufacturer receives the products (drug tablets and capsules) which have been converted from the active ingredients. In conjunction, the number of product lines can be increased to boost production capacity.

To release the finished products into the market, the distribution method could vary depending on the market demand. The dominant intermediary (middleman) is called the wholesaler. In the United Kingdom, approximately 80% of volume supplied by the manufacturers flows through this channel. When there is a large demand, such as from hospitals and retailers, shipments could be received directly from the manufacturer distribution centres. Group purchasing organisations could help consolidate the requisition of drug supplies for hospitals.

3. Supply Chain and Medicine Pricing

In most pharmaceutical markets, the distribution of drugs is carried out by distributors/importers and wholesalers. They are the intermediaries between manufacturers and retailers to ensure the market can receive a smooth supply of medicine. For imported medicines, extra steps should be taken as the logistics of supplying the drugs into a country are often complicated due to international regulations and the country's own policies. The complexity associated with the procedures and parties involved differs based on the product itself, market demand, and distribution strategies [8].

Logistical planning is one of the major challenges faced by distributors when supplying a myriad of pharmacies with pharmaceutical products obtained from a large pool of manufacturers within a short time. Distributors have to comply with certain distribution standards to ensure the handling of pharmaceutical products meets the retailers' requirements, and at the same time to prevent misconduct that would result in potential losses. In other words, a distributor's functionality is to provide distribution services to its clients by first investing in inventory management. Typically a distributor holds a few months' worth of inventory which means inventory costs such as warehousing, capital, and potential obsolescence. In cases where the distributor is also a wholesaler, it has to bear additional expenses coming from interest imposed and risk of delayed repayment or, at worst, default. In Kenya, for example, importers often refuse to deal with domestic currency. Therefore, when purchasing products from manufacturers, the financial cost of acquiring foreign currency and losses when the exchange rate is unfavourable are some of the challenges that distributors have to face [8]. The income of distributors typically comes from payment by a regulated margin as a fixed percentage of the procured price. In some

countries, a lower percentage is applied to higher priced stocks, thus resulting in a regressive margin. In some markets with a regulated or fixed margin, manufacturers may provide discounts while others may be prohibited from doing so, depending on their policies. A discount may be given when wholesalers can influence the sale of a product, especially when the product is a generic drug. The act of giving a discount has transformed into a “fee-for-service” model in some countries to encourage marginal negotiation between manufacturers and distributors [8].

While a wholesaler’s primary objective is to meet the market demand, which is often unpredictable and ever-changing, a wholesaler also has to assist retailers to prevent them from holding excessive inventory. Furthermore, a wholesaler aims to provide sufficient working capital for retailers to ensure they have the capability to purchase the stocks before receiving payment from end-users. To meet the objectives above, some wholesalers provide a series of commercial supports to help stabilize pharmacies’ businesses. The assistive supports include retailing management, sales training, accounting management and relevant business-related training [8].

References

1. Singal, G.L.; Nanda, A.; Kotwani, A. A comparative evaluation of price and quality of some branded versus branded-generic medicines of the same manufacturer in India. Indian J. Pharmacol. 2011, 43, 131–136. [Google Scholar] [CrossRef]
2. Suh, G.-H. High medicine prices and poor affordability. Curr. Opin. Psychiatry 2011, 24, 341–345. [Google Scholar] [CrossRef]
3. Tian, W.; Yuan, J.; Yang, D.; Zhang, L. Descriptive Analysis on the Impacts of Universal Zero-Markup Drug Policy on a Chinese Urban Tertiary Hospital. PLoS ONE 2016, 11, e0162795. [Google Scholar] [CrossRef]
4. Bangalee, V.; Suleman, F. Evaluating the effect of a proposed logistics fee cap on pharmaceuticals in South Africa—A pre and post analysis. BMC Health Serv. Res. 2015, 15, 522. [Google Scholar] [CrossRef] [PubMed]
5. Ewen, M.; Kaplan, W.; Gedif, T.; Justin-Temu, M.; Vialle-Valentin, C.; Mirza, Z.; Regeer, B.; Zweekhorst, M.; Laing, R. Prices and availability of locally produced and imported medicines in Ethiopia and Tanzania. J. Pharm. Policy Pract. 2017, 10, 7. [Google Scholar] [CrossRef] [PubMed]
6. Khan, M.; Ullah, R.; Khan, A.; ur-Rahman, N.; Khan, S.; Riaz, M. Assessment of Prescriptions in the Endocrinology Department of a Tertiary Care Hospital in Pakistan Using World Health Organization Guidelines. Adv. Prev. Med. 2020, 2020, 3705704. [Google Scholar] [CrossRef]
7. Raju, P.K.S. Chapter 6.2—WHO/HAI Methodology for Measuring Medicine Prices, Availability and Affordability, and Price Components. In Medicine Price Surveys, Analyses and Comparisons; Vogler, S., Ed.; Academic Press: Cambridge, MA, USA, 2019; pp. 209–228. [Google Scholar] [CrossRef]
8. Aitken, M. Understanding the pharmaceutical value chain. Pharm. Policy Law 2016, 18, 55–66. [Google Scholar] [CrossRef]
9. Espin, J.; Rovira, J.; Labry, A.O.d. WHO/HAI Project on Medicine Prices and Availability; Andalusian School of Public Health: Granada, Spain, May 2011. [Google Scholar]