CHAPTER 2

LITERATURE REVIEW

There is no previous study which assesses empirically the impact of economic crisis or changes in foreign exchange rates on drug prices in Thailand. Literature review in this study is divided into four parts. Part one focuses on characteristics of the pharmaceutical industry providing concept of drug price setting. Part two deal with drug price and price control in Thailand. Part three focuses on drug procurement in public hospital. Part four reviews the situation of pharmaceutical industry under economic crisis in other countries.

2.1 Characteristics of Pharmaceutical Industry

Several papers reviewed (Graboski and Vernon, 1979; Kucukarslan, 1996 ; Weston, 1979) suggested that pharmaceutical market posses certain characteristics in terms of price setting, entry conditions, single and multiple source of drugs as follows.

1. Price competition does not exist for patented product. Product patent is the principal factor or relatively strong vehicle of protection from competitive suppliers. Once a product patent has been granted, a rival firm cannot supply the identical compound without fear of legal proceeding. Patent holders have a monopoly power on the supply and control of the price of patented products. This type of drug can be called single-source drug.

A leading patented product has an element of uniqueness but no product is completely unique in a long-run extent. Once patents expire, small firms are able to

enter into the market. Product imitations and product substitution result in high cross elasticity of demand over broad groups of drugs. There is a price competition among array of competing drug. This competition results in a downward trend in the prices of new drugs in the years following their introduction. These drug prices compete over their life cycle with prices of other drug over their life cycle. Patented drug products compete in terms of product differentiation.

2. Brand name drug manufacturers differentiate their products to prescribe by advertising and by R&D that results in chemical manipulations of existing products. Larger firm posses economie of scale in marketing and R&D that prohibit revelry from smaller firms. Advertising brand-name products is effective for drug manufacturer to capture market share and to retain it after patent expiration because the decision-maker in the drug selection process is the physician rather than patient. It is generally maintained that doctor's decision in this regard are most directly influenced by consideration of product quality and reputation of manufacturer and only secondarily by a product's price. Evidence demonstrated a difference in price between generic and brand name products. Original pharmaceutical manufacturers also try to keep physician familiar with their own names and the merits of their products including comparative advertisement with generics, arguing the inferior quality of their competitors. Generic drug manufacture argued that they were unable to complete through similar promotional companies because the capital required.

3. Brand-name pharmaceutical prices are unrelated to production cost. New products are introduced at price comparable to those of competitor's products or of products in the same therapeutic category; prices are not based on production cost or R&D costs. When drugs are firstly introduced to the market, pricing decision depends on the firm's goals and there are two strategic pricing concerns as follows

3.1. Penetration Pricing

The objectives of penetration pricing are to build market share and earn profits from future repeat sales. The effect on the target sales analysis is to require a much greater volume of sales and market share to achieve long-term profit goals.

For example, an analysis of pricing policy in the introduction of the benzodiazepine tranquilizers. Roche adopted low prices Librium and Valium to gain a large market share. Furthermore, the price was so low that other innovators were unable to introduce alternative compounds at comparably low prices.

3.2 Price Skimming

Price skimming is the alternative strategy to price penetration. The objectives are to generate the large margin, segment the market and prevent pricing mistakes by setting low price. Seller price skims by launching a high-priced targeted to the segment that mostly values the product. After the initial sales boom to this segment levels off, the company launches a lower priced model targeted to the segment who also values the differentiation but who is not willing to pay as much for it as the first segment did. Once sales to this segment level off, the company introduces an even lower priced model. When firms use a high price relative to cost, price often assumes a passive role in the market of the new product.

For example, over the longer period of time there was a general decline in prices of both the patented and unpatented drugs in antibiotic groups. It is indicates the role of declining prices after an initial policy of price skimming was adopted.

4. When drug patent expires, smaller firms are able to enter the market. It was demonstrated that these small firms sold their product at a fraction of the price charged by the brand-name manufacturers. Thus, it was concluded that production costs do not prohibit entry into the market-patents do.

Although the pharmaceutical industry comprises more than 10,000 companies worldwide, no more than 100 companies, the large research and development-oriented firms, have a significant share of international market, and over the years they have tended to remain the market leaders. One important factor to success in pharmaceutical industry is pharmaceutical research and development. Advantages of large scale in research and development are a postulated source of entry barrier in the literature. These stem in considerable of new product. It is importance of new product competitive in pharmaceutical market. High cost and risk can be important entry barriers to small firm with small resource bases or to firm without expertise in drug R&D. For instance, the cost per case in the typical clinical phase III protocol for the treatment of chronic cares disease ranges form $5,000 to $ 10,000. The most figures on the cost of development borne by marketed new chemical entities are fixed at $231 million dollars (Jackson, 1996:359-386). Cost that have driven up R&D cost to this value are out-of pocket costs, cost of capital, and cost of failure drugs--cost of the research for useless new chemical entities (NCEs).

Once a company can enter the pharmaceutical market, it is very difficult to become the leader of the market due to many factors such as the patent, risk in the R&D, the competitors etc. The type of pharmaceutical market that has few producers or sellers is the oligopolistic market, which does not have perfect competition among the firms. Prices in this market depend on many factors in the health system such as

numbers and types of competing products, classes of physicians who are the most likely prescribes, daily dose quantity etc. The theory of price setting can be called game theory which does not have the exactly pattern of price determination.

2.2 Drug Prices in Hospitals and Price Control in Thailand

Hospitals in Thailand purchase drugs at greatly varying prices depending on the negotiation on individual purchase order. The Health System Research Institute examined purchasing price of 40 items of drugs by sampling in the MOPH hospitals in 1996. It was found that drug procured in the hospitals had wide ranges of price. For instance, prices of Cimetidine 400 mg.(film coat) 500 tablets per package were 250 baht to 6,600 baht which are twenty-six folds. Even though drugs were procured from the same company, the prices were different and the range of the price was 250 baht to 740 baht. If many hospitals in the province were joined to procure and negotiate the price together known as provincial collective bargaining system, the range of price of Cimetidine 400 mg. tablets would be 250 baht to 290 baht. (Viroj Tangcharoensathien, Chongkol Lertthiendamrong and Vit Kaseamsupt, 1997)

Suree Haengjitrakun (1997) analyzed costs analysis of Non-Steroid Anti-inflammatory drugs (NSAIDs) comparing pubic and private hospital. Data on price and amount of all the items of NSAIDs used during 1994 to 1996 were collected from 18 public hospitals and 4 private hospitals. The results showed that costs or the purchasing prices of NSAIDs per case per day had negative relationship with the proportion of essential drugs used. That is purchasing prices of NSAIDs per case per day were lower in the hospitals using higher proportion of NSAIDs falling in the national essential drug list. Purchasing prices of essential drugs were lower than non-essential drug prices. The prices during 1994 to 1996 were insignificantly different.

Average purchasing prices by public hospitals were lower than of private hospitals about 25.71 percent. In the government hospitals, purchasing prices of NSAIDs per case per day ranged from 1.65 to 9.50 baht per case per day. From this study, it could be concluded that proportion of procurement according to the national drug policy in the government hospitals had an effect on cost or purchasing prices of drug in the hospitals.

Nusaraporn Tatiyapaiboon (1995) found that antibiotics market was not purely competitive and the price competition was intensive. The overall success of generic drug use was quite limited. Most of the branded drug manufacturers were the market leaders even after the patent life of the leading brands had expired. Price discrimination among the generic drugs and branded drugs existed. Competition in the antibiotics market was a non-price contest. She also estimated the elasticity of substitution of branded drugs by generics, considering in the 3 types of markets, which are no substitution between different sub-therapeutic class of drugs, perfect substitution between different sub-therapeutic class of drugs, and substitution among group of drugs classified according to patent life. The study demonstrated that elasticity of substitution of branded drugs by generic drugs was quite low that has shown greater competition and lower levels of concentration. Elasticity value of generic substitutions was extremely high as shown in the distortion in this industry.

After baht depreciation on July 2nd 1997, prices of drug increases. Viroj Tangcharoensathien, Chongkol Lertthiendamrong and Vij Kaseamsupt (1997) found that prices of drugs made in Thailand increased approximately 12-15 percent and imported ones 15-20 percent at the end of 1997. Adjustment of drug prices was within limitation of Department of Internal Trade, Ministry of Commerce.

Price Control in Thailand

Drug pricing in Thailand is controlled through the following mechanisms. (Suwit Wibulpolprasert, Pornpis Silkavauth and Pisamai Chandhavimol, eds.1995):

1. Market mechanism allowing free competition among generics and competition among drugs under the same category.
2. Direct price control under the Price Fixing and Antitrust Announcement, enforced by the Department of Internal trade, Ministry of Commerce.
3. Medium pricing designated for the sale of essential drugs in public facilities.
4. Patented drug pricing control designated by the committee on Patented Drug appointed under the 1992 Patent Act.

Nevertheless, it should be noted that drug price index is almost always higher than general consumer price index.

2.3 Drug Procurement in Public Hospitals in Thailand

Drug procurement in Thailand is a pluralistic system. Both public and private hospitals purchase a large proportion of their drug supply directly from pharmaceutical companies and the GPO. According to the government rules, drug procurement criteria using National Essential Drug List (NEDL) as a guideline for selection together with the drug quality and price. In the process of procurement in the public hospitals, the Prime Minister Office's Procurement Regulation A.D 1992 in the eight edition, Articles (60-64) are involved in the part of the pharmaceutical and medical product purchasing. Article 60 of The Prime Minister Office's

Procurement Regulation 1992 states that for hospitals under MOPH not less than 80% of budget for drug procurement must be used to purchased essential drugs and 60% for the other public hospitals. Sudaruk Leu (1994) studied about essential and non-essential drug utilization of outpatients in a university hospital, a central hospital and a general hospital in Songkhla in 1993. The results demonstrated that ratio of essential drug utilization in three hospitals did not comply the regulation of Ministry of Public Health. The physician's opinion showed that NEDL did not cover all disease. They felt that freedom of prescription decreased when using NEDL. Another problem found was that the information about NEDL distributed insufficiently in the hospital.

According to the Prime Minister Office's Procurement Regulation A.D 1992, it is stated in the article 61 and 62 that for pharmaceutical and non-pharmaceutical products GPO can produce, government sector has to purchase them from GPO unless GPO's price is 3 percent higher than medium price. If GPO cannot produce, government sector can purchase from any supplier under the conditions as follows:

1. In case of purchase by bidding, the government sector has to inform GPO every time. If the GPO's price is equal or lower than other suppliers, the government sector has to purchase from GPO.
2. The purchase by special procedure or price competition can be done if price is not higher than the medium price set by MOPH

Article 64 : The Ministry of Public Health has the responsibility in issuing the NEDL with the medium price to every government agency and GPO has to inform GPO's drug list according to the NEDL to every government agency as well.

The purchasing regulation describes that government hospitals have to purchase pharmaceutical products with the price equal or lower than medium price issued by Ministry of Public Health. Those medium prices of national essential drugs are set up by using the following information (Subcommittee for analysis of National Drug Policy, 1994):

1. The purchasing prices by government health institutions.
2. The selling prices of any pharmaceutical companies and the GPO.
3. The cost of product structures and structures of price setting.
4. The medium price that was proposed by Thai Pharmaceutical Manufacturers Association (TPMA), Pharmaceutical Producers Association (PPA) and GPO.

Guidelines for the Medium Price Committee to set the medium price are as follows (Subcommittee for analysis of National Drug Policy,1994):

1. For the pharmaceutical products that GPO can produce, the lowest prices from TPMA, PPA and GPO are used to be medium prices.
2. For the pharmaceutical products that GPO can not produce, the mode prices of actual purchasing prices are used to be medium prices. In the case of more than one mode price, the lowest mode price is used to be medium price. Higher mode price can be used as medium price for life saving drugs used in emergency cases to save the life of the patients first such as adrenaline.

The medium prices have been implemented in the public hospitals and many problems were raised as follows:

1. Some medium prices were lower than the market price especially a drug produced by only one firm that had the monopoly power to charge a high price. Therefore, the government health office could not purchase some drugs under that medium price. Moreover, with the lower price the drug companies spent less money improving the standard in manufacturing process called Good Manufacturing Practice (GMP). So this policy may limit GMP development for the firms. Furthermore, the quality of the drug product was still doubtful at the lower price.
2. Some medium prices were over the real market price. For example, the drugs made locally with skeptical quality. This kind of drugs usually had the price lower than the medium price. When the medium price were effective, the firm would increase their price to approximately near the medium price.

The purchasing prices of essential drugs in 10 government hospitals during October 1994 to March 1995 were investigated. Doungjan Pimkaw (1996) found that 78.57 % of mean price, 82.14 % of mode price and 91.07 % of median price were less than the medium price list respectively. At all percentiles 30, prices were less than medium price list.

2.3 Situation of Pharmaceutical Industry under Economic Crisis in Other Countries

After the economic crisis started, in Indonesia, Western drugs and pharmaceutical raw materials have become so expensive in local-currency terms that many types of medicines are disappearing from the market, according to health professionals. The core of the problem is that the country does not have much of an

indigenous pharmaceutical industry. In total, 80 percent of every Indonesian-made medicine is imported. Jakarta pharmacists and hospitals said that they were experiencing shortages of some of the most common drugs. The government is looking at proposals to reduce drug costs by organizing purchasing cartels to import raw materials for drug factories in bulk (Solomon and Baugh, 1998).

Among the Asian nations, Indonesia may be the most unreceptive to foreign investment. All doctors in government hospitals must prescribe generic medicines manufactured by three state-owned producers and bearing the government seal. Foreign joint ventures cannot participate in the generics market, though the government allows them to market "branded generics." Consequently, most of the top companies in Indonesia are domestic. Only Bayer, at number 4, appears in the top 10. Imports represent only 10 percent of the market. A legal loophole, however, allows foreign companies to compete in the generics market through local joint ventures, which capture about one third of the business. Although the government has announced its intention to establish a patent system for foreign products in compliance with international trade agreements, they still remain unprotected. Copycats abound. Moreover, the government setting up a manufacturing consortium for bulk ingredients to decrease its reliance on imports (Koberstein,1990).

In South Korea, foreign companies or multi national companies that currently share only a 10th or so of total pharmaceutical manufacturing may be slowed in expanding market share because of the IMF reforms that are likely to suppress demand (Gopal, 1998).

In Russia, economic crisis has an impact on the pharmaceutical market (worth $3 billion at manufacturers' prices). Pharmacy shelves emptied, as distributors went

bust and importers held back shipments. Spending power for most Russians (i.e., those paid in rubles) has shrunk by more than two-thirds. Consumption of drugs has plunged. The biggest gainers from this have been western companies that manufacture locally, an American company that has five pharmaceutical factories in Russia and expects to sell more than $250m-worth of drugs this year. It is also developing its own chain of pharmacies. Russian-owned companies which, under communism, concentrated almost entirely on bulk chemicals rather than pills, are also finding business brisk-although most of them lack the cash and ideas to benefit from their new competitiveness. Importers have been the biggest losers. Imports are only a seventh of their level before August. Johnson & Johnson, an American company engaged in belt-tightening worldwide, is cutting its Moscow operation by two-thirds. East European companies, typically heavily exposed to the Russian market, suffered too: shares in Hungary's Gedeon Richter, one of the best companies in the region, have halved in value since the crisis. The world's newest and most profitable drugs are unlikely to be improved selling. Russia was already too deregulated and poor to be a really profitable pharmaceutical market. Now thrifty habits-for example, the use of cheap generic drugs-will become even more entrenched. So might those medieval folk remedies for the common cold (Singh, 1998).