A pricing policy towards the sourcing of cheaper drugs in Cyprus

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Abstract

In contrast to other EU countries, Cyprus lacks comprehensive health care coverage for its population, thus a significant portion of the population lacks insurance for medicines. Due to the small size of the country and small indigenous pharmaceutical industry, pharmaceuticals are mainly imported. Prices in the private sector are determined based on the ex-factory price from the country of origin. Distribution margins are calculated as a percentage of the import price, which creates perverse incentives for wholesalers to import products from high price countries, or import very expensive products, to maximize their income.

In this article, we compare pharmaceutical prices in Cyprus to other EU counties with higher or similar GDP per capita and found Cyprus to be a high price country. We then propose a new pricing system to change wholesaler incentives, which would encourage them to shop around for the best buy in Europe. Prices can be set based on average prices from a basket of European countries, and adjusted to reflect the GDP per capita level in Cyprus. This will establish the wholesale price that the government will accept, and wholesalers can procure products from any country at a lower rate. Thus, wholesalers would be encouraged to go for the lowest prices and the authorities would be indifferent to the actual price they obtain, so long as the necessary criteria (good manufacturing practice, safety, effectiveness and efficacy) are met. Our proposal has implications for low and middle income countries where this system of pharmaceutical pricing and wholesaler incentives can be used.

Keywords: Cyprus; Drug importation; Pharmaceutical pricing; Wholesaler incentives

1. Introduction

In contrast to other EU member states, 43% of the population in Cyprus are not covered for pharmaceutical care and pay out of pocket for all medicines [1]. As a result, the pharmaceutical market is divided into two distinct sectors: public and private, which supply prescription and over-the-counter (OTC) products, but operate independently at all levels. The public sector is run by the government. Medicines are prescribed by doctors working in government hospitals and outpatient clinics and are dispensed by government pharmacies. The public sector uses a tendering process to arrive at the price of pharmaceutical products and some

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patients are reimbursed for medicines dependent on their level of income and disease profile. In contrast, medicines for the uninsured are prescribed by self-employed office-based doctors and dispensed by private pharmacies. There is no price regulation in Cyprus, which is in contrast to most European countries that impose price controls on medicines [2]. Maximum prices in the private sector are based on the ex-factory price from the country from where the product is imported. Because prices in the private sector are based on import prices, this creates incentives for importers/wholesalers to import products from countries with high ex-factory prices as well as particularly expensive products, in order to maximize their benefit. As a consequence, pharmaceutical prices in Cyprus will likely be higher than prices in other EU countries, which have a similar or higher level of GDP per capita. Also, distribution margins are calculated as a percentage of the import price, which creates perverse incentives for wholesalers. Due to the lack of universal health care coverage, there is uncontrolled exposure of almost half the population to unregulated private sector pharmaceutical prices.

There has been anecdotal evidence that pharmaceutical prices in Cyprus are very high and unaffordable [3]. However, there has been no empirical evidence to test if this is the case.¹

The aim of this article is to:

- analyse whether pharmaceuticals in Cyprus are more expensive than in other European countries;
- investigate whether pharmaceutical prices may be lowered if prices are determined by using average prices from a basket of European countries and adjusting for GDP;
- examine alternative incentives to promote a more efficient importation and distribution market.

In this study we explore two hypotheses. Hypothesis 1: given that mark-ups for wholesalers are based on prices in the country of origin, wholesalers possess an incentive to import products from high price countries in order to maximize their benefit. As a result, pharmaceutical prices in Cyprus would be higher than prices in other countries, which have a higher level of socio-economic development. Hypothesis 2: if prices are based on products from a basket of high and similar income countries as Cyprus, then prices could be lower than they currently are in the Cyprus private pharmaceutical market. Prices for the different countries could also be adjusted to reflect price levels in these countries and Cyprus’ purchasing power in terms of its GDP. Thus, we test the effects of calculating average prices for a basket of countries and compare these to prices in Cyprus.

The following section details the pharmaceutical market in Cyprus. The data sources and methodology used in this study are then described. Next, the results of the price comparisons are presented along with the results of the simulation exercises. The article concludes by specifying new options for changing the pricing of pharmaceutical products and amending wholesale incentives in attempt to avoid the perverse incentives present in the current system. We also identify specific challenges and how the proposed pricing options may be relevant to other countries.

2. The pharmaceutical market in Cyprus

It is estimated that approximately 53% of the population is eligible for free health services, 4% are eligible for care at reduced fees, and 43% are expected to pay full prices in public health facilities or utilize the private sector [1].² The significant portion of the population who are not covered, also lack insurance for medicines.

In 2002, total expenditure on health care in Cyprus was estimated at 5.8% of GDP. Around 51% of total health expenditure in Cyprus is from private resources,

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¹ The authors of this paper were invited by the Cyprus Ministry of Health to examine the pharmaceutical price level compared to other European Union (EU) countries and to consider options to reform the system.

² Cyprus lacks comprehensive health care coverage for its population. Eligibility for publicly provided free services is defined on the basis of income and employment groups. This includes persons with an annual income below €15,300 per annum and families with an annual income below €30,600 per annum (increased by €1,700 for each dependent child), civil servants, students, war pensioners, welfare recipients, families with 4+ children, citizens with specific diseases (e.g. multiple sclerosis, Alzheimer’s disease), and the treatment of a specific medical condition only irrespective of income (e.g. cancer, diabetes, rheumatoid arthritis). Reduced fee services are provided for single persons with an annual income between €15,300 and 20,400 and families with incomes between €30,600 and 34,400 (increased by €1,700 for each dependent child).
compared to around 25% in former EU-15 countries [1]. As a percentage of total health expenditure, pharmaceutical expenditure was 21% in Cyprus, compared to 17.8% on average in OECD countries [4]. From 1998 to 2002, the private sector pharmaceutical market in Cyprus experienced an annual average growth rate of 7.7%. In 2002, the value of the private sector in retail prices was almost twice the value of the public sector in public procurement prices [5].

The uninsured in Cyprus must pay the full price of medicines in the private sector, which is determined by importers. For imported products, private pharmacy prices are established based on the ex-factory price from the country of origin. Importers/wholesalers receive up to 6% of the import price for shipping and handling and a 25% margin to arrive at the wholesale price. Subsequently, a 33% pharmacist margin is added to arrive at the retail price. Therefore, in Cyprus the wholesale margin is between 15 and 18.5% of the retail price, which is much higher than in other EU countries, e.g. 7.4% in Finland, 7.8% in Greece and 10.9% in Malta [6]. The pharmacist margin is 25% of the retail price, which is comparable to other EU countries, e.g. on average 26.8% in Germany [7] and 26.4% in France [8]. However, in Cyprus the pharmacist margin applies to inflated wholesale prices.

It is likely that due to the lack of regulation, the system of price setting for pharmaceuticals in the private sector creates perverse incentives for wholesalers to import products from countries with high prices or buy products with high prices in order to maximize their profits.

The pharmaceutical market in Cyprus has some distinctive characteristics. Since Cyprus is a small market, the authorities have reduced purchasing power. Although there is a small indigenous pharmaceutical industry, they mainly produce generic products for export. Some multinational pharmaceutical firms are present, but they play a marketing rather than importing role and do not have a strong presence in the country. Thus, drug distribution is dependent entirely on wholesalers and importers. The wholesale lobby is very influential and powerful, with significant links to politics and the media. Currently, there are 60 importers/wholesalers and 50 importing pharmacies. This appears to be a high number for an island with a population of 715,100 when compared with some larger countries, such as Denmark, Finland and Norway that each have three wholesalers for populations of 5.4, 5.2 and 4.5 million, respectively [9].

With regards to drug dispensing, medicines in the public sector are dispensed by government pharmacies to eligible patients. In the private sector, medicines are dispensed by private pharmacies. There is no regulation of private pharmacies, such that there are no geographical limits or caps as there are in other European countries [10].

3. Data sources and methodology

We first performed direct bilateral price comparisons between Cyprus and selected EU countries. This was carried out in order to gauge the level of pharmaceutical prices in Cyprus in the European context (Hypothesis 1). Next, we performed simulation exercises to test how the average price of a product for basket of selected EU countries compares to prices in the Cyprus private sector pharmaceutical market in 2003 (Hypothesis 2).

Several data sources were consulted for this study. Data on pharmaceutical prices were collected from two lists in Cyprus – the 50 most expensive products and 50 most sold products by volume – based on a specific dose form, strength and pack size. These products made up 30.2% of the value of the Cyprus private pharmaceutical market according to retail prices. The Department of Pharmaceutical Services, Cyprus Ministry of Health provided data on country of origin and prices [5].

Prices were also collected from different EU countries. There were three main criteria used for selecting these countries: the relevant literature on pharmaceutical price levels, the level of GDP per capita, and countries where pharmaceutical price lists were easily available because they were either posted on the Internet or we had access to printed price lists. The joint report by the UK Department of Health and the Association of the British Pharmaceutical Industry (ABPI) on price comparisons was used to determine the high and low price countries. We chose a mix of high/low price countries as fol-
lows: higher prices—Denmark, Sweden, the UK; lower prices—Spain, Portugal, Greece. Products from the price lists in Cyprus were matched with the same product in the comparator countries.

The exercise involved matching products by name (generic or brand), dose form (tablets, capsules, injections) and strength (milligrams) between the Cyprus products and those in each of the comparator countries. To standardise the data, any relevant taxes (VAT) were deducted and prices were converted into Euros based on the annual average exchange rate for 2003. To reconcile the various pack sizes (for a specific strength) in each country, the defined daily dosage (DDD) specification based on the anatomical therapeutic chemical drug classification system of the World Health Organization was used. We were interested in comparing retail prices excluding the VAT.

To compare prices across the countries, a price index was calculated using a Laspeyres index with Cyprus quantities for 2002 as weights. The index is calculated in the following manner: let $\Sigma$ be the sum over all products, $P = 1, \ldots, n$. $P_x$ is the price for product $P$, $X$ represents the foreign country and Cyp represents Cyprus. $Q$ is the quantity measured in volume sold:

$$\text{Country } X\text{'s index number} = \frac{\sum (Q_{P,Cyp} P_{P,X})}{\sum (Q_{P,Cyp} P_{P,Cyp})}$$

Products were included in the index when there were prices available for at least five of the six comparator countries (for most expensive) or four of the six comparator countries (for most sold). If a product appeared more than once on a list (with different strengths), only one of these was used in the comparison. These criteria narrowed the data set to 44 products. According to retail prices, these 44 products made up 14.2% of the value of the Cyprus private pharmaceutical market. The country of origin was collected for the 50 most expensive products and 50 most sold products by volume in the Cyprus private sector for 2003.

We used retail prices in the analysis because it was difficult to determine the actual wholesale prices for the comparator countries. This is due to the fact that some countries utilize claw backs on the pharmacists’ margins. Furthermore, additional incentives and discounts given by wholesalers to pharmacists create further challenges such that retail margins may be much higher than reported. Moreover, the level of pharmacists’ margins in Cyprus as a percentage of the retail price is similar to those in other EU countries and therefore should not create much of a difference in the final price.

To test the price level in Cyprus compared to the average price for a basket of countries, simulation exercises were performed using retail prices. The countries included in each basket were selected and grouped according to their GDP per capita levels. There were five simulations in total. For the first three simulations, we took one high income country and three countries with similar income levels as Cyprus (Basket 1: Sweden, Spain, Portugal, Greece; Basket 2: UK, Spain, Portugal, Greece; Basket 3: Denmark, Spain, Portugal, Greece). We also consider two additional baskets: Basket 4 included two high income countries and two countries with similar income levels as Cyprus; Basket 5 included two high income countries and three countries with similar income levels as Cyprus. For some simulations, prices were adjusted according to GDP per capita in purchasing power standards (PPS) for 2002 in Euros as follows: Cyprus 17,553; Greece 16,457; Portugal 16,243; Spain 20,020; Sweden 24,938; UK 24,938; Denmark 25,929. Then the average of these adjusted prices was determined and compared to the retail price in the Cyprus private sector pharmaceutical market.

4. Results

4.1. Price comparisons

When comparing retail prices of products in Cyprus with other EU countries, Cyprus appears to be a high price country for pharmaceuticals. For the same basket of products (weighted for Cyprus volumes), the index of retail prices for a sample of the most expensive products was higher in Cyprus than in Denmark (84%), Sweden (62%), Portugal (61%), the UK (61%), Spain (58%) and Greece (56%).
Table 1
Number of products used in Laspeyres’s index and price indices relative to Cyprus

<table>
<thead>
<tr>
<th></th>
<th>Cyprus</th>
<th>Denmark</th>
<th>Greece</th>
<th>Portugal</th>
<th>Spain</th>
<th>Sweden</th>
<th>UK</th>
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<tr>
<td>Most expensive in list</td>
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<td>Number of products in list</td>
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<td>Most sold in list</td>
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<td>Number of products in list</td>
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<tr>
<td>Laspeyres index</td>
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<tr>
<td>Most expensive products</td>
<td>1.0</td>
<td>0.84</td>
<td>0.56</td>
<td>0.61</td>
<td>0.58</td>
<td>0.62</td>
<td>0.61</td>
</tr>
<tr>
<td>Most sold products</td>
<td>1.0</td>
<td>0.99</td>
<td>0.67</td>
<td>0.77</td>
<td>0.71</td>
<td>0.76</td>
<td>0.67</td>
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Similarly, for a sample of the most sold products, the index of retail prices in Cyprus exceeded those in each of the comparator countries. Greece and the UK showed the lowest prices (67%) followed by Spain (71%), Sweden (76%) and Portugal (77%). The price of the basket of products in Denmark was comparable to that in Cyprus (Table 1).

The difference between Cyprus and the comparator countries is greater when examining the most expensive products in the Cyprus market. The high retail prices can be attributed to a number of factors including high price country of origin and the high margins earned by wholesalers. From the list of the most expensive products, in the few instances where products are being imported from lower price countries the products tend to be newer and are still achieving high prices, i.e. Viagra® (sildenafil) and Arava® (leflunomide) from Greece, Midarine® (suxamethonium chloride) from Italy, and Valtrex® (valaciclovir) from Spain. Prices in Cyprus were shown to be much higher than those in the comparator countries.

4.2. Simulation exercises

When the average price of the five baskets of country combinations were compared to the 2003 Cyprus retail prices, the Cyprus retail price exceeded the average retail price of the basket for almost all products and for all simulations. For the list of the most expensive products, the average relative change in price was a lowering of the Cyprus price between 33 and 39%. For the most sold products, the retail prices were lowered by between 26 and 33% (Table 2).

When adjusting the prices according to the GDP per capita for the countries in the basket, the average prices that we calculated were even lower than without the adjustment. For the list of the most expensive products, when the GDP ratio for each country in the basket with Cyprus was considered, the average relative change in price was between 40 and 46% lower than the Cyprus retail price. For the most sold products, the retail prices of the basket were between 34 and 43% lower than the Cyprus retail price (Table 2). Therefore, when the GDP per capita level in Cyprus is taken into account and prices for the countries in the basket are adjusted to reflect the income in Cyprus, we observed the greatest difference in price level between the average price of the basket and the Cyprus retail price.

5. Discussion and policy implications

Hypothesis 1 was confirmed – Cyprus has high prices in comparison with the other countries studied, even those with significantly higher GDP per capita levels. Also, Hypothesis 2 was confirmed – the simulation exercises suggest that the average prices for a basket of countries are much lower than prices in the Cyprus private pharmaceutical market (from between 26 to 46%). Therefore, we propose a new pricing mechanism for Cyprus such that the average price of a product for a basket of countries is used to calculate the maximum wholesale price in Cyprus. This in turn would change the incentives for wholesalers.

Setting prices in Cyprus according to the average price for a basket of countries would create the need for wholesalers to shop around and buy products at below these average prices. Also, manufacturing quality would need to be assured by importing from

4 For the 50 most expensive products sold in the private sector, 75% of products came from the most expensive European countries, including the UK (25%), Switzerland (23%), Germany (19%), France (6%) and Denmark (2%). Moreover, 52% of the 50 most sold products by volume originated in these high price countries.
| Pricing mechanism | Option | Countries | Relative change compared to 2003 Cyprus retail price (%)
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<td>Sweden, Spain, Portugal, Greece</td>
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<td>Denmark, Spain, Portugal, Greece</td>
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<td>UK, Spain, Portugal, Greece</td>
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<td>UK, Sweden, Greece</td>
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<th>List of most expensive products</th>
<th>Average retail price of countries in the basket</th>
<th>Weighting for the relative GDP per capita</th>
<th>Differences between each country and Cyprus</th>
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<td></td>
<td>-39</td>
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<td>-33</td>
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A further challenge to consider is the potential for pharmaceutical companies that may withdraw their licensing in Cyprus. However, this problem is protected against by EU pharmaceutical legislation. If a company has not registered for authorization of a medicinal product or withdraws from a country, then the product can be imported from anywhere in Europe for reasons of public health so long as there is a market authorization in any EU Member State [23].
Cyprus’ GDP, since ex-factory prices from the country of import are used to calculate product prices. If these arguments are accepted, pharmaceutical products should be priced to reflect the GDP per capita level in Cyprus.

The proposed measures reflect the fact that Cyprus has a small indigenous pharmaceutical industry and that a significant part of the population is uninsured. In addition, at present in Cyprus there is a need to record the country of origin for each product to arrive at the ex-factory price, an activity that can be administratively tedious, but necessary to avoid fraud. To overcome these challenges prices can be collected from countries, which are publicly available on price lists from national authorities or pharmacists.

Despite the potential efficiency of the pricing options identified in this article, specific issues may need to be addressed including how to select the countries in the basket. Country classifications in terms of GDP levels may be used as a basis for establishing prices for Cyprus. However, these countries could be reviewed periodically so that the basket reflects a mixture of countries with higher or similar GDP per capital to Cyprus.

The price comparisons and simulations in this article may suffer from some of the potential limitations with international drug price comparisons. The literature suggests that the sample selected, disparities with data and the chosen method of analysis can have a significant impact on the observed price differences between countries [26–28]. The limitations with this study are that we were only able to match product prices for 44 products, which made up 14.2% of the value of the Cyprus private pharmaceutical market. By using more products in the comparison and simulation exercises the results would be more conclusive.

However, the Ministry of Health in Cyprus has also performed a comparable simulation analysis for 1662 products using a basket of reference countries, which included Sweden, Austria, France and Greece. If no price was available in these countries, alternatives were used as follows: Denmark or Germany instead of Sweden; Italy or Belgium instead of Austria or France; Spain, Portugal instead of Greece. Prices were not adjusted for differences in GDP levels. On the basis of their simulation, prices were lowered by on average 25% for 920 products, while for the other products prices remained the same [29].

In December 2004, the Cyprus government announced plans for a new price list that is broadly based on the recommendations outlined in this article [29] and on 1 March 2005 a new price list came into effect [30]. Prices are estimated on the basis of using a basket of countries to calculate a maximum price; however, prices will not be adjusted according to GDP levels. The maximum wholesale price is calculated as the average price of the basket, plus 3% (on expenses of import). Wholesalers will negotiate their purchasing prices with the manufacturers, and the authorities will not check wholesale profits.

The pricing options discussed in this article may be relevant to other countries that are dependent on importers due to a lack of an indigenous pharmaceutical industry. Many low and middle income countries also import pharmaceuticals and rely on product certifications supplied by importers. This poses risks of fraud and sourcing products in expensive markets. The pricing approach that we are suggesting for Cyprus eliminates the need for authorities to collect product certificates so long as wholesalers procure products from approved GMP importing countries and price information on other countries can be collected. A system similar to the one presented in this article, will force wholesalers to go for the “best buy”, provided there is pricing data available from other countries, which can be collected from governments, international organizations and NGOs.

References


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