Pricing out Welfare:

The Effects of Government Regulations on Pakistan's Pharmaceutical Market

(Draft)

by

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Abstract

Pharmaceutical industry in Pakistan represents one of the most promising industries with a substantial room for growth owing to various domestic factors. But government imposed regulations, especially refusal to grant price increases for pharmaceutical products, has had negative consequences for the industry and overall welfare as a whole. These include complete withdrawals from this market by firms to smuggling of drugs. In all, the welfare consequences have been overwhelmingly negative. The calculations for welfare losses made under the chosen criterion suggest that per year losses exceed Rs. 100 billion/-

Introduction

The pharmaceutical industry is one of the major industries around the globe, with the present valuation estimated to be more than a trillion dollars. The yearly market worth is more than $300 billion, expected to rise to $400 billion within a few years[1]. The global market, on the basis of value, is governed by USA (48 percent), EU (28 percent) and Japan (12 percent). The rest of the world is left with the remaining 20%. Pakistan's estimated share in this trillion dollar market is a dismal 0.1 percent, implying that Pakistan is missing out on a golden chance to capture a share of this huge and growing market.

Certain variables are likely going to compliment the further expansion of this industry in the future. For example, the expanding global population, increasing complexity of health related issues, challenges like Ebola virus and SARS, an increasing percentage of old population in the industrialized nations that demands more medical care, the ever rising demand in developing world for medication in lieu of increasing incomes and the potential of considerable monetary benefits, etc, are some of the major variables affecting the growth of pharmaceutical sector. Along with this expansion will come opportunities, especially in terms of advances in scientific research, job creation and trade (mainly through outsourcing and patented/licensed drug production). In recent years, China and India have emerged as the major beneficiaries of the expansion of this sector. The improvement in their local infrastructure and implementation of policies to attract foreign investment has resulted in considerable revenue for these countries. India, for example, was able to earn more than $14 billion by exports of pharmaceutical products in 2012-13. In short, the success of the developing nations in attracting foreign investment in the pharmaceutical sector (and realizing earnings through exports) is critically dependent upon the provision of a good infrastructure, a quality human capital base and the ease of doing business in the host country. Unfortunately, on all these counts, Pakistan lags behind.

The aim of this study is to look at the effects of government regulations on the pharmaceutical industry, especially in terms of welfare. It is clarified here that by welfare, only tangible monetary estimates are implied. It is widely accepted that countries with higher average income levels tend to have higher welfare. Thus, for example, the monetary loss due to regulation implies a probable loss in welfare enhancement. This paper follows this line of reasoning to ascertain loss/gain in welfare due to government regulations affecting pharmaceutical sector.

[1] World Health Organization (WHO) estimates.

Regulations and the Pharmaceutical industry: A short review of literature

Except for the USA, all other countries in the world regulate the prices of drugs. Otherwise, when it comes to overall regulation, the US's drug sector is as heavily regulated as the rest of the world. The effects of these regulations on the pharmaceutical sector have been the subject of extensive studies. The economic aspect of these studies tends to look at the cost versus benefit aspect of these regulations. This should not come as a surprise since the pharma industry, and the health services industry as a whole, represent a substantial chunk of GDP in many countries[2].

Schankerman, Lanjouw and Cockburn (2014) analyzed the launch of 642 new drugs in 76 countries between the period of 1983 and 2002 in order to assess whether price regulation and patent effectiveness had any effect on drugs? They found a strong link between enforcement of price regulation and delay of drug launch, while patent protection was found to accelerate research and drug introduction. Vernon (2003) studied the effects of price controls on pharmaceutical research. He concluded that the forced reduction in drug prices through regulations will lead to 30 to 60 percent fewer R&D projects by the pharmaceutical companies. The positive effects of the regulated price (if any) manifests itself only in the short run, but long term effects on welfare outweigh those positives. The damage is not immediately apparent since the development of a drug and its subsequent entry into the market takes a long time. If the overall uncertainty is not accounted for properly by the regulators, it tends to result in pharma companies pursuing only minor level drugs.

The findings of the National Bureau of Economic Research (NBER) Reporter (Fall 2006) suggest that in countries with price controls, firms tend to deliberately delay the launch of their products in order to seek out more profitable alternatives to domestic launch. Filson (2007) outlines a model with various parameters in order to estimate the effects of regulations on pharmaceuticals. He concluded that the welfare effects are negative for US and for the world as a whole.

Danzon and Furukawa (2007) use an infinite time horizon model to gauge the effects of price controls on aspects like flow of new drugs, consumer welfare, firm value and other industry performance measures, plus whether these controls tends to be welfare enhancing? They conclude that the only gain is a very short term gain for consumers who buy medicines on artificially low prices. But the provision of medicines at lower prices is not due to the success or regulations of price controls; rather, the sale of medicines at lower than market

[2] For example, healthcare in USA represented 17.9 percent of US GDP in 2013. Source: *World Bank database for Healthcare expenditures as a percentage of GDP*.

prices owes more to the 'something is better than nothing' approach. Firms have no other option but to sell it at the regulated price in the short run since it can recoup a part of the sunk costs incurred during drug development, which it then uses for its operations. But in the long run, controls prove to be disastrous. Discouraged firms stop R&D, investment and some of them even decide to leave the market altogether. This results in unemployment and the loss of welfare relative to certain aspects like deterring aspiring firms from entering this market and the loss of a potentially new, vital drug development. More importantly, the author's estimate suggested that the Net Present Value (NPV) of losses over a decade due to price controls was substantial[3].

Kutyavina (2010) studied two episodes in US history when pharma firms were threatened with price controls and their resulting effects. She found that in response to the perceived threat of price controls, pharma firms reduced their R&D efforts considerably (thus hampering the development of new drugs). Connaughton (2011) investigated the availability of drugs in Europe in lieu of the implemented price controls. He concluded that price controls resulted in low investment, lower R&D and the lower availability of drugs. Chaudhry, Goldberg and Jia (2003) inquired whether the oft repeated assertion of the governments for regulating prices (that price deregulation will mean higher prices and loss in welfare) holds true in India? Using price simulation, they concluded that the total annual welfare losses to the Indian economy from price regulation were an estimated $305 million per annum. Of this amount, the loss in profits of domestic producers amounted to $50 million. The overwhelming portion of total welfare loss, therefore, derives from loss in consumer welfare.

Vernon and Santerre (2006) estimated the hypothetical case of price controls in US from 1981 to 2000, and their effects upon total welfare. They estimated that the total consumer welfare (in case there had been price controls) over these years would not have been more than $319 billion. But the overall losses would have been far greater, and there would have been 198 less medicines (quite a few of them were categorized as life saving drugs).

The above were some of the studies cited in context of effects of regulations (specifically price regulations) on pharmaceutical industry and development of drugs. All these, and majority of other such studies, overwhelmingly come to the conclusion that regulations only tend to lower welfare rather than enhance it. As we shall see in this paper, this conclusion would seem to hold true for Pakistan too.

[3] Refer to page 3 of the said study.

An overview of the Pakistani Pharmaceutical sector

In terms of size, the market for pharmaceuticals in Pakistan is estimated to be worth approximately $2.2 billion, with the Multi-National Companies (MNC's) garnering an estimated share of 42 to 45 percent. Of the total number of drugs sold, imported drugs constitute an approximate share of 15 percent[4]. There is no unanimous consensus on the total number of pharmaceutical companies, and estimates vary between 650 to above 700[5]. MNC's, whose share in the domestic drug market is about 45 percent, are 22 in total. Twelve years ago, this number was 36. Between 2001 (when the last raise in drug prices was granted) and 2014, 12 MNC's have left Pakistan. The remaining one's usually pursue and market high value products, which would explain their sizeable market share (in terms of value of medicines sold) despite being fewer in numbers compared to domestic pharma firms. It employs an estimated 150,000 people at present across the country[6].

In terms of total expenditure, expenditure on medicine accounted for 43 percent of total household expenditure in 2011-12, of which about 65 percent were borne by households through Out of pocket (OOP) expenditures. This percentage was 24.37 in 2004[7], which clearly indicate a general rise in medicine prices despite government's efforts to regulate it. According to government estimates, a total of Rs. 117,910/- million were spent on purchasing medicines. Total pharmaceutical sales in Pakistan in 2011-12 were estimated to be Rs. 95 billion/- Mark-ups for sales of pharmacies and other retailers of pharmaceuticals is 11-15%. In all, the total of the purchases through retailers amounted to an estimated Rs. 106 billion/-[8]. However, Business Monitor International (BMI), a firm that tracks markets and their valuation for investors' guidance, concludes that the medicine sales in Pakistan in 2014 are somewhere near Rs. 231/- billion[9]. It will be pertinent to mention here that BMI's estimates are based on a relatively sophisticated forecast model that takes into account unofficial, informal data too. In contrast, official figures are largely dependent upon

[4] 'Pharma bureau asks Government to save Industry', published in *Daily Times*, 5th April 2014. Further, see 'Pakistan contributes just 0.1% to global pharma exports' by Salman Abduhu, *The Nation*, 28th July 2014.

[5] Ayesha Haq, Pharma Bureau ED, recently stated that the number is 625 (source: 'Non-functioning of DRPA: Pharma's diverting their investments to India and Bangladesh'; *Pharma News*, 21st March 2014). The report titled 'Pakistan contributes just 0.1% to global pharma exports' (Salman Abduhu, *The Nation*, 28th July 2014) meanwhile, states that the total is around 700. Interestingly, though, information available with drug inspectors state that there are 571 registered/licensed pharma units.

[6] Investment in Pakistan (2013); p.14, published by KPMG.

[7] Household Income Expenditure Survey (HIES), *Pakistan Bureau of Statistics* (PBS). The 2011-12 number is in table 22 of *HIES 11-12*, while the 2004-05 number is in table 17 of *HIES 04-05*.

[8] 'Pakistan National Health Accounts 2011-12'; table 29, p.19.

[9] 'Pakistan Pharmaceutical and Healthcare Report' (2014); *Business Monitor International*.

guesstimates that tend to miss a substantial part of the sales activity. Therefore, for the purpose of estimations and calculations, BMI's estimate of pharma sales would seem to be more credible.

The above statements depict the expenditures only on drugs. But if we take total health expenditures into account, the figures portray an even grimmer picture. Except for a few high-income nations, OOP expenditures consist predominantly of private household spending. In Pakistan, for example, house-hold spending accounted for 98.2 percent of total private expenditures on health in the year 2000 (the estimate was same for 2005). Overall, private health expenditures as a percentage of Pakistan's gross domestic product (GDP) were small compared with that of other countries, but private expenditures as a percentage of *total* health expenditures were relatively high (83 percent, compared to 74 percent of other lower income countries and 39 percent in high income countries)[10].

The number of registered drugs in Pakistan was 50,000 as of end 2010[11]. The passage of 18th constitutional amendment made the relevant regulatory authority defunct till Drug Regulatory Authority of Pakistan (DRAP) was formed in 2012. Since its formation, it has cleared the registration of 8,000 new drugs[12]. That would bring the number of registered drugs to 58,000[13]. But in reality, there may be over 60,000 drugs available in the market. The lion's share of the drugs manufactured in Pakistan (if not all) is basically the result of using already established production formulae (under permission from the parent firm) and producing it in Pakistan. In other words, almost none of the allopathic medicines available in the domestic market are the result of home grown research effort. And it's not difficult to discern the reason for that. There is hardly any incentive to do so in the absence of intellectual property rights enforcement[14]. As explained in the literature review, the research, introduction and success of a drug involves hefty financial investment. That is the primary reason that pharma firms value intellectual property with so much earnest. They can then recoup the costs through market pricing of the drugs and protection of their drugs from copying through strict enforcement of patent laws.

[10] Lorenz, Christian (2008); 'Out of Pocket Health expenditures and their use in National Health Accounts', p.2 and figure 3.

[11] 'Pakistan Pharmaceutical Country Profile' (2010), *Ministry of Health*.

[12] This number was stated by Secretary NHRSC, Miss Rashida Malik. Reported in *Pharma News* on 2nd June 2014.

[13] Drugs like Panadol, Ponston, Augmentin, Amoxil, Calpol, Hydralin, Velocef, Flagyl, Ampiclox, Brufen, etc, constitute roughly over quarter sale in Pakistan.

[14] In this regard, reference may be made to p.10 of U.S Department of State: 2014 Investment Climate Statement that briefly discusses this issue.

In Pakistan, the financial requirement for developing a single drug molecule is an estimated $1 billion[15]. Domestic firms (MNC's plus others) simply don't have that much in their kitty. Even if they had that much amount in their possession, the incentive to carry out research is non-existent. Pricing policy is non-existent, drug prices have not been revised since a decade despite mounting production costs, and enforcement of patent (or intellectual property laws) are unheard of. This all lends an air of uncertainty in which no pharma manufacturer is willing to risk his financial investment. In short, research is not possible without government's backing (financial and administrative). But government (federal or provincial) seem least interested in incentivizing pharma research.

Allopathic medicines face a healthy competition in the form of various alternative medicines that includes Yonani (Greek), Ayurvedic, Hakeem and homeopathic medicines. Their sale largely goes unchecked despite the regulation for these medicines under DRAP 2012 Act. They offer good competition to an already competitive pharmaceutical market, especially in the rural areas where the prevalence of health facilities is low. It is estimated that a total of 4.03 percent of the population uses these alternative medicine facilities to address their health concerns[16].

Given the rising population, an increasing disease burden and an ever expanding health services industry, one would have expected the pharmaceutical sector in Pakistan to be at the forefront of overall industrial and services sector growth. After all, the potential profit opportunities are immense given the size of the market and the extent of health related issues. In fact, in 2010, McKinsey Consultancy signaled the Pakistani pharma industry as one of 3 potential 'sunrise' industries. But the sad reality is that an industry through which the Pakistani economy and its consumers could realize tremendous gains is on the decline. The yearly percentage growth in pharma establishments may seem impressive, but this growth mainly owes to *volume* rather than a desire by top pharma companies to expand their business (and thus add in terms of value added). In fact, as pointed above, quite a few MNC's have left the domestic market or have divested away from pharmaceutical sector. This is unfortunate since MNC's are the major players as far as new investments, innovation and financial strength is concerned. In short, majority (if not all) the expansion in the pharma sector has come through small, local level pharma establishments that rely solely on volume production rather than finding a niche in the market through innovative breakthroughs.

[15] 'Research in Pharmaceuticals: Pakistani companies Lag behind their Indian and Chinese Counterparts'; by Farhan Zaheer, *Express Tribune*, 15th August 2011.

[16] 'Pakistan National Health Accounts 2011-12'; table 27.

Pakistan's drug pricing policy and its consequences

Historically speaking, the two primary motivators for regulating drug industry have been the presence of monopoly (or monopolies), and patents that may hinder competition[17]. Curiously, both are absent in Pakistan's case. What is even more confounding is the fact that there has been no proper drug pricing policy in the last decade or so. This fact was recently confirmed during hearings in the Supreme Court of Pakistan, when the judges admonished the health ministry officials for not having a pricing policy for more than a decade[18]. Of the few cases approved for price increase over the decade, majority have relied on 'hardship cases' rather than pricing according to a set methodology. In short, pricing decisions are arbitrary in nature. Moreover, from 2001 (when the last regulated price hike in medicines was granted by the government) till June 2013, no price raise was approved for medicines despite repeated requests by the pharma manufacturers. This is despite the fact that the production costs in the same period soared to more than 90 percent[19], thus putting exceptional pressure upon pharma companies to keep operating despite receiving no price raise. This is reminiscent of a previous episode where drug prices went through a freeze from 1993 to 2001. In 1993, government officials and drug companies had reached an understanding that drug prices would be revised every year keeping in view the cost of production. Yet, between 1993 and 2001, drug prices of only a fraction of medicines were allowed to increase[20].

At this moment, there still lingers confusion and uncertainty in governing circles on how to price the drugs? This is apparent from the recent step taken by the DRAP officials in the form of a new draft policy for drug pricing, which has yet to be put up to the Economic Coordination Committee (ECC) for approval. The draft proposes two methods for pricing: one based upon *'cost plus'* method (pricing while taking into account the costs of production) and the other is based upon *'reference pricing'* (drugs are priced according to comparative reference price of selected drugs in neighbouring countries. This method is favoured by WHO).

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[17] *National Bureau of Economic Research* (NBER) *Reporter*, Fall 2006.

[18] 'Mismanagement: SC bristles at absence of drug pricing policy'; *Express Tribune*, 19th September 2014 by Hasnaat Malik.

[19] Source: *Federal Bureau of Statistics (FBS)*, *State Bank of Pakistan* (SBP) statistics, various publications like *Economic Survey*.

[20] Rizvi, Shahmim Ahmed, 'Import of Raw Material for Medicines Manufacture', *Pakistan and Gulf Economist*, July 12-18, 1999. There is considerable agreement that this led to the expansion of black market in drugs. At the moment, majority of drugs in this market come from Afghanistan, India and Iran. Respiratory and oncological drugs (plus Viagara) are the major imported drugs.

It must also be kept in mind that the official criteria of individual welfare, at least relative to buying drugs and overall healthcare, revolves around protecting consumers from higher drug prices. Thus, the criterion is strictly tied to the *present* monetary expenditures. But this is a very poor criterion since it completely discounts/negates the intended benefits of *savings through living a healthy life in the future*. Simple cost-benefit analysis can demonstrate that this kind of future saving through use of relatively expensive drugs today is preferable to lifelong, continuous expenditures (or even losing a life altogether) by using an artificially low priced, substandard medicine in the present.

The government's efforts to enforce lower prices are undoubtedly resulting in many unintended, negative consequences. Perhaps the most critical one is the failure of the market to reach its potential in the presence of price restrictions. For example, had the drug prices been allowed to adjust according to market fundamentals, the estimated value of pharma market in Pakistan would have been $6 billion instead of the $2 billion at present[21]. For an investment starved economy like Pakistan's, this could have been a great boon which would have led to (among other things) job creation.

The efforts to push down the prices from market prices to artificially low levels results in lifelong expenditures due to the use of substandard drugs that lead to further aggravation of health problems. Majority of these substandard drugs tend to arise in the first place because the standard, quality medicines are not present in the market. Their absence owes solely to the fact that the government does not allow these to be sold at a price that could see manufacturers recoup their cost of production plus profit margins. Unable of get the market based prices and without much hope of a profit margin, many pharmaceutical firms in Pakistan have divested away from producing drugs to other, relatively deregulated areas like consumer care products. The ultimate loser of this divestment is the user of those medicines that the pharmaceutical companies stop producing[22].

Another consequence of this policy is the continuing decline in the levels of investment in this sector. In the last three years, total estimated investment in the pharmaceutical sector has dropped from Rs. 14 billion/- to a paltry Rs. 4 billion/-[23]. It is to be noted here that this number only indicates the loss in investment by MNC's; taken as a whole, the losses could be even bigger. Even if one were to argue that local pharmaceutical firms step in to fill this void, it is still a loss in the sense that MNC's produce medicines that

[21] 'Global pharmaceutical companies see battle for survival in Pakistan'; by Shazada Irfan Ahmed. Published in *Intellectual Property Watch*, 21st March 2013.

[22] The fact that central issue faced by pharma industry is the strict regulation of prices of medicines was validated by Miss Ayesha Haq, Executive Director Pharma Bureau Pakistan, in a detailed interview with *Business Recorder*. This interview appeared in the said newspaper on 26th May 2014, under the heading 'Regulating Quality is more important than Regulating Prices'.

[23] 'Non-functioning of DRPA: Pharma's diverting their investments to India and Bangladesh' ; *Pharma News*, 21st March 2014.

are (in most cases) qualitatively superior to the local variety. They are properly tested and validated before being introduced into sub-markets like Pakistan. This kind of testing, validation and quality is lacking to a large extent as far as locally produced medicine is concerned.

The payment of double (or more than double) prices by consumers is another potentially negative consequence of official pricing policy. This is especially true in the case of MNC's who stop production of a specific drug because its costs outweigh its profits, or when an MNC leaves altogether. The case of drug Thyroxine (used to treat thyroid disorder) offers a vivid example in this regard. Originally costing $0.5 per 100 tablets, the manufacturer requested a trivial raise of an additional $0.5 (which would have raised the price to $1 per 100 tablets). Unable to get the raise for a long period due to the official price policy, the manufacturer stopped producing it altogether. The end result was that this critical drug had to be imported, and users had to buy it for $8 to $10 per 100 tablets[24]. Further confirmation of this aspect comes from a WHO sponsored survey in 2004, which found the reference price ratio of originator drugs to be 2.24[25].

In the absence of rational, market based pricing and squeezed profit margins, pharmaceutical firms tend to turn towards other, illicit channels to help realize profits. For this, they employ methods like bribing doctors[26] and medical stores to sell their medicines to consumers. It is estimated that a substantial number of medical stores are owned by doctors themselves, who prescribe medicines of those companies that tend to dole out monetary favours to them[27]. The smuggling of drug material is another ploy that has become a favourite among many pharmaceutical companies[28] given the plummeting profits and little probability of extracting a market price for their products.

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[24] A similar story manifests itself in the case of a drug called *Propanol*. Manufactured by more than 70 domestic producers, at present it is being manufactured by only three. These three are also likely to stop its production. This lower supply has already increased the market price of this drug many times. One can easily guess what will happen to its price once it is imported.

[25] This simply means that these drugs are 2.24 times more expensive (relative to income) in Pakistan than comparable international prices. Refer to 'Pakistan Pharmaceutical Country Profile' (2010), published by *Ministry of Health*.

[26] This largely unethical practice does not seem to be limited to developing countries like Pakistan. Considerable amounts of payments are made by leading drug manufacturers to doctors and leading healthcare professionals all around the globe. In US, a study suggested that in the year 2013, pharma giants like Pfizer and GSK paid substantial amounts to doctors and health industry people (142,600 and 85,100 people respectively). But under the 2010 Affordable Care Act (Obamacare), drug companies are now obliged to disclose their payments to such professionals. See 'What we're learning about drug company payments to doctors'; *New York Times*, 29th September 2014.

[27] A good reference in this regard is Rizwan Raheem Ahmed's PhD thesis titled 'Pharmaceutical Drug Promotion in Pakistan: Issues in Ethical and non-ethical practices'.

[28] The case of Ephedrine is the most recent and clear example in this regard. Given its very high demand worldwide (and in Pakistan), some producers have turned to importing (through smuggling) and then re-smuggling the drug to other lucrative destinations. Since there is an official quota on the total amount of

And last, but not the least, frustrated with government's refusal to grant price increase for their drugs, several pharma's have taken recourse to law by filing litigation against government. At least 17 litigations by different pharmaceutical companies are pending before different courts. Recently, the government has requested the SC to stop lower courts from hearing these cases, arguing that lower courts do not have jurisdiction over the issue of drug pricing. Regardless of the outcome, this is a time consuming exercise that entails financial costs over a matter that should never have been reached the court in the first place.

The crux of the above mentioned points is that not only has the official drug pricing policy been a failure, but it has also given rise to practices and side effects that overwhelmingly dwarf any probable benefit of a cap on drug prices.

imported ephedrine, any additional quantity is the result of black market activities. In 2010, more than 30,000/- kg. of this drug made its way into Pakistan, majority of which was then smuggled to Iran, Europe and Australia for a hefty profit (estimated to be Rs. 7 billion/- at least). Reference may be made to Drug Use in Pakistan (2013), UNODC and International Narcotics Control Board (INCB) report (2011). Between 2008 and 2011, 36,000/- litres of smuggled Ephedrine 19 (Acetic Anhydride) was caught in Pakistan by law enforcement agencies.

Capacity, Human Capital, Management and Quality issues

Besides the issue of pricing drugs, there are other serious handicaps that the pharma and the health sector face in terms of capacity, human capital, management and quality. A brief overview of these is taken in the following lines.

The WHO's recommended standard for pharmacists is 1:2000. In Pakistan, the present ratio is 0.9:100,000, which points to the lack of pharmacy professionals as percentage of the total population[29]. Similarly, one pharmacist is available for over 1,200 beds against WHO's standard of one pharmacist for 50 beds. In 2012, there were only 25 drug inspectors to monitor over 600 pharmaceutical manufacturing units and over 50,000 retail outlets[30]. An important implication of all this is that the sale of substandard and counterfeit medicines goes largely unchecked. The shortage of professionals in the pharma sector is complemented by the fact that after devolution of health ministry to the provinces, the issue of healthcare professionals reporting to which authority is not clear as yet. This is illustrated by the recent statement by Minister for National Health Services and Regulation, Miss Saira Afzal Tarar, in which she warned pharmaceutical companies against raising prices but in the same breath laid the responsibility squarely on the shoulders of provinces for failing to check drug prices through drug inspectors[31].

Another critical issue facing the Pakistani pharmaceutical sector is that generic drugs can be registered without bioequivalence tests and there is no limit on number of generics registered against a patented molecule. This is particularly detrimental to interested pharma companies and MNC's since they make considerable investment in developing a molecule and then conducting the required clinical tests, while a generic drug is registered without much delay in Pakistan[32].

As stated in the beginning, the protection of a patent is of critical importance for a pharmaceutical company. Yet there seems to be little implementation in this regard in Pakistan. This fact was conceded by the health ministry officials themselves. They acknowledge that

[29] Source: Statement by Dr. Athar Masood, posted on *Pharma Project*.

[30] Shams, Mazhar (2012),'Drug Regulatory Agency of Pakistan: are we a nation of accidents?'

[31] Statement by the Federal Minister on 5th February 2014, while talking to the media.

[32] 'Global pharmaceutical companies see battle for survival in Pakistan'; by Shazada Irfan Ahmed. Published in *Intellectual Property Watch*, 21st March 2013.

"There are no legal provisions for data exclusivity for pharmaceuticals. Legal provisions do not exist for patent extension. Laws do not exist for linkage between patent status and marketing authorization"[33]

In a 2005 survey, the proportion of pharmacies meeting licensing requirements was found to be only 19.3 percent. Most drug sellers were found to have fragmentary knowledge regarding drug dispensing and storage, and were found using improper dispensing practices[34]. A survey of 88 General Practitioners (GP) in KPK and GB revealed that only 3.4 percent knew about the right components of the treatment under question, while only 35 percent could write the right prescription. Similarly, a survey of 245 medical practitioners in Rawalpindi on knowledge and practice of TB revealed that only 1 in 245 knew that continuous coughing for more than 3 weeks is a symptom of pulmonary TB[35].

The cases of failure to check substandard and spurious drugs, which basically reflects the poor state of official drug enforcement machinery, are many and widespread. Usually, these kinds of cases only come to the fore when patients taking those medicines suffer severe health consequences. Otherwise, the prevalence of these drugs is widespread. Some of the cases where action was taken in lieu of losses are follows:

a) In October 2013, three high-ranking officials (including former K-P DG health services, a hospital's medical superintendent and a project director health) were arrested under the directives of Peshawar High Court (PHC). Case was also registered against the Pharmaceutical Company that supplied the medicine in question (Interferon)[36].

b) In 2010, the license of a pharmaceutical company was revoked by Central Licensing Board (under Supreme Court's directive) for supplying 300 million substandard Paracetamol tablets to government run hospitals.

c) In 2012, more than a 100 people died in Punjab after taking Isotab, which was later found to be contaminated and substandard. It is important to note here that it was a lab in London that declared it substandard. Official labs in Pakistan had clarified the said drug as safe for consumption.

d) More than 50 people died in 2012 after consuming an untested cough syrup called Tyno. Recently, the Crime Investigation Agency (CIA) rejected the domestic forensic lab's test report as unsatisfactory, and decided to send the sample to UK to get it properly tested.

It will not be wrong to assume that quite a few of the drugs that are later found to be spurious and substandard are the result of the failure of government's drug pricing policy.

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[33] 'Pakistan Pharmaceutical Country Profile' (2010), p.9, published by *Ministry of Health*.

[34] Gillani, Knight, Butt, and Nunan (2005); 'Quality of Pharmacies in Pakistan: A cross-sectional Survey '.

[35] Refer to Access to Essential Medicines in Pakistan (2011), p.11, *Agha Khan University* research papers.

[36] 'Substandard Medicines: Court directs NAB to probe spurious drug suppliers', published in *Express Tribune* on 23rd October 2013.

They appear in the market because quality drugs could not make it to the local market due to price restrictions. Thus, in the guise of protecting the consumer against perceived higher prices, the government policy (both at federal and provincial level) ends up hurting the consumer more due to prevalence of these kinds of substandard drugs. In all, the prevalent infrastructure, human resource capacity, quality issues and official practices in Pakistan are unlikely to attract foreign investment in its present shape and there seems little indication of improvement in quality indicators.

Does freezing drug prices help realize savings?

This is the argument that can be heard from many government and non-government officials and individuals alike. In fact, it will not be wrong to state that the supposed savings from freezing drug prices is the primary motive cited by the government circles in their justification of this policy. However, reality paints a completely opposite picture. Perhaps the most damning in this regard are the official statistics themselves that comprehensively refute this assertion. For example, as mentioned above in the overview of Pakistani pharma sector, the HIES states that expenditure on medicine accounted for 43 percent of total household expenditure in 2011-12, up from 24.37 percent recorded in 2007. This almost doubling of expenditure on medicines cannot be possible without an increase in drug prices, and it leaves little room (if any) for savings. Similarly, the SBP's *Inflation Monitor* stats indicate that the rise in prices of drugs over the last five years has been more than 6 percent yearly (on average).

Therefore, an assumption of realized savings due to price freeze of drugs is not possible realistically.

Data and Methodology for calculations

The accumulation of data for this paper proved to be the most challenging aspect of this study. There is little or no official record related to such critical aspects as the prevalence of spurious drugs, per year registration numbers, etc. Even if data about such critical categories exist, it is hard to access it. The relevant data on pharmaceuticals is sparse and available only piecemeal. The one used in this paper came from pharmaceutical sources, industry officials, international organizations and a few papers published on the Pakistani pharma sector.

Ideally, these kinds of studies could make use of a statistical test in order to gauge the efficacy of the results. But a critical requirement for these kinds of tests is the availability of quality data. As explained above, there is a dearth of quality data in this case. The use of the accumulated data for a test is highly likely to result in a misleading result. Therefore, the use of statistical testing is avoided for the purpose of this paper.

The following criteria are used for calculation.

a) Welfare losses due to counterfeit medicines: Counterfeit medicines are part of sub-standard medicines, whereby the identity and source of drugs is deliberately mislabeled. They apply to both generic and branded drugs. These counterfeit medicines not only represent a threat to consumer's health (they can result in under-dosage, wrong dosage or even death), but a loss to consumer too since they likely end up with even more medical complications than before. In future, this exerts an even heavier toll on their incomes since they will have to make more expenditure on a condition that could have been cured earlier if the right, quality medicine had been consumed. In short, this aspect represents a loss in welfare to consumer due to expenditures on counterfeit medicine (that result in little or no improvement).

We can estimate the cost of counterfeit medicine by looking at its prevalence (as a percentage of total medicine sold) and adjusting the total yearly expenditure sales on medicines in Pakistan for the rate of counterfeit medicines. This would give us the money number in terms of counterfeit medicines sold as a percentage of the total sales.

With regard to the percentage of counterfeit medicines sold, the 2010 statement of the then interior minister can be taken into account in which he stated that of the total available drugs in Pakistani market, 50 percent are counterfeit[37]. Even if we are to discard the then interior minister's statement as an exaggeration, its hard to discredit other credible sources of information like Agha Khan Network research reports, World Health Organization (WHO), and international research reports that would seem to confirm this claim. For

[37] Azad, Arif (2010); 'The Growing Menace of Spurious Drugs and Poor Consumers'; *Watch on Medicine'*, Volume 15.

example, Morris and Stevens (2006)[38] put the number in question at 40 to 50 percent, Lancet [39], the reputed medical journal, also puts the figure within this range, and WHO Annual Report (2005) also mentions this aspect of medicines in Pakistan. This is quiet a high percentage since even in countries with lower per capita levels of income than Pakistan, counterfeit medicines constitute at most 25 percent of total medicines sold.

Thus the safe number for calculation to be used here is 40 percent as the number of medicines that are counterfeit.

b) Welfare losses incurred due to lower levels of investment: These represent a loss because lower investment, above all, implies lower contribution to local, provincial and overall GDP of a country. The lower levels of MNC investment are especially worrisome in this regard because not only are their medicines qualitatively superior, but it is their financial capacity that allows them to invest much larger amounts (hence generating more employment opportunities). Moreover, it represents a loss because lower quality medicines may not be as effective in curing an ailment, and lower investments lead to lower employment. In this calculation, one can simply use the total investment number as a loss.

The loss can be calculated by looking at the FDI numbers over the years, and the domestic investment numbers. These shall give us a fair idea of the situation as far as this aspect is concerned.

c) Welfare losses due to government procurement: These mainly occur due to the non-availability of procured drugs in government facilities. Governments (both federal and provincial) purchase medicine for publicly run hospitals and other such facilities. But time and again, the availability of these medicines have been found to be wanting[40]. The availability of medicines in public health facilities in Pakistan ranges from 3.3 percent to around 7.5 percent[41]. More telling is the fact that the various surveys carried out in this regard were carried out in urban areas where the availability of medicines in government's health facilities are acknowledged to be better compared to the rural areas. It's a welfare loss

[38] Morris, Julian and Stevens, Phillip (2006), 'Counterfeit medicines in less developed countries'; *International Policy Network*, p.3.

[39] Nishtar, Sania (March 2012), 'Pakistan's deadly cocktail of substandard drugs'; *LANCET* (e-version).

[40] For example, various survey's carried out by *Citizens' Network* reveal an alarming picture of drug availability in public facilities. Its 2006 survey, titled 'Prices, Availability and Affordability of Medicines in Pakistan', found that the median availability of generic medicines was 3.3%. Similarly, a 2004 survey conducted by WHO found that the median availability of generic medicines is 3.3% while that of originator medicines was zero percent ('Pakistan Pharmaceutical Country Profile' (2010), *Ministry of Health*.) There is no reason to believe that there has been any marked improvement in drug availability since then. In fact, the WHO's 2011 report titled 'The World Medicine Situation (2011)' finds a similar situation, as in the former mentioned report. This is quiet low as the comparative median availability of drugs in countries with the same income level as that of Pakistan is between 30-54 percent.

[41] The 7.5 percent number was estimated in the study carried out by Mendis, Fukino and Cameron (et. all). The results were published in *WHO Bulletin* (2007), p. 279-288.

in the sense that it's a waste of money in terms of expenditures. The people who visit these facilities (especially the poor) often have to buy the same drugs at higher prices in the market. This happens due to inefficiency of the administration of public health facilities (in the form of corruption). The procured medicines find their way to market, and at a relatively higher price[42].

Thus, if we stack the total government procurement of medicine against this median availability of essential medicines in public health facilities, we can get a number for losses due to inefficiency. Although no up to date figures are available, we know that the total government procurement of medicines (as a percentage of total medicines sold in a given year) stood at 27.1 percent in 2004[43]. There is little reason to believe that this percentage would have changed much, or come down drastically.

However, for the purpose of calculation and for avoiding unnecessary controversy and considering that average percentage will be used for calculation over the years in question, the percentage of medicines procured by the government (as a percentage of the total medicines sold) will be considered as 20 percent. Similarly, the availability of medicines in public health facilities will be put at 10 percent. The selection of this number owed to the fact that the sample size used in the surveys (that gauged the availability of medicines in public facilities) was relatively small. From a purely statistical point of view, this implies that the results may represent a number that is far from the true population mean (meaning that it may give a misleading picture). In order to take care of any such bias, the number is taken as 10 percent[44]. Indirectly, it implies that the non-availability percentage of medicines is 90 percent on average.

d) Welfare losses due to resource underutilization: These come in two forms: welfare loss due to underutilization of vast network of government health facilities, and welfare loss due to underutilized production capacity of the pharmaceutical firms. As far as the former is concerned, there is widespread agreement (backed by research and reports) that government health facilities are underutilized, sometimes even severely[45]. This underutilization results in welfare loss because government spends money without anything to show for as output. For example, in many rural areas, the doctors are normally reported to be absent or unavailable. Yet their absence does not stop them from collecting

[42] Recently, embezzlement worth an estimated Rs. 62.71/- million in provision of medicines (from a government hospital) to parliamentarians was revealed. See Corruption of Rs. 62.71 M in issuance of Medicines Revealed; reported by Noor Aftab, *The NEWS*, 8th October 2014.

[43] Pakistan Pharmaceutical Country Profile (2010); p.5, *Health Ministry*.

[44] In reality, the situation may be completely opposite. Interviews/chats with individuals with experience of health related services indicates that if rural areas are also taken into consideration, the number for availability of medicines will be even lower.

[45] For example, refer to Access to Essential Medicines in Pakistan (2011), p.6, *Agha Khan University* research papers.

monthly salaries and other complementary perks. In other words, government has acquired a resource (doctor's services) but the utilization of that resource amounts to little or zero. This being said, however, the real problem encountered in terms of probable calculations pertained to the non-availability of a number for the rate of underutilization. Both the public and private sector experts/related individuals could not point to one single number in this regard. Hence, in the absence of a probable number or an educated guess, it is not possible to calculate a number for underutilization of government resources and welfare loss due to it.

Regarding non-utilization of productive capacity of pharma firms, these costs accrue to the producer due to underutilization of the productive capacity of pharmaceutical plants. These costs can be calculated by making use of annual sales numbers, the allowed profit margin, and average gross revenue of pharma firms in Pakistan. Since 15 percent is the profit margin for pharmaceutical firms on sales, we can adjust this percentage in total sales to arrive at the *gross industrial profit per year*. Once adjusted for the rate of underutilization of productive capacity, we can get an estimate of *total yearly forgone gross profit* of pharma firms. This underutilization also affects the supply of medicines, as fewer medicines get produced.

The rate of production underutilization was arrived at through interviewing various pharma company mangers/owners, industry insiders, official sources, and other credible reports (like newspaper reports). The safe estimate comes out to be around 15 to 20 percent, with 15 percent (on average) being used for our estimations. However, it should be noted that there is variation among the claims of utilization and total production according to source and geographical locales. For example, one pharma source claimed that rate of underutilization is as high as 80 percent[46]. Moreover, some pharma production plants in areas like Karachi are operating at more than their production capacity.

[46] Source: Dr. Kaiser Waheed, former Chairman PPMA. His interview appeared in the *Pharma News* and other news sources, under the heading Local Pharma Industry is Sinking: PPMA

Calculations

a) Welfare cost of counterfeit medicines sold:

Rate of prevalence of counterfeit medicines of total sales= 40 percent (0.40)

Total monetary loss to consumer from counterfeit medicine sale= 0.40*per year total sale of medicines

Year	Estimated total sale of medicines (a)[47]	Prevalence rate of counterfeits (b)	Losses= a*b
2013	Rs. 209 billion	0.40	Rs. 83.6 billion
2012	Rs. 190 billion	0.40	Rs. 76 billion
2011	Rs. 170 billion	0.40	Rs. 68 billion
2010	Rs. 153 billion	0.40	Rs. 61.2 billion
2009	Rs. 136 billion	0.40	Rs. 54.4 billion
Total			**Rs. 343 billion**

The estimates show that the Pakistani consumer has suffered a staggering monetary loss of **Rs. 343 billion/-** over the last five years due to buying of counterfeit medicines. On average, it implies that the loss amounts to **Rs. 68.64 billion/-** per year. It is pertinent to mention here, again, that this is only a loss in terms of expenditure. This does not say or indicate anything about the extra expenditure they had to incur or will incur in the future due to side effects of these medicines.

b) Welfare losses due to lower levels of investment:

The following table represents the Foreign Direct Investment (FDI) figures over the years[48]. The domestic investment figures are presented separately.

Year	FDI ($ mil.) 'a'	Increase/Decline	Exchange Rate 'b'[49]	Pak Rupee equivalent (mil.)=a*b	Increase/Decline
07-08	46.2		62.54	2889	
08-09	30.4	-51.5%	78.49	2386	-21.08%
09-10	5.4	-463%	83.80	453	-426%
10-11	6.3	+14.28%	85.50	539	+16%
11-12	2	-215%	89.23	178	-202%
12-13			96.37		
Total	**90.3**	**- 715**		**6445**	**-633**

[47] BMI's estimates are used here for this calculation. It should be noted here that the average growth rate of sales over the estimated years is 11 percent, which is used in calculations of years for which data was not available (2009 and 2010). Resulting values are then rounded off.

[48] Taken from SBP, published as Net Inflow of FDI by Economic Group till FY 12.

[49] Taken from SBP, published as Monthly Average Foreign Exchange Rates. Please note that the stated exchange number is the *average* over the fiscal year. Its use makes more sense since FDI is a *flow* variable (it's continuous), not a stationary number calculated at a specific point in time (like GDP).

We can see from the above table that the loss, in fact, is not limited to the pharma sector alone. With the decline in FDI over the years, the government is losing an opportunity to earn much wanted dollars in order to beef up its foreign exchange (FX) reserves. If we stack the total inflow of FDI (90.3) against the percentage loss in FDI (-715 percent), it would imply that the government has lost an opportunity to garner an additional **$555 million**/- in FX revenues just from decline in pharma sector investment between 2007 to end fiscal 2012[50]. For a government that almost always finds itself short of FX, this is tantamount to a considerable loss. The situation reads even grimmer if we consider that $555 million is a substantial chunk of the present estimated valuation of Pakistani pharmaceutical market ($2.2 billion). In short, an opportunity worth 30 percent of total pharma market has evaded us.

In terms of investment in rupees, using the same methodology as used above for calculating the forgone dollar amount, we can conclude that an investment worth **Rs. 34,351 million/-** has not been realized. On average, this implies that the forgone chance to earn FX amounts to **$139 million**/- (0.139 billion) per year, and **Rs. 8,587 million/-** (8.587 billion) per year in terms of investment in this sector.

As far as domestic investment numbers are concerned, unfortunately there are no concrete, reliable numbers that can give us a good guess about the loss in terms of domestic investment forgone. However, just by considering the numbers on FDI, one can get an idea of the substantial loss of investment opportunities in this sector.

An objection to this calculation may come in the form of pointing out that decline in investment does not owe solely to pricing issues. There are other important determinants like security, financing options, infrastructure, etc, that affect flow of FDI. These are very valid objections, but the facts suggest that it is issues like pricing and failure to implement intellectual property/trademark, etc, that is the main culprit in this regard. The security situation and infrastructure were not ideal when the FDI flows to pharma sector were at its maximum in the last decade (FY 04-05). International investment came to this sector because Pakistan, for reasons outlined above, offers a tremendous opportunity in terms of pharma sales and profits. That is why McKinsey consultancy termed this sector as a probable star performer for the future. Yet the continuous refusal to grant price rises (despite escalating production costs) and the failure to check copied/counterfeit medicines has made doing business in this sector extremely hard. This, primarily, explains why FDI has declined over time and international investors are reluctant to invest.

[50] (715% *90.3)-90.3= 555

c) Welfare losses due to government procurement:

The numbers for calculation have been outlined in the methodology section. The relevant calculations are as follows.

Year	Medicine Sale 'a'	Govt. Procurement (of total) 'b'	Total Govt. Procurement 'c'=a*b	Non-availability percentage 'd'	Loss=c*d
2013	Rs. 209 billion	0.20	41.8 billion	0.90	37.62 billion
2012	Rs. 190 billion	0.20	38 billion	0.90	34.20 billion
2011	Rs. 170 billion	0.20	34 billion	0.90	30.60 billion
2010	Rs. 153 billion	0.20	30.6 billion	0.90	27.54 billion
2009	Rs. 136 billion	0.20	27.2 billion	0.90	24.48 billion
Total					**154.44 billion**

The calculations indicate that the estimated total loss over the last five years amounts to **Rs. 154.44 billion/-** in total. On average, the loss per year amounts to approximately **Rs. 31 billion**/- per year.

d) Welfare losses due to production underutilization:

The relevant numbers to be used for calculation have been outlined in the methodology section. The calculations are as follows.

Year	Medicine Sale 'a'	Profit Margin 'b'	Total Gross Profit 'c'=a*b	Rate of under-utilization 'd'	Forgone Earnings=c*d
2013	Rs. 209 billion	0.15	31.35 billion	0.15	4.7025 billion
2012	Rs. 190 billion	0.15	28.5 billion	0.15	4.275 billion
2011	Rs. 170 billion	0.15	25.5 billion	0.15	3.825 billion
2010	Rs. 153 billion	0.15	22.95 billion	0.15	3.4425 billion
2009	Rs. 136 billion	0.15	20.4 billion	0.15	3.06 billion
Total					**19.30 billion**

The total loss due to underutilization of productive capacity amounts to a total of **Rs. 19.30 billion**/-. On average, the loss amounts to **Rs. 3.86 billion**/- per year.

Suggestions for further research

The criteria used for the calculation of welfare losses due to government policies (especially pricing policy) are by no means exhaustive. There are many other criteria that, given the availability of sound data, can be used to calculate further welfare losses. For example, Pakistani pharmaceutical manufacturers have to import about 90 percent of raw material for manufacturing drugs in Pakistan. They have to buy this material for as much as three times the rate prevalent in international market. The reason for this is the imposition of quota by the government, which gives the quota holders a monopoly position. What's the extent of price differential in this case? The price differential would seem to be huge, and many examples can be given to demonstrate this. For example,

'*In the case of one drug produced by a German-based company, the price for the raw materials charged to the company's subsidiary in Pakistan was US$11,092 per kg whereas the competitive international price was US$320. The price difference was 3360%. For an Italian-based drug MNC, the price of the raw material transferred from the MNC to its subsidiary in Pakistan was 7044% more than the price in the international market*'[51].

However, the calculation regarding this criterion requires sound statistics on imported raw material for drug manufacturing, which is not available. Therefore, once the data becomes available, further calculations of welfare losses can be made.

[51] Khor, Martin and Oh, Cecilia (2001); 'TRIPS, PATENTS AND ACCESS TO MEDICINES: PROPOSALS FOR CLARIFICATION AND REFORM'. *Third World Network Briefing Paper*. It may be noticed here that the information revolves around international pharma companies and their Pakistani subsidiaries involved in this practice. This is primarily why the government placed quota restrictions. But in doing so, government took the monopoly position away from one group and gave it to the other (quota holders). This did not solve the issue; rather, it exacerbated it.

Conclusion

The pharmaceutical industry is an ever expanding global industry with extensive potential for further growth. Yet what is often neglected is the fact that the kinds of risks that the drug manufacturers face are also unique in its nature. Pharma firms invest time and financial resources in developing a drug. Despite the painstaking research effort, only 3 out of 10 products tend to generate economic, after tax returns. And even if a particular drug does make it to the market in the end, it takes (on average) about 15 years from discovery for financial gains to materialize[52]. Add to this the fact that unlike majority of other finished products (like automobiles, laptops/desktops, etc), manufacturing a drug is a trivial matter once the exact combination of compounds is known[53]. These statistics should be kept in mind given the fact that a New Chemical Entity (NCE) costs at least $800 million and it takes over 16 years on average to find a proper niche in the market[54]. If prices are to be controlled, then firms have little incentive to invest such substantial financial resources and time in pharmaceuticals.

This is why the issue of gaining and maintaining a patent is so critical to the pharmaceutical industry. If another manufacturer in another country can easily manufacture the same product without permission, this implies a loss in terms of all the time and financial resources spent in developing that particular drug. Resultaantly, the drug companies are either discouraged from pursuing cutting edge research, they abandon this industry altogether or resort to illegal routes (like smuggling) in order to stay put. The end result is that in countries where there is little or no price incentive and little patent protection (as in Pakistan),

'*The range of health issues keeps growing because of long governmental neglect and institutional apathy. The only loser in this is the poor consumers who, despite paying expenses out of pocket, end up consuming expensive, substandard, and often not-required medicines*'[55].

The discussion in this paper amply demonstrates that there is substantial growth potential in the pharmaceutical industry of Pakistan. However, it's clear too that the

[52] Vernon(2003), 'The Effects of Price Controls on Pharmaceutical Research'

[53] This kind of information is easily available on the net. Pharmaceutical companies are bound to display information on the content of chemicals/compounds used in their drugs (either on the drug packaging or on net through the regulating agency like FDA). Indirectly, it implies that the company's information is in fact *public property*.

[54] Kutyavina, Marina (2010), 'The effect of price control threats on pharma R&D investments', p.3.

[55] 'The Growing Menace of Spurious Drugs'(2010); *Watch on Medicine,* Volume 15, published by *Citizens' Network*.

government's regulatory policies have caused tremendous damage to this industry. The calculations based on four selected criteria shows that on average, the yearly loss amounts to **Rs. 112 billion**/-. For a financially resource starved country like Pakistan, this is a tremendous loss. Unfortunately, governments over the years have not taken any concrete steps to halt it.

The government seems to be suffering from '*Agarophobia*', a term coined by economist Daniel McFadden to describe a government's fear of markets. Moreover, as the calculations in this paper demonstrate, the end result of placing price restrictions on medicines (for the purpose of enhancing welfare) have actually led to the erosion of welfare in that both the consumers and producers are suffering losses. Essential medicines are unavailable, smuggled or available at black market prices. The following table, that contains the list of essential drugs over the years that were not available on regulated prices (but available on much higher black market prices), is an ample proof of this fact[56].

Year	Medicine	Used For	Regulated Price (Rs.)	Black Market Price
2001	Dalintin	Epplilepsy	55 per 100 tablets	500 per 100 tablets
2001	Lescol	High Blood Pressure	535	Up to Rs. 1,200/-
2001	Buscopan	Stomach and Kidney Pain	60	200
2003	Pendura P.A	Heart Problem	14	90-100
2003	Buscopan	Stomach and Kidney Pain	75	150
2003	Phenoberbeton	Brain Disorders	8	Up to 50
2012	Panadol CF	Fever	17.50	50
2013	Typherix	Typhoid Vaccination	400	1000
2013	Typphim	Typhoid Vaccination	400	1000
2013	Salbutamol	Asthma	50	175

Perhaps the most important question to address here is that why do policymakers keep pursuing those policies whose effectiveness over time has been shown to be questionable? Regarding price regulations, it has been established that historically, it rarely (if ever) works. Yet this policy keeps being towed by governments around the world. The probable answer to this question lies in the concept and appeal of welfare populism. The first step in this process of welfare populism revolves around turning a purely market oriented issue into a public good issue, and basing the decision on inability of the markets to

[56] For a report on medicine shortage and black market pricing in the current fiscal, refer to 'Irregular Drug Supply Hits Consumers', DAWN, November 2 2014.

solve the problem. While markets may have their shortcomings, in the case of pharmaceutical industry in Pakistan a market oriented approach easily provides the answer to the ills affecting this particular industry. However, government's intervention has only exacerbated the supposed ills rather than curing it. Thus, in this guise of providing welfare, the society ends up with less welfare than before due to the government's policies. Pakistan's case represents a clear example in this regard.

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