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They should not emerge, but they do! –

Development of the Generic Pharmaceutical Industry in Syria and Bangladesh

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Abstract

The discussion about the economic development of the countries within the Middle East and North Africa (MENA) region is mostly dominated by the macroeconomic perspectives. The productivity, innovativeness and international competitiveness of the industries of the MENA countries have been discussed mainly under the top down approach concluding that the institutions are the prime facilitators in the development of the industries. When the institutions do not move in parallel with the needs of the industry, it withers away, becomes inefficient, gets crippled with lesser chances of growth. Taking a bottom up approach this paper shows that competitive industry can emerge even where the institutions have not developed and the available ones are dysfunctional and under-resourced.

JEL classification: I11, I12, I15

Introduction

The recent social and political events in the MENA region, widely known as *Jasmine Revolution*, have drawn significant attentions of different interest groups to get deeper understanding about the causes and impacts of such event on the development and well-being of the concerned countries and regions. Previous discussions on the development in the MENA region countries focused on the dominant cultural attributes in the region and their relations to social and economic development in the region. Such discussions were sometimes based on comparison of the development of the MENA region countries with other countries, mainly the western countries. These analyses worked with standard macroeconomic indicators and western benchmarking parameters. These analyses mainly ended up with the not so encouraging prospects of the countries of the region. Absence, inefficiency and voids of the supporting, monitoring and regulatory institutions were identified as frontrunners among the key challenges for growth and development of this region. They include dysfunctional institutions with corruptions (Aysan et al., 2007; Nabil et al., 2007; Nabil, 2007), difficulties in property rights relating to innovation (Nugent, 2002), general lack of openness to foreign elements including FDI (Brach, 2008; Brach, 2009) and willingness of the political elites to maintain status quo. We are mainly concerned in this paper to know that in spite of such challenges how the region still does some progress. There is a lack in this understanding, as the extant works are based only on macro-level analyses. A considerable body of meso and micro-level analysis relating to industrial and economic development in this region is not available. In this paper, we focused on analysing the development of one particular industry based on the general and the particular industry specific institutional perspective of a country. The purpose is to understand how institutional settings influence the development of an industry. Development and contribution of some key industries in a country or region are not reflected in the typical macroeconomic measures of growth and development; whereas development of such industries are demonstrations of different types of critical competences which can be exploited for further developments in different sectors

Taking a bottom-up approach we show that competitive industries can emerge even where the institutions have not developed and the available ones are dysfunctional and under-resourced. The cases of Syrian and Bangladesh pharmaceutical industries are both successful stories of emerging new industries in developing countries. Analysing both, we are faced with these questions: How could they emerge in such insufficient environments? What have been the conditions on the micro and on the macro level which first intensified entrepreneurs to invest into that specific market and how have they learned to be successful? One of the central point's here is the question why the entrepreneurs have been able to take the opportunities into their business perspective and do not move into rent-seeking behaviour in such environments?

Though Bangladesh is far from MENA region, we have picked Bangladesh for different reasons. Bangladesh is a developing country in South-Asia with a good number of cultural similarities with MENA region countries through their similarity in religious beliefs and practices. Bangladesh is attributed with challenging institutional setup. In spite of this, a number of industries like ready-made garments, pharmaceutical and ceramic have successfully emerged there. We picked Bangladesh in our work to compare Syria with another country with similar but not same context. Comparing Syrian development with a western country or with another MENA country could be prone to the limitation of comparison between very dissimilar or very similar cases.

In the first section of this paper we introduce the theoretical questions, assumptions and their discussions relating to the emergence of new industries. In the second section we present the case of the pharmaceutical industries in Syria and Bangladesh. In the third section of this paper we compare the Syrian and Bangladesh cases to focus on the drivers and trajectories of the emergence and development of new industries there. We have ended the paper with comments relating to implications of our work for further research in this issue.

Theoretical aspects of the emergence of industries - Analysis from the firm's perspective

The discussion about the emergence of new industries and their dynamics is a crucial point in the analysis of economic development. Such dynamics such as innovation, competitiveness and sustainable development have been in the spotlight of the analysis. Taking a bottom-up approach right from the entrepreneurial perspective, the birth of a single firm can be the initial point for the emergence of new industries. More deeper analysis of this phenomenon leads to postulate that entrepreneurs not only kicks off the development of the industry, they also contribute to the boundary shifting or restructuring the industry (Schumpeter, 1934), as the emergence of a new firm with a close substitute stands for the shifting of the current boundary of the industry. Acs et al. (2008) note that dynamics of entrepreneurship can be very different depending on the availability and the efficiency of the institutions in a particular location and current level of economic development there. This observation confirms that institutions and emergence of industry is co-evolutionary (Nelson, 1995). If the whole process of industry development has to be explained, it looks like a more complex co-evolutionary space consisted of entrepreneur, institution and technology.

By looking into history and taking a favourable example of economic growth- the first industrial revolution in Great Britain, Crafts (1996) developed three major implications for future research in growth economics.

First of all he draws attention to the fact that the major incentive for innovators is the ability to allocate rents or any form of surplus. He pointed out that undue attention is paid in the discussion to R&D and learning as well as patenting issues. Secondly the British example gives us support for the understanding of the role that human-capital formations played in growth. The capabilities for the transfer of technology and knowledge as well as for innovation in Britain have been strong and improving at that time. Another example from Germany during the "Founder Years" shows similar effects. Finally the Industrial Revolution in Britain shows that the mainstream calls for economic openness as fundamental for growth

is a paradigm which has to be discussed in detail. The British, German and present-day China are examples that show growth performance side by side with growing protectionism and artificial devaluation (see also Elsenhans et al., 2005; Chang, 2002).

Birth of the firm

We want to examine, an outwardly either or looking issue, do the institutions and the environment kickoff the process of the emergence of an industry or the entrepreneurs do it. If we conceptualise an industry as a group of firms offering something similar or close substitute to each other (Porter, 1980), the entrepreneurs kickoff the process. Kirzner (1973) views the entrepreneur as the entity which looks for opportunities in the market and initiates necessary actions to exploit the opportunities, and the most recognizable shape of such activities is the creation of organization (Katz and Gartner, 1988) with high probabilities of survival (Low and Abrahamson, 1997).

When we go into the theory of Organizational Development and Learning we can find a simplified example of the steps for the emergence of the firm. Ask the entrepreneur or the key member of the firm about the starting point for the firm, they will usually answer that in the beginning there was an idea. But there is still one step before even an idea can originate. Following the Organizational Development Literature the initial step lies in a strong need. A potential entrepreneur or a group of them has to come in contact with a need of the environment. There has to be a problem to solve or a demand to cover or something to improve. Furthermore the need has to be strong, which means it has to appeal to the potential entrepreneur, from which he is able to address the need and materialise the idea by articulating a specific product which has potential for successful commercialisation. From this a vision emerges within the entrepreneur, such vision motivates and drives the entrepreneur to organize and invest different forms of resources which may be tangible, intangible or both (Kofman and Senge, 1995).

The two crucial points for the success of a company are the capability to seek further needs of the environment and to attract the resources needed to be invested. Right in the Schumpeterian scenes the first point is the constant seeking for opportunities to invent, of which an expected potential surplus return above the costs for the production may arise. An expected development and imitating of future machinery as well as the costs of maintaining the learning capabilities and capacities may also be triggered (Elsenhans, 2004). Against the wisdom that there is minimal economic growth in developing countries because of insufficient financial resources, which refers to FDI, marginal and underdeveloped economies are often rather faced with limited investment opportunities because of the absence of markets for products with mass consumption character (ibid.).

Profit, rent and the perspective of the entrepreneur

Here in our paper, we follow Elsenhans (2001 and 2004) by conceptualizing rent and profit as two different forms of surplus appropriation. The appropriation of profit is just possible under the conditions of competition, whereas rent arises in imperfect market conditions and appropriated through political privileges and power. Rent originates from surpluses under the conditions of absence of rentable investment possibilities in non-growing markets or in the absence of pressure for reinvestments in the imperfect market (Alexander 2006). Here the crucial point is that theoretically every capitalist has to reinvest their profits in the perfect market condition; otherwise in the long term he will be running out of the market. This also goes in line with the Schumpeterian assumption for perpetuity of competition as the means of development through creative destruction (Schumpeter, 1934) under which the entrepreneur constantly seeks for new innovative investment opportunities.

We do not follow the conceptualisations which perceive rent as any sort of excessive income (Khan, 2000) in the form of entrepreneurial rent, innovators rent, monopoly rent or others (Boldrin and Levine, 2003). Those concepts suffer from the challenge that in the short term perspective forms of rents are the driving forces behind undertaking economic initiatives, especially for the SMEs, for example profits of the entrepreneurs may appear as rents (Pasour,

1987). The theoretical conceptualization of rent in neoclassical literature is that rent is the return in excess of opportunity costs left behind. Opportunity costs are subjective and profits are made through entrepreneurial activity which makes the objective identification of rents impossible (ibid.).

Instead of classifying any sort of excessive income we focus more on how different kinds of surpluses can be appropriated than on how they arise. Strategic decision making and management of the enterprises has always to deal with uncertainties and the decision maker or entrepreneur will do anything he can to lower potential risks in the future (Sterman, 1989). Taking also into account that one of the driving forces for economic activity is that any entrepreneur tries to reach the best positive rate of surplus he can, or think he can achieve, the two perspectives of surplus appropriation, rent-seeking and profit seeking, lead to different behaviours.

Under the business or profit perspective and with the pressure of competition the focus lies on seeking new innovative product or process development respective adjustments, else the firm fails in the market. Constantly searching for those strong needs of the environment is fundamental for long run success of enterprises. Under those conditions the investment of the available resources has the tendency to be efficient (Elsenhans, 2001).

Under the rent-seeking perspective and with the assumption that rent can just be appropriated through political privileges the focus lies on attracting that political power to maintain. That means to invest resources in reaching political goals which not automatically fits with the needs of the market. The conditions have the tendencies to be inefficient (Krueger, 1974).

Both perspectives can occur in the entrepreneurial decision making at the same time and both strategies can be successful for the entrepreneur. They are also described above extreme theoretical stereotypes (ibid.).

Nevertheless in the market it depends on which sort of perspective dominates. If rent dominates, then, following our assumptions, there is a lack of rental investment opportunities

and the entrepreneur will invest the available resource to obtain wealth transfers through the aegis of the state or political powers. Here the probability to gain those transfers depends on the determination of a small group of people. Their decisions for going for something or someone are based on non-economic criteria. Non-economic criteria include norms and culture, which mainly come from private sphere. If the decisions for the wealth transfer through aegis are not based on economic questions then the uncertainty for the entrepreneur lies in the “goodwill” or in good relations to the institutions or controller of the resources (Elsenhans, 1999).

Following the assumption, that long term business success of a firm lies in its capability to address and fit with the needs of the customers in an ongoing changing environment (Teece et al., 1997). Only rent-seeking behaviours don't guarantee the firms' competitiveness in the market. Rent-based competitiveness can be retained for longer time in the market, when the market contains significant amount of imperfections. Especially in international market of the product with greater amount of homogeneity, rent-seeking behaviours don't sufficiently safeguard the competitiveness of the firms. In both the cases of Syria and Bangladesh, the pharmaceutical industry has demonstrated international competitiveness, even in the western markets. Their process of internationalisation was fast and they achieved remarkable growth in international markets. This fact strongly supports the argument of the competitiveness of the drug production in both countries and hence the arguments that profit perspectives are dominating.

The cases of the pharmaceutical industries in Syria and Bangladesh

Syria

After the Syrians had ended a period of longstanding political and economic instability in the beginning of the 1980s, the Syrian government was confronted in the mid 1980s with financial crisis. The approach to increase and generate growth and employment exclusively through supporting the state-owned industrial sector failed and the Syrian government was

pushed to increase the productivity and macroeconomic involvement of the private sector. (Sukkar, 1994; Perthes, 1992)

For the pharmaceutical sector the Syrian government decided in the end of the 1980s to support and encourage the domestic private pharmaceutical industry because of the increasing high import costs for pharmaceutical products which Syria wasn't able to pay anymore. (Di Tomasso et al. 2003) The costs for imported medicine ranged up to 600 million US\$ per year at that time. Only 6 % of the Syrian pharmaceutical demand in 1988 was served by two public sector companies and 2 % by private sector firms. The balance of the national demand was imported and distributed by Saydalaya, a state owned company. (Syrian European Business Centre - SEBC, 2003)

Nevertheless the sponsorship from the Syrian Government was limited. With import restriction and no effective patent protection through the absence of international intellectual property rights especially, companies in the pharmaceutical sector had marginal problems to getting started.

The development of the domestic private pharmaceutical industry in Syria, in the beginning of the 1990s, was strongly supported by the government through the reinforcement of 'Law No. 103 in 1956' and the 'Law No. 10 in 1991'. They fostered the private investments in the Syrian economy. Both Laws encouraged budgetary and regulatory support for the local producers, export base and development of the local technology. An example of such support is the provision of the tax waiver for the local producers for three to five years. The Minimum amount of the capital investment for being eligible for government support under the 'Law No. 10' was 10 Million SYP or 217391 US\$, which was relatively high in the early 1990s' Syrian context. Most of the private owned firms including the pharmaceutical firms were not in a position, at that time, to comply with this requirement. As a result, quite a few numbers of the pharmaceutical firms developed at that time. Nevertheless, the introduction of this law and the reinforcement of 'Law No. 103' after a period of strict restrictions for the private business activities encouraged the private entrepreneurs to start-up, which resulted in significant rise in

the amount of private investments in the industrial sector, including in the pharmaceutical industry (Wils, 1997; Di Tomasso et al., 2003; SEBC, 2003)

Currently there are 63 pharmaceutical manufacturing units in Syria, which are producing more than 6500 varieties of medical drugs (SANA, 22 July 2009). Qualities of the products generally meet the standard criteria, as all of the pharmaceutical production units in Syria are ISO compliant. The industry provides more than 14,000 jobs, 25 % of them are filled in by the university graduates and the rate of female employments in this sector is higher than any other sector of production (SANA, 11 November 2009).¹ The turnover in the Syrian domestic markets reaches to 500 million US\$ a year, and the Syrian industry supplies more than 92% of the human drug needs in the local market. In past 20 years, Syrian pharmaceutical industry has turned itself around from 90% finished product import to 10% finished product import for its domestic market.

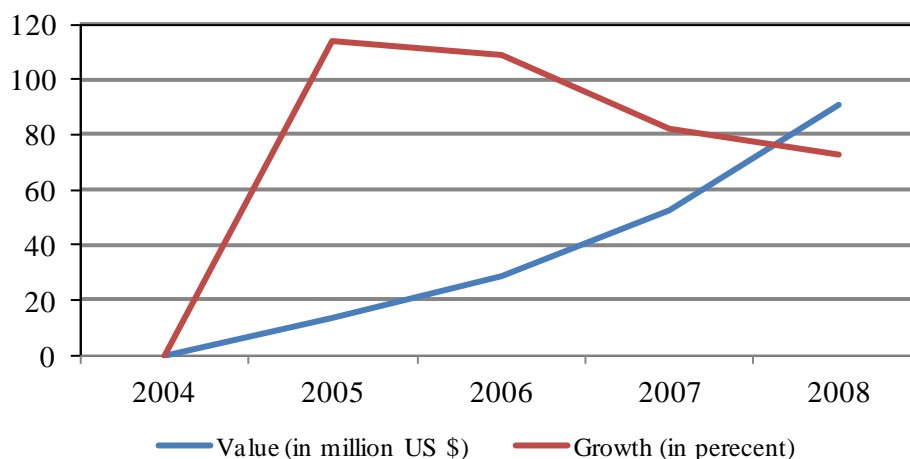
The Syrian pharmaceutical industry is highly dominated by the private sector. In 2009 the public sector contributed just 7 % to the Syrian production of pharmaceutical products. Nearly three quarters of the companies in the pharmaceutical sector are SMEs.

The privately-owned pharmaceutical firms are locally-owned and managed by native Syrians, as no foreign firm or their subsidiaries are allowed in Syria. Although the Syrian government is changing the regulatory regime slowly, some sectors like financial sector has been made open for the foreign firms, but the pharmaceutical sector is reversed for the local private entrepreneurs only. International engagements in the Syrian pharmaceutical sector are limited to granting license of the products of the foreign firms to the local Syrian firms and to have scientific offices in Syria to perform marketing activities for the allowed imports and licensed products in cooperation with the local Syrian firms. The pricing of the pharmaceutical products, including domestically produced and imported ones, are controlled by the Ministry of Health (SEBC, 2003)

¹ More than 70 % of the students in pharmacy in Syria universities are female.

Syrian pharmaceutical industry is ranked second, preceded by Egypt, among the Arab countries to meet the demands of the local pharmaceutical market by its own production. With regards to exports in pharmaceutical products, it lies second behind Jordan (SANA, 22 July 2009).

Chart 1. Export performance of the Syrian pharmaceutical industry



Source: Constructed from the data from the Central Bureau of Statistics Syria (2009)

Starting the export activities with the former Soviet Union, Syrian pharmaceutical export has achieved a tremendous growth in the last years. Chart 1 shows that exports jumped to 19.4 million US\$ in 2008 from 1.26 million US \$ in 2004. Annual average export growth (in terms of export value) in this period is around 100 %, while share in the world pharmaceutical trade increased 75 % per annum in this period. Pharmaceutical industry is the second largest export industry in Syria, which is just preceded by the mineral oil sector.

Syria is exporting pharmaceutical products to 56 countries all over the world. Most of them are Arab and African, Asian and South-American. Others are North-American and European countries including Germany, United Kingdom, Canada, Honduras, Bolivia and Afghanistan.² Syria is exporting at least 100,000 US\$ of pharmaceutical products to at least 21 different countries, which include Yemen, Sudan, United Arab Emirates, Iraq and Algeria. The exports

² Central Bureau of Statistic Syria www.cbssyr.org

to the European Union started to grow and have reached to 1.6 million Euros in 2005 with a growth rate of 20 % in the period of 2003 and 2005.³

Table 1. Export destination of the Syrian pharmaceutical products

<i>Importing country</i>	<i>Import (000 US\$)</i>
Jordan	1298
United Arab Emirates	1117
Algeria	17831
Sudan	10219
Iraq	89006
Kuwait	14066
Saudi Arabia	6882
Yemen	28472
European Economic Community	473
Germany	666
United Kingdom	78
Bolivia	401
Canada	608
Honduras	3085
Afghanistan	1783
Ghana	64

Source: Central Bureau of Statistics Syria (2009)

Jordan is the biggest exporter of the pharmaceutical products in the region. Syria's per capita in pharmaceutical export is around 3 US\$, while that of Jordan is 55 US\$. It is ascertained that if Syria could increase the exports up to the per person level of Jordan the amount of exports would reach 1.0 billion US\$ a year, and the Syrian pharmaceutical industry has the potential to reach that level (SEBC, 2010).

³ The meanly amount of exports to the European Union compared to other countries in the region like Jordan and Egypt is based on the fact that until now Syria and the European Union haven't signed the free trade agreement for the Mediterranean region.

Bangladesh

Bangladesh, a tiny South-Asian nation with a territory of 144000 km² neighbouring to India, started out as an independent nation after winning a bloody war of independence against Pakistan in 1971. In 2007, Bangladesh, with a population size of 153 million, achieved 140th place (belongs to medium HDI nations group) in the Human Development Index (HDI) ranking with a HDI score .547 (while in 2007 India scored .619 and Pakistan .551), which was just .347 in 1970 (UNDP, 2008). This development has drawn applause from the international press as Perry (2006) in his Times article, comments 'the country now scores higher than neighbour India on several key parameters of social development, such as infant mortality, child vaccination, and employment of women, a striking turnaround over the past decade or so'.

From the post-colonial to the pre-independence period, i.e. 1948 – 1971, pharmaceutical market of this region used to be dominated by the imported drugs and the production by the TNC's local subsidiaries, where the role the local firms was both technologically and commercially insignificant, and this trend continued till the early 1980s (Begum, 2007). During 1981-1982, 122 companies from 23 countries had been exporting human pharmaceutical drugs to Bangladesh including 29 UK, 12 USA, 10 Swiss, 9 German and 10 Indian companies (Chowdhury, 1995). In the early 1970s, under a changed world perspective, featured by the sharp rise of oil price, US departure from Vietnam, nuclear capability development by India and a strong political role of the 'Non-Aligned Movement (NAM)', third world countries attempted to exert more self-control over the determination of their course of action relating to their economy and welfare, where tackling the increasing cost of healthcare was an important element on the agenda (Chowdhury, 1996). Among the reasons of such shamle scenario in the developing countries, pharmaceutical TNC's practices had been alleged and argued to contribute to public health disasters, as reported in the literature focusing on this issue c.f. marketing drugs with misrepresented therapeutic value (Silverman et al., 1992), dumping in third world countries (Guha, 1986), few therapeutic value drug marketing in the third world (Davies, 1994) and unethical profit targeted drug promotion and

marketing (WHO, 1977). It was a heightened necessity to streamline the pharmaceutical TNC's and the importers' detrimental practices and to promote local pharmaceutical industry development, in order to improve public health situation in the developing countries. In response to this call, Bangladesh government took initiatives to draw a full-fledged drug policy suitable to support the healthcare of a developing country like Bangladesh by constituting an expert committee on April 1, 1982. Recommendations of this expert committee, after revisions and due process, emerged and had been enforced as the 'Drug Ordinance (Control) 1982'. The expert committee marked 1742 drugs as non-essential or therapeutically non-significant and banned their production and distribution under different implementation frameworks. Among the 1742 drugs, expert committee identified as harmful, inappropriately formulated or therapeutically ineffective, 176 were being produced by the TNCs, 617 were being imported and 994 were being produced by 156 local manufacturers. 'DOC (Drug Ordinance Control) 1982' initially caused a huge stir among the medical practitioners, pharmaceutical companies' representatives, pharmaceutical TNCs worldwide, different national governments and the legislative bodies including the US Congress and the German Bundestag. Bangladesh government finally didn't back off from DOC 1982. Later this initiative was hailed as an example for the other developing nations to follow to fit the pharmaceutical industry with public health benefits. This legislation was further dubbed as the turning point of the local pharmaceutical industry development in Bangladesh (Reich, 1994).

The demographic and the economic context got substantially changed over the periods in Bangladesh. If 1970 -2005 period is considered, the population count stands at 153.3 million in 2005 from a 79 million of the 1970, though the fertility per woman has dropped down to 3.2 from 6.2 children, infant mortality rate has got reduced to 54/1000 birth from 145/1000 birth and the birth time life expectancy has improved to 62 years from 43.5 years. In 2006, for this population, there were 1683 hospitals and 51044 hospital beds with 44,632 registered physicians i.e. one physician for 3125 people (Bangladesh Bureau of Statistics - BBS, 2007). In the same period, health expenditure from the part of the government was .09% of GDP and the private contribution was 2%, whereas the per capita health expenditure rose to US \$ 64 from the US \$ 2 per capita drug expenditure in 1990. These developments along with the

regulatory reforms served as the driver of the pharmaceutical industry development in Bangladesh. Pharmaceutical drug market developed from less than € 100 million in 1982 to more than € 3900 million in 2007.

Local producers are the producers of the generic drugs in their own brand name. There are 237 licensed drug manufacturers in Bangladesh and among them 150 are in operation (Directorate of Drug Administration Bangladesh - DDA, 2007)⁴, while 138 are registered members of the 'Bangladesh Association of Pharmaceutical Industries (BAPI, 2007)⁵, the apex body of the pharmaceutical drug manufacturers of Bangladesh. This industry employs 65000 skilled people directly and 15000 unskilled people in indirect manner (Lincoln and Bhattacharjee, 2007). Local producers supply 97% of the yearly domestic demand for the human pharmaceutical drugs of the country, while the remaining 3% imported finished drug includes only high-tech therapeutic drugs⁶ (Faroque, 2006).

There are about 450 generics formulations in Bangladesh with the registration from the DDA. Among them, 117 are in the controlled category i.e. in the essential drug list. The remaining 333 generics are in the decontrolled category. The total number of the brands /items that are registered in Bangladesh is currently estimated to be 5,300, while the total number of dosage forms and strengths is 8,300 (Sarker, 2006).

After consolidating the positions in the domestic market, leading Bangladeshi pharmaceutical firms tried to explore markets outside Bangladesh. They initially went out to the neighbouring non-regulated markets e.g. Nepal, Myanmar and Sri Lanka mainly with bulk formulations and few finished formulations (Begum, 2007). Local firms started to get into export venture systematically as a serious business option since 1992 (Lincoln and Bhattacharjee, 2007). Beximco, a leading Bangladeshi manufacturer, exported 'Active Pharmaceutical Ingredient (API)' to Hong Kong and later it exported finished formulations there in 1993. In post-1992

⁴ Professor Habibur Rahman, Director, Drug Administration Bangladesh revealed in a press conference in Dhaka on 11. 04. 2007.

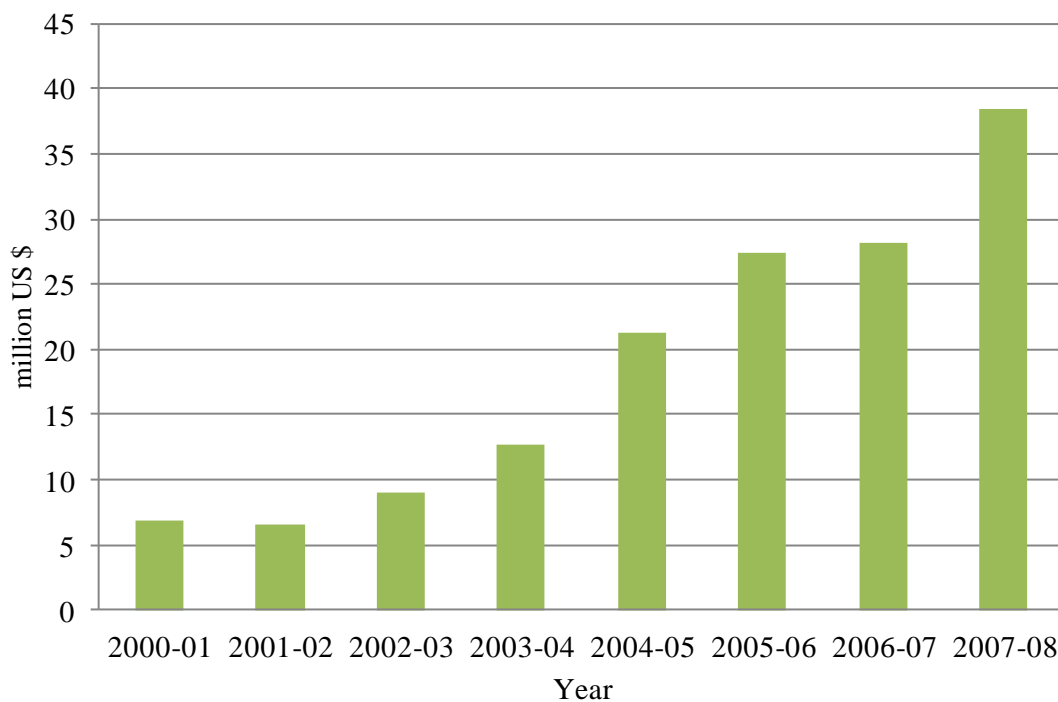
⁵ Information collected from 'Bangladesh Association of Pharmaceutical Industries (BAPI)'-the apex association of the owners of the pharmaceutical manufacturing units.

⁶ Principally vaccines, hormonal drugs and anti-cancer drugs

period, local drug manufacturers were encouraged by their initial experiences of success in the neighbouring market as well as by the unfolding of the events in the Soviet Union and other communist countries. Collapse of the Soviet Union changed the world political geography and gave birth to the new economies in Central Asia and in Eastern Europe, which got exposed to serious challenges in the initial periods of their adjustment with the new system. The newly emerged nations found that their demands for the necessary commodities including the medical drugs were much higher than their existing supply capabilities, and the free falling of the purchasing power made this situation even worse. These newly emerged nations looked for low cost quality sources to fill the gaps, while such suppliers looked forward to get into these markets as an opportunity for their expansion. Several Bangladeshi pharmaceutical manufacturers put efforts to get into CIS (Commonwealth of Independent States - organization of new countries emerged from the breakup of the Soviet Union including Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, and Uzbekistan) countries' markets (Begum, 2007).

Beximco was the first to export pharmaceutical drugs to Russia in 1994. Currently, the local producers are looking onward more to get into international market as a part of their regular growth and expansion strategies.

Chart 2. Pharmaceutical drugs export from Bangladesh



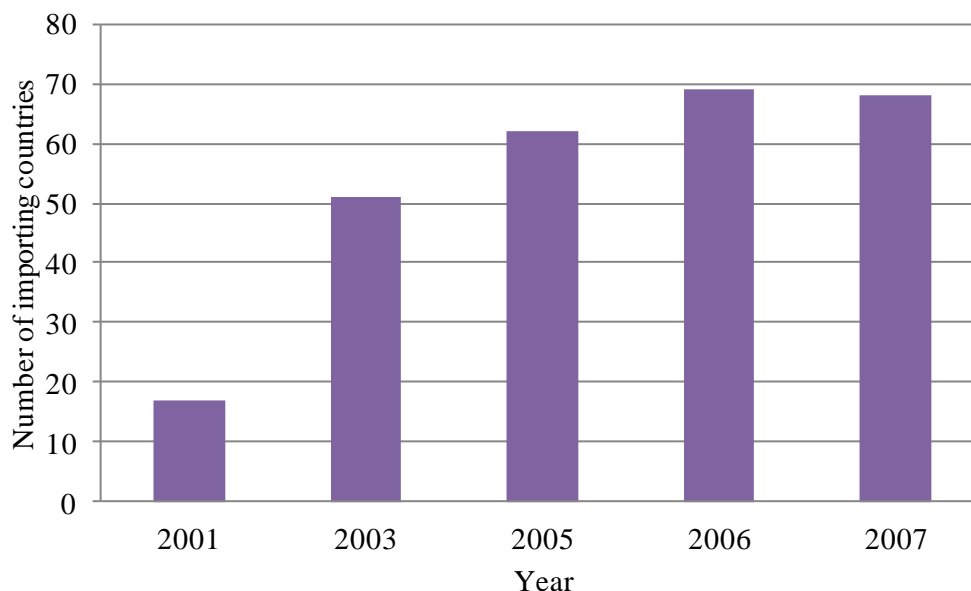
Source: Board of Investment Bangladesh (2007) and The People's Daily (2007)

Chart 2 shows that pharmaceutical exports from Bangladesh have been significantly increasing over the years. Though the monetary value of the Bangladesh pharmaceutical export is quite insignificant in terms of the national export-earning context, it is an important indicator of export diversification. Export diversification with a knowledge-based and technology-based product is highly encouraging for a knowledge and technology dearth country like Bangladesh, as it suggests that the country has received some success in technology and knowledge capability building which can be extended further. Such export can be extremely important, as exposure to competition and networks in the export market can be an important source of learning, capability building, and improvement for the sector (World Bank, 2008).

Bangladesh pharmaceuticals producers mainly export generic finished formulations in dosage and bulk form as well as a small amount API (ibid). They mainly export to 'moderately regulated markets' i.e. where certification and registration rules are not as stringent as in the 'highly regulated market' e.g. USA, Canada, UK, Japan, Germany, France, Italy, and EU, and

to the ‘non-regulated markets’ i.e. where the regulatory requirements are minimum (Chowdhury, 2006).

Chart 3. Number of the countries importing pharmaceutical drugs from Bangladesh



Source: Constructed from Begum (2007), Gehl Sampath (2007) and The Financial Express (2006)

Bangladeshi pharmaceutical products are exported to as many as 69 countries of Asia, Africa, North America, South America, and Europe including Russia, Ukraine, Malaysia, Tanzania, Vietnam, Philippines, Germany, Sweden, USA, Netherlands and Brazil to name a few. Chart 3 shows the diversification of international markets that Bangladeshi pharmaceutical industry achieved over the past years.

Insights from Syria and Bangladesh cases

Following the first point of Crafts (1996)’s historical analysis the major incentive for the entrepreneurs in Syria and Bangladesh to move into the market of pharmaceutical products lied in the initial reinforcement of laws, which banned foreign competitors from the respective domestic markets. In both cases the state decided to cut imports of drugs and to become self-sufficient in that sector because they wanted to reduce negative balance of payments. For the

local entrepreneurs the new scenario opened up a large market with strong potential demand for mass consumption. Because of the weakness of the state and the political powers or tribal structures the market was free for the competition of local manufacturers, where they had to compete only with local firms from the same starting position for the new vacuum in the domestic market. The investments for this catch up came from local entrepreneurs which identified this huge opportunity of a large scale market. Drug production in those cases can be compared with large scale products for mass consumption. The demand for daily used drugs was dominating the markets and the production in both cases started with low level generics, where the knowledge gap as well as the success barriers was relatively small and the cost manageable.

Beside that in both countries the demand was also backed and subsidized through the public health system. If mass demand is a precondition for economic growth here the potentials and incentives had been tremendous.

Taking the second point into account that the available capabilities and human resources in Great Britain at the time of the Industrial Revolution had been favourable for economic growth we can argue that a similar effect can be related to the instances in Bangladesh and Syria.

In both countries there have been no significant barriers for the freedom to operate. The status of the institutional guaranty for property rights was either absent or significantly low. Hence the cost for entering the market had been low, especially for manufacturers in the pharmaceutical sector. North (1995) posits that short run economic growth can occur within autocratic regimes; in the end the development of the rule of law entails positive long run economic performance. Here the cases challenge the theoretical discussions of the neoclassical and institutional economics which require stable and secure property rights as a precondition for the successful emergence of an industry which is knowledge, technology and capital intensive like the pharmaceutical sector.

Here one effect in the Syrian pharmaceutical industry seems to be interesting. There is a difference between the protection of property rights in the local market and the protection of international property rights. With regards to international property rights, Syria until now has not signed the international agreements, which lower the barriers for local activities. In the case of property rights on the national level the situation improved significantly during the last decade. This might be one reason why the Global Information Technology Report (GITR) ranks Syria 61st, preceding Czech Republic, Hungary and Italy (GITR 2010).

Secondly, if capabilities are one of the preconditions for the birth and the success of a firm and the fast takeover of the market in both cases suggest that the capabilities available were in the market at the time of take-off, then the question arises: how had the entrepreneurs been able to learn the needed routines and capabilities?

In case of the development of the pharmaceutical industry in Bangladesh, only two public universities were offering undergraduate and graduate programs in pharmaceutical science. The graduates from those universities were working for the TNCs then operating in Bangladesh. Beside the pharmacists, TNCs were managing their operations in Bangladesh with local management and support staffs. These pharmacists and managers got exposed to the production and organizational management practices and standards of the TNCs. These learning formed the initial phase of the capability development for the pharmaceutical industry of Bangladesh. Later in the post-1982 (when the Drug Ordinance was enforced), when TNCs found doing business in Bangladesh not as lucrative as it was before, some of these people turned out as entrepreneurs in new market condition. Some of them involved not directly into entrepreneurship but they teamed up with the local entrepreneurs from other fields to start new pharmaceutical firm. Each of the new entrants in this industry, during initial phase of the development of Bangladeshi industry, started with the technological and managerial capabilities of the people who worked previously with TNCs.

Thirdly, even if the national education systems in both countries seem to be insufficient for the recent growth the potential human resources had been fair enough to start. The further

development of the education and training of the needed human resources was also mainly based on private investments.

Table 2. Education scenario in Syria

	<i>Primary education</i>	<i>Primary education quality</i>	<i>Primary education enrolment</i>	<i>Higher education and training</i>	<i>Quality of education system</i>	<i>Quality of math and science learning</i>	<i>Quality of management schools</i>
Arab world average	73.3	60.9	93.9	68.7	68.8	70.3	79.8
Syria	73.8	50.3	98.3	54.5	54.7	64.1	64.4
Tunisia	89.1	75.6	101.7	80.6	87.9	90.4	96.7

Source: The Arab World Competitiveness Review

In Syria until now the data shows that the institutional framework is still weak whereas the determinants of education and training as well as foresight and R&D are above the regional average (Köcker et al., 2009). Hence the level of development of institutions for higher education as universities and so forth is one of the best capacities in the country (ibid.). Higher Education in Syria has faced recent changes in the last decade. The opening of this sector for private activities has generated some sort of gold-digging mentality. Private universities are growing all over the country. Due the fact that Syria has one of the youngest population in the area and a tremendous need for academic education, the state universities in the big cities weren't able to meet the demand from the market. Also, following the infamous tragic incident in the United States on 11th September, 2001, parents increasingly hesitated to send their children abroad. (Landis, 2007)⁷

The Global Information Technology Report (GITR) 2010 ranks the availability of scientists and engineers in Syria positively at 62th, right after Poland. The quality of the education system in Syria has been ranked at 108th, two positions behind Spain but before Greece, Mexico and Egypt. The quality of mathematics and science education is ranked 69th before Israel (94th), which economy is marked as highly innovative. But according to the GITR data Syria performs poorly in the area of R&D Cooperation between universities and industries. Syria is ranked here at 136 out of 138. The company spending on R&D is ranked in the same

⁷ <http://www.joshualandis.com/blog/?p=312>

position. Weakness relating to the transfer of knowledge and technology from the higher education institutions into the economy is also backed by other resources and arrangements (Köcker et al., 2009). But those data and resources are just general scientific view to the Syrian reality. Salaries in academic positions in Syria especially at state universities are poorly paid. Due that fact a high percentage of the academic staff in Syria has a second job to raise the necessary income resources. Companies which are innovative and investing in R&D activities have fewer difficulties to find scientific staff without any official cooperation with universities ore research institutions.⁸

Table 3. Education scenario in general in Bangladesh

	2002	2003	2004	2005	2006	2007
Public spending on education, total (% of government expenditure)	16	15	15	..	14	16
Public spending on education, total (% of GDP)	2	2	2	..	2	3
School enrollment, primary (% net)	87	88	..
School enrollment, secondary (% net)	44	44	41	40	41	41
School enrollment, tertiary (% gross)	5	6	5	6	6	7

Source: World Bank Database, 2010

Table 3 shows that enrolment in tertiary level is fairly low; where government's financial ability is a significant factor. In spite of that, graduate level pharmacy education started in 1964 in Dhaka. Over the period of time 4 public universities have been giving pharmacy education, which is not enough to meet the requirements of this growing sector. Since 1994, 14 private universities are offering pharmacy education. The number of qualified pharmacy science graduates in the country is estimated to be 2527 (Chowdhury, 2008). There are 18 government and 28 private medical colleges in Bangladesh (including 3 dental colleges under government and 8 under private management) recognized by BMDC (Bangladesh Medical and Dental Council), where 2120 and 2526 students are enrolled respectively (Director General Health Services – DGHS Bangladesh, 2008). Beside this, 30 institutes offer post-graduate education and research in health and medical sciences, which include 10 specialized

⁸ Discussion with the Marketing Director of Atawfeer Solar Water Heater Company during the GIZ Conference on *Prmotion of Innovation in the MENA-Region* in January 2011 in Casablanca.

institutes, 20 specialized hospitals and 10 medical colleges. Post-graduate institutes have 2203 Fellows and 1595 Members (DGHS, 2007). Besides, there are two institutes for training of the health technology. These institutions are the suppliers of the technical people to the pharmaceutical industry. Global Information Technology Report (GITR) 2010 of the Global Economic Forum (GEF) has ranked the quality of the education system of Bangladesh 108th, quality of mathematics and science education in Bangladesh 118th, quality of the management schools 101th and local availability of research and training 119th place in the world. Global Information Technology Report (GITR) 2010 has ranked Bangladesh's capacity for innovation at 123rd and availability of the latest technology at 109th place. Collaboration between industry and research institutions is in the embryonic stage which GITR 2010 ranks as 125th in the world, whilst quality of the scientific research institutions has been ranked at 108th place in the world.

In the last point referring to the discussion about the role of protectionism in economic development, one sees that both cases are based on state activities to protect the sector of pharmaceutical production from foreign influences. The regulations for banning foreign firms from the domestic market and prohibiting the import of drugs had been the initial points for the emergence and the success of the domestic pharmaceutical industries in both countries. This protection created the safe haven for the entrepreneurs to get over the market and to acquire the resources and capabilities needed to address the domestic demand, grow in the national market and spread into the international market.

Implications for further research

The cases show that institutions and policies are not casually linked and that their positions in proportion to the emergence of an industry are quite a complex issue. Taking a look to the whole picture the process seems to be a co-evolutionary space consisted of entrepreneurs, institutions and technology. Analysing the central initial points in the cases, we can postulate that the entrepreneur kicks off the process of development of the industry. Even in insufficient institutional environments entrepreneurs can go through that process if the profit perspective

dominates their investment and business scenarios. This is possible if the addressed market has potential for mass consumption, giving the entrepreneurs enough space for rental investments.

Further research is needed to understand the implications of the entrepreneurial perspectives more deeply and to understand how they are learned to acquire the needed capabilities. Especially in the Syrian case the existing data and information is insufficient to answer the raised question completely.

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