بنك البحر المتوسط ش.م.ل
BANKMED s.a.l.

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Analysis of Lebanon's Pharmaceutical Market

(2009 – 2013)

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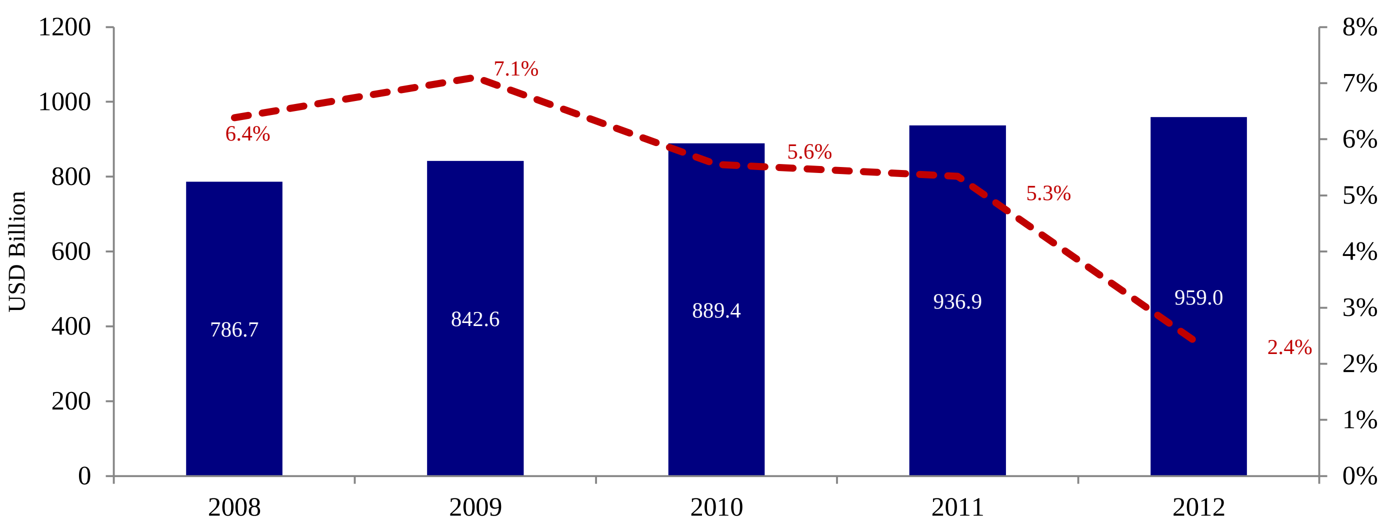
World Pharmaceutical Market:

The pharmaceutical market is considered an essential part of the global healthcare system. The world pharmaceutical industry is highly regulated and is mainly driven by continuous research and development. The industry is technologically sophisticated and capital intensive. Today, the pharmaceutical industry is one of the fastest growing industries globally. Furthermore, it constitutes a major source of employment and earnings for economies around the world.

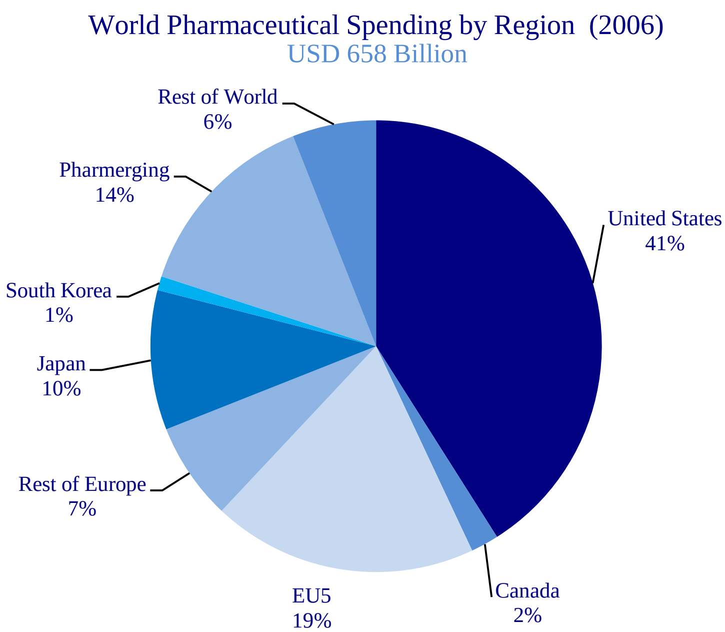
The period 2000-2007, witnessed unprecedented growth in the world pharmaceutical industry with its market value growing at a compounded annual growth rate of 7.8%. In 2008, economic slowdown in developed countries had negative effects on various sectors of the global economy, and the pharmaceutical sector was no exception. In 2008, the pharmaceutical market was valued at USD 786.7 billion, growing by 6.4% only, one of the lowest year-on-year growth rates ever witnessed in the sector. The positive developments that came with the start of the global recovery in 2009 helped the pharmaceutical industry rebound to its pre-crisis growth levels, hence reaching a value of USD 842.6 billion, 7.1% higher than the previous year. Over the years 2010 and 2011, growth in pharmaceutical market value subsided to an average rate of 5.4%, reaching USD 936.9 billion in 2011. The year 2012 witnessed further deterioration in market value growth, with the pharmaceutical market growing at 2.4% only, hence recording a value of USD 959.0 billion, as the global recovery failed to take hold.

World Pharmaceutical Market Value

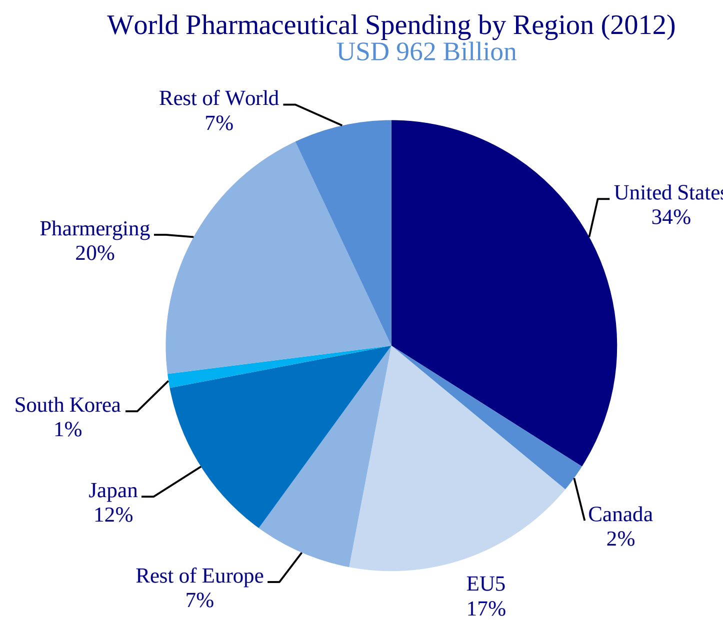


Source: IMS Institute for Healthcare Informatics

Even though the pharmaceutical market has emerged as one of the fastest growing global sectors, world pharmaceutical consumption is still unevenly distributed around the world, with developed countries constituting the largest share of pharmaceutical spending. The United States spent 34% (USD 327 billion) of total pharmaceutical spending in 2012. Hence, after years of quick expansion, US spending slightly subsided from a previous 41% share out of total pharmaceutical spending in 2006. The United States is followed by "Pharmerging" countries (including China, Brazil, India, Russia, Mexico, Turkey, Poland, Venezuela, Argentina, Egypt, Ukraine) which constituted a 20% share of total pharmaceutical spending in 2012. Thus, these countries' share of total spending increased from a 14% in 2006 as most of them gained access to basic medicines over the past few years. Third came EU5 countries (France, Germany, Italy, Spain, United Kingdom) in terms of total spending, which together constituted a share of 17% (USD 164 billion) in 2012. Furthermore, Japan is today responsible for 12% of the global spending on pharmaceuticals, with its share almost increasing by 2 percentage points over the last six years. As for the rest of European countries (other than EU5), their spending on pharmaceuticals constituted a share of 7% (USD 67 billion) in 2012, having maintained a stable share since the past few years. In addition, Canada and South Korea both retained 2% and 1% of total pharmaceutical spending respectively.



Source: IMS Institute for Healthcare Informatics



Source: IMS Institute for Healthcare Informatics

The major players in the pharmaceutical industry include the Swiss company Novartis which ranked first in terms of its sales in 2012 that reached USD 50.7 billion. Second came the American company Pfizer, recording total sales of USD 46.9 billion. The American company Merck & Co. and the French company Sanofi came next, having achieved total sales of USD 40.1 billion and USD 37.8 billion in 2012, respectively. After having witnessed falling pharmaceutical sales in previous years, Johnson & Johnson ranked 8th in 2012, recording total sales of USD 27.9 billion. It was followed by American company Abbott, which reported sales figures of USD 26.7 billion.

Corporation	2012 Rank	2012 Sales (USD Million)
Novartis	1	50,761
Pfizer	2	46,930
Merck & Co	3	40,115
Sanofi	4	37,780
Roche	5	35,069
Glaxosmithkline	6	32,714
Astrazeneca	7	31,983
Johnson & Johnson	8	27,933
Abbott	9	26,715
Teva	10	24,846

Corporation	2012 Rank	2012 Sales (USD Million)
Lilly	11	21,981
Amgen	12	17,211
Boehringer Ingel	13	17,145
Bayer	14	16,214
Takeda	15	15,961
Bristol-Myers	16	13,501
Novo Nordisk	17	12,607
Daiichi Sankyo	18	11,564
Otsuka	19	10,651
Mylan	20	10,514

Source: IMS Institute for Healthcare Informatics

The pharmaceutical industry is dominated by few main pharmaceutical products which constitute the highest share in terms of total sales. In 2012, Seretide, a treatment for asthma, recorded the highest sales of USD 8.9 billion. It was followed by Humira, a treatment for Crohn's disease, with sales reaching USD 8.5 billion. Third came Crestor, a treatment for high cholesterol, which achieved total sales of USD 8.3 billion. On the other hand, Lipitor, a substitute of Crestor, fell to 14th position in 2012, with sales reaching USD 5.1 billion, after having achieved the highest sales in 2011. Similarly Plavix, a drug to prevent heart attacks, fell from 2nd position to 12th position in 2012, with its total sales recording USD 5.2 billion.

Product	2012 Rank	2012 Sales (USD Billion)
Seretide	1	8.9
Humira	2	8.5
Crestor	3	8.3
Nexium	4	7.5
Enbrel	5	7.5
Remicade	6	7.3
Abilify	7	7.0
Lantus	8	6.6
Mabthera	9	6.0
Cymbalta	10	5.8

Product	2012 Rank	2012 Sales (USD Billion)
Avastin	11	5.4
Plavix	12	5.2
Spiriva	13	5.1
Lipitor	14	5.1
Herceptin	15	5.0
Singulair	16	4.7
Lyrica	17	4.6
Copaxone	18	4.5
Glivec	19	4.3
Neulasta	20	4.3

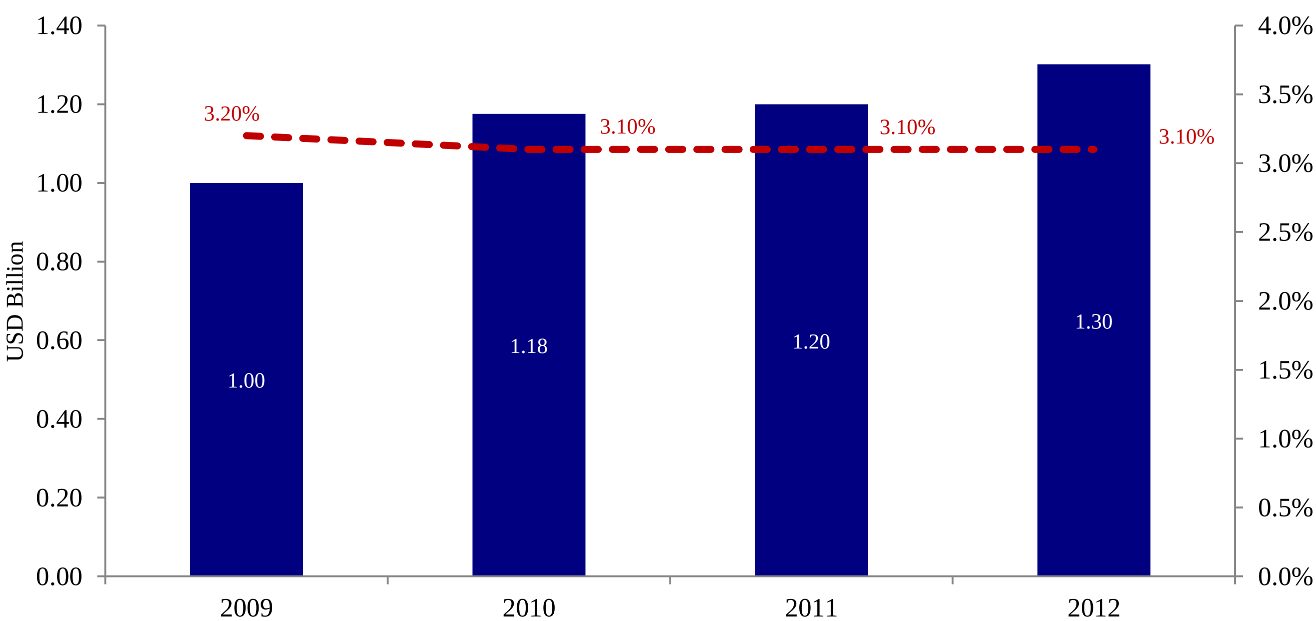
Source: IMS Institute for Healthcare Informatics

Lebanon’s Pharmaceutical Market:

Lebanon’s pharmaceutical sector faces several challenges. A particular challenge relates to the high cost of pharmaceuticals. In addition, counterfeit pharmaceuticals and registration of fake medicaments remains a major issue, with several incidents reported recently. Furthermore, the legal framework that governs the pharmaceutical market remains weak, thus hindering foreign investments in the sector.

Despite these challenges, the pharmaceutical market achieved high growth rates over the past few years. During 2010, pharmaceutical sales in Lebanon increased by 18%, reaching USD 1.18 billion. However, economic growth surpassed pharmaceutical market growth, hence leading to a slight drop in pharmaceutical sales-to-GDP ratio from 3.2% in 2009 to 3.1% in 2010. Despite the economic challenges which Lebanon faced in 2011 and 2012, pharmaceutical market continued to grow, yet at a moderated rate. In 2011, pharmaceutical sales rose by a slight 1.7%, reaching USD 1.20 billion. The year 2012 also witnessed an 8.3% growth in pharmaceutical sales which recorded USD 1.30 billion. Despite the nominal increase in pharmaceutical sales in 2011 and 2012, these sales maintained a stable share of GDP, with the pharmaceutical sales-to-GDP ratio fixed at 3.1%. It is noteworthy that the private sector accounts for 90% of local hospitals and pharmacies which drives the prescription of high value pharmaceuticals, hence increasing nominal value of pharmaceutical sales.

Lebanon's Pharmaceutical Sales

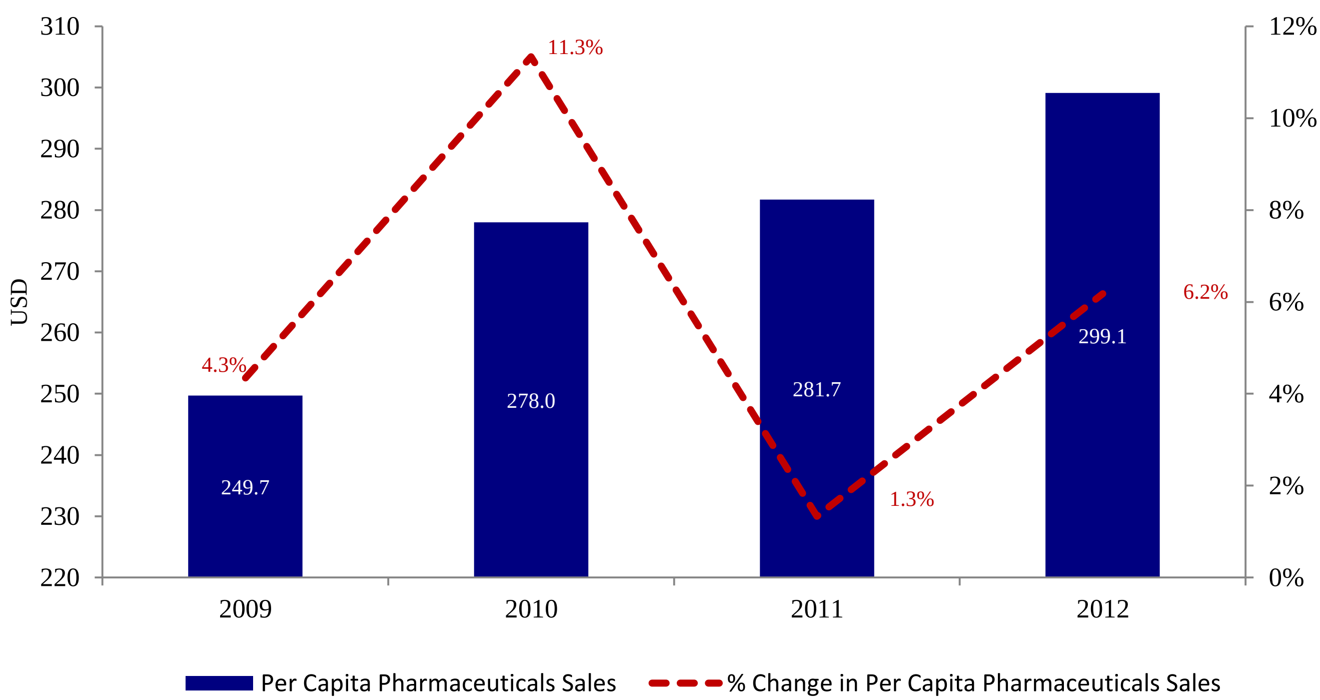


Source: Business Monitor International, International Federation of Pharmaceutical Manufacturers

Lebanon's per capita pharmaceutical spending is considered one of the highest in the Middle East. Several factors interact leading to this high expenditure. Lebanon's pharmaceutical market is dominated by private pharmacies facing a fixed mark-up scheme on drugs. This has developed a tendency towards the prescription of high value pharmaceutical products in an attempt to drive up returns. Furthermore, the pharmaceutical market encompasses over 50 pharmaceutical companies limiting benefits from economies of scale.

In 2010, per capita pharmaceutical spending grew by a significant 11.3%, reaching USD 278.0. However, as economic growth plunged in the following year, Lebanese purchasing power was heavily affected. Hence, the propensity to consume in Lebanon deteriorated in most sectors. The health care sector was no exception, with pharmaceutical sales per capita growing by only 1.3%, to reach USD 281.7 in 2011. By the year 2012, per capita expenditure on pharmaceuticals grew by 6.2%, hence recording USD 299.1. However, it is important to note that with a large section of Lebanon's population not covered by drug insurance, the high per capita pharmaceutical expenditure is considered a burden and must hence, be tackled through regulating the pharmaceutical market.

Lebanon's Per Capita Pharmaceutical Sales



Source: Business Monitor International, International Federation of Pharmaceutical Manufacturers

Pharmaceutical Imports and Exports:

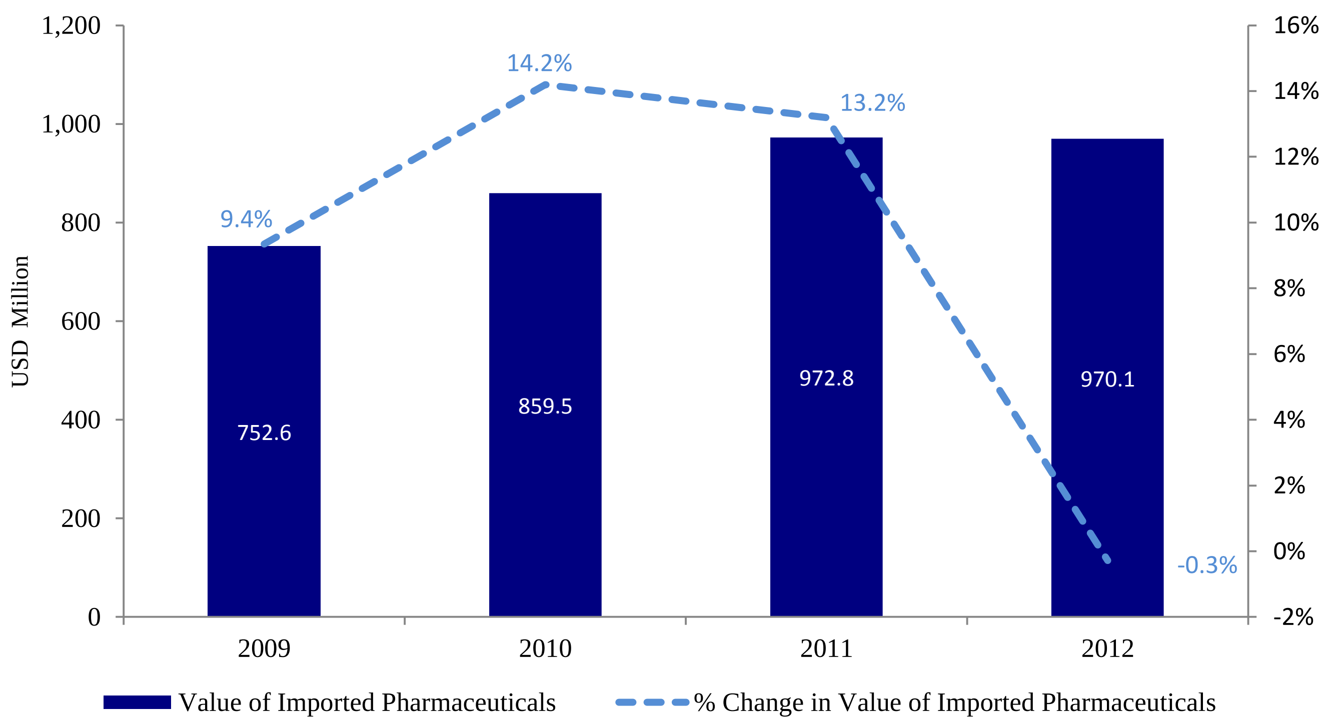
Evolution of Pharmaceutical Imports:

The Period 2009-2012:

Local pharmaceutical production in Lebanon remains limited, facing several inefficiencies, including high production cost and limited production efficiency, relatively small local market, as well as uncertain authenticity. Since local pharmaceutical production is still weak satisfying only 5% of local demand, imports constitute over 95% of the total pharmaceutical products sold in the Lebanese market.

Unaffected by the global slowdown in pharmaceutical market growth, Lebanon's pharmaceutical imports increased by a remarkable 14.2% in 2010, reaching USD 859.5 million. In the year 2011, the value of imported pharmaceuticals rose by 13.2% to reach USD 972.8 million. However, as per capita pharmaceutical spending subsided given local economic challenges, the value of pharmaceutical imports slightly declined in 2012, falling by 0.3% to reach USD 970.1 million.

Total Pharmaceutical Imports



Source: Lebanese Customs

The Period January-September 2013:

During the first nine months of 2013, the value of imported pharmaceuticals totaled USD 833.2 million, witnessing a 13.0% rise from USD 737.5 million in the same period last year. This can be attributed to the rising local demand by displaced Syrian nationals, as well as higher Syrian pharmaceutical imports from Lebanon given that the country's major pharmaceutical production firms have shut-down operations as a result of the turmoil.

USD Million	Jan - Sept 2012	Jan - Sept 2013	Y-o-Y Change
Total Imported Pharmaceuticals	737.5	833.2	*13.0%*

Source: Lebanese Customs

Pharmaceutical Imports by Type:

The Period 2009-2012:

Lebanon trades three main types of pharmaceutical products:

- **Retail Medicaments:** They include medicaments put up in measured doses or in forms or packages for retail sale.
- **Vaccines and Toxins:** They include vaccine for human medicine and veterinary medicine.
- **Gauzes and Bandages:** They include adhesive dressings, adhesive plasters, and poultices.

During the year 2010, imports of all three sub-categories of pharmaceutical products witnessed positive growth. The rise in imports comes as a direct response to rising local demand, where per capita spending on pharmaceuticals witnessed stellar growth in that year. This trend continued through 2011 where the value of imported gauzed and bandages rose by 44%, reaching USD 9.0 million . Meanwhile, imports of vaccines and toxins as well as imports of retail medicaments saw increases of 29% and 12%, to reach USD 105.4 million and USD 831.1 million, respectively. As pharmaceutical spending subsided when economic activity in Lebanon slowed in 2012, growth in pharmaceutical imports also lessened. The value of imported gauzes and bandages witnessed 7% decline, reaching USD 8.4 million in 2012. Similarly, and after witnessing consistent growth over the past few years, imports of retail medicaments dropped by

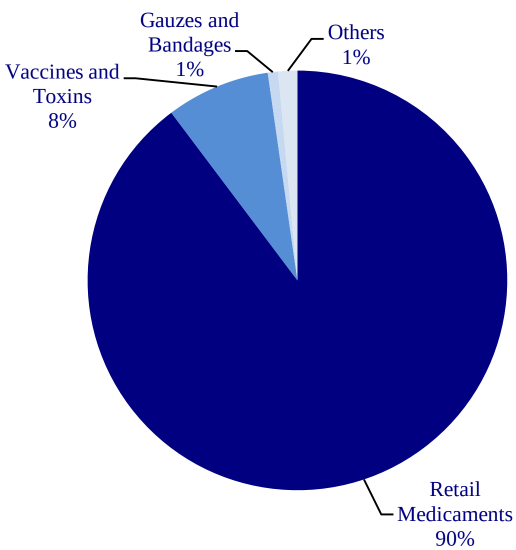
2%, to reach USD 831.1 million. On the other hand, the value of imported vaccines and toxins rose by 12% to reach USD 117.6 million. This rise may be attributed to the increased demand on vaccine by Syrian displaced nationals.

USD Million	2009	2010	2011	2012
Retail Medicaments	675.3	755.8	844.8	831.1
% Change		*12%*	*12%*	*-2%*
Vaccines and Toxins	60.2	81.7	105.4	117.6
% Change		*36%*	*29%*	*12%*
Gauzes and Bandages	6.0	6.3	9.0	8.4
% Change		*5%*	*44%*	*-7%*
Others	11.1	15.7	13.7	13.0
% Change		*42%*	*-13%*	*-5%*

Source: Lebanese Customs

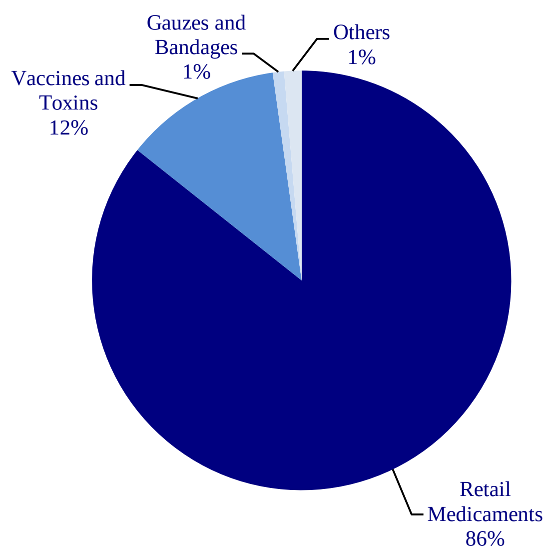
Over the period 2009-2012, the value of imported retail medicaments constituted a falling share of total value of pharmaceutical imports, decreasing from a share of 90% in 2009 to reach 86% in 2012. However, retail medicament still constitute a high share due to the widespread use of expensive patented drugs. On the other hand, the value of imported vaccines and toxins out of total pharmaceutical imports rose to 12% in the year 2012, after these products constituted 8% of the market for pharmaceutical imports in 2009.

Value of Pharmaceutical Imports by Type (2009)



Source: Lebanese Customs

Value of Pharmaceutical Imports by Type (2012)



Source: Lebanese Customs

The Period January-September 2013:

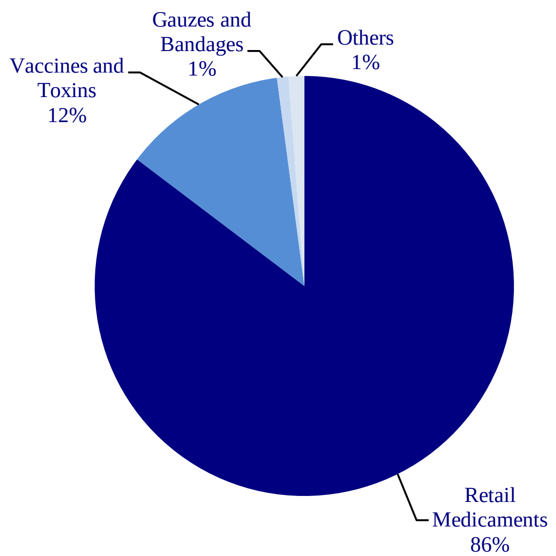
The rise in pharmaceutical imports witnessed during the first nine months of 2013 is mainly attributed to increases in imported vaccines and retail medicaments. In fact, mounting cases of Syrian refugees infections have increased demand for vaccine imports, where the value rose by 16.9%, from USD 90.5 million imported in the first nine months of 2012 to USD 105.8 million imported in the same period of 2013. Likewise, the value of imported retail medicaments rose by 12.3% to reach USD 709.2 million in January-September 2013.

USD Million	Jan - Sept 2012	Jan - Sept 2013	Y-o-Y Change
Retail Medicaments	631.3	709.2	*12.3%*
Vaccines and Toxins	90.5	105.8	*16.9%*
Gauzes and Bandages	6.3	6.3	*1.5%*
Others	9.4	11.8	*26.1%*

Source: Lebanese Customs

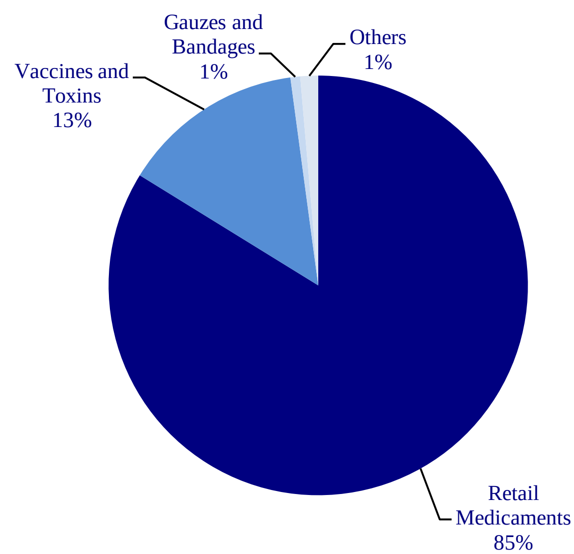
Hence, as a share of total value of imported pharmaceuticals, the value of imported retail medicaments decreased from a share of 86% in the first nine months of 2012 to reach 85% in the same period of 2013. On the other hand, the value of imported vaccines and toxins out of total pharmaceutical imports rose from 12% in January-September 2012 to reach 13% in January-September 2013.

Pharmaceutical Imports by Type (Jan - Sept 2012)



Source: Lebanese Customs

Pharmaceutical Imports by Type (Jan - Sept 2013)



Source: Lebanese Customs

Value of Pharmaceutical Imports by Country:

The Period 2009-2012:

Lebanon mainly imports pharmaceutical products from France, Germany, Switzerland, and the US. During the period 2010-2011, import of pharmaceutical products from France and Switzerland has been on the rise. In fact, over the abovementioned period, the value of imported pharmaceuticals from Switzerland saw a high average annual increase of 19.5%, to reach USD 113.1 million in 2011. Concurrently, the value of imported pharmaceuticals from France rose by an average annual rate of 6%, totaling USD 143.3 in 2012. It is noteworthy that France and Switzerland together account for about 45% of the 3,500 imported drugs which are sold in Lebanon. Likewise, the value of imported pharmaceuticals from the US grew by an average annual rate of 26%, to reach USD 85.1 million in 2011.

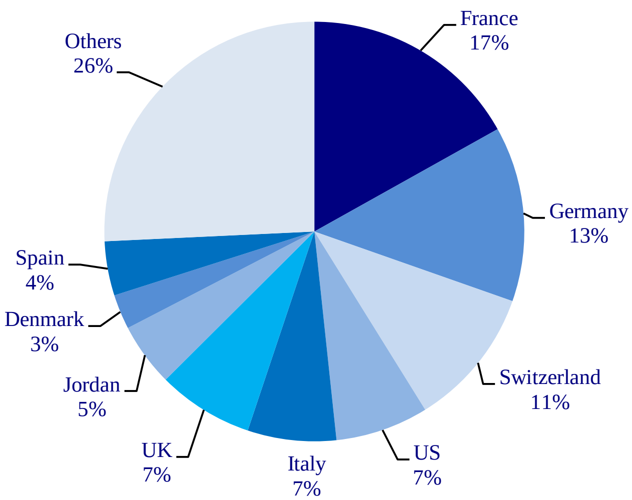
However, the year 2012 witnessed trend reversal in the value of pharmaceutical imports by country. While pharmaceutical imports from US saw the highest 23% rise to reach a value of USD 104.8 million, the value of imports from France and Switzerland dropped. In fact, the value of imported pharmaceuticals from Switzerland decreased by a yearly 8% to reach USD 104.4 million, while the value of pharmaceutical imports from France dropped by 4% to reach USD 137.8 million in 2012. The appreciating euro and Swiss franc during the previous year has shifted the choice of drug importers in Lebanon about countries of origin. Drugs prices in euro and Swiss franc became more expensive as a result of the depreciating dollar against the aforementioned currencies. Hence, pharmaceutical importers shifted their demand from importing Swiss and French pharmaceutical products, towards importing from the US given that the local currency is pegged to the US dollar. Similarly, pharmaceutical imports from Denmark served as a substitute, hence increasing in value by 12%, to total USD 35.1 million in 2012.

Value of Pharmaceutical Imports by Country				
USD Million	2009	2010	2011	2012
France	127.1	138.7	143.3	137.8
% Change		*9%*	*3%*	*-4%*
Germany	101.6	92.9	110.8	125.5
% Change		*-9%*	*19%*	*13%*
Switzerland	81.0	110.7	113.1	104.4
% Change		*37%*	*2%*	*-8%*
US	53.9	68.7	85.1	104.8
% Change		*27%*	*24%*	*23%*
Italy	51.3	63.4	81.7	75.4
% Change		*24%*	*29%*	*-8%*
UK	55.6	57.2	68.1	59.3
% Change		*3%*	*19%*	*-13%*
Jordan	36.7	40.2	37.5	40.6
% Change		*10%*	*-7%*	*8%*
Denmark	20.2	25.0	31.2	35.1
% Change		*24%*	*25%*	*12%*
Spain	31.5	30.3	32.7	31.9
% Change		*-4%*	*8%*	*-3%*
Others	193.7	232.3	269.3	255.5
% Change		*20%*	*16%*	*-5%*

Source: Lebanese Customs

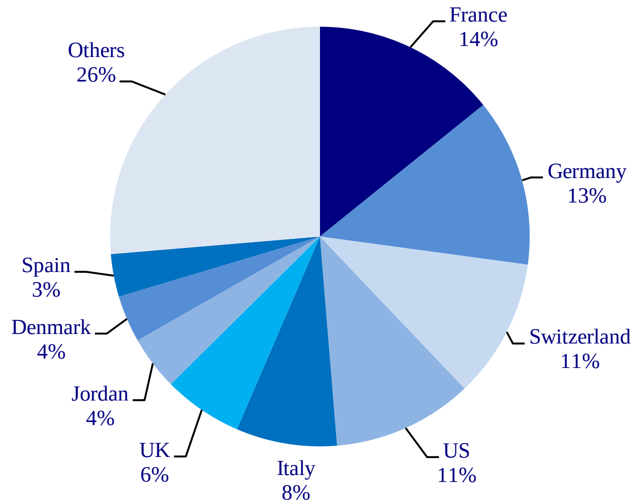
Over the period 2009-2012, the value of imported pharmaceuticals from France as a share of total pharmaceutical imports decreased from 17% in 2009 to 14% in 2012. Yet, France maintained its position as the major exporter of pharmaceuticals to Lebanon. Concurrently, the share of US out of total pharmaceutical imports rose by 4 percentage points to reach 11% in 2012. Similarly, Italy's share of the total value of pharmaceutical imports rose from 7% in 2009 to 8% in 2012. While Germany (13%) and Switzerland (11%) maintained a stable share, the share of UK and Jordan out of total pharmaceutical imports each dropped by 1 percentage point over the aforementioned period, reaching 6% and 4% in 2012, respectively.

Share of Countries in Pharmaceutical Imports (2009)



Source: Lebanese Customs

Share of Countries in Pharmaceutical Imports (2012)



Source: Lebanese Customs

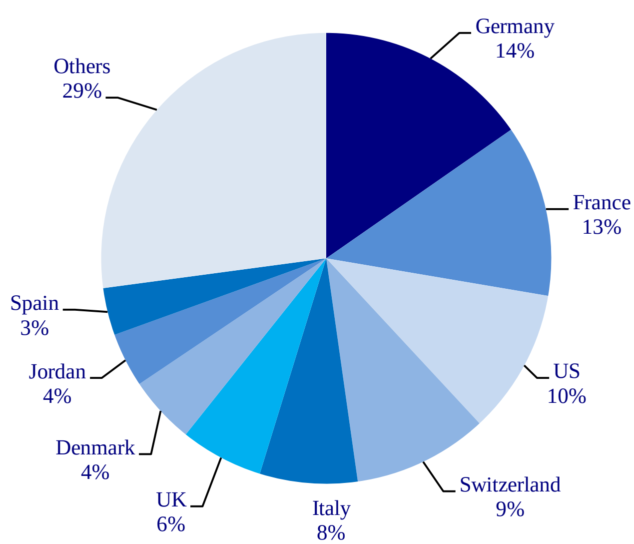
The Period January-September 2013:

During the period January-September 2013, pharmaceuticals imported from Germany recorded the highest value, totaling USD 121.3 million, and constituting a 14% share of total imported pharmaceuticals during the first nine months of 2013. The value of pharmaceuticals imported from France came second with a total value of USD 105.3 million, equivalent to 13% of total value of imports. Hence, France has lost its position as the major exporter of pharmaceutical products to Lebanon. As for the value of pharmaceutical imports from US, it totaled USD 82.3 million, hence constituting a share of 10% out of total imports.

USD Million	Jan-Sept 2013
Germany	121.3
France	105.3
US	82.3
Switzerland	77.9
Italy	64.0
UK	48.1
Denmark	34.8
Jordan	30.5
Spain	27.7
Others	241.4

Source: Lebanese Customs

Share of Countries in Pharmaceutical Imports (Jan - Sept 2013)



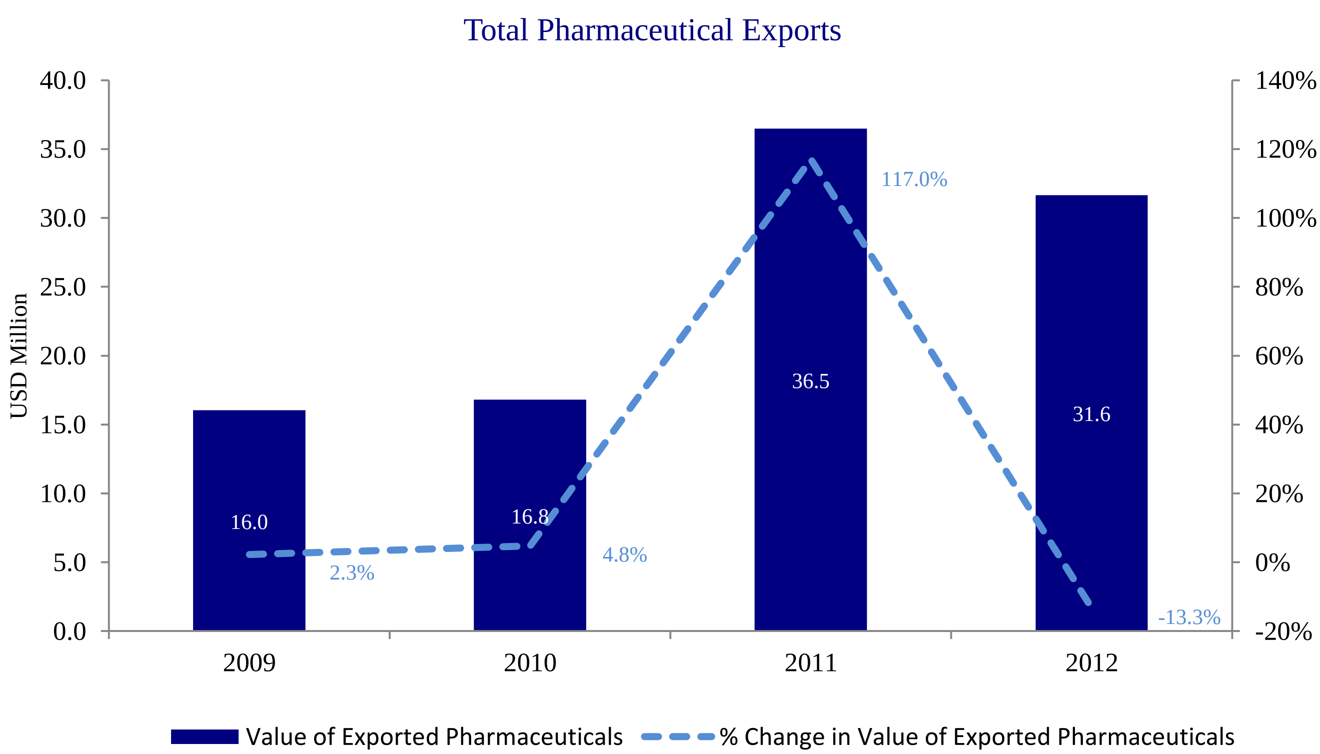
Source: Lebanese Customs

Evolution of Pharmaceutical Exports:

The Period 2009-2012:

With domestic demand consuming most of imported and locally produced pharmaceutical products, Lebanon has a modest pharmaceutical export activity. Yet, despite the large pharmaceutical trade deficit, Lebanese pharmaceutical companies have reoriented their focus more towards export activity over the past few years as they faced subsiding local demand.

During the year 2009, the value of exported pharmaceuticals witnessed a slight 2.3% increase to reach USD 16.0 million. Similarly, Lebanon's pharmaceutical exports increased by 4.8% in 2010, reaching USD 16.8 million. The year 2011 was a stellar year for pharmaceutical exports with the value of exported pharmaceuticals rising by a remarkable 117% to reach USD 36.5 million. This rise is attributed to the increased demand from various Arab countries including: Saudi Arabia, Egypt, Iraq, and Jordan. However, the year 2012 saw an adjustment to the previous year's significant growth in exports, with the value of pharmaceutical exports falling by 13.3% to reach USD 31.6 million.



Source: Lebanese Customs

The Period January-September 2013:

During the first nine months of 2013, the value of exported pharmaceuticals witnessed a rising trend, totaling USD 25.4 million, hence rising by 13.8% from USD 22.3 million in the same period last year.

USD Million	Jan - Sept 2012	Jan - Sept 2013	Y-o-Y Change
Total Exported Pharmaceuticals	22.3	25.4	*13.8%*

Source: Lebanese Customs

Pharmaceutical Exports by Country:

The Period 2009-2012:

Lebanon's pharmaceutical exports are mostly destined to Arab countries. Yet, some non-Arab countries import specific types of pharmaceutical products that are locally manufactured.

After having declined in 2010, the value of exported pharmaceuticals to France saw a significant 1542% rise, increasing to USD 9.0 million in 2011. This comes after the governments of Lebanon and France have signed an agreement to extend collaboration in healthcare during 2011. Likewise, pharmaceuticals exports to Arab countries including Egypt and Saudi Arabia continued with a significant increasing trend which witnessed 147% and 143% rise in 2011, respectively.

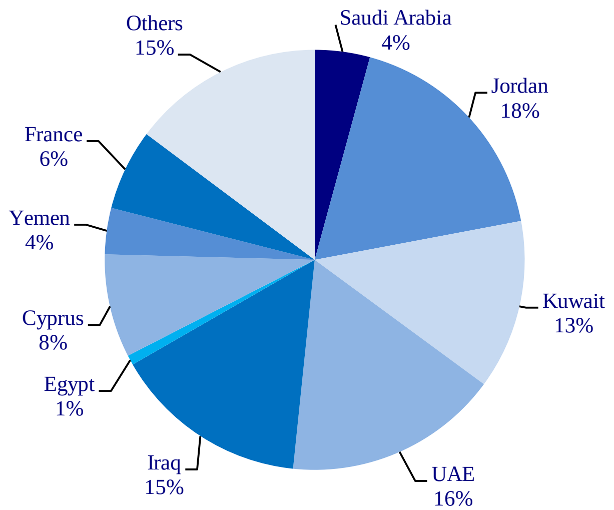
In 2012, pharmaceutical exports to Yemen saw a significant 111% rise to reach a value of USD 0.9 million. Also, the value of pharmaceuticals to Egypt increased by 96% to reach USD 1.6 million. Likewise, pharmaceutical exports to Jordan rose in value by 40%, amounting to USD 5.7 million. After witnessing stellar growth in 2011, pharmaceutical exports to France dropped by 98% in 2012 to reach USD 0.2 million, reflecting a necessary adjustment.

Value of Pharmaceutical Exports by Country				
USD Million	2009	2010	2011	2012
Saudi Arabia	0.7	2.2	5.4	6.7
% Change		*225%*	*143%*	*24%*
Jordan	2.9	2.2	4.1	5.7
% Change		*-22%*	*84%*	*40%*
Kuwait	2.1	3.0	4.0	4.5
% Change		*43%*	*33%*	*13%*
UAE	2.7	2.8	3.3	4.1
% Change		*5%*	*17%*	*25%*
Iraq	2.4	2.4	4.9	2.9
% Change		*1%*	*102%*	*-41%*
Egypt	0.1	0.3	0.8	1.6
% Change		*174%*	*147%*	*96%*
Cyprus	1.3	0.8	0.9	1.3
% Change		*-40%*	*16%*	*44%*
Yemen	0.6	0.5	0.4	0.9
% Change		*-4%*	*-18%*	*111%*
France	1.0	0.6	9.3	0.2
% Change		*-43%*	*1542%*	*-98%*
Others	2.4	1.9	3.4	3.8
% Change		*-18%*	*75%*	*11%*

Source: Lebanese Customs

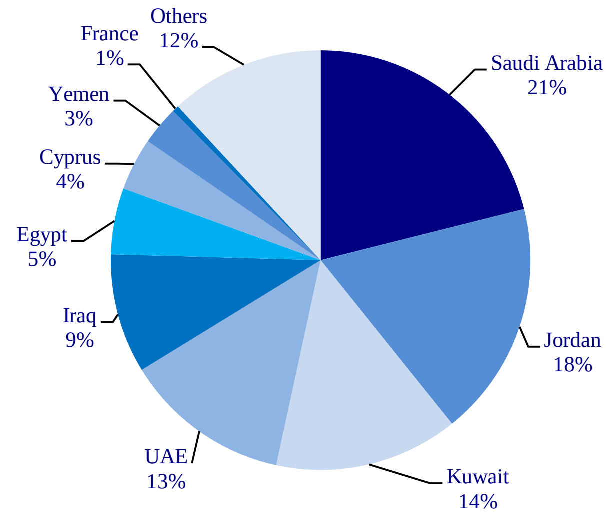
Over the period 2009-2012, the value of exported pharmaceuticals to Saudi Arabia as a share of total pharmaceutical exports increased significantly from 4% in 2009 to 21% in 2012, hence making Saudi Arabia the major importer of pharmaceuticals from Lebanon. Concurrently, the share of Kuwait out of total pharmaceutical exports rose by 1 percentage points to reach 14% in 2012. Similarly, Egypt's share of the total value of pharmaceutical exports rose from 1% in 2009 to 5% in 2012. Thus, Arab countries constitute about 80% of the demand for Lebanon's pharmaceutical exports.

Share of Countries in Pharmaceutical Exports (2009)



Source: Lebanese Customs

Share of Countries in Pharmaceutical Exports (2012)



Source: Lebanese Customs

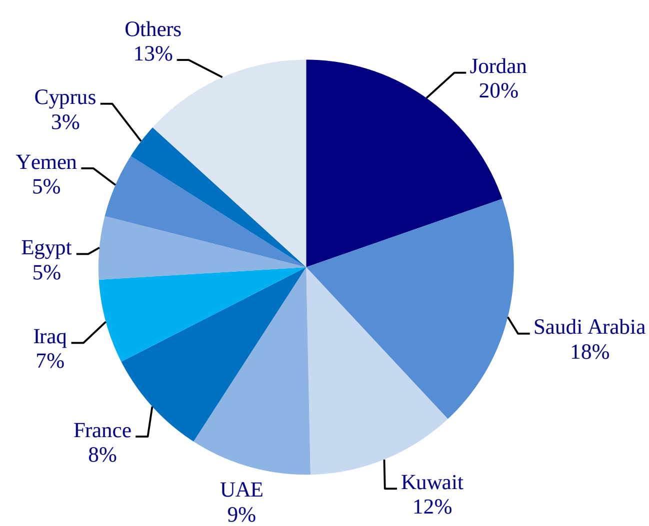
The Period January-September 2013:

In terms of value of exports by country, pharmaceuticals exported to Jordan recorded the highest value, totaling USD 5.0 million, and constituting a 20% share of total exported pharmaceuticals during the period January-September 2013. The value of pharmaceuticals exported to Saudi Arabia came second with a total value of USD 4.7 million, equivalent to 18% of total value of pharmaceutical exports. As for the value of exports to Kuwait, it totaled USD 2.9 million, hence constituting a share of 12% out of total pharmaceutical exports.

USD Million	Jan-Sept 2013
Jordan	5.0
Saudi Arabia	4.7
Kuwait	2.9
UAE	2.4
France	2.1
Iraq	1.7
Egypt	1.2
Yemen	1.3
Cyprus	0.7
Others	3.4

Source: Lebanese Customs

Share of Countries in Pharmaceutical Exports (Jan-Sept 2013)



Source: Lebanese Customs

Determinants of Pharmaceutical Market Size:

This study attempts to understand the impact of two macro-factors on pharmaceutical market size in Lebanon. It examines the impact of population's median age and government's contribution to health expenditure on the size of the pharmaceutical market. Specifically, the following hypotheses are tested:

- Population aging is associated with deteriorating health conditions, and hence, higher demand for pharmaceutical products, therefore, a growing pharmaceutical market.
- Higher government health expenditure is associated with increased health market activity, thus a growing pharmaceutical market.

To test these hypotheses, Ordinary Least Squares estimation was conducted and a pharmaceutical market function was constructed to establish quantitatively the relationship between pharmaceutical market size and the abovementioned variables.[1]This study considers data on Lebanon's pharmaceutical market size over the period 2005-2012. Lebanon's population median age is retrieved from CIA World Fact Book. Furthermore, growth in Lebanese government's health expenditure over the aforementioned period is retrieved from World Health Organization Database.

The procedure followed is to regress Lebanon's pharmaceutical market size on population median age and government health expenditure growth. The estimated equation explains 79% of the adjusted variation in Lebanon's pharmaceutical market size, thus making the estimation quite reliable. The analysis showed that there exists a positive relation between pharmaceutical market size and population median age, indicating that the first hypothesis is accepted. In fact, a rise in population median age by 1 year contributes to an increase in pharmaceutical market size by USD 120 million. In addition, the analysis verifies the second hypothesis stating the positive impact of growth in government health expenditure on the pharmaceutical market. In fact, 1% growth in government health expenditure contributes to an increase in pharmaceutical market size by USD 91 million.

[1] Technical details on the test performed can be found in Appendix 1.

Appendix 1:

Ordinary Least Squares Estimation:

Dependent Variable: PHARMA
Method: Least Squares
Sample: 2005 2012
Included observations: 8

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.74E+09	6.42E+08	-4.268579	0.0079
AGE	1.20E+08	22287979	5.398210	0.0029
GOVEXP	91076368	1.94E+08	0.468685	0.6590

R-squared	0.854917	Mean dependent var	7.22E+08
Adjusted R-squared	0.796883	S.D. dependent var	1.95E+08
S.E. of regression	87786168	Akaike info criterion	39.69870
Sum squared resid	3.85E+16	Schwarz criterion	39.72849
Log likelihood	-155.7948	Hannan-Quinn criter.	39.49778
F-statistic	14.73149	Durbin-Watson stat	1.326920
Prob(F-statistic)	0.008018		