



IEIS

PHARMACEUTICAL MANUFACTURERS
ASSOCIATION OF TURKEY

**TURKISH
PHARMACEUTICAL
MARKET
2018**

Turkish Pharmaceutical Market 2018



June 2019

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INTRODUCTION

The Turkish pharmaceutical industry is one of the most dynamic and strategic sectors of our country, with its deep-rooted past, production experience tracing back long years, qualified manpower, high value added and its advanced technology-oriented structure.

There are around 500 organizations operating in our industry, while 81 drug and 11 raw material production facilities meeting the highest international standards. With over 35 thousand employees, the pharmaceutical industry provides the increasing and ageing population of our country over 11 thousand products, while also exporting to more than 160 countries.

As the Pharmaceutical Manufacturers Association of Turkey (IEIS), we maintain our efforts towards making our country a global manufacturer and exporter of greater R&D competence and higher value-added output, specifically in biotechnology.

We are aware that in order for our industry to make the breakthrough it targets and become a player of global impact, it should act with a vision focused on R&D, production, employment and export.

Within this scope, our priority is to guide the pharmaceutical industry by gathering and thoroughly analyzing market-related and macroeconomic data.

To this end, we have issued the *Turkish Pharmaceutical Market 2018* report that analyzes 2018 and the past nine years. In this study, we offer an analysis of the Turkish pharmaceutical market in different categories including originator and generic products, import and local products, and biotechnological products, in terms of market structures and prices.

Furthermore, the Turkish pharmaceutical market's products are analyzed with a focus on biocidal products licensed by the Ministry of Health, medical devices in pharmaceutical form, specialty medical food, cosmetic and derma-cosmetic products; vitamins authorized by the Ministry of Agriculture and Forestry, food supplements and infant formulas.

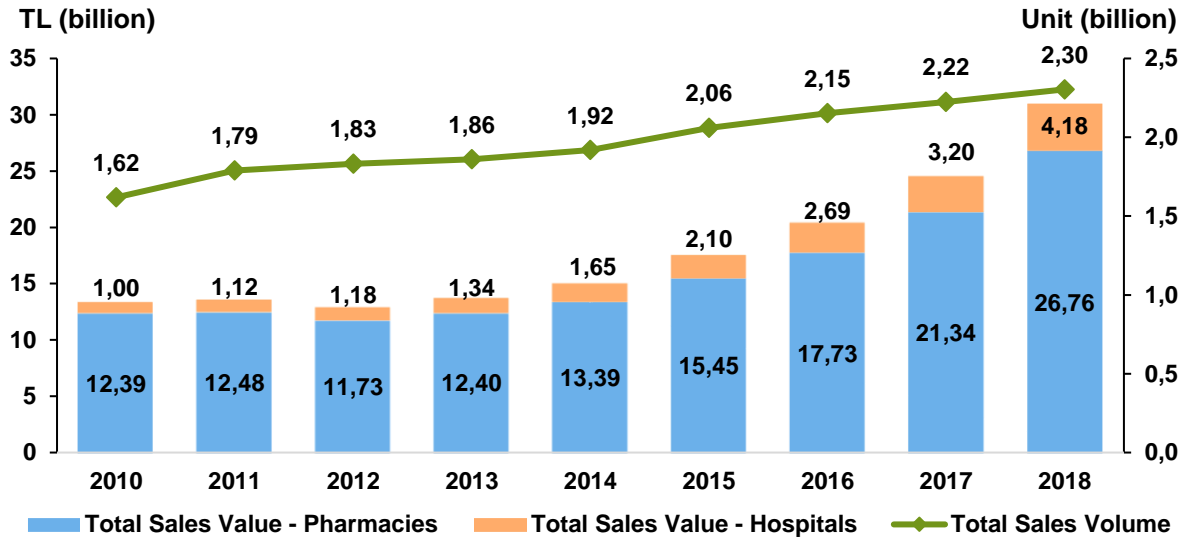
Our report features an analysis of data regarding investment incentives, R&D, production, employment and foreign trade.

As has been the case in past years, we are particularly pleased to present our Turkish Pharmaceutical Market 2018 Report to our stakeholders in the public, academic and private sectors. It is our hope that it will be met with interest and converted into concrete steps of benefit to the development of our industry.

1. The Turkish Pharmaceutical Market

In 2018, the Turkish pharmaceutical market grew in value by 26.1% in the hospital and pharmacy channels, reaching 30.94 billion TL. Unit sales rose by 3.6% to 2.30 billion units. From 2010 to 2018, the hospital market raised its value share from 7.5% to 13.5%. In unit terms, the hospital market, which had a share of 8.3% in 2010, rose to 13.3% in 2018.

Chart 1- Turkish Pharmaceutical Market



Source: IQVIA, İEİS

An analysis of the 9-year period between 2010 and 2018 indicates that the pharmaceutical market grew by 131% to 30.94 billion TL in 2018 from 13.39 billion TL in 2010. This growth signifies a compound annual growth rate (CAGR) of 11%, which corresponds to a real increase of just 2.5% when taking into account the manufacturer price inflation of 137% in the same period

In volume terms, the pharma market was at 2.30 billion units in 2018, up 42.3% from 1.62 billion units in 2010. This increase denotes a CAGR of 4.5%. Increased access to public healthcare services and personnel, a higher average life expectancy and the growing and aging population underline this expansion.

An analysis of companies operating in the sector reveals that the number of players rose from 441 in 2010 to 488 in 2018. The number of multinational companies operating in the sector totaled 109 in 2010, whereas the number had soared to 130 for 2018. In the meantime, with 26 local companies entering the market in 2018, the total number of local companies registered at 358.

When the market is analyzed in terms of concentration, multinational companies receded to a 66% market share on the value scale, decreasing by 1 percentage point over the past nine years. In 2010, 90% of the market was accounted for by 50

companies. Within the span of nine years, the leading companies in the market lost market share and the number of companies making up 90% of the market rose to 66 in 2018. The share of foreign capital companies is 69%.

The non-reimbursed products have gained share over the past nine years

Table 1- Breakdown of the Pharmaceutical Market

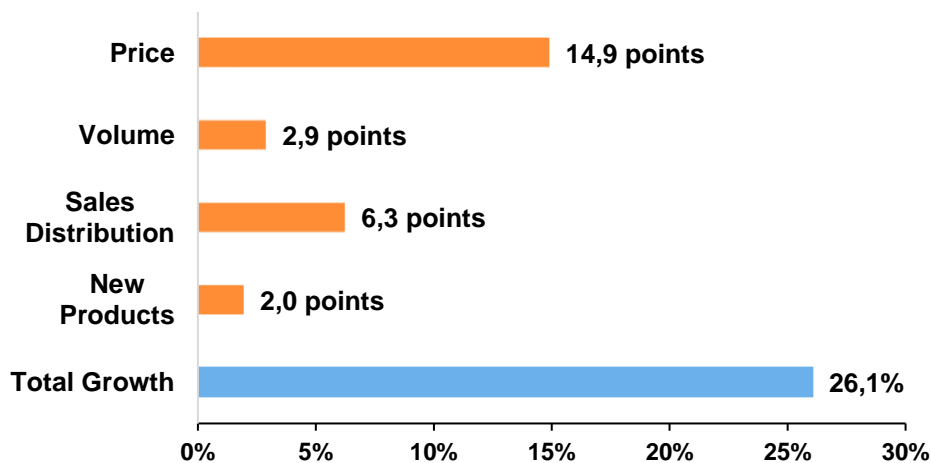
	2010		2018	
	Value (Billion TL)	Share	Value (Billion TL)	Share
Drug	13,39	100,0%	30,94	100,0%
Prescription	13,35	99,7%	30,80	99,6%
Reimbursed	13,02	97,2%	29,37	94,9%
Non-reimbursed	0,33	2,5%	1,43	4,6%
Non-prescription	0,05	0,3%	0,14	0,4%
Reimbursed	0,02	0,2%	0,04	0,1%
Non-reimbursed	0,02	0,2%	0,10	0,3%

Source: IQVIA, İEİS

1.1. Market Growth and Sources

As for the sources of market growth in 2018, four main factors are found to contribute to growth in value terms. These are: volume and price increases in the current portfolio, new products entering the portfolio, and changes in sales distribution.

Chart 2 - Sources of Growth



Source: IQVIA, İEİS

A.Price

As readers may recall, in February 2018, the currency rate that established medicine prices increased by 15%. Additionally, public institution discount improvement was made so as to reflect a price increase of 2.5% to non-discounted products and 2.5% to discounted products as of May 31, 2018.

Accordingly, 14.9 points (3.661 million TL) out of the year-over-year 26.1% growth in 2018 derives from this price increase.

B. Volume

2.9 percentage points (713 million TL) of overall market growth stemmed from the rise in volume (units) of the current product portfolio.

C. Sales Distribution

Changes in the sales distribution of current products in the market, in other words shifts in the sales volume towards higher-priced products, contributed 6.3 percentage points to growth (1,536 million TL).

D. New Products

In 2018, a total of 444 new drugs were launched to the market, of which 418 are chemical and 26 are biotechnological products, and a contribution of 2 percentage points (483 million TL) was made to growth.

Among the new products launched, the highest market share in unit terms belonged to oncological drugs. 56 oncological drugs (12.6%), 40 serums / vaccinations (9.0%), 37 antibiotics (8.3%), 26 antirheumatic drugs (5.9%), 25 otorhinolaryngology drugs (5.6%) and 23 nerve system drugs (5.2%) were launched to the market. Thus, of the new products in the market 46.6% are associated with these therapeutic groups.

A total of 55 reference drugs, comprising 39 chemical and 16 biotechnological products, were launched in 2018. Of these 55 products, 6 are produced in Turkey and only 6 have a generic competitor.

The remaining 389 are listed as 379 chemical generics and 10 biosimilars. Only 22 of these products are in the import products category. Therefore, we observe a trend towards generic local products among the new market entrants.

Table 2- Unit Distribution of the New Products in the Market

	2018
Drug	444
Reference	55
▪ Generic exists	6
Import	5
▪ Generic non-existing	49
Import	44
Generic	389
▪ Import	22
▪ Local	367

Source: IQVIA, IEIS

1.2. Market Structure

A. Originator-Generic Products

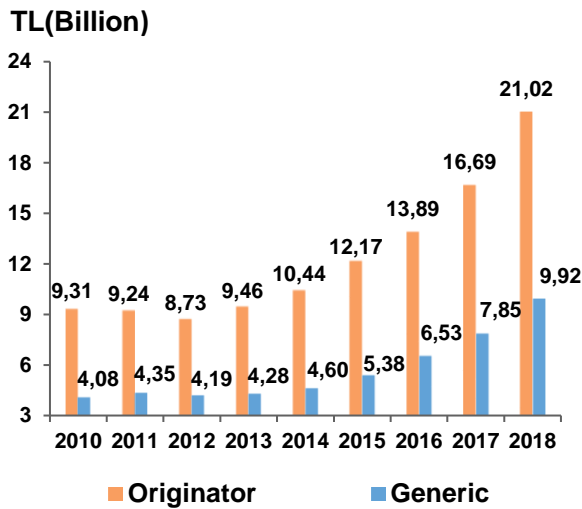
The originators market reached 21.02 Billion TL from 16.69 Billion TL on an increase of 26% parallel to the general growth of the market in 2018. On a unit basis, 0.93 billion units were sold, marking growth of 1.7%.

As for the generic product market, in 2018, the figure hit TL 9.92 billion TL from 7.85 billion TL in 2010, up by 26.3%. On a unit scale, generic products grew by 4.9% to 1.37 billion units.

Over the past nine years, the value of originator medicines has risen by 125.6%. This growth signals a CAGR of 10.7% and a shrinkage of 4.7% when the effect of inflation is nullified. In the same period, the sales volume for originator-branded medicines rose 24.5%.

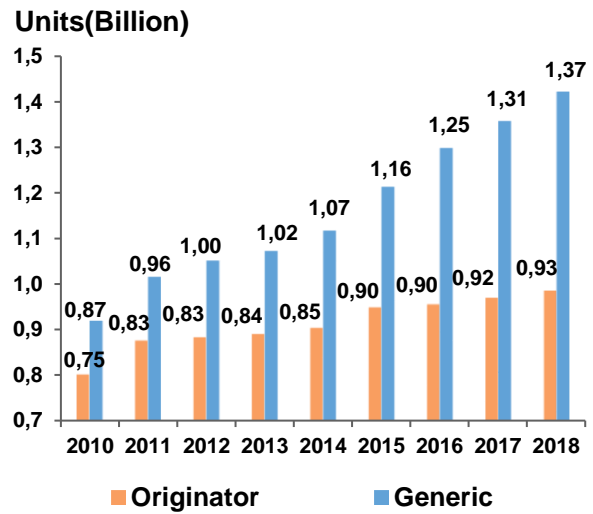
In terms of generic drug value, since 2015, the value of generics has outpaced market growth, taking market share from originator medicines. Between 2010 and 2018, generic products gained a total of 143.1% in value. When the CAGR is considered, growth rises by 11.7%. This increase is 2.6% in real terms when the effect of inflation is nullified. On a unit scale, the increase was at a rate of 57.7% in total for the period between 2010- 2018.

Chart 3- Originator – Generic Drugs (Value)



Source: IQVIA, İEİS

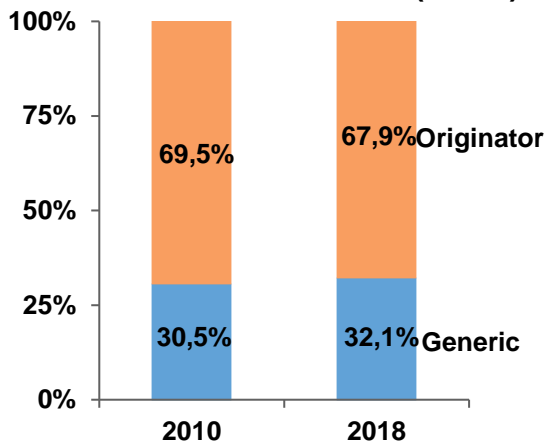
Chart 4- Originator – Generic Dugs (Units)



Source: IQVIA, İEİS

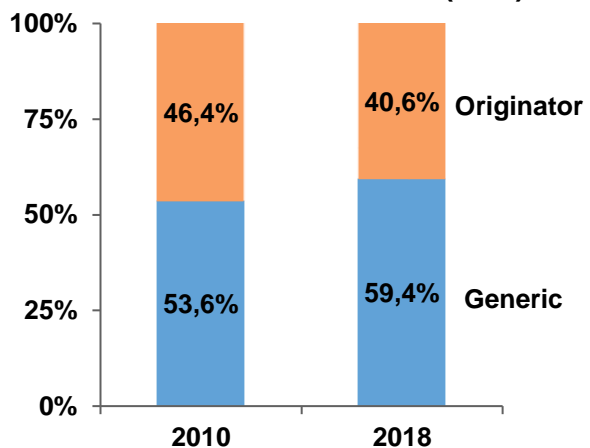
In 2018, generic products marked a 32.1% and 59.4% market share in value and unit terms, respectively. These values were at 30.5% and 53.6% in 2010 respectively.

Chart 5- Originator-Generic Products Market Share (Value)



Source: IQVIA, İEİS

Chart 6 - Originator-Generic Products Market Share (Unit)



Source: IQVIA, İEİS

Regarding the import-local breakdown of originator-generic products, in 2018, local products made up 74% of total value, whereas 37% were import products on a unit basis. Meanwhile, almost all generic products are local in origin. It is thought that foreign GMP audits play a role in the downsizing of the imported generic products market.

Table 3- Originator-Generic Products Breakdown

	ORIGINATOR DRUG				GENERIC DRUG			
	2010		2018		2010		2018	
	Import	Local	Import	Local	Import	Local	Import	Local
UNIT	38%	62%	37%	63%	5%	95%	2%	98%
(mn)	287	464	349	586	44	824	31	1,339
TL	77%	23%	74%	26%	10%	90%	4%	96%
(mn)	7.186	2.128	15.603	5.416	426	3.652	426	9.491

Source: IQVIA, IEIS

B. Import-Local Products

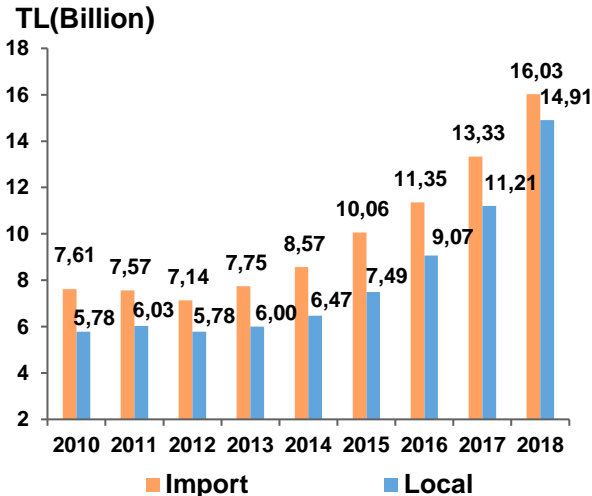
In 2018, imported products expanded by 20.2% to TL 16.03 billion. Units sold printed at 0.38 billion, down by 12% year-over-year.

Between 2010 and 2018, import products gained a total of 110.5% in value. This growth signals a CAGR of 9.8% and a shrinkage of 11.1% when the effect of inflation is nullified. In the same period, there was an increase of 14.6% in imported drugs in unit terms.

Local products, on the other hand, have outgrown the market over the past three years. In 2018, they expanded by 33.0% to TL 14.91 billion. The number of units sold rose to 1.92 billion, up by 7.3%.

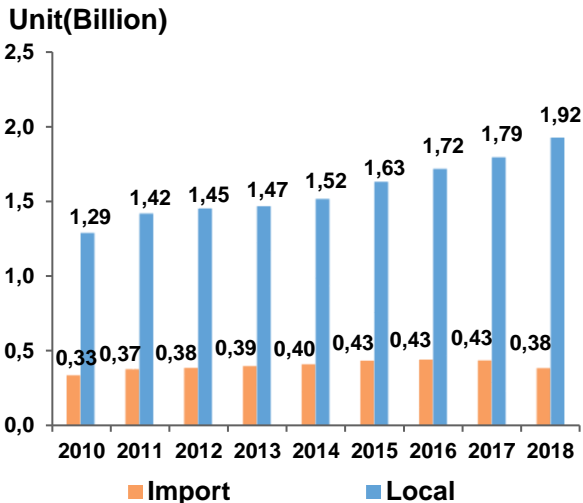
Between 2010 and 2018, local products rose by 157.9% in value. This expansion equates to a CAGR of 12.6%. Taking into account local producer prices, this marks a real increase of 8.9%. Local products grew by 49.4% in unit terms.

Chart 7 - Import-Local Products (Value)



Source: IQVIA, IEIS

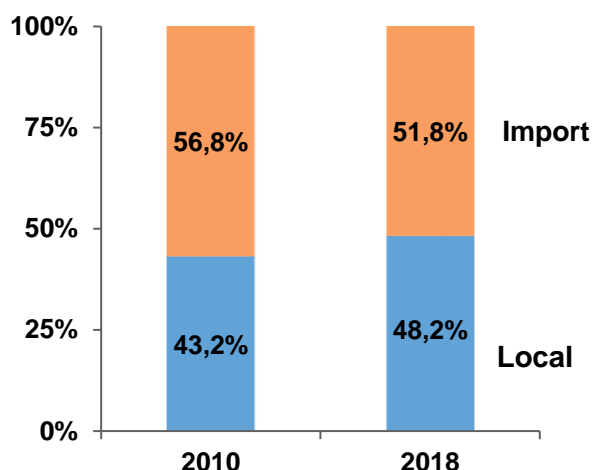
Chart 8 - Import-Local Products (Volume)



Source: IQVIA, IEIS

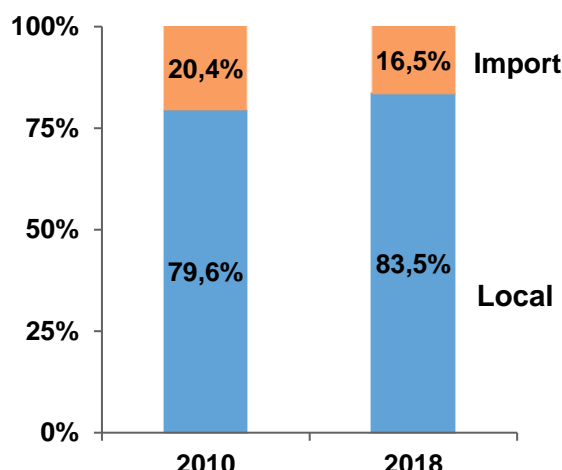
These developments culminated in the rise of local products from 43.2% in 2010 to 48.2% in 2018. These units, at 79.6% of the total in 2010, had reached 83.5% in 2018.

Chart 9 - Import-Local Products Market Share (Value)



Source: IQVIA, İEİS

Chart 10 - Import-Local Products Market Share (Volume)



Source: IQVIA, İEİS

Originators constitute almost all imported products but continue to account for a smaller portion of locally manufactured ones. Generics claim a gradually increasing share among local products. In 2018, 64% of locally manufactured products were generics on the value scale, and 70% on the unit scale.

Table 4- Import-Local Products Breakdown

	IMPORT PRODUCT				LOCAL PRODUCT			
	2010		2018		2010		2018	
	Originator	Generic	Originator	Generic	Originator	Generic	Originator	Generic
UNIT (mn)	87%	13%	92%	8%	36%	64%	30%	70%
	287	44	349	31	464	824	586	1.339
TL (mn)	94%	6%	97%	3%	37%	63%	36%	64%
	7.186	426	15.603	426	2.128	3.652	5.416	9.491

Source: IQVIA, İEİS

C. Biotechnological Products

The worldwide use of biotechnological products has exceeded 20%, an uptrend that continues today. And Turkey is no exception to this trend. In 2018, biotechnological products claimed an approximate 17.6% of the prescription products market at TL 5.4 billion TL.

In the Turkish pharmaceutical market, there are 252 originator biotechnological products under 107 brands and 83 biosimilar products under 23 brands. The

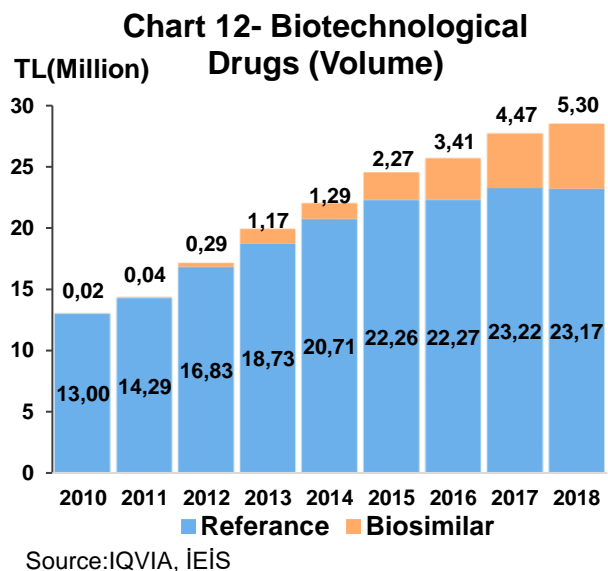
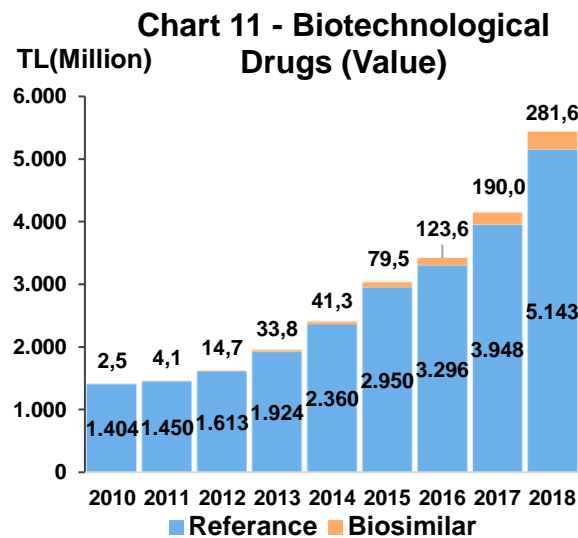
biotechnological drug market comprises 335 forms of drug under a total of 130 brands. 29 types of biosimilars under 7 different brands are locally manufactured.

Efforts are underway for the local production of two originator biotechnological, 39 biosimilar products and one biobetter product by 2024. Local development and production of these products, for which we are currently import-dependent, will ease patient access, while reducing the foreign trade deficit, therefore significantly contributing to the national economy.

An analysis of the originator biotechnological products shows that the market grew by 30.3% in 2018 to TL 5.1 billion. For that year, the biosimilar pharmaceutical market exhibited a 48.2% increase to 282 million TL.

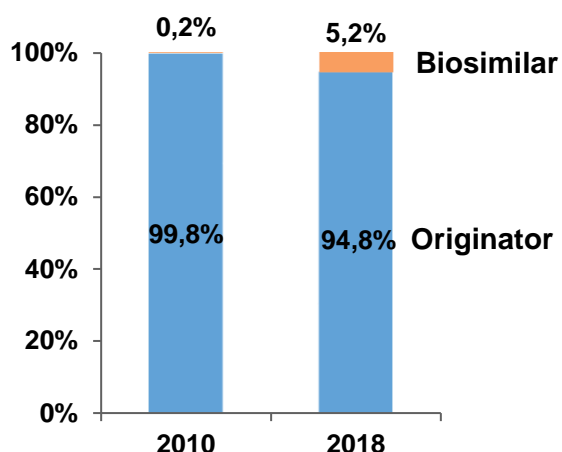
On a unit scale, biotechnological products reached a volume of 28.5 million units on a 2.8% increase in 2018. The unit sales for originator biotechnological products decreased by 0.2% compared to the previous year, and that of biosimilar drugs increased by 18.5%. Biosimilar unit sales in 2018 were recorded at 5.3 million.

In Turkey, biosimilars that contain abciximab, adalimumab, enoxaparin sodium, epoetin alfa, filgrastim, infliximab, insulin glargine, recombinant human epidermal growth factor, rituximab, somatropin and trastuzumab are licensed. Among them, those manufactured in Turkey contain the active ingredients of enoxaparin sodium, epoetin alfa, filgrastim, infliximab, and insulin glargine. The number of biosimilars is expected to increase over the coming term.



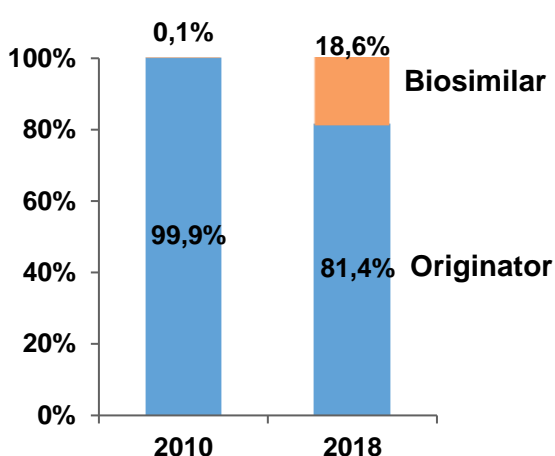
In 2010, the share of biosimilars among biotechnological products was 0.2% in value and 0.1% in unit terms, whereas in 2018, they had a respective 5.2% and 18.6% share in terms of value and units.

Chart 13- Originator-Biosimilar Products Market Share (Value)



Source: IQVIA, IEiS

Chart 14 - Originator-Biosimilar Products Market Share (Volume)



Source: IQVIA, IEiS

Blood and hematopoietic biotechnological products have significantly expanded their market share within the biosimilars category. As for the originator biotechnological products market; antineoplastics, immunomodulatory agents, digestive system and metabolism products rank the highest in value terms.

Table 5- Biotechnological Products

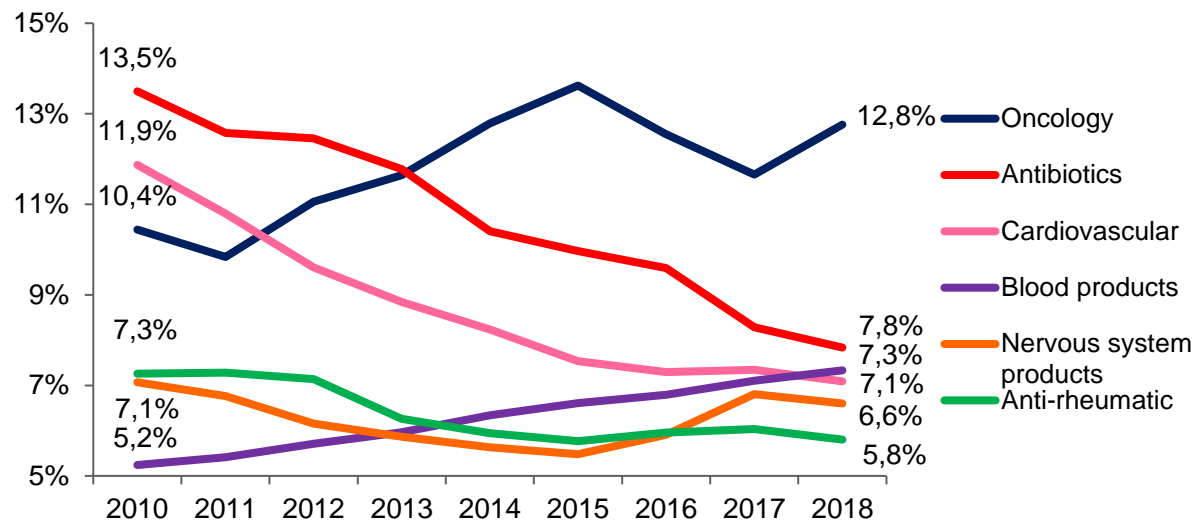
	Unit		Value	
	2010	2018	2010	2018
Biosimilar	100%	100%	100%	100%
Blood and hematopoietic organs	0,0%	81,9%	0,0%	49,6%
Antineoplastics and immunomodulatory agents	100,0%	6,2%	100,0%	30,6%
Digestive system and metabolism products	0,0%	10,1%	0,0%	13,6%
Systematic Hormonal Preparations (Excluding Sex Hormones and Insulins)	0,0%	1,6%	0,0%	5,9%
Dermatologic Products	0,0%	0,1%	0,00%	0,2%
Originator	100%	100%	100%	100%
Antineoplastics and immunomodulatory agents	6,9%	11,1%	44,2%	49,9%
Digestive system and metabolism products	51,1%	59,4%	23,8%	22,9%
Blood and hematopoietic organs	35,1%	18,0%	17,3%	10,8%
Ophthalmologics	0,1%	1,4%	1,5%	6,2%
Systematic Hormonal Preparations (Excluding Sex Hormones and Insulins)	1,9%	3,2%	4,1%	3,1%
Respiratory System	0,1%	1,1%	0,4%	2,7%
Genito Urinary System and Sex Hormones	3,3%	4,9%	3,8%	2,3%
Systematically Used Anti-infectives	1,5%	0,4%	5,0%	1,1%
Dermatologic Products	0,0%	0,0%	0,0%	0,7%
Muscle-Skeleton System	0,0%	0,5%	0,0%	0,3%

Source: IQVIA, IEiS

D. Therapeutic Groups

An analysis of the pharmaceutical market from the perspective of therapeutic groups indicates an upward trend in oncology and blood products over the past 9 years. In 2018, oncology drugs stood out as the highest selling therapeutic group on the value scale at 12.8%.

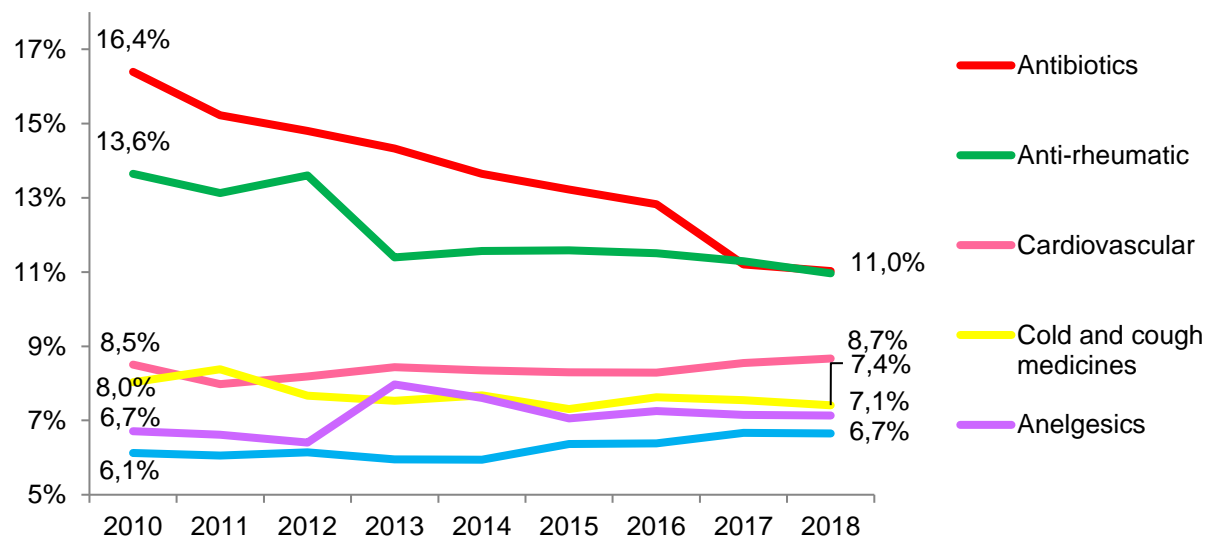
Chart 15 - Therapeutic Groups on Value Scale



Source: IQVIA, iEiS

An analysis by unit reveals antibiotics and antirheumatic products to be the leading therapeutic groups, on 11%.

Chart 16 - Treatment Groups on Unit Scale



Source: IQVIA, iEiS

E. Average Prices

From 2010 through 2018, average product price increased by 62.3% to 13.43 TL. That period indicates a 31% real shrinkage when the effect of inflation, which soared by 137%, is excluded.

A comparison of the average drug prices between 2017-2018 demonstrates pharmaceutical market growth of 22%, with originators on 24%, generics on 20%, import products on 37% and local products on 24%.

Table 6- Distribution of Average Product Prices

TL	Product	Originator	Generic	Import	Local
2010	8,27	12,41	4,70	23,00	4,49
2011	7,59	11,20	4,51	20,35	4,25
2012	7,05	10,49	4,19	18,78	3,98
2013	7,39	11,28	4,19	19,71	4,09
2014	7,84	12,24	4,32	21,27	4,27
2015	8,52	13,55	4,63	23,50	4,59
2016	9,49	15,36	5,23	26,10	5,28
2017	11,03	18,16	6,02	30,94	6,25
2018	13,43	22,49	7,24	42,25	7,75

Source: IQVIA, İEİS

Table 7- Change in Average Product Prices

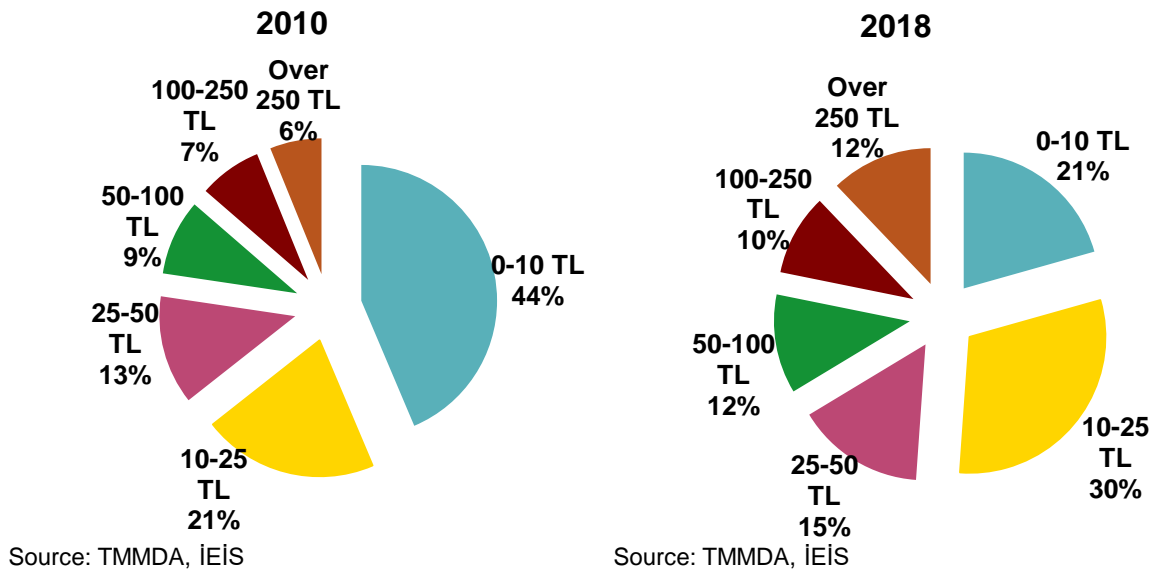
Change	Product	Originator	Generic	Import	Local
2010-2018	62,3%	81,3%	54,1%	83,7%	72,6%
2017-2018	21,7%	23,9%	20,4%	36,6%	23,9%

Source: IQVIA, İEİS

F. Retail Price Ranges

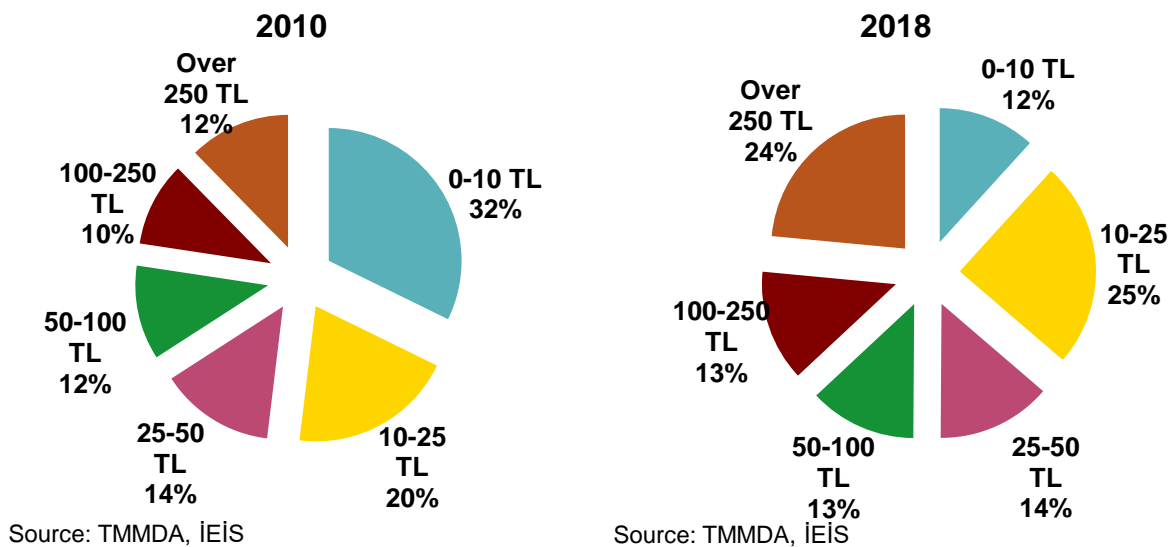
When the retail sales price distribution of products in the market is analyzed, between 2010 and 2018 we observe a 23-point drop at the TL 0-10 price range due to the exchange rate. 51 percent of the 2018 pharmaceutical market comprised products priced at TL 25 and under. In 2018, the products with the highest market share (30%) were priced between TL 10 and TL 25.

Chart 17 - Retail Price Distribution



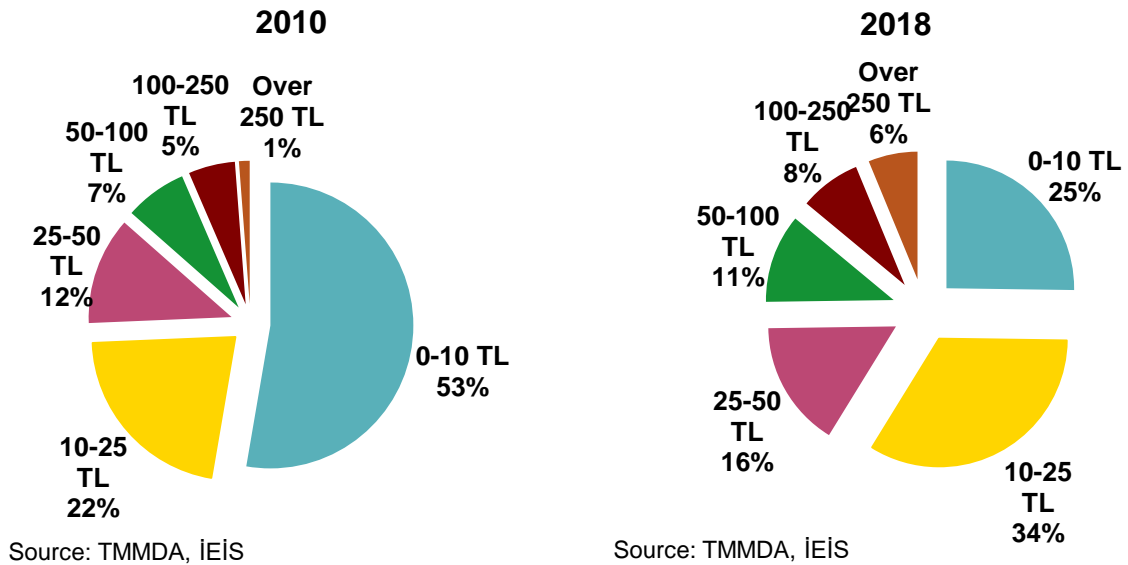
The retail sales price distribution of products in the market over the past 9 years shows a 20-point drop at the TL 0-10 price range. Originator drugs priced above 250 TL was the group to have seen the greatest rise in share at 12 percentage points.

Chart 18 – Price Breakdown of Originator Products



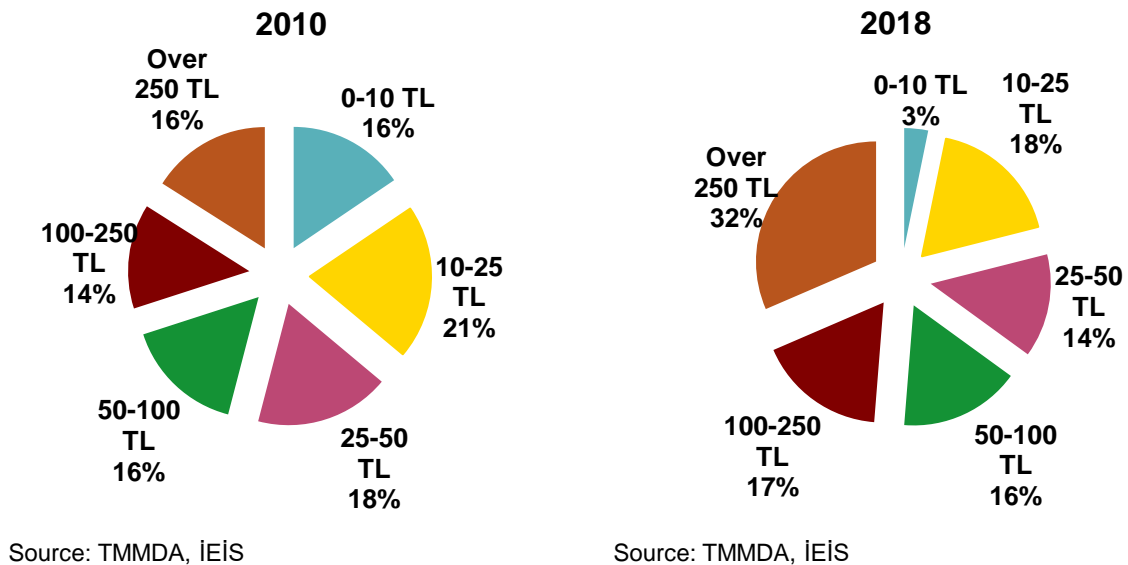
An analysis of the price range for generic products indicates that as of 2018 those products priced between TL 10-25 had the highest market share of 34%. The TL 0-10 price range, on the other hand, shrank by 28 points.

Chart 19- Price Breakdown of Generic Products



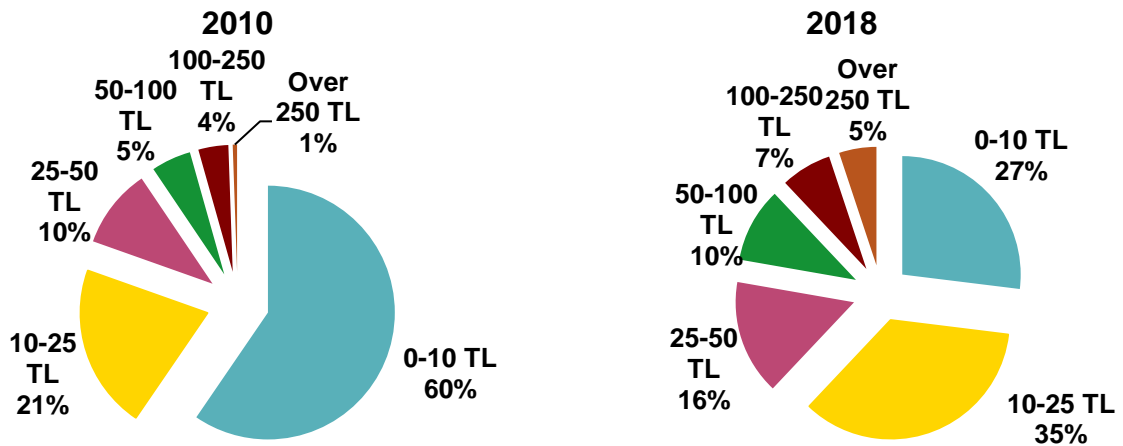
In 2018, import products priced at over TL 100 grew in terms of unit share.

Chart 20 - Price Breakdown of Import Products



Among local products, the group with the highest share was the TL 10-25 group with 35%. In 2018, products priced at 25 TL and under accounted for 62% of the local pharmaceuticals market.

Chart 21 - Price Breakdown of Local Products



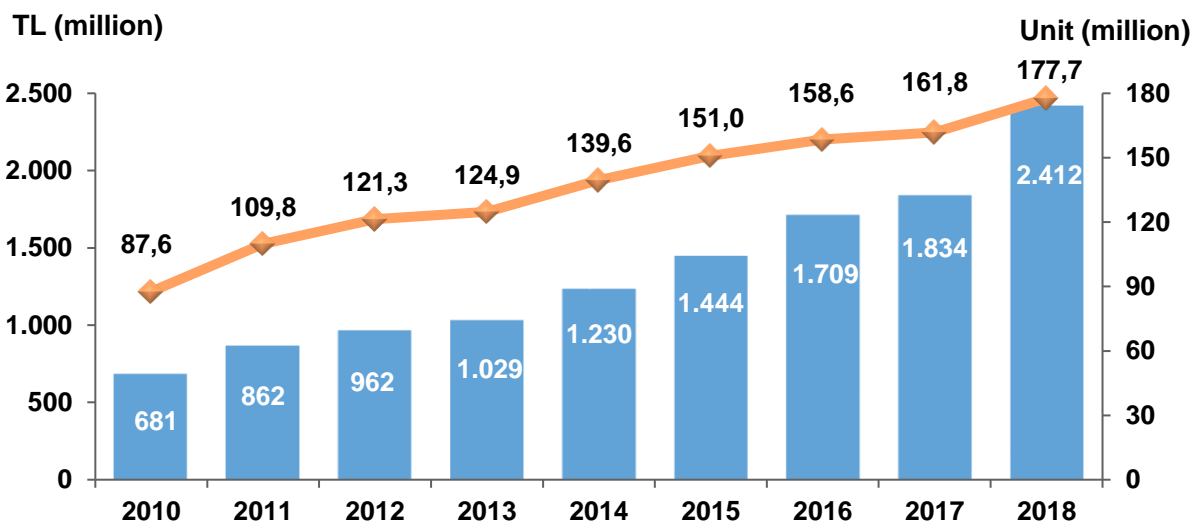
Source: TMMDA, İEİS

Source: TMMDA, İEİS

2. Medicinal Products Market

Medicinal products that are within the portfolio of pharmaceutical companies, yet that are not classified as pharmaceutical products are as follows: biocidal products licensed by the Ministry of Health, certain medical devices in pharmaceutical form, medical infant formulas, cosmetic and derma-cosmetic products; vitamins authorized by the Ministry of Agriculture and Forestry, food supplements and infant formulas. These products scored 31.5% growth in 2018, printing at 2.4 billion TL. They posted a 9.8% rise in unit terms with sales of 178 million units.

Chart 22 - Medical Products Market



Source: IQVIA, İEİS

■ Total Sales Value

◆ Total Sales Amount

An analysis of the medicinal product subgroups indicates that reimbursed products have gained share over the past nine years.

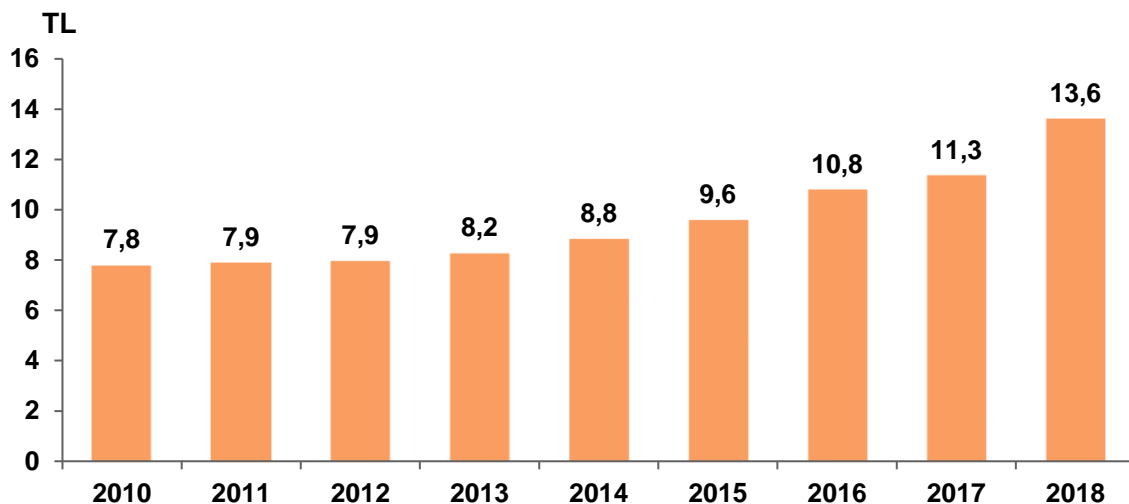
Table 8- Breakdown of the Medicinal Products Market

	2010		2018	
	Value (Billion TL)	Share	Value (Billion TL)	Share
Non-Drug Medical Products	0,68	100%	2,41	100%
Reimbursed	0,13	19,4%	1,01	42,0%
Non-reimbursed	0,55	80,6%	1,40	58,0%

Source: IQVIA, İEİS

Whereas the average price of medical products was 7.8 TL in 2010, it reached 13.6 TL in 2018 on a rise of 75% over the past 9 years.

Chart 23 - Average Price Breakdown of Medicinal Products



Source: IQVIA, İEİS

3. Investment Incentives

Entering effect in 2009, Resolution no. 2009/15199 of the Council of Ministers brought about massive positive changes regarding investment incentives, which had been implemented differently by various public institutions. The resolution ensured that these incentives were to be coordinated and managed single-handedly by the Ministry of Trade. Following this resolution, aside from general and regional incentives, investments totaling more than TL 20 million in biotechnological, oncological and blood products were included within the scope of priority investments.

Later in 2015, Council of Ministers Resolution no. 2012/3305 was put into effect, whereby pharmaceutical investments were offered 5th Region incentives, being classified as advanced technology.

With the effect of these developments, a fixed investment incentive in the pharmaceutical sector amounting to 8.2 billion TL was received over the 9-year period between 2010 – 2018. It was foreseen that with these investments new employment would be provided to 7,770 people

Table 9 - Investment Incentives in the Pharmaceutical Industry

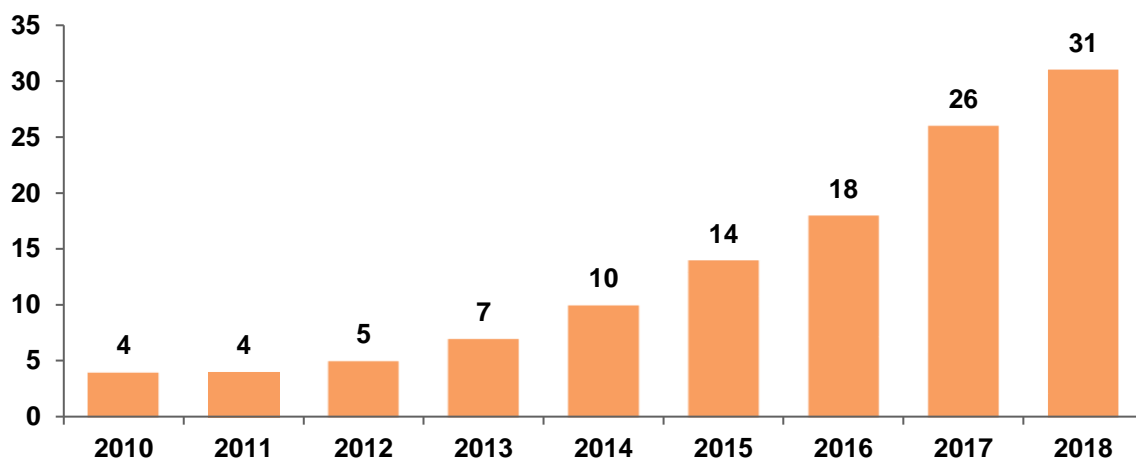
	No. of Documents		Fixed Investment (millionTL)			Employment Provided With Investment		
	Drug	Total	Drug	Total	Share	Drug	Total	Share
2010	14	3.581	272	67.439	0,40%	634	132.739	0,48%
2011	17	3.979	237	49.481	0,48%	600	119.903	0,50%
2012	20	4.025	672	61.794	1,09%	725	148.428	0,49%
2013	21	4.667	512	95.191	0,54%	672	189.260	0,36%
2014	17	3.959	1.707	64.503	2,65%	885	143.305	0,62%
2015	24	4.552	879	99.074	0,89%	956	141.771	0,67%
2016	15	5.161	327	97.780	0,33%	551	141.356	0,39%
2017	33	7.450	2.398	179.189	1,34%	2.117	226.501	0,93%
2018	11	5.954	1.218	231.371	0,53%	630	259.976	0,24%

Source: Ministry of Industry and Technology, IEIS

4. R&D

The pharmaceutical industry is a high-priority sector contributing to Turkey's industrial transformation with 32 accredited R&D centers and 1.298 R&D employees as of May 2019. Advances in R&D will make it possible to locally manufacture those products for which Turkey is currently dependent on imports.

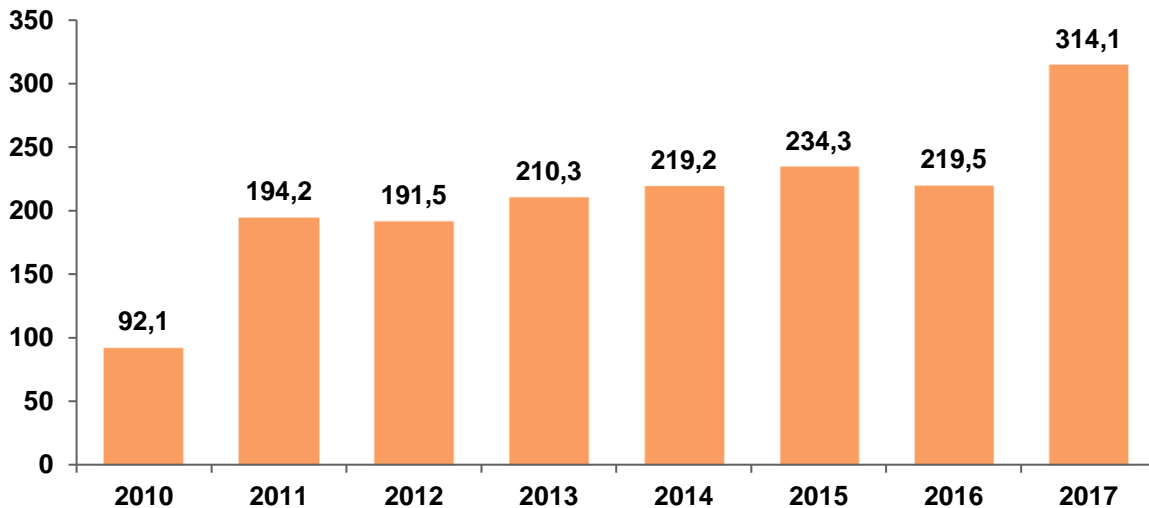
Chart 24 - Number of Accredited R&D Centers in the Pharmaceutical Sector



Source: Ministry of Industry and Technology, IEIS

From 2010 to 2017, pharmaceutical R&D spending climbed from TL 92.1 million to TL 314.1 million on a 241% rise. This increase points to 92.3% real growth on a manufacturer price basis, and 19.1% CAGR.

Chart 25 - Pharmaceutical Sector R&D Expenditure



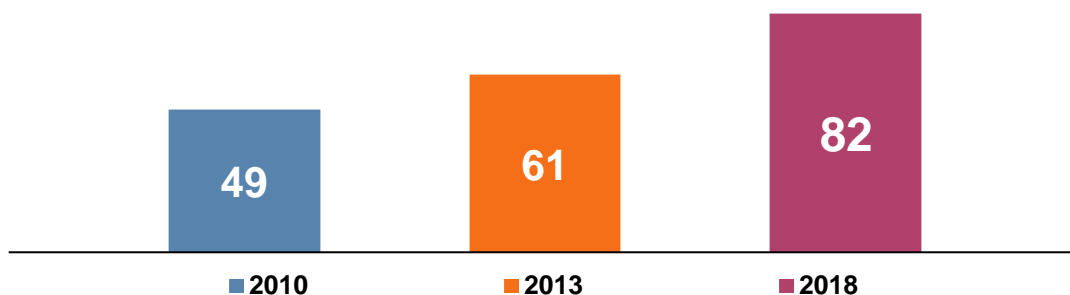
Source: TurkStat, İEİS

5. Production

Turkey boasts a well-established pharmaceutical industry with advanced production technology and capacity. As of May 2019, there are 81 production and 11 raw material facilities meeting international standards.

A key step in domestic production concerns policies to promote localized production. Related efforts will consider the pharmaceutical industry's production technologies and capacity, whereby ultimately the imported products of today will be manufactured locally. In the meantime, the industry continues to invest in new technologies and expand its capacity and employment. This will inevitably reduce imports. Improvement to foreign trade tendencies will not end there. As a result of production contracts with global firms including the exports of said products, export figures will rise.

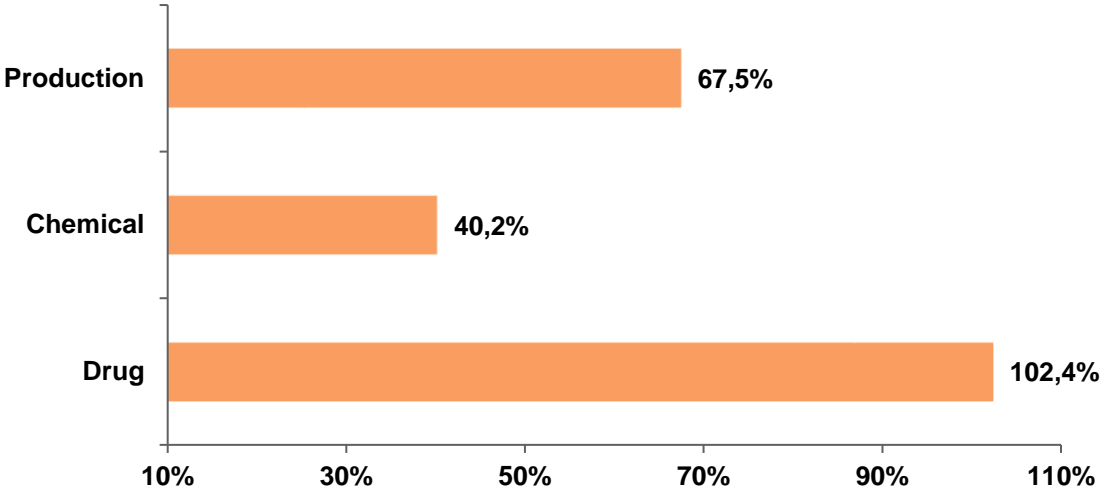
Chart 26 - Number of Production Facilities



Source: TMMDA, İEİS

The industrial production index data for the 2010-2018 period reveals 67.5%, 40.2%, and 102.4% production growth in the manufacturing industry, mid-technology chemical industry and pharmaceutical industry, respectively.

Chart 27 - Industrial Production Index Change (2010-2018)

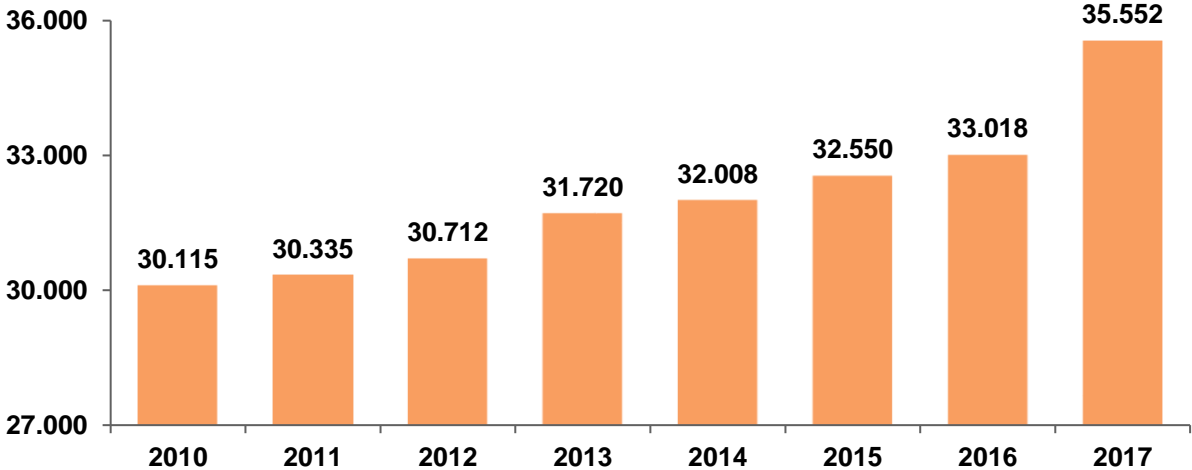


Source: TurkStat, İEİS

6. Employment

In 2017, the Turkish pharmaceutical sector employed an approximate 35.500 people.

Chart 28 - Employment in Drug Industry

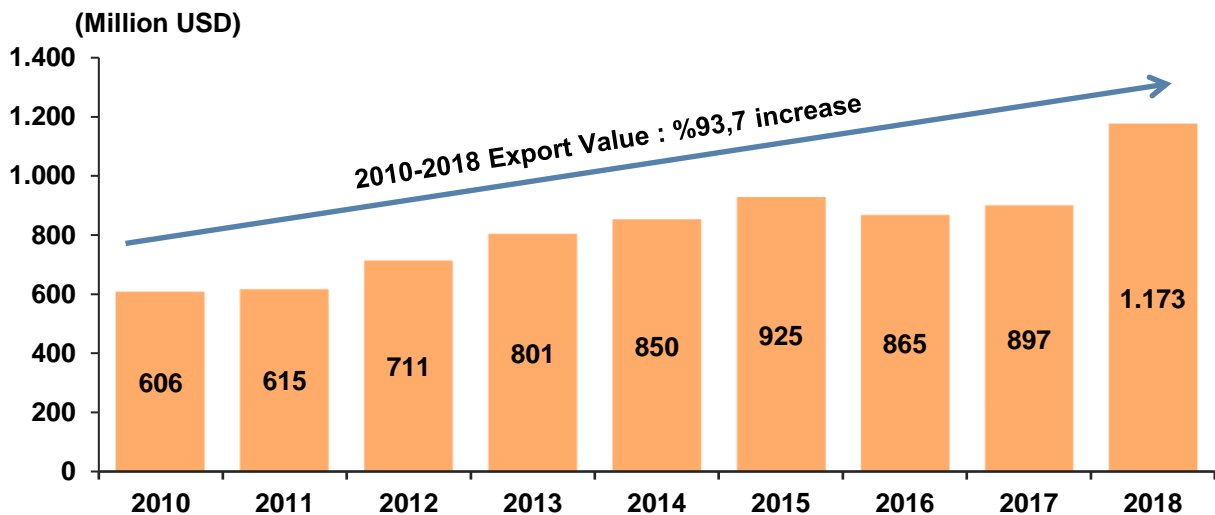


Source: TurkStat, İEİS

7. Foreign Trade

Pharmaceutical exports, at USD 606 million in 2010, surged by 93.7% to hit USD 1.173 million in 2018.

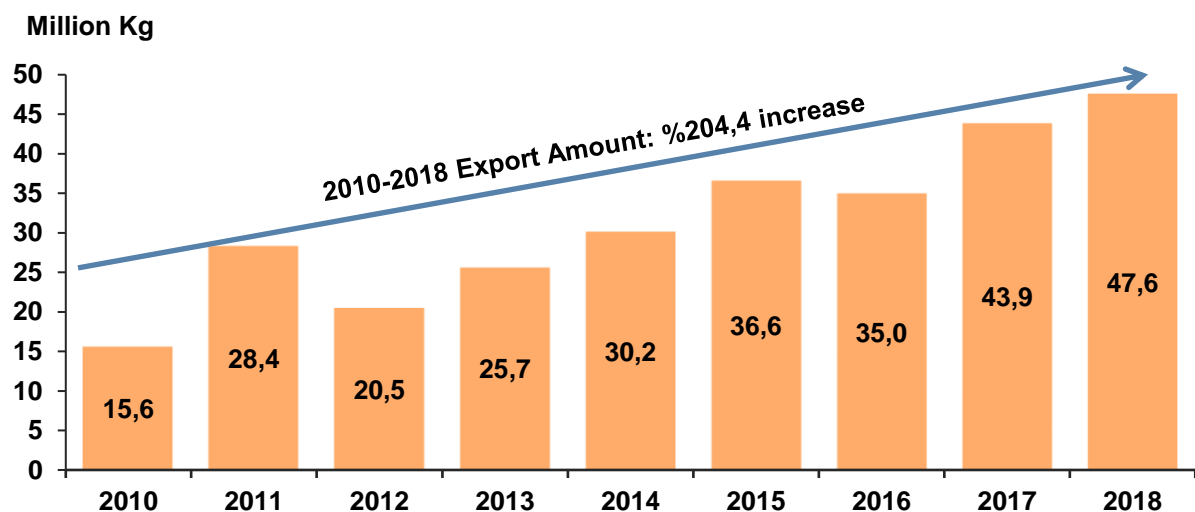
Chart 29 - Export Value in Pharmaceutical Industry



Source: TurkStat, İEİS

When the export amount in the period between 2010 – 2018 is examined, it is seen that pharmaceutical export figures indicate a 204.4% increase from 15.6 million kg in 2010 to 47.6 million kg in 2018. Quantity-wise (kg) growth is, however, paired with a gradually descending unit price, which translates into a greatly underperforming export value.

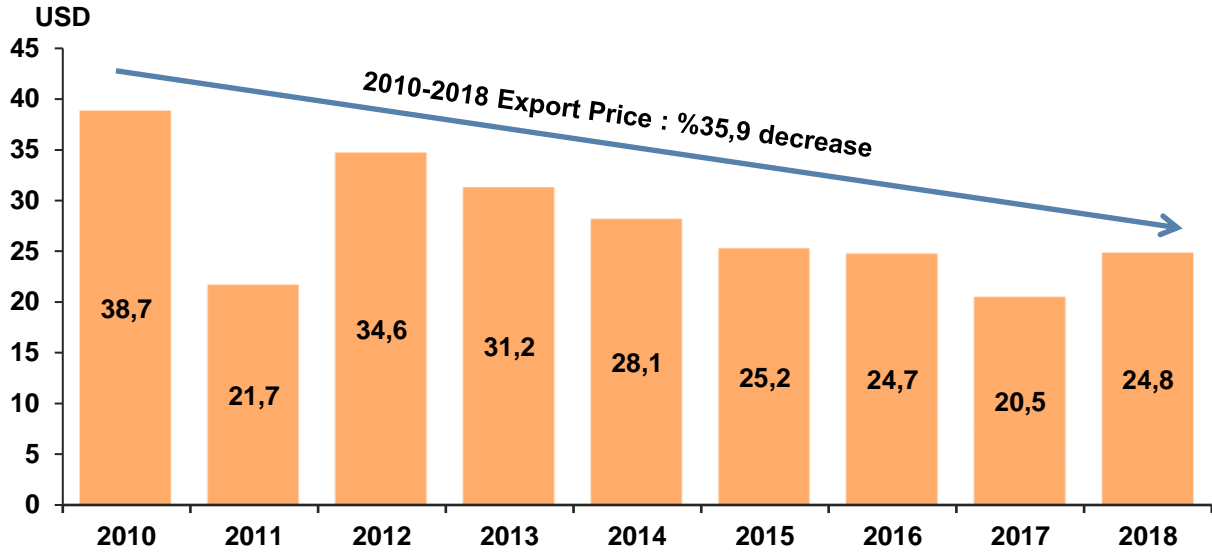
Chart 30 - Export Volume in Pharmaceutical Industry



Kaynak: TurkStat İEİS

In fact, when we look at the export price per kilogram, from 2010 to 2018, the export value of the industry decreased by 35.9% per kilogram, from USD 38.7 to USD 24.8.

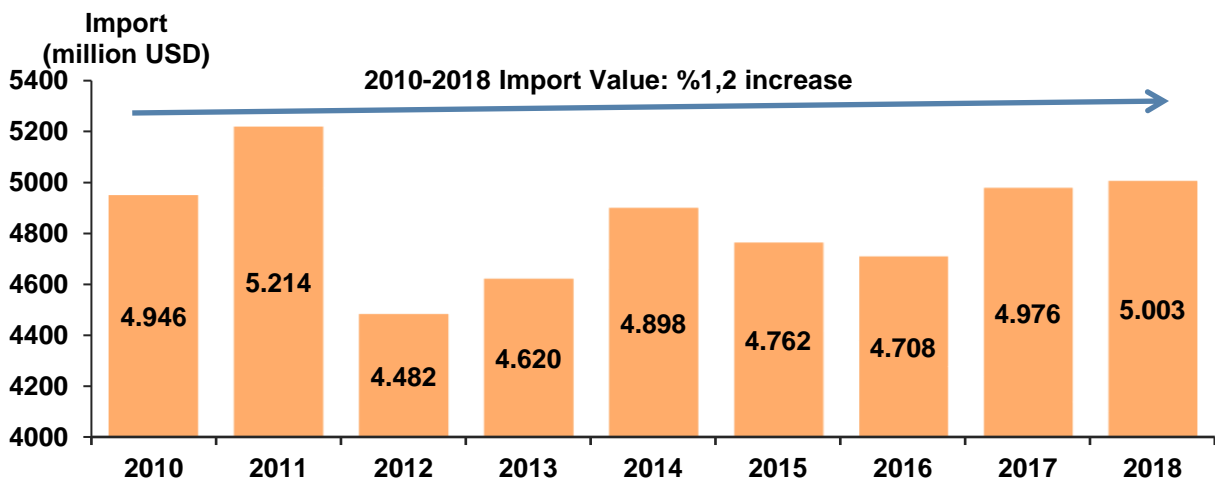
Chart 31 - Export Price in Pharmaceutical Industry



Kaynak: TurkStat, İEİS

In the same period, medicine imports rose by 1.2% to USD 5 billion.

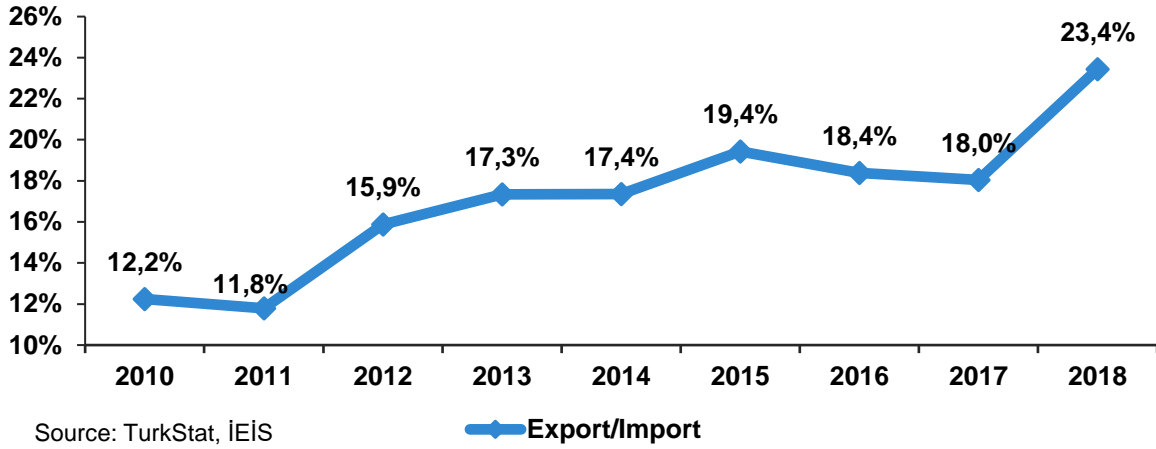
Chart 32 - Import Value in Pharmaceutical Industry



Source: TurkStat, İEİS

Amid these developments, the export import coverage ratio was at 23.4%.

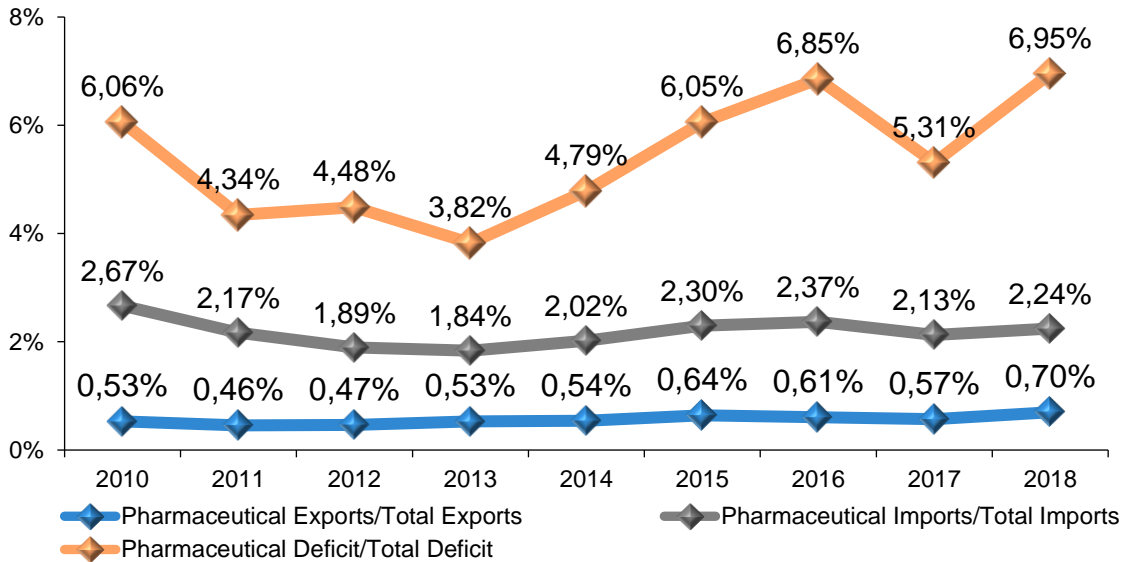
Chart 33 – Export Import Coverage Ratio



When the countries exported are examined, it is seen that exports were made to 164 nations, mainly the Commonwealth of Independent States (CIS), North Africa and the Middle East. Additionally, in 2018, the sector imported from 75 countries.

An analysis of the pharmaceutical industry's share of Turkey's foreign trade indicates 2.24% of Turkey's total imports for 2018, and a 6.95% share within the pharmaceutical foreign trade deficit

Chart 34 - Pharmaceutical Products in Turkish Foreign Trade

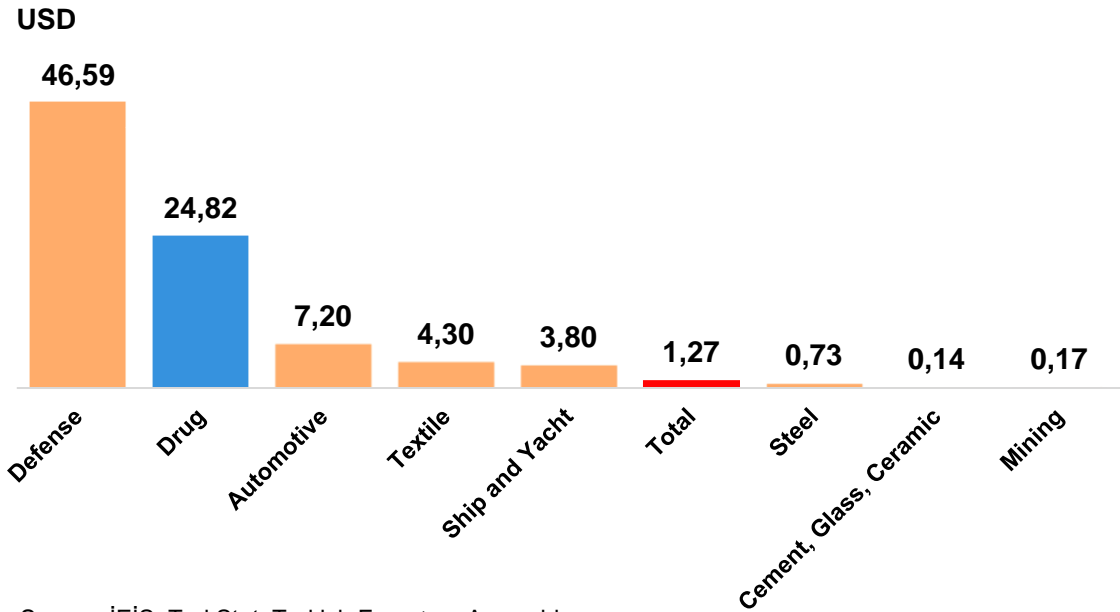


Our industry primarily aims to become one of world's prominent pharmaceutical manufacturers and exporters. Yet there are certain obstacles to overcome that currently prevent us from attaining these goals.

The first is that our pharmaceutical prices are taken as a source price in destination countries, resulting in the low penetration of those markets by our companies. Over the years this has led to a decrease in the export value per kilogram.

Nonetheless, the export value per kilogram still by far outgrows the average Turkish market and other sectors.

Chart 35 - Export Prices per Kg in Various Sectors (2018)



Source: IEIS, TurkStat, Turkish Exporters Assembly

The second challenge for our exports is presented by licensing and customs clearance processes. Support from the Ministries of Trade, Foreign Affairs and Health is instrumental in overcoming such problems.

Accordingly, Turkey's membership of Pharmaceutical Inspection Co-operation Scheme (PIC/S), which features members such as the U.S., Germany, Australia, Switzerland, Japan and Canada, as of January 1st, 2018 is a major development in regard to sectoral targets such as widening the global impact area and becoming a net exporter.

One of the problems that must be overcome is exports realized by the pharmaceutical warehouses without permit from the respective pharmaceutical companies.

Pharmaceutical companies license their products in the countries of export much effort and at high cost, at the highest price possible. These companies also invest in the marketing of these products to health professionals.

Some warehouses, however, purchase pharmaceutical exporters' products in the Turkish market and sell them at lower prices than the exporters as these warehouses have no licensing or promotional costs. The pharmaceutical company is then faced with only two options: reducing product prices or else exiting the market. For that reason,

the agreement of companies should be sought in the permits issued by the Ministry of Health for the export of pharmaceutical warehouses.

An analysis of the export and import of pharmaceutical products on a country basis shows that Turkey exports mostly to South Korea, Iraq and Switzerland.

Table 10 - Exports per Country (USD million)

Country Name	2017	2018	Change (%)
South Korea	136	354	159,6%
Iraq	61	53	-14,3%
Switzerland	55	44	-20,0%
Slovenia	30	33	12,4%
Azarbaijan	26	30	14,4%
K.K.T.C	30	30	-1,7%
Iran	25	27	5,7%
Libya	22	26	17,2%
Germany	19	25	30,4%
Hong Kong	15	20	37,6%

Source: İEİS, TurkStat

The most important import markets are Germany, USA and Switzerland.

Table 11 - Imports per Country (USD million)

Country Name	2017	2018	Change (%)
Germany	828	880	6,3%
USA	600	563	-6,1%
Switzerland	417	399	-4,5%
South Korea	182	384	111,1%
Italy	346	363	5,2%
France	339	328	-3,0%
Ireland	410	317	-22,6%
United Kingdom	375	290	-22,7%
China	208	277	33,1%
India	170	183	7,7%

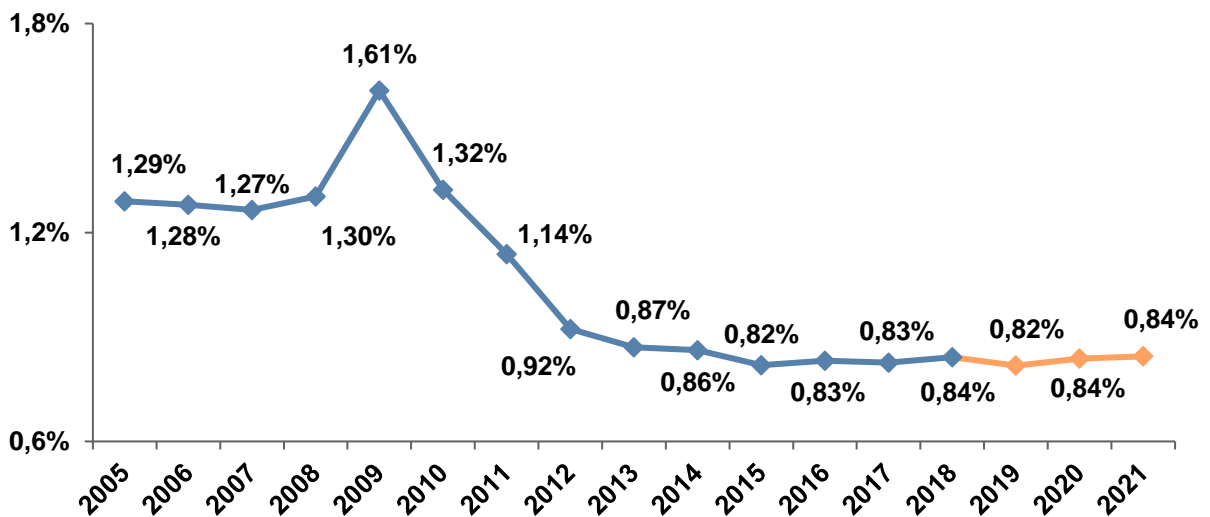
Source: İEİS, TurkStat

8. Pricing Policies

The global financial crisis which broke out in 2008 and gradually intensified, affected our economy deeply. In its aftermath, radical arrangements were introduced in 2009 to overcome the challenges posed by public finance. A global budget was one of the newly adopted practices. As part of the Healthcare Transformation Program, service quality and access to healthcare were improved, although the means of mitigating rising expenses involved measures addressing the prices of pharmaceuticals. Pharma

budgets were not proportional to the level of services offered. Furthermore, prices were constantly reduced based on the rationale that the pharma budget was exceeded, while the Social Security Institution discount rates were increased. The chart below presents annual public pharmaceutical spending as a percentage of GDP.

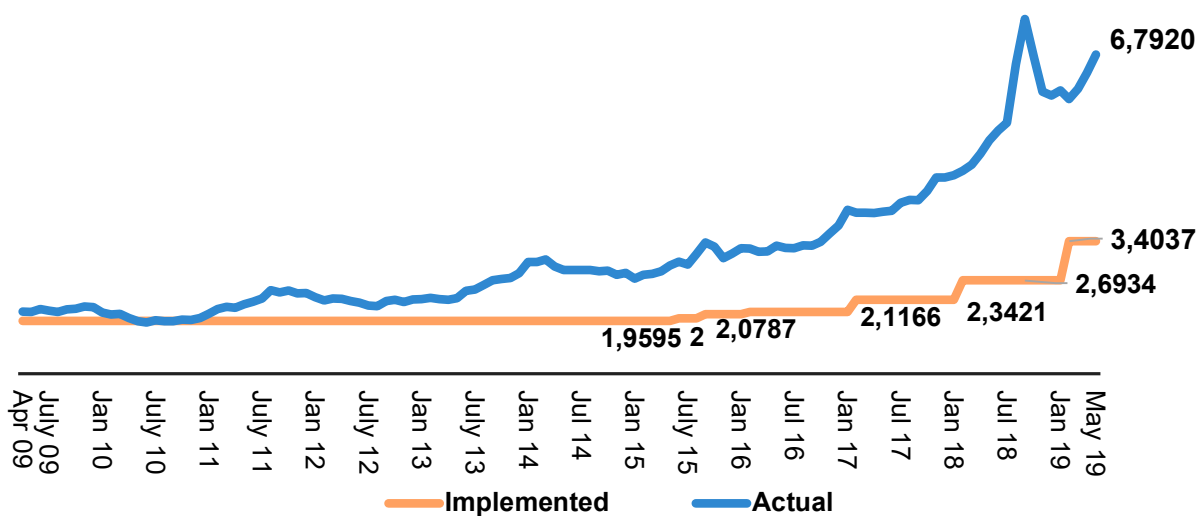
Chart 36 - Pharmaceutical Spending as a Percentage of GDP



Source: General Directorate of Budget and Fiscal Control, İEİS

Additionally, although the conditions stipulated by the legislation were achieved, the Euro value used for TL conversion of EU-based pharma prices was not updated from April 2009 to May 2015; prices were fixed at TL 1.9595 so as to curb pharmaceutical expenses. Legal proceedings initiated by the industry regarding an update of the exchange rate were finalized in favor of the pharmaceutical sector in April 2015. The conversion rate was subsequently set at 70% of the Euro average of the previous year. This value was updated to TL 2.3421 for 2017. In 2018, a provisional decision overruling the regulation was carried into effect, whereby the increase was reduced to 15% from 23%. The conversion rate was then set as TL 2.6934. In 2019, the adjustment factor used to determine the annual average Euro value was reduced from 70% to 60%, and the conversion rate was set as 3,4037 TL.

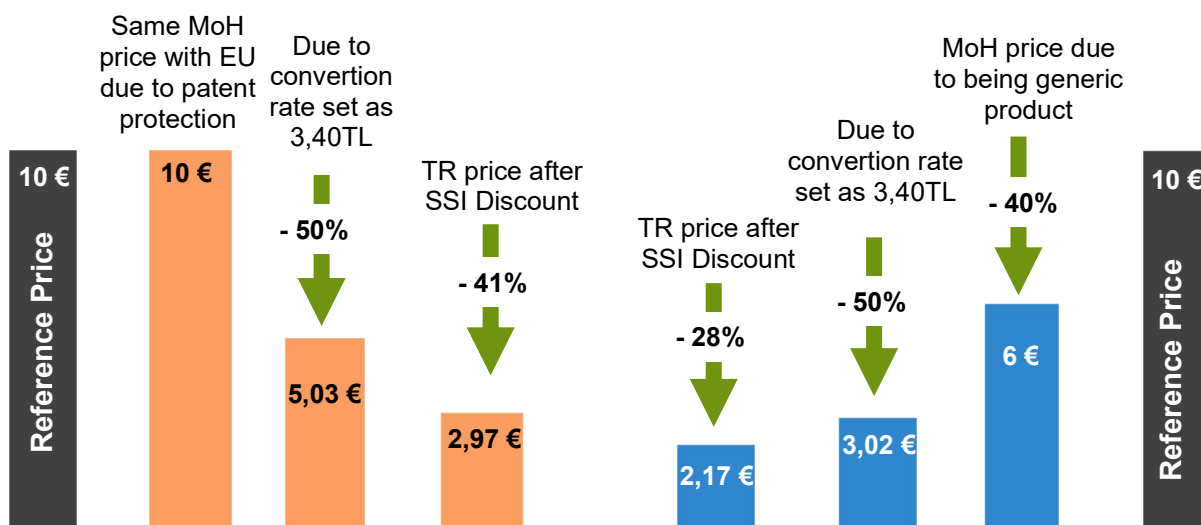
Chart 37 - Currency Trends (Euro/TL)



Source: Central Bank of the Republic of Turkey, IEIS

The chart below depicts how a product, whose source price is 10 euros, is priced in Turkey. The originator product is priced at EUR 2.97 and generics at EUR 2.17.

Chart 38 – Pharmaceutical Pricing

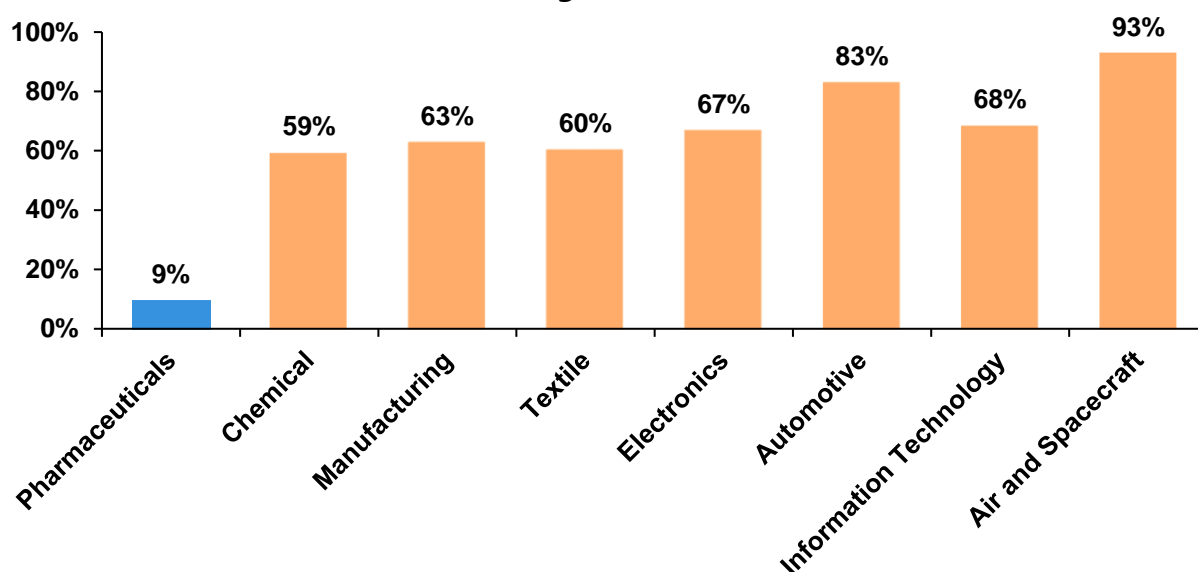


6,7698 TL value dated 28 May 2019 is used for calculations.

■ Originator
■ Generic

Price-oriented policies have an inevitably negative impact on the pharmaceutical industry's financial performance and that of the country in meeting economic goals. When the real net sales change in the 2010- 2017 period is compared with other sectors, the pharmaceutical sector lags behind them, despite its strategic importance.

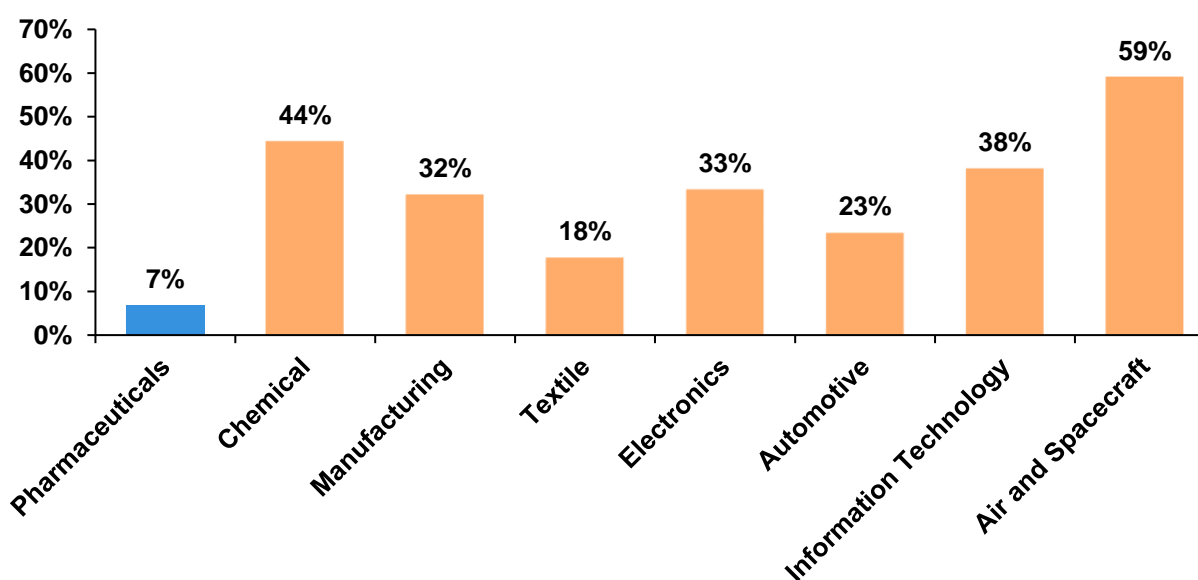
Chart 39 - Real Change in Net Sales - 2010-2017



Source: Ministry of Industry and Technology, I&ES

This situation has inevitably had a negative impact on the pharmaceutical sector's capability of generating equity improve its R&D capacity. As a matter of fact, when taken from this point of view, real growth in the equity of the pharma industry has lagged that of other sectors.

Chart 40 - Real Change in Equities - 2010-2017



Source: Ministry of Industry and Technology, I&ES

9. Conclusion and Evaluation

With its nationwide investments, plus its rising R&D competence, high production capacity, high technology, employment and export potential, the Turkish pharmaceutical industry is of critical importance for Turkey in both economic and strategic terms.

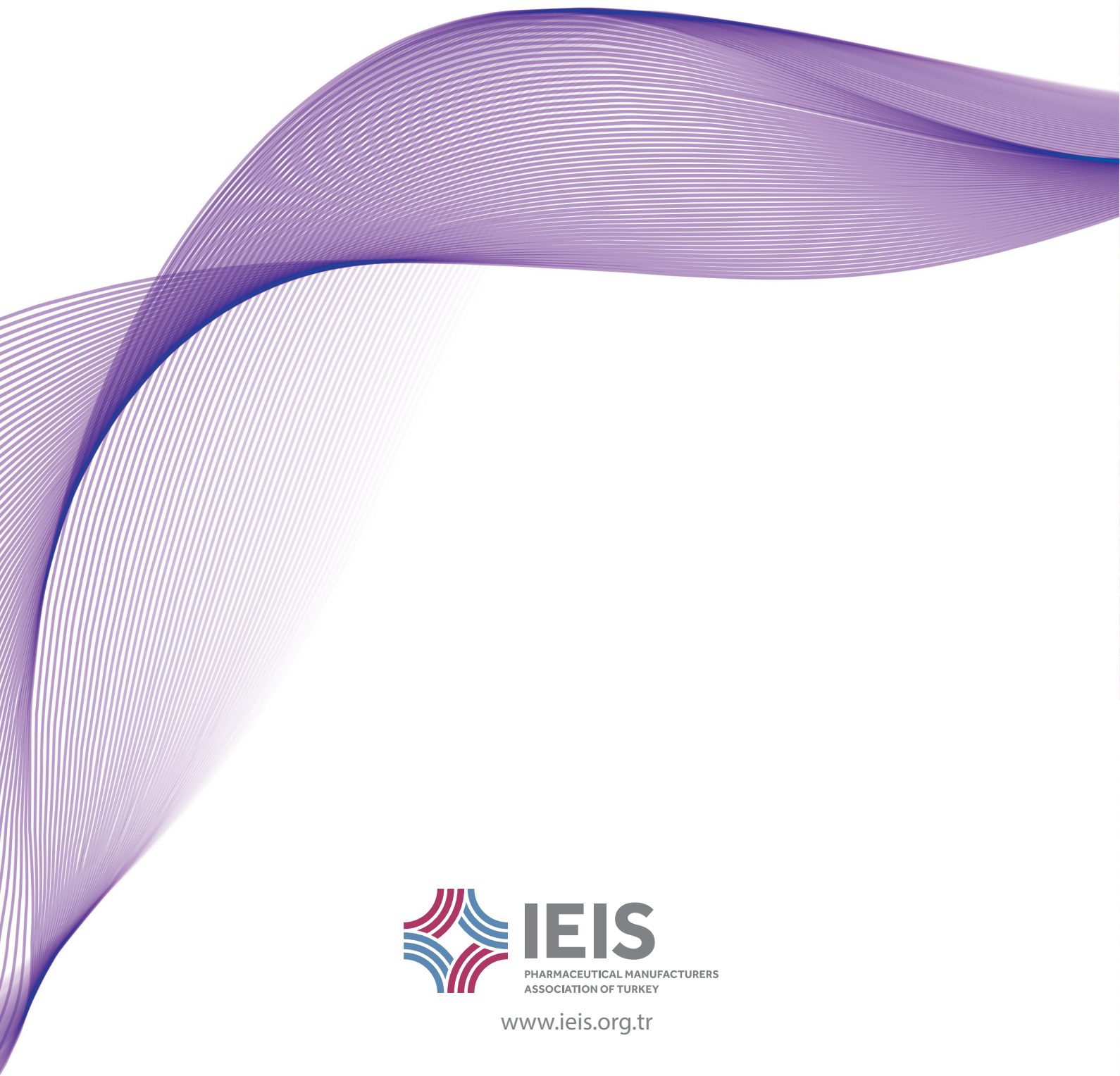
As is the case the world over, it is the field of biotechnology that will direct the future of the pharmaceutical industry in our country. In this regard, pharmaceutical companies invest at high cost with a long-term perspective in the interests of our country's advancement in such a strategic field.

The industry has been working flat out to become one that develops and produces conventional products and biotechnological drugs of higher added value, and that exports more of its output.

The pharmaceutical industry has been a focal point in efforts towards localization and technological transformation over recent years. Related companies carry are broadly committed to requisite investment and work that will expedite in this process. The efficiency of production technology and capacity is ensured to make the industry first a regional, and then a global drug production hub.

The most significant obstacle before all efforts to keep the industry globally competitive is drug policies with a focus on financial discipline implemented since 2010. The pharmaceutical industry, among Turkey's most dynamic and strategic sectors, should be supported with balanced and sustainable policies by means of which earnings are reinvested into the industry.

Once this condition is met, the pharmaceutical industry will have transformed into an industry of accelerated investments, that allocates greater resources to R&D. An industry that having developed its own molecule, is a powerful player in the field of biotechnology, no longer dependent on imports, but engaged in greater export activity.



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