BAK
economic intelligence

The economic portrait of Ticino's life science sector

Study commissioned by
Farma Industria Ticino

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Foreword

since 1980

Farma Industria Ticino

Giubileo 40 anni

Dear Stakeholders,

The world around us is changing with unprecedent speed. We are experiencing megatrends such as climate change, rapid advances of the technology and digitalization, migrations, world globalization versus nationalisms and regional globalization, aging populations and booming of healthcare costs, political instability, redesigning of supply chains and research on the best way to ensure energy for human activities on our planet. Since the beginning of the new millennium, we have run from one crisis to the other, some of those never experienced by our generation: financial crisis, terrorism, worldwide pandemic and today, conflict on the continent of Europe.

All these events and threats are disrupting established business models and have created an ever-increasing intensity of uncertainty and of risks, but also opportunities of how we manage the health of people. How is the pharmaceutical industry in Ticino reacting to these challenges? I have always answered with pragmatic optimism. Our cluster has in its DNA the capacity of turning risks into opportunities and threats into innovative business models. As an example of its resilience and belief in innovation, the associated companies invested around 1 billion CHF in R&D and new technological infrastructures and created more than 500 new jobs in the last 5 years.
To gather an unbiased picture of the "state of the union" for its 40 years anniversary, Farma Industria Ticino (FIT) has commissioned the independent economic research institute BAK Economics a study on the global Ticino Life Science Sector. Therefore, not only touching the pharmaceutical industry, but also medical technology and research & development in biotechnology.

Compared with the cantonal economy as a whole, in the period 2010-2019 Ticino's life science sector registered a Gross Valued Added growth rate more than eight times higher. With a normalized 17.1 % growth, Ticino surprisingly scores a plus 3.7 % compared to Switzerland life science industry, the driving sector of our national economy. Many other economic indicators are presented in the study, confirming how the life science sector is very important for the Canton of Ticino, where it can be considered a key sector for the entire regional economic system.

However, the consistency of an ecosystem goes beyond numbers. In the last decade, FIT has worked to build a cohesive entrepreneurial culture, to instil an ethical behaviour with common values leading to a relentless work to identify and train talents and with a diligent attention to our environment and to the community where we live and operate. The efforts made in the same period by many stakeholders in the region are creating the conditions for even a further acceleration of the growth of the life sciences, thanks to the presence of institutions such as the University (USI) , in particular of the biomedicine faculty, the University of Applied Sciences and Arts (SUPSI) , the Institutes of Oncological and Biomedical Research in Bellinzona, now under the umbrella of Bios+, the Swiss Artificial Intelligence Lab IDSIA and the upcoming Innovation Park Ticino and several others.

An ecosystem cohesively working for a Sustainable growth of *Ticino, the life science valley in the heart of Europe.*

I wish you a pleasant reading of the study.

Giorgio Calderari
Chairman of the Board of FIT & Group CEO Helsinn Group

Introduction

The Swiss life science sector is one of the main pillars of the national economic system. In fact, a study published in 2021 by BAK Economics[1] shows that this sector was responsible for more than a third of the country's GDP growth between 2010 and 2020. In connection with the production, research and development of life science products in 2020, around 61.4 billion Swiss francs (CHF) of value added was created along the entire value chain. In other words, one of every eleven CHF earned in Switzerland was generated by the activities of the life science sector. Moreover, in terms of employment, in 2020 about 206,000 jobs were linked to activities of the life science industry (including indirect effects).

With a focus on the research and production industry, the life science sector is usually represented by the pharmaceutical industry, medical technology and research and development in biotechnology. Depending on the structure of the local ecosystem, the wholesale of life science products, the management of companies or medical research and laboratories can also play an important role within the regional life science cluster. In the context of the present study, the extended definition was applied.

The life science sector is very important for the Canton of Ticino, where it can be considered a key sector for the entire regional economic system. This is due both to its contribution to the economic growth of the Canton in recent years and to its good development prospects for the future. In fact, in addition to a higher level of productivity and innovation capacity, in the coming years this sector is also expected to gain in importance due to demographic dynamics, such as an increasingly ageing population.

What is the value added produced by the life science sector in the Canton of Ticino? How has it developed over the last decade? How many jobs does this sector provide? How high is the productivity of this sector? What is the importance of life science activities for Ticino's economy as a whole?

This study aims to answer these and other questions by providing an overview of Ticino's life science sector based on three main macroeconomic variables: value added, employment and productivity. In order to facilitate a contextualization of the results, the main dynamics of the Ticino life science sector are also compared with those that have shaped the same economic sector at the Swiss level, as well as with the overall economic development of the Canton of Ticino and Switzerland.

[1] BAK Economics (2021), *Importance of the Pharmaceutical Industry for Switzerland*, Study on behalf of Interpharma (association of research-based pharmaceutical companies in Switzerland, Basel).

Definition of the life science sector

In the present study, a definition of "life science" has been adopted that includes five main sub-sectors: Pharma, Med Tech, Wholesale of life science products, Biotech and Other life science activities. The following table shows in detail which activities constitute these sub-sectors and their NOGA (General Classification of Economic Activities) code. Overall, the pharmaceutical industry is the driving force for Ticino's entire life science sector. In addition to the typical activities of this sector, wholesale trade in pharmaceuticals and medical technology is particularly relevant for the Canton of Ticino and has therefore been included in the sector definition used in this study.

This study does not consider the activities classifiable under the NOGA code 20 (Manufacture of chemicals and chemical products). The reason is that this NOGA category is itself made up of sub-categories referring to activities with chemical products that are not necessarily related to life science activities. Their integration into the present study would therefore risk overestimating the values and results reported.

Sub-sectors included in Ticino's life science sector

Sub-sector	NOGA Code	Description
Pharma	211000	Manufacture of basic pharmaceutical products
	212000	Manufacture of pharmaceutical preparations
Med Tech	266000	Manufacture of irradiation, electromedical and electrotherapeutic equipment
	325001	Manufacture of medical and dental instruments and supplies
Wholesale life science	464601	Wholesale of pharmaceutical goods
	464602	Wholesale of medical, surgical and orthopedic goods
Biotech	721100	Research and experimental development on biotechnology
Other life science activities	721900	Other research and experimental development on natural sciences and engineering
	869006	Medical laboratories

Source: BAK Economics, Federal Statistical Office (FSO)

In Ticino, life science companies have grown rapidly

Between 2011 and 2019, the number of companies (institutional unities) active in Ticino's life science sector grew at a higher rate than the total growth of companies in the same Canton. At the same time, it can be seen that over the examined period the growth of the overall number of companies in Ticino was higher than the Swiss average.

The growth rate of life science companies in Ticino was also about twice higher than that recorded for the same sector at national level, as well as that of the Swiss economy as a whole. Compared with the national and cantonal context, it is thus possible to see how the pharmaceutical sector is gaining importance in Ticino, also in terms of the number of companies present on its territory.

Growth of institutional units in Ticino and Switzerland

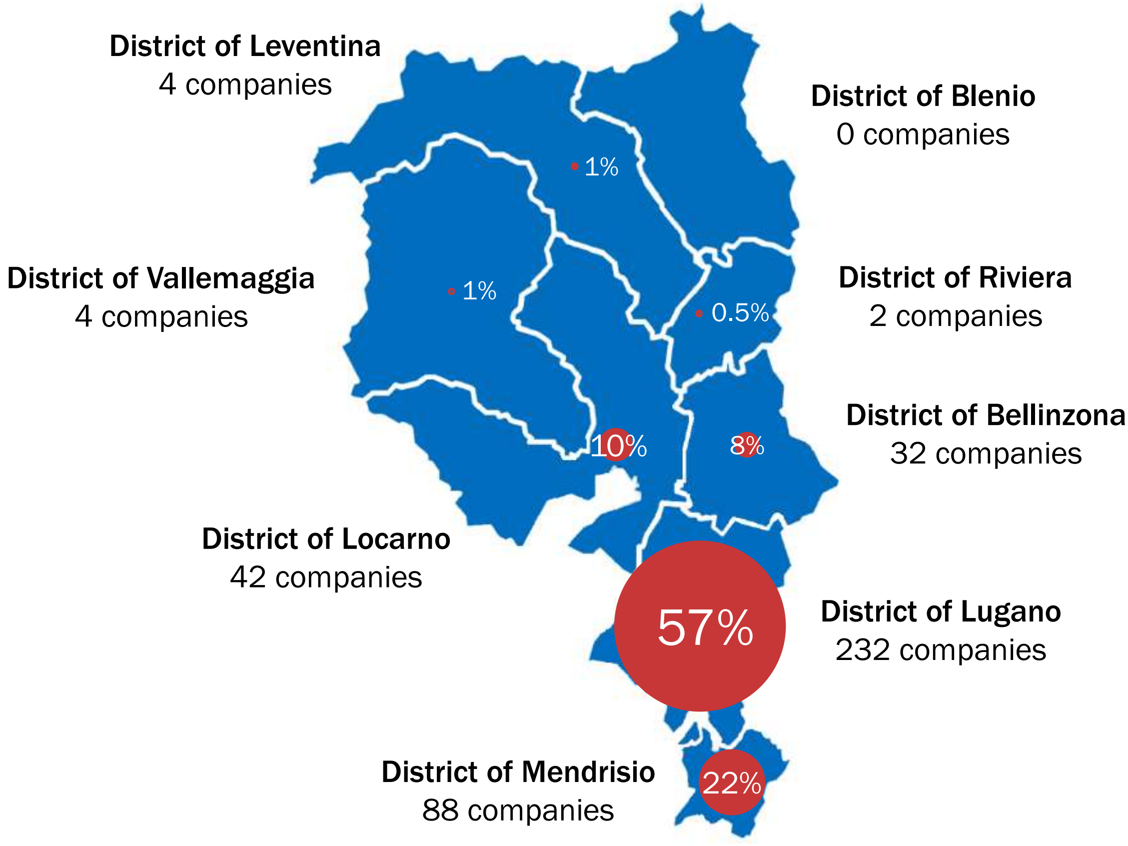
Sector	Institutional unities 2011	Institutional unities 2019	Ø growth per year
Life science TI	318	404	+3.4%
Total TI	32'498	37'358	+1.9%
Life science CH	4'836	5'409	+1.5%
Total CH	600'030	657'707	+1.2%

Source: BAK Economics, STATENT

Ticino's life science sector is highly concentrated in the Lugano region

In 2019, the Canton of Ticino was hosting 404 companies (institutional units) active in the life science sector. More than half of these companies are located in the Lugano district (57.4%), while just over a fifth operate in the Mendrisio district (21.8%).

As for other economic sectors, the activities of Ticino's life science sector are therefore concentrated in the southern part of the Canton. The Locarno and Bellinzona districts are less important, but collectively they still account for 18.3% of all life science companies active in Ticino.

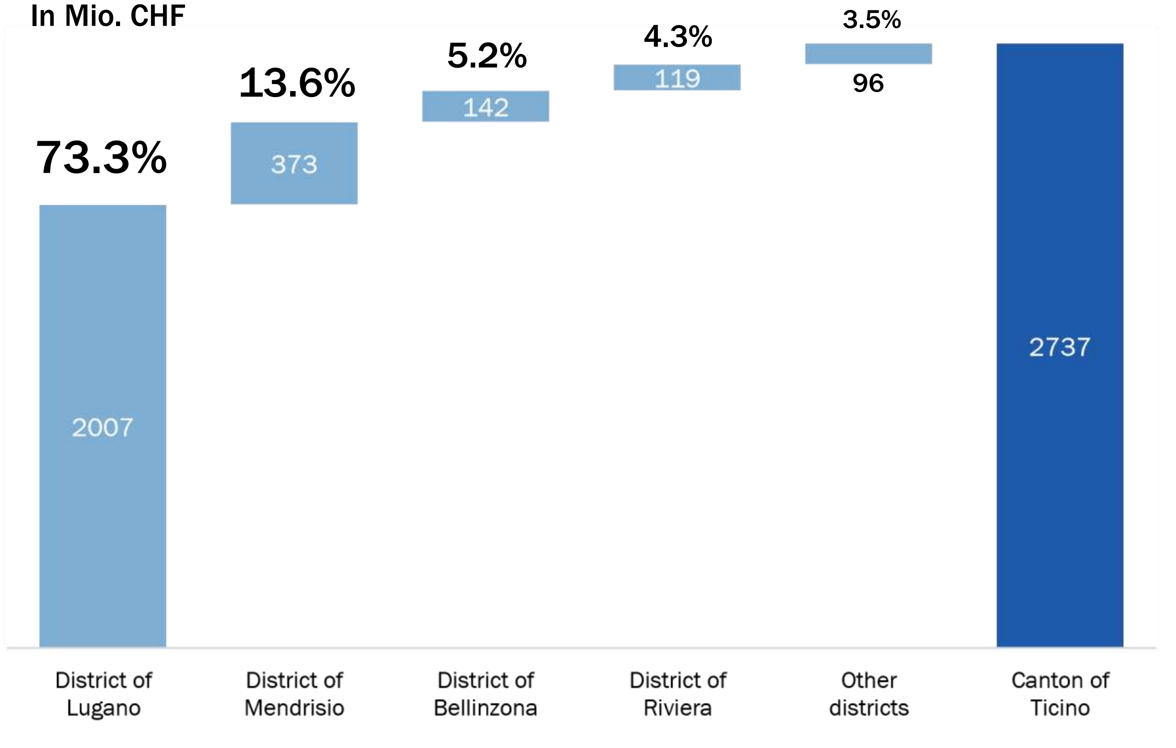


Institutional units in the life science sector by district, 2019
Number of institutional units, % share over total life science companies in Ticino.
Source: BAK Economics, STATENT

More than 2'700 million CHF of gross added value generated in 2019

In 2019, the gross value added (GVA) generated by Ticino's life science sector stood at 2'737 million CHF, a value that corresponds to about 8.5% of the GVA produced in Ticino.

From a geographical point of view, the GVA provided by this sector is highly concentrated in the Lugano district (73.3%). As a result, the shares recorded in the other districts are much lower, but still allow us to underline a certain degree of importance of the Mendrisio district, responsible for more than one tenth (13.6%) of the GVA production of the whole life science sector in Ticino. The case of the Riviera district is also interesting: although it is less industrialized than other parts of Ticino, this area is home to some important production plants operating in the manufacturing of basic pharmaceutical products, which explains the result recorded for this district (4.3%).

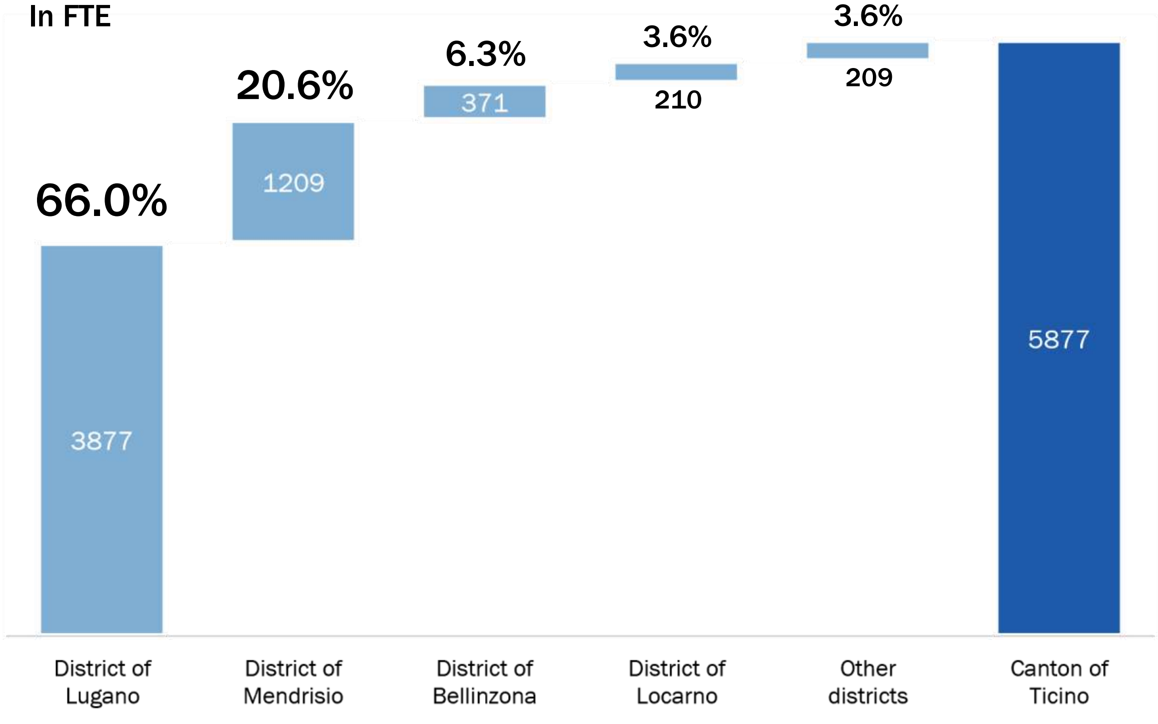


GVA produced per district, 2019
Gross value added (nominal) in CHF million, % share of added value of Ticino's life science sector
Source: BAK Economics

Ticino's life science sector provides almost 6'000 FTE jobs

In 2019, Ticino's life science sector counted 5'877 full-time equivalent jobs (FTE). Compared with the cantonal economy as a whole, this corresponds to around 3.0% of the total FTEs in Ticino.

66.0% of FTE jobs in Ticino's life science sector are located in the Lugano district, while 20.6% are in the Mendrisio district. This shows that the life science sector in Ticino is particularly concentrated in the Sottoceneri region, also in terms of jobs. In fact, the remaining districts together account for only 13.5% of FTE jobs in Ticino's life science sector.

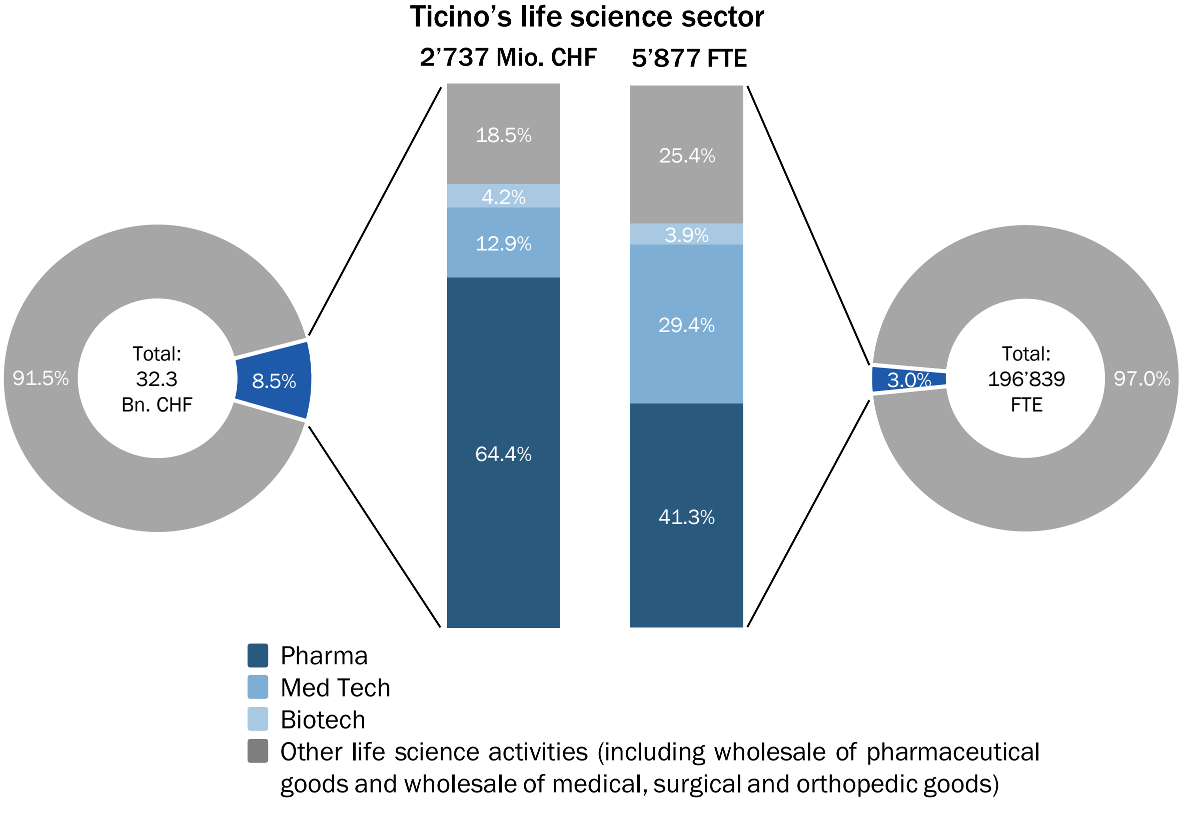


Jobs by district, 2019
FTE jobs, % share of FTEs in the Ticino's life science sector.
Source: BAK Economics, STATENT

In Ticino, the life science sector is a pillar of the regional economy

In Ticino, the life science sector generates 8.5% of the region's total GVA and 3.0% of full-time equivalent jobs. This difference highlights the fact that this economic sector is characterized by a high level of productivity.[3]

At a sub-sector level, the activities in the pharmaceutical sector generate the largest percentage of GVA (64.4%) and employs the largest percentage of FTE jobs (41.3%). This makes the pharmaceutical sector the most productive activity in Ticino's entire life science sector. By contrast, all other sub-sectors show lower shares of GVA produced than the corresponding percentages of FTE jobs, with the only exception recorded in the biotech sector.



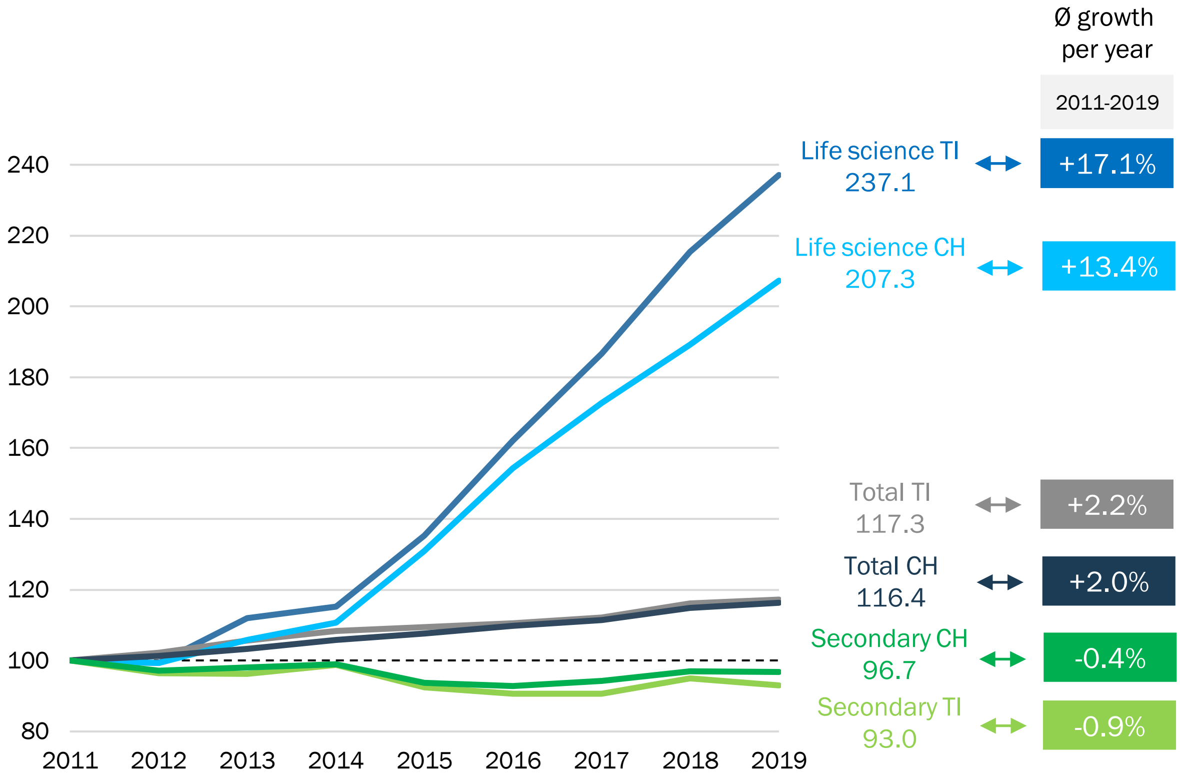
Structure of Ticino's life science sector, 2019
% shares of total nominal gross value added and total number of employees (FTE) in relation to Ticino's economy, or to the totals in the life science sector respectively.
Source: BAK Economics, STATENT

[3] The concept of productivity indicates the efficiency with which human resources are employed in a production process. It is then calculated by dividing the value added produced by the number of FTE jobs employed in that production process.

The life science sector drives the economy also in Ticino

In the period between 2011 and 2019, the GVA growth of Ticino's life science sector was higher than that of the same sector at the Swiss level. This is mainly explained by the strong increase in the number of companies active in this sector in Ticino (cf. p. 5). Even with a higher GVA growth rate, Ticino's life science sector also follows the trend observed in the same sector at national level.

Compared with the cantonal economy as a whole, Ticino's life science sector registered a GVA growth rate more than eight times higher. On the one hand, this demonstrates the great dynamism that has characterized the development of this sector in recent years. On the other hand, it confirms once again that Ticino's life science sector is effectively a driving force for the entire cantonal economy. These statements are also confirmed by the analysis of the remaining part of the secondary sector, which shows a decline in GVA at both Ticino and Swiss levels.

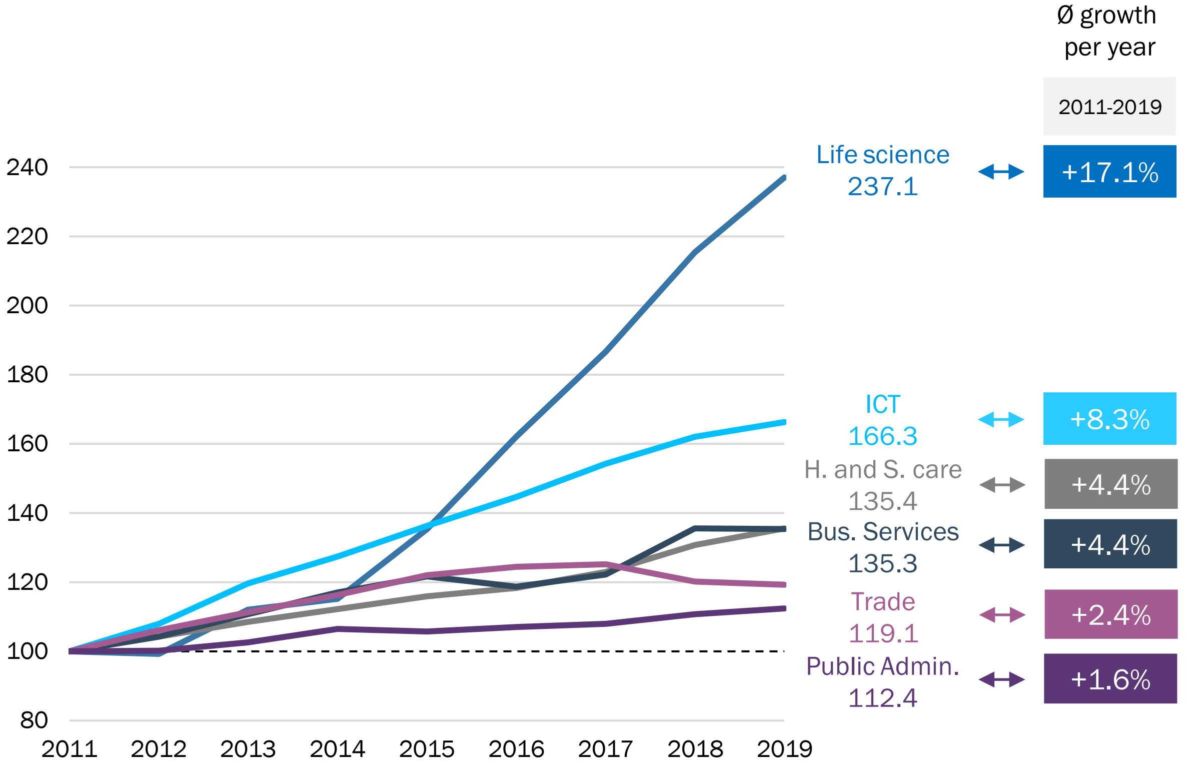


Growth of GVA (real) in Ticino and Switzerland, 2011-2019
Index 2011 = 100, the value recorded in 2019 is shown below the sector name.
The two lines referring to the secondary sector do not include activities in the life science sector.
Source: BAK Economics

In Ticino, the life sciences sector has grown the most in recent years

The graph below shows the six Ticino's sectoral aggregates with the highest growth in value added over the period 2011-2019. This comparison clearly shows that the life sciences sector has developed most dynamically, with an average annual growth rate over twice that of the information and communication technology (ICT) sector.

When compared to the health care and social assistance, business services, trade (retail and wholesale) and public administration sectors, the positive dynamics of the life sciences sector are even more evident.

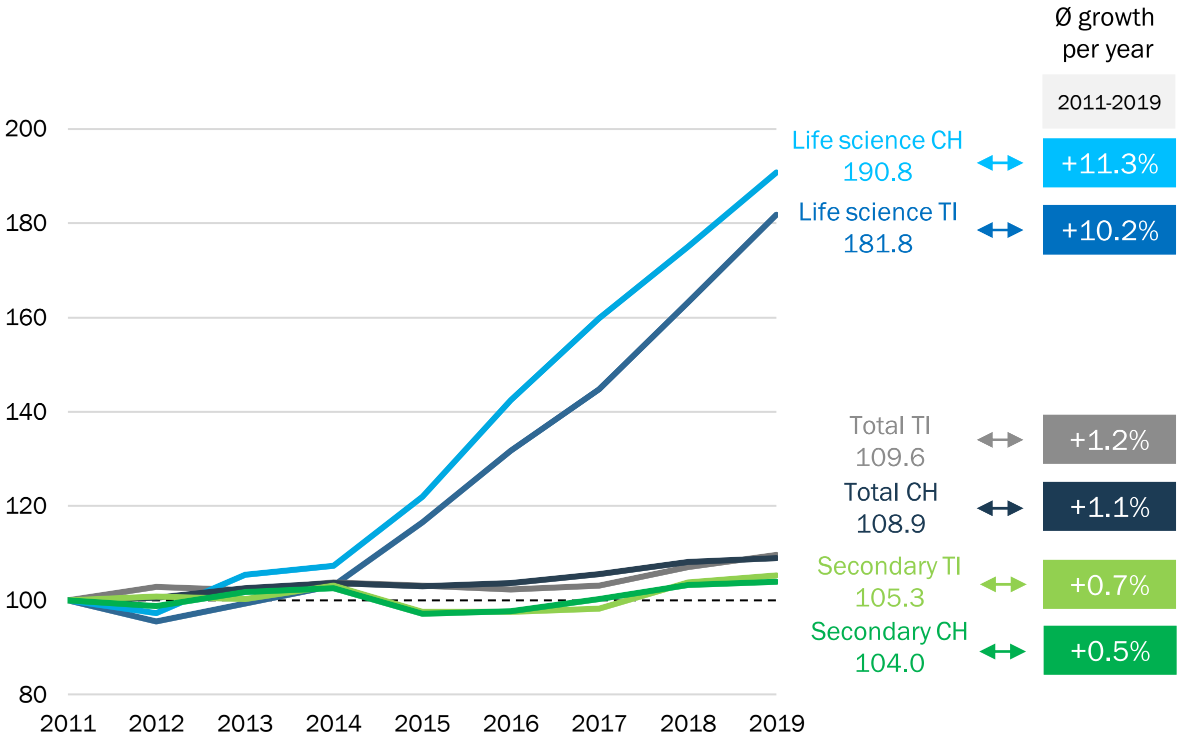


Growth of GVA (real) in Ticino by sector, 2011-2019
Index 2011 = 100, the value recorded in 2019 is shown below the sector name.
ICT: NOGA 61-63 / Health and Social care: NOGA 86-88 / Business Services: NOGA 69-82 / Trade: NOGA 45-47 / Public Administration: NOGA 84-85
Source: BAK Economics

...and shows a significant increase in hourly productivity

The growth rate of productivity in Ticino's life science sector followed the Swiss trend, although it was slightly lower than the national average. In both cases, this sector also shows a clearly higher increase in productivity than in the Swiss and Ticino economies as a whole. These statements are also confirmed by the analysis of the remaining part of the secondary sector, which shows a much lower increase in hourly productivity at both in Ticino and Switzerland.

Until 2014, the growth rate of productivity in Ticino's life science sector was even below the cantonal average. However, since 2015 there has been a clear increase, in line with the trend registered by the life science sector at national level. The increase in hourly productivity also follows the trend seen in the previous graph (cf. p. 10), namely a clear acceleration from 2015 onwards. Productivity growth in the Ticino life sciences sector is also clearly higher than in the rest of the secondary sector, confirming a trend also perceived at national level.

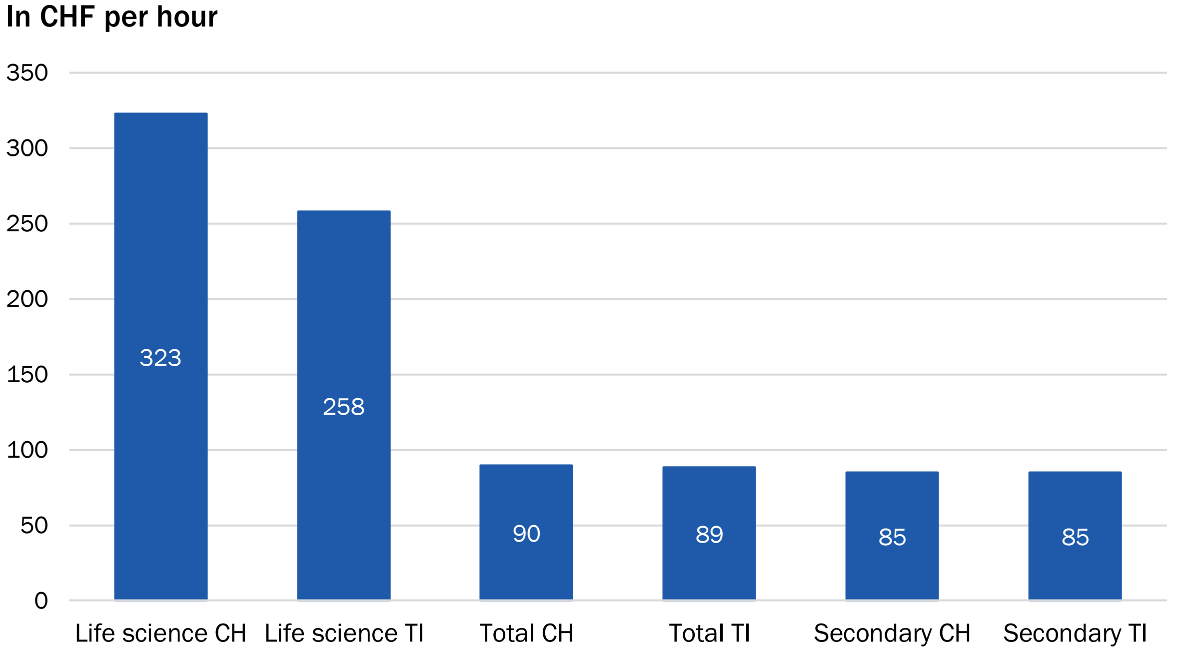


Growth of hourly productivity (real) in Ticino and Switzerland, 2009-2019
Index 2011 = 100, the value recorded in 2019 is shown below the sector name.
The two lines referring to the secondary sector do not include activities in the life science sector.
Source: BAK Economics

In 2019, the hourly productivity was over 250 CHF per hour

In 2019, the nominal hourly productivity of Ticino’s life science sector amounted to 258 CHF per hour. This value is around 20% lower than the data recorded for the same sector at the Swiss level (325 CHF per hour).

Despite this, Ticino’s life science sector displays a level of hourly productivity almost three times higher than the average of both the Swiss and Ticino economies. The same applies when comparing with the rest of the secondary sector, which shows a slightly lower value than the average for Ticino and Switzerland.

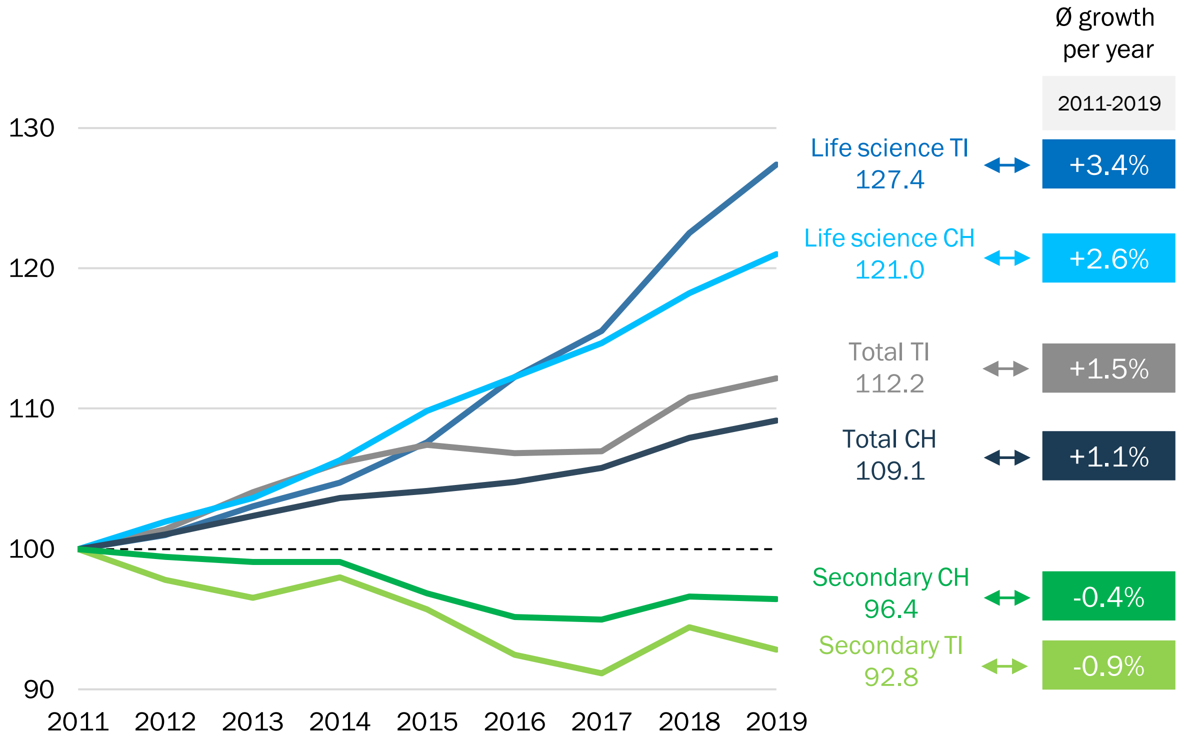


Hourly productivity (nominal) in Ticino and Switzerland, 2019
The value recorded in 2019 is shown in the columns.
The two columns referring to the secondary sector do not include activities in the life science sector.
Source: BAK Economics

Employment growth is clearly above the cantonal average

In the period from 2011 to 2019, employment in Ticino's life science sector grew at about twice the rate of the entire cantonal economy, or three times the rate of the entire Swiss economy. This growth rate is also clearly higher than that recorded in the Swiss life science sector. These statements are also confirmed by the analysis of the remaining part of the secondary sector, which shows a slightly decrease in employment at both Ticino and Swiss levels.

From the graph, it can be noticed that until 2015 employment growth in Ticino's life science sector followed a similar pattern to that of the entire Ticino economy. From 2016 onwards, employment growth in Ticino's life science sector accelerated: in the second part of the examined period, it is therefore possible to note how employment in this sector increased more rapidly than in the same sector at the national level, as well as in Ticino's economy as a whole.

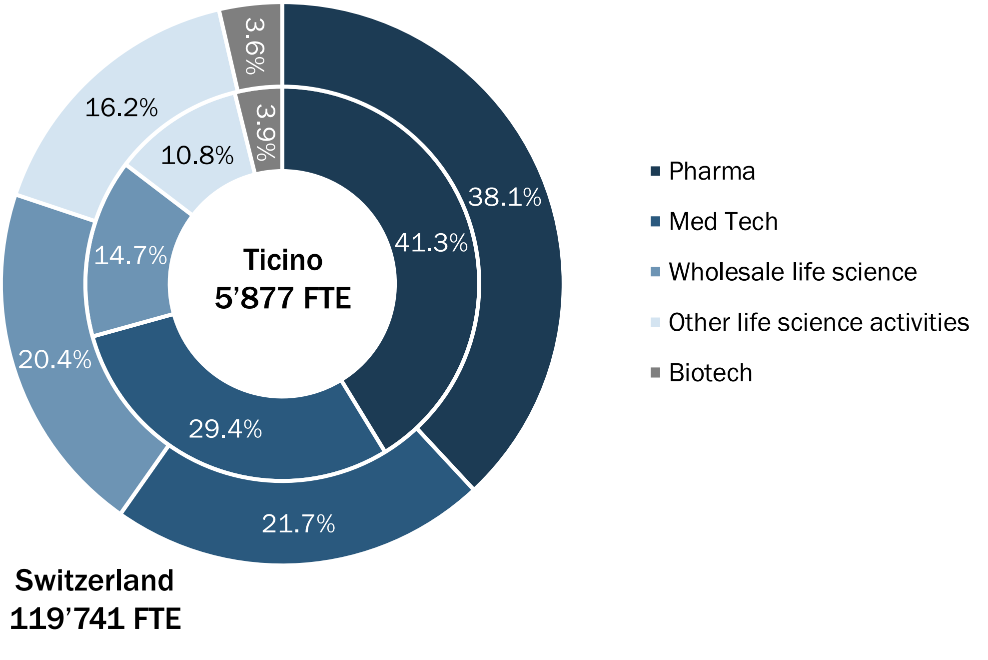


Growth of FTE jobs, 2011-2019
Index 2011 = 100, the value recorded in 2019 is shown below the sector name.
The two lines referring to the secondary sector do not include activities in the life science sector.
Source: BAK Economics

In terms of jobs, there are similarities and differences with the Swiss context

Analyzing the structure of jobs within the life science sector in Ticino, it is possible to see that more than a third of them are related to the activities in the pharmaceutical sector (41.3%). This sector is also the most important in Switzerland (38.1%), where the percentage of FTE jobs is however slightly lower than in Ticino.

A bigger difference is found in the Med Tech sector, which is also more important in Ticino (29.4%) than in the Swiss average (21.7%). Compared with the Ticino context, in terms of FTE jobs, the wholesale in life science and the other life science activities appear to be more important in Switzerland. Finally, in Ticino there is a slightly higher percentage of FTE jobs in the biotech sector than in the Swiss context (respectively 3.9% and 3.6%).



Employment shares in the life science sector in Ticino and Switzerland, 2019
In full-time equivalents (FTE). The inner circle refers to Canton Ticino, the outer circle to Switzerland.
Source: BAK Economics, STATENT

Summary and conclusions

In the last decade, Ticino’s life science sector has experienced a phase of great development. In fact, during this period, the number of companies active in Ticino in this sector has clearly increased. Nowadays, Ticino’s life science sector is concentrated in the Lugano and Mendrisio districts, but the analysis presented in this report shows that this sector plays an important role in the economic system of the entire Canton of Ticino. In fact, compared with the overall cantonal economy, in 2019 Ticino’s life science sector generated 8.5% of total GVA and 3.0% of total FTE jobs.

Ticino’s life science sector recorded a growth rate above the cantonal average both in terms of GVA and employment. These positive trends also have an impact on the growth of hourly productivity and on its nominal level, which in 2019 was almost three times higher than the cantonal average. In general, the economic development of Ticino’s life science sector follows the dynamics of the same sector at national level.

In Ticino, the most represented sub-sector in terms of GVA production is the pharmaceutical sector, responsible for almost two thirds (64.4%) of the GVA production of all Ticino’s life science sector. Overall, the pharmaceutical sector is thus the main driving force of Ticino’s entire life science sector. Furthermore, the particularities associated with this type of activity and its production processes result in this sub-sector having a lower proportion (41.3%) of FTE employees. By contrast, all other sub-sectors show lower shares of GVA produced than the corresponding percentages of FTE jobs, with the only exception recorded in the biotech sector.

The data revealed by this study allow us to conclude that, from an economic point of view, Ticino’s life science sector is in excellent health. The growth seen in the last decade also makes it possible to consider it as a key sector for the whole of Ticino's economic system. This fact constitutes an interesting parallel with the Swiss context, where the life science sector is one of the main pillars of the national economy. The development seen in recent years also suggests very good growth prospects for the future. In addition to a higher level of productivity and innovation capacity, in the coming years this sector is also expected to gain in importance due to demographic dynamics, such as an increasingly ageing population. For Ticino’s life science sector, there is thus further scope for future development, which would continue to have positive consequences for the entire cantonal economy.

BAK Economics AG was founded in 1980 as a spin-off of the University of Basel, with which it maintains constant contact to this day. Since 1987, BAK has acquired the status of a private company under Swiss law.

In recent years, BAK has further developed to provide its clients with a service offering that is increasingly close to and in line with their cross-cutting needs and in step with the most innovative technologies. Thanks to an evolving territorial presence and a strong and developed sensitivity to local and regional dynamics, BAK is a solid and reliable partner able to provide services in a widespread and systematic way. Its services can be summed up in its name: Beratung (Consulting), Analysen (Analysis) and Kommunikation (Communication).

The group's four offices (Basel, Zurich, Lugano and Bern) are in constant contact with each other in order to offer clients not only specific and synergistic skills aimed at providing a quality service, but also the possibility of accessing a consolidated and well branched network throughout Switzerland. In an increasingly fast-paced and immediate world, networking between people - be they entrepreneurs, managers, institutional representatives or leading figures in the various sectors - remains a cornerstone for economic development as well as for the expansion and consolidation of your business. The values on which BAK bases its actions are quality, concreteness, transparency and innovation.

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