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BIOTECH

IN SPAIN

FLANDERS INVESTMENT & TRADE MARKET SURVEY



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BIOTECH IN SPAIN

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FLANDERS INVESTMENT & TRADE

Executive summary

The topic of this paper concerns analysing Spain's biotech industry and covers in extension the current interest and knowledge of the industry by Flemish companies. Next to studying the Spanish biotech industry, the Spanish economy in general and the biotech industry in general will be studied.

Before understanding the Spanish biotech industry, first, the economic situation in Spain needs to be analysed. Spain is a big country with a sizeable population, which causes the country to be a vast selling market. Spain has suffered tremendously from the financial crisis; it was the second worst effected country in the European Union. But, has gradually recuperated after the financial crisis and is now in a steady growth mode. Each year GDP increases while unemployment is reduced. This makes it interesting to look to Spain for investments because it is a growing market.

Next, understanding what biotechnology is, is fundamental before zooming into the Spanish biotech industry. The definition of biotechnology is as follows: "Biotechnology means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify" (The Secretariat of the Convention on Biological Diversity, sd)

Furthermore, understanding how the biotech industry functions is crucial before zooming into the Spanish biotech industry. The biotechnology industry is a very competitive industry that is massively dependent on investments and capital. The differences between the big companies and the little ones is tremendous and the big companies own the majority of the industry's share. The reason why the industry is investment driven is because there are huge R&D costs, R&D is the main activity of the companies in the industry.

Lastly, zooming into the Spanish biotech industry. This industry currently experiences a substantial growth. There is growth in all sorts of fields like; employment, size, business income, etc. This makes the industry in Spain more attractive for foreign investors. In this paper, the attractiveness will be discussed with eight Flemish companies via interviews. To learn the findings of these interviews, look at the part 'Conclusion'.

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Introduction

The biotech industry in Spain is currently growing and is gaining considerably more interest from foreign investors. Is there a current interest from Flemish companies and why or why not? Answering that question is the purpose of this paper, of which it is hoped that it be a useful tool to Flemish investors interested in learning or connecting more with the biotech industry in Spain.

During the research, FIT Madrid was interested in developing the understanding of:

- What does the Spanish biotech industry look like?
- How did the industry evolve after the crisis?
- How well is the Spanish biotech industry known by Flemish biotech companies?
- Is there a current interest by Flemish biotech companies to invest in Spain?
- What are the (de)motivators for Flemish biotech companies to invest in Spain?

This paper began with desk research. This offered a clear background understanding of the Spanish environment, the biotech industry in general and the Spanish biotech in particular. For this topic, some field research needed to be conducted as well. A conversation with ASEBIO about the industry in Spain was held for more information, a conversation was held with Flanders bio, about the Flemish prospects for the Spanish market and lastly eight Flemish companies or offices of companies in Flanders were interviewed about their knowledge of and interest in Spain.

First, the Spanish environment will be discussed, it will be briefly explained what biotech is, an analysis of the global biotech industry globally will be performed and the Spanish biotech industry will be discussed. The findings of the field research together with the conclusion will close this paper.

1.The Spanish economy: A general introduction

1.1. Spain: Country profile

Spain, also known as Kingdom of Spain or España or Reino de España, is a country located in the southwest of Europe. Spain occupies 85% of the Iberian Peninsula, the other 15% belongs to its neighbour Portugal. Spain is also called the Kingdom of Spain because its political system is that of a parliamentary constitutional monarchy. The reigning monarch is King Felipe VI of Spain. He was crowned king on 19th of June 2014.

Spain is the second largest country of the European Union with a surface area of 505 944 km². The country has a population of 46 449 565, as last recorded in 2015, making it the 5th most populous member state of the European Union. Spain has been a member of the European Union since January 1, 1986. The official language spoken is Spanish (Castilian), however, there are four more co-official languages spoken; Basque, Catalan/Valencian/Balearic, Galician and Occitan.

Spain has been a member of the Eurozone since the initiation on January 1, 1999. Thus, its official currency is the Euro.

1.2. The Spanish economy: Macro-economic indicators

1.2.1. Gross Domestic Product

Spain currently has the 14th largest economy in the world with a GDP of \$1.252 trillion in 2016. It has seen its GDP increase with 3.2% compared to 2015, which indicates that the Spanish economy is growing. Along with having the 14th largest GDP it also belongs amongst the largest in the world in terms of purchasing power parity.

If we scale it down and look at Spain on the EU level we see that it has the fifth largest economy in the European Union and the fourth largest in the Eurozone.

Spain witnessed a huge GDP growth between 1997 and 2007 led by historically low interest rates, massive inflows of foreign investment and an immense surge in immigration.

In 2007 it became clear that this growth was not sustainable. Spain was losing competitiveness to its main trading partners and its trade deficit reached to 10%. In 2008, Spain was for the first time in 15 years, officially declared to be in a recession.

However, Spain managed to recover from the crisis. By Q2 2016 the Spanish economy had been accumulating 12 consecutive quarters of growth, managing to consistently outperform the rest of the Euro area. In 2016, growth reached 3.2%, which indicates Spain's economy grew almost twice as strong as the Eurozone average. almost twice as fast as the Eurozone average. (Wikimedia Foundation, 2017)

1.2.2. Trade balance

Products manufactured in Spain are in demand from foreign countries. Spain is currently the 17th largest exporter in the world with \$266 billion in exports in 2015. Spain's exports have been increasing with an annual rate of 2.2 % since 2010. Its main exports consist of cars, packaged medicaments and refined petroleum.

Spain's export level may be high but it is overshadowed by its imports. Currently Spain has a trade deficit of \$36.1 billion in net imports. The trade deficit has increased over the past 2 decades and spiked in 2008 which also caused the huge suffering of the Spanish economy in times of the financial crisis. (Observatory of Economic Complexity, 2017)

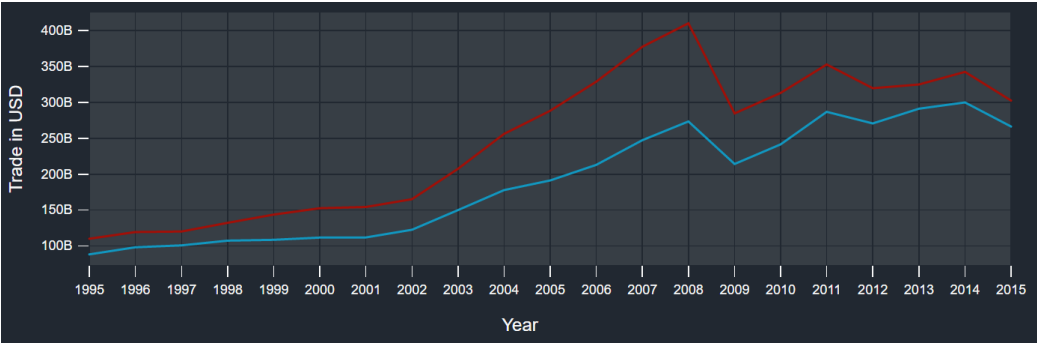


Figure 1 Spanish trade balance 1995-2015 (red: import/blue: export)

1.2.3. Employment

Spain suffered a lot from the financial crisis and thus the unemployment rate soared to record heights. During the recession, a lot of jobs were lost what resulted in a downward spiral of the economy in general. Spain's unemployment kept increasing even after the financial crisis while other countries were recovering. The unemployment rate spiked to 27 % in early 2013 which translated into 6.2 million unemployed people.

However, the Spanish economy is recovering well lately which leads into more job creation. Currently Spain still has the second highest unemployment rate in the EU behind Greece. The Spanish government is trying to reinstate jobs lost and aims to bring the number of employed Spaniards to at least 20 million (currently 18.5 million Spaniards are employed). Professor Marcel Jansen says that in order to reinstate the Spanish labour market the Spanish government is obliged to implement further reforms and adjust the current labour market policies. (Trading Economics, 2017) (Buck, 2016)



Figure 2: Spanish unemployment rate 2012-2017

2. The biotech industry in Spain

2.1. Introduction

To obtain more in-depth information of the industry in Spain an interview was held with ASEBIO. Some information that follows originates from the interview with Asebio.

ASEBIO (Asociación Española de Bioempresas) is the Spanish Bioindustry Association. “Since 1999, ASEBIO brings together companies, associations, foundations, universities, research and technology centers that carry out activities directly or indirectly related to biotechnology in Spain. ASEBIO has been acting as a meeting and promotion platform for those organizations interested in stimulating the national biotechnology scene. In order to do this, ASEBIO works closely with regional, national and European governments as well as all the social organizations interested in using biotechnology to improve quality of life, the environment and generating skilled employment.” (ASEBIO, 2017).

In this chapter on the Spanish biotech industry, we will be looking at:

- Evolution since the crisis in 2008
- Current situation – figures of pure biotech vs biotech users
- Strengths of the Spanish biotech that contribute to the attractiveness of the industry
 - o Qualified workforce for biotech
 - o Geographical situation
 - o Infrastructure for innovation
 - o Government support
 - o Internationalisation

2.2. Evolution of the industry since the financial crisis in 2008

2.2.1. Situation before the crisis.

During the interview with ASEBIO, the evolution of the biotech industry in Spain was discussed. ASEBIO explained the situation before the crisis.

The Spanish biotech industry was in general a lagging industry in comparison with the rest of Europe. The biotech industry in Spain began to develop itself 5 to 10 years later than their peers in the rest of Europe. This led to Spain being a less attractive industry to invest in when it came to biotech. It got overshadowed by the other countries in Europe and was considered a lesser known, less relevant industry.

2.2.2. The crisis

In the year 2008 the financial crisis hit European countries ferociously. Every country and every sector were affected by the crisis and suffered losses. Spain was no exemption. Spain is considered to be one of the hardest hit countries in Europe. It affected all sectors in Spain but less so their biotech industry. This was due to the fact that the industry in Spain was used to having less money at hand and was less depended on investments than other countries' biotech industries. Therefore, the biotech industry in Spain was hit less than other countries and managed to survive the crisis.

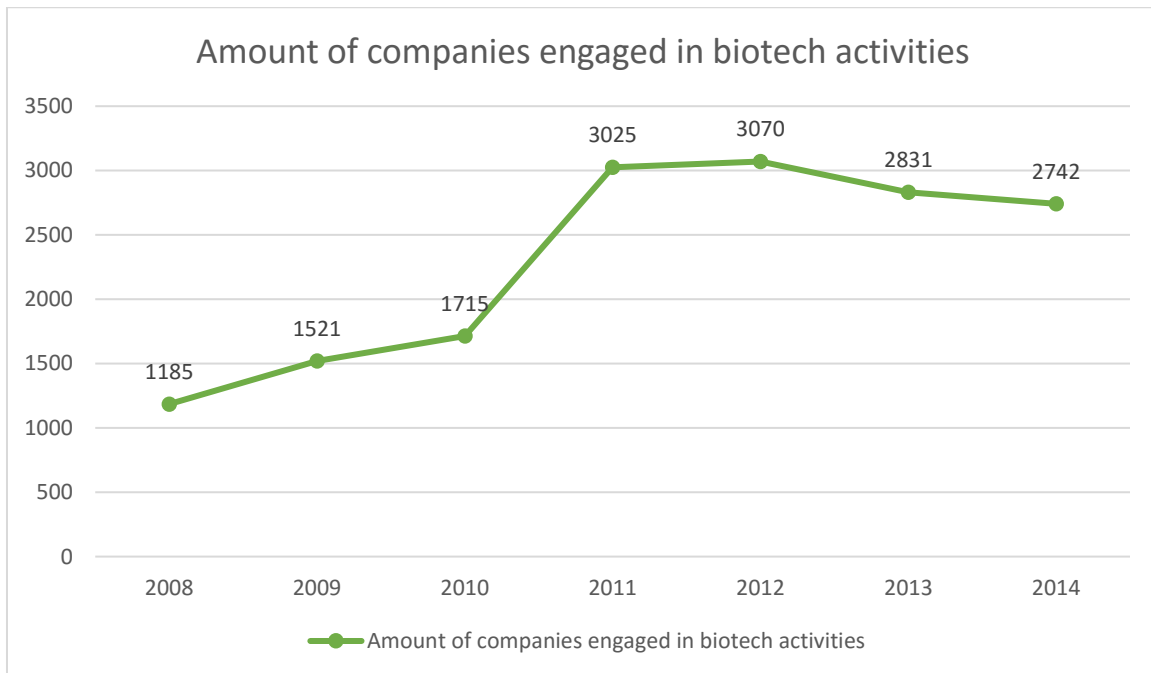
2.2.3. Evolution since the crisis (2008-2014)

While other sectors and industries in Spain suffered after the crisis, the biotech started to thrive. It experienced tremendous growth, especially between 2010 and 2011. To go more in depth, following four factors will be discussed.

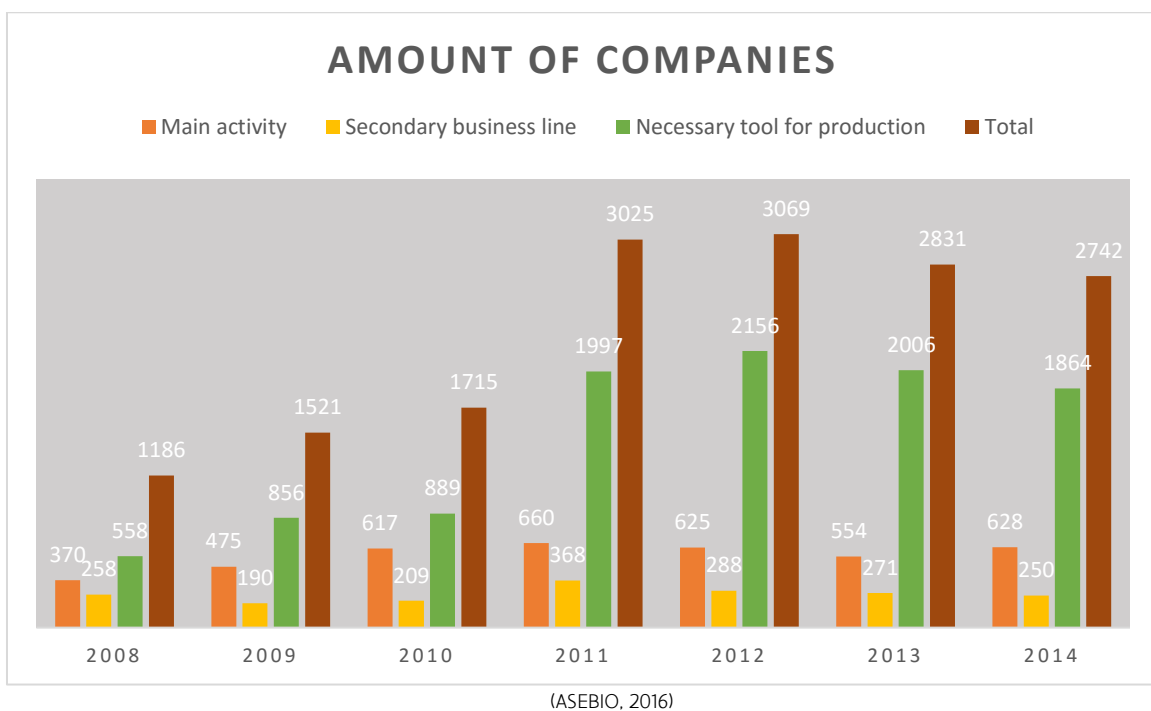
- Amount of companies and their focus
- Business income
- Expenses for R&D
- Employment

2.2.3.1. Amount of companies and their focus

Companies that have biotech as one of their activities



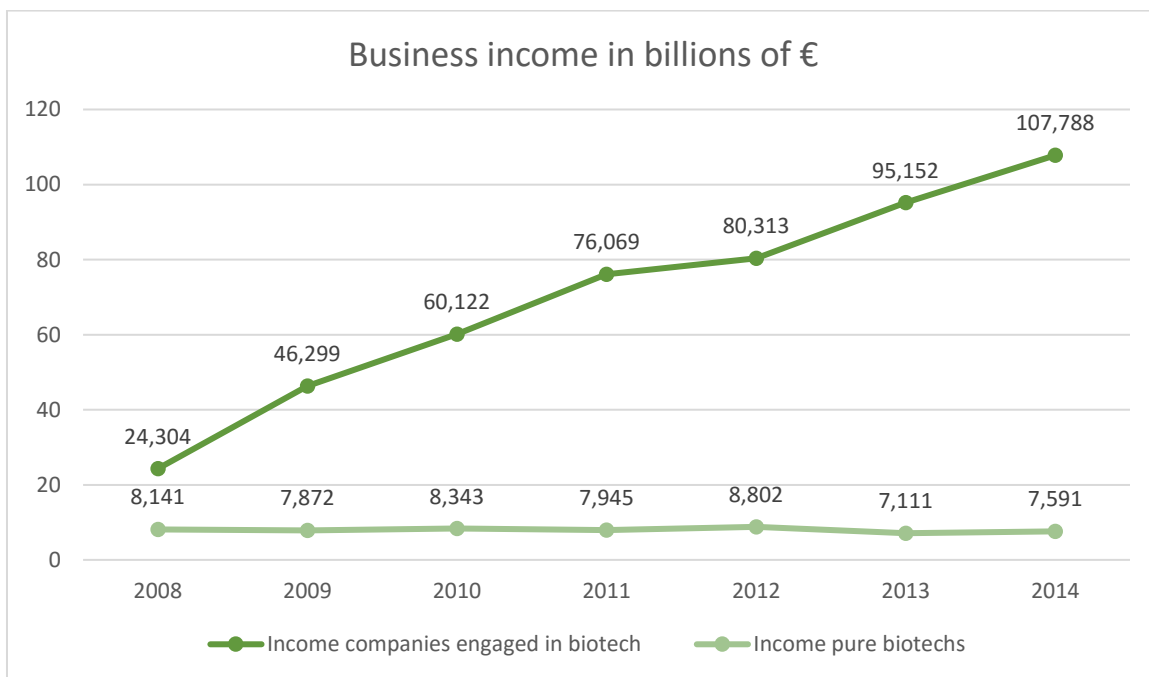
Companies for which biotech is; main activity, secondary business line and necessary tool.



Conclusion

From these diagrams we can conclude that the industry has known a massive growth in terms of the amount of companies in the year 2011, the number soared from 1715 to 3025 in just one year. This means that in 2011, 1310 new companies entered the market (a 76,38% increase). In 2012 the number of new entrants stagnated and went into a decline from 2013 onwards. This concerns the total amount of companies that are active in biotech. However, when we look at the 'pure biotechs' we see a remarkable difference. Whereas in the total amount we see a huge increase in 2011, with the 'pure biotechs' we see a big increase in 2010. After 2010 the amount of companies is very volatile: it increases, then decreases to later increase again. There is not really a clear comparison between the total amount and the 'pure biotechs' except for the increase after 2009.

2.2.3.2. Business income in billions of euros



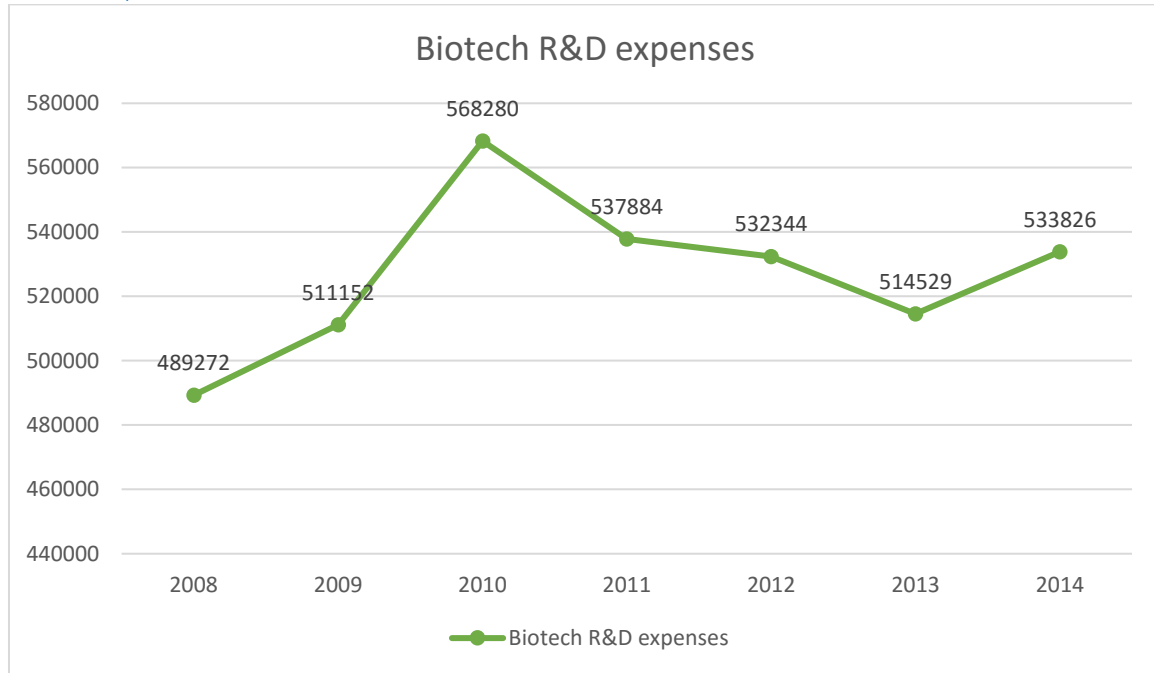
(ASEBIO, 2016)

Looking at the evolution of the business income of the biotech industry we see a steady curve that indicates that revenue has increased yearly. Here we don't see remarkable indicators in the curve like the boom in 2010 and 2011 as seen in other diagrams. The only year that is an exemption to the steady curve is the small increase in 2012. Each year there is at least an increase of 14 billion except for 2012 where the revenue only increased by 4,244 bln.

When looking at 'pure biotechs' it is visible that there is no constant increase, it is highly volatile. One year there is an increase, the next a decrease. It is incomparable with the industry as a whole because it shifts from increase to decrease each year while the industry as a whole is steady growing. An explanation could be that the companies that do not have biotech as their main activity are bigger and more established companies not solely focusing on R&D. Big pharma multinationals are also represented in this industry and can raise the revenue figures of the whole industry. Whereas, 'pure biotechs' are mostly smaller companies where the lifecycle is more volatile and are more depended on R&D, innovation and the success of their products. As discussed in this study biotech companies are companies that rely heavily on investments and have little revenue

because they are developing products and solutions that are still in the pipeline and are not yet approved to be put on the market.

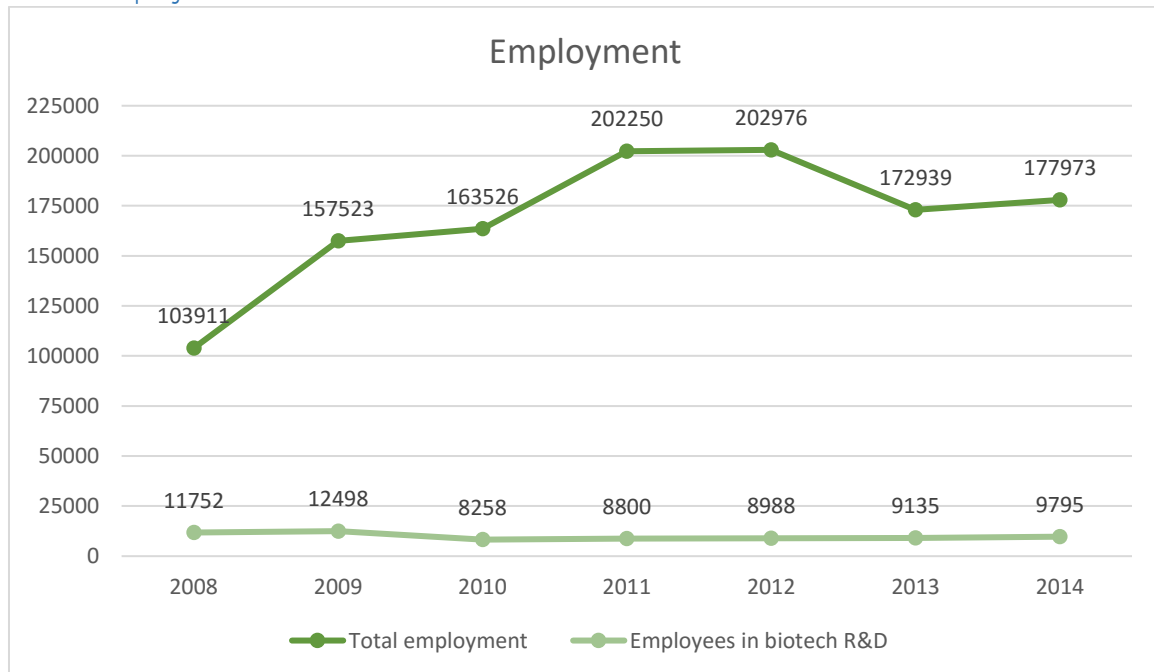
2.2.3.3. Expenses for biotech R&D



(ASEBIO, 2016)

When we examine the figures of the R & D expenses we see more volatility than in other aspects. We can see that there are some interesting spikes in the curve. A fact that keeps returning in each diagram is that 2010 was a milestone year where most of the aspects of the industry soared and peaked. However, after the peak companies cut back on R&D expenses and it declined for three years straight. Since 2014 the expenses increased again meaning that companies are more willing to invest in innovation and look towards the future.

2.2.3.4. Employment



(ASEBIO, 2016)

The total employment in the industry is strongly related to the amount of businesses active in biotech. If we compare it to the previous diagram about the companies active in biotech we see that the curve here is almost identical to the diagram of the total amount of companies that have biotech-related activities. There is only one slight exemption which is in 2014. In 2014 we see that total employment increased compared to the year before while the total amount of companies decreased.

If we zoom in more closely on employment in 'pure biotechs' we see that the curve is quite steady during the same period. However, it is remarkable that when employment soared in the whole industry, the employment in 'pure biotechs' decreased, namely in 2010. After 2010 the number of employed people is steadily increasing. There are no major spikes visible here as in comparison to the whole industry.

2.3. Current situation, figures and scope of the Spanish biotechnology industry.

2.3.1. Pure biotech figures compared to biotech users

According to the 2015 annual report of ASEBIO there were 2.742 companies active in biotechnology at the end of 2014. These are companies who are active in biotech but not all of them have their focus on biotech, most of them use biotech as their *tool* (activity but is implicated). This is mostly the case with pharmaceutical companies. At the end of 2014 there were 628 companies in Spain that have biotech as their sole activity. (Spanish Bioindustry Association (ASEBIO), 2016)

2.3.1.1. Latest figures of 'pure' biotechs in 2014.

Spanish biotechs' results in 2014	
Number of biotechs in 2014	628
Units active in biotech R&D	519
Employment in biotech	27.578
Expenditure on biotechnology (thousands of euros)	549.621
Internal R&D expenditure in biotech (thousands of euros)	364.396
Turnover (thousands of euro's)	7.591.397
Comparison to Spanish GDP	0,73%

(Spanish Bioindustry Association (ASEBIO), 2016)

We can conclude that, after looking at these numbers, the Spanish biotechs' dedicate most of their expenditure to R&D development (66,30% of total expenditure). This proves that the Spanish biotech industry is heavily investing in the future and putting their efforts in developing new products or improving them. When looking at total turnover we see that the biotechs in Spain manage to obtain 7,591 billion in revenue during the year 2014. When comparing this number to the Spanish GDP in 2014 we can see that the companies who have biotech as main activity account for 0,73% of the Spanish GDP. (Spanish Bioindustry Association (ASEBIO), 2016)

2.3.1.2. Latest figures of all biotech activities in 2014

Spanish biotechs' results in 2014	
Number of companies active in biotech in 2014	2.742
Units active in biotech R&D	1.079
Employment in biotech	177.973
Expenditure on biotechnology (thousands of euros)	885.078
Internal R&D expenditure in biotech (thousands of euros)	533.826
Turnover (thousands of euro's)	107.787.966
Comparison to Spanish GDP	10,35%

(Spanish Bioindustry Association (ASEBIO), 2016)

We can conclude that, after looking at these numbers, the Spanish companies active in biotech dedicate only 533,83 million to expenditure of R&D in biotech. This proves that the companies who are not exclusively active in biotech are spending proportionally less to R&D than pure biotech companies. This means that from the 2742 companies active in biotech, the 628 pure biotechs account for 68,26% of total expenditure on R&D. When looking at the total turnover we see that the companies active in biotech managed to obtain 107,788 billion in revenue during 2014. When comparing this number to the Spanish GDP in 2014 we can see that the companies who are active in biotech account for 10,35% of the Spanish GDP. (Spanish Bioindustry Association (ASEBIO), 2016)

2.4. Strengths of the Spanish biotech industry that contribute to its attractiveness

2.4.1. Geographical distribution of biotechnology in Spain

In Spain, there are a lot of options to invest in terms of different regions. In 2014 the 'Spanish Statistical Office' did an Innovation survey to discover the activity of biotech in Spain per region or the amount of companies active in biotech in Spain per region.

2.4.1.1. Companies that use biotechnology

According to the 2014 survey Catalonia is the leading region when it comes to the amount of companies, followed by Andalusia and Madrid.

Also in the Basque country, Castile-Leon, Galicia and Valencia there is quite some activity.

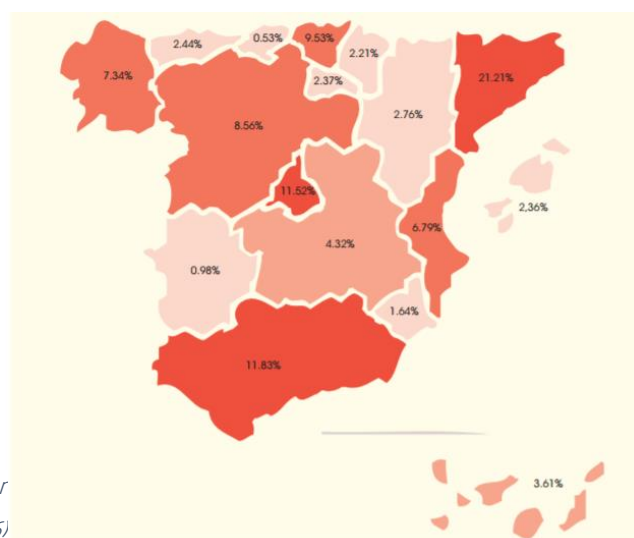


Figure 1 Geographical distribution of biotechnology user companies (Spanish Bioindustry Association (ASEBIO), 2016)

2.4.1.2. 'Pure biotechs'

If we compare this illustration to the previous we can see a very strong similarity. Again, Catalonia leads the pack, followed by Madrid, Andalusia and Valencia. Madrid is more important when it comes to biotech as a main activity. Andalusia is around the same as above but Valencia is more present percentage wise with 'pure biotechs'.

The *chasing* group is made up of the Basque Country (7.17%), Castile-Leon (6.78%) and the Canary Islands (5.4%). The Canary Islands come as a surprise because the region was never really linked with biotech in the past but has been able to make its mark in recent times. (Spanish Bioindustry Association (ASEBIO), 2016)

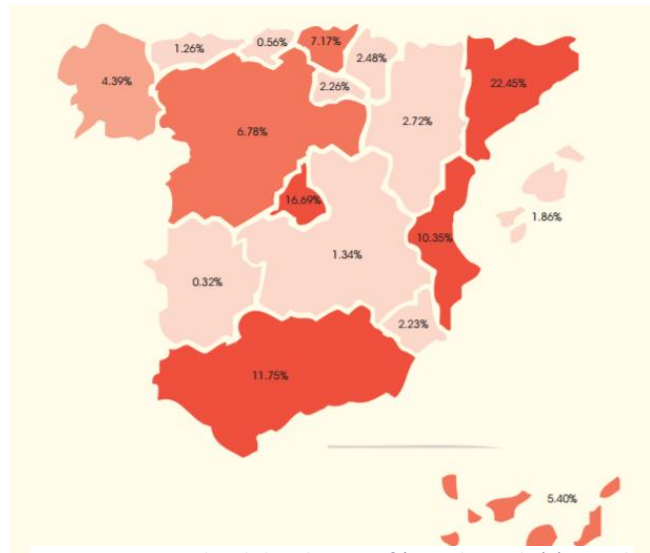


Figure 2 Geographical distribution of 'pure biotechs' (Spanish Bioindustry Association (ASEBIO), 2016)

2.4.2. Infrastructure for innovation

There has been a huge growth of science and technology parks, research centers (nearly 80) and institutes of technology. Universities work together with public R&D centers and both of them also work with hospitals for clinical trials and clinical research. (ICEX, 2017)

2.4.3. Government support

Private investments will generate higher revenue with the support of subsidies provided by the government. The government has a technology fund which focuses on providing financial aid to foreign companies. Companies can submit a call for aid and the concerned bodies will then perform an analysis and screening. (ICEX, 2017) (ICEX, 2016)

According to a report of ICEX on Spain's biotech there is a favourable legal framework as well. The government offers tax incentives for R&D spending:

- Deductions from company tax rate up to 42% for R&D investment and up to 12% for innovation
- Companies can deduct up to 40% of the social security contributions of R&D workers. (ICEX, 2017)

2.4.4. Spain's qualified workforce for biotech

In some Spanish regions, the percentage of workers with a post-graduate studies is higher than the European average. Currently there is a surplus of talented qualified workers for competitive and innovative projects. However, those mostly have a difficulty to find a job. This is because there are more graduates than there are positions to be filled. The attraction of working on scientific or biotech projects is high because there are very few innovative jobs on the market. (ICEX, 2017)

These workers also are among the cheapest in Europe. The cost per hour is less than the EU average. This makes Spanish workers attractive for businesses. (ICEX, 2017)

2.4.5. Internationalisation

Spain has always been overlooked when it comes to foreign investments. Other regions in the world like the U.S., Germany, etc. were always considered the best places to invest in biotech. Lately Spain is increasingly becoming a hub for biotech and there is more interest coming from foreign investors. (Spanish Bioindustry Association (ASEBIO), 2016)

Spain was put on the international biotechnology map in April 2014 by the first big investment agreement between Oryzon and Roche (a €16 million deal). It was a kick-start for other international investments and the Oryzon-Roche deal was soon followed by other investments. The investments not only bring capital but also brings together the great scientific quality of Spanish biotech projects. (Spanish Bioindustry Association (ASEBIO), 2016)

According to ASEBIO, the industry will continue to attract more foreign investments what will contribute to the growth of the Spanish biotech industry.

3. Field research

3.1. Description of the field research and methods

The field research was conducted by doing in-depth interviews with biotech professionals that are prospects in the Spanish market for Flemish companies or companies that have offices in Belgium. People who were interviewed have following profile: business development managers, CEOs and other professionals within a company who have their eye on expanding to foreign markets. Doing in-depth interviews was the best way to perform field research rather than using questionnaires because it is more interesting to talk to people to question their current knowledge of the Spanish biotech industry and their interest to invest in it. In this context, the word 'invest' needs to be taken with its broadest definition. Another reason for opting in-depth interviews is because the pool of interesting parties from Flanders for this paper is very small. It made most sense to talk with people who already are interested in expanding and who are currently looking at foreign markets for the future. The information received in interviews was often surprising and each interview delivered new fascinating input.

The question used for the interviews list consists of three topics.

Firstly, the correspondents were asked about their current knowledge of the Spanish biotechnology industry. They are asked what is according to them the importance of the biotech industry for the global Spanish economy; if the current economic growth in Spain has a strong liaison with the biotech industry; which Spanish biotech companies they know; if they are aware of the current internationalization as well as the attractiveness of the Spanish biotech for foreign companies and what their current knowledge is about venture capital investments in the industry.

Secondly, their current business development in Spain was discussed. If they were active in Spain, they were asked how and why they choose Spain. If they were not active in Spain, they were asked if there are plans to become active on the market in the future.

Lastly, the third part covers the motivating and demotivating factors to invest in Spanish biotech. During this interview, the interviewees were provided, briefly, with the interesting information discovered during this study. When this information is provided, there is a discussion and they are asked some more questions if this information helps spark their interest in Spain and if the provided information is a motivator or a demotivator.

3.1.1. Field research outline

The field research part of this paper will concern four parts:

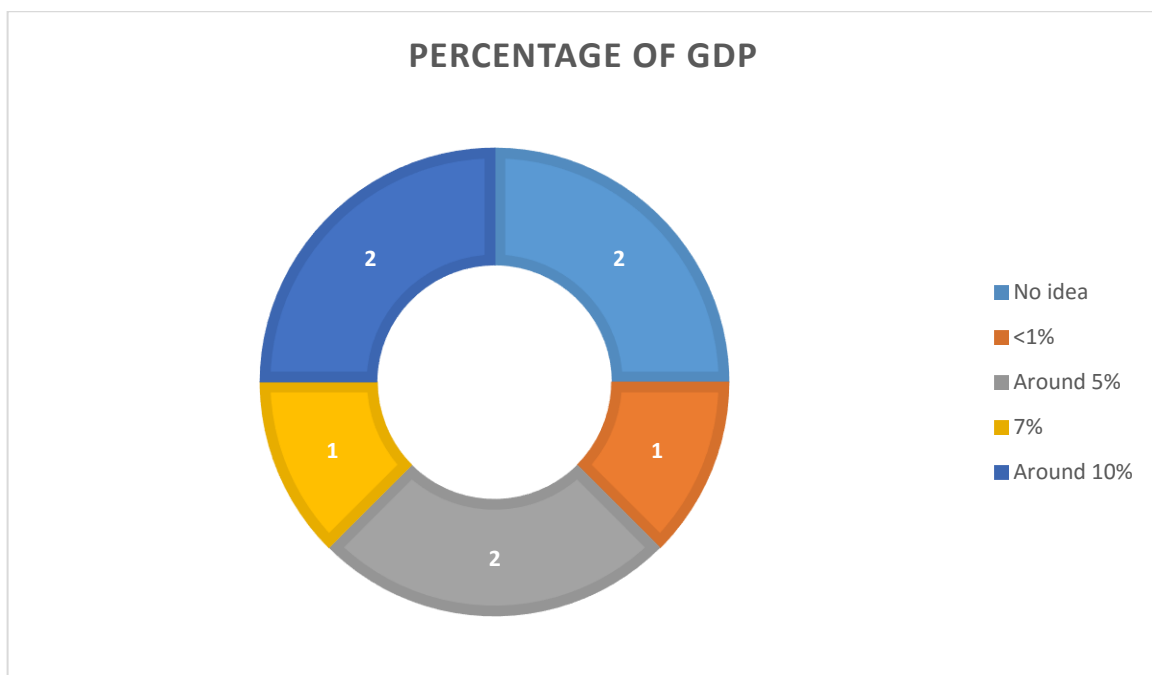
- The current knowledge of the Flemish companies about the Spanish biotech acquired from the interviewees
- The business development in Spain and possible interest in Spain of the interviewees' businesses
- The dimensions for investing in Spanish biotech
- Other interesting facts acquired during the interviews.

3.2. Current knowledge of the Flemish companies about the Spanish biotech.

3.2.1. Importance of the biotech industry in Spain for the global economy.

The first question of the interview was about the interviewees' knowledge of the importance of the Spanish biotech for the country's global economy. The second part of this question was about how big the share of the industry in the total gdp actually is. This is an important first question to ask in the interview because this question links to other questions as well and it provides a global perception about the Spanish biotech.

The answers provided during the interviews by the interviewees differentiated a lot. The results were as follows:



✓ In 2014 biotech (in general) accounted for 10.35% of global Spanish GDP

From these answers, it became clear that four people (half of the interviewees) thought that the biotech industry accounted for less than it actually does. The persons who didn't have an idea of the importance of biotech are those who are currently not looking to expand abroad so they are currently not interested to look into the Spanish biotech industry. The two persons that have answered positive are doing business in Spain or have done so in the past. So, they are the ones who are more aware of the importance of the biotech industry in Spain.

3.2.2. Biotech and economic growth in Spain, are they related?

This question is about the biotech industry and the current economic growth in Spain. The economy has recuperated well from the financial crisis in Spain. The interviewees were asked if the biotech industry was partially responsible for this growth.

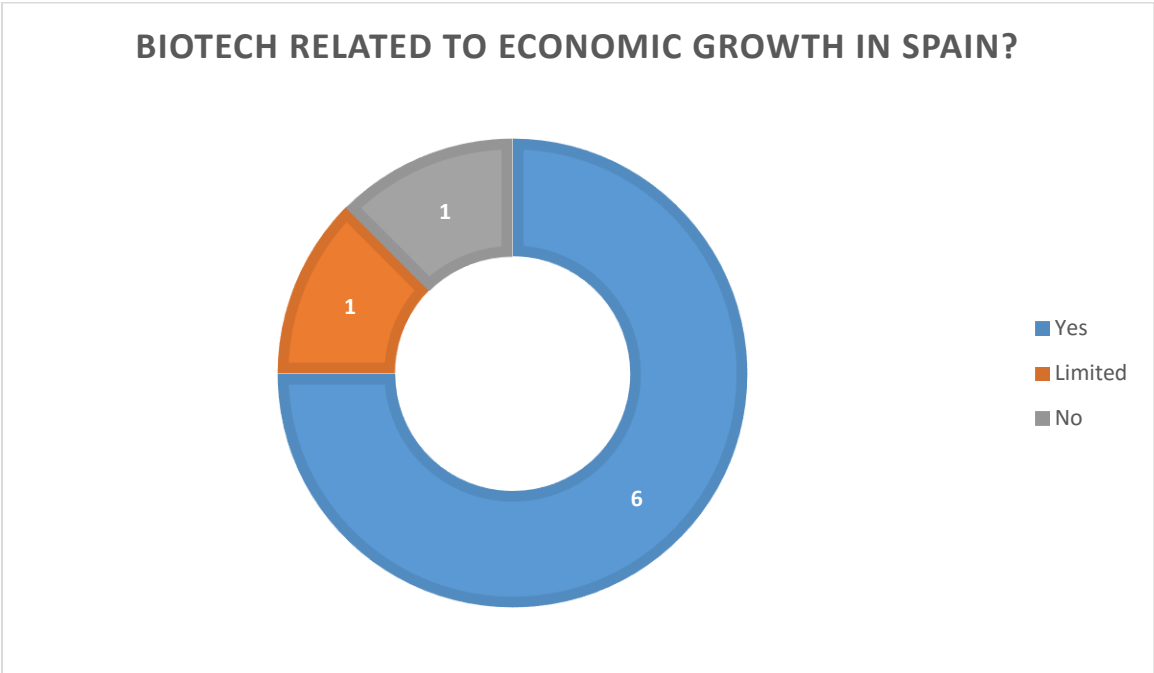
Some interviewees noticed that there is more activity around biotech in Spain lately with the emergence of more fairs and congresses. They see that this industry in Spain is still young and

fresh but they see a liaison between the growth of the global economy and the growth of this industry. The answers also depended a lot on the answers provided on the previous question.

Also, according to some responses the government injected a lot of capital in the industry because they know that there is a lot of potential. This in turn had a positive influence on the industry that also affected the global economy in Spain. If biotech grows, foreign investors notice this and will consider investing in Spain.

Lastly, an important factor that was brought up about the relation between the industry and the economic growth was job creation. Due to the crisis, the unemployment in Spain soared, but with the development of biotech a lot of jobs were created. This brought about a drop in the unemployment rate that helped create a more stable economy.

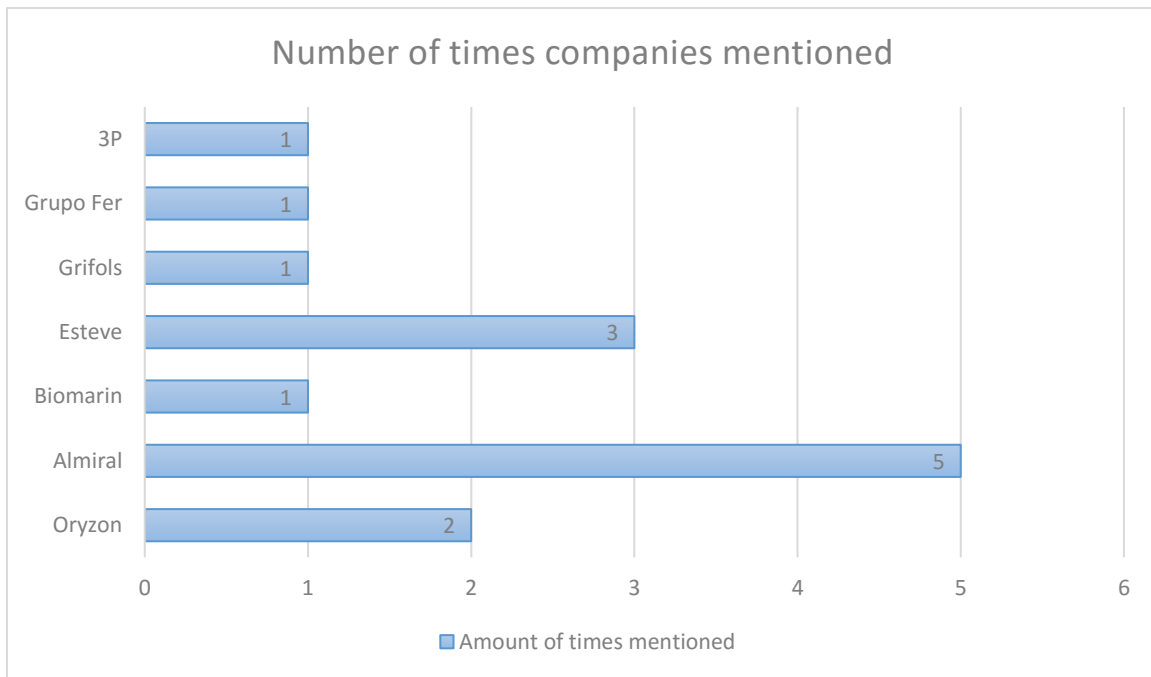
The results were as follows:



3.2.3. The biggest biotech companies in Spain

This question was difficult to answer for most of the interviewees. They did not know a lot of Spanish companies and surely could not estimate their size. As a conclusion, the Spanish company that came up the most was Almirall. One of the reasons for this is that Almirall is looking to expand and wants to attract foreign investors. They are present at a lot of biotech fairs and congresses where they have a big stand that catches the eye.

The results were as follows:

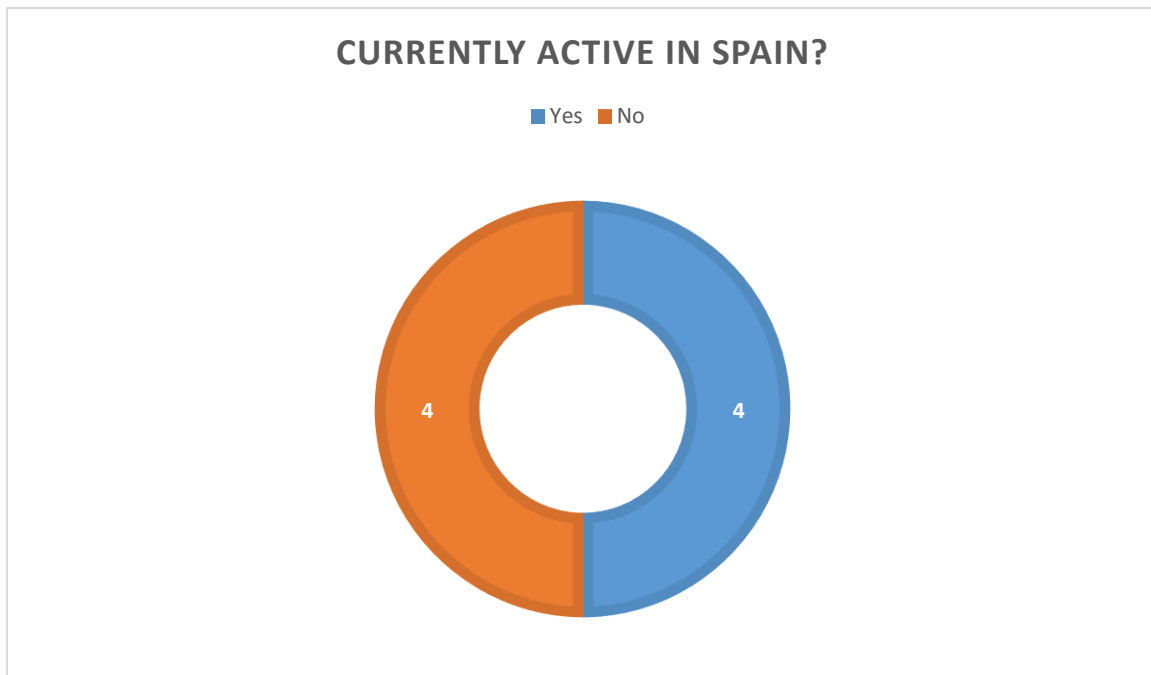


This graph depicts the companies that were mentioned during the interviews and several companies were mentioned in different interviews. For example: Almirall was mentioned by 5 different individuals.

3.3. Current business development and interest in Spanish biotech for the interviewees.

One of the most crucial questions asked during the interviews was the question if the companies of the interviewees were already active in Spain or if they are considering Spain to invest in in the future. This is an important question because it is what this paper is partially about; the interest from Flemish companies in the Spanish biotech industry.

Firstly, we take a look at the companies that are already active in Spain. Their business activities will be mentioned as well as their plans for the future. After that, the companies that are not active in Spain will be discussed. The reasons why they are not active in Spain and if they have ever considered to do business in Spain in the near future will be mentioned. Below, the amount of companies active and not active in Spain:



3.3.1. Active companies

3.3.1.1. Current and past business activities in Spain.

Currently there are four of the eight interviewees who are active in Spain in the form of different business activities. The types of business they have in Spain are: offices, clients, partnerships and projects.

- *Offices*

The company that has offices in Spain has chosen to establish itself there because of the importance of the Spanish market for their business. The company knew that Spain has potential in a variety of fields. Mainly the company established itself in Spain because it is a market of 40+ million persons which allows them to sell more products and expand abroad. When they initially sold their products, they learned more about the potential of the biotech industry in Spain. They then decided to open offices in Spain to perform basic research. The company decided to be more active in Spain and discovered that there is indeed a good level of scientific knowledge. Spain became an important location for the entire organisation and the company is nowadays focusing on scanning and scouting the Spanish market in search of new opportunities.

As a conclusion, they believe in the potential of the Spanish biotech industry and decided to establish themselves in Spain in the early stage of the industry's growth to exploit the most opportunities with an eye on the promising future.

- *Clients*

Spain is one of the most populous countries in the European Union. This means that it is a big market for selling products and services. All four of the active companies have clients in Spain for various reasons. Most clients have been addressed through fairs and congresses. This is one of the main channels to promote the company and to attract customers in the biotech industry. A big advantage in Spain is that there are several fairs and congresses where foreign countries can participate in to meet companies active in the same niche and to find new clients. This is the main channel that brought new business for the companies active in Spain.

- *Partnerships and projects*

Partnering with Spanish companies is also a good way to penetrate the Spanish market. In Spain, there is limited knowledge of languages other than Spanish. English is spoken but hardly well enough to hold meetings and to negotiate business deals. Therefore, some of the companies have decided to partner with Spanish companies to give them more insight in the Spanish market and to guide them during meetings with other Spanish companies.

The companies in question not only have partnerships to help them explore the Spanish market but also partner with other companies to handle shared projects.

3.3.1.2. Plans.

The four companies active in Spain are very pleased with their business in the country. They all receive income originating from Spain and have successful projects in the country. In terms of the future, all four companies see the growing curve of the Spanish biotech industry and the global Spanish economy as well. They understand the importance of the market for future endeavours and they all plan to focus more on Spain and they want to be more present in the country. Being active in a growing industry early on allows them to be a step ahead of the competition and will allow them to benefit from the growing market.

3.3.2. Non-active companies

3.3.2.1. Reasons for not being active in Spain now.

There are several reasons why the interviewed companies are not active in Spain. The most recurring reason is that these companies are not yet ready to expand abroad. At least one of the companies still has products in early phases in the pipeline. For that company, it is not useful to focus already on going abroad since they don't have an approved product yet

Another reason is that Spanish biotech is often perceived negatively. As previously mentioned, it has long been known as the 'valley of death' when it comes to biotech. Lack of money in the industry and lack of proof of concept were the most recurring points of reasoning when avoiding Spain.

Lastly, another reason was that there are better alternatives than Spain. The companies are all located in Belgium which boasts a good environment for biotech. Therefore, for some companies it is more important to increase their presence in Belgium before looking for other alternatives. Next to Belgium, the Netherlands, the UK, Germany and the US are for various reasons more attractive markets and locations for some of the companies. Spain comes at a lower ranking in their list.

3.3.2.2. Is Spain ever considered?

Some of the companies have considered Spain to do business with. There have been visits to fairs and congresses in Spain to explore the market and to make acquaintances. Some companies have encountered Spanish players and clients but nothing specific is planned. These companies gather contacts in Spain and retain them for future purposes.

Thus, some of the companies have considered Spain for the future but have not undertaken specific plans.

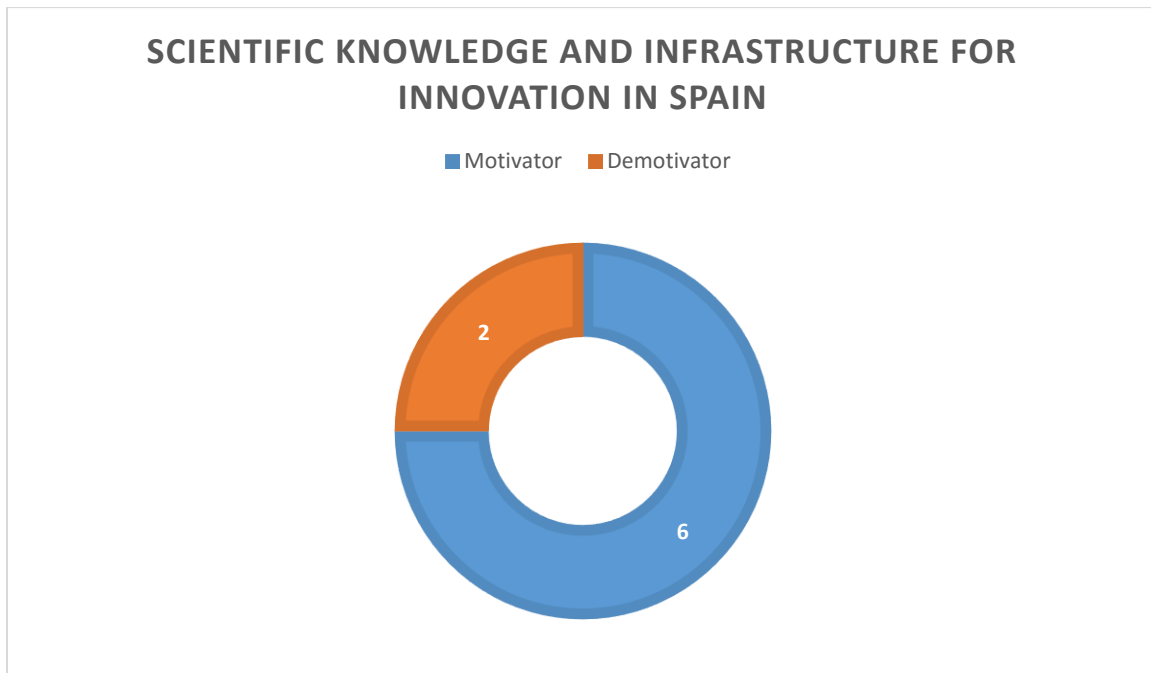
3.4. Dimensions for investing in Spanish biotech.

3.4.1. Scientific knowledge, quality, infrastructure for innovation.

A good level of scientific knowledge, scientific quality and a healthy infrastructure for innovation are very important factors for biotech companies and companies related to the industry. It ranks around the top of the list of factors for expanding abroad.

Are according to the interviewees, these factors motivators in the Spanish biotech industry?

The results were as follows:



75% of the interviewees think that the level of scientific knowledge and infrastructure in Spain is a motivator to invest in Spain. Spain boasts a series of well-established ecosystems for biotech. Such as the bioparks and research centres in Catalonia, Galicia, Valencia and Madrid. These areas gather different actors in the biotech industry and allow them to work together closely. This is an important factor for foreign investors. Everything is centralised and close-by which creates a well-balanced ecosystem. Some companies see locations as Barcelona and Valencia as new biotech-hubs.

For the companies who think of it as a motivator, the scientific knowledge is of a good level. Some even compare the level with major global players as Germany and the UK. They believe that there is a huge potential for scientific development and they see Spain emerging as one of the major players on global level in terms of scientific development.

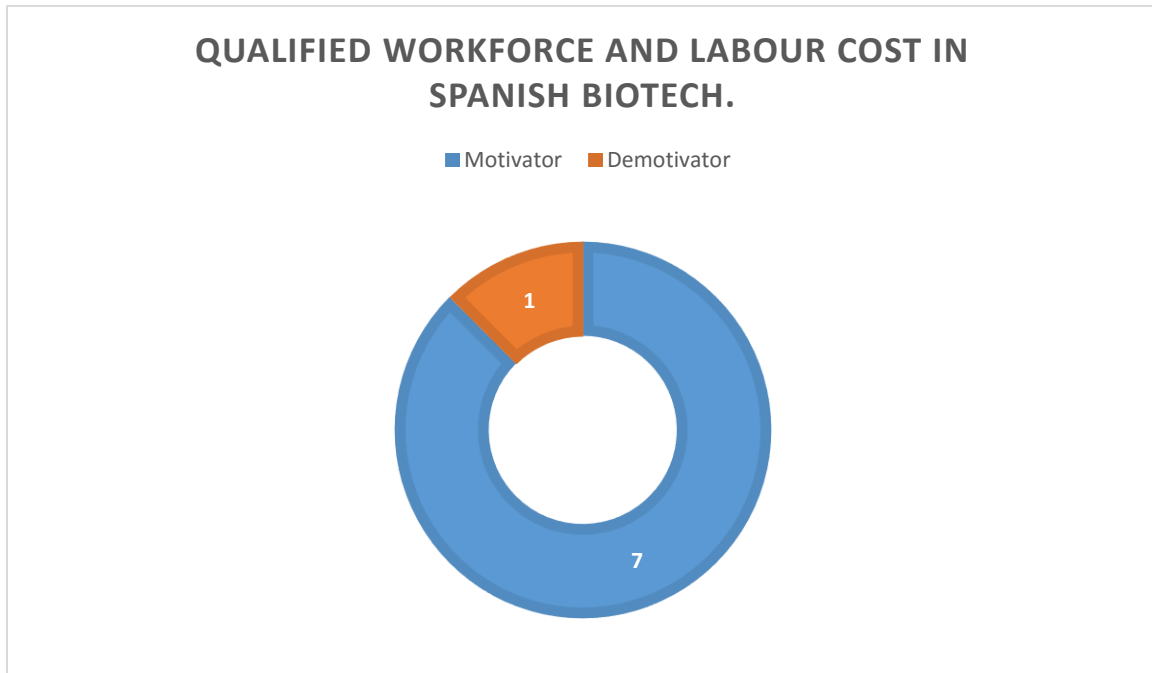
The companies who think of this topic as a demotivator believe that the level of scientific knowledge is better in other countries and that Spain is lacking behind. They believe that the Spanish biotech scene needs to improve its quality in order to be considered as an investment location. Spain is often overshadowed by the prowess of the US, UK and Germany. In these countries, biotech is well-established and is already known to be of high quality worldwide while Spain has not received this recognition yet.

3.4.2. Qualified workforce and labour costs.

When investing in Spain or establishing an office in the country, most probably local staff will be hired. Working together with qualified people is important to have a well-functioning company and is of grave importance when performing research and development in the biotech industry. Not only the quality but also the cost of the employees is important to consider when working together with Spanish personnel.

Are according to the interviewees, these factors motivators in the Spanish biotech industry?

The results were as follows:



A huge majority of the interviewees believe the qualified workforce and labour cost in Spain to be a motivator. They believe the level of the employees is high and they are very qualified. Spain has several high-quality universities that are highly ranked on a global level. Some reasons for this will come to light later in the subchapters 'Other factors' and 'Interesting things obtained during the interview'.

The labour cost of qualified workers in Spain is lower than average in the European Union. This is often a crucial factor for doing business in Spain. However, even though the workforce is qualified and cheaper, there are some factors that are considered to be negative about this as well. These factors will, again, be brought up in the subchapters 'other factors' and 'Interesting things obtained during the interview'.

The interviewee for who this factor of labour is a demotivator argued that the main reason why is that the level in other countries overshadows Spain. The quality in countries like the US, UK and Germany strongly overshadows Spain and the person was more likely to invest in a workforce from one of the mentioned countries.

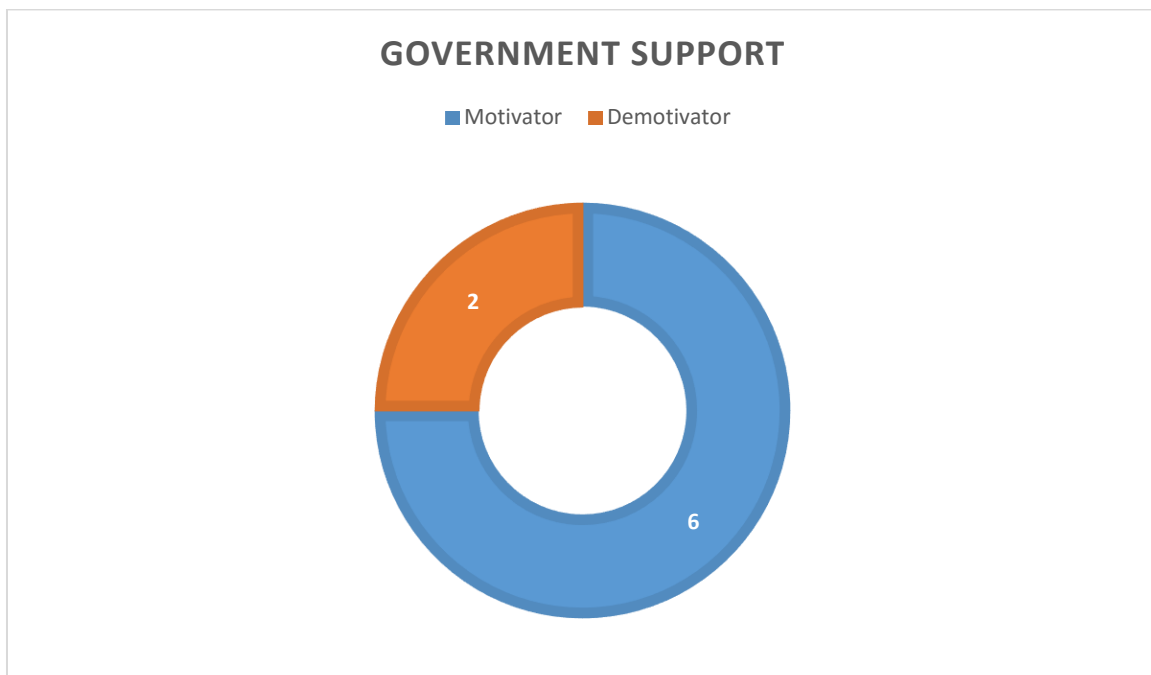
But, in general, 87.5% think of this factor as a motivator and even as one of the most crucial to invest in Spain.

3.4.3. Government support

The biotech industry is strongly dependent on capital. Subsidies and tax regimes granted by the government are crucial factors for investing in a country's biotech. The government in Spain has lately been investing more and more in the industry and wants to inject capital to bring the industry to a higher level and to compete with major players like the US.

Is according to the interviewees, this factor a motivator in the Spanish biotech industry?

The results were as follows:



The government support is perceived to be a motivator by 75% of the interviewees. They believe that the government is implementing a lot of positive initiatives to improve the conditions for biotech industry. Some of the companies have already worked together with the government - both regional and local - and have had very positive experiences with them. The grants and tax regimes of the government are very beneficial and can convince foreign investors to consider Spain.

However, there is always a flip-side to each coin. The strong support of the government can also be a demotivator and a trap. Because the government invests a lot in the industry, companies rely too much on its support. In the States the government grants beneficial support as well but they don't provide it for a long time. In Spain however, the support lasts for a few years. This causes the Spanish biotech companies to rely too heavily on government support and they will focus less on generating their own revenue. In the US they are supported for a limited time which forces them to advance quicker and secure own revenue faster than in Spain. This dependency on support can sometimes lead to failures. This can be a demotivator when investing in Spain as well.

Another demotivator is that although the support in Spain is good, it is yet again overshadowed by other, better performing countries. Therefore, some companies will rather invest in countries with even better government support.

3.4.4. Other factors

During the interviews, the previous dimensions for investing in Spanish biotech were discussed but after that the interviewees could mention other reasons for investing or not investing in Spain. **Other determining factors for doing business** in Spain or not are **the following**:

3.4.4.1. *Growing global economy*

Spain was severely struck by the financial crisis but is now recuperating well and increasing its GDP and decreasing its unemployment rate each year. This is a big **motivator** because due to the huge impact of the crisis a lot of foreign companies avoided Spain. This leaves the opportunity to invest in a growing market where, as of now, there is less foreign competition.

3.4.4.2. *Foreign experience*

A recurring **motivator** was that a lot of Spanish engineers that worked or studied in bigger biotech countries like the US return to Spain with their acquired knowledge and experience., which allows Spain to increase its level to reduce the gap with the bigger players in the industry.

3.4.4.3. *Language*

Language was a demotivator that often recurred. The foreign language skills in Spain are rather limited. English is universally the most used language and definitely so in the biotech industry. It is difficult to hold meetings with Spaniards when the language spoken is not Spanish, often a translator is necessary which makes negotiation more difficult.

3.4.4.4. *Complexity of the country*

Spain has 17 regions each with its own government. This causes a huge complexity because each region offers different incentives and different regimes and rules. Especially for US companies this will be difficult because they need to do business with 17 different areas which all work differently and independent while in their country all 50 states work together. This is an important **demotivator**.

3.4.4.5. *Lack of awareness of quality offered*

Spain is being overlooked, while biotech giants like the US, UK and Germany are the go-to countries for foreign investors. But Spain has almost equal quality in all sorts of fields as those countries. This causes the country to have a negative image which causes foreign investors to consider other countries. This is a huge **demotivator** because it scares away foreign investors.

3.4.4.6. *Cultural differences: punctuality*

Spanish people are notorious for being tardy. Punctuality is very important in countries like Germany and the UK, 'time is money'. The companies that were interviewed also have had experiences with Spaniards with meetings often less structured than at home which causes a different experience and often a less efficient meeting. This is also an **demotivator**.

3.4.4.7. *Lack of entrepreneurial spirit*

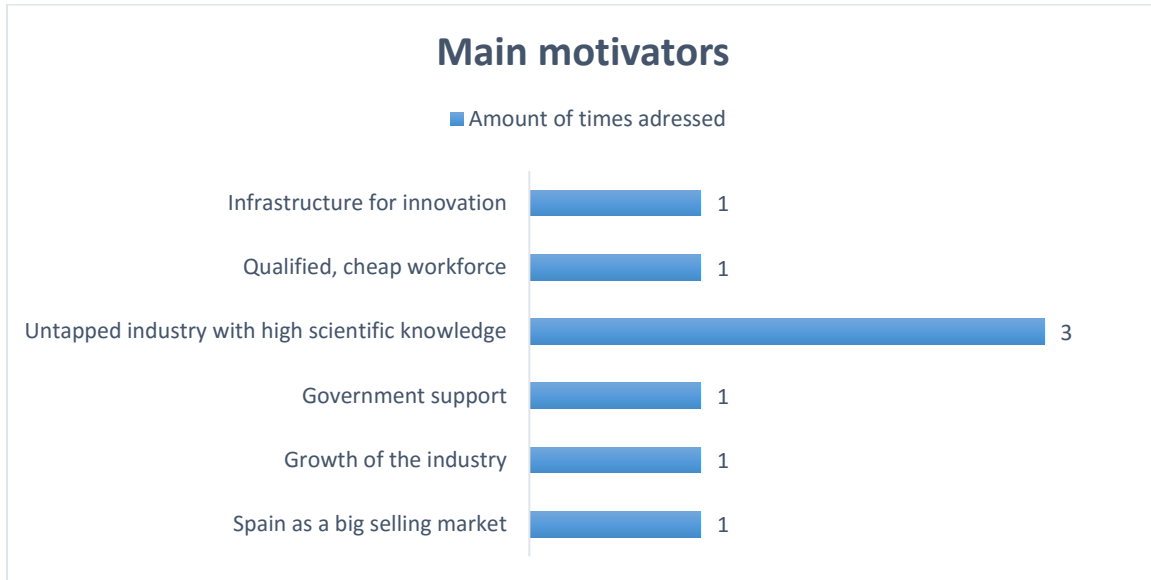
Spain has a good quality of education and a lot of young people have special prowess that distinguishes them from others. These persons often have revolutionary ideas or a business vision but they lack the entrepreneurial spirit to actually start a business. This lack not only exists with young individuals with great ideas but is commonly the case in the whole country. This can be a **demotivator** for foreign investors who want to inject capital in solvent companies with a lot of entrepreneurial spirit.

3.4.5. Most crucial motivator and demotivator.

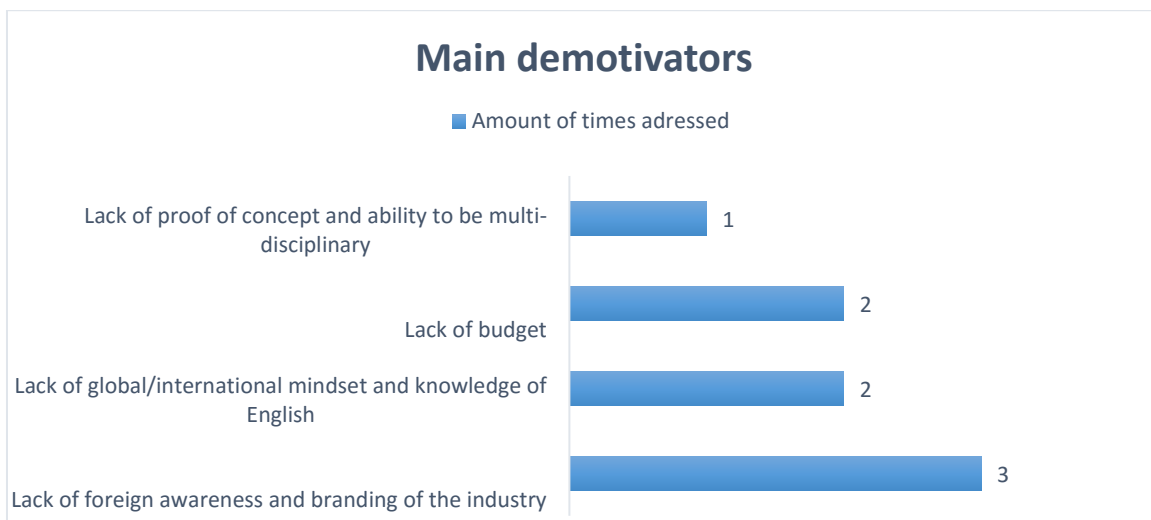
3.4.5.1. Results

At the end of the interview, each interviewee needed to provide the most crucial motivator/demotivator for doing business in Spain. The results were as follows:

Motivators



Demotivators



3.4.5.2. Conclusion

The results of the question 'which is the most crucial motivator and most crucial demotivator' were very different. Mainly with the **motivators**, there are the most differences. There are six different most crucial motivators for doing business in Spain. However, there is one answer that recurs three times and that is: Spanish biotech industry is untapped but with high scientific knowledge. It can be concluded that this is the most crucial motivator for the interviewees when doing business in Spain. In the interviews, it is explained that Spain is often an overlooked country when it comes to biotech. Therefore, there are less international biotech and pharma companies present in the country which leaves the opportunity to establish yourself as a company in a country that is untapped and

unexplored by other foreign players. Not only that, but it is also a high-quality industry when it comes to scientific knowledge and potential.

When looking at the most crucial **demotivators**, there are more recurring elements. The only response that was mentioned once was 'Lack of proof of concept and ability to be multi-disciplinary'. This is a more relative answer from a scientific point of view instead of an economic point of view. 'Lack of budget' and 'Lack of global/international mindset and knowledge of the English language' were both mentioned twice as the most crucial demotivator. According to some interviewees there is a lack of budget in the Spanish biotech industry, this can scare them off because it is then required for them to invest more of their own money, creating a higher risk. Also, Flemish biotech companies have a global mindset and the English language level in Belgium is very high. In Spain, this is often not the case. This can be a demotivator for some businesses to invest in Spain, keeping things local influences the potential.

Lastly, the biggest demotivator according to the interviewees was: 'Lack of foreign awareness and branding of the Spanish biotech industry'. Spain is often overlooked and underestimated. 'Being untapped' is the most crucial motivator but surprisingly it is also the biggest demotivator. Companies think the industry needs to be more active internationally and should express its potential more on a global level.

3.5. Interesting opinions obtained during the interview.

3.5.1. Venture capital investments

Spain is becoming more interesting to invest in. More venture capitalists are pumping money in the biotech industry and this supports its growth. During the interviews more information has come to light about venture capital investments.

The interviewees see that the industry is benefiting from more capital investments which allows it to expand and grow. This helps the industry to reach a higher level and helps putting Spain more on the map. Whenever there is more money invested in an industry, more foreign investors and interested parties will consider Spain for their next investments.

A lot of other sectors are looking to invest their money because, nowadays, the banks are not offering high interest rates. Biotech is a very interesting industry to invest in because if a product passes the phases in the pipeline and is eventually approved for selling, the yield of the investment can be enormous. Therefore, a lot of other industries invest money in the biotech industry because they expect high return on investment.

Also, in Spain there are a lot of rich families with family funds and investment funds. More and more of those funds invest in the Spanish biotech.

3.5.2. Internationalisation, is the Spanish biotech an attractive industry to invest in?

Spain is attracting more and more foreign investors, but do the Flemish companies think it is an attractive location to invest in? The answers were mixed. The reasoning behind the responses differentiated a lot because not all companies had the same business focus. Some of them were biotech companies, others provided services to biotech companies, etc.

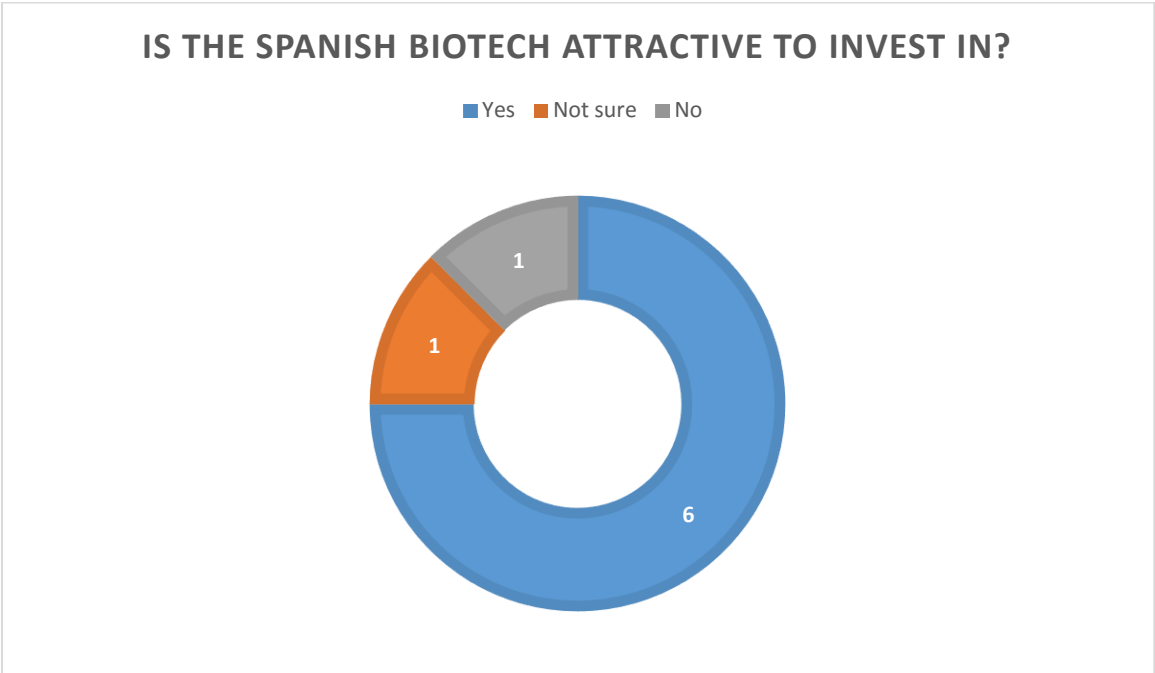
According to some, the Spanish biotech scene is currently looking to expand internationally. Thanks to different aspects Spain can be an attractive location to invest in. Some of the reasons

for it being attractive are: cheap labour, willingness to internationalise, good support from the government, capital investments, scientific quality, etc.

According to one interviewee, who has had experience with Spain, there has been a certain view on Spain from the outside as 'the valley of death'. The reason why it was seen this way is because Spain was perceived of having less talent and scientific knowledge, lack of money and almost no proof of concept. Nowadays, Spain got rid of this image and is no longer being overlooked as often. Therefore, Spain is becoming a more interesting location to invest in because it is still relatively untapped internationally and is now welcoming more foreign investments.

In general, the responses were positive on this question and most interviewees think that the Spanish biotech is attractive to invest in.

The results were as follows:



4. Conclusion

4.1. Situation of the Spanish biotech industry

In this paper, it is revealed that the Spanish biotech industry is growing, together with the global Spanish economy. This industry is becoming a more relevant player on the global level and is experiencing more exposure. More and more foreign investors are looking at Spain to invest their money in, which sparks the interest of additional more foreign investors. The amount of foreign interest increased from 2014 onwards when a first big international deal was made in the Spanish industry between Oryzon and Roche. This deal sparked the interest of other multinationals and has put Spain on the map. Currently the industry keeps growing in quantity, quality and recognition.

4.2. Knowledge of the Spanish biotech industry from Flemish companies.

The interviewee knowledge of the Spanish biotech was varied greatly. Some companies, mostly the ones in early stage, had little idea about the industry. Others had some information but no profound knowledge. In general, it became clear from the interviews that the interviewees knowledge of Spanish biotech was fairly limited. FIT Madrid is a facilitator between Spanish and Flemish companies, they can help promote the Spanish industry to the Flemish companies, they can offer Flemish companies a new perspective of the potential of the market and why it could be beneficial for the Flemish companies to work together with Spain. The knowledge of this industry in Spain for Flemish companies can definitely be improved which will in turn lead to a better understanding of the industry and its potential.

4.3. Current business development of the interviewees and plans in Spain.

Half of the interviewees are currently doing business in Spain. This was an interesting fact that proves that some Flemish companies are aware of the importance of Spain as a potential global player. Most of them have small business activities in Spain generating some revenue for local companies. But all of them have positive experiences and discovered the potential of the Spanish biotech industry. All of them want to focus more on their Spanish business and have future plans to be more present and active. Thus, all the Flemish companies active in Spain know the potential of the industry, they see it as a growing industry and want to exploit this by focusing more on it for future endeavours.

4.4. Main motivators and demotivators

When deciding to expand and go abroad there are always motivators and demotivators attached to a certain location and industry. For the Spanish biotech industry the biggest motivator for the interviewees was the fact that is still relatively untapped with high scientific knowledge. There is a lot of quality in this industry and the potential is huge, the interviewees know this and this is for them the biggest driver when investing in Spain. On the other hand, the biggest demotivator is, surprisingly, very much linked to the biggest motivator: the lack of foreign awareness and industry branding. The untapped industry is the biggest motivator but at the same time being less attracted from abroad is also the biggest demotivator.

4.5. Global conclusion

To end this paper, the global conclusion is as follows: the Spanish biotech industry is a growing industry that is globally becoming more relevant and has high-quality scientific level with a huge potential. However, the industry is often overlooked and underestimated which makes the industry

less international with a lack of a global mindset. The Spanish biotech industry is going to keep growing and expanding and more foreign investments will flow in. It will also become a major player in the world of biotech, putting them alongside the biotech giants Germany, the US and the UK.

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