

EXAMINATION CASE STUDY:

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Warning:	Candidates are warned that possession of unauthorised materials in an examination is a serious assessment offence.

Instructions to candidates: The exam has three (3) questions. Students will be required to attempt **ALL** questions. **Consider the questions very carefully.**

The annotated case study you brought to the exam **MUST** be submitted at the end of the exam with your answer paper.

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Spain Adopts the 'Israel Model' to Engineer a Bio-tech Resurgence

Spain is one of the world's leading nations in biotechnology research, but it lags behind in technology transfer and the creation of new companies. Nevertheless, the importance of this sector in Spain's economy is growing. On an annual basis, the sector as a whole sells more than 76 billion euros of products, according to Asebio, Spain's biotech industry association. Overall, more than 3,025 companies are involved in biotech research and development in Spain. And although 97% of these firms are small and mid-size companies, they are leaders in job creation, increasing personnel rolls at an annual rate of more than 20%.

Ever since the onset of the economic crisis, however, Spain has been losing its position in the world rankings of research and development activity. The sector has been especially hurt by cuts in public subsidies and the shortage of tax incentives for research, which translates into fewer patent registrations. According to the latest report by COTEC, Spain's Foundation for Technological Innovation, investment in R&D in Spain has declined by an annual rate of between 3% and 6% each year since 2009. The Spanish government is hoping to bring about a radical change in these statistics. To do so, it is focusing on the Israeli biotech sector — a world leader in creating start-ups — as the inspiration for designing an entrepreneurial and business model based on innovation.

The Israeli Model

According to Gil Gidron, president of the Spain-Israel Chamber of Commerce, the Israeli ecosystem is based on three major pillars: public and private-sector financing of innovation; developing an entrepreneurial culture in the school system, and a focus on specific sectors. "You can't copy this model, but there are many aspects of it that can be adapted to Spain," Gidron says, adding that although the Spanish government is already taking some steps in this direction, much work is yet to be done. He notes that while it is common to talk about the "Israeli miracle," there is nothing fortuitous about the Middle Eastern nation's flourishing start-up community. Rather, it is the result of a long-term strategy that has been implemented, little by little.

The technological revolution that turned Israel into a model for start-ups began back in 1993, when the government decided to create an environment that favoured technological innovation as a base of its national economy. The program bore fruit in the creation of Yozma, a \$210 million investment fund. Although 85% of the capital committed to Yozma came from public coffers, private-sector managers of risk capital were in charge of investment decisions. At first, the money was invested in the creation of new companies; there were about 600 investments each year between 2003 and 2012. Today, there are about 3,500 companies with active technologies in Israel, and it is the world's leading country in terms of start-ups per capita.

But all has not been smooth for Israel's innovation push. Many of the nation's start-ups will raise two or three rounds of venture capital and then sell out to larger firms, usually multinationals based elsewhere. This has been an area of concern for the Israeli business community and the government because it limits the amount of jobs and economic activity that are generated by these generally small, early-stage companies.

Even nurturing a greater number of early-stage start-ups will be a challenge for Spain, according to Paris de l'Etraz, director of IE Business School's Venture Lab. De l'Etraz points out that one of the big differences between Israel and Spain has to do with entrepreneurial spirit, noting that unlike in Spain, "in Israel, you can fail many times, and people see that as a way of gaining experience." In fact, about one out of every two projects supported by the Yozma fund did not yield positive results. However, the fund continued to take risks by financing new initiatives.

“Spain has everything it needs to be a success, except an entrepreneurial culture.” –Paris de l’Etraz

In an effort to figure out how much of the Israeli model is exportable, the government of Spain is compiling a report that compares the two countries and analyzes their respective strengths and weaknesses. The results of the study show that Spain’s key advantages are its industrial infrastructure, the ease of marketing products abroad (particularly in Europe and Latin America) and the country’s attractiveness to foreign talent. But the report gives Spain a low grade when it comes to its entrepreneurial culture. And this is not the only obstacle identified in the report: Other areas mentioned as needing improvement in Spain were availability of private-sector financing, risk capital funds and incentives for R&D.

The Scarcity of Specialized Investors

“If you don’t finance it, it won’t work out,” Gidron points out. In Israel, he notes, economic support for the creation of innovative companies “is much more developed than in Spain.” When it comes to investment, the differences between the two countries are stark: So far, private risk capital has been practically non-existent in the financing of start-up projects in Spain. On the one hand, in Israel there are about 25 biotech incubators, supported by about 20 funds. Most of those funds utilize public-sector capital, although some are private. In Spain there are only three risk capital firms that specialize in this area: Ysios, CRB Inverbio and Suanfarma. Only the last of those three also acts as an incubator of projects.

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“Risk capital in Spain is focused on development and expansion, as well as on seed capital to a lesser extent, which noticeably restricts the appearance and financing of new projects and entrepreneurs,” says Hector Ara, president of Suanfarma, and a professor of innovation management in the management schools of the University of Alcala and the University of Almeria. Ara adds that Spain has a strong pool of companies that specialize in mergers and acquisitions, as well as more than 80 managers of risk capital, with plenty of capacity for dealing with capital development and expansion. “But there are few investors specialized and trained in the area of seed capital who can give support and financing to new start-ups,” he notes.

In Spain, risk capital “corresponds more with the characteristics of private equity [i.e., the acquisition of mid-size and big companies] than to the original concept of risk capital [that is, support for start-up projects],” says Ara. “There is a substantial difference between ... acquiring companies that are already operating — with the goal of strengthening and improving their results, in anticipation of deriving more profitability — and betting on start-up entrepreneurial projects with expectations of making a profit over the long term.”

But start-up projects require a smaller volume of investment and have greater potential for profitability. The profitability of biotech projects has been well proven. In Israel, for example, the funds invested in this sector have achieved a return of 40%. While a number of the projects failed, the successes compensated for the losses. Analysing the statistics of the big professional investment funds bears similar results.

For example, the Dexia Equities Biotechnology fund, which invests in biotech firms — 80% of which are based in the U.S. — has appreciated in value by 228% over the past five years. In addition, among the 10 funds that have grown the most since the global financial crisis began in 2008, half specialize in biotech, according to data from VDOS, a Spanish investment research firm.

“Biotechnology is certainly an innovative sector with high risk, and it takes a long time to make a profit, but it is also a sector with extremely high profitability in those projects that are successful,” notes Ara. “Overall, the funds that invested in the biotech sector were the most profitable category in 2013 on an international level. Over the past five years, their profitability has exceeded 150%,”

which contrasts with the rest of the market during times of crisis. All of this demonstrates that the risk-reward relationship is very positive.”

The Pitfalls of Exaggeration

But Wharton senior fellow Stephen Sammut, who is a partner at Burrill & Co., a San Francisco-based life sciences venture capital firm, warns executives and policymakers in Spain’s biotech sector against comparing their performance with that of their peers in other countries.

“When countries seek to benchmark themselves against other countries in a certain sector, there is a remarkable tendency to exaggerate what they have observed in the countries they have targeted,” he points out. “They tend to grossly overestimate what the real success of that country is. That is symptomatic often of taking a too high-level view of what is going on, rather than getting really down in the weeds and doing an adequate number of case studies of what companies in those countries are really up against and what progress they have really made.”

“Risk capital in Spain is focused on development and expansion ... which noticeably restricts the appearance and financing of new projects and entrepreneurs.” –Hector Ara

Sammut adds that “possibly, there is a loss of objectivity because the people doing the analysis are often advocates for driving the industry in their home country, and they see things through a different lens. They are trying to build a case, oftentimes not very scientifically, about what is going on elsewhere.” Sammut, who has done studies of the biotech sectors in Japan, Thailand, Singapore and elsewhere, notes that “unless you spend a significant amount of time in a given country talking to a wide variety of entrepreneurs, doing a very close analysis of a particular industry and doing an extensive analysis of the pipelines and projects underway, you come away with a distorted view of what is going on....”

According to Sammut, while the statistics of biotech company creation in Israel are impressive, the biotech community in Israel does not feel it has made anywhere near the progress in biotech that they would have preferred to make. “Part of that has to do with what we mean by the definition of biotech,” he says. Although Asebio, the Spanish biotech industry group, defines the sector in very broad terms, “if you look at the classic definition of biotech as biopharmaceuticals, then you see that Israel has not done quite as well as many people think it has.”

Sammut adds that “biopharma probably does not fit into the Israeli biotechnology culture as well as medical technology does. When you look at other industries, the notion of being able to scale up or sell off is much more frequent and more direct than [it is] in biopharma.” In the case of other types of technology, Sammut continues, entrepreneurs can sell an app, a new medical device or some other product to another firm, or they can choose to scale up and produce it on their own.

By contrast, the biopharma sector “requires a far broader array of capabilities and capacities than just about any other industry — and there are a variety of reasons,” he notes. “One is that it [requires] entrepreneurial talent with scientific credentials.... The incubator of this often happens within the pharmaceutical industry — the research-driven, discovery-driven pharma business, not in the generics industry. There is not a long or in-depth tradition of that in Israel.” Often, biotech execs in Israel are people who have had very significant experience in other countries, he adds.

Creating a Successful Ecosystem

Experts in Spain agree that local investors’ ignorance of the biotech sector has been one of the biggest obstacles to the industry’s progress, since they have often preferred to diversify their investments into other sectors. But the government seems to have decided to make a change in this situation by developing different programs to assist entrepreneurs through the CDTI, the Center for the Development of Technology and Investment. The CDTI has established a fund that aims to direct 1.2 billion euros into the sector through the ICO, the Official Credit Institute. It will

function very much like its Israeli counterpart functioned during its day, where a key to its success was public money managed by private funds.

The goal is to create an ecosystem of entrepreneurs that is also capable of attracting private capital and, above all, foreign investment. Gidron says that a collateral effect of the Israeli initiative has been to attract big multinationals that established themselves in the country because of the projects that were being developed there. That was the case, for example, with Microsoft, Intel, Samsung, Cisco and IBM, which established R&D centers in Tel Aviv and Jerusalem, he notes.

“When countries seek to benchmark themselves against other countries in a certain sector, there is a remarkable tendency to exaggerate” –Stephen Sammut

Gidron acknowledges that the Spanish government “is trying to emulate those programs, but there is a lot of work left to do.” While he says officials are moving in the right direction in terms of financing, it is more difficult to tackle more ephemeral challenges like entrepreneurial culture. According to Gidron, Spain must leverage the strength of its universities and facilitate easier technology transfer from academia to corporations.

According to de l’Etraz, the financial crisis may serve as a good moment to force a change in the entrepreneurial culture of Spain. “Many people have been forced to emigrate, to leave their comfort zone. And during times of crisis, many have been forced to become entrepreneurs.” De l’Etraz adds that “the opportunities in Spain are the same, and even greater, than they are in the United States or Israel. If they can pull off a change in the culture, they already have everything they need in order to succeed.”

But Wharton’s Sammut suggests that the challenges facing Spain’s biotech sector won’t be resolved simply by focusing on the lessons of Israel’s success. “Israel might not be the best benchmark country for Spain or, for that matter, any other country. There are such unique elements in the Israeli entrepreneurial ecosystem, and unique factors contribute [to it], which may well be unreproducible, so it may be a waste of time and resources for one country to emulate what Israel has done and try to get the same results.”

Instead, Sammut says that Spain’s biotech industry would be best served if it does “an extremely deep dive” into the experiences of those Spanish biotech firms that have already made significant progress in the sector, and analyze what those firms have done right.

According to Asebio, the Spanish industry group, 53 drugs developed by Spanish biotech firms are in Phase III trials, 60 drugs are in Phase II trials and 23 drugs are in Phase I trials. Of this total, at least five to 10 products are likely to be eventually approved. If Sammut were running Spain’s biotech policy, “I would be dissecting what those products are, and what could be replicated” from their experiences. Spain is more likely to make progress by analyzing what has gone right within its own borders, “rather than by figuring out what happened in another country.”