LUISS

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Course of Algorithms

# The effects of public grants in Italy
# Support and value-creation for businesses
# With the contribution of Value Services S.p.A.


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# TABLE OF CONTENTS

# INTRODUCTION

In the current economic system, regulatory authorities try, as much as they can, to create environments which are favourable to the development and growth of businesses. We are currently living in the digital age, and we can witness a constant search for improvement and a great willingness to innovate. (Which are probably due to the seemingly endless amount of information we have access to).

Some of the many ways through which business is promoted are public grants, which can take many different forms. In fact, only looking at the amount of public grants offered by the Italian government (which will be the geographical area of interest of this thesis) one could find themselves submerged with all sorts of different financial or fiscal aids.

In this thesis we will bring our attention to three different instruments offered by the Italian Ministry of Economic Development (now known as the Ministry of Business and Made in Italy). The choice of the three grants has been made for two reasons.

The first being the possibility to illustrate through these, the possible lifetime of a company, from being a startup to becoming a strongly competitive firm in its market.

The second being that I had the opportunity to intern at Value Services S.p.A. (a consultancy company focusing on public grants), where I had the opportunity to work on projects involving said grants. I have thus developed a certain affinity with them, and it is for this reason that I chose to write my thesis on this subject.

The main objective is to illustrate these grants into detail, in order to understand what their objectives are and how they are put into action. This will allow us to determine whether they can truthfully prove to be a necessity for companies.

For the sake of clarity, each chapter will have a very similar structure starting from an analysis of the legislation and continuing with a very simple case study.

The case studies have been created with the support of Value Services and their know-how. (For privacy reasons, I could not indulge in too many details, and I must state that the case studies are only based on realistic scenarios and not actual companies)

# PART 1: THE FOUNDATION OF A COMPANY – INVESTMENTS

## CHAPTER 1: "*SMART & START*" - INCENTIVES FOR STARTUPS

### OVERVIEW OF THE LEGISLATION

As we have previously stated, we will be analysing public grants in the optic of them helping during the different phases a businesses lifetime. For this reason, the first public funding we will observe is directed towards Startups. The "*Smart & Start*" incentive is specifically designed for innovative startups. But we first need to define a startup, which according to the Italian government[1] is a limited company which must abide to many rules. Among which the most significant are that it has not been established for more than 60 months; starting from its second year of activity, its total production value does not exceed € 5 million; its corporate purpose is the development, production, and marketing of innovative products or services with a high technological worth.

The ministry for economic development stands to gain a lot from investments in Startups as these have a high potential for growth. Furthermore, considering their innovation capabilities, their growth usually proves to be beneficial to other economical actors. This being said, we should also question whether these grants prove to be really beneficial for the startups themselves. It seems to be the case that access to public funding might increase the chances of survival of one such company by 10% [2] (although the results might be biased as startups gaining access to funding must have been considered as promising by external observatory, making them inherently more likely to succeed). Having seen that it would not be pointless to apply for an initiative such as "*Smart & Start*" we should look at out how one should proceed in order to do so. The relevant legislation is contained in a ministerial decree issued by the Ministry of Economic development in 2014[3] and its 2019[4] and 2022[5] amendments.

#### Beneficiaries

First off, we should understand which kinds of startups can try to obtain these subsidies. They must abide to the following requirements:

1. Be of *small dimensions* (which, following the European Union guidelines[6], must "employ less than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million").
2. Have their legal headquarters located on the Italian national territory.
3. Be duly incorporated.
4. Not be in voluntary liquidation and not be involved in bankruptcy proceedings.
5. Not be among the companies which have received and, successively, not reimbursed or deposited in a blocked account, the grants recognized as illegal or incompatible by the European Commission.
6. Not be in conditions that would classify them as a company in difficulty as defined in Article 2, point 18 of the GBER Regulation[7] ((‘undertaking in difficulty’ means an undertaking in respect of which at least one of the following circumstances occurs:
    a. Case of a limited liability company: if "more than half of its subscribed share capital has disappeared as a result of accumulated losses".
    b. Case of a company where at least some members have unlimited liability: if "more than half of its capital as shown in the company accounts has disappeared as a result of accumulated losses".
    c. If the undertaking is "subject to collective insolvency proceedings".
    d. If the undertaking has "received rescue aid and has not yet reimbursed the loan or terminated the guarantee, or has received restructuring aid and is still subject to a restructuring plan".
    e. For non-SME’s [Small and Medium Sized Enterprises]:
    f. The debt to equity ratio "has been greater than 7,5" for the past two years, and;
    g. Earnings before interest, taxes, depreciation, and amortization "interest coverage ratio has been below 1,0".
7. In the case of an enterprise with a legal headquarter located outside of Italy, the ability to prove to be enlisted as a startup in Italy and the existence of a branch located in Italy.

It should be noted that it is also possible to apply for a grant having only the intention of forming a startup (which should be then created no later than 30 days after the confirmation of admissibility for the grant).

## Business plan

To be admitted for "Smart & Start", startups must present a business plan, illustrating their projects, ideas and the feasibility of these. Evaluating target markets, their trends, and their profitability. The business plan must be convincing, innovative and enticing. In fact, the ministry has defined three key characteristics which must be possessed by those in order to be considered admissible, these are:

1. The business plans must be characterized by an important degree of technological and innovative content.
2. They should be aimed at developing products, services, or solutions in the domains of digital economy, artificial intelligence, blockchain and the internet of things.
3. They should aspire to accrue the economic value of the results of public and private research.

It is now quite clear that not all startups are suited for this grant, there is an extreme focus on the digital sector. This shows a push from the government to enable the activities in this sector to thrive as it is a booming domain which has been constantly growing and doesn't seem to stop. Innovations are more and more frequent and not focusing on this sector would truly be a missed opportunity. Furthermore, the benefits of innovation in these domains have been proven to extend to sectors other than the economy, such as healthcare[8], providing assistance in the early detection of diseases.

## Evaluation criteria

Let's now observe the evaluation criteria, which elements will prove to be meaningful in order to present a suitable application for the grant? The main aspects would be the following:

1. Adequacy of the technical and organizational competences of the company (30%[9])
2. Innovativeness of the idea (based on the business plan) with reference to the introduction of a new product and/or service. (20%)
3. Economical and financial sustainability of the project. This should be done with consideration of the target market, its main characteristics and its potential (as it might be an emerging or not-yet existing market). (30%)
4. Technological and operational feasibility of the business plan. (20%)

Each one of the preceding points has been assigned a weight and will result in a final grade marked out of 10 which is calculated as the weighted average of each of its sub-categories. With these the total final score is calculated in proportion of their weights.

In addition, some bonus points are awarded, among which the most notable being for the existence of a collaboration between the startup and research organizations, incubators or accelerators; and for startups operating in the Central-North area promoting the realization of a business plan in Southern Regions of the country (such as Basilicata, Sicilia, and others).
Besides, the business plans need to be realized within 24 months of the signing of the financing contract (and can only be started after the submission of the request for the grant).

**Admissible expenses**

Moving to more practical aspects, we will now look at the different steps needed to present the business plans and the projects. It needs to be pointed out that the presentation process is very supported. The Invitalia website dedicated to "*Smart & Start*"[10] provides extensive information regarding all aspects of the necessities. Not only does it provide all the documentation necessary to deeply understand the procedure (which is very easily accessible), it also offers useful tools such as a help hotline, and a FAQ.
There are also some useful guidelines to determine the admissible expenses (which determine the financial aid provided), these are:

1. New technological fixed assets (such as machinery or tools) provided they are coherent and functional to the company's business and serve the project.
2. Fixed assets necessary for the completion of the project.
3. Services supporting the realization of the business plan (such as incubation, acceleration, and marketing).
4. Costs of personnel and collaborators, provided they are working towards the realization of the project.

To determine the expenses of the personnel employed, companies must use standard hourly rates which are summarized in **Table 1** taken from the "*Allegato 10*" of a directorial decree of 2022[11]:

| Cost range - Level | Beneficiary | | |
|---|---|---|---|
| | **Enterprises** | **Universities** | **Public research entities** |
| **High** | € 75,00 | € 73,00 | € 55,00 |
| **Medium** | € 43,00 | € 48,00 | € 33,00 |
| **Low** | € 27,00 | € 31,00 | € 29,00 |

*Table 1 – Standard hourly rates for personnel costs of research and development projects*

In **Table 1**, the cost range levels refer to different roles within the organisation. For example, a "high" level for an enterprise could be considered as an upper management employee.

## Granted aid

With all of this in mind, it is now of interest to understand the extent to which this grant can provide a help for a startup. The grant consists of:

1. A facilitated financing (with no interest) equal to 80% of the admissible expenses (which can even go up to 90% for startups comprising only workers under the age of 35 and/or women) It should also be highlighted that for startups located in one of the following regions: *Abruzzo, Basilicata, Calabria, Campania, Molise, Puglia, Sardegna* and *Sicilia*, the company only has to repay 70% of the granted concession.
2. Technical and managerial tutoring services (only for companies younger than 12 months old at the time of the presentation of the request). This would allow the startups to gain competences and know-how in their reference market.

It is no secret that these concessions would prove of the utmost importance for startups. Not only obtaining funds but also knowledge, two assets that can be fundamental.
This being said, once the project has been approved, the startups need to take every step to allow for monitoring of the project, that needs to be completed as specified in the business plan. The ministry and the managing entity have the right to perform controls at their will to verify that the previously stated conditions remain true throughout the duration of the project, and that the planned activities are effectively being performed. The startups must abide to all requests made by the ministry or the

managing entity. In fact, if the startup loses the prerequisites necessary for the project; doesn't follow the predicted times for the realization of the business plan; interrupt the activities related to the project; transfers the allocated resources to a different project; moves its activity (if it was previously located in one of the regions previously listed); and other possible scenarios, the ministry can completely or partially revoke the grant.

## CASE STUDY

Let's imagine a company Y founded in 2021 (less than 60 months old), which is considered to be of small dimensions (employs less than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million). Company Y is located in Abruzzo. Furthermore, all of its employees are either females or under the age of 35.

We could envision it operating in the sector of telecommunications.

A possible project could involve the amplification of the current target user-base through the implementation of new, innovative products which could allow the satisfaction of currently non-fulfilled necessities of their clients. The idea does not need to be ground-breaking, it only needs to provide a technological innovation which is currently not being implemented by the company (or by another company if the innovation has already been marketed on a large scale). It could for example be an implementation of artificial intelligence to improve the current user experience (such as an improved recommendation system).

Let's suppose that the expected costs are equal to € 800.000,00 (Taking into consideration all of the elements present in the previous section: cost of personnel, fixed assets…). Knowing this, we can easily estimate the expected concession for the company: it would normally be 80% of the expected costs, but in this case the company does not employ any male above the age of 35 this means it obtains a different treatment. Thus, company Y can expect to request a financing of 90% of € 800.000,00, which is equal to € 720.000,00. Furthermore, considering company Y is located in Abruzzo which also has a special status with respect to "Smart & Start", it would only have to repay 70 % of the obtained financing, or € 504.000,00. These conditions are clearly extremely favourable for company Y.

**Table 2** and **Table 3** below give a general overview of the different possible scenarios.

| Company Potential financing elements | |
|---|---|
| **A** | Standard<br>(Young/Small/Innovative Company) |
| **B** | No employed male over 35 Years old |
| **C** | Special Status Location |

*Table 2 - Elements influencing the financing*

| Company Status | Expected Costs [Amount] | Expected Financing concession [%] | Expected Financing concession [Amount] | Company Repayment [%] | Company Repayment [Amount] |
|---|---|---|---|---|---|
| **A** | 800.000,00 € | 80% | 640.000,00 € | 100% | 640.000,00 € |
| **A+B** | | 90% | 720.000,00 € | 100% | 720.000,00 € |
| **A+B+C** | | | | 70% | 504.000,00 € |

*Table 3 - Financings overview*

As per every grant request, the demand must be clear and concise. In this case, every section is provided in the fac-simile present on the dedicated website, this means there isn't much room to interpretation as to what needs to be provided. Making the task quite a bit easier for the company. This being said, a great deal of information needs to be provided, the main structure can be summarized as follows:

1. Personal data of the proposing entity

    a. Data of the company (size, name, date of foundation…).
    b. Data of the legal representative and of the company structure (Names, birthdates, academic degree…) .
    c. Legal headquarters and location.
2. Main points of the business plan.
3. Information on the project
    a. Main objectives.
    b. Notable members of the team.
4. Executive summary (profile and objectives of the startup).
5. Analysis of the target market.
6. Value proposition.
7. Client profile (their needs, the problems that need to be solved).
8. Value map (explanation of how the products or services offered create value for the clients).
9. Innovative value proposition.
10. Sales channels.
11. Customer relations.
12. Key resources.
13. Main activities and time estimates.
14. Key partners.
15. Cost structure.
16. Cost estimates.
17. Revenue model.
18. Sales objectives.

This is not an extensive list of all the sections of the demand. This being said it provides a clear idea of what is needed for it to be completed. We can easily see that the startup needs to be highly prepared to execute its project. Having acquired substantial knowledge on the degree of innovation of their project, on its market (along with its opportunities and its risk). The startup needs to be able to complete and honest competitive assessment of their project and their possible position in the target market. The project needs to be tangible and definable in clear deliverables and costs. No detail should be left unattained. It is for this reason that many startups require the help of consultancy companies in order to profit from their know-how and pre-acquired knowledge of markets and of these

procedures. It is in fact, a wise investment as the financial aid provided is quite considerable, furthermore the costs incurred are admissible for the grant.

# CHAPTER 2: INVESTMENT TAX CREDIT FOR 4.0 CAPITAL ASSETS

## (“*Credito d’Imposta Beni Strumentali 4.0*”)

## OVERVIEW OF THE LEGISLATION

Moving on from startups, we will now observe a different kind of tool available to companies. It concerns to investments made on tangible and intangible assets. It is the investment tax credit for 4.0 capital assets (in italian: “*Credito d’Imposta Beni Strumentali 4.0*”). To analyse this tool, we will gather information from all the past legislation on the topic which is presented in a document by Eutekne[12].

### Beneficiaries

First of all, it is worthy of our attention that, in contrast with the other grants presented in this work, this tax credit is aimed at all companies independently of their legal form, size or the market in which they operate. This can be explained by the fact that the Ministry of Economic Development seems to want to encourage a complete digital transformation of business models which need to keep up with current innovations and can benefit greatly from the implementation of new technologies in their business models. Thanks to this tool, companies have an incentive to invest in new goods defined as 4.0.

### Investments

We have introduced 4.0 capital assets. But what exactly are they? The first concept that will aid in understanding this concept are the so called $5 + 2/3$ characteristics. As a matter of fact, the capital assets must have the following 5 attributes:

1. Controlled through a Computer Numerical Control and/or a Programmable Logic Controller.
2. Interconnection with factory computer systems.
3. Automatized integration with the logistics system.
4. Simple and intuitive interface between the device and the user

5. Compliance with the most recent security, health, and hygiene in the workplace parameters.

Additionally, 2 out of the following 3 attributes must also be present:

a. Remote maintenance and/or remote diagnosis and/or remote control systems.
b. Constant monitoring of the work conditions and the process parameters through a set of sensors and adaptability to the process deviations.
c. Integration characteristics between physical machine and/or plant modeling and/or the simulation of its own behaviour in the completion of the process (cyber-physical system)

It seemed quite easy to define the capital assets through $5 + 2/3$ characteristics yet this definition, as we can see, is quite complex. It is for this reason that **Table 4** and **Table 5** have been included.

| **Tangible 4.0 capital assets** |
|---|
| **Capital assets controlled by computer-based systems or through adequate sensors and drive systems** |
| Machine tools for removal |
| Machine tools operating with lasers and other processes with an energy flux |
| Machine tools and plants for the realization of products through the transformation of materials and raw materials |
| Machine tools for the deformation of plastics and metals (along with other materials) |
| Machine tools for assembly, joining and welding |
| Machine tools for the de-production and repackaging to recover materials |
| Robots, collaborative robots, and multi-robot systems |
| Machine tools e systems for the modification of superficial characteristics of a product |
| 3D printing machines for industrial use |
| Tools and machines for charging and discharging, displacing, weighing and automated sorting of pieces |
| Automated warehouses interconnected to the factory management systems |

| |
|---|
| Devices, and intelligent instruments for the integration, sensorization and/or interconnection and automatic control of process used to revamp existing manufacturing systems |
| Filters and systems for the treatment and recovery of water, air, oil… integrated with the factory system and capable of warning the operators and/or stopping the machines |
| **Quality and sustainability assurance systems** |
| Measurement systems (with or without the use of coordinates) and the related tools to verify micro and macro geometric requirements of a product in order to ensure its quality and that allow to qualify the production processes in a documentable manner and connected to the factory's information system |
| Other in-process monitoring systems to ensure the quality of a product and that allow to qualify the production processes in a documentable manner and connected to the factory's information system |
| System to inspect and characterize materials capable of generating reports to be inserted in the company's information system |
| Smart devices to test metallic powder and constant monitoring systems that allow to qualify production processes through 3D printing technologies |
| Smart and connected system for the marking and traceability of production batches and/or single products |
| Monitoring and control systems for work conditions of the machines and the production systems connected to the factory's information system and/or cloud solutions |
| Tools for the automatic labelling, identification or marking, with a connection with the code of the product allowing maintenance technicians to monitor the consistency of their performance |
| Smart components, systems and solution for the management, efficient usage and monitoring of energetic and water consumption and for the reduction of emissions |
| **Devices for the interaction between man and machine and the improvement of work safety and ergonomics in the "4.0" domain** |
| Workbenches and workstations equipped with ergonomic solutions capable of automatically adapting to the physical characteristics of the operators (age, height…) |
| Systems for carrying/displacing heavy objects or objects exposed to high temperatures capable of assisting the operator's work in an "intelligent" manner |
| Wearable devices; communication tools between the operator and the production system; virtual reality devices |
| Human-Machine-Interfaces capable of assisting the operator in terms of security and operation efficiency |

*Table 4 - Tangible 4.0 capital assets*

| **Intangible 4.0 capital assets** |
|---|
| *Software*, systems, platforms and applications for the design, performance definition/qualification and production of products in unconventional or high-performance materials, capable of allowing the design, 3D modeling, simulation, experimentation, prototyping and simultaneous verification of the production process, the product and its characteristics and/or the digital archiving integrated into the company information system of information relating to the product life cycle |

| |
|---|
| *Software*, systems, platforms and applications for the design and re-design of production systems that take into account material and information flows.<br>*Software*, systems, platforms and decision support applications capable of interpreting data analysed from the field and displaying specific actions to operators online to improve product quality and production system efficiency |
| *Software*, systems, platforms and applications for the management and coordination of production with high characteristics of integration of service activities, such as factory logistics and maintenance |
| *Software*, systems, platforms and applications for monitoring and controlling the working conditions of machines and production systems interfaced with factory information systems and/or cloud solutions |
| *Software*, systems, platforms and Virtual Reality applications for the realistic study of components and operations, both in immersive or visual contexts |
| *Software*, systems, platforms and reverse modeling and engineering applications for the virtual reconstruction of real contexts |
| *Software*, systems, platforms and applications capable of communicating and sharing data and information both with each other and with the surrounding environment and actors thanks to a network of interconnected intelligent sensors |
| *Software*, systems, platform and applications for dispatching activities and routing products in production systems |
| *Software*, systems, platforms and applications for quality management at the production system level and related processes |
| *Software*, systems, platforms and applications for accessing a virtualized, shared and configurable set of resources to support production processes and production and/or supply chain management (*cloud computing*) |
| *Software*, systems, platforms and applications for industrial analytics dedicated to the treatment and processing of big data from IoT sensors applied in the industrial field (*Data Analytics & Visualization, Simulation and Forecasting*) |
| *Software*, systems, platforms and Artificial *intelligence & machine learning* applications that allow machines to display an intelligent ability and/or activity in specific fields to ensure the quality of the production process and reliable operation of the machinery and/or plant |
| *Software*, systems, platforms and applications for automated and intelligent production, characterized by high cognitive capacity, interaction and context adaptation, self-learning and reconfigurability |
| *Software*, systems, platforms and applications for use along the production lines of robots, collaborative robots and intelligent machines for the safety and health of workers, the quality of final products and predictive maintenance |
| *Software*, systems, platforms and applications for the management of augmented reality through *wearable devices* |
| *Software*, systems, platforms and applications for devices and new interfaces between man and machine that allow the acquisition, transmission and processing of information in vocal, visual and tactile forma |
| *Software*, systems, platforms and applications for the intelligence of plants that guarantee energy efficiency and decentralization mechanisms in which the production and/or storage of energy can also be delegated (at least partially) to the factory |
| *Software*, systems, platforms and applications for the protection of networks, data, programs, machines and plants from attacks, damage and unauthorized access (*cybersecurity*) |
| *Software*, systems, platforms and *virtual industrialization* applications which, by virtually simulating the new environment and uploading the information to the *cyber-physical* systems at the end of all the checks, allow you to avoid hours of testing and downtime along the real production lines |
| *Supply chain management* systems aimed at drop shipping in e-commerce |
| *Software and digital services* for immersive, interactive and participatory use, 3D reconstructions, reality increased |
| Software, platforms and applications for the management and coordination of logistics with high characteristics of integration of service activities (intra-factory communication, factory-field with telematic |

| |
|---|
| integration of on-field devices and mobile devices, telematic detection of performance and field device failures) |
| Fee for access, through cloud computing solutions |

*Table 5 – Intangible 4.0 capital assets*

After observing **Table 4** - Tangible 4.0 capital assets and **Table 5** – Intangible 4.0 capital assets we have obtained a clearer image of the kinds of investments admissible for the tax credit. On a side note, it is important to state that the admissibility is determined on a case-by-case basis. These tables provide an assistance towards determining whether a good is admissible, but they may not cover each case. It is for this reason that a common practice (as I have seen during my internship) is to look at past goods that have been approved for the tax credit; this is possible thanks to the extensive documentation available.

To confirm whether a good is admissible, the companies must produce a sworn expert's report issued by an engineer or an industrial expert (or a certification of conformity issued by an accredited certification body) to attest that the goods possess the characteristics we have listed before and are interconnected to the company's production management system. The aid can be utilized only after the interconnection.

**Granted aid**

| TYPE OF GOOD | FAVOURABLE RATE | | | | |
|---|---|---|---|---|---|
| | From 16.11.2020 to 31.12.2021 | From 01.01.2022 to 31.12.2022 | From 01.01.2023 to 31.12.2023 | From 01.01.2024 to 31.12.2024 | From 01.01.2025 to 31.12.2025 |
| TANGIBLE | • 30% for investments up to 2,5 Million €<br>• 30% for investments between 2,5 and 10 million €<br>• 10% for investments between 10 and 20 million € | • 40% for investments up to 2,5 Million €<br>• 20% for investments between 2,5 and 10 million €<br>• 10% for investments between 10 and 20 million € | • 20% for investments up to 2,5 Million €<br>• 10% for investments between 2,5 and 10 million €<br>• 5% for investments between 10 and 20 million €<br>• 5 % for investments included in the PNRR between 10 and 50 million € | | |
| INTANGIBLE | 20 % of admissible costs (max 1 million €) | 50 % of admissible costs (max 1 million €) | 20 % of admissible costs (max 1 million €) | 15 % of admissible costs (max 1 million €) | 10 % of admissible costs (max 1 million €) |

*Table 6 - Conceded aids*

As we can easily see from **Table 6** the volume of the conceded aids decreases as the years go by. This might be an attempt to accelerate the investment process as there would be more benefits in investing today rather than tomorrow.

**Table 6** includes the dates of the investment which, as we just mentioned, prove to be a significant factor in the final amount received by the company. Finally, to determine the date of the investment the general guideline states that it is the moment of delivery of the good (or its shipment).

## CASE STUDY

Let's take as an example Company Z which focuses its activity on the industrial production of materials for the apparel market. It invests in tangible goods which are admissible for the investment tax credit with a total cost of € 1 million and intangible goods admissible with a cost of € 500.000. It is thus very simple to calculate the amount it can receive. One must only look at the date of delivery (let's suppose April 2021) and obtain the result on this basis. Here, the tax credit received would be equal to 50% of the investment cost for tangible goods (in other words: € 500.000) and 20% of the investment cost for intangible goods (which is equal to € 100.000).

In fact, the trickiest part of the request for this grant is the necessity to prove the admissibility of the goods. It is for this reason that in the documentation representing the final request for the tax credit, almost all of it is devoted to descriptions of the goods and proofs of their purchase and delivery. The structure of this document is the following:

1. Recap of the costs sustained and the expected tax credit
2. Sworn expert's report
    a. Description of the company
    b. Technical description of the goods
    c. Report on the incurred expenses
    d. Determination of the categories of the goods (**Table 4)**
    e. Analysis of the compliance with the mandatory requirements
    f. Conclusions
3. Administrative documents
    a. Offer
    b. Purchase order
    c. Invoices
    d. Delivery confirmations
4. Technical documents

It is quite clear that the most essential aspect is the validity of the investments with respect to the 4.0 paradigm. For this reason, the investments should be made with care and consideration for this component.

## A NOTE ON RESEARCH AND DEVELOPMENT TAX CREDIT

While remaining on the topic of tax credit. It is of interest to briefly cite Research and Development Tax Credit. This measure aims at incentivizing spending on Research, Development and Technological innovation to sustain the competitiveness of companies.

It is true that Research and development are essential to economic growth. Researchers have observed that grants for research and development allow to "lower the cost of capital and the incremental expense of research"[13] which proves to also improve the general environment for entrepreneurship. This being said, the same paper also shows that investment tax credit impedes economic growth. Which could be expected as it focuses on investments generally not leading to future innovation. (Nevertheless, these negative effects come from a policy-making viewpoint and not a company's perception). The resulting stimulation of investment has also been observed in Italy[14]. What about the results for companies? As expected, companies only stand to gain from such a measure. It is a very effective way to stabilise their position in their reference markets. This ties with the following measure which will be analysed, and which also concerns Research and Development.

# PART 2: COMPETITIVE GROWTH OF THE COMPANY - RESEARCH AND DEVELOPMENT ACTIVITIES

## CHAPTER 3: INNOVATION AGREEMENTS

## ("*Accordi di innovazione*")

In this second part, the attention will be shifted towards a different kind of company. Since we are following the hypothetical development and growth of an enterprise, it is of interest to observe public grants which are aimed towards already established companies. The selected grants focus on research and development. These activities, when concerning big projects, are usually carried out by companies trying to gain a further competitive advantage or to expand their businesses.

### OVERVIEW OF THE LEGISLATION

The first grant we will analyse is defined as "*Accordi di innovazione*" which will be translated as Innovation Agreements. To illustrate this aid provided by the Ministry of Economic Development we will observe two ministerial decrees, the first from 2017[15] and the second from 2021[16] (which is an extension of the first one with some amendments).

#### Beneficiaries and eligible projects

As a first step, we must clarify what represents a research and development project. As per the decrees, these are defined as operations of significant technological impact, capable to influence the competitive capabilities of businesses and with the further goal of safeguarding employment levels and heightening the presence of foreign businesses on the national territory. It is clear that, since these grants are provided by the government, a territorial aspect comes into play. To further this point, it needs to be noted that some grants are distributed on a regional basis (it is for this reason that some big companies make investments to delocalize their factories or research centers to different regions in order to obtain some funding).

This being said, these grants are destined to a variety of companies which still need to fit a certain profile. The beneficiaries can be:

1. Companies conducting industrial activities aimed at producing goods or services; or land, water or air transportation (art. 2915 of the Italian civil code, numbers 1 and 3[17]) and artisan enterprises.
2. Agro-industrial companies, mainly conducting industrial activities.
3. Companies completing auxiliary activities to companies conducting the following kinds of activities: industrial activities aimed at producing goods or services; intermediary activity in the circulation of goods.
4. Research centers.

Nevertheless, the beneficiaries may jointly present projects (or with research organizations) up to a maximum of five co-proponents. This may be done by creating what is defined as a *network contract* (or other contractual forms of collaboration). Said collaboration must be stable and coherent with respect to the execution of the activities which must have as an objective, the completion of the proposed project.

The network contract must include elements indicating the division of costs, it must define aspects regarding the property, usage, and distribution of the results of the project. Furthermore, one of the co-proponents must be selected as a leader which will represent the group when communicating with the Ministry.

As stated earlier, the companies need to fit a certain profile, in fact the requesting subjects need to fulfil the following criteria:

1. Be duly incorporated as a company and registered in the “Registro delle Imprese” [Company Register; to serve as an example, in the UK this would refer to the “Company House”].
2. Be in full and free exercise of its rights, not being in voluntary liquidation, and not being subject to insolvency proceedings.
3. Be subject to ordinary accounting.
4. Not being among the companies that have received and subsequently not reimbursed or deposited in a blocked account the aid identified as illegal or incompatible by the European Commission.
5. Being in compliance with the repayment of amounts due in relation to the revocation of incentives granted by the Ministry.

6. Not be in conditions that would classify them as a company in difficulty as defined in Article 2, point 18 of the GBER Regulation[18]. (Which have been listed in Chapter 1)

On a related note, as per article 9 of both decrees, when presenting a project, the proposing subject must also be in possession of two financial statements.
It should also be understood that, some subjects are excluded a priori such as those having legal representatives or administrators being condemned with a definitive ruling for criminal activities.
It is of interest to understand which projects are admissible for the grant. We have provided a brief definition of a research and development project, but we will now dive into some specifics. Eligible projects to the incentives must include the realization of *industrial research* and *experimental development* activities. These activities must be tightly linked to the realization of the goal of the project presented. Some examples would be the creation of new products, processes or services, or a significant improvement of existing ones (through the development of new technologies). Furthermore, projects must:

1. Be realized in one or more local establishments on the Italian national territory.
2. Amount to eligible expenses and costs higher or equal to €5.000.000 (and not higher than €40.000.000 prior to the 2021 amendment)
3. Start after the project's proposal and not more than 3 months after the concession decree (which will be explained in a later paragraph).
4. Have a duration of at least 18 months and at most 36 months. (although the Ministry might allow for an extension of a maximum of 6 months if the motivations of the request are reasonable (was 12 months prior to 2021)).
5. In the case of a joint project, each participant must sustain at least 10 per cent of the total eligible costs (if it is a large enterprise), and 5 per cent otherwise.

**Eligible expenses**

We have mentioned, in point 2 of the preceding list, the concept of "eligible expenses" these are defined in decree from 2016[19] and can be synthesized as follows:

1. Expenses for the personnel employed by the proposing entity or collaborators employed with varying types of contracts (such as, for example, project-based contracts). As long as these individuals are employed in activities of research and development related to the project.

2. Newly manufactured tools and equipment, in the measure and period in the extent and for the period in which they are used for the research and development project.
3. The consultancy services and other services used for the research and development project.
4. General expenses calculated on a lump sum basis at a rate of 25 percent of the eligible direct costs of the project
5. The materials used for the execution of the project.

Again, to determine the expenses of the personnel employed, companies must use standard hourly rates which are summarized in **Table 1 - Standard hourly rates for personnel costs of research and development projects**.

## The proposition of the project

With these preliminary requirements in mind, let's observe the steps that need to be taken in order to present a project and to follow it through.

The proposing entities should present a project proposal (or plan) in order for the technological innovation of the project to be evaluated (along with the strategic relevance of the economic system).

The proposition should include the following elements:

1. The denomination and size of each proposing entity, along with a description of the company profile, with particular reference to the technical-organizational structure and the presence in national and international domains.
2. An up-to-date industrial strategic plan
3. A description of each project, along with its objectives, the start and end dates, the production units involved and the expected costs.
4. The type and amount of funding requested for the completion of each project.

## Technical valuation and controls

The technical valuation of the project is completed taking into account the following factors:

1. Relevance of the project with regards to technological development and the degree of innovation of the expected results.

2. Industrial interest of the project in terms of its potential to favour the innovation of specific or economic sectors.
3. Direct and indirect effects on the occupational levels of the production sector and/or the relevant territory
4. The national significance of the project in terms of the multi-regional impacts of the initiative
5. The capability of attracting foreign investments (also through the consolidation and expansion of foreign companies already present in the national territory)
6. The capability to reinforce the presence of Italian products in market segments characterized by a strong international competition.
7. Admissibility of the expected costs
8. Any technical aspects of the propositions that might be subject to improvement and other elements that should be specified in a detailed way in the Research and Development Project.

Once the projects have been approved they have to be completed. During their realisation the ministry can perform controls at their discretion, and it is the company's duty to allow these controls to happen as easily as possible. Furthermore, there are two mandatory controls performed by the ministry:

- An intermediate technical check (at the half point of expected completion of the project), done regardless of the submission of work progress reports. It evaluates the status of advancement of the project. To facilitate this inspection, the beneficiary should transmit a report on the implementation status of the project.
- A final check to verify whether the project has been completed (within 30 days from the submission of the final work progress report). For this inspection to be performed, the beneficiary must give access to the whole of the documentation regarding personnel (timesheets, payrolls…) and the accounting evidence of all incurred expenses. (Furthermore, the beneficiary must make available all other documents deemed necessary for the completion of the proper examinations).

**Granted aid**

All of this may seem like a lot of work, but it is definitely worth it. First of all, the magnitude of these agreements can be exemplified by the fact that a total of €206.600.000 has been made available by the Italian ministry (as per the 2017 decree). And in 2021 a further billion euros has been issued. (This significant increase is also a consequence of the Covid-19 pandemic which led to the

creation of the “Piano Nazionale di Ripresa e Resilienza” [National Recovery and Resilience Plan] a set of missions to rebuild the national economy after being profoundly hit by the worldwide infection). Second, the amount of conceded aid is quite substantial it covers:

- 50% of the total costs for industrial research projects.
- 25% of the total costs for experimental development projects.

These are clearly non-negligible amounts that can provide a significant help to the companies obtaining them.

Furthermore, subjects may also receive a facilitated financing (which can only be granted to subjects belonging to category 1.[20] and to the agricultural enterprises presenting a joint project) which cannot exceed a total of 20% of the total eligible costs of the project. Its preferential interest rate is equal to twenty percent of the reference interest rate, in force at the time of granting the incentives, based on that established by the European Commission.

## CASE STUDY

The company:

Company X is operating in the sector of software engineering and information & Communications technology. Is currently performing the following activities:

- Design, development and sales of software and information systems;
- Professional consulting related to processes, software and information systems;
- Research and development in the field of technologies enabling digital transformation (ICT domain);

Company X is located in different cities in Italy (one for each macro geographical area: North, Center and South) and counts around 300 employees and 200 external partners.

It is considered to be a large enterprise as it counts more than 250 employees. Furthermore, its revenues are higher than 50 million euros.

In recent years, the company has sustained costs for research and development approximately equal to 10% of their revenue.

Their main topics for research and development are:

- Artificial intelligence and data science
- Big data & Analytics
- Blockchain & DLT
- Key digital technologies
- Cloud computing

Furthermore, company X collaborates with many universities and research institution, creating a network which allows them to expand their knowledge and verify their results.

From this information (revenue, sectors of activity, etc.) we can gather that the company is already stable and has solidified its position in its operating markets.

Taking into consideration its focus on research and development and its strong focus on digital innovation, which is currently at a high. It would be reasonable to consider the possibility to present one of its projects for grants related to research and development. In this case, for innovation agreements.

The project:

Let's envision that company X is presenting a project P. Its expected duration is of 36 months (which is the maximum length allowed). Project P is an artificial intelligence project which uses analytics technologies (among others) to automate the strategic decisions of a company. Its main goals would be to mitigate the risks taken by companies, to improve the efficiency of current processes and to give a support for strategic decisions.

This project could be considered admissible on the basis that it could provide substantial benefits to the companies employing it. Furthermore, the research is performed to obtain a result which was not previously possible, hence the innovation aspect is fulfilled.

Now let's suppose that the company assigns 40 of its employees to the project, whom would be working on this project only. 5 of these belonging to the "High" category (hourly rate of € 75,00), 25 to "Medium" (hourly rate of € 43,00) and the remaining 10 to "Low" (hourly rate of € 27,00). (and to further simplify, let's suppose the same exact team works on both the industrial research and the experimental development which both last 18 months each). Now, considering the standard yearly rate defined by the *Centro Nazionale di Ricerca* [National Research Center] as 1506 hours (for employees working for the company for at least three years, which we assume is the case).

We obtain a total cost of € 7.770.960,00 for personnel.

Let's simplify all further costs (tools, materials, consultancies) to € 10.000.000,00 (split equally between research and development activities).

Company X could thus aspire to obtain (in the best case scenario) 25 % of € 8.885.480,00 (= € 2.221.370,00) for its industrial research and 50 % of € 8.885.480,00 (= € 4.442.740,00) for its experimental development. Amounting to a total of € 6.664.110,00 (which represents almost 40 % of its total expenses).

**Table 7** and **Table 8** below provide a recapitulation of this simulation.

| Personnel Cost | | | | |
|---|---|---|---|---|
| **Employee Category** | **High** | **Medium** | **Low** | **TOTAL** |
| **Hourly Rate [€]** | 75 | 43 | 27 | |
| **N. of Employees** | 5 | 25 | 10 | **40** |
| **Years dedicated to project** | 3 | 3 | 3 | **3** |
| **Years of Activity in Industrial Research** | 1,5 | 1,5 | 1,5 | **1,5** |
| **Years of Activity in Experimental Development** | 1,5 | 1,5 | 1,5 | **1,5** |
| **N.R.C. Standard Yearly rate [Hours/ Year]** | 1.506 | 1.506 | 1.506 | **1.506** |
| **Hours of Activity** | **22.590** | **112.950** | **45.180** | **180.720** |
| **Cost [€]** | 1.694.250,00 | 4.856.850,00 | 1.219.860,00 | **7.770.960,00** |
| **Cost Industrial Research [€]** | 847.125,00 | 2.428.425,00 | 609.930,00 | **3.885.480,00** |
| **Cost Experimental Development [€]** | 847.125,00 | 2.428.425,00 | 609.930,00 | **3.885.480,00** |

*Table 7 - Recap of personnel costs*

| Activity | Cost [€] | Cost Industrial Research [€] | Industrial Research Potential Financing (25% of Cost) [€] | Cost Experimental Development [€] | Experimental Development Potential Financing (50% of Cost) [€] | Total Potential Financing [€] |
|---|---|---|---|---|---|---|
| **Personnel** | **7.770.960,00** | **3.885.480,00** | **971.370,00** | **3.885.480,00** | **1.942.740,00** | **2.914.110,00** |
| **Other (Tools/ Material/ Consultancies)** | **10.000.000,00** | **5.000.000,00** | **1.250.000,00** | **5.000.000,00** | **2.500.000,00** | **3.750.000,00** |
| **Total Project (Personnel+ Other)** | **17.770.960,00** | **8.885.480,00** | **2.221.370,00** | **8.885.480,00** | **4.442.740,00** | **6.664.110,00** |

*Table 8 - Total financing*

This would prove to be a game changer for the company as the sustained costs would significantly decrease.

Naturally, the example has almost been simplified to its limits. This being said, the process is not as easy as this description would indicate.

In fact, when submitting the application for the project, the request must be of the utmost clarity and precision, every detail is fundamental. (It is in fact an extensive document comprising detail information and strategic plans for the project) This is explainable by the fact that the final submission reflects on the image of the company: its professionalism and trustworthiness. It is for this reason that most companies rely on consulting companies to do most of the work for them. The expertise they have allows them to present a final product of higher quality and in shorter time periods.

As an example the general structure of a development plan to apply for a innovation agreement grant is the following:

**Part 1: Description of the company**

1. Organizational structure of the company
2. Industry

**Part 2: Description of the project**

1. Name and duration of the project
2. Technological sector
3. Synthesis of the project
4. Purpose of the project
5. Final objective of the project
6. Project managers
7. Subdivision of the achievement objectives of the project (which may represent its different phases):
   This includes a list of activities to be performed to reach each objective and an estimate of the time to complete them.
8. The expected intermediary results of the project
9. The expected final results of the project
10. A project timeline
11. Further information on costs
12. Further elements supporting the demand for the grant

**Part 3: Evaluation criteria**

1. Characteristics of the proposing entity (such as their organisational capabilities and the quality of their collaboration)
2. Quality of the project proposal (including its feasibility, the expected results and the degree of innovation)
3. Impact of the project (which also comprises its industrial relevance and the potential for further development)
4. Financial resources for the completion of the project

As one can clearly see from this overall structure, innovation agreements are complicated processes that require a high degree of certainty in the company's ability to perform the project. A project which must prove to be of a high degree of innovation and improvement of the general well-being of the state (or the region) and to the current existing technologies.

# CONCLUSIONS

This thesis analysed three different public grants offered by the Italian state. Said analysis was done through the lens of the state's guidelines and rules concerning the grants. Taking this approach allowed us to deeply understand the goals of the grants, their necessary requirements to which firms must abide and extent to which these aids can prove to be useful for the companies obtaining them. The first aspect that stands out is the absolute precision required to apply for these subsidies. All details must be curated to the utmost perfection. It is for this reason that many companies turn to consultancy firms to take care of this part of their business. Lacking the expertise, the know-how and the precision will most likely result in failures to obtain the grants. And, as the process is quite accurate and time-intensive, the resources employed to apply will be lost.
This being said, by providing some very simple case studies, we were able to observe how impactful these grants can be for a company. Not only can a substantial amount of funds be received but also knowledge and help in the development of the business. As we have seen for the "Smart & Start" grant.
Furthermore, we have observed that public grants can prove to be a sustain for companies in all states of their lifetime. From startups to competitively established companies, one can be sure to find a public grant which can apply to at least part of their business activities. In fact, it happens that companies once applying for grants devoted to smaller companies in difficulty will later on apply for bigger financings which pertain to stronger companies.
We have also observed how these tools prove to be beneficial to the overall welfare of the state (in this case Italy, but it wise to think it would be the same in many other countries). In fact, many of them are part of a plan called PNRR which has been created to uplift the Italian economy following the Covid-19 pandemic.
Although these manoeuvres may not provide universal benefits (as we have mentioned with regards to the investment tax credit), they can certainly be defined as great (and maybe underrated) tools for most companies.

# NOTES

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[19] Ministero dello Sviluppo Economico (2016, June 1) Bando Horizon 2020.
[20] Companies conducting industrial activities aimed at producing goods or services or land, water or air transportation (art. 2915 of the Italian civil code, numbers 1 and 3 ) and artisan enterprises.

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