Politecnico di Torino

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Master of science degree in Engineering and Management

A.a. 2024/2025

March 2025

The Sicilian Economy:

An econometric analysis of Sicilian enterprises

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Abstract

This thesis explores the historical, economic, and business dynamics of Sicily, with the goal of providing a comprehensive understanding of the island's unique development path. Renowned for its rich cultural heritage and strategic importance, Sicily has long been a region of contrasts. Despite its historical significance, the island has struggled with economic and social disparities, particularly in comparison to mainland Italy. The central focus of this research is to uncover the underlying causes of these persistent challenges and offer insights into future opportunities for growth and development.

The study begins with a brief overview of Sicily's history, tracing its origins from the ancient Siculi and Sicani peoples to its annexation to the Kingdom of Italy in 1861. This historical context is essential for understanding the complex factors that have shaped the island's evolution. From its geography to its administration, Sicily's unique position has influenced its development in profound ways, yet the island has also been left behind during crucial periods of modernization and growth.

One of the key objectives of this research is to identify when and why Sicily began to fall behind the rest of Italy and Europe. By examining the policies implemented after its annexation, the study seeks to uncover why many of these strategies failed to bring about the desired economic and social progress. This historical analysis lays the groundwork for understanding the long-standing issues that continue to affect the island today.

Shifting from the past to the present, the thesis analyzes Sicily's economic situation over the last thirty years, from 1995 to 2024. By examining key economic indicators such as GDP, productive sectors, employment rates, and foreign trade, the research aims to assess whether there has been a real economic recovery on the island. Special attention is given to the tourism sector, one of the most vital industries in Sicily, to evaluate how it has contributed to or hindered broader economic growth. This section also compares Sicily’s performance with that of the rest of Italy, providing a clearer picture of the island's economic evolution in national terms over recent decades.

A significant part of the thesis is dedicated to an in-depth analysis of 58,000 Sicilian companies over a ten-year period (2013-2022). By examining various financial indicators—such as

revenue, EBITDA, net profit, bank debt, and ROE—the research seeks to identify patterns of success among the island's enterprises. The geographical distribution and sectoral specialization of these companies are analyzed to determine if certain regions or sectors have been more favorable to growth. Furthermore, the study aims to understand the factors behind the success of the highest-performing companies and how these factors could potentially be replicated in underdeveloped sectors or regions of Sicily. This analysis is particularly crucial for providing practical solutions to stimulate future economic development across the island.

The conclusion of this thesis will bring together the historical, economic, and business analyses, offering a holistic view of Sicily's development challenges and opportunities. By identifying the strengths on which the island can capitalize, as well as addressing its persistent obstacles, this research aims to provide actionable insights for promoting sustainable growth. Ultimately, the goal of this study is not only to gain a deeper understanding of Sicily’s past and present but also to contribute to shaping a future where the island can realize its full potential as a competitive and prosperous region in Italy and Europe.

Introduction

Sicily is the largest and one of the most densely populated islands in the Mediterranean Sea. It lies in the South of the Italian Peninsula, and it is one of the five autonomous regions of this country. Situated roughly 160 km northeast of Tunisia, it is separated from the mainland by the Strait of Messina - approximately 3.1 kilometers wide at its narrowest point.

Sicily is partitioned into nine provinces and its capital city is Palermo, a vital cultural and historical center. Due to its strategic position, Sicily has always been a contested territory, undergoing several successive dominations over the centuries, including the Greeks, Romans, Arabs, Normans and others.

Only after Giuseppe Garibaldi's Expedition of the Thousand, Sicily formally became part of Italy in 1861. Sicily gained special status as an autonomous administrative division in 1946, just 18 days prior the Italian institutional referendum that saw Italy transitioning from a monarchy to a republic.

Figure 1 – Regional flag of Sicily

History of Sicily

At the center of the Mediterranean mercantile routes that united the countries of three continents, Europe, Africa and Asia, Sicily was already a land of conquest in historical times due to its geographical position. Inhabited in prehistoric times by the Sicani, it was invaded around the year 1000 B.C. by the Sicels and then by the Elymians, both peoples of the Indo-European linguistic group, who managed to settle the former in its eastern part and the latter in the western part, forcing the Sicans to retreat to the central part of the island, from whose coastal area they were removed by the Carthaginians. The island's fertile landscapes and abundant natural resources, such as olives and vines, captured the interest of the Ancient Greeks, who

established their first colony in Naxos around 750 BC. The Greeks colonized not only the island but also much of Southern Italy, well aware of the profitable trading opportunities these lands could offer, naming the region *Magna Graecia*. The Greeks revived their luminous civilization on the island, giving life to the flowering of a splendid culture, of which we can still admire the superb architectural remains in the Valley of the Temples of Agrigento , in Segesta and Selinunte, and remember the great scientist Archimedes of Syracuse, who was an immortal expression of it, and the philosopher Empedocles of Agrigento.

Figure 2 – Remnants of Greeks rule: Valley of Temples, Agrigento

During this era, Sicily became a battleground between Greek colonies and Carthaginian power. The Greco-Punic wars inflicted heavy losses on the Carthaginians, however, it was only with the arrival of the Romans that the Carthaginians were finally driven out. Around the middle of the 3rd century B.C. the island, conquered by the Romans, was a province of Rome until the entire imperial period. This marked the beginning of more than 500 years of Roman dominance, which could have driven Sicily to flourish into a prosperous land, known as the Granary of Rome. Regrettably, this ambitious vision was far from reality: corruption and mismanagement plagued the Roman administration, contributing to the eventual decline of the empire. During the 5th century AD, Sicily was occupied by the Vandals, who then sold it to Odoacer, ruler of the Heruli, who in 476 had deposed Romulus Augustulus, the last Roman emperor, occupied Italy, bringing about the end of the Roman Empire. Sicily was then conquered by the Ostrogoths (Eastern Goths) of Theodoric, who were replaced around the middle of the 6th century by the Byzantines, who starting from 827 were ousted by the Arab Muslims. It was not until then that Sicily truly began to thrive: advanced irrigation systems were introduced to make the most of the prosperous land that Sicily had to offer; the Arab Muslims built roads, bridges, irrigation

canals, and they made the land flourish by introducing sugar cane and orange among the crops, managing at the same time to guarantee with incredible tolerance the peaceful coexistence between Muslims, Christians, Jews and Byzantines. Meanwhile Arabian art, literature and numerical system became widespread throughout the island. After about two hundred years The Normans conquered Sicily in the 11th century; They continued Arab Muslins' wise policy ushering in an era of cultural diversity and harmonious coexistence of several cultures. This period, often referred to as Golden Age, was characterized by a unique architectural style known as 'Sicilian Romanesque', which blended features of Arabian and Byzantine architecture. The Norman dominion also became Swabian when the last Norman heir, Constance of Hauteville, married Henry of Hohenstaufen, son of Emperor Frederick I Barbarossa, who then became King of Sicily and, upon the death of his father, also Emperor of Germany with name of Henry VI. At the end of its brief existence, the Kingdom of Sicily and the imperial crown passed to its only son, still at a young age, Federico, who, having reached adulthood and became Federico II of Swabia, made Sicily one of the most prosperous, advanced and powerful states of Europe extending its influence to Abruzzo and North Africa, welcoming into its cosmopolitan court the best minds of the time and giving life to the Sicilian poetic school which began to use the "vulgar". Federico's heirs were killed due to the intrigues of Pope Clement IV and following this flourishing era, Sicily fell under Angevins control, who governed tyrannically, relocating the kingdom's capital from Sicily to Naples. This laid down roots for the Sicilian Vespers rebellion, marking the end of the Angevins power and resulting in the creation of an independent Kingdom of Sicily. The Sicilian Vespers revolt represent a milestone in the history of Sicily, celebrated in both literature and music, including Giuseppe Verdi's famous opera, "Les Vêpres Siciliennes." The Angevins were followed by the Aragonese with whom the Spanish dominion of the island began and also its decline, involved for centuries in dynastic disputes and wars of succession and plundered by its masters. The Spanish Burbons rule followed in the 16th century, further enriching Sicily's cultural fabric, and, despite the strict administration, Sicily remained a prosperous region. It was under the Spanish Bourbons dynasty that Sicily was united with Naples to form the Kingdom of the Two Sicilies. Only in the early 19th century did a period of political continuity begin with the Bourbon government and a revival, albeit modest, of its economy, based however on the shameful exploitation of human labour.

Figure 3 – Arab-Norman monuments: the cathedral of Palermo

Therefore In 1860, Giuseppe Garibaldi, an Italian revolutionary welcomed with enthusiasm by the peasants, led his famous Expedition of the Thousand, conquering the Kingdom of the Two Sicilies as part of the broader movement for Italian unification, eventually establishing the Kingdom of Italy. However, tensions remained, and Palermo soon revolted against Italian rules. Under the command of Raffaele Cadorna, the Italian soldiers suppressed the civilian insurgents, restoring the control.

Between 1871 and 1914, this led a significant number of Sicilians to emigrate to the United States. Even later, a strong separatist movement campaigned for Sicily to be admitted as a US state, potentially becoming the 49th state. In response to these sentiments, the Italian government granted Sicily with a special status in 1946, and from that moment on, Sicily is declared an autonomous region of Italy.

Geography

Sicily island is surrounded by three seas: the Tyrrhenian Sea to the north, the Mediterranean Sea to the south, and the Ionian Sea to the east. It is separated from Italy by the Strait of Messina and it situated only 140km away from the African shore. Sicily is colloquially referred to as 'the football at the toe of Italy's boot' but it also has been known for much longer as the 'three-caped island' or the 'Trinacria', a name that reflects its triangular shape.

Covering an area of 25,708 km^2, encompassing the dependent islands of Ustica, Pantelleria, the the Aeolian, Egadi, and Pelagie archipelagos, Sicily stands as the largest island in the Mediterranean, and one of the most diverse in terms of geography, flora and fauna.

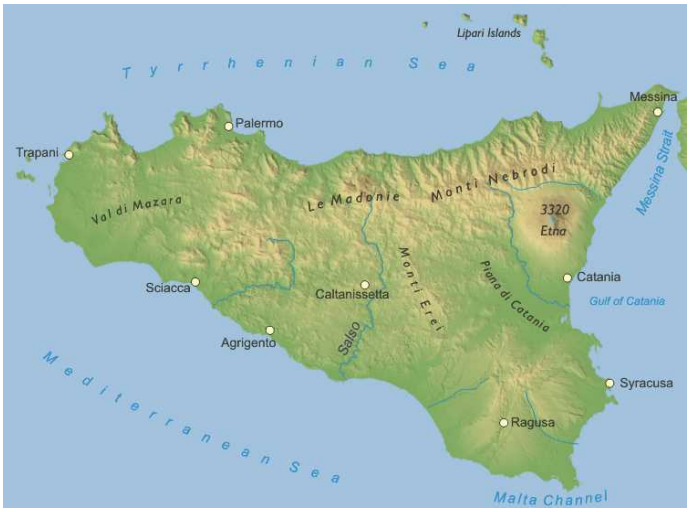

Figure 4 – Topographic map of Sicily

Sicily's terrain is predominantly hilly and it is intensively cultivated wherever possible. Along the northern coast, the mountain ranges of Madonie, Nebrodi and Peloritani are an extension of the Apennines on the mainland. The majority of the northern cost is well known for their citrus groves, which, especially during the 19th century, turned Palermo in one of the most valuable pieces of real estate in the world.

On the opposite side of the island, the Mount Etna dominates the eastern coast. It is one of the tallest and largest active volcanoes in Europe and its almost constant state of activity has turned the surrounding area in one of the most agriculturally productive on the island, making the volcanic soil incredibly rich. Catania, the main city in this region, is known for its vibrant culture and nightlife, earning it the nickname "Milan of the South."

In the southeast, the lower Hyblaean Mountains reach elevations of around 1,000 meters. The southern coast is characterized by a long, nearly unbroken, stretch of coastal plain framed by the mountains and hills at its back. This area is famous for its rich archaeological heritage, with world-class sites at Agrigento, Segesta, Selinunte and Syracuse itself, to name a few, drawing visitors from around the globe. Here, the agriculture is still flourishing, famous for the quality of its wines, olives, fruits and, in the south-east, the flavorsome tomatoes of Pachino. The Enna and Caltanissetta districts were once renowned for the sulfur production throughout the 19th century, though the industry has declined since the 1950s.

The western coast offers a calm and tranquil environment with wide-open landscapes and sandy beaches. This region is also celebrated for its salt pans, notably those in Trapani and Marsala, and additionally, for its numerous thermal springs, as a result of volcanic activity.

Sicily generally enjoys a typical Mediterranean climate with mild, wet winters and hot, dry summers, contributing to the island's agricultural abundance and varied natural beauty.

Current Administration and Governance

Sicily is partitioned into nine provinces, each with a capital city sharing the same name: Catania, Messina, Enna, Siracusa, Ragusa, Palermo, Trapani, Agrigento and Caltanissetta.

Along with Valle D'Aosta, Friuli Venezia Giulia, Trentino-Alto Adige, and Sardinia, Sicily is one of five Italian regions granted special autonomy. This autonomy was established by the Sicilian Special Statute, decreed by King Umberto II on May 15, 1946, even before the birth of the Italian Republic, conventionally on June 2nd of the same year.

Figure 5 – Sicilian provinces

The Sicilian Special Status was then fully incorporated into The Constitution of the Italian Republic with constitutional law no. 2 of 1948. The article grants the island with exclusive jurisdiction over a range of matters, including cultural heritage, agriculture, fishing, local governance, environment, tourism, and local policing, meaning national laws do not apply to these areas in the region.

The Sicilian Regional Assembly (ARS) serves as the central governing body of the autonomous government system. Its members are bestowed with the honorific title of Deputies, and they hold significant legislative authority, encompassing both exclusive and implementative powers. Regarding the form of government, it is worth noticing that until 1999, the Sicilian Region operated under a parliamentary-assembly system, where the President and members of the Council were elected by the ARS. However, in 2001, Sicily transitioned to a semi-presidential

system, where the President of the region is elected through universal direct suffrage at the same time as the legislative assembly. According to Article 2 of the Sicilian Special status, alongside the ARS and the President, the Regional Executive Board also holds executive power. For what concerns fiscal policy, all taxes collected in Sicily should remain within the region. Moreover, as stipulated in Article 38 of the Sicilian Special Statute, each year the Italian State is required to provide a determined amount of public funds from other regions to support Sicily's development. These funds are to be used for public works and economic initiatives to help balance Sicily's lower income levels compared to the national average, as part of the national solidarity efforts.

Sicily's economy from 1861 until the eve of 21st century

Sicily in the pre-unification era

On May 11th 1860, Garibaldi's Thousand, who had landed in Marsala on the western coast of the island to drive out the Bourbons, were enthusiastically welcomed by the peasants, who saw an opportunity to free themselves from the centuries-long exploitation they have been enduring under the Bourbon misrule and the landowners, which condemned them to a life of hardship and perpetual poverty. Some of them joined Garibaldi's forces, helping to defeat the Bourbon army at the Battle of Calatafimi four days later, and contributing to the liberation of Palermo by the end of the month. Garibaldi and his troops then managed to free the entire island and eventually the whole of Southern Italy from foreign domination, paving the way for the annexation of these territories into the Kingdom of Savoy, culminating in the long-sought unification of Italy with the proclamation of the Kingdom of Italy on March 17, 1861.

The economic, cultural, and social divide between the North and the South immediately became apparent. This had already been realized in Sicily, after the landing of the Thousand, by the provisional civil government led by Francesco Crispi, who attempted to implement a social reform, including tax relief and the distribution of public land to the peasants who had supported Garibaldi. However, other peasants, who demanded land expropriated from the lords, initiated violent uprisings that Garibaldi was forced to suppress harshly because he could not afford to lose the support of the bourgeoisie, which was essential to the success of his campaign.

It is clear that the peasants' condition was on the brink of survival. Although feudalism had been officially abolished in Sicily in 1838, the peasants continued to work like slaves for the landowners, and the agricultural contracts between them and the lords were still archaic and feudal, based on bartering and forms of personal dependency. Often, the peasants had little to exchange, and their production was only for subsistence; they survived mainly on bread and a few legumes, as the production of more nutritious and desirable foods was reserved for trade. Consequently, they suffered from malnutrition and diseases related to poor hygiene, often living in small, unhealthy homes, sometimes in huts or even caves, alongside their animals. There were high birth rates as well as high mortality rates, especially infant mortality, and life expectancy at birth was only 30 years.

The island's socioeconomic context at the time of unification was characteristically pre-industrial, with agriculture dominating both employment and income. Manufacturing still retained all the characteristics of craftsmanship, and the use of machines powered by engines

was just beginning to spread. As the following table shows, in agriculture, grazing and cereal cultivation occupied 82% of the island's territory, but wine production and commercialization were starting to grow. The wine industry, including companies like Woodhouse, Ingham, and Florio, was able to compete in international markets, exporting wine to many American cities, as well as Australia, Brazil, and even Sumatra, establishing a sort of monopoly on the trade of Marsala wine, which experienced rapid development.

WINES INDUSTRY, ITALY 1858				
Region	Production Quantity (Hectoliters)	Production Value (Francs)	Export Quantity (Hectoliters)	Export Value (Francs)
Sardinian States (Mainland)	3.800.412	76.089.244	143.814	3.000.000
Sardinian States (Sardinia)	508.000	10.000.000	142.767	2.855.840
Kingdom of the Two Sicilies (Naples)	5.200.000	100.000.000	3.040	558.144
Kingdom of the Two Sicilies (Sicily)	1.950.000	40.000.000	98.350	3.934.000
Roman States	9.286.922	80.000.000	5.200	81.445
Tuscany	1.500.000	18.000.000	n.d.	n.d.
Lombardy	1.397.062	32.312.060	n.d.	n.d.
Venice	2.106.493	36.150.000	92.307	1.300.000
Modena	1.001.143	9.000.000	151.984	1.367.856
Parma	600.000	4.500.000	15.000	135.000
Trieste, Istria, Gorizia	402.545	8.000.000	n.d.	n.d.
Italian Tyrol	213.200	4.000.000	n.d.	n.d.
Canton of Ticino	105.000	3.159.000	n.d.	n.d.
Corsica	169.433	4.235.825	n.d.	n.d.

Table 1.1 – The primacy of wine in the Kingdom of the two Sicilies

Source: https://angeloforgione.com/2021/10/21/primato_vini_duesicilie/

Sicily's geography, with its mountainous and hilly terrain, made large-scale wheat and cereal cultivation more feasible, especially on the vast estates known as latifundia. However, this type of agriculture was inefficient, relying on single, poor harvests and irregular employment. Alongside this form of agriculture was an equally backward and poor handicraft sector. However, there were irrigated and fertile areas specialized in the production of vegetables and fruits, which supported a modest domestic industry, since the high tariffs imposed by the Bourbon regime and the landowners' reluctance to invest had hindered the development of modern agriculture aimed at export. Yet, certain products, like citrus fruits, wine, olive oil, and sumac, were profitable and exported. Citrus fruits, in particular lemon, had already become the most important agricultural product in the coastal regions of Sicily and Calabria by the early 19th century, and the citrus groves were among the most profitable in Europe. Their production

was mainly destined for export, as the lack of rail infrastructure and roads limited the commercialization of many products, especially in the island's interior. It is worth noting that 50.8% of Sicilian municipalities lacked carriage roads, and coastal towns relied on cabotage navigation to overcome isolation, while inland towns were accessible only with great difficulty and slowness.

It is not surprising that the lack of connection routes, especially between the coast and the interior, led to the absence of a regional market and favored a more lucrative international market. The unique success of citrus fruits, particularly lemons, in fact, was due to their ability to be preserved as juice or fresh fruit, making them suitable for distant markets, even transoceanic ones, long before the advent of steam power and refrigeration. In the early decades of the 19th century, the United States became the main market for Sicilian citrus production, followed by England, Russia, and the Danubian countries. Sicilian lemons held a virtual monopoly throughout the century, constituting two-thirds of Sicily's citrus production until 1930. While oranges were less suited for long-distance travel, they were still popular in European markets, and their by-products, like essences and calcium citrate, became important commodities by the end of the century.

During this period, Sicily was at the center of significant international trade. Commercial houses on the island managed the export of high-quality agricultural products—wine, citrus fruits, olive oil, sumac, and licorice—as well as raw materials like sulfur and sea salt. However, much of this trade was controlled by British merchants, who had established dominance in Sicily's economy. Local entrepreneurs, with the notable exception of the Florio family, preferred to invest in speculative financial ventures rather than in modernizing agriculture or industry.

Therefore, the backbone of the island's economy was rural, with an underdeveloped agrarian structure. However, at the Paris International Exhibition of 1856, the Bourbon Kingdom was recognized as the most industrialized state in Italy and the third in Europe, after England and France and it also had a merchant fleet that ranked second in Europe. In fact, the first railway built in Italy was the 7.25-kilometer, double-track Naples-Portici line, opened on October 3rd, 1839. The metal currency in circulation was, as the following table demonstrates, in absolute terms, twice that of all the other states of the peninsula combined; and the public and ecclesiastical assets together represented an enormous wealth.

Region	Value of the gold currency of the early Italian states at the time of annexation
Two Sicilies	445,2
Lombardy	8,1
Duchy of Modena	0,4
Parma and Piacenza	1,2
Rome (1870)	35,3
Romagna, Marche, and Umbria	55,3
Piedmont	27
Tuscany	85,2
Venice (1866)	12,7
TOTAL	670,4

Table 1.2 – Value of the golden currency in 1861

Source: http://www.ilportaledelsud.org/benessere_due_sicilie.htm

By the early 19th century, the Bourbon Kingdom had a powerful banking system, with several credit institutions, all later merged into the Bank of the Two Sicilies, which in 1860 could boast wealth of around 440 million lire in gold. Meanwhile, the monetary wealth of all the other Italian states combined did not exceed 230 million, much of which was in paper currency. Unfortunately, this wealth was not used to build road and rail infrastructure or to make investments that would foster the modernization of productive activities. Instead, Bourbon governments believed that protectionist policies were sufficient to support the economy. With the birth of the Kingdom of Italy, a massive, rapid, and cynical transfer of capital from the South to the North was witnessed, so much so that within a few decades of unification, there was no trace of that once-flourishing banking world, one of the richest in Europe.

However, when looking at the economies of individual provinces, a gap more pronounced than commonly thought becomes evident between the island's inland areas and its more urbanized coastal regions, which were not far behind the northern centers in economic terms. Prior to unification, some manufacturing industries existed in Sicily, though they operated mostly within the confines of artisanal businesses. However, a few truly industrial operations were already functioning: Palermo's Oretea foundry, Messina's Jager silk mill, and the internationally recognized wine producers Woodhouse, Beniamino Ingham, and Vincenzo Florio. Other notable industries included Palermo's Ruggeri cotton mill and the Sicilian Steamship Company, owned by the English entrepreneur Ingham. To give a sense of their scale,

the Oretea Foundry employed around 200 workers, the Ruggeri cotton mill had a workforce of approximately 500, and the Jager silk mill in Messina employed about 200 people.
In 1851, Ingham commissioned the construction of the "Corriere Siciliano," a passenger steamship intended for Mediterranean routes, from the James & G. Thomson shipyards in Glasgow. Another steamship, the "Etna," was built for postal services between Naples and Sicily. In 1854, two brothers from Palermo, Luigi and Salvatore de Pace, owners of the Sicula Transatlantica shipping company, sought to establish a direct shipping line between Palermo and New York. They commissioned the construction of the transatlantic steamship "Sicilia" from the same Glasgow shipyards. The "Sicilia" departed from Palermo in June 1854, arriving in New York after 26 days, becoming the first Italian steamship to reach North America.
The activity of preserving sardines and anchovies in salt was widespread across the main coastal centers of the island. The production of tuna in the Palermo, Messina, and Syracuse areas was modest, while the tuna industry in Trapani was very active and profitable. In 1855, 21 tuna fisheries were operating, providing income and employment well into the second half of the 19th century. As early as 1842, the company of Vincenzo Florio and Ingham, which managed the tuna fisheries of Favignana and Formica, was exporting 6,332 tons of tuna, 1,300 of which were shipped to England. Tuna exports increased further after innovations in processing, such as boiling, salting, and preserving in oil. From 1874, tuna was preserved in cans, which Ignazio Florio, son of Vincenzo, elegantly decorated with key-closure lids. This innovation, showcased at the Palermo Universal Exposition in 1891-92, was a great success and allowed Florio Tuna to expand its international market, including cities like Boston and New York.

The consequences of unification on Sicily

The establishment of the Kingdom of Italy found Sicily with a production system that was still archaic but nonetheless vital and expanding, particularly in the agricultural sector and the others previously mentioned. However, all of these activities were carried out relying entirely on human labor, without the aid of machinery, which was already in use in northern Italian agriculture and even more in the industrialized countries of Europe. Furthermore, antiquated farming methods persisted, with no innovation on the horizon. The same outdated labor model was also followed in the sulfur mining sector, where Sicily was the world leader at the time. However, the commercialization of sulfur, like other sectors, was in the hands of English entrepreneurs, such as the aforementioned Benjamin Ingham. Unfortunately, the mineral was not processed locally, which hindered the development of a chemical industry. Despite this,

numerous sulfur mines were operational, but their owners were resistant to adopting technological innovations or more efficient production methods, since Sicilian mining laws still followed Bourbon regulations regarding subsurface property rights, rather than the Piedmontese rules, which recognized state ownership of these resources. As a result, the industry was left to the whims of the mine owners, who showed little interest in improving the productivity of the deposits by implementing more rational and humane working methods.

Indeed, the extraction and transport of the mined sulfur was still performed by "carusi", young boys—sometimes as young as 7 or 8 years old—who carried heavy baskets of sulfur, weighing between 20 and 70 kilos, on their backs. They would haul these loads up from the mines through narrow, treacherous tunnels from dawn until dusk, bent under the immense weight, which often deformed and crippled their bodies over time. These young workers were frequently subjected to maltreatment and deprived of basic needs, and many faced fatal dangers in their work. Unfortunately, this situation persisted for years until Law No. 653 of 1934 prohibited the employment of minors under 16 in underground mines and quarries.

The first census on December 31, 1861, recorded a Sicilian population of 2,392,414 inhabitants (according to the Central Institute of Statistics of the Kingdom of Italy), with an illiteracy rate of 89%, one of the highest in Europe, compared to a national average of 75%. Following unification, compulsory free elementary education, also extended to women, was introduced across Italy, in line with the regulations already in place in the Kingdom of Sardinia. In 1877, the Coppino Law reinforced compulsory education until the age of nine and introduced penalties for non-compliant parents. Unfortunately, these regulations were not uniformly applied. The overwhelming poverty of many families—across Italy, not just in Sicily—made it difficult for them to sacrifice the labor of even their youngest members. Moreover, until 1911, the responsibility for elementary education was placed largely on municipalities, which were required to cover the costs of facilities, teachers, and staff and not all municipalities had the financial means to meet these obligations.

This uneven educational provision widened the gap between the North and South of Italy, as wealthier northern municipalities progressed both economically and culturally. As a result, the literacy gap between the two areas increased. In 1901, as can be observed in the chart below, illiteracy in Sicily dropped to 71%, compared to the national average of 49%, and by 1911, the Sicilian rate was 59%, while the national average had fallen to 39%.

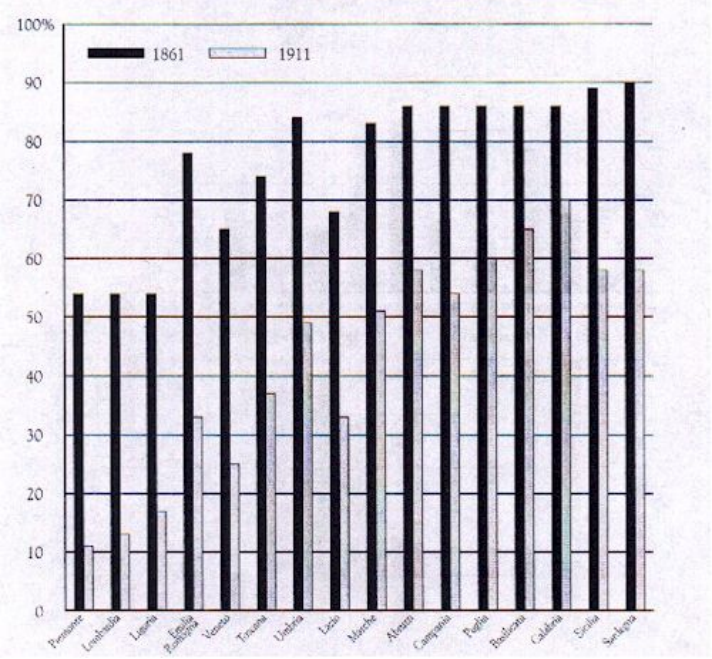

Figure 1.1 – The illiteracy rate of the Italian regions in 1861 and 1911

Source: https://digilander.libero.it/emcalvino/Sicilia/istruzione.html

While Sicily's agriculture continued to suffer under the burden of illiteracy, northern Italy, particularly the irrigated regions of the Po Valley and Piedmont, was already experiencing advanced forms of agricultural economies. These areas were home to modern, capitalist agricultural enterprises that integrated farming with livestock breeding, largely employing wage labor. Alongside them large cereal farms and small family-run businesses coexisted, especially in the hilly regions of Lombardy, Piedmont, and Veneto. Meanwhile, sharecropping prevailed in central Italy, including Tuscany, Marche, and Umbria.

However, the socio-economic gap between northern and southern Italy was not as significant as the much wider disparity between Italy and the more industrialized European nations, particularly England. The political unification of the country also led to the consolidation of the public debt, with the modest debt of the Kingdom of the Two Sicilies being combined with the much higher debt of the Kingdom of Sardinia, which had accrued due to war expenses against Austria. In an attempt to recover resources, the new national government imposed a heavier fiscal policy compared to the previous Bourbon regime. New municipal and provincial taxes were introduced, including the "focatico", a tax levied on every "focus", meaning on every household, which was particularly burdensome for large families. Additionally, the infamous "grist tax," essentially a tax on bread—the most essential item in the diet of the poor—was implemented, further hurting the lower classes.

Indirect taxes on consumer goods, such as salt and tobacco, were also increased, alongside inheritance taxes and other levies. Compounding these fiscal pressures was the introduction of compulsory military service, which deprived families, especially the poorest ones, of the labor and support of their young men for extended periods. The deep-rooted dissatisfaction of the rural masses was further inflamed by widespread hostility towards the new political order, which had failed to bring about any significant social change and, in many cases, worsened the situation of those already struggling to survive. This discontent erupted into widespread brigandage across southern Italy, which was violently suppressed by the new government.

Moreover, political unification led to the dismantling of customs barriers between the former pre-unification states, and the liberal trade policies of the old Piedmontese state were extended to the entire kingdom. This significantly reduced the protective tariffs that had previously shielded the southern Italian industry and, while this may have opened up broader markets for Sicily's agricultural products, such as wine, citrus fruits, olive oil, and sulfur, it also starkly revealed the underdevelopment and weakness of Sicily's industrial sector. The textile industry, in particular, collapsed under the weight of competition from imported goods, especially from Britain, where the use of coal had dramatically lowered production costs, making Sicilian textiles uncompetitive.

Following the end of the American Civil War (1865), the resumption of cotton production in the United States further dealt a severe blow to the Sicilian textile industry, which dwindled, surviving only in a few centers around Catania and other isolated areas by the 1890s.

Thus, it appears that, in the immediate aftermath of Italy's unification, certain sectors of Sicily's economy, rather than benefiting, suffered, and, as can be seen in the figure below, the difference in GDP per inhabitans between the south and the islands compared to the northwest increased. The southern politician and writer Giustino Fortunato, in a letter dated September 2, 1899, to the historian Pasquale Villari, argued that unification had been an economic disaster for Sicily, which in 1860 had been in "flourishing conditions due to a healthy and profitable economic awakening. Unity has ruined us. And as if this were not enough, it is proven, contrary to everyone's opinion, that the Italian state lavishes its financial benefits on the northern provinces to a far greater extent than on the southern ones[1]."

[1] Giustino Fortunato- Emilio Gentile, Carteggio 1865-1911, Laterza, Bari 1978, pp. 64-65

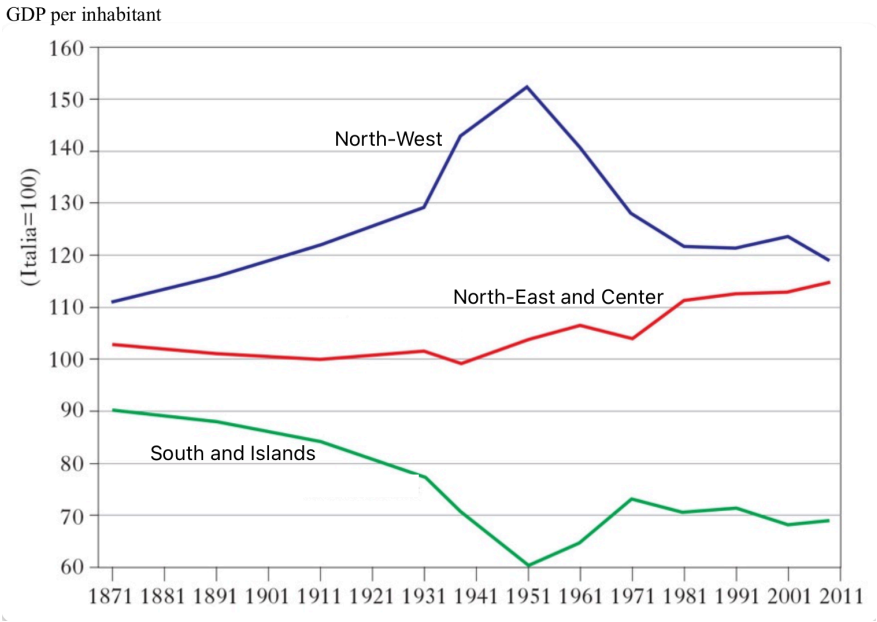

Figure 1.2 – GDP per inhabitant between 1871-2011

Source: https://www.treccani.it/enciclopedia/lo-sviluppo-economico-delle-regioni-dalle-tre-italie-alle-due-italie_%28L%27Italia-e-le-sue-Regioni%29/

On the other hand, in the early decades of unification, there was a significant increase in the production of citrus fruits, wine, and sulfur. The area under vineyards expanded from 146,000 hectares in 1853 to 304,000 hectares in 1879-1883, and citrus groves grew from 7,695 hectares in 1853 to 26,640 hectares in 1880 (and to 35,000 hectares by 1917). Wine exports rose from 100,000 hectoliters in the 1870s to 760,000 hectoliters in 1880, accounting for 35% of Italy's total wine exports. Similarly, citrus exports increased from 223,000 quintals annually in 1850 to 621,000 quintals between 1866-1870, and to 948,980 quintals between 1881-1885.

Sicily's post-unification economic policies

Certainly, the economic and social conditions of Sicily, and of the South in general, would have improved in a few decades if the governments of the Kingdom of Italy had acted with political wisdom and fairness, investing precisely in the South at least part of the huge gold resources of the Bourbon Kingdom, which they had seized.

Unfortunately, they did not do so, and did not try to eliminate, or at least reduce, the imbalances in its economy, and the socio-cultural gap existing with the northern regions (Southern Question); instead, they preferred to bridge the economic gap between Italy and the most industrialized countries in Europe. As evidenced by the data in the following figures, they were primarily concerned with building infrastructures in the North that would serve this purpose,

constructing communication roads between the various provinces and thousands of kilometers of railways, urged by the interests of the northern entrepreneurial class. In those years, the lack of efficient transport infrastructures and their slow and very late construction were certainly one of the reasons for the decline of Sicilian sulphur industry. It is sufficient to think that the mineral extracted in the Ennese and Calatino areas was transported by means of animal-drawn wagons to the small ports of embarkation, mostly located on the Mediterranean coast of Sicily, between Licata and Porto Empedocle, which did not allow the mooring of large ships, forced to anchor offshore to embark the mineral, which was therefore loaded onto barges and transported to the ship. And it was also the cause of the depression of another important production sector, namely that of salt obtained from the rock salt mines in the Calatino area, whose production had decreased, revitalising the salt pans of Trapani and Marsala, in crisis since 1840. It was only after the construction of the railway that mining of rock salt resumed, along with that of sulphur in the Calatino and Enna areas.

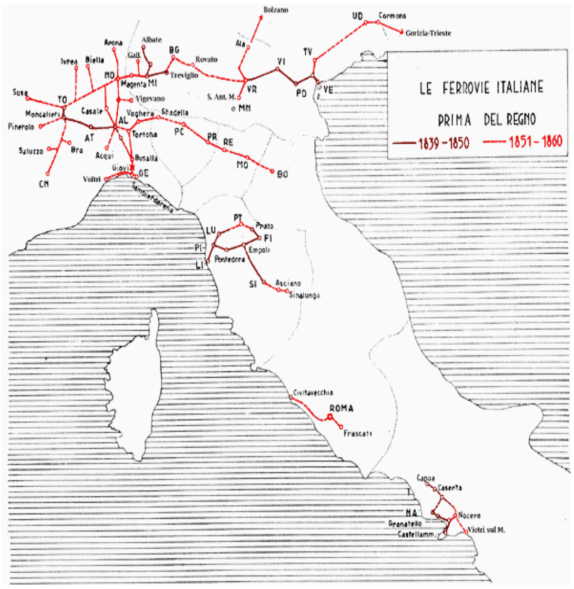

Figure 1.3 – Italian railways before unification
Source:https://www.reportdifesa.it/nasce-il-regno-ditalia-con-la-sua-rete-ferroviaria-nazionale/

Figure 1.4 – Italian railways after unification
Source: https://www.stagniweb.it/FS101.HTM

After unification, the increase in foreign demand and prices of sumac caused a further enlargement of the sumac plantations and the emergence of new mills to grind the product; but this production sector was short-lived, because at the beginning of the 1880s chemistry

succeeded in finding substitutes: prices fell sharply and demand dropped, leading to a gradual abandonment of the crop and the crisis of the entire sector.

The late-century crisis and the Italian government's response

In the last thirty years of the 19th century, the world economic system underwent profound transformations, which began in 1873 with a sudden crisis of overproduction, characterized by a protracted fall in prices. The phenomenon, already referred to by contemporaries as the 'Great Depression', was not in fact a true period of crisis, because the fall in prices was rather the consequence of technological and organizational innovations that made it possible to increase production, progressively reducing costs and thus prices. Therefore, it was not a recession, but, more of a slowdown in global growth rates, due to the need of entrepreneurs to reshape production according to market demands and the prospects of its evolution, taking into account that the fall in prices was benefiting wage earners and urban populations, who saw their consumption progressively increase, their standard of living improve and the volume of trade expand. Then, in the last decades of the 19th century, the increasingly widespread use of chemical fertilizers, the first mechanization experiments applied to cereal cultivation through the use of animal-drawn harvesters and threshers, the extension of drainage and irrigation works, enabled by advances in hydraulic engineering, and the introduction of new crop rotation systems, made it possible to increase the cultivable area and increase land yields. All these innovations required costly investments that were profitable only in the long run, and were carried out in England, Germany, Belgium, the Netherlands, Denmark, partly in France, and in some regions of northern Italy. Unfortunately, not in Sicily, where the fall in prices in the agricultural sector had dramatic consequences for the subsistence of the latifundium of feudal origin, where a more economical extensive cultivation based on the exploitation of human labor was practiced, and for the poverty of the independent peasants, who could not bear the burden of costly technological innovations that were profitable only in the long run. And this led to the ruin of small and medium-sized enterprises, and thus, ss the following table demonstrates, to unemployment, growing misery in the countryside and emigration.

The sulfur mining business was also affected by the crisis; and the crisis worsened when agriculture and industry were hit by commercial competition from the products of the United States of America, a country endowed with great natural resources, which although also affected by the crisis, having emerged stronger from the war of secession, had begun to cultivate immense areas of its territory with cereals, adopting a highly mechanised agriculture, which

increased production and lowered costs. When the progress of steam navigation, which lowered considerably transport costs, allowed the products of North American industry and agriculture to reach the European market at highly competitive prices, the entire economy of the old continent, including agriculture, especially the most backward, was hit hard.

The Italian government decided to intervene with a massive increase in public spending in the sectors of public and private construction, shipbuilding and, railroad mechanics, creating the conditions to favor the inflow of foreign capital, with state orders, tax concessions, protectionist customs tariffs and even capital advances, measures that allowed for a substantial industrial expansion in the 1880s. These measures benefited the more advanced northern factories, while they did little to benefit the South and Sicily, that, given the lack of a competitive manufacturing apparatus, only ended up paying the costs, buying the industrial products they needed at a higher price, without being able to change the conditions of backwardness in which they found themselves.

Distribution of the working population by major economic categories and by regions on census dates (thousands)							
Year	Region	Agriculture	Industry	Transport	Commerce	Other	Total
1861	North	5100	2300	1813	1500	1169	11882
1861	Center						0
1861	South	3200	1400	787	700	323	6410
1871	North	4166	1520	105	92	1030	6913
1871	Center	1553	478	44	34	472	2581
1871	South	2982	1327	122	75	1029	5535
1881	North	4058	1838	119	148	1035	7198
1881	Center	1424	603	51	42	435	2555
1881	South	3117	1956	143	90	1056	6362
1901	North	4328	2018	175	401	640	7562
1901	Center	1681	596	76	118	273	2744
1901	South	3658	1376	173	255	506	5968

Table 1.3 - Distribution of the italian working population from 1861 to 1901

Source: SVIMEZ, Statistiche sul mezzogiorno, 1861-1953, Roma, 1954

R.S. Eckaus, L'esistenza di differenze economiche tra Nord e Sud d'Italia al tempo dell'unificazione, Moneta e Credito

It was precisely during the years of the Italian industrialization process that the economic dualism between the two parts of the country intensified: as Rosario Romeo named it, the 'Sacrifice of the Mezzogiorno' was perhaps necessary to transform the rest of Italy from an agricultural to an industrial country, since the customs duty regime introduced by the Depretis government did not affect all productive activities uniformly, further exacerbating the imbalances between the various sectors of the economy and the different areas of the country.

Moreover, the protection granted to the iron and steel industry damaged the mechanical industry, whose production was largely destined for export, and for the same reason it was a burden on silk factories. Eventually, it ended up damaging the island's citrus and wine industry too, which exported a large part of its production to France, which in retaliation introduced customs duties on Sicilian agricultural products, opening a real customs war with Italy.

However, the gap between the North and the South remained unchanged, as evidenced by the *Inchiesta Agraria* (Agrarian Inquiry), ordered by Parliament in 1877, chaired by Senator Stefano Jacini, and concluded in 1884. The report indicated that the state of agriculture had not significantly improved compared to the first decades after unification, nor had the conditions of the peasants. They were burdened by archaic contracts, underpaid, malnourished, and mostly illiterate. This situation led to rising unemployment, which was also fueled by a significant population increase, growing from 2,392,414 inhabitants in 1861 to 3,568,124 by 1901[2].

Between 1889 and 1894, a large social protest movement developed on the island, leading to the formation of a considerable network of popular associations known as the *Fasci Siciliani*, demanding better working conditions, land for peasants to cultivate, more advantageous agricultural agreements, and lower taxes. Miners, peasants, urban proletarians, and even small landowners joined the movement, all seeking to escape exploitation by the few large landowners who controlled the market and reaped all the profits. However, the *Fasci*, which had also led to violent protests, were dissolved by the Crispi government in 1894, with more than one hundred demonstrators dead.

By the late 1880s, salt exports began to recover. Salt was an essential commodity for both domestic use and the food preservation industry, as well as in chemical industries, where demand remained high and, despite market fluctuations, it guaranteed steady profits. As a result, not only did the salt pans of Trapani and Marsala resume production, but so did the rock salt mines in the Nisseno and Enna regions, thanks to the construction of a new railway. In the Trapani area alone, around forty salt pans were operating at full capacity, producing an average of 160,000 tons of salt, which was almost entirely exported worldwide. By 1929, total salt production would reach 230,000 tons, making it a pillar of Sicily's economy, alongside citrus and wine production.

The sulfur extraction industry also began to recover, driven by the need to combat a serious vine disease, powdery mildew, a parasitic fungus that was devastating vineyards across Europe,

[2] ISTAT, 31.12.1901

which could be eradicated only by spraying the vines with sulfur powder dissolved in water. Hence, sulfur production quickly increased, and with the contribution of foreign capital and bank financing, sulfur refineries and chemical industries developed in southern Sicily and Catania. Refined sulfur, known as *fiore di zolfo*, accounted for eight-tenths of global sulfur production, thanks to massive extractions carried out in inland Sicily. By the early 1900s, more than 700 mines were in operation, extracting 540,000 tons of sulfur and employing 39,000 workers, whose working and living conditions, however, remained barely humane.

Meanwhile, as briefly mentioned before, in the last decades of the 19th century, Sicily's railway network expanded, although not enough to close the gap with the northern regions that existed at the time of unification. The construction and operation of the railway lines had been entrusted to private concessionaires, who built the infrastructure to serve the interests of their investors. As a result, the railways did not follow a coherent plan aimed at connecting various urban centers, especially provincial capitals. Instead, the routes were designed to favor the commercial interests of investors, focusing on transporting sulfur, wine, citrus fruits, and other agricultural products to the ports.

At the same time, the industrial take-off in the northern regions required the creation of rail and road connections with other European countries to increase exports and establish new trade relationships. In September 1871, the Frejus tunnel, which connected Italy to France, was completed. Then, in 1882, a road connection was established between Italy and Switzerland through the San Gottardo tunnel. In 1898, work began on the railway connection between Italy and Switzerland via the Simplon tunnel, which was completed in 1905. This allowed for greater commercial distribution of northern Italy's agricultural and industrial products, leading to the expansion of the region's industrial and technical infrastructure, job growth, and an improved standard of living. As a result, the socio-economic divide between the North and the South, especially Sicily, widened further, particularly as the North began electrifying its railways and doubling its tracks.

Furthermore, the collapse of the Sicilian textile industry and the agricultural and industrial crisis of the 1870s, followed by a tariff war with France in the late 1880s, created a large mass of unemployed workers. The harsh and inhumane conditions of land and mine workers, as documented by the *Jacini Inquiry* mentioned earlier, fueled the not-so-new phenomenon of emigration. Between the 1870s and 1890s, emigration became an increasingly widespread phenomenon affecting all Italian regions, particularly the southern ones. It was driven by

frustration and despair, along with the belief that better living conditions and employment opportunities could be found elsewhere.

In Sicily, emigration initially targeted Tunisia and northern Italy, as well as Switzerland and France, but it increasingly shifted towards the United States, as highlighted in the charts below. In the 1890s, another significant factor contributed to the rise in emigration: the failure of the *Fasci Siciliani*, which crushed any hope of socio-economic change and led to the so-called "silent revolution"—the mass emigration of peasants, workers, artisans, laborers, and small landowners who had been defeated. It was a sad and painful phenomenon, especially in terms of the emotional and moral toll on the emigrants and it also drained Sicilian society of labor and intellectual energy. However, from an economic perspective, mass emigration had positive effects: it reduced demographic pressure, eased unsustainable social tensions, and benefited the most depressed areas, which could rely on remittances from emigrants.

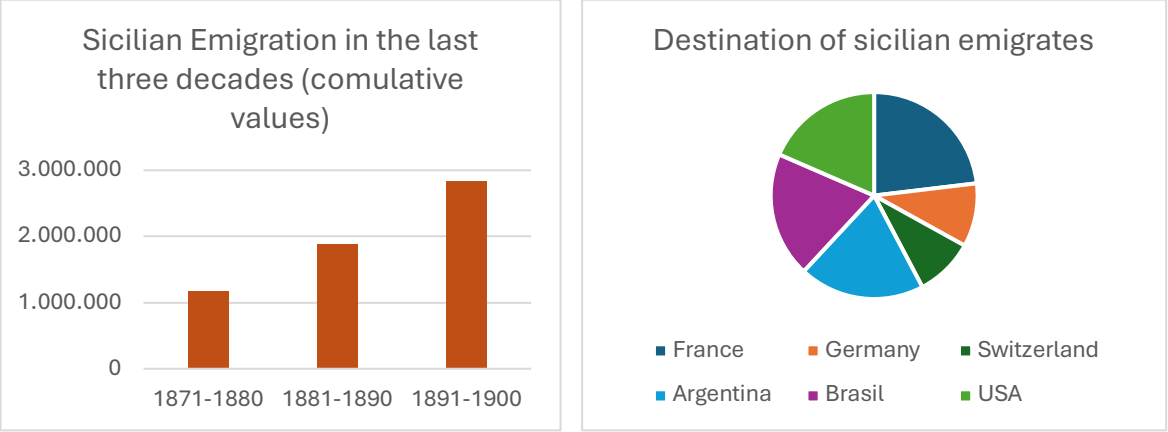

Figure 1.5 – Sicilian Emigration from 1871 to 1900

Source: https://digilander.libero.it/emcalvino/Sicilia/emigrazione.html

To conclude, by the late 19th century, there is no doubt that Italy experienced its first true industrial take-off, thanks in part to the country's advances in economic infrastructure and productive systems during the first 30–40 years of unification, reflecting in the rising standard of living for the population. However, the benefits of economic and social progress were not evenly distributed across the country but concentrated mainly in the more developed regions, particularly in the so-called "industrial triangle" of Milan, Turin, and Genoa. Consequently, the North-South divide continued to widen, albeit within the context of overall growth.

The Sicilian economy in the first half of the 20th century

In general terms, agriculture remained the dominant employment sector in Sicily: by 1901, over half of the workforce was employed in this sector. In fact, the 19th century closed with significant growth in the production of oranges and lemons, most of which were destined for export. Its growth continued unabated, unaffected by competition from Spanish citrus fruits or those from Louisiana, Florida, and California in the United States, nor by a long phase of declining prices due to the production boom, or even by World War I. In the early 20th century, citrus exports reached 3,000,000 quintals, compared to 1,450,000 during the 1886-90 period. The cultivation of premium orange varieties, especially blood oranges, expanded and gained a foothold in the Central European market. By 1917, Sicilian citrus production accounted for 73% of Italy's total and covered 35,000 hectares, up from 26,840 in 1880.

Alongside citrus farming, as shown in the table below, the derivative citrus industry also grew, particularly in the production of essences and calcium citrate, which were made in family-run workshops. By 1927, there were 209 companies producing calcium citrate in the province of Messina, employing skilled workers primarily during the winter citrus harvest. Initially, the calcium citrate was processed into citric acid outside of Sicily, but by the early 1900s, Sicilian chemical industries had taken over this process.

Employment in industrial sectors in Sicily - 1911	
Areas of industry	Employees
Underground extraction industry	36.679
Industry working with and utilizing products from agriculture, hunting and fishing	119.439
Metalworking industries	26.229
Industries processing minerals and involved in building, road and hydraulic constructions	85.853
Textile fiber industries	57.079
Chemical industries	8.275
Industries and services corresponding to collective needs	3.843

Table 1.4 – Sicily's employment industrial sector in 1911

Source: Istat

Sulfur production remained stable until World War I, when it drastically declined due to a lack of miners as a result of the wartime draft. After the war, the American sulfur industry dominated the market with the introduction of the "Frasch process", which significantly reduced production costs and prices. However, this method could not be adopted in Sicily due to the different composition of the sulfur deposits, and, as a result, Sicilian sulfur production became

uncompetitive and plummeted, from 253,000 tons in 1930 to 203,000 tons in 1940, and further decreased to just 30,000 tons in 1944. Production revived slightly after the war, but this positive trend did not last long: after 1950s, production slowly declined again, and by 1976, it had fallen to 85,000 tons. As a result, all sulfur mines were closed under several laws enacted in 1975.

Despite the draft of approximately 500,000 Sicilians, of whom about 50,000 never returned home, Sicily's economic conditions during the Great War and the following decades did not undergo significant changes. On the contrary, salt exports grew, with total production reaching 230,000 tons in 1929, making salt a pillar of Sicily's economy, along with citrus production, which, as mentioned earlier, accounted for 73% of the national output by 1917. This stability was largely due to the massive employment of women in nearly all sectors, replacing men who had gone to war, but, on the other side, also creating problems reintegrating returning soldiers into the workforce. Moreover, the expansion of female labor, the prolonged absence of men called to the front, and the detachment of many young people from the family unit disrupted the traditional patriarchal family structure, leading to profound changes in the mentality and habits of the younger generations.

During its first years in power (1922-25), the Fascist regime adopted a liberal economic policy aimed at boosting national production. This approach encouraged private initiative and reduced state controls, leading to a significant increase in output. However, this growth came with a rising trade deficit, a sharp depreciation of the lira, and inflationary pressures. As a result, in the summer of 1925, the government shifted to a new phase of protectionism, deflation, and monetary stabilization, with increased state intervention in the economy. One of the key measures was the imposition of higher tariffs on grain imports, continuing from 1887, in an attempt to achieve self-sufficiency in the grain sector—known as the "Battle for Grain". This initiative promoted expanding land dedicated to wheat cultivation and adopting more advanced agricultural techniques, which also benefited the machinery and fertilizer industries. By the late 1930s, grain production had increased by 50%, and imports had been reduced to one-third of what they had been 15 years earlier. However, this effort had adverse effects on livestock farming, due to the reduction of pastureland, and on specialized crops, particularly fruits and vegetables, including citrus fruits, wine, and olive oil.

Distribution of the working population by major economic categories and by regions on census dates (thousands)							
Year	Region	Agriculture	Industry	Transport	Commerce	Other	Total
1901	North	4328	2018	175	401	640	7562
1901	Center	1681	596	76	118	273	2744
1901	South	3658	1376	173	255	506	5968
1911	North	4065	2405	234	472	667	7843
1911	Center	1513	731	98	134	273	2749
1911	South	3508	1268	212	313	478	5779
1921	North	4237	2501	349	596	769	8452
1921	Center	1681	654	141	152	342	2970
1921	South	3887	1246	267	300	494	6194
1931	North	3398	2972	342	691	892	8295
1931	Center	1501	808	141	214	411	3075
1931	South	2907	1246	267	343	549	5312
1936	North	3612	3058	296	774	870	8610
1936	Center	1695	846	127	249	427	3344
1936	South	3197	1257	239	401	514	5608
1951	North	3100	3787	374	1290	852	9403
1951	Center	1534	1010	157	455	455	3611
1951	South	3627	1493	254	650	539	6563

Table 1.5 - Distribution of the working population from 1901 to 1951

Source: SVIMEZ, Statistiche sul mezzogiorno, 1861-1953, Roma, 1954

R.S. Eckaus, L'esistenza di differenze economiche tra Nord e Sud d'Italia al tempo dell'unificazione, Moneta e Credito

This protectionist policy had wide-reaching consequences for Sicily's wine industry, which experienced a period of overproduction by the late 1920s, which was further exacerbated by the global economic crisis of 1929. The global recession spread, and the austerity measures adopted by European governments worsened the downturn. In Italy, foreign trade dropped drastically, and by 1933 the volume of exports was half of what it had been in 1929, while unemployment soared from 300,000 in 1929 to 1,300,000 in 1933. During the 1930s, the "Battle for Grain" led many wine producers to abandon specialized viticulture in favor of more versatile land use for cereal crops. This caused a decrease in wine production until 1940, along with a downward trend in prices, leading to a generalized crisis in the sector, despite propaganda efforts to boost wine consumption. One positive development during this period was the creation of Consortia to protect certain wines, established by laws passed in 1926 and 1930.

Moreover, in the 1930s, the citrus industry saw its monopoly on derivative products broken by the introduction of lemon substitutes, particularly in the production of citric acid from sugar rather than calcium citrate. The government's autarkic policies, which reduced international trade, further impoverished the southern peasant class, especially in areas where specialized agriculture, such as in Sicily, was strong. By 1935, Sicilian exports were about a third of what they had been in 1926. The situation did not improve during World War II, which caused widespread destruction, death, and unimaginable suffering for civilians across Europe, along

with the collapse of international trade and widespread hunger. Sicily, more than any other Italian region, bore the brunt of the war, particularly after the Anglo-American invasion of the island on July 10, 1943, following days of intense bombing. Their advance toward Messina, where they arrived after more than a month of fierce fighting with the Italian-German forces, left the island devastated.

The economic situation after the Second World War

In 1945, at the end of the war, the Italian economy was in dire conditions. The industrial plants had largely survived, but production had dropped to less than a third of pre-war levels. The damage inflicted on agriculture was incalculable, with production decreasing by 60%, and even more so to livestock, which had been destroyed by three-quarters, making the problem of food supply dramatic. The transport system was largely disjointed: roads were cut off, railways unusable, bridges destroyed, with disastrous consequences for the movement of goods and their export, which supported Sicily's economy, further penalized by the collapse of international trade. But, as can be observed in the chart below, all of Italy in 1945 hit the lowest point of production activity: the national income at constant prices had fallen to half of what it had been in the years before the war, industrial production to less than a third, and consumption to 60% of 1938 levels.

Labour force by sector of economic activity and region at the Censuses 1861-2011 (percentage compositions)

YEARS	Piedmont	Lombardy	Sicily	Piedmont	Lombardy	Sicily	Piedmont	Lombardy	Sicily
	AGRICULTURE			INDUSTRY			SERVICE		
1861	81,1	69,3	53,9	11,5	19,8	23,1	7,4	10,9	23,0
1871	76,3	64,7	55,2	14,2	23,1	21,4	9,3	12,2	23,4
1881	72,2	59,6	56,0	16,9	27,1	19,8	10,9	13,3	24,2
[...] (b)	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]
1901	64,1	53,5	55,5	22,7	31,7	19,3	13,2	14,8	25,2
1911	57,9	46,3	53,9	26,6	36,9	20,0	15,5	16,8	26,1
1921	53,3	40,8	54,2	29,2	40,1	20,0	17,5	19,1	25,8
1931	45,6	34,8	52,3	33,4	42,9	20,0	21,0	22,3	27,7
1936	43,2	31,0	52,1	35,0	44,7	20,9	21,8	24,3	27,0
[...] (b)	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]
1951	32,6	20,1	51,2	43,4	53,0	22,2	24,0	26,9	26,0
1961	22,2	11,1	41,0	50,9	58,9	29,9	26,9	30,0	29,1
1971	12,2	5,5	28,7	55,7	59,8	33,6	32,2	34,7	37,7
1981	8,0	3,8	19,9	48,8	51,3	28,7	43,1	44,9	51,4
1991	5,7	2,5	16,3	43,4	45,2	23,9	50,9	52,3	59,7

(a) The active population in employment status includes the employed and the unemployed and excludes persons seeking their first job from the calculation. From 1861 to 1961 the data on the active population refer to persons aged 10 and over, from 1971 to 1991 to those aged 14 and over and from 2001 to those aged 15 and over. Until 1961 the reconstruction by C. D'Agata (1965) is used. For subsequent years, reference is made to census data as published.

(b) The General Population Censuses of 1891 and 1941 were not carried out, the former for organisational and financial reasons, the latter for wartime reasons.

Table 1.6 – Changes in labor force before and after the World Wars

Source: Ministry of Agriculture, Industry and Commerce (until 1921), Istat (from 1931), General Population Census

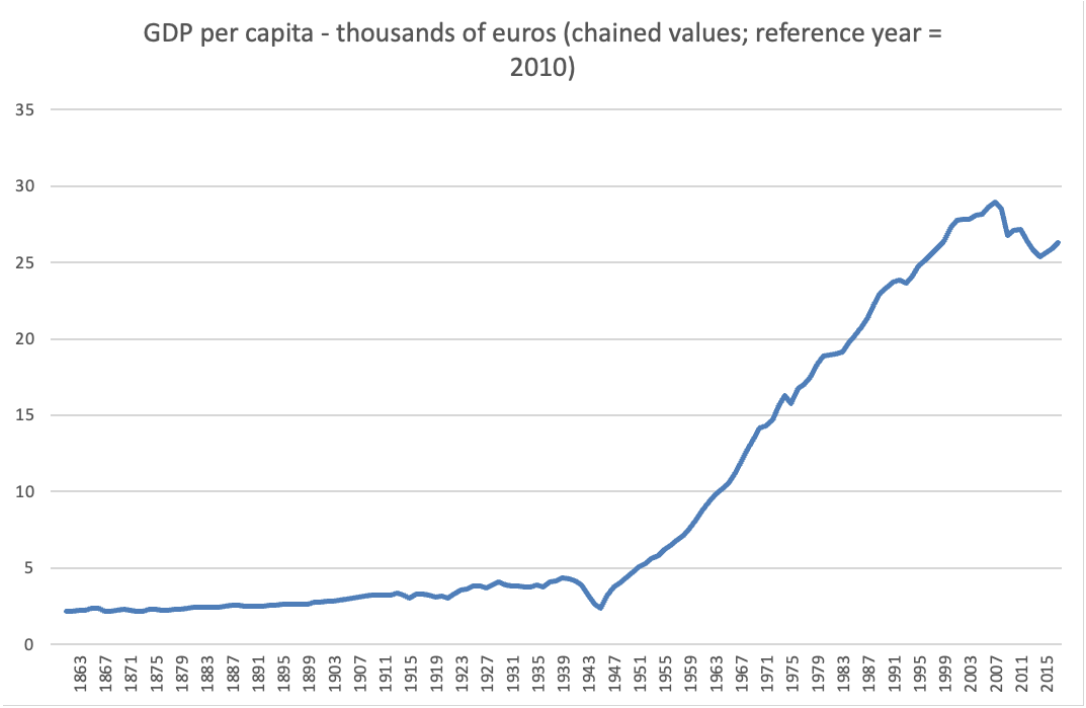

Figure 1.6 – Italian GDP drop during the years of World War Two

Source: Istat e Banca d'Italia

The population was in need of basic necessities, and the import of foodstuffs, raw materials, and coal was urgent. The balance of payments was heavily in deficit: the value of imports in dollars was 11 times higher than in 1938, while the value of exports had not increased compared to the pre-war period. Added to this were the loss of income from tourism and the increased cost of freight due to the loss of the merchant fleet. Italy was still a semi-agricultural country, where 25% of the added value was produced by agriculture, yet it employed half of the working population. In 1950s Italy, almost two-thirds of the population either did not consume or barely consumed meat; 1,750,000 families did not use sugar and another 600,000 consumed it in minimal quantities; those with very low consumption of meat, wine, and sugar were 6.9% in the North, 18% in the Center, 56.9% in the South, and 58.9% in the Islands: in this general poverty, the South held the lowest position.

The Marshall Plan

In the two-year period between 1945-46, the first American aid began to arrive, which became more substantial with the implementation of the European Recovery Program (ERP), better known as the Marshall Plan, named after the U.S. Secretary of State who initiated it. Between

1948 and 1952, the Marshall Plan provided European economies with a total of 13 billion dollars in grants, machinery, and agricultural products. The effect was not only to allow reconstruction but also to initiate a strong economic recovery in Western Europe, which by 1951 had exceeded pre-war production levels by an average of 30%. As for Italy, the American commitment aimed to favor Sicily, due to its strategic importance, and, since agriculture was the island's main resource, as can be observed in the chart below, they planned its modernization through hydraulic reclamation, hydrogeological improvements, the enhancement of hydroelectric resources, vocational training, and agronomic experimentation.

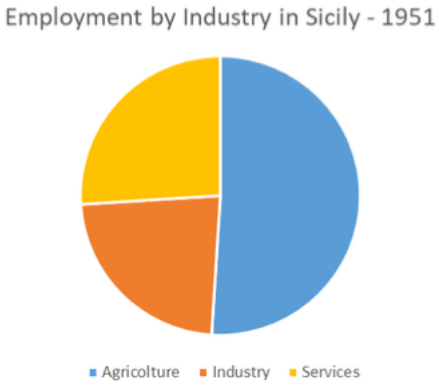

Figure 1.7 – Employment by industry in 1951

Source: Istat

However, the first American aid in 1948 was partly used to reduce the public deficit, help rebuild dollar reserves, and mainly to purchase foodstuffs and other basic necessities for the population. The main objective of the ERP was to rebalance Italy's balance of payments, and the recovery of exports was the keystone of this process. The government's economic policy, promoted by the Governor of the Bank of Italy, Luigi Einaudi—who later became Minister of Finance and subsequently Prime Minister—was aligned with this goal. His main objective was to stabilize the lira by reducing inflation, which was extremely high; he enforced a strict credit freeze, which penalized the South in its prospects of productive recovery much more than the North, where the resulting deflationary line had positive effects instead: the safeguarding of savings and fixed incomes. Additionally, his liberal policy provided ample room for entrepreneurs, both in terms of investments and in wage and union matters. Alongside deflation, this inevitably led to a temporary production halt, wage and consumption containment, and a reduction in workers' social protections. According to Einaudi, this was necessary to reduce production costs for companies and support the competitiveness of their products, thereby

boosting exports. However, by focusing entirely on industrial recovery and individual free initiative, he directed his efforts towards the wealthy regions of the North and Center, with little to no attention given to the impoverished South, leaving the gap between the North and South unchanged or even worsened.

Nonetheless, the exploitation of Sicilian hydrocarbons became a reality under the Marshall Plan, thanks to years of oil exploration in southeastern Sicily. In 1953, the American company Gulf identified the first Sicilian oil field in Ragusa, which was soon connected by a pipeline to the refinery built in Augusta. By 1958, the production from this field contributed 90% of Italy's oil production, covering 10% of the country's oil demand. In 1956, the Italian company Agip discovered small oil fields in Vittoria and Castelvetrano; furthermore, in 1960, the first Sicilian gas field was found, as well as more hydrocarbon fields in Syracuse, Gela, and Catania, where new manufacturing and mining complexes were established. The most important complexes were created by companies from mainland Italy or foreign groups; only a few companies were organized by local entrepreneurs. The machinery and equipment needed for these new enterprises were imported from outside since local investments were almost exclusively in construction, a sector naturally subject to strong seasonal fluctuations and, therefore, unable to provide truly stable employment. However, in these mining areas, there was undeniable development in commerce and the tertiary sector, with a significant increase in labor activities and a reduction in unemployment.

Hence, despite the Marshall Plan's substantial contributions to Italy's post-war recovery, its benefits were felt more in the North and Center, where industrialization was already more advanced. For Sicily, the plan's focus on exports and industrial growth did not address the island's deeper agricultural and infrastructural challenges. As a result, further measures were needed, leading to the creation of the "Cassa del Mezzogiorno" (Fund for the South), a policy designed specifically to address the economic disparity between Northern and Southern Italy, with a particular emphasis on Sicily.

"La Cassa per il Mezzogiorno"

A year after the implementation of the ERP, the only definite figure for Sicily was the 5.2 billion lire allocated for public works, a sum lower only than the one allocated to Campania and Molise. Despite pressure from the South, even after the first year, the allocations for the North—particularly for housing and public works—continued to exceed that for the South. As a result, in 1950, a public body called the "Cassa per il Mezzogiorno" (Fund for the South) was

established with the aim of creating a network of infrastructures with public financing as well as coordinating and funding industrial initiatives to promote the economic development of the southern regions and close the gap with the North. This initiative was promoted by a group of experts who believed that the South needed a massive injection of capital to create the necessary conditions for its industrialization.

The “Cassa per il Mezzogiorno”, more properly Fund for Extraordinary Public Interest Projects in Southern Italy, (“Cassa per opere straordinarie di pubblico interesse nell'Italia Meridionale”, and in abbreviated form “Casmez”), originally established for a ten-year period but extended multiple times, operated eventually for over 40 years. It operated outside of the central and peripheral administration and enjoyed a high degree of decision-making and managerial autonomy, even though its actions had to be coordinated with the industrial policies of the Special Statute Region of Sicily, which also had legislative autonomy.

In its early years, the Cassa helped improve local living standards, especially in rural areas, by modernizing agriculture and strengthening basic infrastructure. By the late 1950s, the Cassa shifted its focus toward the industrialization of the southern regions.

A quantitative analysis of the activities of the Cassa Depositi e Prestiti (Deposits and Loans Fund), which financed the “Cassa per il Mezzogiorno”, was conducted based on data collected by SVIMEZ, a research institute. The analysis shows that total expenditure for the South between 1951 and 1998 amounted to 379,229 billion lire (in constant values of 1998), of which 108,998 billion were used for incentives for private investments and 202,420.4 billion for tax breaks. However, the average annual expenditure for infrastructure and extraordinary interventions was very low, just 0.7% of GDP as evidenced in the table below.

Still, the initial results of the Cassa, regarding the use of public capital, were positive in terms of infrastructural achievements and per capita income, initiating a slow process of reducing the economic and social gap between the northern and southern regions. Nevertheless, looking at the bigger picture, despite the large sums of public money invested (1,500 billion lire), the industrial take-off of the South did not occur.

Expenditure for extraodinary intervention in the Southern Italy (a) and for interventions in depressed areas (b) from 1951 to 1998 - Incidence of the national GDP

Periods	Extraordinary intervention and intervention in the depressed areas (in million € 2008 (d))	Incidence % on the national GDP	contributions reductions (c) in millions € (d)	Incidence % on the national GDP	Total	Incidence % on the national GDP
1951-1957	1.518,800	0,73			1.518,800	0,73
1958-1965	2.329,600	0,74			2.329,600	0,74
1966-1970	2.328,900	0,7	361,1	0,13	2.690,000	0,8
1971-1975	5.807,700	0,9	1969,5	0,33	7.777,200	1,27
1976-1980	7.119,100	0,9	3642,9	0,46	10.762,000	1,32
1981-1986	5.973,800	0,65	5089,3	0,55	11.063,100	1,19
1987-1993	6.305,300	0,57	6215,2	0,55	12.520,500	1,1
1994-1998	6.081,300	0,49	3330,8	0,26	9.412,100	0,74
1951-1998	4.592,900	0,7	2308,9	0,43	6.901,800	0,99

(a) Until 1993, expenditure of the Southern Italy fund and the Southern Italy agency, and payments made by the state for interventions not managed by the agency (the data includes interventions carried out by these entities with the provided funding)
(b) From 1994 to 1998, payments from the state for interventions in depressed areas, excluding expenses for interventions financed with community resources and charges for mortgage amortization and interest payments
(c) recognized strating from 1968
(d) The conversion to euro in 2008 was carried out based on the currency adjustment coefficients developed by ISTAT, dividing the values obtained by 1,936.27 (exchange rate lire/euro).

Table 1.7 – Expenditure of the "Cassa per il Mezzogiorno" and its incidence on national GDP
Source: A.Lepore, Cassa per il mezzogiorno e politiche per lo sviluppo, in "Istituzioni ed Economia" - Proceedings of the study conference held in Trento, November 12-13, 2010, Bari, Cacucci Publisher, 2011, p.154.

The massive flow of capital led to continuous waste, clientelist favoritism, and mistakes, the first of which was prioritizing large, prestigious, and expensive works that were disconnected from the economic and social reality they were meant to serve, and ill-suited to promote the creation of the small, capital-light businesses that should have been the foundation of the southern economy.

These projects often resulted in gigantic contracts, sometimes left unfinished, and other state initiatives that ended up creating enormous infrastructures— for example, the so-called "cathedrals in the desert"—that had no impact on the island's industrial growth.

Despite this, the gap between Southern and Northern Italy had just begun to narrow when the "oil shock" (Autumn 1973 - Winter 1974), caused by the suspension of oil supplies by OPEC countries and the sharp increase in crude oil prices (300% in just five months), triggered a severe economic crisis in Western Europe and the United States, abruptly interrupting this phase of development. From the mid-1970s onwards, the process of closing the gap between the South and North came to a halt, and from the early 1990s, the gap began to widen again.

Although the growth gap did not steadily or significantly decrease over the entire period (it stood at 47% in 1951 in per capita terms and at 41% in 2008), the southern area developed at almost the same pace as the rest of the country (at 3.1% per year compared to 3.4%). Most

notably, during the first quarter-century of this period, the South achieved a modernization of its productive structure and a clear improvement in the economic and social conditions of its population.

In general terms, the process of capital accumulation should be accompanied by a convergence of the southern regions with the rest of the country: the relative increase in investments supports a positive productivity trend and, therefore, the recovery of the production differential. But, when the rate of capital accumulation decreases, the gap tends to widen again.

In the end, the "Cassa per il Mezzogiorno" proved to be an ineffective instrument for addressing the deep-rooted economic disparities between Northern and Southern Italy. Despite the substantial financial resources allocated, the initiative failed to stimulate the kind of sustainable industrial development the region needed. This initiative was not able to address the underlying structural issues of the South, and much of the investment was misallocated, allowing the North-South divide to persist, as can be observed in the chart below, and the Cassa was not enough to reverse this trend. As a result, the South remains dependent on external assistance, with its economy struggling to keep pace with the rest of the country, revealing the inherent limitations of the Cassa's approach.

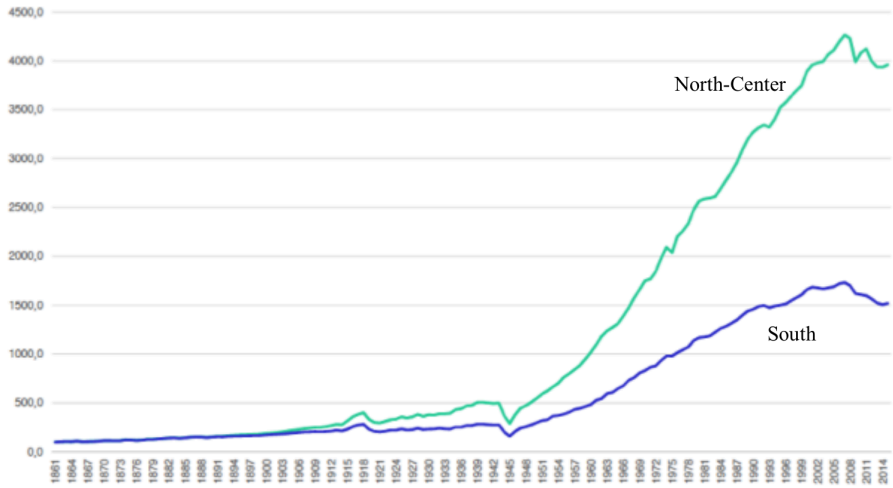

Figure 1.8 - Nominal GDP per capita of the South and the North-Centre of Italy from 1861 to 2014
Source: https://estudioshistoricos.org/23/eh2308a.pdf

Sicily in the end of the 20th century

During the second half of the 20th century, Sicily’s economy underwent a turbulent modernization process, marked by inconsistent industrialization and heavy reliance on public sector employment.

Sicily's economy reflected the typical traits of regions experiencing delayed development. Agriculture was the dominant sector, employing 51% of the workforce and contributing nearly half (49%) of the island's total added value. Industry, on the other hand, accounted for only 23% of employment and 16% of added value. However, in 1951, for the first time since Italy's unification, the service sector surpassed industry, absorbing 26% of the workforce.

The 1950 agrarian reform, which aimed to dismantle Sicily's feudal land ownership system and modernize agriculture, was a pivotal moment in this period. While the reform succeeded in redistributing land to small farmers and increasing mechanization, it also led to the creation of fragmented land plots that were too small to be economically viable. The lack of capital and technical support meant that productivity improvements remained limited, leaving Sicily’s agricultural sector lagging behind more developed regions like Lombardy and Tuscany. Moreover, the reform failed to trigger the anticipated economic transformation from agriculture to industry, further entrenching Sicily’s dependence on public support.

In the immediate aftermath of the war, Sicily's industrial landscape consisted largely of small, artisanal enterprises, particularly in the food, wood, and leather industries, employing about 45% of the workforce. The island's industry remained centered on resource extraction, particularly in mining. However, the war had taken its toll, with roughly 20% of the region's industrial and electrical equipment destroyed.

While post-war industrial initiatives aimed at stimulating growth in sectors such as petrochemicals and manufacturing, they ultimately failed to foster sustainable development. In the 1950s, significant investments were made to establish industries in southeastern Sicily, including the transfer of an oil refinery to Augusta previously mentioned, which became one of the island's first major petrochemical plants. These initiatives were expected to catalyze broader economic transformation; however, by the 1970s, the island experienced a slow but steady process of deindustrialization. The census data from 1971 reflected that industrial employment peaked at over 30%, but from that point onwards, industrial jobs began to decline, falling below even the levels recorded in 1951,as evidenced by the chart below

Employed by economic sector in Sicily between 1951 and 2001 (percentage composition)

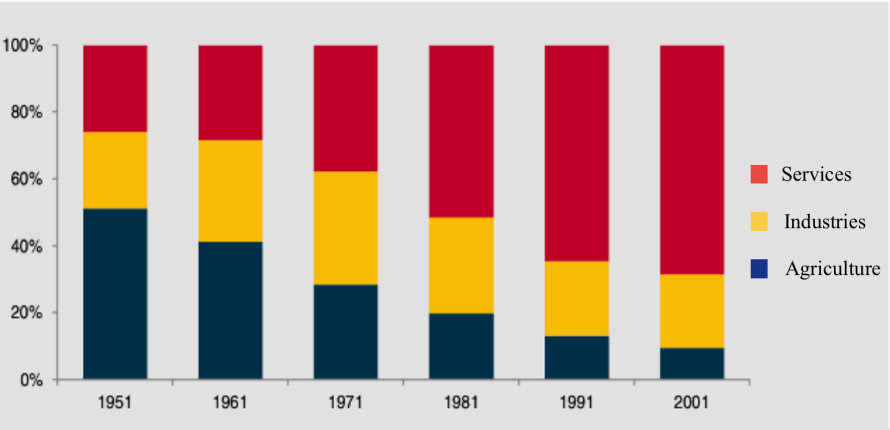

Figure 1.9 – Employment by economic sector, 1951-2001

Source: Censimenti e società: mutamenti sociodemografici della Sicilia in 150 anni di storia, Istat

Sicily's industrialization was further hindered by structural weaknesses such as limited access to capital, poor infrastructure, and mafia influence. The period between 1958 and 1973 saw some industrial growth As can be observed in the chart below, but this momentum was not sustained. By the 1980s, the situation had worsened, with the number of industrial jobs shrinking dramatically. In 1980, there were 364,000 workers employed in industry, but this number dropped to just 263,000 by 1996—a loss of 110,000 jobs in less than two decades. Employment in Sicily's industrial sector, while an indicator of development, revealed the limitations of autonomous growth. For example, from 1947 to 1957, the island's GDP more than doubled, but its share of national GDP remained unchanged at 5.4%.

Employment in industry in Sicily at the censuses and labour force survey (ratios in thousands)

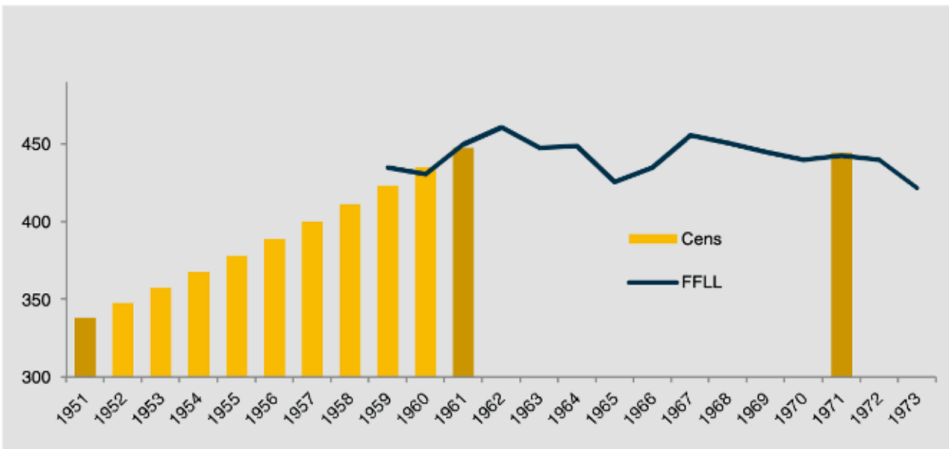

Figure 1.10 – Employment in industry in Sicily at the census and labor force survey, 1951-1973

Source: Censimenti e società: mutamenti sociodemografici della Sicilia in 150 anni di storia, Istat

Furthermore, while public investments in infrastructure, such as the development of industrial zones, were intended to attract external investments, these efforts were often undermined by the presence of organized crime. Mafia activity deterred foreign investors and constrained local economic initiatives. The local industrial landscape was largely characterized by isolated industrial complexes, many of which were controlled by large public or private groups. These factories, rather than driving regional development, became symbols of Sicily's "industrialization without development," as they failed to integrate with or boost the broader economy.

Another significant issue was the over-reliance on the service sector. By the 1990s, 68% of the workforce was employed in services, a figure significantly higher than the national average and even the rates in Northern Italy. This expansion of the tertiary sector did not reflect true economic development but was instead driven by public sector employment and other unproductive activities that acted as social safety nets in a region plagued by high unemployment. At its peak, the unemployment rate in Sicily surpassed 24%, nearly double the national average and triple that of Northern Italy.

In summary, despite significant financial investments and industrial projects, the Sicilian economy remained heavily dependent on external resources and public sector employment throughout the second half of the 20th century. The lack of a self-sustaining industrial base, combined with the detrimental effects of organized crime and mismanagement, resulted in an economy that stagnated rather than flourished. The phenomenon of "tertiarization without development" and what renowned economist Carlo Trigilia termed "development without autonomy" became the defining economic patterns of Sicily, leaving Sicily caught in a cycle of underdevelopment and reliance on external aid.

The economic landscape of Sicily today

In the previous chapter the Sicilian's economic history has been explored, starting from 1861 until the end of the 20th century, focusing on the main events that marked the island's economic course. This second chapter will focus on the last 30 years—a period that has seen Sicily go through significant economic, social and productive transformations—with the aim of providing a comprehensive overview of the actual economic status of the island.

The analysis begins with an examination of the Gross Domestic Product (GDP) of the region, as it provides a general picture of economic development. As the most widely used indicator to measure a nation's economic activity and size, GDP helps to understand the dynamics of growth and recession in production volumes. Next, the macroeconomic sectors will be analyzed to assess how each of them has contributed and continues to contribute to Sicily's GDP and overall economy. Thanks to the island's rich cultural and natural heritage, tourism remains one of the main drivers of the economy. This chapter will explore the evolution of this key sector within the tertiary segment, as well as its economic impact, challenges and future opportunities.

Special attention will be paid to the labor market, with an analysis of employment and unemployment rates to assess labor dynamics and identify any signs of improvement or deterioration in the Sicilian employment structure. In addition, the problem of undeclared work, which represents a significant part of the island's employment landscape, will be addressed.

Foreign trade will be another key indicator that will be examined to understand the degree of Sicily's openness to global markets and its role in international trade. The analysis will cover export and import trends, highlighting their impact on the region's trade balance and economic growth.

Finally, the chapter will turn to Sicily's financial market, focusing on the decline in the number of locally based banks and the trends in household savings and investments, since those are crucial measures to determining whether the region owns the financial resources necessary to support future growth.

The Sicily's Gross Domestic Product

Gross Domestic Product (GDP) is a measure of the total economic output of a country or region over a specific period, and it represents the market value of all final goods and services produced within its borders. It is used as an indicator of economic health, reflecting a region's level of activity and growth.

In this chapter, we will analyze nominal variables, focusing on their role in economic analysis and their distinction from real variables. In economics, a nominal variable refers to a measure expressed at current prices, meaning it is not adjusted for price changes, i.e. inflation. This implies that changes in nominal values over time may reflect both variations in actual economic activity and shifts in price levels.

Sicily's GDP has experienced various ups and downs from the late 20th century into the 21st century, mirroring the economic, social, and political changes the island has undergone. During the fifteen years spanning from 1995 and 2008, the economy showed some recovery signs, with a steady increase in regional output that ultimately led to a doubling of its GDP as can be seen in the following chart,.

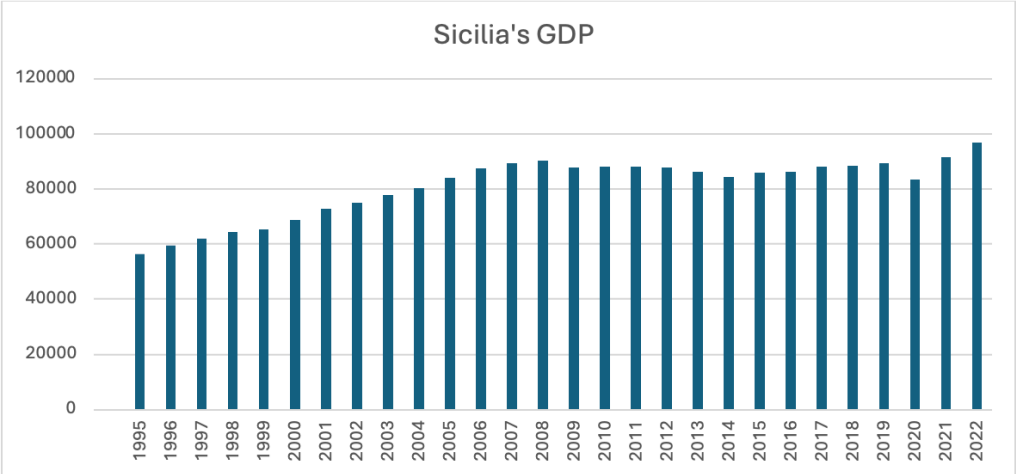

Figure 2.1 – Sicily's Real Gross Domestic Product (thousands of EUR)

Source: Istat

This improvement in GDP during those years can be attributed to rising household demand, which nearly doubled in several sectors, as well as increased investments, due to positive prospects for both domestic and foreign markets.

However, the period following 2008 presented significant economic challenges, affecting the GDP's growth, which was, as a matter of fact, rather stagnant. The global financial crisis triggered the deepest recession in decades, hitting Italy particularly hard due to a fragile phase of structural transformation. Although Sicily had previously achieved higher growth rates than other southern regions, the crisis exacerbated existing disparities. For instance, while foreign tourist spending in Sicily grew consistently between 1997 and 2007, with an average annual growth of 9.7%, the economic downturn in 2008 led to an 11% decline in the average turnover

of Sicilian businesses. The economic downturn continued into 2009, sharply reducing foreign trade and orders, reducing domestic demand and particularly affecting the manufacturing, transport, and trade sectors the hardest, resulting in job losses and postponed investments plans.

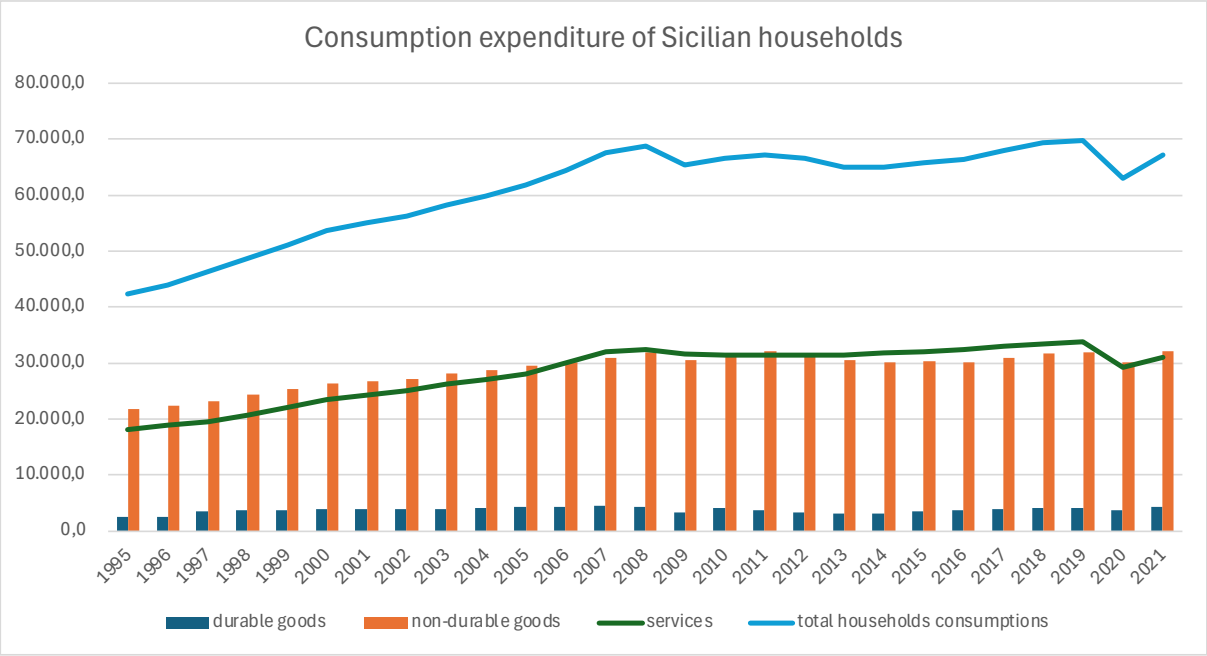

Figure 2.2 – Nominal consumption expenditure of Sicilian households

Source: Istat

The fall in Sicily's GDP in 2009, albeit less severe than the national average, was followed in 2010 by a slower recovery compared to other regions. Nevertheless, industrial activity began to improve, with production levels increasing and exports gradually rebounding from their 2009 decline. The tourism sector also saw positive developments, with a rise in overnight stays, particularly from international visitors.

The already "unstable" trend of Sicilian GDP had to face once again serious challenges in early 2020 with the onset of the COVID-19 pandemic. Lockdowns and social distancing measures led to a sharp drop in domestic demand and a significant contraction in production. Revenue expectations fell by around 30%, compared to the previous year and exports, which had seen moderate growth in early 2020, also declined. The tourism sector, a key part of the island's economy, was one of the most exposed to the crisis, due to its dependence on international visitors and the time required to restore traveler confidence. The labor market also suffered, with employment dropping by 17% in the second quarter of 2020, a more significant contraction compared to other Italian regions. The employment situation was partially mitigated by the

extensive use of the *Cassa Integrazione Guadagni* (CIG), with a number of hours authorized of 92 million, which is ten times higher than previous years, but still the outlook remained uncertain.

In 2021, Sicily experienced a strong economic rebound, with regional GDP growing by 5.7%. While this growth was less intense than the national average, it marked a recovery from the deep contraction caused by the pandemic. Despite this progress, economic output in 2021 remained approximately 3% below 2019 levels. The economic recovery translated into increased employment and households' income and consumption, although it was threatened by rising prices of goods and services and decreased consumer confidence due to the war in Ukraine.

In 2023, Sicily's economy continued to grow but at a slower pace than the previous year: according to the regional economic indicator (ITER), output increased by 0.7%. Many Sicilian businesses managed to maintain profitability, with about 80% of firms in industry and services closing the year in profit. The positive results translated into higher liquidity levels, driven by growth in bank deposits and investments in listed securities, particularly government bonds. Despite this, the regional income growth remained slower than the national average, further widening the development gap.

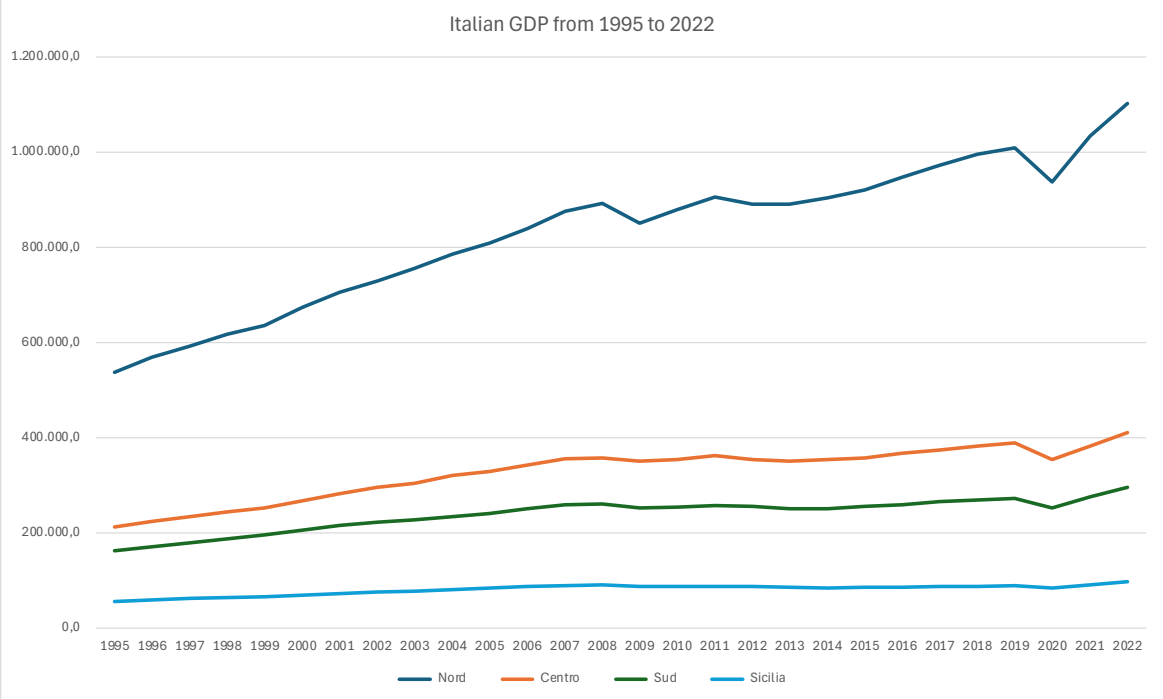

Figure 2.3 – Italian Nominal GDP from 1995 to 2022

Source: Istat

The slower performance of Sicily's economy compared to the rest of Italy can be largely attributed to its lower openness with international markets. The region's economic structure is less diversified and more vulnerable, heavily reliant on tourism and agriculture. Additionally, historically lower investment levels in the South compared to the North have contributed to a lack of infrastructure and industrial development. For instance, in 2018, public investment spending in the South amounted to 8.4 billion euros—about two-thirds of what was allocated in 2009—while investment in other regions like the North-East and North-West was notably higher.

In 1995, Sicily's per capita GDP was 67.8% of the average EU-15 countries. By 2005, this percentage had dropped to 59.8%, reflecting an 8-point decline. While other less developed European regions saw their per capita incomes rise faster than the EU average between 1995 and 2005, Sicily experienced relative stagnation. This widening economic gap was due not only to slower productivity growth but also to persistently low employment rates compared to both national and European averages. This disparity made Sicily one of the regions with the highest unemployment rates in Italy, even exceeding the average for Southern Italy, which stood at 19.3%.

The productive sectors

Today, Sicily's economy remains heavily dominated by the services sector, which employs nearly 70% of the workforce. This reliance on services is largely driven by tourism, especially in cities like Palermo, Messina, and Catania, which has earned the name of the "Milan of the South," due to its growing service-based economy. Agriculture, while historically significant, now employs only about 10% of the population and contributes modestly to Sicily's overall economic output. The island remains a major producer of oranges, lemons, and wine, accounting for 15% of Italy's total wine production. Despite this, challenges such as drought, inefficient land use, and global competition have reduced productivity. For example, 90% of Sicilian farms occupy just 25% of the arable land, leading to suboptimal yields, especially in grain production.

The industrial sector employs around 20% of the workforce, focusing on petrochemicals, shipbuilding, and mechanical engineering, particularly around Syracuse, Palermo, and Milazzo. Yet, industrialization remains underdeveloped compared to Northern Italy, with the region still depending heavily on external subsidies.

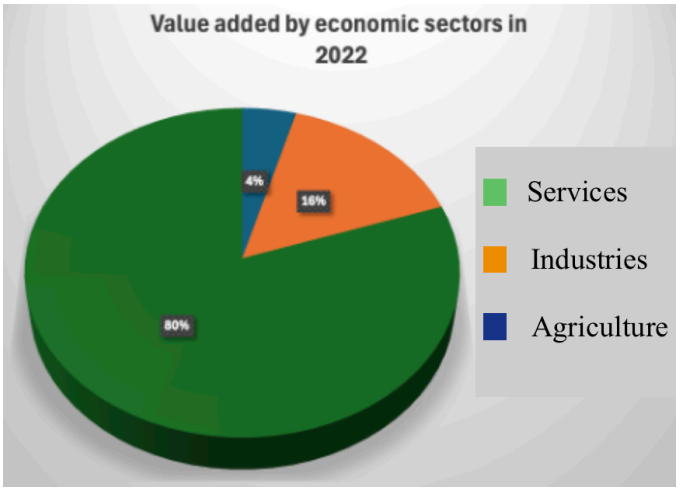

Figure 2.4 – Value added by economic sector in Sicily in 2022

Source: Istat

From 2000 to most recent years, Sicily's economy has experienced fluctuations across its productive sectors, shaped by both regional and global factors. In the early 2000s, agriculture played a significant role, accounting for 4.5% of the island's value-added, thanks to robust production of cereals, vegetables, wheat, and grapes. However, the region experienced thirty natural disasters in 2001, including frosts in winter, droughts, and strong winds in autumn, that severely impacted output, leading to a decrease in the production of vegetables (-6.7%) and cereals (-2.9%). On the other hand, table grape production grew, and wine production remained stable. In the years that followed, agriculture saw improvements, achieving a peak in value-added in 2003 due to expanded cultivated land.

The global financial crisis of 2008 did not severely impact the primary sector: despite the global downturn, cereal production increased by 6.5%, marking the third consecutive year of growth and continuing with a steady growth in the following years. However, by the 2010s, agricultural output began to decline due to shrinking cultivated areas. Between 1982 and 2010, the number of farms almost halved and the UAA – Used Agricultural Area - was reduced by approximately one fifth. In the period considered the reduction in the number of farms and UAA affected small and medium-sized farms. As a result of this rearrangement, the share of large farms rose from 1.8 to 4.2 per cent of the total, and the UAA occupied by them from 32.7 to 45.4 per cent.

The downward trend in agriculture continued for several years and worsened during the COVID-19 pandemic, with a 4.1% contraction in 2020, which was more severe than the national average (3.2%). The added value of the primary sector, which in 2022 had fallen by 3.7 per cent in 2022, recorded a further decline in 2023, albeit less intense than the national

averages. While wine, olive and cereal production saw some growth, adverse weather conditions in 2023 and the spread of grapevine downy mildew led to further setbacks. Despite these challenges, agricultural exports provided some relief, particularly for horticultural crop products, with an 11.2% increase in 2023.

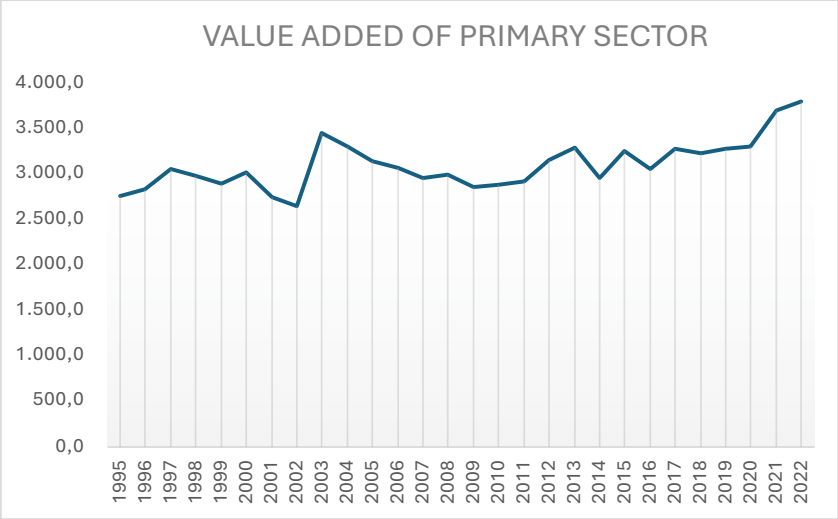

Figure 2.5 – Nominal Value added of primary sector (thousands of EUR)

Source: Istat

Sicily's industrial sector has faced continuous challenges over the past three decades. Among them, low-capacity utilization, which consistently remained below 70%, reflecting underinvestment and limited capacity growth, and a severe decline in production during the global financial crises of 2008 and 2020.

In general terms, the most contributing branches of the industrial sector in terms of gross value added, have always been manufacturing and construction. In particular, the manufacturing sector is specialized in refined petroleum and chemical products, manufacture of basic pharmaceutical products and pharmaceutical preparations and, in most recent years, in the microelectronic field.

Despite occasional improvements in domestic demand and investment in the early 2000s, industries such as textiles and electronics struggled to compete with Northern Italy. A 2006 survey, conducted by the Sicilian branches of the Bank of Italy on 58 high-performing enterprises, highlighted that self-financing and innovation were key to their success. However, growth was limited by a lack of skilled labor, bureaucratic inefficiencies, and isolation from industrial networks. These findings underscore the need for more supportive regional policies,

better infrastructure, and a skilled workforce to enhance the competitiveness of Sicily's industrial sector.

The 2008 financial crisis gave the final blow to the already precarious region's industrial base, causing significant drops in production capacity, investment and employment. Also the construction sector, that from 2000 to 2008 was already going through an overall 2.9% decline, was heavily impacted by the crisis, leading to a sharp reduction in public works tenders and a slowdown in ongoing projects. From 2008 to 2012, public investment spending in Sicily, which includes infrastructure and construction-related projects, decreased by 20.8%, a much more significant decline compared to Italy (-6.3%). The industrial sector continued to stagnate, with limited recovery in investment and output in subsequent years, though some resilience was seen in sectors like chemicals, electronics, and food processing.

The most remarkable result was achieved by the 15.5% increase in Sicilian exports in 2011, particularly of refined petroleum products and extractive industries, which account for more than 80 per cent of the total, and a 5.9% growth in agri-food exports in 2015.

The COVID-19 pandemic brought additional challenges, halting non-essential industries and severely reducing turnover for about a third of businesses: more than one in four companies reported problems with liquidity, difficulties in the procurement of raw materials and in logistics.

By 2021, the sector began to recover with an increase in added value of 12.7%, also due to increased public investments through EU-supported programs like the PNNR funds (National Recovery and Resilience Plan). However, rising energy prices and issues in supply of production inputs continued to hinder growth, exacerbated by the conflict in Ukraine.

In 2024, Sicily's industrial landscape remains focused on key areas such as energy, petrochemicals, electronics, and construction. A significant share of the manufacturing value-added in the region comes from multinational companies with plants on the island, heavy reliant on external investments and large companies, particularly in industrial hubs around Syracuse, Milazzo, Palermo, and Catania. Catania has emerged as a center for high-tech electronics, while other cities maintain their importance in petrochemicals, shipbuilding, and automotive industries.

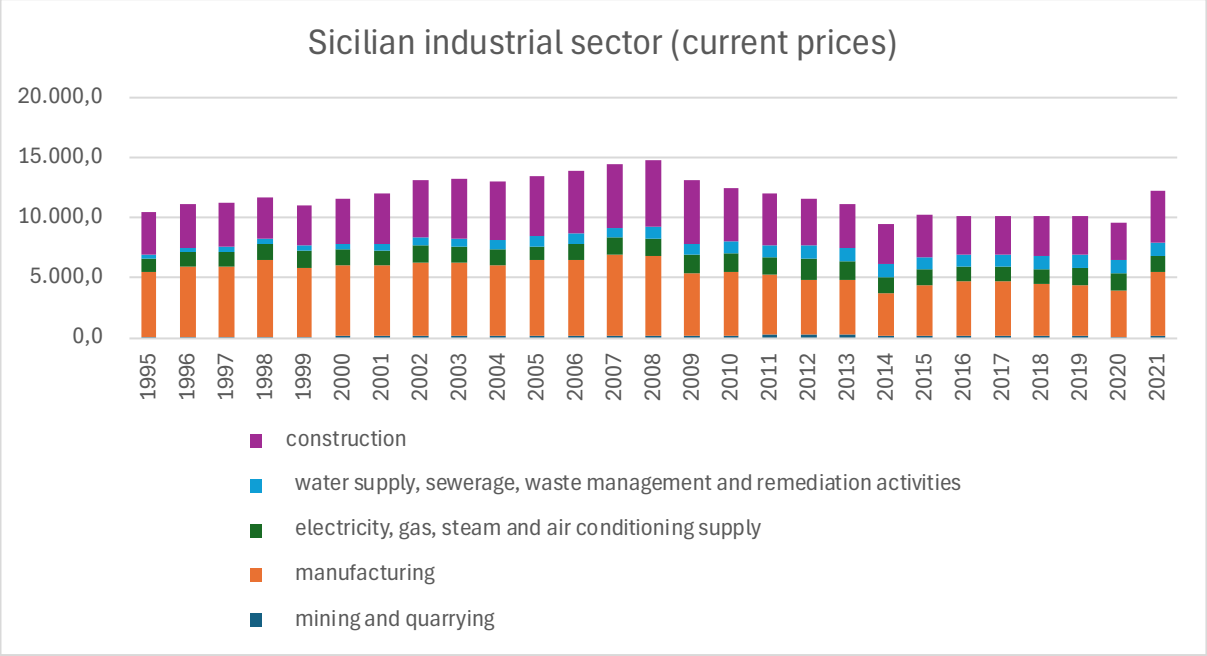

Figure 2.6 –Breakdown of Sicilian industrial sector (thousands of EUR)

Source: Istat

Despite slight improvements in industry and agriculture, Sicily's economy remains highly dependent on the services sector, which, as previously stated, accounts for around 80% of the island's total gross value added. Sicily stands out for its specialization in public services and commerce, it is able to attract international tourists and it serves as logistics hub in the Mediterranean positions. This dependency, however, highlights the challenges and opportunities for diversifying the economy and strengthening other sectors to ensure sustainable growth.

The service sector in Sicily began the new century with moderate growth. Between 1995 and the early 2000s, rising demand for consumer goods positively impacted local commerce and large-scale distribution. However, hypermarkets and chain stores remained still limited, primarily concentrated in major cities and completely absent in the rural areas. Traditional small and medium-sized retailers faced more unfavorable dynamic compared to larger chains, which continued to expand during the early 2000s. By 2006, large-scale retailers accounted for 18% of total sales in Sicily, with their sales areas growing by 10.6% and their workforce increasing by 11.9%.

This upward trend was stopped by the 2008 financial crisis, which severely affected the service sector, causing contractions in commerce, restaurants and tourism. The retail sector experienced a significant slowdown due to decreased consumer demand, especially in non-essential goods.

Public services also suffered as government spending was reduced in response to the economic downturn, slowing investments in healthcare, education, and infrastructure and stalling job growth in these areas. The transportation sector was not spared either; in 2008, cargo traffic in Sicilian ports decreased by 7.6%, primarily affecting oil transport, while passenger movements declined by 4.9%, impacting arrivals and departures almost equally.

The lack of investment during and after the financial crisis delayed the recovery of Sicily's tertiary sector: while the tourism industry will eventually recover in the early 2010s, it will take several years for the sector to return to pre-crisis levels.

According to ISTAT's household consumption survey, average monthly expenditure in Sicily in 2010 was 32% lower than the national average and 11% lower than the rest of Southern Italy. Between 2007 and 2010, household expenditure dropped by about 9%, reaching its lowest point since 2002. This decline, steeper than the national average drop of 4%, widened the economic gap between Sicily and the rest of the country.

In 2015, the decline in value added that have been characterizing the tertiary sector since 2011, finally reversed.

After an average annual decrease of 5.7% from 2007 to 2014, consumption on durable goods by Sicilian households surged by 7.9% in 2015, in line with the national average. Signs of recovery in the service sector were further confirmed by consistent growth in tourism. Passenger traffic at Sicilian airports increased by 8.9% between 2015 and 2017, significantly outpacing previous years, for both domestic and international flights. The number of passengers through Sicilian ports also rose steadily, particularly in local transportation and ferry services, although cruise traffic, which accounts for 9% of total port traffic, remained flat.

By 2018, the growth momentum in the service sector began to slow. The value added from services remained stationary, perhaps due to a slowdown in household consumption. According to a Bank of Italy survey, revenues in the sector had stagnated, with more businesses experiencing declining turnover than those seeing growth. This stagnation was partly due to the lingering effects of the financial crisis and to important regulatory interventions specific to the retail sector adopted in Italy since the end of the 1990s, aimed at favoring greater liberalization and modernization.

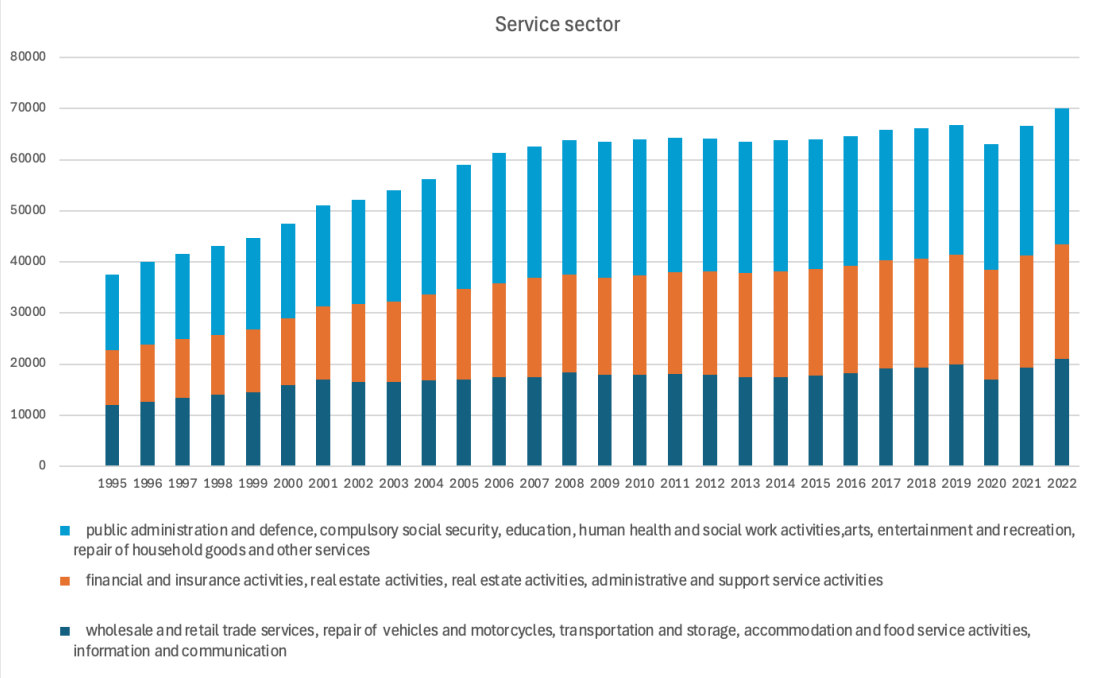

Figure 2.7 – Breakdown of Sicily's service sector (thousands of EUR)

Source: Istat

The situation deteriorated further with the onset of the COVID-19 pandemic in 2020. In the first semester of 2020, revenues plunged by over 30% due to falling domestic demand and logistical disruptions. The suspension of some economic activities from March 26th affected around 24% of the value added in the private non-financial service sector. Fortunately, with the partial reopening in early May, this figure dropped to 10% and gradually returned to zero. Commerce saw a major contraction from lockdowns and reduced consumer spending, with many small businesses struggling to survive.

After the sharp decline in 2020, the service sector's value added grew by 4.3% in 2021, even though, not much later, the business activity continued to be hampered by rising energy prices from the latter half of 2021, driven by the conflict in Ukraine. As a matter of fact, similar to the industrial sector, private non-financial services in Sicily are heavily reliant on energy-intensive activities such as land, maritime, and air transport, which account for 7.7% and 6.7% of value added respectively--higher than the national average. On the positive side, Sicily is the second-largest Italian region for wind power electricity production and sixth for photovoltaics. The increase in renewable energy production, which had been modest between 2014 and 2021,

accelerated in the last two years, spurred by high electricity prices and tax incentives for energy-efficient building upgrades.

In recent years, the service sector has undergone significant transformations, and its status in 2023-2024 reflects both global trends and regional developments. Growth in services, particularly in non-financial private sectors, has slowed compared to previous years, but specific areas like tourism and transportation have shown some positive results. Moreover, employment in the service sector expanded, with more stable, long-term positions being created, and the occupation rate for individuals aged 25-34 notably increased.

Tourism

Tourism in Sicily saw significant growth in the 1990s, with tourist arrivals and stays increasing by 45% between 1989 and 2000, compared to a national growth of around 35%. However, the Mafia-related violence in 1992-1993 considerably damaged Sicily's reputation, particularly abroad, leading to an 18% drop in arrivals. Despite this setback, the sector rebounded strongly, starting in 1994, and saw a further acceleration into the 2000s. This period was marked by a significant growth in both tourist arrivals and presences, with a slight increase in the average stay in local accommodation facilities.

The growth was evident across most of Sicily, though not evenly. Palermo, with its improved image as a city rich in art and culture, attracted more visitors, while Messina became particularly popular among international tourists. A very positive trend was realized in Agrigento due to the increased interest in the Pelagie Islands. Over 80% of annual tourist visits are concentrated between April and October, with nearly half in the peak months of June to August. Sicily's tourism appeal remained heavily centered on its coastal areas, home to the island's main beach resorts and key archaeological and cultural sites. In the first years of the new century, tourism infrastructure continued to consolidate, boosting foreign visitor numbers and increasing reliance on jobs in public services. The demand for transport and accommodation led to the growth of hospitality services and new public and private infrastructure.

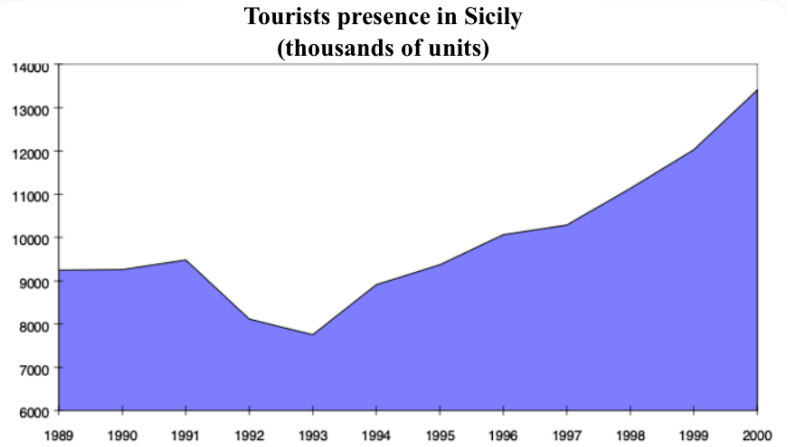

Figure 2.8 – Tourists presence in Sicily between 1989 and 2000

Source: Istat and Osservatorio turistico della Regione Siciliana

By 2007, however, the steady rise in tourism began to slow. While arrivals still increased, the pace was significantly slower than the previous year (0.9% compared to 5.9%), and overnight stays dropped, primarily due to a decline in domestic tourism. This trend worsened during the 2008 financial crisis, as both international and domestic travel decreased as consumer spending tightened globally. Hotels, restaurants, and other hospitality businesses saw reduced occupancy and revenue, and investment in tourism infrastructure, already lagging behind Northern Italy, further declined. according to provisional data provided by the tourism observatory of the Sicilian region, the negative trend for the tourism sector came to a halt; arrivals remained at the 2009 level, while presences rose by 3.8 per cent. This recovery was driven primarily by an increase in foreign tourists, up by 10.2%, while domestic tourism grew by just 0.8%.

This positive trend continued in the years that followed, with national tourism also picking up. In 2014, arrivals and overnight stays from domestic tourists increased by over 10%. Eastern Sicily, especially Catania, Syracuse, and Ragusa—home to three UNESCO World Heritage sites—showed the strongest growth. In these areas, hotel stays increased by 4.1%, while non-hotel accommodations, which account for less than 20% of total tourist traffic, saw a significant 15.6% increase. The overall spending in 2014 by foreign tourists increased for the fourth consecutive year, showing a marked acceleration (36.0 per cent, compared to 5.7 per cent the previous year), exceeding by 25 per cent, in nominal terms, the previous peak recorded in 2007. By 2016, Sicily's tourism sector was thriving, with international arrivals rising annually by 4.8%, particularly in key destinations like Palermo, Catania, and the Valley of the Temples. The sector's focus on cultural and culinary tourism became a key economic driver.

This upward trend continued until 2020, when the COVID-19 pandemic struck, dealing a severe blow to the service sector. Tourism was hit hardest: the number of tourist presences decreased by 56.2 per cent compared to the previous year, slightly more than the national average (-53.4 per cent). Both domestic and international tourist numbers dropped sharply; foreign tourists, who had made up half of Sicily's visitors in 2019, were especially impacted. Tourist activity came to a halt in April and May 2020, and although there was a partial rebound during the summer as restrictions eased, international tourism remained down by more than 70% compared to the same period the previous year.

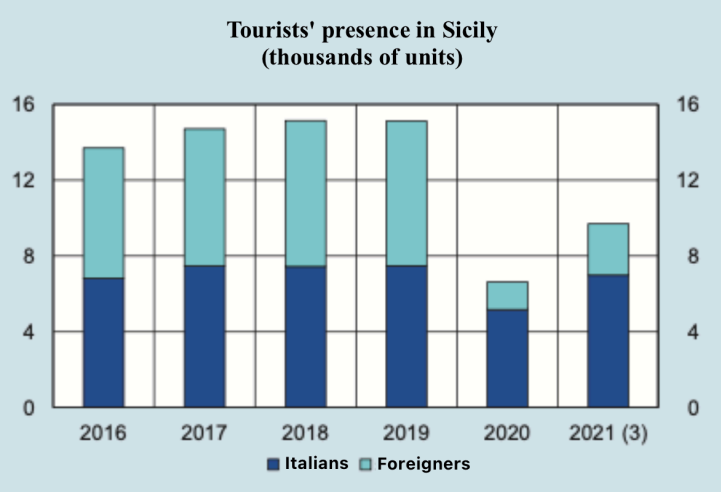

Figure 2.9 – Tourists presence in Sicily between 2016 and 2021

Source: Istat and Regione Sicilia per il 2021

As the economy slowly began to recover, tourism infrastructure—supported by EU recovery plan (PNRR) funds—played a crucial role in driving growth. Tourist arrivals and overnight stays rose by around 40% and 45%, respectively. The recovery has been stronger for the foreign component, which shrank more intensively in 2020, and was widespread among all the provinces and types of accommodation facilities. Yet, overnight stays in 2021 were still more than a third lower than the pre-pandemic three-year average. Passenger traffic at Sicily's airports, especially for domestic flights, showed a robust recovery, outpacing the national average, though it still lagged slightly behind the broader Southern Italy region. Compared to 2019, total passenger volumes were down 36.5%, with domestic traffic dropping by 26.3% and international traffic by 57.6%.

Between 2023 and 2024, the trend in the tourism sector continued to stay positive, with an increase in presences of 11.4 per cent, more than double the corresponding Italian figure. The

increase mainly concerned the foreign component, whose overnight stays exceeded the pre-pandemic values. In the same year, the increase in passenger traffic in Sicilian ports continued (10.6 per cent), with cruise traffic doubling.

The labor market

In the late 20th century, significant changes reshaped Sicily's labor market, initially causing a sharp decline in employment across all major sectors. Key factors included the end of extraordinary economic support for Southern Italy, a lack of new investment incentives for disadvantaged areas until 1995, strict public finance austerity measures introduced in 1992, and a notable reduction in public works projects. This negative trend continued through 1994, resulting in a 4% drop in employment compared to 1993, which translated into a loss of nearly 55,000 jobs in a single year. However, by 1996, the employment situation began to improve, and by 2000, the overall number of people employed had slightly surpassed 1993 levels, with a modest 0.3% increase. During this time, the labor market became more flexible, as the share of part-time workers increased from 5.7% to 8.9%, and fixed-term contracts rose from 13.1% in 1993 to 17.5%, driven mainly by the service sector.

Despite these gains, unemployment rate in Sicily continued to rise until 1999, as job seekers increased, due to a substantial increase in the level of education among the workforce. The gap between Sicily and the rest of Italy, already wide at the beginning of the period, widened further—from 9.2 to 13.4 percentage points. By 2000, the unemployment rate in Sicily was 2.3 times the national average, up from 1.9 times in 1993.

On the other hand, employment growth continued into 2001, with a 3.2% increase in the number of employed people, thanks to an upward trend in construction and service sectors. However, in the following years, the employment rate for those aged 15 to 64 remained relatively stagnant at the 2001 level.

Between 2003 and 2004, there was a significant reduction in job seekers, decreasing by 16.9%. While this trend affected much of Southern Italy, Sicily accounted for 57% of the overall decline in job seekers in the area considered. The drop in unemployment rate, from 20.1% to 17.2%, was mainly due to fewer people actively looking for work. This change was largely driven by interregional migration patterns, as many young Sicilians, especially those aged 20 to 34—who faced the highest unemployment rates—moved to Northern Italy in search of better opportunities.

After years of stability and slight growth, partly due to the regularization of foreign workers, employment in Sicily fell by 14,000 jobs (or 0.9%) in 2007. This decline affected all major sectors except for construction, where there was an increase in formalized labor. The 2008 financial crisis exacerbated unemployment, leading to a further contraction in employment and increasing reliance on social safety nets. The use of Cassa Integrazione Guadagni (as already mentioned, a wage support measure) rose by 1.1%, particularly in the ordinary sector (up 35.2%). As job seekers increased by 6.9%, the unemployment rate climbed to 13.8%, making it the highest among Italian regions.

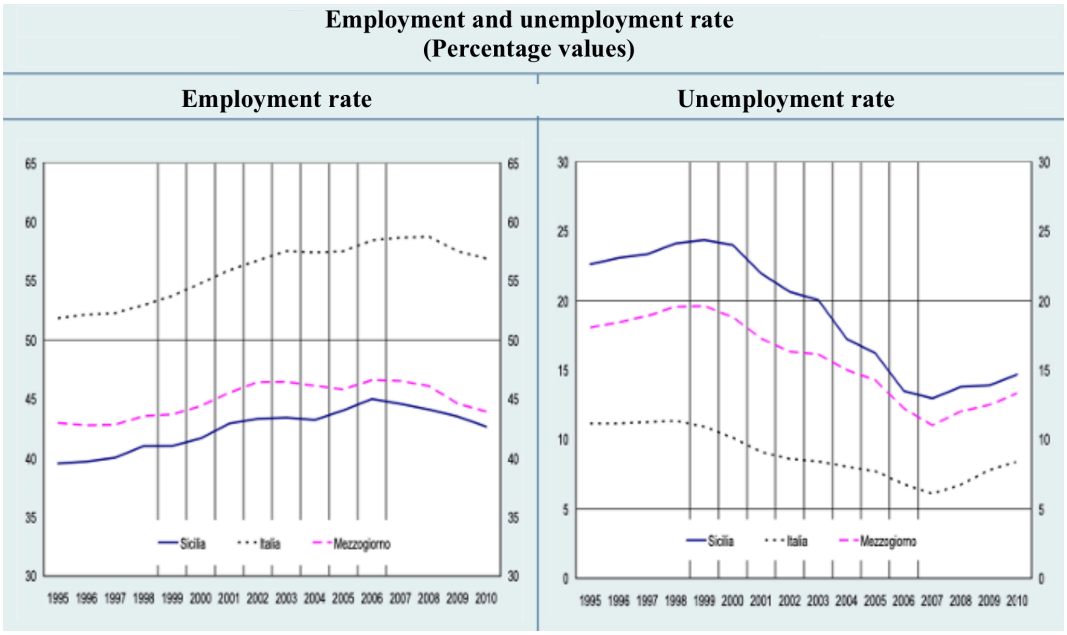

Figure 2.10 – Employment and unemployment rate in Sicily, Italy and South

Source: Istat, Rilevazioni sulle forze di lavoro

The economic crisis hit men and women differently. Until mid-2008, female employment rates grew slightly (from 27.1% in 2004 to 28.7% in 2008), while male employment remained stable at 60%. Afterward, male employment declined, while female employment remained steady, reducing the gender gap in employment from 33 percentage points in 2004 to 28.5 in 2010. In the following years Sicily's labor market did not show any improvement: the decline in employment affected all economic sectors. According to the 2013 Labor Force Survey, average monthly wages in Sicily were around €1,180—lower than the national average of €1,268. That same year, the decline in real wages in Sicily (-5.0%) exceeded the national average (-4.5%).

Some signs of recovery emerged from 2015 onward, particularly in agriculture (up 12.6%) and in commerce, hotels, and restaurants (up 6.5%). The construction sector, after losing nearly 64,000 jobs between 2008 and 2014, started to bounce back, adding about 4,000 jobs, corresponding to a 4.2% increase. Conversely, employment fell in public administration and defense (-2.4%), community and personal services (-5.3%), and slightly in manufacturing (-0.4%). Employment among workers aged 55 and older continued to grow (6.7%), partly due to extended working lives, while jobs for those aged 15 to 34 increased by 7.1%, supported by youth employment initiatives like the EU's "Youth Guarantee" (Garanzia Giovani) program. This program is a European Union initiative, launched in 2014, aimed at tackling youth unemployment by ensuring that young people receive a concrete offer of work within four months of leaving formal education or becoming unemployed, in order to support people under 30, particularly those not in employment, education, or training (NEETs). According to monitoring reports from the Ministry of Labor and Social Policies, Sicily saw the highest participation in the program, with over 47,000 internships in 2016, particularly in retail and food services.

Figure 2.11 – Sicily's employment by sector

Source: Istat

However, this although slight positive trend was short-lived. By 2016, Sicily's labor market recovery had stalled, and the COVID-19 pandemic soon dealt a severe blow, causing a sharp

drop in employment in the second quarter of 2020. Self-employed workers and temporary employees were particularly affected. The overall loss of jobs was partly cushioned by public support measures like wage supplements and a temporary freeze on layoffs. Surprisingly, the unemployment rate in Sicily fell slightly during the pandemic, but this was largely due to a significant drop in workforce participation, as many people stopped searching for jobs. The pandemic hit young people and women particularly hard: the latter, in particular, faced challenges balancing work and caregiving responsibilities, further widening the gender gap in labor market participation.

In 2021, as the economy began to recover, employment saw some improvement, especially in permanent positions and new hires in the private sector. Yet, the region struggled to fully regain pre-pandemic employment levels, and the recovery of temporary contracts lagged. By 2023, labor force participation continued to rise, partly offsetting the expected long-term decline in the working-age population. However, the region continued to face challenges, such as low female participation rates, which remained well below the national average. The unemployment rate fell to 15.8% in 2023, but it was still significantly high compared national average of 7.7%. Public programs like the "Garanzia di occupabilità dei lavoratori" (GOL) helped job seekers, especially those further from the labor market, while the use of wage support measures like Cassa Integrazione Guadagni (CIG) decreased to nearly half of 2022 levels, with about 10 million hours authorized, slightly above 2019 levels.

Throughout the analyzed period, Sicily consistently struggled with lower employment rates and higher unemployment rates compared to both the national average and other southern regions. Despite some progress, by 2022, Sicily's employment rate remained the lowest among all Italian regions at 42.6%, while the unemployment rate was extremely high at 16.9%, second only to Campania, and more than double the national average of 8.2%.

The undeclared work

A significant aspect of Sicily’s labor market is the prevalence of undeclared work, which refers to economic activities and employment that operate outside official records and regulations. Workers in such informal jobs are not registered with social security systems, meaning they avoid paying taxes, making social security contributions, and ensuring standard employment rights.

Undeclared work has long been widespread in Sicily, particularly in sectors like agriculture, construction, and small-scale services. This phenomenon is often driven by high

unemployment, a rigid labor market, and economic pressures that push both businesses and workers towards informal employment as a way to reduce costs and navigate around bureaucratic obstacles.

Between 1995 and 2001, the share of irregular employment increased in Sicily from 20.3% to 24%, with the number of people working unofficially rising by about 75,000, reaching 364,000 in 2001. At the turn of the 21st century, irregular employment in agriculture reached 42.2%, while in construction, it surpassed 34%, increasing by 2.3 percentage points over the period. In 2001, around one-fifth of jobs in industry and services were also informal.

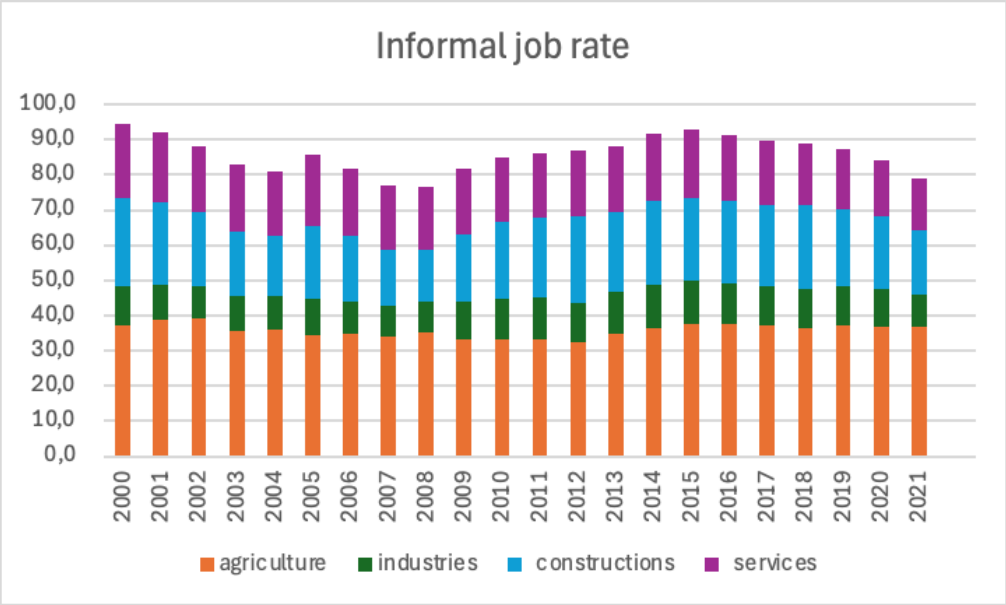

Figure 2.12 – Informal job rate, by productive sectors

Due to its hidden nature, the true extent of informal work is hard to measure accurately. Despite various policy efforts to curb it, the rate of undeclared work in Sicily has remained persistently high over the years, as reflected in the data. While there was a slight decline after 2016, informal work still represents around 30-40% of jobs across key sectors like agriculture, construction, and services. Furthermore, reductions in undeclared work have often coincided with economic downturns, such as the 2008 financial crisis and the COVID-19 pandemic, highlighting that that there has been no such improvement in the black market for labor over the years.

The prevalence of informal work not only distorts competition and hampers productivity but also deepens social inequalities by depriving workers of critical benefits like social security, healthcare, and pensions. Additionally, the informal economy undermines the state's ability to collect taxes and invest in public services, which contributes to the region's ongoing economic

stagnation. To effectively tackle the informal job market in Sicily, efforts should focus on creating more formal employment opportunities, improving labor regulations, and addressing the economic pressures that drive both workers and employers towards unregulated labor practices.

The international trend: Import and Export

Sicily's import and export activities have always played a crucial role in shaping its economic landscape, significantly influencing the region's GDP. Thanks to its strategic position in the Mediterranean, the island has become a hub for international trade: key exports include citrus fruits, wine, and refined petroleum, while imports primarily consist of machinery, chemicals, and foodstuffs. Over the years, fluctuations in global demand and market conditions have influenced trade volumes, with notable changes in both export growth and import dependency between 2000 and 2024, reflecting broader economic trends in Italy and Europe.

Petroleum products, both crude and refined, have been especially important in Sicily's export profile, growing in importance over the years. By 2007, these products accounted for two-thirds of exports, driven by a global surge in energy prices. In fact, while the volume of refined petroleum exports increased by 51.9%, their value grew nearly sixfold. However, excluding petroleum, Sicily's contribution to Italy's total exports remained relatively stable in the time span considered, between 0.9% and 1.0%.

During the first decade of the new century, Sicily's export composition shifted slightly. The agricultural sector's share of exports decreased from 12.2% to 10.3%, and transport exports saw a steep decline, both in relative terms (from 27% to 10.6%) and in absolute value (a 38.7% drop). This was largely due to a change in the Sicilian Fiat plant's focus toward domestic markets. Among the main local export sectors, the food industry grew from 10.6% to 11.9%, while metals and metal products increased from 2.6% to 6.7%.

The chemical sector experienced the largest growth, where its share rose by 13.1 percentage points (from 20.6% to 33.7%), thanks to the expansion of companies in pharmaceuticals and biotechnology. The electrical and optical equipment sector also saw a positive trend, peaking at 21.8% in 2000–up from 9.4% in 1997–before declining to 13% by 2007. Despite a drop in export values after 2000, the decline was less steep than the national average.

In 2008, Sicilian exports represented 4% of Italy's total, an increase of over two percentage points since 1997. Asia, United State of America, Africa could be found among the most

geographical areas for local exports, apart from Europe and, in particular, the euro countries, which were the main destination of the Island's sales.

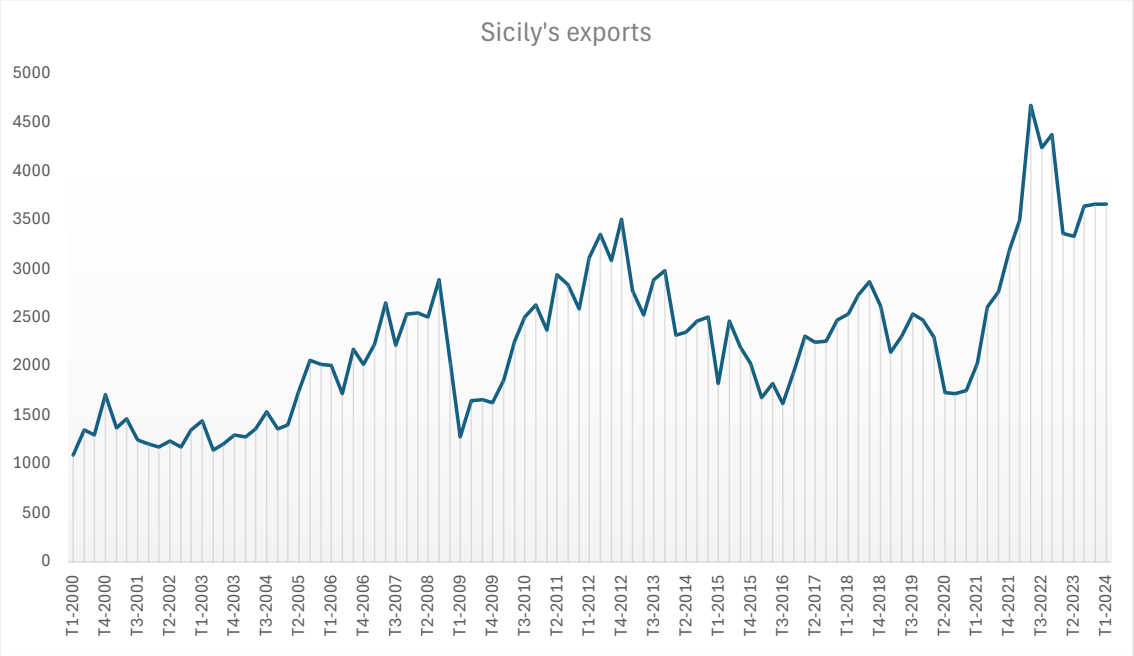

Figure 2.13 – Nominal value of Sicily's exports (millions of EUR)

Source: Istat

Throughout the same period, imports steadily grew, especially in the mining and quarrying sector. Nearly 90% of Sicily's imports were concentrated in petroleum products, whose value rose due to increasing oil prices on international market. Other sectors, like machinery and mechanical appliances, saw a notable 44% increase, while imports of electrical and precision equipment rose by 29.5%.

In terms of geographic distribution, trade flows are affected by Sicily's heavy specialization in energy products. A variable percentage, between 20% and 40%, of local imports has come, over the years, from Africa, with similar values for the Middle East, since both are key suppliers of crude oil and gas. Apart from energy, Europe remained the dominant trade partner for both imports and exports. Between 1997 and 2008, non-petroleum imports from Eurozone countries declined, replaced mainly by other European nations, whose overall share rose from 16.3% to 24.1%, including Turkey and Russia. At the same time, Asian markets, particularly China, gained significance, with Asia's share of imports nearly doubling.

The global financial crisis hit Sicilian trade hard, with exports plunging by 43% in 2009, in contrast with a 24.2 per cent drop at the national level and a 35.0 per cent decrease for Southern

Italy. The drop was most pronounced in refined petroleum products, which over the past five years have accounted for over 60% of Sicily's total exports. Excluding petroleum, regional export values fell by 38.5%. Imports also fell significantly, by 47.9%, with petroleum and gas imports dropping 52.2%.

In the years that followed, Sicily's trade began to recover, heterogeneously across various markets. In 2010, chemical exports grew by 67.5%, and there was an increase of 53% for agricultural, forestry, and fishing products. Transport equipment exports nearly tripled, driven by a surge in the sale of ships and aircraft. Among other sectors, a noteworthy increase was seen in the sales of pharmaceutical products (71.0 percent), while the increases for food products, beverages, and tobacco (16.1 percent) and for computers, electronic and optical appliances (22.5 percent) were more modest.

Despite a brief recovery, trade conditions worsened again, and Sicily struggled to match the growth in global demand.

The competitive capacity of a region lies in the gap between exports and potential demand, which represents the value of exports that regional producers could achieve if the growth rate of foreign sales in each country and in each sector matched the increase in imports for that market. As the following graph shows, despite the improvement witnessed in 2009-2010, the growth rate of current value exports of non-oil manufactured products from Sicily continues to be more than 40 percentage points lower than that of potential demand, widening the gap already present before the crisis.

The dynamics of Sicilian exports followed a divergent trend compared to the rest of the country. During the period from 2005 to 2016, the volume of goods sold—estimated by deflating regional exports with national production price indices for exported goods in each sector—declined by over 20 percent, against a 33 percent increase in potential demand. The graph below represents the real exports of Sicily from 2005 to 2016, adjusted for inflation to constant prices. It differentiates between total real exports (red), real exports excluding oil (purple), Sicily's potential demand (green), and global trade trends (black). The use of real values allows for a more accurate assessment of export dynamics, eliminating price level distortions.

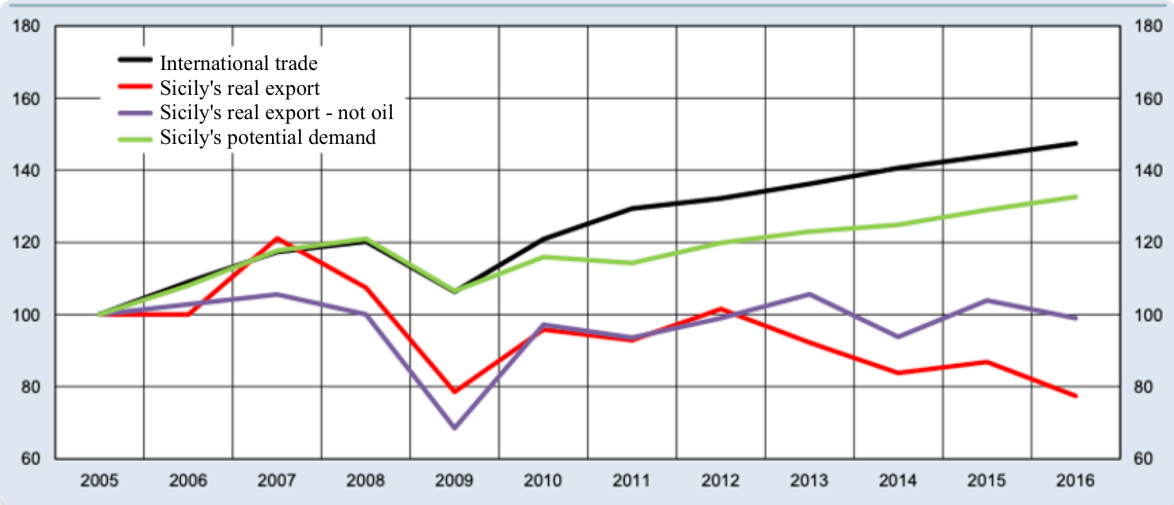

Figure 2.14 – The gap between exports and potential demand

Source: Istat

A 15.2% decline in petroleum product sales, particularly between 2013 and 2014, contributed to this trend, as the sector faced oversupply and weakened global demand. Excluding petroleum, some growth was seen in chemical products (26.7%), electronics (6.7%), and agri-food exports (6.6%), leading to a partial re-composition of the sectoral mix of Sicilian exports, that will continue also in the following years. An increase of exports of 17.1 per cent was achieved thanks to the euro area countries, which receive more than half of the sales of non-oil products. On the other side, in 2016, exports outside the EU, especially to Turkey, Africa, and the Middle East, declined due to weaker sales of oil derivatives.

Sicilian exports faced another downturn in 2019, dropping by 14.1% after two years of growth. The decline was mainly driven by falling sales in the oil sector, which still made up 56% of exports. The trend extended to other sectors, including chemicals, agriculture, transport equipment and metals. Still, the pharmaceutical and electronics sectors showed resilience, and sales to North America grew even as demand in the EU and Asia fell.

The COVID-19 pandemic further strained trade in 2020, amplifying the negative trends of the previous year. However, with the global economic recovery, Sicilian merchandise exports increased by 38.8 per cent at current prices in 2021, more than offsetting the drop in 2020. This growth was led primarily by the oil sector, whose sales (in value) gradually approached pre-pandemic levels, supported by the increase in prices (exported quantities increased by only 3.8 per cent). In the non-oil sectors as a whole, exports grew by 12.9 per cent at current prices), less than the national average, but more compared Southern Italy. The conflict in Ukraine and the sanctions adopted against Russia and Belarus had a limited impact on exports: in 2021, Sicily's

sales to these countries accounted for 1.3 per cent of the total (2.0 per cent in Italy). Much more significant was the weight of imports from these areas, which accounted for 13.9 per cent and were almost entirely made up of imports of crude oil and petroleum products from Russia.

In 2023, in a negative international environment, with wars, high interest rates, unfavorable exchange rates, and a drop in demand for fuel and chemicals, where even Lombardy stalled at a modest +1.64% and the entire country at +1.04%, Sicily managed to increase exports in most sectors except for refined petroleum products and chemicals. According to the analysis by the Economic Observatory of Unioncamere Sicilia, the total regional export figures show a loss of 16.7%, falling from 12.4 to 10.3 billion euros. However, this is solely due to the collapse in refined petroleum products (-23.3%, equal to -1 billion and 933 million euros) and chemicals (-34%, equal to -302 million euros). In contrast, when analyzing the rest of the sectors, the balance between the third quarter of 2022 and the third quarter of 2023 is positive by 157 million euros (+4.8%).

The island played a crucial role in meeting national energy needs with a surge in crude oil and natural gas exports, and other sectors like machinery, electrical appliances, and agriculture also saw growth. Consistent with this trend, exports from all Sicilian provinces, except for the three affected by refining activities, have increased: Siracusa (-26.91%), Messina (-10.69%), and Ragusa (-15.53%).

All other provinces show positive growth: Catania (+9.6%); Trapani (+25%); Palermo (+12.7%); Agrigento (+35.8%); Caltanissetta (+63.9%); and Enna (+93.9%). Despite the drought and fires, there was an encouraging recovery in agricultural exports (+7.6%), as well as in fishing (+11.2%), thanks to increased demand from northern markets and innovations in the fish processing sector. The sale of wood, paper, and related products (+3.3%) is also doing well. All these are signs of a return to innovative and competitive activities related to nature, which is the island's primary resource.

The financial market

Over the past two decades, Sicily's financial landscape has experienced a profound shift, driven by the behavior of households, the role of financial institutions, and changes in the broader economy environment. Households, which accumulate savings when their income exceeds their consumption, deposit these saving in banks. Financial institutions like banks that act as intermediaries, channel these funds to businesses and the public sector for investments or financial needs. These intermediaries, including banks, investment funds, and post offices,

bridge the gap between savings and investment demands, facilitating the flow of capital from households to businesses. Banks also assess the financial health of companies to determine suitable interest rates for loans.

Historically, local banks in Sicily were key in supporting businesses on the island. But over the years, this landscape changed dramatically, with a sharp reduction in the number of Sicilian banks. In the period 1996-2001, the reduction in the number of banks based in the region was marked (-24) and largely due to aggregation operations; 30 operations were carried out (mergers, incorporations and transfers of assets and liabilities), involving companies that accounted for 23 per cent of loans and 18.9 per cent of deposits.

Since 1996, banks holding close to 60% of the regional market share were absorbed into larger groups, which led to a drop in the number of branches by 183. Meanwhile, banks from outside the region expanded, adding 303 branches and increasing their market presence from 28% to nearly 45%.

After this wave of consolidation, the number of Cooperative Credit Banks (CCBs) in Sicily began to recover from 2005 onwards. The distribution network expanded significantly, particularly after 2002, and by 2008, there were 159 operational branches across about one-third of Sicily's municipalities. However, from 2009 onward, the number of banks and branches dwindled again. By the end of 2019, only 53 banks remained, six fewer than the previous year, with 22 headquartered locally. The number of branches dropped further to 1,228—about a third fewer than the peak in 2008. This reduction coincided with the rise of digital banking: since 2010, both internet banking and card payment systems have more than doubled in usage.

The integration of local banks into larger national groups had profound consequences. As these local banks disappeared, their focus on funding Sicilian businesses diminished. Instead, Northern Italian companies—considered more financially secure—benefited from lower interest rates, creating additional barriers for Sicilian companies seeking credit. This shift created a larger issue: while Sicilian households increased their savings over time, those savings often flowed to wealthier regions instead of being reinvested locally.

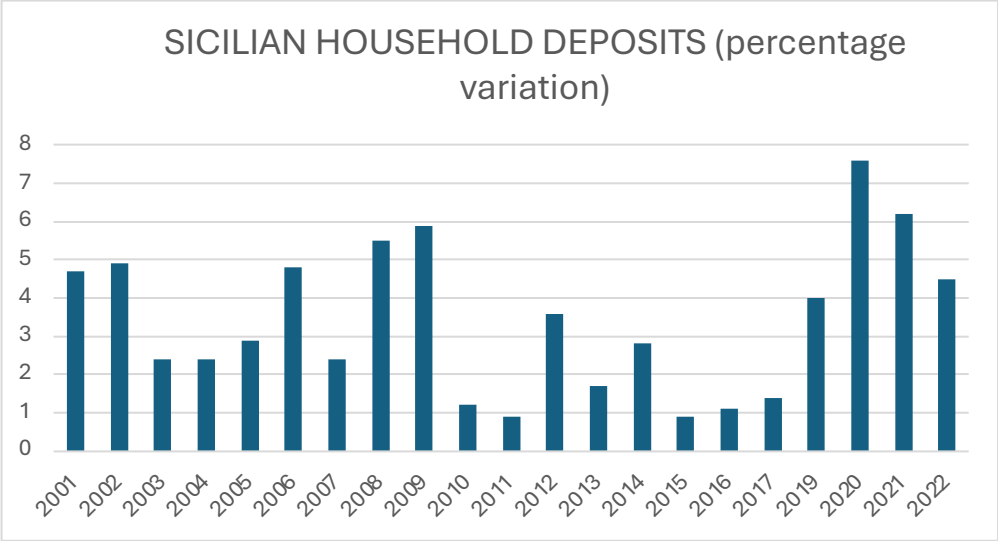

Figure 2.15 – Sicilian households deposits

Source: Istat

From 2001 to 2022, savings in Sicily followed an upward trend, especially during times of economic uncertainty, like the 2009 crisis and the COVID-19 pandemic. However, this growth in savings did not translate into increased local wealth. Despite rising deposits, real assets, particularly real estate—a traditional cornerstone of wealth in Sicily—saw a decline. Local investments remained sluggish, with a shift toward safer, more liquid financial products.

This trend reveals a decline in confidence among Sicilian households when it comes to local investments. More and more, they are opting to place their money in non-local banks or seek investment opportunities outside the island. As a result, even though savings have grown, these funds are not being channeled back into Sicily's economy, reducing the financial resources available locally, which in turn, has stalled the growth of wealth on the island. The tendency to invest outside of Sicily has compounded the problem, weakening the local financial ecosystem and limiting the region's economic growth potential.

An econometric analysis of Sicilian Enterprises

This final chapter presents a comprehensive econometric analysis of all 57,999 Sicilian companies, representing the entire population of enterprises in Sicily as retrieved from the AIDA database distributed by the Bureau Van Dijk. The analysis covers the period from 2013 to 2022 and aims to uncover the factors that drive both the success and failure of these firms, thereby laying the foundation for actionable recommendations to stimulate Sicily's economic growth.

The analysis focuses on several key performance variables:

- Revenue (expressed in thousands of euros) represents the total income generated by a company's core operations and serves as a primary indicator of market size.
- EBITDA (also in thousands of euros) reflects earnings before interest, taxes, depreciation, and amortization, offering insight into the operational efficiency and cash flow generation of the enterprise.
- Net Profit, likewise measured in thousands of euros, provides the final profitability figure after all expenses and taxes, encapsulating overall financial performance.
- ROE (Return on Equity), expressed as a percentage, evaluates how effectively a company uses its shareholders' equity to generate profits.
- Bank Debt Over Revenue (in percentage) indicates the extent of reliance on borrowed funds relative to sales, highlighting potential financial vulnerability.
- The Number of Employees offers an absolute measure of firm size and labor input, which is crucial for understanding the scale of operations.

A particularly valuable metric introduced in this study is (labour) productivity, computed as the ratio of Revenue to Number of Employees for each year. Unlike raw revenue figures, which can be heavily influenced by company size, this indicator provides a measure of how efficiently firms convert labor into revenue. In other words, productivity enables us to distinguish between firms that are merely large and those that are truly efficient. A high productivity ratio suggests that a firm is effectively leveraging its human resources to generate revenue, potentially reflecting superior management practices, technological advantages, or well-executed

economies of scale. Thus, incorporating productivity into the analysis offers a more nuanced view of competitive performance by focusing on efficiency rather than sheer size.

The analysis will start with a general overview of the totality of Sicilian enterprises, using pie charts by province and by sector to provide a visual representation of the regional and sectoral distribution of all businesses in Sicily. The chapter continues by mapping the geographical distribution of Sicilian enterprises to identify provinces with favorable conditions—such as robust infrastructure, market access, and supportive local economic environments—that foster business success. It then delves into sectoral specialization, pinpointing industries where companies have achieved significant performance and may benefit from targeted development policies. Subsequent sections explore the interplay between regional economic strengths and dominant industries, assess temporal trends over the decade, and compare the performance indicators of Sicilian firms with those of nearly all Italian companies.

Two important caveats must be considered when interpreting these findings. First, since Revenue, EBITDA, and Net Profit are nominal figures expressed in current euros, their values are influenced by inflation; thus, observed increases may partly reflect inflationary pressures rather than real growth. The dataset, though extensive, may include variations in data quality, self-reporting inaccuracies, or limited historical coverage for some firms. As a result, the performance measures might be less representative for smaller subgroups or newly established companies.

Despite these limitations, the insights provided by this analysis offer a valuable basis for policy formulation and strategic decision-making aimed at enhancing the performance of Sicily's business sector.

For the first three paragraphs of this chapter, the analysis focuses on the time average values of key variables in the dataset, including MediaRicaviVendite (Average Revenue), MediaEBITDA (Average EBITDA), MediaUtileNetto (Average Net Profit), MediaDebVsBancheSuFatt (Average Bank Debt as a Percentage of Revenue), MediaROE (Average Return on Equity), and MediaDipendenti (Average Number of Employees). These values are calculated over the 2013–2022 period to provide a more stable and representative assessment of business performance. This approach allows for an examination of geographic and sectoral trends, focusing on the average performance of companies rather than year-to-year fluctuations. Additionally, as mentioned before productivity variable was calculated as the ratio of Revenue to Number of Employees for each year, and its average over the period was analyzed to evaluate business efficiency across different regions and sectors. Moreover, in recognition

of the fact that financial data often exhibit skewed distributions and may be influenced by outliers, medians were also calculated for all key indicators. The median serves as a robust measure of central tendency, offering an alternative perspective that is less affected by extreme values. By analyzing both the means and medians, the study provides a more nuanced and reliable picture of the financial performance of Sicilian companies.

The use of average values over a decade is preferred for various reasons. Averaging will smooth out some of the erratic fluctuations caused by economic shocks, policy changes, or firm-specific anomalies and makes the observed trend representative of the structural economic conditions rather than transient distortions. This approach allows more stable comparisons to be made between provinces, showing persistent economic strengths and weaknesses rather than year-by-year variations. Besides, since financial indicators may be susceptible to cyclic influence, averaging over a decade gives a clearer picture of the long-term economic dynamics and thus provides more reliable identification of regions that constantly perform better or worse than others.

Overview of Geographical Distribution and Sectoral Specialization of Sicilian enterprises

This chapter begins by providing a visual representation of the totality of Sicilian enterprises, offering a broad perspective before delving into more detailed analyses. To ensure a comprehensive understanding of the regional business landscape, this section considers the entire universe of Sicilian firms, comprising 57,999 companies. The analysis focuses on two key dimensions: the geographic distribution of firms across the island's nine provinces—Palermo, Catania, Messina, Siracusa, Ragusa, Trapani, Agrigento, Caltanissetta, and Enna—and their sectoral specialization across the six main economic sectors—Agriculture, Services, Manufacturing, Wholesale, Retail, and Construction. Through visual representations, such as pie charts, this section provides an essential first glance at how businesses are distributed spatially and industrially, serving as a foundation for the subsequent analyses on firm performance and economic dynamics in Sicily.

In addition to these visualizations, a panel containing nine pie charts, each representing the sectoral specialization of a single province, is included to provide further insight into how industries are distributed at the provincial level.

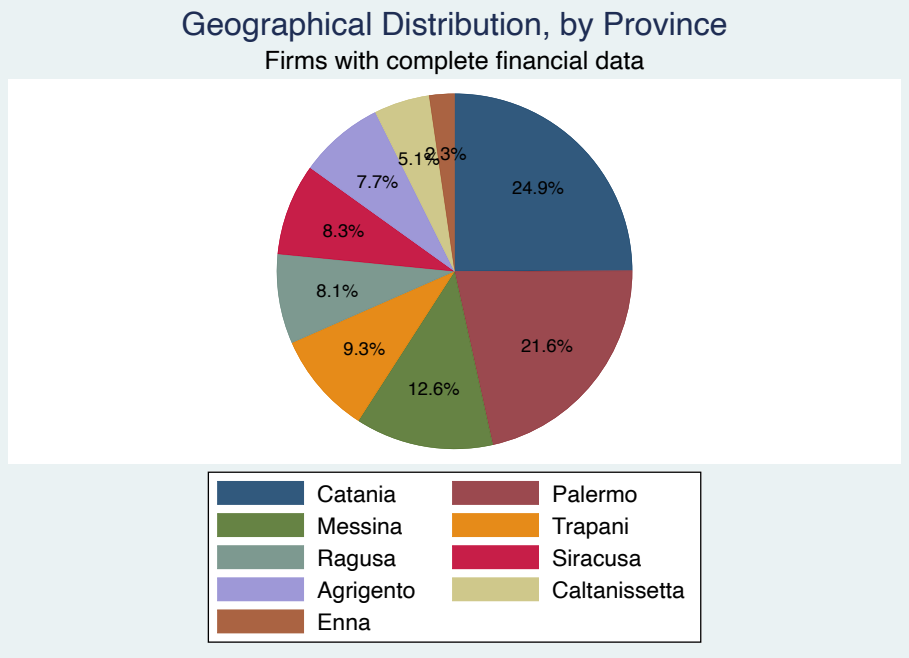

Figure 3.1 – Sicilian company distribution by Province

The pie chart presented above, generated using the entire dataset of Sicilian companies (57,900 industries), illustrates the distribution of firms across the island's provinces. The chart highlights that Catania and Palermo host the largest concentration of businesses, while provinces such as Trapani, Siracusa, Messina, Ragusa, Agrigento, Caltanissetta, and Enna exhibit progressively smaller shares. However, it is important to consider that these figures are influenced by the size of each province. Metropolitan areas like Palermo and Catania naturally accommodate more companies due to their larger populations, more developed infrastructure, and greater market access. This does not necessarily imply that these provinces generate more profit or exhibit higher economic performance—a province with fewer firms could still achieve strong economic output depending on business size, sectoral specialization, and overall profitability. Conversely, the lower business presence in smaller provinces may reflect structural or geographic constraints that limit economic activity. Therefore, while this distribution helps identify where businesses are most concentrated, it should be analyzed alongside other indicators, such as revenue, productivity, and sectoral specialization, to fully understand the economic dynamics of each province. This is why the analysis in the following paragraph will delve in the examination of average values of key indicators such as revenue, ROE, EBITDA, debt vs. banks over revenue, productivity, and number of employees across provinces, in order to assess the economic impact of business presence in different areas of Sicily.

Building upon the previous analysis of the geographical distribution of firms across Sicilian provinces, it is equally important to examine how these businesses are distributed across different economic sectors. While the geographical distribution provides insights into where business activity is concentrated, sectoral specialization highlights the industries that drive the regional economy.

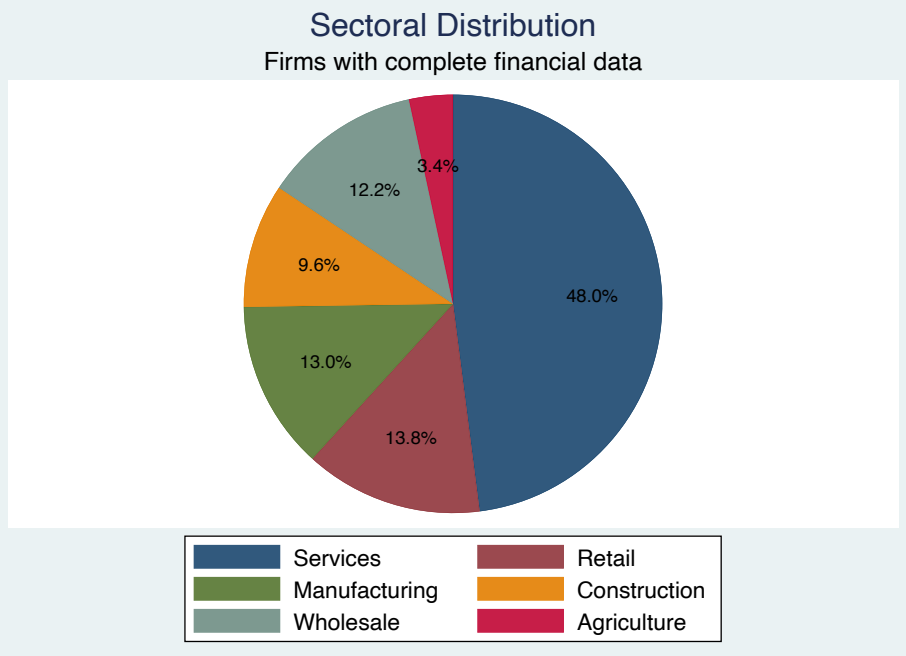

Figure 3.2 - Sicilian sectoral distribution

The pie chart just presented an initial overview of the sectoral distribution of Sicilian enterprises, offering a clear snapshot of how businesses are divided across different industries. This visualization is particularly useful as it allows for an immediate understanding of the economic structure of the region. Notably, this chart is based on the subset of firms with complete financial data, ensuring that the analysis is both comprehensive and representative of the broader Sicilian business landscape.

The distribution mimics the aggregate data discussed in the previous chapter and highlights the predominance of the service sector, which accounts for nearly half of all firms (48.0%), while manufacturing represents only 13.0%. Retail and wholesale trade together make up 26.0%, followed by construction at 9.6% and agriculture at just 3.4%, despite Sicily's strong natural potential in this sector. The limited presence of agriculture and industry suggests that the region's economic activity is concentrated in services and trade, potentially at the expense of sectors that could provide long-term structural growth.

To further refine this analysis, a panel of nine pie charts has been created, each representing the sectoral distribution of firms within a specific Sicilian province. This visualization allows for a more detailed examination of how different industries are distributed across the island, revealing potential regional specializations and economic patterns that may not be immediately apparent in the aggregate sectoral or geographical breakdowns. By comparing sectoral compositions across provinces, this panel helps identify whether certain areas exhibit a stronger presence in specific industries, such as manufacturing in Catania or wholesale trade in Palermo. This approach provides a more nuanced understanding of the interplay between geography and sectoral specialization, offering insights into the factors that shape local business environments.

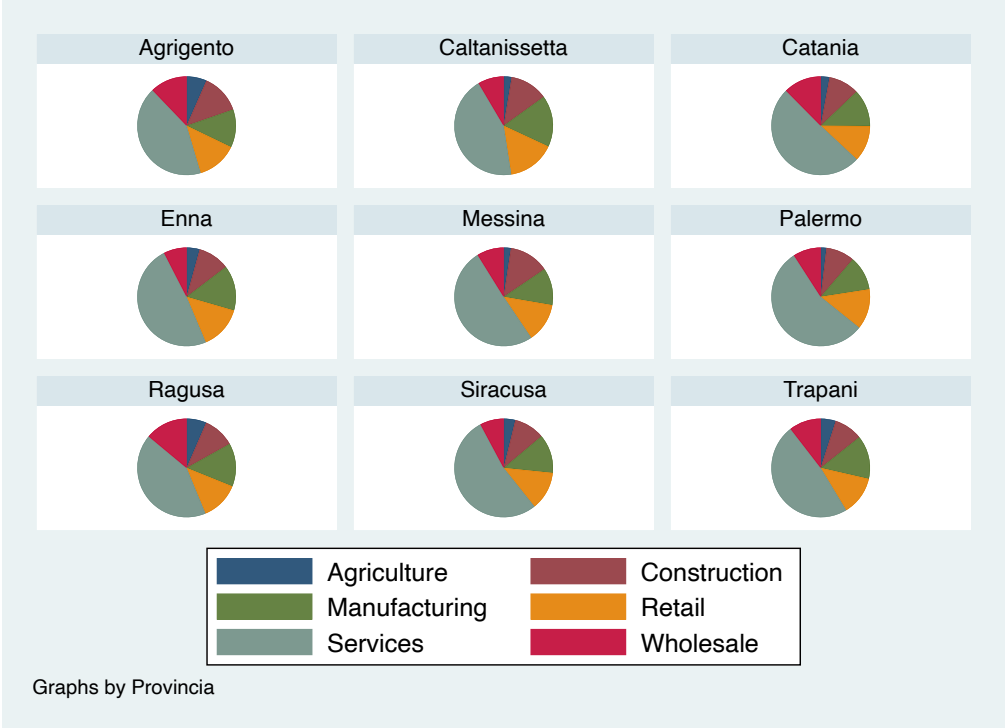

Figure 3.3 - Sicilian sectoral distribution by Province

This panel of pie charts illustrates the sectoral distribution of firms across the nine Sicilian provinces: Agrigento, Caltanissetta, Catania, Enna, Messina, Palermo, Ragusa, Siracusa, and Trapani. Each chart provides a breakdown of the relative share of Agriculture, Manufacturing, Services, Construction, Retail, and Wholesale within each province, offering a more granular perspective on sectoral specialization at the regional level.

A key takeaway from these charts is the dominance of the services sector across all provinces, which aligns with the previous discussion on sectoral distribution in Sicily. Services represent

the largest share of enterprises in every province, reinforcing its position as the backbone of the regional economy. However, as noted earlier, high representation does not necessarily correlate with superior performance. While Palermo and Ragusa show strong sectoral diversification with a significant presence of both services and trade-related sectors (retail and wholesale), their financial metrics in previous analyses indicated that service-based firms often operate with lower profitability margins.

Manufacturing emerges as an important sector in provinces like Catania, Siracusa, and Ragusa, which were previously identified as key industrial hubs. This visualization confirms that manufacturing has a notable presence in these provinces, reinforcing their role as production centers. However, it is important to note that despite Catania's strong representation of manufacturing firms, financial indicators such as ROE and EBITDA did not show it as the most profitable sector overall, suggesting that scale, capital intensity, and operational efficiency play a significant role in performance beyond sheer numerical presence.

Retail and wholesale trade show considerable representation in Palermo, Ragusa, and Trapani, reflecting these provinces' historical roles as commercial and trade centers. This aligns with previous findings that wholesale trade is a significant contributor to firm revenues in these areas. However, wholesale businesses were found to have lower EBITDA and ROE, confirming that while revenue levels might be high due to large transaction volumes, profitability and capital efficiency remain moderate in the sector.

The agriculture sector, despite Sicily's natural advantages, remains a relatively small component of the business landscape across all provinces, confirming earlier observations that its economic potential remains underutilized. Even in provinces like Agrigento and Enna, which are traditionally known for agricultural production, businesses in this sector remain a minority. This reaffirms previous findings that agriculture struggles with profitability due to structural inefficiencies, fragmented land ownership, and limited integration into high-value markets.

Similarly, construction appears relatively underrepresented in all provinces, reflecting the sector's long-term struggles with investment cycles, reliance on public infrastructure spending, and economic fluctuations. This is consistent with its weak financial performance observed earlier, particularly in EBITDA and Net Profit.

One of the most crucial insights from this panel is that a high concentration of firms in a sector within a province does not necessarily translate into strong financial performance for that sector in that region. For example, services dominate across all provinces, but their financial efficiency varies significantly, with some provinces demonstrating higher productivity and profitability

than others. Conversely, manufacturing and wholesale are less widespread but show stronger financial results in provinces where they are well-established. This highlights the importance of sectoral efficiency, firm specialization, and competitive positioning within industries, rather than just numerical dominance.

Overall, these pie charts confirm the sectoral patterns discussed earlier while also emphasizing the disconnect between sectoral presence and economic performance. While services and trade-related activities are the most widespread, the most financially successful provinces tend to have a more balanced sectoral composition, with a strong presence of high-value manufacturing and well-integrated trade activities. This reinforces the argument that policy interventions should not only focus on supporting dominant sectors but also on improving the competitiveness and financial viability of underperforming industries to foster balanced and sustainable regional economic growth.

As said, sectoral and geographic distribution alone do not fully capture business performance or economic potential. In the following sections, a more detailed analysis will assess how these structural patterns translate into financial outcomes, identifying the key factors influencing firm success and regional economic dynamics.

Geographical Distribution of Sicilian enterprises and their performance

This chapter begins with an analysis of the geographical distribution of Sicilian enterprises across the island's nine provinces: Palermo, Catania, Messina, Siracusa, Ragusa, Trapani, Agrigento, Caltanissetta, and Enna. The overview of the provincial distribution of Sicilian enterprises has already been presented in the introductory section of this chapter, offering a broad perspective on the spatial concentration of businesses across the island. Building upon this foundation, the present section shifts its focus towards a deeper analysis of economic performance at the provincial level, by examining seven key financial indicators: Revenue, EBITDA, Net Profit, Debt vs Banks Over Revenue, ROE, Number of Employees, and Productivity.

To assess these metrics, bar charts displaying both mean and median values will be utilized. As already mentioned, the inclusion of both statistical measures is crucial to identify distortions caused by extreme values, offering a more accurate representation of the typical firm's performance in each province. Additionally, boxplots will be incorporated to further explore the dispersion of these indicators, highlighting outliers and variations within the data. This combined visual approach provides a comprehensive picture of business performance across

Sicilian provinces, ensuring that insights are not skewed by a small number of highly successful or struggling firms.

To better understand the relationships between different financial variables, a correlation matrix will be examined. This analysis helps identify how different performance indicators interact—for example, whether higher revenues correlate with higher profitability, or whether certain variables, such as debt levels, exhibit weak or unexpected relationships with other firm performance measures. By exploring these correlations, we can better interpret the factors driving business success and financial stability in each province.

In the second part of the analysis, the focus will shift towards identifying the geographical concentration of the most successful companies. Instead of analyzing all firms, this section will isolate top-performing enterprises and determine which provinces host the highest concentration of high-performing businesses. A bar chart will illustrate the distribution of these top performers across the nine provinces. As in the sectoral analysis that will follow, top-performing firms are defined based on two core financial indicators: ROE (Return on Equity) and Productivity. This selection is justified by their relevance in assessing business efficiency and competitiveness. ROE reflects how effectively firms utilize their equity to generate profits, making it a key measure of financial performance. Productivity, measured as revenue per employee, evaluates the efficiency of labor in generating economic output. To classify top performers, companies ranking in the top 10% in both ROE and Productivity within their respective sector are considered. This ensures that the evaluation accounts for sector-specific characteristics, making the comparison more meaningful.

By combining regional and firm-level performance data, this analysis aims to uncover spatial patterns in business success, providing insights into the economic strengths and weaknesses of different areas in Sicily.

From this point onwards, the analysis focuses only on firms with complete financial data (32,787 observations), excluding those with missing mean and median values due to insufficient records over the years. This ensures more reliable results by avoiding distortions from incomplete observations, allowing for a clearer assessment of economic performance across Sicilian enterprises. Retaining these incomplete observations could have compromised the reliability of the results, as missing financial data often reflects either reporting inconsistencies or firms with limited activity, making them less representative of broader economic trends. By removing these cases, the analysis ensures a more accurate and meaningful

assessment of business performance, preventing distortions that could arise from firms with incomplete financial histories and provides a more robust foundation for evaluating sectoral and geographical economic dynamics across Sicily.

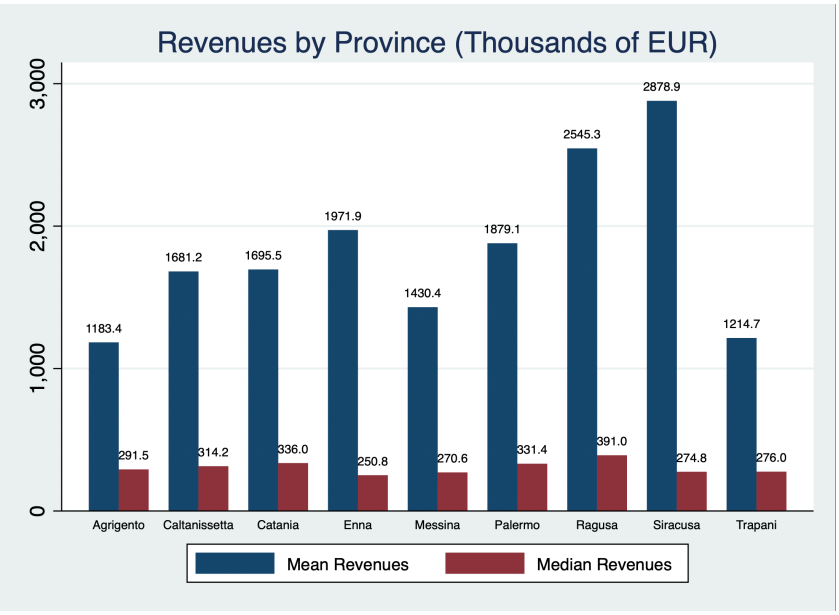

Figure 3.4 – Graph bar of Mean and Median Revenues by Province

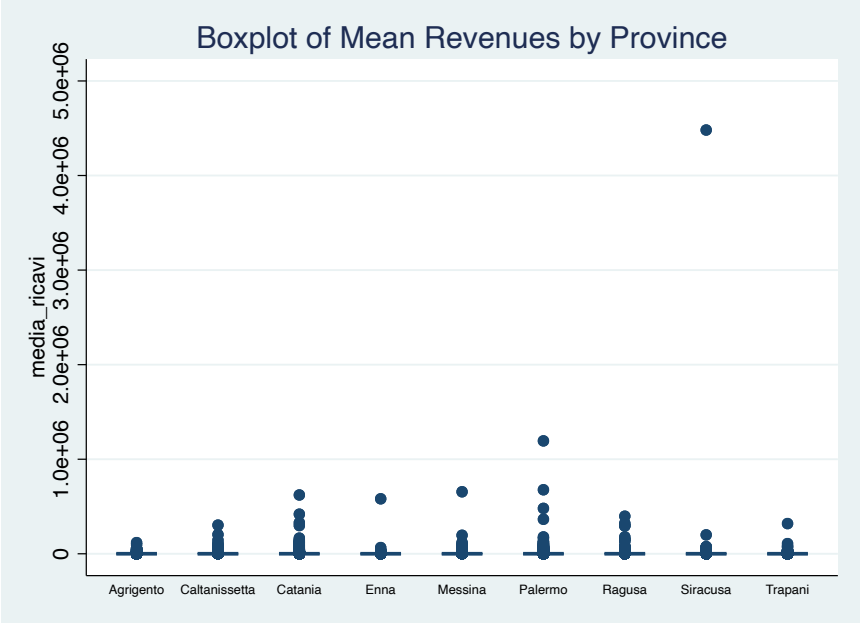

Figure 3.5 – Boxplot of Mean Revenues (thousands of EUR) by Province

The bar chart above illustrates the mean and median revenues of companies across Sicilian provinces. A significant disparity between mean and median revenues is evident across all

provinces, highlighting a highly skewed distribution where a small number of large firms generate disproportionately high revenues compared to the majority of businesses. Siracusa records the highest mean revenue at 2,878.9 thousand euros (highly influenced by the presence of an outlier), followed by Ragusa (2,545.3) and Enna (1,971.9). Conversely, Trapani (1,214.7) and Agrigento (1,183.4) exhibit the lowest mean revenues. However, when considering median revenues, the differences between provinces become much less pronounced, with values ranging between 250.8 thousand euros (Enna) and 391.0 thousand euros (Ragusa).

This contrast between mean and median revenues underscores the concentration of economic activity within a small number of dominant firms, while the majority of businesses operate at significantly lower revenue levels. The accompanying boxplot strongly confirms this hypothesis, as most companies cluster near the lower revenue range, while a few extreme outliers, particularly in Siracusa, Palermo, Catania, and Ragusa, drive up the mean. These outliers significantly inflate the average revenue, making it a less reliable measure of central tendency compared to the median, which remains more stable and representative of the typical firm's revenue in each province.

Since EBITDA and Net Profit are closely linked to revenue generation, we expect to observe a similar trend in their distribution. The following bar charts and boxplots for these indicators further confirm that a small fraction of highly profitable firms exerts a strong influence on the averages, reinforcing the presence of revenue concentration in specific provinces. Mean (resp. median) EBITDA ranges from 97 to 250 thousand euros (resp. 25.5 to 32 thousand euros). The corresponding figures for Net profits are 52 to 182 and 10.4 to 13.6.

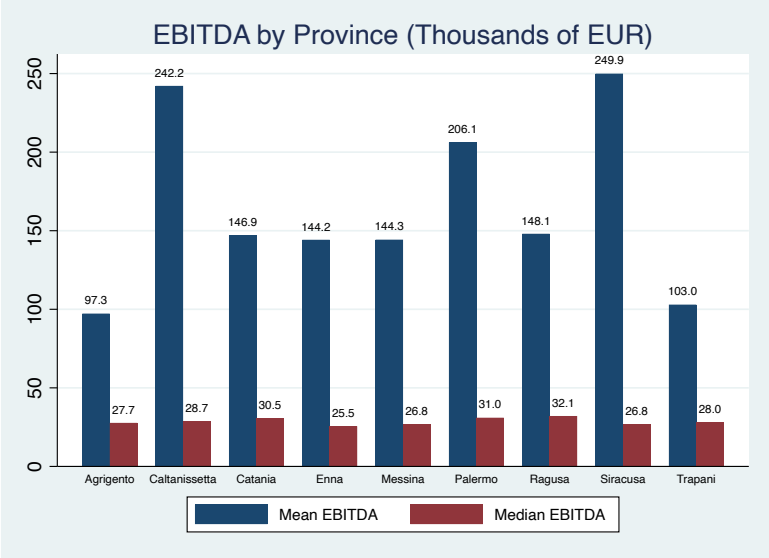

Figure 3.6 – Graph bar of Mean and Median EBITDA by Province

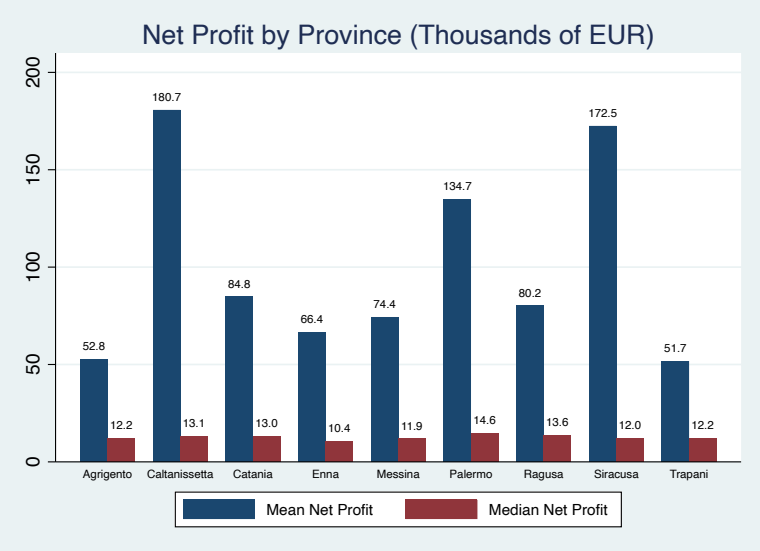

Figure 3.7 – Graph bar of Mean and Median Net Profit by Province

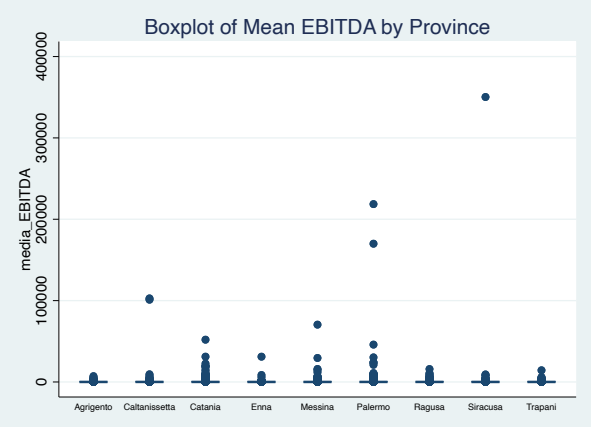

Figure 3.8.a –Boxplots of mean EBITDA (thousands of EUR) by Province

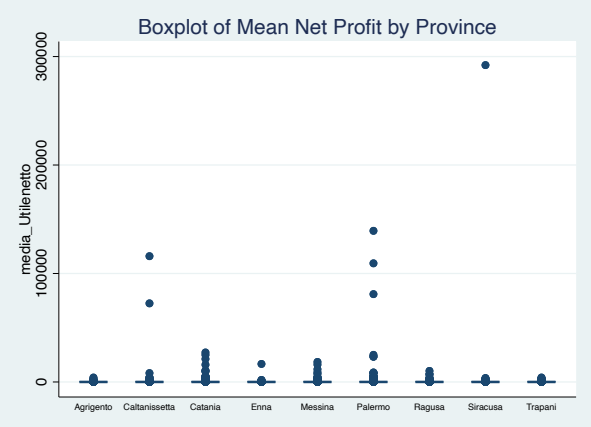

Figure 3.8.b – Boxplots of mean Net Profit (thousands of EUR) by Province

Something that is worth noticing is the fact that Caltanissetta exhibits high mean EBITDA and Net Profit despite having relatively moderate mean Revenue suggests that firms in this province operate with higher profitability margins and lower cost structures. This could be attributed to several factors. First, businesses in Caltanissetta may benefit from lower operational costs, such as reduced labor and production expenses, which allow them to retain a larger portion of their revenue as profit. Additionally, the province's sectoral composition may be skewed toward high-margin industries, such as specialized manufacturing, professional services, or certain agricultural activities, which generate strong profitability even without exceptionally high

revenues. Another possible explanation is that firms in Caltanissetta rely less on debt financing, leading to lower interest expenses and higher net earnings. Furthermore, government incentives or tax benefits in the region may provide additional financial advantages, contributing to greater profit retention. The market specialization of local businesses could also play a role, as firms operating in niche markets with limited competition may enjoy higher pricing power and profitability. This trend is further reinforced by the scatterplots of mean EBITDA and Net Profit, where Caltanissetta displayed more outliers compared to Revenue, indicating the presence of several highly profitable firms that significantly elevate the mean values. These findings suggest that while Caltanissetta may not have the largest firms in terms of revenue generation, it appears to host companies that operate efficiently and maintain high profit margins relative to their scale.

Another intriguing aspect to take under consideration when analyzing the average values of performance variables is the potential distortion of local data because of fiscal registration practices. For instance, STMicroelectronics, a major global semiconductor manufacturer with a production facility in Catania, reports its revenues in Milan, where its headquarters are fiscally registered. This practice may lead to an underrepresentation of high-performing companies in the Catania's dataset, despite the actual presence of large, successful enterprises. Similar scenarios may apply to other multinational firms operating in Palermo, where regional subsidiaries may not report their financial results locally, thereby skewing the data utilized in this analysis. The following charts display the Debt vs Banks Over Revenue and ROE (Return on Equity) by provinces.

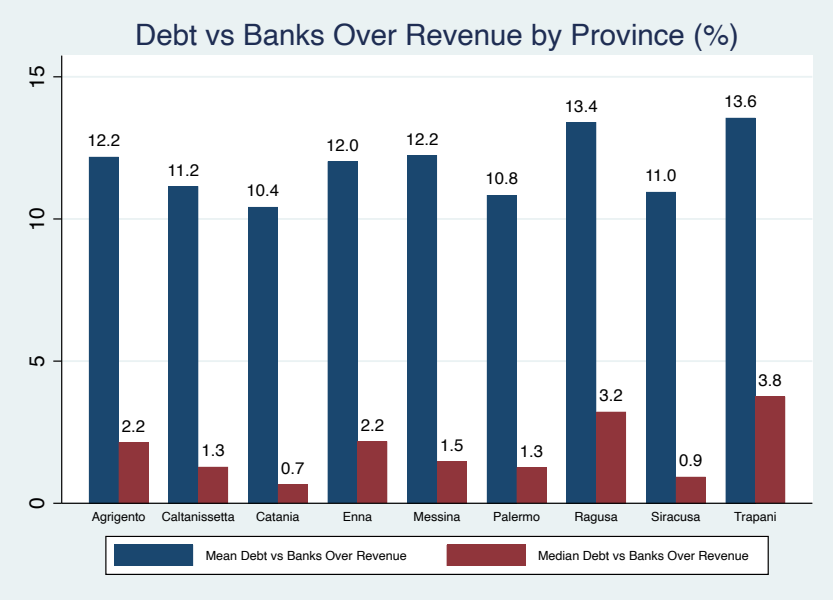

Figure 3.9 – Graph bar of Mean and Median Debt vs banks over revenues by Province

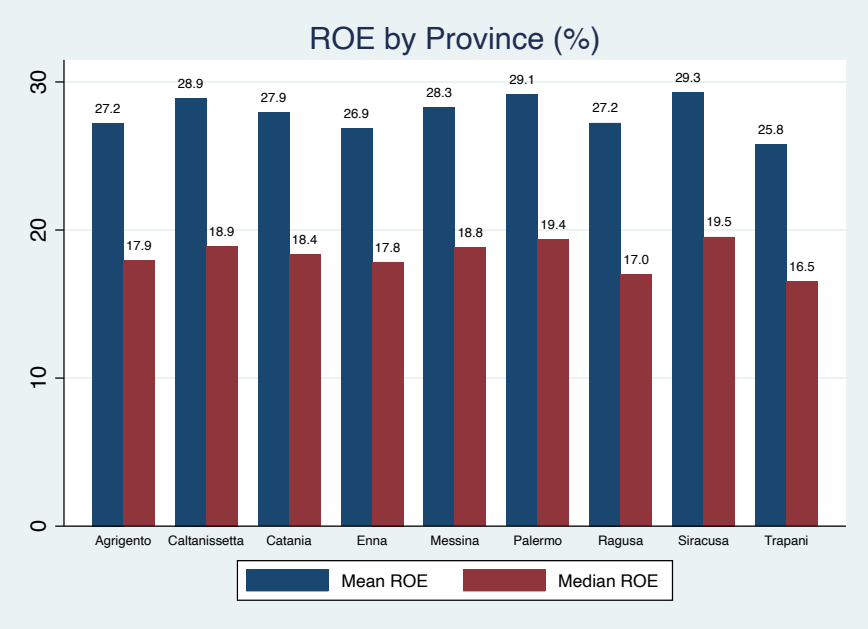

Figure 3.10 – Graph bar of Mean and Median ROE over revenues by Province

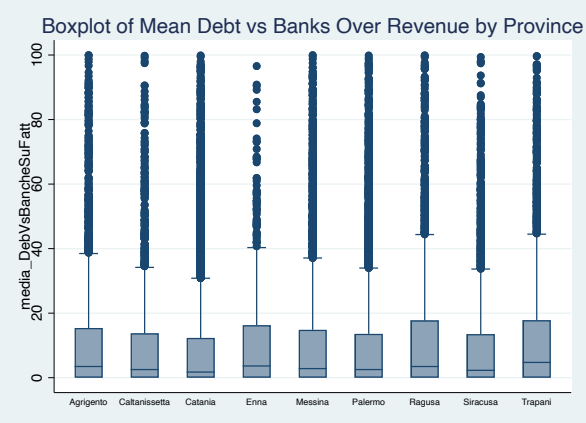

Figure 3.11.a – Boxplots of mean Debt vs banks over revenues (%) by Province

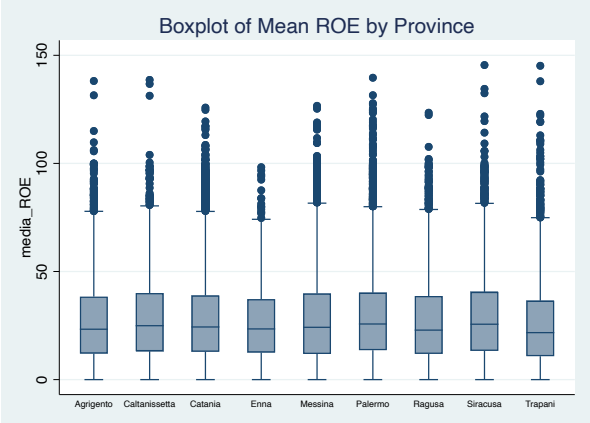

Figure 3.11.b – Boxplot of Mean ROE (%) by Province

The analysis of Debt vs Banks Over Revenue and ROE (Return on Equity) highlights significant financial disparities among Sicilian provinces, revealing a strong presence of outliers that distort mean values. The Debt vs Banks Over Revenue bar chart shows that, on average, firms in provinces like Ragusa and Trapani exhibit the highest debt-to-revenue ratios (mean around 13.5% and median around 3.5%), while others, such as Caltanissetta and Palermo, report relatively lower values (11% and 1.3%). However, the large gap between mean and median debt ratios suggests that a subset of firms with exceptionally high debt levels is inflating the average, a pattern confirmed by the boxplot, which displays a high concentration of extreme

outliers across all provinces. Importantly, a high debt-to-revenue ratio does not necessarily indicate excessive debt but may instead reflect low revenues, making even moderate debt levels appear disproportionately high. This could explain why Trapani and Agrigento, which previously showed low revenue, EBITDA, and net profit levels, now exhibit some of the highest debt ratios. On the other hand, Ragusa, a more profitable province, also has a high debt-to-revenue ratio, suggesting that in this case, firms may be leveraging debt strategically for growth, while in weaker provinces, high debt may indicate financial distress.

A similar dynamic is observed in ROE, where Siracusa, Palermo, and Caltanissetta report the highest mean values (around 29%), yet median ROE remains significantly lower across all provinces (around 18%). This suggests that only a small fraction of firms achieve exceptionally high returns on equity, while the majority operate at more modest levels. The boxplot confirms this, revealing a dense clustering of firms with moderate ROE levels, alongside a large number of extreme outliers that inflate the mean. The presence of such a high number of outliers in both debt-to-revenue and ROE distributions can likely be attributed to the fact that both are expressed in percentage terms rather than absolute values, making them highly volatile. In the case of ROE, firms with low equity bases can report exaggeratedly high returns even with small net profits, while for debt-to-revenue, companies with very low revenues may appear excessively leveraged even with moderate debt levels. These findings underline the strong financial asymmetries among Sicilian firms. While some companies effectively leverage debt and generate high returns, a significant portion struggles with low revenues, high debt exposure, or weak profitability. The abundance of outliers suggests that mean values alone do not provide a complete picture of financial health, reinforcing the importance of considering median values and distribution patterns when assessing regional economic performance.

The following chart focus on productivity across Sicilian provinces, expressed in thousands of euros per employee.

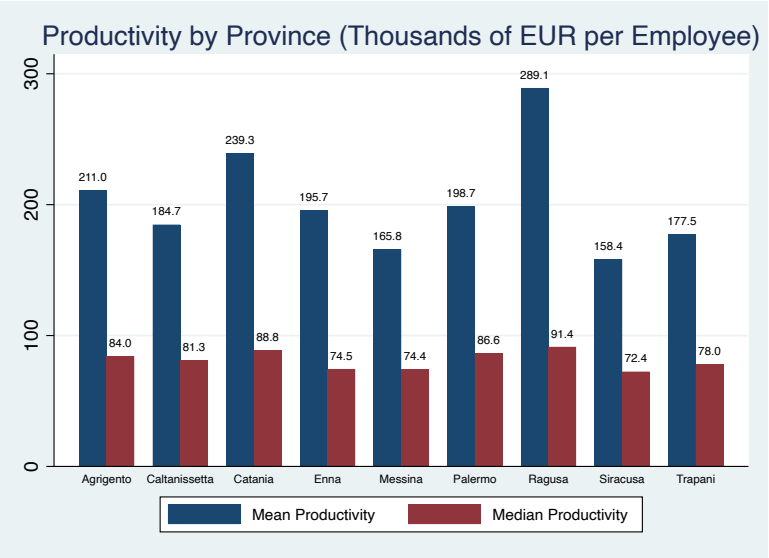

Figure 3.12 – Graph bar of Mean and Median Productivity by Province

Focusing now on productivity across Sicilian provinces, expressed in thousands of euros per employee, the bar chart reveals a significant disparity between mean and median productivity, indicating that a small number of highly productive firms elevate the average values in each province. The geographical variation in productivity suggests differences in industrial composition. Provinces such as Ragusa, Catania, and Agrigento, which report higher mean productivity, might be home to firms in capital-intensive sectors, such as high-tech manufacturing, energy, or export-driven agriculture. It could also be attributed to the presence of a few large firms that operate with economies of scale, efficient labor allocation, and better access to technology and international markets. On the other hand, lower-productivity provinces might rely more on labor-intensive, lower-margin industries such as retail, traditional agriculture, or small-scale manufacturing. provinces with lower productivity may be characterized by a fragmented business environment, with numerous small firms struggling to achieve efficiency due to size constraints. This is a common challenge in Southern Italy, where small and family-run enterprises dominate the economic landscape, often limiting growth potential.

The following boxplot of mean productivity further confirms this pattern, showing a large concentration of firms at the lower end of the scale, with a few extreme outliers significantly inflating the mean.

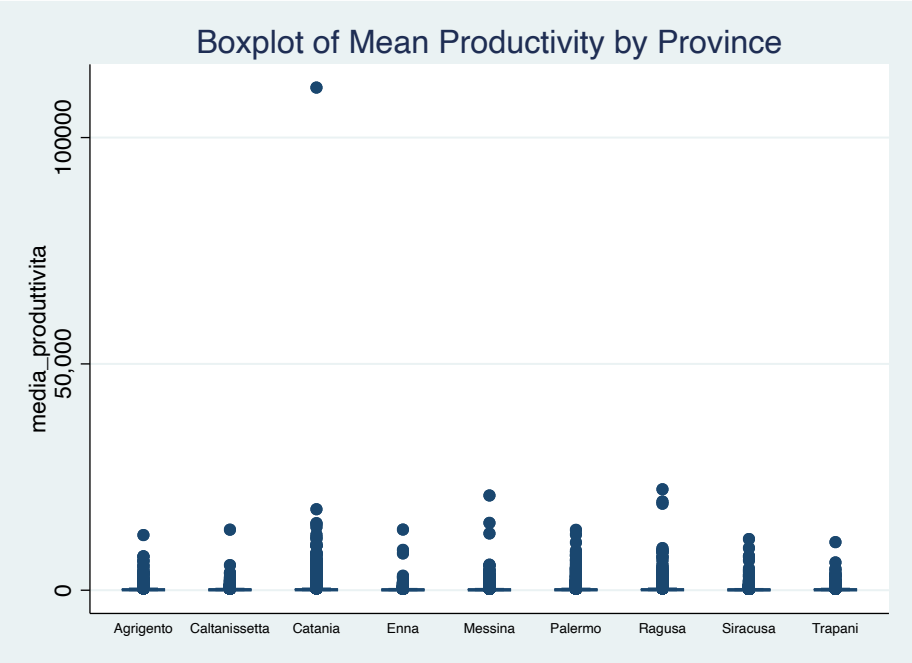

Figure 3.13 – Boxplots of mean Productivity (thousands of EUR per employees) by Province

The boxplot of mean productivity further confirms this pattern, showing a large concentration of firms at the lower end of the scale, with a few extreme outliers significantly inflating the mean. Notably, Catania presents an exceptionally high outlier, which is most likely an error in data reporting rather than an actual firm performance. Such anomalies can arise from misclassified financial records, incorrect revenue or employee figures, or unusual fiscal practices that distort productivity calculations. The chart reported below demonstrates tha the number of employees per firm is a crucial indicator of business structure and labor market dynamics in Sicilian provinces.

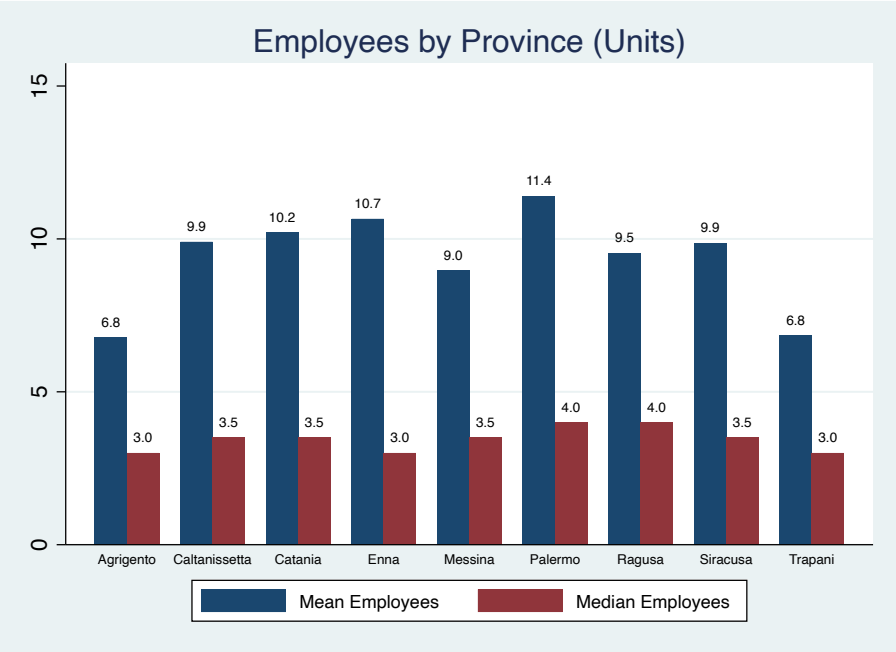

Figure 3.14 – Graph bar of Mean and Median employees by Province

The number of employees per firm is a crucial indicator of business structure and labor market dynamics in Sicilian provinces. This chart follows the same trend observed in other performance variables, with a significant gap between mean and median values, confirming the presence of a small number of large employers alongside a majority of small firms. In all provinces, the median number of employees remains low (3 to 4), indicating that most Sicilian businesses are micro-enterprises, often family-run. Palermo, Catania, and Enna show the highest mean values, suggesting a concentration of larger firms, while Agrigento and Trapani report lower averages, reflecting a more fragmented business landscape.

This duality in firm size presents challenges for labor market stability, as smaller businesses often offer lower wages, limited career progression, and fewer benefits. Their restricted scalability also limits integration into larger supply chains and access to capital for expansion. Supporting business growth, workforce development, and SME financing could help reduce this gap, fostering a more balanced and resilient labor market in Sicily.

The correlation matrix is a valuable tool for understanding relationships between financial variables, confirming expected trends while revealing notable exceptions. As expected, the data in the following table indicates that, Revenue, EBITDA, and Net Profit are strongly correlated (0.88 and 0.84), reflecting the natural link between sales volume and profitability. The near-

perfect correlation between EBITDA and Net Profit (0.94) further emphasizes that operational earnings largely dictate final profitability.

	media_r~	media_~A	media_~o	media_~t	media_~E	media_..	media_~a
media_ricavi	1.0000						
	32787						
media_EBITDA	0.8797	1.0000					
	0.0000						
	32787	32787					
media_Util~o	0.8620	0.9484	1.0000				
	0.0000	0.0000					
	32787	32787	32787				
media_DebV~t	0.0080	0.0223	0.0129	1.0000			
	0.1460	0.0001	0.0200				
	32787	32787	32787	32787			
media_ROE	-0.0232	-0.0154	-0.0052	-0.2073	1.0000		
	0.0000	0.0054	0.3498	0.0000			
	32787	32787	32787	32787	32787		
media_Dipe~i	0.3276	0.3465	0.2928	0.0174	-0.0417	1.0000	
	0.0000	0.0000	0.0000	0.0017	0.0000		
	32787	32787	32787	32787	32787	32787	
media_prod~a	0.1007	0.0428	0.0389	-0.0120	-0.0263	0.0002	1.0000
	0.0000	0.0000	0.0000	0.0299	0.0000	0.9714	
	32787	32787	32787	32787	32787	32787	32787

Table 3.1 – Correlation matrix

More interestingly, the Debt Ratio shows weak correlations with all other financial indicators, with its highest value reaching just 0.02 (with EBITDA). This suggests that firms in Sicily adopt diverse financing strategies, with some relying on internal funds while others operate with high leverage. The negative correlation between ROE and the Debt Ratio (-0.18) implies that higher debt burdens often translate into lower shareholder returns, likely due to increased financial costs.

Another notable finding is the weak correlation between ROE and Revenue (-0.02), indicating that larger firms do not necessarily deliver higher returns to investors. This could stem from capital-intensive industries, inefficiencies, or sectoral cost structures. Meanwhile, the number of employees correlates moderately with firm size and profitability (around 0.33-0.35), but not overwhelmingly so, suggesting that revenue growth does not always translate into proportional employment increases, possibly due to automation, outsourcing, or industry-specific labor intensity.

Finally, Productivity (Revenue per Employee) shows weak correlations across all metrics, including Revenue (0.10) and profitability measures (0.04). This implies that high revenue does not necessarily equate to high productivity, pointing to potential inefficiencies in larger firms or higher value-added sectors among smaller enterprises.

In order to conclude the topic of geographic distribution, the bar chart below illustrates the geographical distribution of top-performing companies across Sicilian provinces, providing insight into which areas host the most successful enterprises. The two performance metrics that were used to rank the industries were ROE and productivity. ROE (Return on Equity) is a crucial measure of financial efficiency, as it indicates how effectively a company generates profits relative to shareholder investment. It is particularly useful for comparing firms across different industries since it accounts for capital structure variations. Productivity (Revenue per Employee) reflects how efficiently businesses utilize their workforce to generate revenue. Since labor costs and workforce efficiency are fundamental determinants of competitiveness, this measure offers key insights into a firm's ability to generate value per employee.
Unlike revenue or EBITDA, which primarily measure absolute size or operational earnings, ROE and productivity provide a normalized performance assessment, making them ideal for ranking firms within different sectors without the distortions caused by company size.
To rank the top-performing companies by province, the process began by calculating the total number of firms within each province to ensure that the ranking would be relative to the number of businesses in each area. Companies were then ranked within their respective provinces based on two key financial indicators: Return on Equity (ROE), which measures financial efficiency in generating profits relative to shareholders' equity, and Productivity, defined as revenue per employee, which reflects operational efficiency. The ranking was structured so that higher values of ROE and productivity received a better rank, ensuring that the most profitable and productive firms were placed at the top. To identify the top performers, a threshold was set at the top 10% for both indicators within each province, meaning that only firms ranking in the top decile for both ROE and productivity were classified as top-performing. Finally, the total number of these top-performing companies was counted, and their distribution across provinces was analyzed to provide insights into the economic landscape of Sicily. This approach allows for a fair comparison of business performance across different regions while accounting for sectoral and structural differences within each province.

This visualization allows us to compare the spatial concentration of high-performing firms relative to the overall business landscape, highlighting provinces that may offer more favorable conditions for business success, by focusing on companies that rank in the top 10% based on both ROE and productivity.

The distribution of top-performing firms across Sicilian provinces reveals significant regional disparities in business success. The highest concentration of top performers is found in Catania and Palermo, reinforcing their roles as the island's primary economic hubs. These provinces have already demonstrated stronger financial performance in previous analyses, with higher revenues, EBITDA, and net profits. This suggests that their economic ecosystems provide better conditions for fostering competitive and profitable enterprises. By contrast, Enna and Caltanissetta register the lowest number of top-performing firms, aligning with their weaker financial indicators observed earlier. This suggests structural challenges that limit business growth and competitiveness in these provinces. Messina presents an interesting case: despite not being among the top provinces in terms of revenue or profitability, it still hosts a notable number of top-performing firms. This suggests that while the overall economic environment may not be the most dynamic, certain companies in Messina exhibit exceptional efficiency and competitiveness.

Provincia	top_performer_province 0	1	Total
Agrigento	2,513	25	2,538
Caltanissetta	1,648	12	1,660
Catania	8,111	63	8,174
Enna	745	7	752
Messina	4,090	29	4,119
Palermo	7,017	68	7,085
Ragusa	2,650	22	2,672
Siracusa	2,712	24	2,736
Trapani	3,028	23	3,051
Total	32,514	273	32,787

Table 3.2 – Table of top performer industries by province

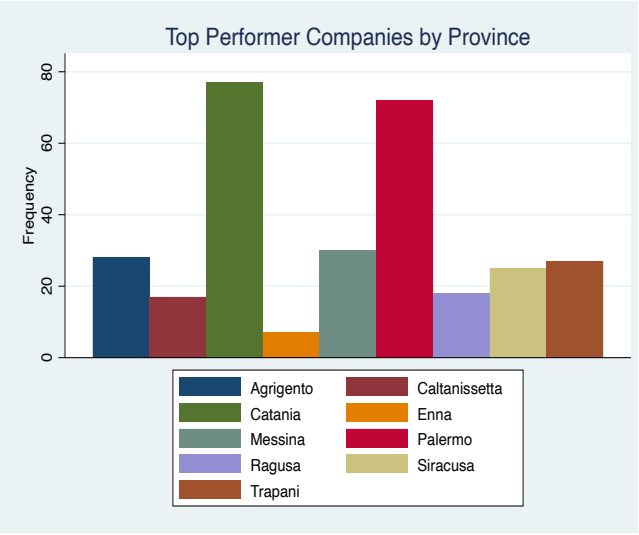

Figure 3.15 – Graph bar of number of Top Performer Companies by province

Another noteworthy observation is that Ragusa and Trapani, which previously showed relatively high debt ratios, also host a fair number of top-performing firms. This suggests that

some businesses in these provinces might be effectively leveraging financial resources to drive productivity and profitability, rather than being burdened by excessive debt.

Overall, the geographical distribution of high-performing firms underscores the economic divide within Sicily, with major metropolitan areas supporting a larger share of successful enterprises. However, the presence of strong performers in certain smaller provinces suggests that sectoral specialization, access to resources, and strategic financial management also play crucial roles in fostering business success.

These results highlight the uneven economic geography of Sicily, where some provinces, such as Siracusa and Ragusa, have successfully combined sectoral specialization, resource advantages, and competitive industries to foster stronger business performance. Their relative success suggests that targeted investment in key industries, along with strategic market positioning, can generate competitive advantages.

In contrast, provinces like Agrigento and Trapani face systemic challenges that hinder business growth, including weaker infrastructure, limited access to capital, and lower economic diversification. Addressing these structural inefficiencies requires a combination of policy interventions, including improved infrastructure, financial support mechanisms, and incentives for innovation to attract investment and enable firms to scale.

Beyond individual provinces, this analysis underscores the importance of regional economic coordination. Encouraging inter-provincial business collaboration, knowledge-sharing, and the development of integrated supply chains could reduce disparities and stimulate broader economic growth. Additionally, promoting financial literacy and business planning among firms—particularly in underperforming areas—may help improve resilience and long-term profitability.

Ultimately, building a more balanced and resilient economy in Sicily will require a data-driven and collaborative approach that leverages the strengths of high-performing provinces while implementing targeted interventions in lagging areas. Policymakers must combine strategic investments, sectoral diversification, and institutional support to create an environment that fosters innovation, growth, and regional equity.

Sectoral Specialization Sicilian Enterprises

This section examines the distribution of Sicilian enterprises across the six main economic sectors: Agriculture, Services, Manufacturing, Wholesale, Retail, and Construction. In the introductory overview, the sectoral distribution of all 57,999 Sicilian enterprises was already presented to provide a comprehensive picture of the region's economic structure. However, it is reintroduced here to facilitate a direct comparison with a pie chart illustrating the distribution of Italy's GDP across economic sectors. This comparison helps contextualize the composition of Sicilian businesses within the broader national framework, highlighting potential discrepancies between firm concentration and actual economic output. This initial step provides important context for understanding the industrial landscape of the region.

As said in the previous section, from this point onward, the analysis will be limited to the 32,787 firms with complete financial data, excluding those with missing mean and median values due to insufficient historical records. This approach improves result accuracy by eliminating potential distortions from incomplete data, allowing for a clearer assessment of economic performance across Sicilian enterprises. An ANOVA (Analysis of Variance) is conducted to assess whether significant differences exist in key financial indicators across sectors. This statistical approach allows for a deeper understanding of how revenue, profitability, debt levels, and productivity vary among industries, offering insights into sector-specific performance trends.

However, not all companies contribute equally to economic growth. To identify the sectors where high-performing firms are concentrated, the focus will shift to a subset of top-performing enterprises, selected based on two key financial indicators: Return on Equity (ROE) and Productivity.

Once this classification is established, the final step is to analyze which sectors are most represented among these top performers. A bar chart will visually illustrate the distribution of high-performing firms across industries, revealing which sectors exhibit a concentration of outstanding enterprises. This approach allows for a more targeted identification of competitive advantages within the Sicilian economy, distinguishing industries where firms excel in both profitability and efficiency.

To better contextualize the structure of Sicilian enterprises, the sectoral distribution previously introduced is now compared with the composition of Italy's GDP, as shown in the charts below, to better understand the structural characteristics of the Sicilian economy. While the earlier visualization highlighted the share of firms operating in each sector in Sicily, this comparison

sheds light on whether the island's business landscape aligns with national economic patterns or diverges in key areas.

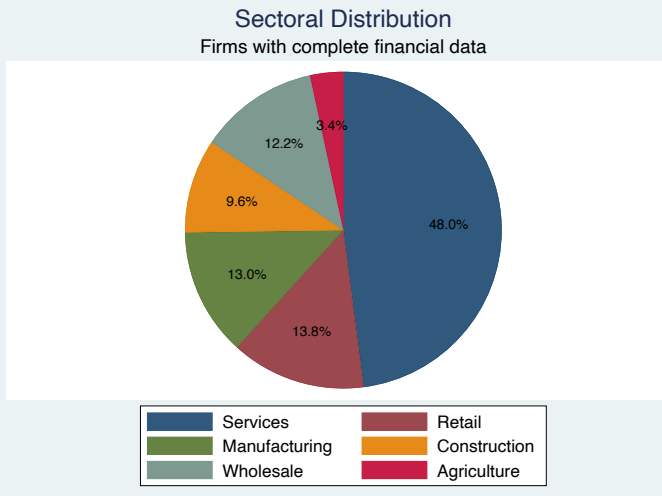

Figure 3.16.a - Sicilian sectoral distribution

Figure 3.16.b – Sectoral composition of Italy's GDP

Nationally, as of 2019, services contributed approximately 65.8% of GDP, industry accounted for 18.8%, tourism represented 13.2%, and agriculture made up only 2.2%. This contrast reveals a key difference: while the national economy benefits from a more substantial industrial sector, Sicily remains heavily service-oriented, with a business landscape that appears even less diversified than the national average. Notably, agriculture—where the island has significant potential—remains underrepresented in its business structure, suggesting that this sector may not be fully leveraged for economic development. Furthermore, the industrial presence in Sicily is far lower than in Northern Italy, where manufacturing plays a central role in driving economic growth. This comparison raises important questions about the extent to which Sicily's sectoral structure aligns with its natural and economic strengths and whether policy interventions could help foster greater diversification and competitiveness in underdeveloped sectors.

The dominance of the service sector in Sicily aligns with historical economic trends, as tourism, public administration, and professional services have long been central to the island's economy. While this labor-intensive sector provides widespread employment opportunities, it does not necessarily translate into high financial performance compared to capital-intensive industries such as manufacturing. The relatively low presence of manufacturing firms is significant, as it highlights Sicily's weak industrial base compared to the rest of Italy. Given the region's strategic location in the Mediterranean and its access to global trade routes, a stronger industrial

sector could enhance economic resilience and reduce dependence on volatile service-based industries.

Another notable aspect is the limited presence of agriculture, which stands in stark contrast to the island's historical and geographic advantages in farming. Structural challenges such as fragmented land ownership, limited technological adoption, and weak integration with international markets continue to hinder the sector's growth. Meanwhile, construction maintains a modest share, likely reflecting fluctuating investment in public infrastructure and private real estate development.

Overall, this sectoral distribution highlights both the strengths and limitations of Sicily's economic structure. While services and trade dominate the business landscape, the underrepresentation of agriculture and manufacturing suggests that certain sectors are not fully capitalized upon. The comparison with national GDP composition further underscores the region's heavy reliance on services, raising important considerations for future economic policies aimed at fostering industrial growth and sectoral diversification.

The following tables show the Analysis of Variance (ANOVA) used here to determine whether economic sectors exhibit significant differences in key financial performance indicators, including Revenue, EBITDA, Net Profit, Debt Ratio, ROE, Number of Employees, and Productivity.

Number of obs = 32,787 R-squared = 0.0009
Root MSE = 27925.2 Adj R-squared = 0.0008

Source	Partial SS	df	MS	F	Prob>F
Model	2.383e+10	5	4.767e+09	6.11	0.0000
sector_num	2.383e+10	5	4.767e+09	6.11	0.0000
Residual	2.556e+13	32,781	7.798e+08		
Total	2.559e+13	32,786	7.804e+08		

Figure 3.17.a – Anova of mean Revenues

Number of obs = 32,787 R-squared = 0.0007
Root MSE = 2724.7 Adj R-squared = 0.0005

Source	Partial SS	df	MS	F	Prob>F
Model	1.626e+08	5	32527516	4.38	0.0005
sector_num	1.626e+08	5	32527516	4.38	0.0005
Residual	2.434e+11	32,781	7423988.6		
Total	2.435e+11	32,786	7427817		

Figure 3.17.b – Anova of mean EBITDA

Number of obs = 32,787 R-squared = 0.0005
Root MSE = 2133.06 Adj R-squared = 0.0003

Source	Partial SS	df	MS	F	Prob>F
Model	72785481	5	14557096	3.20	0.0069
sector_num	72785481	5	14557096	3.20	0.0069
Residual	1.492e+11	32,781	4549959.4		
Total	1.492e+11	32,786	4551485.6		

Number of obs = 32,787 R-squared = 0.0221
Root MSE = 832.56 Adj R-squared = 0.0219

Source	Partial SS	df	MS	F	Prob>F
Model	5.131e+08	5	1.026e+08	148.06	0.0000
sector_num	5.131e+08	5	1.026e+08	148.06	0.0000
Residual	2.272e+10	32,781	693156.08		
Total	2.324e+10	32,786	708701.37		

Figure 3.17.c – Anova of mean net profit

Number of obs =	32,787	R-squared =	0.0073
Root MSE =	17.1333	Adj R-squared =	0.0071

Source	Partial SS	df	MS	F	Prob>F
Model	70281.672	5	14056.334	47.88	0.0000
sector_num	70281.672	5	14056.334	47.88	0.0000
Residual	9622908.3	32,781	293.5514		
Total	9693190	32,786	295.65028		

Figure 3.17.d – Anova of mean productivity

Number of obs =	32,787	R-squared =	0.0099
Root MSE =	20.1407	Adj R-squared =	0.0098

Source	Partial SS	df	MS	F	Prob>F
Model	133565.84	5	26713.167	65.85	0.0000
sector_num	133565.84	5	26713.167	65.85	0.0000
Residual	13297547	32,781	405.64801		
Total	13431113	32,786	409.66001		

Figure 3.17.e – Anova of mean debt vs banks over revenues

Figure 3.17.f – Anova of mean ROE

Number of obs =	32,787	R-squared =	0.0020
Root MSE =	49.8799	Adj R-squared =	0.0019

Source	Partial SS	df	MS	F	Prob>F
Model	165826.35	5	33165.269	13.33	0.0000
sector_num	165826.35	5	33165.269	13.33	0.0000
Residual	81559119	32,781	2487.9997		
Total	81724945	32,786	2492.6781		

Figure 3.17.g – Anova of mean number of employees

By comparing the variance within and between sectors, ANOVA allows us to assess whether sectoral classification plays a meaningful role in explaining variations in firm performance.

The results reveal that while sectoral differences are statistically significant across all financial indicators (p-value < 0.05), the overall explanatory power of the sectoral classification remains weak, as indicated by consistently low R-squared values. The R-squared statistic measures the proportion of variance in the dependent variable that can be explained by the independent variable (sector), with higher values indicating stronger explanatory power. However, across all tested variables, the R-squared remains extremely low, suggesting that factors beyond industry classification—such as firm size, competitive strategies, and regional economic conditions—play a much greater role in shaping business performance.

For Revenue, EBITDA, and Net Profit, the R-squared values are below 0.001, confirming that sector alone does not meaningfully determine firm-level financial performance. This is consistent with the earlier correlation analysis, which showed a strong interdependence between

these metrics, meaning that a company's overall financial success is driven more by firm-specific factors than by industry affiliation.

The Debt vs. Banks Over Revenue (Debt Ratio) exhibits a slightly higher R-squared (0.0073), suggesting that some industries may have distinct financing structures. However, this remains a weak relationship, reinforcing the idea that debt levels are more influenced by firm-specific financial strategies and access to credit rather than by industry norms. Interestingly, ROE (Return on Equity)—which reflects a company's efficiency in generating returns for shareholders—has an R-squared of 0.0099, indicating that while some sectors systematically yield higher returns, other factors such as financial structure, investment decisions, and management practices likely have a greater impact.

The number of employees per firm, with an R-squared of just 0.002, suggests that industry classification has minimal influence on workforce size. This aligns with the earlier findings that most Sicilian firms are small, often family-run enterprises, and that employment levels are more closely tied to business models, automation, and firm-specific strategies rather than sectoral affiliation.

Among all variables, Productivity (Revenue per Employee) has the highest R-squared value (0.0221), meaning that sectoral classification explains productivity variations more than any other metric. This suggests that certain industries, such as manufacturing and high-value services, tend to operate more efficiently, whereas retail and construction are more labor-intensive, resulting in lower productivity levels. However, even in this case, the explanatory power remains weak, highlighting that productivity is primarily shaped by factors such as technological adoption, workforce skills, and operational efficiency rather than by sector alone.

Overall, while ANOVA confirms that financial performance varies across industries, the consistently low R-squared values indicate that sectoral classification alone is insufficient to explain firm performance in Sicily. Instead, a broader analytical framework—one that incorporates firm size, regional economic conditions, and competitive positioning—is necessary to obtain a clearer understanding of business success on the island. These findings reinforce the need for policies that go beyond industry-specific interventions, focusing instead on fostering competitiveness, innovation, and financial sustainability across firms of all sectors.

As the following table and chart indicate the analysis of top-performing firms by sector provides valuable insights into which industries in Sicily demonstrate the highest levels of efficiency and profitability.

Sector	top_performer_sector 0	1	Total
Agriculture	1,102	7	1,109
Construction	3,125	23	3,148
Manufacturing	4,226	48	4,274
Retail	4,476	38	4,514
Services	15,576	151	15,727
Wholesale	3,964	51	4,015
Total	32,469	318	32,787

Table 3.3 – Table of top performer industries by sector

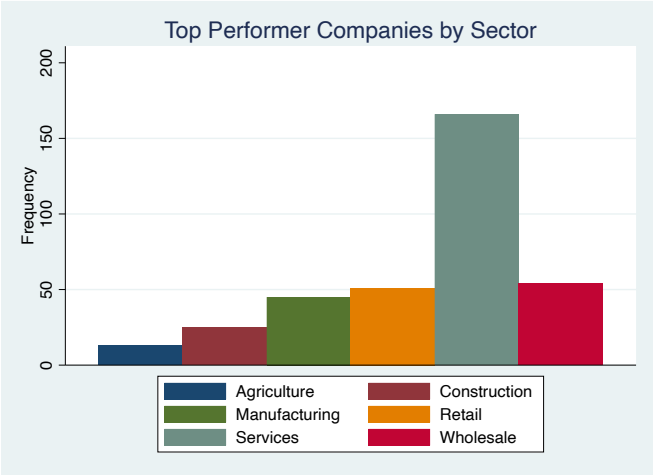

Figure 3.18 – Graph bar of number of Top Performer Companies by sector

The bar chart and corresponding distribution table reveal that the majority of high-performing firms are concentrated in the services sector, which accounts for nearly half of all top-performing companies. This finding aligns with the overall sectoral composition of Sicilian enterprises, where services dominate in terms of firm count. However, the presence of high-performing firms in manufacturing, wholesale, and retail indicates that certain companies in these sectors manage to leverage competitive advantages despite the general dominance of services.

A deeper examination of sectoral performance confirms these observations. The services industry, as expected, displays the highest concentration of top performers, surpassing other sectors both in numerical representation and financial results. This aligns with publicly available data from ISTAT, which identifies services as the primary contributor to regional GDP and employment. Sectors such as tourism, public administration, and professional services have historically been central to Sicily's economy, with a labor-intensive rather than capital-intensive structure. While services dominate in firm count, their financial performance—especially in terms of EBITDA and ROE—remains moderate compared to capital-intensive industries.

Wholesale trade also shows significant representation among top-performing firms, likely influenced by Sicily's strategic position as a Mediterranean trade hub, with major ports facilitating the import and export of goods across Europe, North Africa, and the Middle East. However, despite its strong presence, wholesale trade exhibits lower EBITDA and ROE compared to manufacturing and services. This suggests that while revenue generation in the

sector is substantial due to high transaction volumes, its profitability and capital efficiency remain moderate, possibly due to thin margins and operational costs.

Manufacturing, while less represented in firm count, demonstrates strong financial performance. The sector records high mean revenue and EBITDA values, reflecting the presence of highly profitable capital-intensive firms, particularly in industries such as food processing, energy, and chemical production. These firms benefit from efficient cost structures and economies of scale, allowing them to maintain profitability despite their smaller numbers. This suggests that, although manufacturing does not dominate in terms of firm count, it holds a strategic role in driving financial performance within the Sicilian economy.

In contrast, agriculture and construction are the most underrepresented sectors among top-performing firms, reflecting structural challenges that have affected Sicily for decades. According to official reports from Regione Siciliana and ISTAT, agriculture is still hindered by fragmented land ownership, low levels of technology adoption, and weak integration with international markets—factors that limit profitability despite the island's agricultural potential. Similarly, construction has suffered from low investment in public infrastructure and cyclical fluctuations in demand, which limit both revenue generation and operational efficiency.

As previously explained, the selection of top-performing firms was based on a dual ranking system that considered both Return on Equity (ROE) and Productivity (Revenue per Employee). By ranking firms within each sector based on these two indicators, only those in the top 10% for both metrics were classified as "top performers." This ensures that the selected firms are not only profitable but also operate efficiently relative to their workforce, making them more resilient and competitive in their respective industries.

Despite strong revenue and EBITDA figures in some sectors, ROE remains consistently low across all industries, indicating inefficiencies in capital utilization and shareholder value generation. The persistently low ROE suggests limited efficiency in profit conversion, potentially due to high debt levels or constrained reinvestment strategies. This pattern of low ROE is not unique to Sicily and has been observed in broader Italian economic trends, particularly in capital-intensive industries where debt-financed growth strategies lead to strong operational results but limited returns to shareholders.

Overall, these findings highlight both the strengths and weaknesses of Sicily’s economic structure. While the service sector dominates in terms of business count and top-performing firms, manufacturing and wholesale trade emerge as significant contributors to high financial performance. However, the underrepresentation of agriculture and construction among top

performers suggests that these sectors face persistent structural barriers that may require targeted interventions to improve efficiency, innovation, and financial sustainability. Addressing these disparities could help Sicily diversify its economic base and better leverage its sectoral potential.

Sectoral Specialization by Province

This section delves into the intersection of sectoral specialization and the geographic distribution of firms across Sicilian provinces. By leveraging statistical analyses and visual data representations, the aim is to uncover patterns of economic concentration, identify disparities, and explore how structural and fiscal practices influence corporate success at the provincial level. A central focus is placed on understanding the interplay between regional characteristics and sectoral performance, providing insights into how specific industries thrive in certain provinces and why others lag behind. A panel of pie charts illustrating the distribution of firms by sector within each province was presented in the initial part of the chapter to provide a broader picture of the geographic and sectoral distribution of Sicilian enterprises. This visualization allows for an immediate comparison of sectoral structures across Sicily, highlighting differences in industrial composition among regions and helping to identify provinces with higher concentrations of specific industries.

Building on this, in this section, the analysis focuses on 32,787 firms, the same subset used throughout most of this chapter. These firms were selected after excluding companies with missing values due to insufficient economic performance data over the ten-year period considered. This ensures a more robust analysis by removing potential distortions caused by incomplete observations, allowing for a clearer assessment of sectoral specialization across Sicilian provinces.

The first part of this section presents a series of bar charts, displaying the median values of all seven performance variables (Revenue, EBITDA, Net Profit, Debt vs Banks Over Revenue, ROE, Number of Employees, and Productivity) for each province across all sectors. This approach will allow us to evaluate whether certain sectors systematically outperform others across different provinces, and whether specific regions benefit from sectoral advantages.

Finally, an Ordinary Least Squares (OLS) regression will be conducted, using sectoral and provincial dummies to analyze the determinants of Productivity (Revenue per Employee). By isolating sectoral and geographic effects, this regression helps assess whether productivity variations are primarily driven by industry-specific characteristics or by regional factors. This

targeted approach allows us to understand whether certain provinces inherently foster higher firm productivity due to economic conditions, infrastructure, or business environment, or whether productivity differences are mainly dictated by the sector in which firms operate.
These analyses collectively aim to provide a comprehensive picture of sectoral specialization across Sicilian provinces, helping to identify regional strengths and structural imbalances that could inform future economic policies and business development strategies.

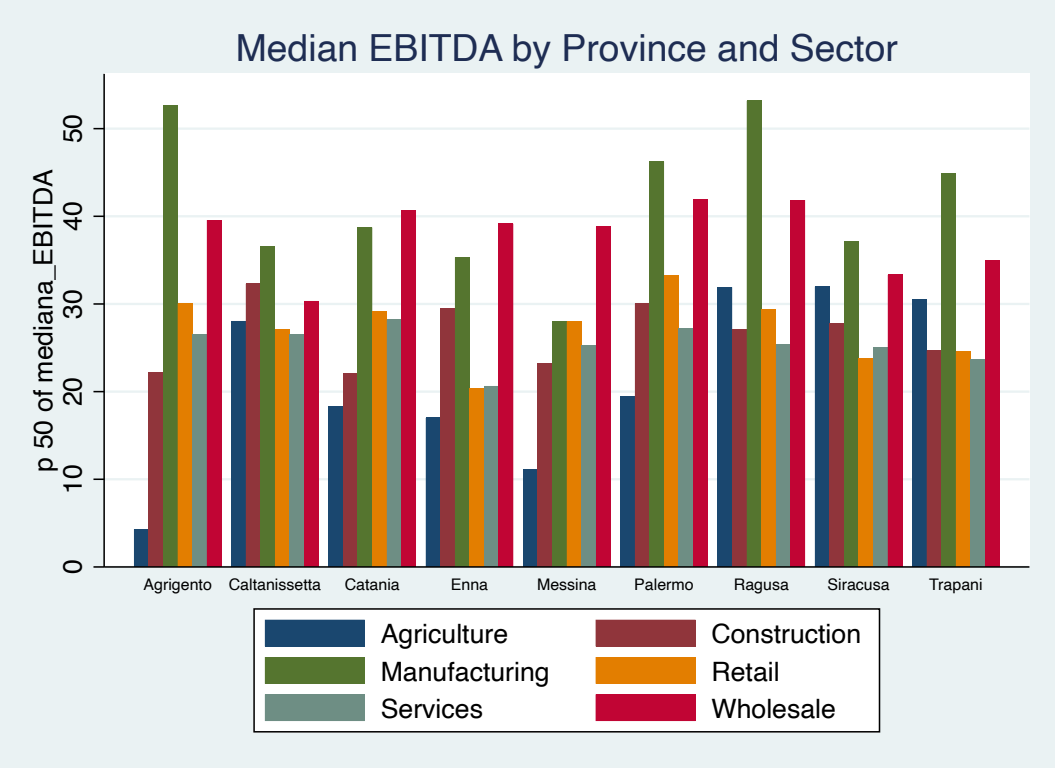

Figure 3.19.a – Graph bar of median EBITDA (thousand of EUR) by Province and Sector

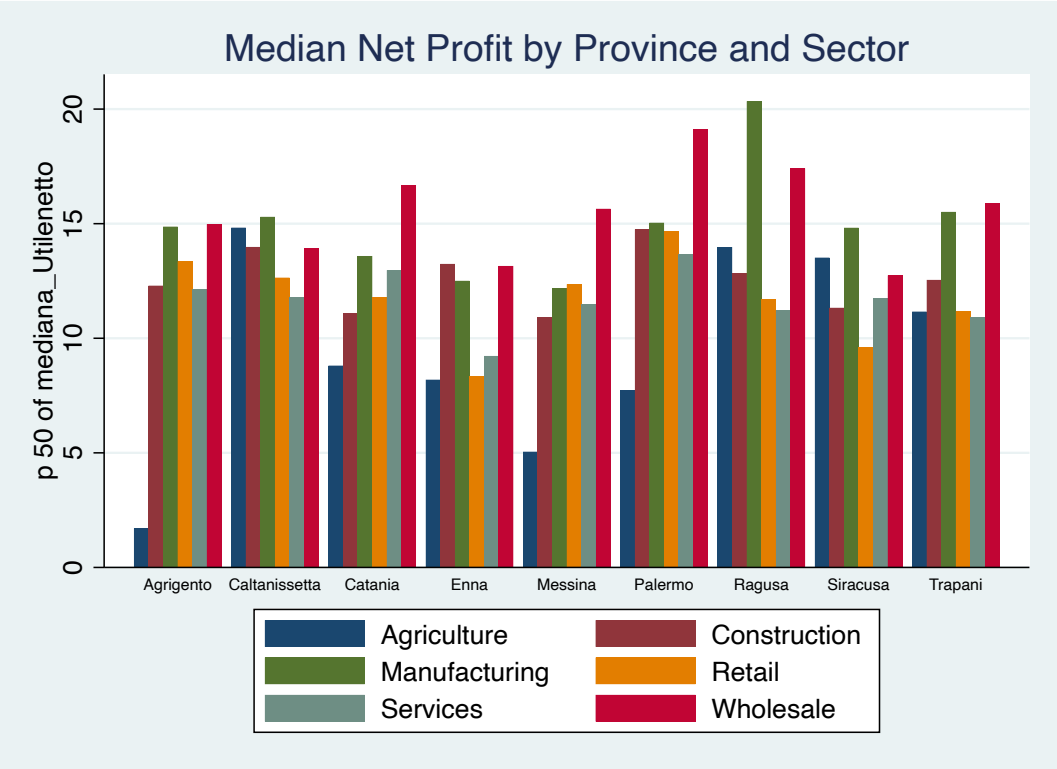

Figure 3.19.b – Graph bar of median Net Profit (thousands of EUR) by Province and Sector

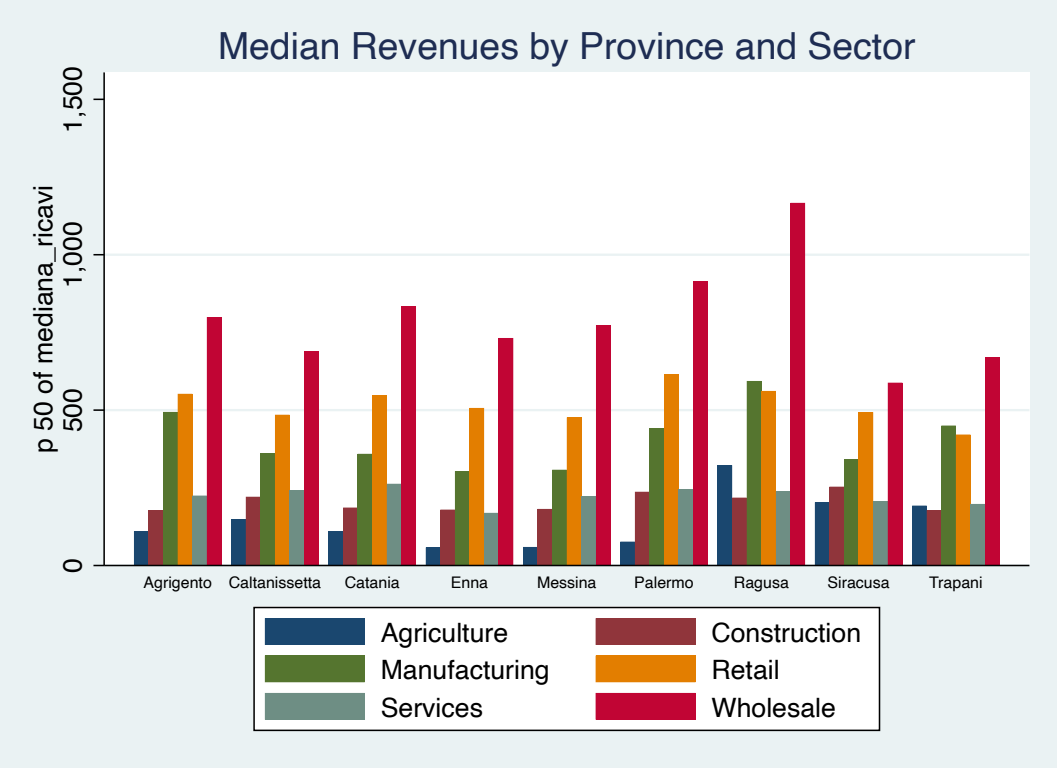

Figure 3.19.c – Graph bar of median Revenues (thousands of EUR) by Province and Sector

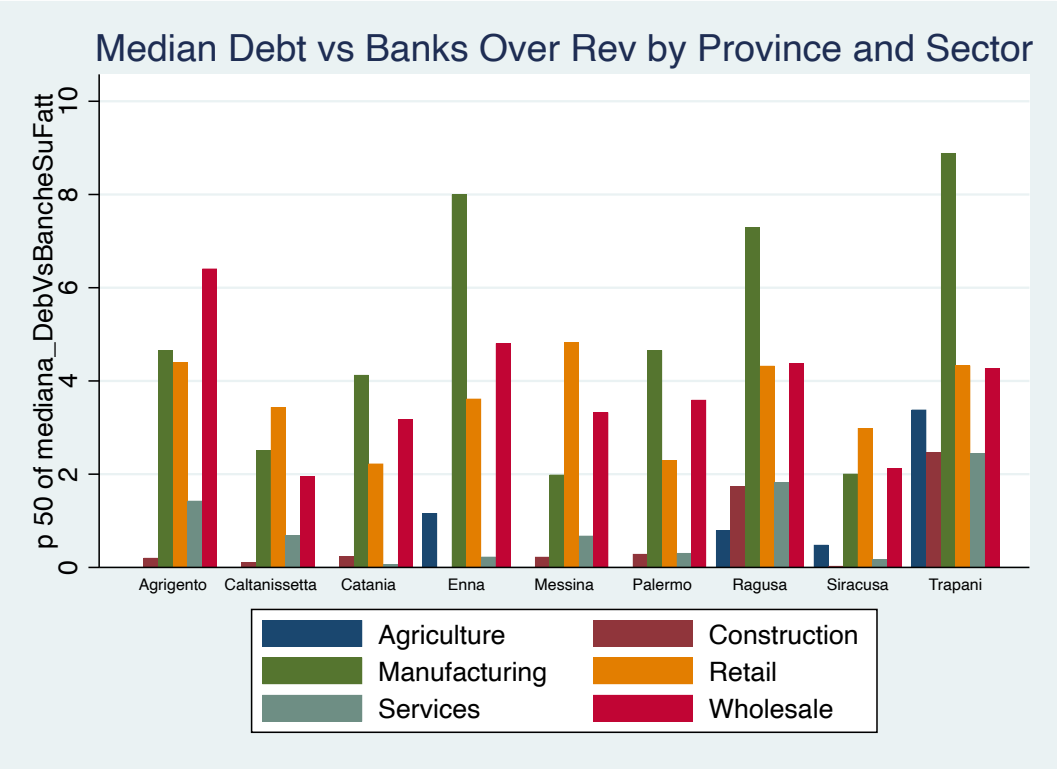

Figure 3.19.d – Graph bar of median Debt vs banks (%) over revenues by Province and Sector

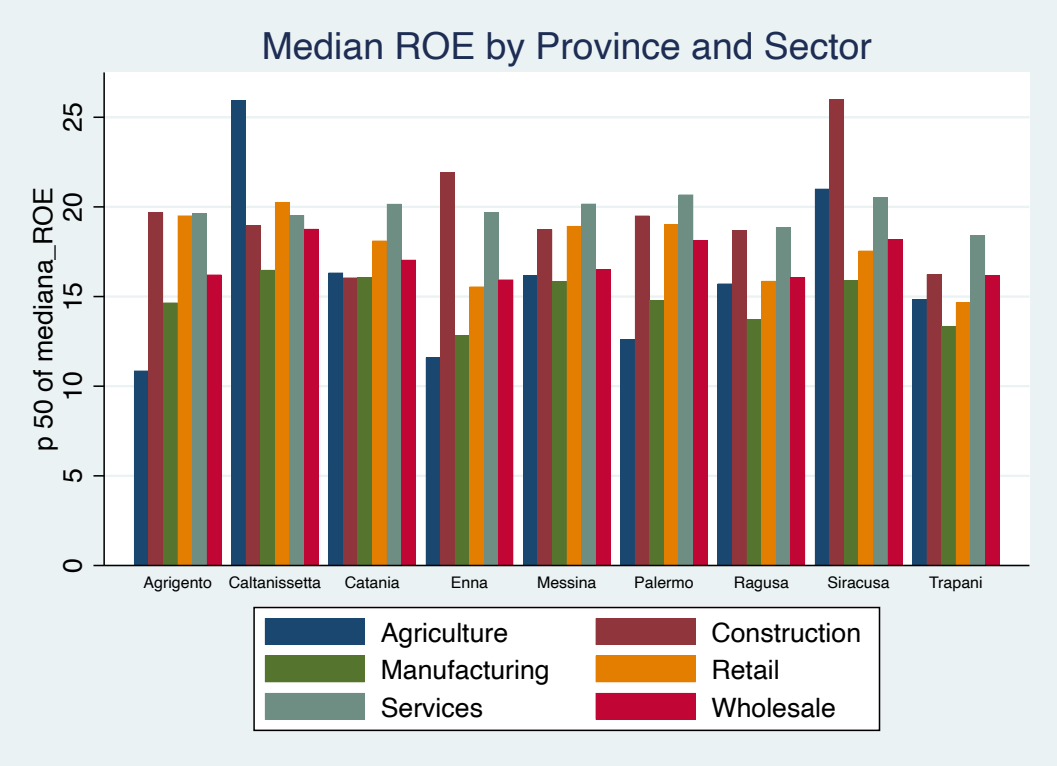

Figure 3.19.e – Graph bar of median ROE (%) by Province and Sector

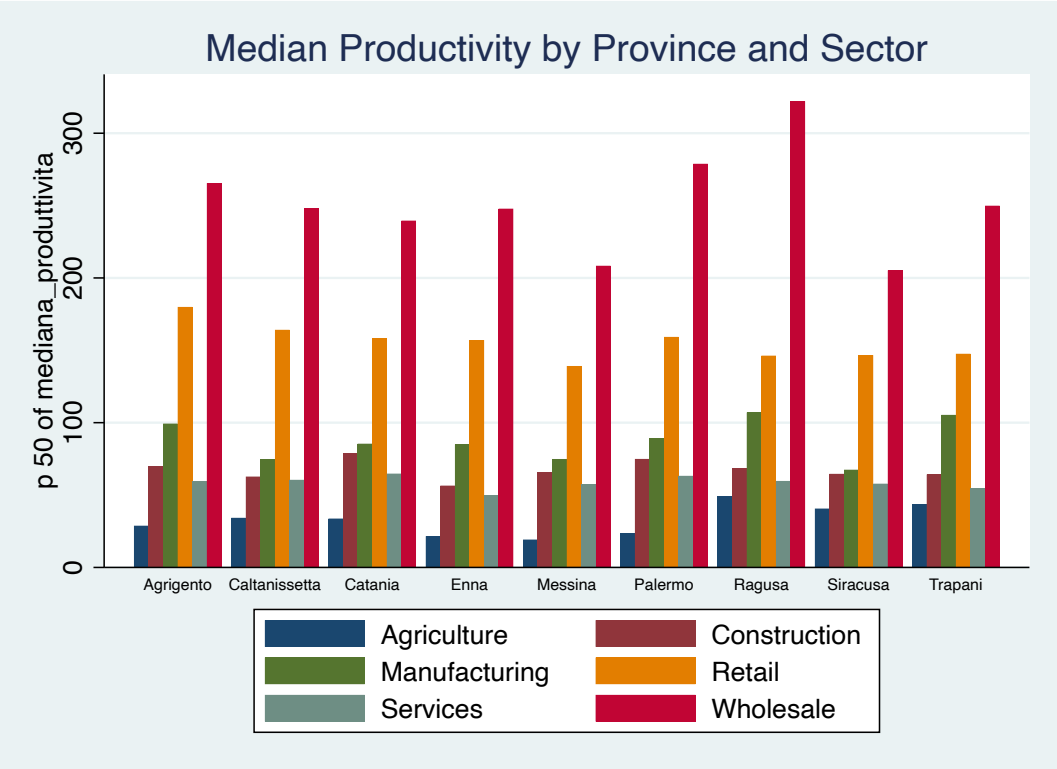

Figure 3.19.f – Graph bar of median Productivity (thousands of EUR) by Province and Sector

These bar charts provide a comprehensive overview of how different economic sectors perform across Sicilian provinces, revealing sectoral strengths, weaknesses, and their alignment with the broader geographic performance trends observed earlier. By analyzing median values for key financial indicators—including Revenue, EBITDA, Net Profit, ROE, Productivity, Debt vs. Banks Over Revenue, and Number of Employees—these graphs offer valuable insights into how sectoral specialization influences provincial economic success.

One of the most striking findings is the role of Ragusa and Palermo as economic hubs. Ragusa, which already stood out in the geographical performance analysis, exhibits consistently strong median values across multiple sectors, particularly in Manufacturing, Wholesale, and Services. Its high EBITDA, Net Profit, and Productivity figures suggest that businesses in this province operate with greater efficiency, possibly benefiting from strong infrastructure, well-integrated supply chains, and a higher concentration of high-value-added firms. A key factor behind Ragusa's strong economic performance is its diversified industrial base. The province hosts one of the largest industrial zones in Southern Italy, housing enterprises in the agro-food, chemical, and mechanical engineering sectors. Notably, Ragusa is a leader in Sicily's agricultural production, accounting for 47% of the island's greenhouse-grown fruits, vegetables, and flowers, as well as 60% of its dairy production. This specialization in high-value agricultural

goods contributes to the province's productivity and financial strength. Additionally, Ragusa benefits from the presence of the Vega oil platform, the largest in the Mediterranean, which plays a crucial role in the local energy sector and generates significant economic activity. The petrochemical and chemical industries, with key players such as Versalis (a subsidiary of Eni), further enhance the province's industrial strength, supporting a business environment characterized by capital-intensive, high-value-added activities. This aligns with Ragusa's strong representation among top-performing firms, reinforcing its role as a leading economic center in Sicily.

Palermo, the regional capital, stands out for its strong performance in the services sector, reflecting its role as an administrative and commercial hub. High median revenue values highlight its business activity, though lower profitability indicators suggest thinner margins in service-based firms. The province's strength in Wholesale and Retail is supported by the Port of Palermo, a major Mediterranean trade and logistics hub, and the presence of Fincantieri's shipyard, which contributes to industrial employment. Despite its urban focus, Palermo also maintains key agricultural and fishing activities, such as the renowned Ciaculli Mandarin production and coastal fisheries. Additionally, industrial zones like Brancaccio and Via Ugo La Malfa house a mix of manufacturing and service firms, further diversifying the local economy. The city's significant tourism industry fuels hospitality and retail, reinforcing its economic importance, though its reliance on services may explain the lower margins observed in financial performance.

On the other side, Catania and Siracusa emerge as strong manufacturing centers. Catania, in particular, benefits from high-tech industries and export-oriented manufacturing, which may explain its higher-than-average Net Profit and EBITDA in this sector. The presence of STMicroelectronics, a leader in semiconductor production, and 3Sun, a major photovoltaic panel manufacturer under Enel Green Power, highlights the province's role as an innovation hub. However, while these companies drive employment and industrial activity locally, their financial results are largely reported at the corporate level, with STMicroelectronics headquartered in Switzerland and Enel Green Power integrated into Enel's national financial structure. This suggests that the actual economic impact of Catania's manufacturing sector could be even stronger if more large firms recorded their revenues and profits within the province.

Siracusa, which already ranked highly in earlier analyses, confirms its industrial strength, showing high performance in both Manufacturing and Wholesale, reinforcing its importance as a production and trade hub. The province's industrial base is strongly linked to the petrochemical industry in Augusta and Priolo, one of the largest in Europe, which has historically contributed to economic activity in the area. Despite environmental and regulatory challenges, this sector remains a key pillar of Siracusa's economy, sustaining its strong financial performance across multiple metrics.

Conversely, underperforming provinces such as Agrigento and Enna continue to struggle across most sectors. In Agrigento, relatively low median values for Revenue, EBITDA, and Net Profit across all industries indicate broader structural weaknesses, likely linked to lower business density, limited access to financing, and weaker market integration. Enna, on the other hand, lacks a clear industrial or commercial specialization, with below-average figures in multiple sectors. However, it stands out for its high Debt vs. Banks Over Revenue ratio in manufacturing, suggesting that firms in this province may rely more on external financing, potentially due to lower profitability or higher capital requirements.

Sectoral specialization also plays a crucial role in shaping financial outcomes. Wholesale trade emerges as a significant sector in multiple provinces, particularly in Ragusa and Palermo, underscoring the importance of trade in Sicily's economy. However, despite generating high revenues, Wholesale businesses report lower EBITDA and ROE compared to Manufacturing and Services, suggesting that these firms may face profitability challenges due to competitive pricing, high supply chain costs, or volume-driven business models.

The agriculture sector, despite Sicily's strong natural potential, remains weak in financial performance across all provinces. Median values for Revenue, EBITDA, and Productivity in agriculture consistently lag behind those of other industries, reinforcing earlier observations about the sector's structural inefficiencies. Factors such as fragmented land ownership, outdated production methods, and weak integration into larger distribution networks continue to limit profitability. Even in historically agricultural provinces like Agrigento and Enna, the sector does not translate into strong business performance, raising concerns about its long-term competitiveness.

Debt levels also show interesting variations across sectors and provinces. While Construction and Manufacturing in Enna and Trapani exhibit higher reliance on bank financing, relatively lower debt ratios in Agriculture and Services suggest that businesses in these industries either have less access to credit or rely more on self-financing. This could have significant

implications for business expansion, as firms with limited access to external capital may struggle to invest in productivity-enhancing technologies or scale their operations.

From a broader perspective, these findings confirm that regional economic success in Sicily is closely tied to sectoral specialization. Provinces like Ragusa, Siracusa, and Palermo exhibit strong multi-sector performance, with high median values in key financial indicators, while underperforming provinces such as Agrigento and Enna struggle across multiple industries. The data suggests that economic strength in Sicily is strongly correlated with the presence of well-developed sectors that feature higher profit margins, efficient cost structures, and strong market positioning. Moving forward, fostering sectoral diversification and strengthening underdeveloped industries—particularly agriculture and high-value manufacturing—could be key strategies to reduce regional disparities and promote more balanced economic growth across the island.

To conclude the analysis on Sectoral Specialization by Province, an OLS regression was conducted to assess the impact of sectoral and provincial characteristics on firm productivity. This approach allows us to determine whether structural differences across industries and geographic areas significantly influence business efficiency in Sicily. By incorporating sectoral and provincial dummy variables, the regression provides a statistical framework to contextualize the patterns observed in the previous descriptive analyses and to better understand the extent to which sector and location drive variations in productivity

The Ordinary Least Squares (OLS) regression is a fundamental statistical method used to estimate the relationship between a dependent variable and one or more independent variables. In this case, the OLS regression is applied to median productivity, using sectoral and provincial dummy variables to examine how industry affiliation and geographic location influence firm productivity. This choice is particularly relevant as productivity—measured as Revenue per Employee—is a key indicator of business efficiency, capturing how effectively firms utilize labor to generate value. Unlike revenue or profit, which can be heavily influenced by firm size, productivity allows for a more standardized comparison across different firms and industries. The median, rather than the mean, is used as it provides a more accurate representation of the typical firm by minimizing the impact of extreme values or outliers that could distort the analysis.

Source	SS	df	MS	Number of obs	=	32,787
				F(13, 32773)	=	57.65
Model	507546367	13	39042028.2	Prob > F	=	0.0000
Residual	2.2194e+10	32,773	677206.438	R-squared	=	0.0224
				Adj R-squared	=	0.0220
Total	2.2702e+10	32,786	692418.5	Root MSE	=	822.93

mediana_prod~a	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
sector_num						
Construction	35.0514	28.86951	1.21	0.225	-21.5339	91.6367
Manufacturing	115.0906	27.84615	4.13	0.000	60.5111	169.67
Retail	165.8479	27.71142	5.98	0.000	111.5325	220.1633
Services	55.73477	25.73896	2.17	0.030	5.28547	106.1841
Wholesale	417.2689	28.00407	14.90	0.000	362.3799	472.1579
prov_num						
Caltanissetta	-22.4568	26.03653	-0.86	0.388	-73.48935	28.57574
Catania	25.93039	18.76187	1.38	0.167	-10.84356	62.70435
Enna	-5.112342	34.20513	-0.15	0.881	-72.15564	61.93095
Messina	-31.11361	20.83175	-1.49	0.135	-71.9446	9.717382
Palermo	-1.119444	19.13089	-0.06	0.953	-38.61669	36.3778
Ragusa	65.55062	22.83096	2.87	0.004	20.8011	110.3001
Siracusa	-31.39892	22.73752	-1.38	0.167	-75.96528	13.16745
Trapani	-27.66532	22.14013	-1.25	0.211	-71.06077	15.73013
_cons	73.44567	28.42997	2.58	0.010	17.72189	129.1695

Table 3.4 – OLS Regression Results: Impact of Sectoral and Provincial Factors on Median Productivity

From a statistical perspective, the regression decomposes the total variation in productivity into two main components: the portion explained by sectoral and provincial differences (the model sum of squares, SS) and the unexplained variation due to other factors (residual SS). The R-squared (0.0224) value indicates that sectoral and geographic factors explain only a small fraction (2.24%) of the total variance in productivity, suggesting that firm-specific characteristics, such as managerial efficiency, access to technology, and market positioning, play a far greater role in determining business performance. Despite this low explanatory power, the F-statistic (57.65, $p < 0.000$) confirms that the overall model is statistically significant, meaning that sectoral and provincial differences do contribute to variations in productivity, even if their effect size is limited.

The coefficients of the regression indicate how each sector and province compares to the reference category (which is implicitly omitted in the model). Among sectors, wholesale trade exhibits the highest positive effect on productivity (coef. = 417.26, $p < 0.001$), followed by retail (coef. = 165.85, $p < 0.001$) and manufacturing (coef. = 115.09, $p < 0.001$). This suggests that firms engaged in wholesale activities tend to have the highest labor efficiency, likely due to economies of scale and high revenue per worker. The positive coefficient for manufacturing supports the idea that capital-intensive industries, particularly those with technological

integration, operate more efficiently than labor-intensive service sectors. Construction, however, does not show a statistically significant effect ($p = 0.225$), implying that productivity levels in this sector do not systematically differ from the baseline category.

The provincial dummy variables reveal that Ragusa is the only province with a significantly positive coefficient (coef. = 65.55, $p = 0.004$), suggesting that firms in this province tend to have higher productivity compared to the baseline. This aligns with previous findings indicating that Ragusa has a concentration of high-performing firms, particularly in manufacturing and wholesale trade. In contrast, other provinces, including Palermo, Messina, and Siracusa, show negative coefficients, though not statistically significant, indicating that firm location within these areas does not have a strong systematic effect on productivity. The lack of significant provincial effects, aside from Ragusa, suggests that productivity is more influenced by sectoral affiliation rather than geographic factors, reinforcing the idea that industry-specific dynamics play a larger role in shaping firm efficiency.

The regression results highlight a key insight: while sectoral and geographic factors contribute to productivity differences, their explanatory power is limited. The low R-squared value suggests that productivity is largely determined by firm-specific factors rather than broader structural conditions. This finding has important policy implications, as it indicates that efforts to improve productivity should focus on firm-level interventions, such as promoting innovation, enhancing workforce skills, and improving access to financial resources, rather than relying solely on broad sectoral or regional strategies.

In summary, the analysis of Sectoral Specialization by Province highlights significant disparities in firm distribution, performance, and productivity across both sectors and geographic areas in Sicily. While services dominate in terms of sheer presence, manufacturing and wholesale stand out for their higher productivity levels. However, sectoral concentration does not always translate into superior financial performance, as seen in provinces where dominant industries underperform relative to others. The OLS regression confirms that both sectoral and provincial factors play a role in shaping productivity, but their explanatory power remains limited, indicating that firm-specific characteristics and broader economic conditions likely have a stronger influence. These findings emphasize the need for targeted policies that not only support high-performing sectors but also foster improvements in underperforming industries, ensuring a more balanced and competitive economic landscape across Sicily.

Temporal Trends in Company Performance (2013-2022)

In this last section, an examination of the time-related trends of business performance over a ten-year period for Sicily's provinces will be conducted. The analysis will focus on examining the evolution of key financial indicators over time, both at the aggregate level and through a comparative lens across provinces and sectors. This dual perspective will allow for the identification of which provinces and sectors have shown sustained improvement and which have faced stagnation or decline, thereby highlighting where strategic investments or policy interventions can reap economic benefits.

As the first statistical approach employed in this study, a fixed-effects panel regression (xtreg, fe) was performed to analyze the temporal trends of key financial performance indicators for Sicilian firms from 2013 to 2022. This econometric method was chosen due to its ability to control for unobserved time-invariant characteristics specific to each firm, such as industry specialization, structural advantages, firm size, and managerial practices. By accounting for these fixed factors, the model isolates the effect of time on the financial variables under analysis, making it particularly suited to studying how performance metrics evolve over time within the same firms. This methodology is valuable because it helps eliminate the bias that could arise from structural differences between companies and allows a clearer estimation of whether financial trends have improved, declined, or remained stable over the observed period. It also ensures that observed trends are more likely to be linked to dynamic elements, such as market conditions, policy changes, or economic cycles, rather than static firm characteristics.

In addition to the fixed-effects model, a random-effects model (xtreg, re) was also employed to assess the impact of time-invariant variables, such as geographic location or sector-specific characteristics. The choice between the two models was guided by the Hausman test, which confirmed the appropriateness of the fixed-effects model for most analyses. The random-effects model assumes that time-invariant characteristics are uncorrelated with the explanatory variables, providing a complementary perspective on the data.

The number of observations varies across the different performance variables due to uneven data availability. Specifically, some variables have missing data for certain years or provinces, which reduces the available sample size. This heterogeneity is common in firm-level datasets and reflects differences in financial reporting practices across firms and sectors. Despite this, the sample remains sufficiently large to ensure the robustness of the estimates.

As in the rest of the chapter, the regression was applied to six key financial variables: Ricavivendite, or Revenue; EBITDA; Utilenetto, or Net Profit; ROE, or Return on Equity;

Dipendenti, or Number of Employees; and DebVsBancheSuFatt, or Bank Debt as a Percentage of Revenue. In all variables, the coefficient for the year variable - that is, the passage of time - was highly significant, signaling meaningful temporal trends. These results suggest that the observed financial dynamics are influenced by systemic factors, such as market conditions or changes in economic policies, rather than random fluctuations.

The fixed-effects regression analysis provides a detailed look at the financial performance of Sicilian firms from 2013 to 2022, revealing both positive trends and underlying challenges. Across key indicators—revenues, profitability, employment, productivity, and financial structure—the results highlight a consistent pattern of growth, though with notable variations.
Revenues (Ricavivendite) show an average annual increase of 87.66 thousand euros per firm, reflecting a positive trend in economic activity. Similarly, operational profitability, as measured by EBITDA, grows by 14.26 units per year, while net profit (Utilenetto) increases by 13.15 units annually. This upward trend implies a general growth in both operational profitability and net earnings among the firms in the dataset. However, the coefficient for net profit is lower than that for EBITDA, suggesting that while operating performance has improved, not all of these gains are fully translating into net profit—possibly due to increasing interest expenses, tax burdens, or other financial constraints. The increasing EBITDA could be linked to post-COVID recovery efforts, financial incentives, or sector-specific growth, particularly in industries that have shown resilience or expansion in the last decade, such as technology, tourism, or advanced manufacturing. Employment levels also rise, with firms adding an average of 0.27 employees per year, and productivity increases by 3.14 units annually, indicating gains in efficiency and workforce skills.
However, the low within R-squared values—ranging from 0.0001 to 0.0097—indicate that these temporal trends explain only a small fraction of the variation in performance. Instead, the high rho values—ranging from 0.262 to 0.810—highlight the dominant role of firm-specific characteristics, such as managerial practices, sector specialization, or access to resources, in shaping financial outcomes. This underscores the importance of intrinsic factors over external trends in driving firm performance. The low within R-squared and high rho values suggest that firm-intrinsic characteristics, rather than external trends, are responsible for much of the variation, implying that other external or firm-specific factors may substantially contribute to reaching a critical turning point.

Despite the overall positive trends, some areas raise concerns. The return on equity (ROE) shows a decline of 0.49 percentage points per year, pointing to potential inefficiencies in capital utilization, possibly driven by increased reliance on debt financing, reinvestment inefficiencies, or diminishing returns on equity investments. This discrepancy raises questions about the sustainability of profitability and whether the financial improvements are balanced by an efficient use of capital resources. The analysis of bank debt as a percentage of revenue (DebVsBancheSuFatt) reveals an average annual increase of 0.39 percentage points, indicating a structural reliance on external financing. This may be due to limited access to alternative funding sources, such as venture capital, bond issuances, or retained earnings. Such persistence of bank dependence may raise concerns about the financial fragility of Sicilian firms, as excessive indebtedness could hamper long-term growth and make them more vulnerable in periods of economic downturn.

From a policy perspective, diversification of financing options could be a key strategy to address these challenges. Encouraging firms to explore venture capital, crowdfunding, or stock market listings could reduce traditional reliance on bank loans. Additionally, government-backed financial instruments, such as public loan guarantees or interest subsidies, could alleviate the cost of borrowing for SMEs and make credit access more affordable.

The results also reveal significant heterogeneity across firms, with much of the variation in performance driven by unobserved, time-invariant factors. This heterogeneity suggests that while some firms have thrived, others may have struggled due to differences in market positioning, operational efficiency, or access to funding. Policymakers should consider targeted interventions to address these disparities, such as promoting access to alternative financing, supporting sector-specific growth initiatives, and fostering innovation and efficiency improvements.

In summary, while the analysis identifies positive trends in key financial indicators—with revenues, profitability, and productivity all showing steady growth—it also highlights the critical role of firm-specific factors and structural challenges in shaping performance. These insights underscore the need for nuanced, firm-level strategies and policy interventions to sustain growth and enhance the resilience of Sicilian firms in the face of evolving economic conditions. The fixed-effects model (FE), as explained before, is designed to control for unobserved, time-invariant firm-specific characteristics, such as sectoral affiliation, managerial strategies, or structural advantages, by focusing solely on variations within the same firms over time. This allows for an unbiased estimation of how key financial indicators have evolved over

the decade. The tables are presented below, however, the FE model does not allow for an assessment of cross-sectional differences between firms, sectors, or provinces, as it eliminates time-invariant effects.

Fixed-effects (within) regression — Number of obs = 390,735
Group variable: identifica~o — Number of groups = 57,673

R-sq:
within = 0.0003
between = 0.0016
overall = 0.0000

Obs per group:
min = 1
avg = 6.8
max = 10

F(1,333061) = 106.02
corr(u_i, Xb) = -0.0140 — Prob > F = 0.0000

Ricavivend~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
anno	87.66145	8.513776	10.30	0.000	70.9747	104.3482
_cons	-175538.1	17183.11	-10.22	0.000	-209216.5	-141859.7
sigma_u	21123.694					
sigma_e	13403.679					
rho	.71294538	(fraction of variance due to u_i)				

F test that all u_i=0: F(57672, 333061) = 24.34 — Prob > F = 0.0000

Table 3.5.a – Fixed effect panel regression of Revenues (thousands of EUR)

Fixed-effects (within) regression — Number of obs = 383,066
Group variable: identifica~o — Number of groups = 57,494

R-sq:
within = 0.0002
between = 0.0065
overall = 0.0001

Obs per group:
min = 1
avg = 6.7
max = 10

F(1,325571) = 60.82
corr(u_i, Xb) = -0.0293 — Prob > F = 0.0000

Dipendenti	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
anno	.2702148	.0346498	7.80	0.000	.2023023	.3381273
_cons	-537.8276	69.93199	-7.69	0.000	-674.8923	-400.7629
sigma_u	38.625475					
sigma_e	53.913124					
rho	.33918599	(fraction of variance due to u_i)				

F test that all u_i=0: F(57493, 325571) = 4.37 — Prob > F = 0.0000

Table 3.5.b – Fixed effect panel regression of Employees

Fixed-effects (within) regression — Number of obs = 390,379
Group variable: identifica~o — Number of groups = 57,633

R-sq:
within = 0.0001
between = 0.0012
overall = 0.0000

Obs per group:
min = 1
avg = 6.8
max = 10

F(1,332745) = 41.95
corr(u_i, Xb) = -0.0145 — Prob > F = 0.0000

EBITDA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
anno	14.25524	2.201072	6.48	0.000	9.941202	18.56928
_cons	-28631.42	4442.364	-6.45	0.000	-37338.32	-19924.51
sigma_u	2069.9248					
sigma_e	3463.243					
rho	.2632031	(fraction of variance due to u_i)				

F test that all u_i=0: F(57632, 332745) = 3.53 — Prob > F = 0.0000

Table 3.5.c – Fixed effect panel regression of EBIDA (thousands of EUR)

Fixed-effects (within) regression — Number of obs = 390,734
Group variable: identifica~o — Number of groups = 57,673

R-sq:
within = 0.0002
between = 0.0009
overall = 0.0000

Obs per group:
min = 1
avg = 6.8
max = 10

F(1,333060) = 58.35
corr(u_i, Xb) = -0.0134 — Prob > F = 0.0000

Utilenetto	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
anno	13.15124	1.721665	7.64	0.000	9.776823	16.52565
_cons	-26452.22	3474.787	-7.61	0.000	-33262.7	-19641.74
sigma_u	1663.8149					
sigma_e	2710.5013					
rho	.27367804	(fraction of variance due to u_i)				

F test that all u_i=0: F(57672, 333060) = 3.64 — Prob > F = 0.0000

Table 3.5.d – Fixed effect panel regression of Net Profit (thousands of EUR)

```
Fixed-effects (within) regression               Number of obs      =       347,186
Group variable: identifica~o                    Number of groups   =        56,184

R-sq:                                           Obs per group:
     within  = 0.0037                                         min =             1
     between = 0.1273                                         avg =           6.2
     overall = 0.0062                                         max =            10

                                                F(1,291001)        =      1080.01
corr(u_i, Xb)  = -0.1880                        Prob > F           =       0.0000
```

ROE	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
anno	-.494497	.015047	-32.86	0.000	-.5239887	-.4650052
_cons	1022.729	30.36831	33.68	0.000	963.2076	1082.25
sigma_u	23.386947					
sigma_e	22.06518					
rho	.52905585	(fraction of variance due to u_i)				

F test that all u_i=0: F(56183, 291001) = 4.34 Prob > F = 0.0000

Table 3.5.e – Fixed effect panel regression of ROE (%)

```
Fixed-effects (within) regression               Number of obs      =       193,674
Group variable: identifica~o                    Number of groups   =        38,479

R-sq:                                           Obs per group:
     within  = 0.0097                                         min =             1
     between = 0.0030                                         avg =           5.0
     overall = 0.0004                                         max =            10

                                                F(1,155194)        =      1523.23
corr(u_i, Xb)  = -0.0568                        Prob > F           =       0.0000
```

DebVsBanch~t	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
anno	.4389801	.0112477	39.03	0.000	.4169349	.4610253
_cons	-874.4172	22.69611	-38.53	0.000	-918.9011	-829.9333
sigma_u	17.161381					
sigma_e	11.875281					
rho	.67620923	(fraction of variance due to u_i)				

F test that all u_i=0: F(38478, 155194) = 8.71 Prob > F = 0.0000

Table 3.5.f – Fixed effect panel regression of Debt versus Banks over Revenues (%)

```
Fixed-effects (within) regression               Number of obs      =       268,313
Group variable: identifica~o                    Number of groups   =        44,603

R-sq:                                           Obs per group:
     within  = 0.0006                                         min =             1
     between = 0.0026                                         avg =           6.0
     overall = 0.0002                                         max =            10

                                                F(1,223709)        =       123.53
corr(u_i, Xb)  = -0.0294                        Prob > F           =       0.0000
```

Produttivita	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
anno	3.137065	.2822486	11.11	0.000	2.583865	3.690265
_cons	-6144.49	569.6386	-10.79	0.000	-7260.967	-5028.013
sigma_u	732.40195					
sigma_e	355.80443					
rho	.80905732	(fraction of variance due to u_i)				

F test that all u_i=0: F(44602, 223709) = 16.07 Prob > F = 0.0000

Table 3.5.g – Fixed effect panel regression of Productivity (thousands of EUR/n° Employees)

The fixed-effects model (FE), as explained before, is designed to control for unobserved, time-invariant firm-specific characteristics, such as sectoral affiliation, managerial strategies, or structural advantages, by focusing solely on variations within the same firms over time. This allows for an unbiased estimation of how key financial indicators have evolved over the decade. However, the FE model does not allow for an assessment of cross-sectional differences between firms, sectors, or provinces, as it eliminates time-invariant effects.

To address this limitation, the random-effects model (RE) was employed as a complementary approach. The RE model assumes that firm-specific effects are uncorrelated with the explanatory variables, enabling the estimation of both within-group and between-group variations. This broader approach provides insights into how financial performance differs across firms, sectors, and provinces, while still capturing temporal trends. This RE model is of

particular relevance for regional economic analysis because it allows the performance comparison of firms in different industries and locations-evaluation means, therefore, highly valuable to appraise structural disparities in business dynamics within Sicily.

The random-effects (RE) regression analysis provides key insights into the determinants of firm performance across Sicilian provinces and economic sectors, examining how different regions and industries influence variables such as revenue, EBITDA, net profit, productivity, debt ratio, ROE, and employment. The coefficient on the year variable is statistically significant across most models, particularly for revenue (73.22, $p<0.01$), EBITDA (5.50, $p=0.01$), net profit (6.97, $p=0.00$), and productivity (2.65, $p<0.01$), indicating a slow but steady economic growth trend. However, the within R-squared values remain consistently low, with values as low as 0.0002 for revenue and 0.0006 for productivity, suggesting that much of the variation in firm performance is driven by factors outside of the model.

At the provincial level, Ragusa emerges as one of the strongest economic performers, displaying positive and significant coefficients across multiple indicators, particularly in revenue (666.98, $p=0.02$) and net profit (120.28, $p=0.03$), aligning with its strong industrial and commercial presence. In contrast, provinces such as Enna and Caltanissetta exhibit consistently weaker performance, with revenue coefficients of -398.66 and 151.61, respectively, and statistically insignificant effects, reinforcing their status as economically disadvantaged areas. Palermo, despite being the regional capital, does not consistently exhibit the strongest performance, with its revenue coefficient at 48.81 ($p=0.32$) and EBITDA at 48.81 ($p=0.32$), suggesting that structural inefficiencies may limit its financial output. Employment trends further confirm these disparities, as Palermo and Enna exhibit stronger workforce growth, whereas Caltanissetta (1.41, $p=0.10$) and Trapani (-4.67, $p=0.03$) show stagnation or weak increases in employment levels.

At the sectoral level, Wholesale and Retail trade show the most robust financial performance. Wholesale reports a revenue coefficient of 528.57 ($p=0.02$) and productivity of 399.58 ($p=0.00$), suggesting strong revenue generation and operational efficiency, likely due to the sector's role in interregional and international trade. Similarly, Retail exhibits positive effects on revenue (168.60, $p=0.00$) and productivity (140.49, $p=0.00$), reinforcing its economic importance. Manufacturing also demonstrates positive and significant effects on revenue (1656.11, $p=0.00$) and EBITDA (195.30, $p=0.76$), underscoring the presence of capital-intensive firms that leverage economies of scale. However, ROE regression results indicate lower profitability for Manufacturing (-0.65, $p=0.22$), likely due to high debt financing. The

service sector, while dominant in firm count, exhibits mixed performance results, with moderate impacts on revenue (52.57, p=0.04) and productivity (40.49, p=0.03), but relatively weaker effects on profitability, reflecting thinner margins and lower capital efficiency.

These findings suggest that regional economic conditions, access to markets, and infrastructure play a crucial role in shaping corporate success. Additionally, the retention of provincial coefficients in the RE model—as opposed to their omission in the FE model due to collinearity—reinforces the relevance of cross-sectional differences in firm performance. Meanwhile, other sector coefficients were generally insignificant, which may indicate that sector-specific effects on financial outcomes are weaker after controlling for time and provincial influences. The services and wholesale sectors consistently indicate higher financial stability and revenue generation, while agriculture and construction show weaker financial indicators, reflecting sectoral challenges related to low investment levels, limited scalability, and exposure to cyclical fluctuations.

The analysis of financial structure provides further insights into firm sustainability. Despite positive revenue and profit trends, ROE exhibited a declining trend (-0.11 per year, p=0.00), suggesting diminishing capital efficiency over time. This could be attributed to rising equity bases, increased leverage, or reinvestment inefficiencies. At the same time, the bank debt ratio over revenue (DebVsBancheSuFatt) has a small but significant positive coefficient (0.36, p=0.00), indicating a gradual increase in financial leverage among firms over the ten-year period under consideration. However, the relatively weak correlation between debt levels and other financial performance metrics suggests that access to credit alone does not guarantee more attractive financial outcomes, reinforcing the need for effective debt management strategies.

As the following table demonstrates the employment trends observed in the RE model align with broader financial patterns. The coefficient for the year variable in the Dipendenti (employees) model (0.03, p=0.27) confirms a gradual expansion in workforce size across firms. However, provincial disparities remain, with Palermo and Enna showing stronger employment growth, while Caltanissetta and Trapani exhibit weaker increases in employment levels, reinforcing the idea that labor market dynamics are heavily influenced by regional economic conditions and sectoral specialization.

Overall, these findings emphasize the significant economic disparities between Sicilian provinces and the structural characteristics of different industries. While some regions and sectors display strong financial performance, others continue to lag behind, pointing to the need for targeted policy interventions to enhance regional competitiveness and sectoral efficiency.

The low R-squared values suggest that additional firm-level and macroeconomic factors—such as innovation capacity, international trade exposure, and infrastructure quality—should be further explored to provide a more comprehensive understanding of firm success in Sicily.

Random-effects GLS regression — Number of obs = 390,735
Group variable: identifica~o — Number of groups = 57,673

R-sq:
within = 0.0003
between = 0.0005
overall = 0.0007

Obs per group:
min = 1
avg = 6.8
max = 10

Wald chi2(14) = 129.68
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

Ricavivendite	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
anno	73.21904	8.449734	8.67	0.000	56.65787	89.78022
Prov_num						
Caltanissetta	151.6182	502.5888	0.30	0.763	-833.4377	1136.674
Catania	222.2444	371.9683	0.60	0.550	-506.8	951.2888
Enna	398.6652	670.7989	0.59	0.552	-916.0766	1713.407
Messina	124.6405	412.9728	0.30	0.763	-684.7713	934.0522
Palermo	379.8651	380.1543	1.00	0.318	-365.2237	1124.954
Ragusa	606.8912	439.0242	1.38	0.167	-253.5805	1467.363
Siracusa	1071.256	452.1967	2.37	0.018	184.9669	1957.545
Trapani	-85.61918	435.9234	-0.20	0.844	-940.0134	768.7751
Sector_num						
Construction	24.6221	540.8424	0.05	0.964	-1035.41	1084.654
Manufacturing	1656.118	529.329	3.13	0.002	618.6524	2693.584
Retail	1429.74	529.0069	2.70	0.007	392.9053	2466.574
Services	528.5704	485.5467	1.09	0.276	-423.0837	1480.224
Wholesale	1638.256	540.8289	3.03	0.002	578.2509	2698.261
_cons	-147809.8	17066.83	-8.66	0.000	-181260.1	-114359.4
sigma_u	20035.882					
sigma_e	13403.679					
rho	.69082757	(fraction of variance due to u_i)				

Table 3.6.a – Random effect panel regression of Revenues (thousands of EUR)

Random-effects GLS regression — Number of obs = 390,379
Group variable: identifica~o — Number of groups = 57,633

R-sq:
within = 0.0001
between = 0.0004
overall = 0.0003

Obs per group:
min = 1
avg = 6.8
max = 10

Wald chi2(14) = 75.95
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

EBITDA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
anno	5.504895	2.148015	2.56	0.010	1.294863	9.714927
Prov_num						
Caltanissetta	91.78538	45.59157	2.01	0.044	2.427539	181.1432
Catania	28.14743	33.68275	0.84	0.403	-37.86954	94.16441
Enna	24.026	60.67316	0.40	0.692	-94.89121	142.9432
Messina	30.29893	37.45511	0.81	0.419	-43.11172	103.7096
Palermo	80.48719	34.47364	2.33	0.020	12.9201	148.0543
Ragusa	22.28217	39.86753	0.56	0.576	-55.85677	100.4211
Siracusa	120.2706	41.15878	2.92	0.003	39.60084	200.9403
Trapani	-5.246741	39.50035	-0.13	0.894	-82.666	72.17252
Sector_num						
Construction	-8.600273	48.78189	-0.18	0.860	-104.211	87.01047
Manufacturing	195.3073	47.86881	4.08	0.000	101.4861	289.1284
Retail	36.46658	47.81968	0.76	0.446	-57.25827	130.1914
Services	69.12671	43.83109	1.58	0.115	-16.78065	155.0341
Wholesale	52.58663	48.71225	1.08	0.280	-42.88762	148.0609
_cons	-11094.29	4335.752	-2.56	0.011	-19592.21	-2596.372
sigma_u	1169.8847					
sigma_e	3463.243					
rho	.10242182	(fraction of variance due to u_i)				

Table 3.6.b – Random effect panel regression of EBITDA (thousands of EUR)

Random-effects GLS regression — Number of obs = 347,186
Group variable: identifica~o — Number of groups = 56,184

R-sq: — Obs per group:
within = 0.0037 — min = 1
between = 0.0008 — avg = 6.2
overall = 0.0015 — max = 10

Wald chi2(14) = 401.33
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

ROE	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
anno	-.1164256	.0145775	-7.99	0.000	-.1449969	-.0878543
Prov_num						
Caltanissetta	2.815403	.5051914	5.57	0.000	1.825246	3.80556
Catania	1.17747	.3726745	3.16	0.002	.4470413	1.907899
Enna	.2218015	.6723537	0.33	0.741	-1.095988	1.539591
Messina	1.335966	.4148889	3.22	0.001	.5227987	2.149133
Palermo	1.53883	.381336	4.04	0.000	.7914254	2.286235
Ragusa	2.425932	.440985	5.50	0.000	1.561618	3.290247
Siracusa	2.483899	.4554171	5.45	0.000	1.591298	3.3765
Trapani	-1.085196	.4371915	-2.48	0.013	-1.942076	-.2283168
Sector_num						
Construction	.2376057	.5471825	0.43	0.664	-.8348523	1.310064
Manufacturing	-.6574385	.5363152	-1.23	0.220	-1.708597	.39372
Retail	-.0334766	.5360154	-0.06	0.950	-1.084047	1.017094
Services	2.342624	.4927631	4.75	0.000	1.376826	3.308422
Wholesale	-.0960682	.5461183	-0.18	0.860	-1.16644	.974304
_cons	261.0487	29.43155	8.87	0.000	203.3639	318.7335
sigma_u	18.11465					
sigma_e	22.06518					
rho	.40262017	(fraction of variance due to u_i)				

Table 3.6.c – Random effect panel regression of ROE (%)

Random-effects GLS regression — Number of obs = 193,674
Group variable: identifica~o — Number of groups = 38,479

R-sq: — Obs per group:
within = 0.0097 — min = 1
between = 0.0038 — avg = 5.0
overall = 0.0085 — max = 10

Wald chi2(14) = 1574.31
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

DebVsBancheS~t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
anno	.3693915	.0107514	34.36	0.000	.3483191	.390464
Prov_num						
Caltanissetta	-.9117023	.4972445	-1.83	0.067	-1.886284	.0628791
Catania	-1.730016	.3547018	-4.88	0.000	-2.425219	-1.034813
Enna	-.4758996	.6463917	-0.74	0.462	-1.742804	.791005
Messina	-.2465552	.3932058	-0.63	0.531	-1.017224	.524114
Palermo	-1.21479	.3618739	-3.36	0.001	-1.92405	-.5055306
Ragusa	.8454639	.4337664	1.95	0.051	-.0047026	1.695631
Siracusa	-1.096223	.4290928	-2.55	0.011	-1.937229	-.2552165
Trapani	1.252875	.4178383	3.00	0.003	.4339269	2.071823
Sector_num						
Construction	.1615664	.5391488	0.30	0.764	-.8951458	1.218279
Manufacturing	4.234256	.525735	8.05	0.000	3.203834	5.264677
Retail	-.0297695	.5219243	-0.06	0.955	-1.052722	.9931833
Services	.0117427	.4833525	0.02	0.981	-.9356107	.9590961
Wholesale	.5859496	.5264662	1.11	0.266	-.4459052	1.617804
_cons	-734.5182	21.7009	-33.85	0.000	-777.0512	-691.9852
sigma_u	15.378066					
sigma_e	11.875281					
rho	.62643811	(fraction of variance due to u_i)				

Table 3.6.d – Random effect panel regression of Debt Versus Banks over Revenues (%)

Random-effects GLS regression — Number of obs = 390,734
Group variable: identifica~o — Number of groups = 57,673

R-sq: — Obs per group:
within = 0.0002 — min = 1
between = 0.0002 — avg = 6.8
overall = 0.0003 — max = 10

Wald chi2(14) = 74.85
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

Utilenetto	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
anno	6.969193	1.677046	4.16	0.000	3.682244	10.25614
Prov_num						
Caltanissetta	82.7405	36.83208	2.25	0.025	10.55095	154.9301
Catania	24.57819	27.2279	0.90	0.367	-28.78752	77.9439
Enna	5.216953	49.0374	0.11	0.915	-90.89458	101.3285
Messina	7.974705	30.27424	0.26	0.792	-51.36171	67.31112
Palermo	63.62386	27.86251	2.28	0.022	9.014332	118.2334
Ragusa	11.3688	32.21986	0.35	0.724	-51.78097	74.51857
Siracusa	94.03814	33.26321	2.83	0.005	28.84346	159.2328
Trapani	-9.294389	31.92826	-0.29	0.771	-71.87263	53.28385
Sector_num						
Construction	-9.24839	39.45487	-0.23	0.815	-86.57851	68.08173
Manufacturing	123.4948	38.71104	3.19	0.001	47.62251	199.367
Retail	16.43367	38.66971	0.42	0.671	-59.35758	92.22491
Services	45.44584	35.44531	1.28	0.200	-24.02569	114.9174
Wholesale	22.3118	39.39919	0.57	0.571	-54.90919	99.53278
_cons	-14056.99	3385.154	-4.15	0.000	-20691.77	-7422.211
sigma_u	991.59291					
sigma_e	2710.5013					
rho	.11803695	(fraction of variance due to u_i)				

Table 3.6.e – Random effect panel regression of Net Profit (thousands of EUR)

Random-effects GLS regression — Number of obs = 383,066
Group variable: identifica~o — Number of groups = 57,494

R-sq: — Obs per group:
within = 0.0002 — min = 1
between = 0.0014 — avg = 6.7
overall = 0.0010 — max = 10

Wald chi2(14) = 147.39
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

Dipendenti	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
anno	.0364937	.0336683	1.08	0.278	-.029495	.1024824
Prov_num						
Caltanissetta	1.415735	.8757343	1.62	0.106	-.3006724	3.132143
Catania	1.666128	.6474253	2.57	0.010	.3971972	2.935058
Enna	1.531291	1.165831	1.31	0.189	-.7536965	3.816278
Messina	1.013799	.7194269	1.41	0.159	-.3962522	2.423849
Palermo	2.652872	.6622428	4.01	0.000	1.354899	3.950844
Ragusa	1.324476	.7654732	1.73	0.084	-.1758242	2.824775
Siracusa	1.804156	.7895552	2.29	0.022	.2566564	3.351656
Trapani	-.4677396	.7596689	-0.62	0.538	-1.956663	1.021184
Sector_num						
Construction	-2.030946	.9399396	-2.16	0.031	-3.873194	-.1886985
Manufacturing	2.196709	.9214218	2.38	0.017	.3907558	4.002663
Retail	1.756079	.9200593	1.91	0.056	-.0472039	3.559362
Services	2.753186	.8441357	3.26	0.001	1.098711	4.407662
Wholesale	.1095123	.9388711	0.12	0.907	-1.730641	1.949666
_cons	-69.8371	67.96528	-1.03	0.304	-203.0466	63.3724
sigma_u	27.519657					
sigma_e	53.913124					
rho	.20669774	(fraction of variance due to u_i)				

Table 3.6.f – Random effect panel regression of Employees

Random-effects GLS regression — Number of obs = 268,313
Group variable: identifica~o — Number of groups = 44,603

R-sq: — Obs per group:
within = 0.0006 — min = 1
between = 0.0238 — avg = 6.0
overall = 0.0300 — max = 10

Wald chi2(14) = 1223.23
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

Produttivita	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
anno	2.654853	.2782004	9.54	0.000	2.10959	3.200116
Prov_num						
Caltanissetta	-22.73518	19.34755	-1.18	0.240	-60.65568	15.18533
Catania	16.67667	14.34695	1.16	0.245	-11.44283	44.79617
Enna	-3.756852	25.91175	-0.14	0.885	-54.54294	47.02924
Messina	-30.43203	15.90695	-1.91	0.056	-61.60908	.7450249
Palermo	-3.779613	14.67299	-0.26	0.797	-32.53814	24.97892
Ragusa	33.29698	16.92003	1.97	0.049	.1343336	66.45964
Siracusa	-28.75378	17.39339	-1.65	0.098	-62.84419	5.336633
Trapani	-27.51653	16.84987	-1.63	0.102	-60.54167	5.508616
Sector_num						
Construction	36.7144	21.23711	1.73	0.084	-4.909563	78.33837
Manufacturing	96.13473	20.57828	4.67	0.000	55.80204	136.4674
Retail	147.1137	20.51615	7.17	0.000	106.9028	187.3247
Services	40.49909	18.94441	2.14	0.033	3.368726	77.62945
Wholesale	399.5822	20.98948	19.04	0.000	358.4436	440.7209
_cons	-5276.484	562.0055	-9.39	0.000	-6377.995	-4174.973
sigma_u	696.63887					
sigma_e	355.80443					
rho	.79310954	(fraction of variance due to u_i)				

Table 3.6.g – Random effect panel regression of Productivity (thousands of EUR / n° employees)

The decision to use both models was motivated by the need for a comprehensive perspective. While the FE model allows for an accurate estimation of how financial indicators have evolved over time within firms, the RE model enables an evaluation of broader structural patterns affecting different sectors and provinces. The similarity of the results from both models strengthens this result: there is a positive trend in revenues, EBITDA, and employment, coexisting with a decreasing ROE and increasing bank debt over revenue. This might suggest that Sicilian firms are expanding their revenues and operational structure but are still facing problems in terms of capital efficiency and financial sustainability.

Finally, the research focuses on a visual representation of the temporal trends of some key financial variables used until now across Sicilian provinces and economic sectors over a ten-year period. By analyzing geographical and sectoral trends, the research will try to provide an overall understanding of the island's economic dynamics. While the provincial analysis highlights regional disparities in financial performance and economic development, the sectoral breakdown offers insight into industry-specific growth trajectories and resilience to economic shocks. The dual approach allows us to assess whether variations in economic performance are driven primarily by regional factors, such as infrastructure and institutional quality, or by

sectoral characteristics, such as capital intensity, market demand, and technological advancements.

To examine the economic performance of Sicilian enterprises over time, the analysis focused on five core financial indicators: EBITDA, ROE, Productivity, Debt over Revenue, and Number of Employees. These variables were selected for their ability to reflect both the operational efficiency and financial health of firms, while also minimizing potential distortions from missing data. Revenue and Net Profit, although important, were excluded due to a higher concentration of missing or inconsistent values, particularly among smaller firms and in earlier years of the dataset. In contrast, EBITDA, ROE, and productivity offer more stable and reliable measures of firm performance, while the debt ratio and employment figures provide valuable insight into financial sustainability and labor dynamics. This targeted selection ensures the robustness of the temporal analysis and highlights the structural and sectoral shifts occurring within the Sicilian business landscape.

To ensure the reliability of this temporal analysis, a methodological choice was made regarding how to aggregate the data for each year. Rather than calculating the mean of each financial variable (such as productivity, revenue, or net profit) across all firms in a given province or sector for each year, the analysis is based on the sum of these values. This approach was chosen because the dataset contains a substantial number of missing values, particularly in earlier years and among smaller or less active firms. Calculating the mean would have resulted in misleadingly low or unstable values that do not accurately reflect the economic scale or trend. In contrast, using the sum provides a more faithful representation of the overall economic output, capturing the total financial activity in each province or sector and producing clearer, more interpretable trend lines over time. This reasoning was applied for EBITDA, Productivity and employees, while for percentage variables the sum was not significant, hence the average value were used.

The temporal analysis of key financial variables, presented in the following charts, reveals significant regional and sectoral patterns across Sicilian enterprises from 2013 to 2022. Among provinces, as expected, Catania and Palermo emerge as the two major economic poles, consistently leading in terms of aggregate values of EBITDA, ROE, productivity, and employment. Catania's sharp rise in EBITDA and ROE after 2019 suggests a phase of accelerated expansion, while Palermo exhibits more stable and gradual growth. Ragusa also performs well, particularly in productivity, confirming its strong industrial fabric, while

provinces like Enna and Caltanissetta remain structurally weaker across all indicators, as seen throughtout the whole chapter.

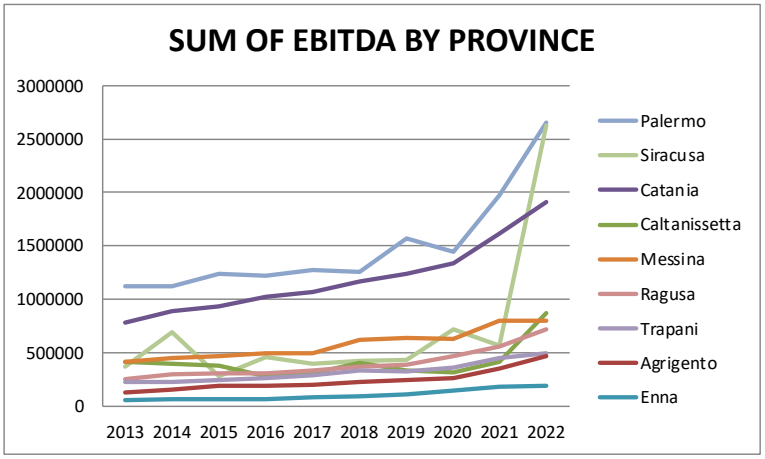

Figure 3.20 – Temporal trend of EBITDA by Province (thousands of EUR)

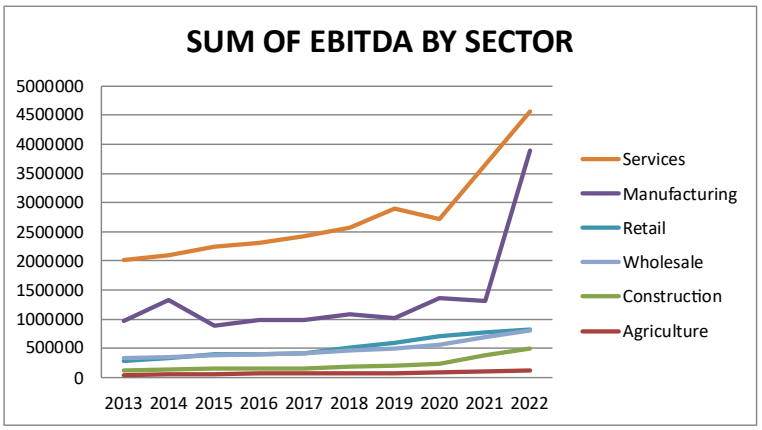

Figure 3.21 – Temporal trend of EBITDA by Sector (thousands of EUR)

On a sectoral level, services dominate consistently, especially in total EBITDA, ROE, and employment, highlighting the centrality of the tertiary sector in the regional economy. Economic reports from the Bank of Italy confirm that in Southern Italy, the tertiary sector remains the primary driver of economic growth, with consumer demand and digital transformation playing key roles. Manufacturing follows with strong figures in productivity and EBITDA, especially in recent years, despite slower ROE growth. In contrast, construction and agriculture remain significantly less dynamic, both in financial and employment terms. Meanwhile, the relative weakness of construction and agriculture suggests deeper structural challenges, including low investment and productivity constraints. The economic literature suggests that services tend to exhibit higher scalability and lower fixed costs, enabling stronger

EBITDA growth, whereas capital-intensive sectors such as manufacturing and agriculture face more significant constraints[3].

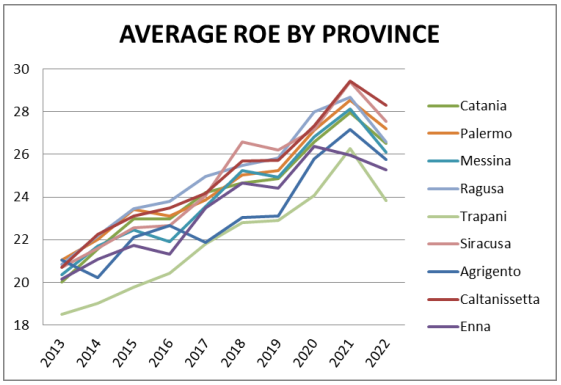

Figure 3.22 – Temporal trend of ROE by Province (%)

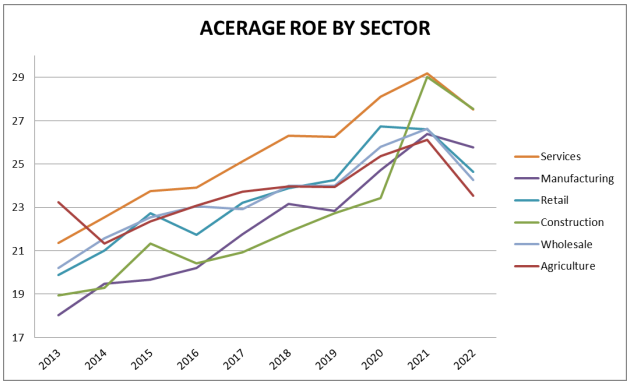

Figure 3.23 – Temporal trend of ROE by Sector (%)

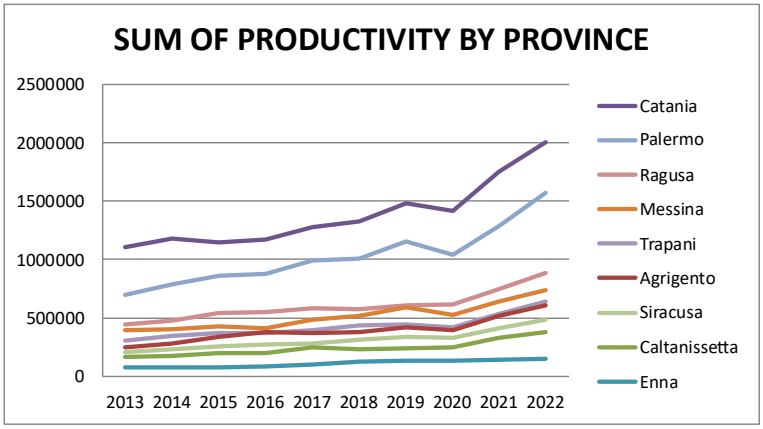

Figure 3.24 – Temporal trend of Productivity by Province (thousands of EUR/n° employees)

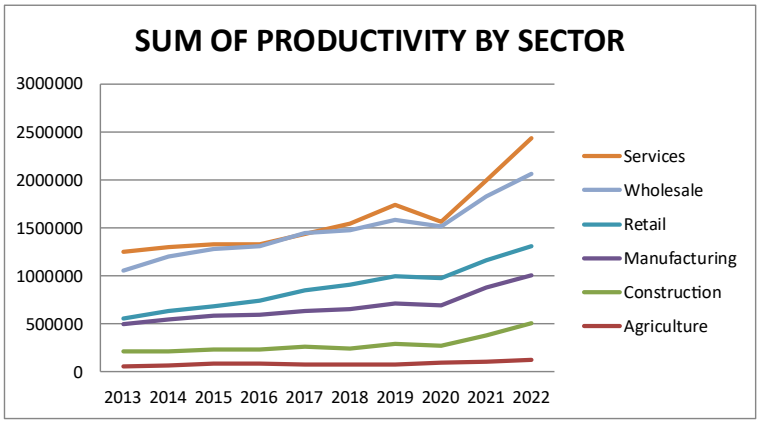

Figure 3.25 – Temporal trend of Productivity by Sector (thousands of EUR/n° employees)

[3] Banca D'Italia, 2023

Trends in employee count provide additional insights: Catania and Palermo again dominate in employment, followed by Messina and Ragusa, supporting their role as regional economic engines. The services sector shows the most pronounced growth in employment, nearly doubling over the decade, further underscoring the island's dependence on labor-intensive service industries. The manufacturing sector also experiences moderate labor expansion, indicating productivity-driven growth rather than labor-intensive business expansion. Agriculture remains largely stable, likely due to ongoing mechanization and automation, which reduces labor demand despite stable production levels[4].

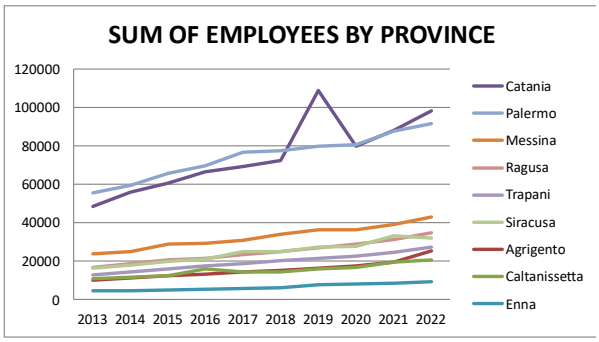

Figure 3.26 – Temporal trend of Employees by Province

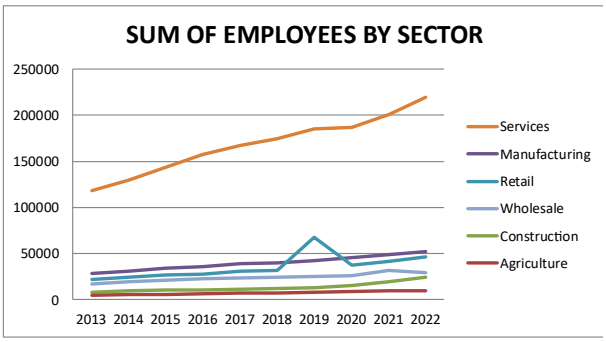

Figure 3.27 – Temporal trend of Employees by Sector

Despite the general upward trend, the charts also reveal rising debt levels, particularly in Catania and Palermo, with manufacturing and services showing the highest aggregate debt-to-revenue ratios. This suggests growing reliance on external financing. However, the IMF's regional economic outlook suggests that sector-specific shocks and differences in financial leverage contribute to variations in ROE across industries, which is evident in the observed trends[5]. In this context, debt should be interpreted cautiously, as it may signal either investment-driven expansion or vulnerability, depending on repayment capacity and profitability.

[4] Bank of Italy, 2023
[5] IMF, 2023

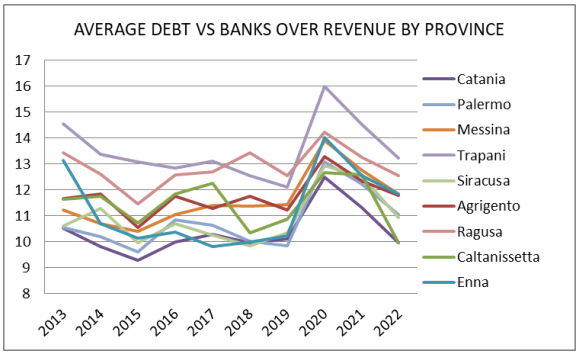

Figure 3.28 – Temporal trend of Debt Versus Banks over Revenues by Province (%)

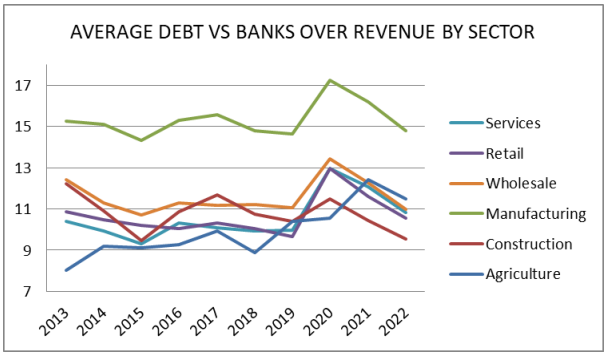

Figure 3.29 – Temporal trend of Debt Versus Banks over Revenues by Sector (%)

The comparison of provincial and sectoral trends allows for a more nuanced understanding of economic performance in Sicily. The provincial analysis highlights geographical disparities, shedding light on the role of local factors such as infrastructure, business density, and institutional support. Meanwhile, the sectoral analysis captures broader industry-specific trends, revealing which sectors have driven economic growth and which have stagnated.

This dual approach is essential because economic performance is shaped by both location and industry dynamics. While certain provinces may exhibit overall economic growth, their industrial composition can determine whether this translates into long-term competitiveness. The combined results from both the provincial and sectoral trend analyses reinforce the findings from the fixed-effects and random-effects econometric models, confirming a sustained improvement in revenue, profitability, and employment across most regions and industries. However, challenges persist in financial efficiency, as evidenced by the declining Return on Equity (ROE), and in debt sustainability, as indicated by the fluctuating debt-to-revenue ratios, highlighting potential risks to long-term economic stability.

Some strategic interventions would be essential to build resilience and support economic growth in the longer term. Modernization through more technological intensity within manufacturing and agricultural sectors can drive productivity and hence the global competitiveness of firms from Sicily. Investment in infrastructure will underpin businesses, particularly in the worst-performing provinces; it can also provide an attractive incentive to attract private investment and trigger business growth in areas lagging behind. The critical elements of sustainable development involve an easing of credit availability along with financial stability. Ideally, sustainable debt management and judicious financial assistance to ailing industries would limit the risks arising from excessive leveraging. A key priority for fostering long-term economic sustainability is the development of a skilled workforce that

aligns with the needs of high-growth sectors. Investing in education and vocational training programs tailored to the service and retail industries, which have demonstrated the strongest growth in revenue and employment, could help address labor market mismatches and ensure that human capital is effectively utilized. Additionally, promoting sectoral diversification would reduce Sicily's reliance on traditional industries and enhance resilience to external shocks.

While these policy measures could strengthen Sicily's economic foundation, future research should focus on firm-level microdata analysis to better understand the determinants of financial success. Further exploration of econometric methodologies to establish causal relationships in Sicily's economic trajectory would allow for more precise policy recommendations. Additionally, investigating the long-term impact of macroeconomic fluctuations and global events on regional economic stability remains crucial for anticipating future risks and opportunities.

In conclusion, while Sicily has recorded very positive economic growth over the last couple of years, this growth has been unbalanced across its provinces and sectors. In this way, addressing inequalities in financial efficiency, job creation, and the sustainability of public debt will be the only paths toward a truly balanced and resilient economy. Indeed, through such initiatives as technological innovation, infrastructure investment, financial stability measures, and development of the labor force, it is possible to transform Sicily into a more competitive and sustainable regional economy within Italy and Europe.

Conclusion

The analysis conducted in this thesis has provided a comprehensive and in-depth understanding of the structural challenges, economic trends, and sectoral disparities that have shaped Sicily's economic development over time. The three chapters regarding history, macroeconomics, and econometric analysis indicate continuous economic stagnation arising from persistent structural weaknesses, inefficient public policies, financial constraints, and glaring regional disparities. Yet, the research also reveals major opportunities for revitalization, given the correct mixture of strategies and proper policy interventions. The overarching theme that emerges is that Sicily has long struggled with an economic system highly dependent on external resources, structurally fragile, and unable to fully capitalize on its potential. Despite these challenges, clear pathways exist to build a more resilient, diversified, and competitive regional economy.

The first chapter traced the historical antecedents of the underdevelopment of Sicily's economy by showing that after the unification, several policies systematically have put the region in a position of disadvantage by concentrating industrial investment in Northern Italy while neglecting the South. The extraction of resources from the island without corresponding reinvestment, combined with high taxation, inadequate infrastructure, and the collapse of key industries such as sulfur extraction and textile production, created a cycle of economic dependency and stagnation. Additionally, failed public interventions—including the Cassa per il Mezzogiorno and the inefficient allocation of Marshall Plan funds—further exacerbated the region's vulnerabilities, preventing the creation of a self-sustaining economic model. As a consequence of such economic distortions in history, mass emigration, permanent unemployment, constant reliance on public subsidies and informal economy expansion are forming a cycle of divergence in labor market dynamics and government revenues.

The second chapter examined Sicily's economic trajectory over the past 30 years, confirming that many of these historical challenges persist today. The region's GDP growth has consistently lagged behind the national average, with a particularly slow recovery following major economic shocks such as the 2008 financial crisis and the COVID-19 pandemic. The island's economic structure remains heavily skewed toward the tertiary sector, with over 70% of the workforce employed in services, particularly in public administration, retail, and tourism. Even though tourism remains one of Sicily's most promising industries, it is limited by excessive seasonality,

a lack of infrastructure, and vulnerability to global crises, preventing it from becoming a stable economic driver. Meanwhile, agriculture—despite Sicily's competitive advantage in wine, citrus fruits, and other high-value crops—faces significant challenges, especially because of fragmented land ownership, outdated farming techniques, and increasing competition in international markets. As a result, its contribution to economic growth remains constrained.

The industry is still yet to develop, providing jobs for only 20% of the available workforce, mostly belonging to a few multinational corporations in the petrochemical, shipbuilding, and microelectronics sectors. This lack of industrial diversification makes the regional economy vulnerable to external shocks. The analysis also revealed that Sicily's export structure has been historically dominated by petroleum products, which accounted for over 60% of total exports until 2023, exposing the region to fluctuations in global oil prices. Nevertheless, recent trends suggest a gradual shift toward non-oil exports, which would mark an initial step in creating a more diversified and resilient economy. Financial constraints have also remained a critical barrier to business growth. The consolidation of local banks into larger national and international banking groups has resulted in less financial capital for the region, leaving local businesses with limited options and access to credit. This financial bottleneck has contributed to an increased reliance on bank loans, further exacerbated by the high levels of undeclared employment (exceeding 40% in agriculture and 30% in construction and services), weakening the economic fabric and reducing tax revenues.

The quantitative validation of these structural challenges is provided by Chapter 3 through an econometric analysis that extends to 57,999 Sicilian enterprises, covering their economic performance variables from 2013 to 2022. The results indicate strong territorial and sectoral differences, and the most dynamic provinces, due to the presence of petrochemical industries and well-structured agricultural cooperatives, were Siracusa and Ragusa. In contrast, Agrigento, Caltanissetta, and Enna remain the least competitive due to a lack of economic diversification, weak infrastructure, and a fragile business environment. The study confirmed that revenues, EBITDA, and net profits have shown an upward trend, suggesting some positive business growth. Nevertheless, this advancement further failed to translate into any financial efficiency, as ROE has gone down and increasing dependence on bank credit raises fears over long-term financial sustainability. Employment (measured through the variable 'Number of employers') trends have been similarly uneven: job creation, for instance, is concentrated in

some provinces such as Enna and Ragusa while others, for example, Caltanissetta and Trapani, persist in stagnation.

The analysis also underscored the crucial role of export-driven growth, revealing that businesses engaged in international markets tend to outperform those that rely solely on domestic demand. Sicily has a great geographical advantage as a Mediterranean hub, but other than that, the region is still quite weakly represented in world trade, which weakens its competitive possibilities and limits the economic advantages of international integration. This lack of export expansion can be attributed to several interrelated factors, including a fragmented business landscape, insufficient government incentives, infrastructural deficiencies, and a weak presence of structured international trade networks. Many Sicilian firms in the agricultural sector carry quality marks that would make them competitive if it wasn't for the great challenges they face, such as supply chain issues, vague export strategies, and hurdles associated with compliance with international regulatory standards. Overcoming these challenges requires targeted policies that support export-oriented businesses through investment in transportation infrastructure, trade facilitation programs, and financial mechanisms designed to assist firms in navigating international markets. Moreover, improved collaboration between local companies and international distribution channels and development of digital trade-enabling measures would give Sicilian businesses more accessibility to new markets and reduce their dependence on the domestic market.

Beyond trade, the research highlights that sectoral specialization plays a crucial role in determining business success. Wholesale trade and retail grow and resist; however, agriculture and construction have stagnated. While agriculture has probably been one of the oldest traditions in Sicily, it has become very sensitive to criticism, largely because of two reasons: instability of land property rights, traditional methods of farming, and competitive world stress imposed on nominal returns. Although Sicilian agricultural products, including citrus fruits, wine, and olive oil, are widely recognized for their quality, the sector's structural inefficiencies—such as small-scale production, lack of cooperative organization, and inconsistent integration into broader supply chains—continue to hinder growth.

It is also important to highlight that the standard economic indicators used in this research, such as sales revenue or ROE, may not accurately reflect the real performance of agricultural firms. This is because the income of agricultural enterprises is often not measured through direct sales,

but rather through the value of cultivated land and agricultural assets. As a result, financial metrics in this sector may appear distorted or underestimated when compared to other industries. These methodological limitations should be taken into account when interpreting the apparent stagnation of agriculture in Sicily. In a similar vein, the industry grapples with limited investment from both the public and private sectors, archaic regulatory frameworks, an inability to efficiently plan urban areas, and subsequent inertia and weak financial returns. On the other hand, the deficient level of industrial diversification in the region is largely complicated by the dominance of agriculture and mining industries by relatively few productive sectors in the subsidizing economies of certain provinces. The disproportionate concentration increases the vulnerability of the economy as slowdown in these few dominant sectors has heavy implications in terms of employment and regional advances. And with no collective attempts at expansion across different industries and promotion of sectoral diversification, Sicily runs the risk of remaining subject to an unstable and unbalanced economic structure that is unable to withstand external shocks.

To address these challenges, a key priority must be reducing business fragmentation, particularly in agriculture and fishing, by fostering cooperative models that enhance market integration, financial accessibility, and overall competitiveness. A well-known example is the Ragusa agricultural model whereby businesses formed cooperatives and used that collective bargaining power to get financing around the obstacles. Banca Agricola Popolare di Ragusa has been a fundamental factor in access to credit for local agricultural enterprises, thus granting them the resources needed to modernize and enlarge their market reach. Replicating this model across other Sicilian provinces could significantly improve the sector’s competitiveness, allowing small-scale producers to achieve economies of scale, strengthen their presence in export markets, and adopt more sustainable farming practices. By providing targeted financial incentives for modernization, cooperative networks in agriculture and fisheries can tackle long-standing inefficiencies and ensure income stability for businesses operating in these industries.

Tourism, despite its status as one of Sicily’s most vital economic pillars, remains underdeveloped in several key aspects that limit its full potential. The sector's over-reliance on peak-season visitors makes it highly vulnerable to external crises, as demonstrated by the 56.2% decline in revenues during the 2020 pandemic. This sharp contraction highlights the urgency of diversifying tourism offerings and extending the sector's seasonality to create a more stable and

sustainable revenue stream. Developing niche markets such as adventure tourism, eco-tourism, and cruise tourism could attract visitors all year round and abate the pressure of mass tourism during peak months. Infrastructure development, including improvements in transportation networks, accommodation facilities, and digital marketing strategies tailored to international travelers, would further enhance the industry's competitiveness. Besides, long-term economic benefits for rural economies may result from supporting local tourism businesses focused on experiential travel such as agritourism, cultural heritage tours, and sustainable hospitality because these sectors will also be integrated into different productive sectors. However, while tourism remains an important economic driver, its volatility underscores the necessity of economic diversification, as excessive dependence on a single industry leaves the region susceptible to unpredictable downturns. A more balanced economic model, where tourism is complemented by robust industrial and technological development, is essential for ensuring long-term economic resilience.

Beyond sectoral specialization and tourism expansion, access to finance is of utmost importance in supporting business growth and economic equity in terms of overall economic development. The econometric analysis of the third chapter showed the increasing appreciation of bank credit for Sicilian firms at a rate of 0.19 % a year compared to their sales. While this trend suggests that businesses have greater access to financial resources, the lack of alternative financing mechanisms—such as venture capital, crowdfunding, and public loan guarantees—remains a major constraint on innovation and expansion. Many small and medium-sized enterprises (SMEs) struggle to secure adequate funding due to rigid banking regulations, limited investor confidence, and a risk-averse financial culture that favors established businesses over startups. Policymakers ought to design interventions to address the specific governance arrangements in their respective countries, such as: investment funds targeted towards growing sectors; in granting micro-finance to budding entrepreneurs; and working with the local investment framework with the help of public-private partnerships. Also, alleviating bureaucratic processes and easing regulatory requirements would reduce a big share of the administrative load for businesses, enabling better access to credit and competition. By fostering broader financing options and creating greater access to capital, Sicily could establish a more dynamic competitive business environment conducive to sustainable growth and to upgrading its economy.

Addressing Sicily's high unemployment rate and ongoing brain drain requires a multifaceted approach that combines infrastructure development, economic diversification, targeted investments, and financial sustainability. The region has long suffered from bad connectivity, which has restricted internal mobility, limited access to employment opportunities, hindered the expansion of businesses, and deterred external investment. A crucial step toward resolving this issue involves substantial improvements in transportation infrastructure, including the modernization of roads, railways, ports, and airports. Flowing through the heterogeneous rural lands of Sicily, major upgrades to the already inadequate road network will benefit trade, logistics, and mobility of workers. Meanwhile, more transportation links between big cities will boost connections to the mainland via high-speed rail, enabling greater economic integration with the rest of Italy and Europe. Strengthening airport capacities, particularly in cities like Catania and Palermo, would help support both tourism and business travel, while upgrading port infrastructure could enhance maritime trade and create new opportunities in the logistics and shipping industries. These improvements would not only increase accessibility but also attract investments in sectors that require efficient transportation networks, such as manufacturing, agribusiness, and technology.

Economic modernization requires a digital platform in addition to physical infrastructures. The high-speed internet diffusion on urban and rural terrains is essential to connect Sicily with the global digital economy, boost technological-based business growth, and enable host working tasks. Currently, many rural areas suffer from a digital divide that limits business development and access to online services. Bridging this gap would facilitate the emergence of digital startups, attract international firms looking for cost-effective locations, and enhance the efficiency of local enterprises through digital transformation. This well-functioning digital infrastructure will also help ensure innovation in key sectors such as finance, e-commerce, and AI, thereby guiding Sicily's traditional agriculture- and service-based economy towards a vector of knowledge- and technology-based growth.

In addition to technological advancement, revitalizing Sicily's agricultural sector is critical for long-term economic sustainability. Agriculture, as mentioned before, remains broken, with a small-scale predominance generally characterized by some quality of produce and international competition. Encouraging modern farming practices, precision agriculture, and digital tools for agriculture will further optimize productivity. Furthermore, branding Sicilian agricultural

products under certified quality labels—such as DOP (Denominazione di Origine Protetta) and organic certifications—would allow local producers to enter premium international markets, capitalizing on growing consumer demand for high-quality, traceable food products. Another promising avenue is agrivoltaics, a model that integrates solar energy production with agricultural activities, optimizing land use and generating additional income for farmers. Due to abundant sunlight in Sicily, the establishment of large solar farms and wind energy projects would be a way to ensure energy independence for the island while creating thousands of jobs in the renewable industry, ultimately contributing further in diversifying the economic space.

One of the most pressing challenges Sicily faces is its aging population, which places a significant burden on social and healthcare services. The demographic trend appears to provide structural risks, which, if carefully attended to, could create economic opportunities. Care of the elderly investments could include home health care and assisted living facilities or specialized geriatric centers, and such investments will lead to job creation in health care and social service sectors. Additionally, medical tourism represents a sector with untapped potential. The low cost of living in Sicily, together with a pleasant climate, cultural heritage, and natural beauty, would certainly put Sicily in the running for an attractive investment destination for international retirees and those seeking high-quality yet affordable medical treatment. Specialized medical facilities, wellness retreats, and rehabilitation centers could provide attractive sources of income, with a spinoff effect improving the overall medical care options available to the local people.

Sustainability must also be a central pillar of Sicily’s economic strategy. The island’s natural environment is one of its greatest assets, yet it remains underutilized for economic development. Efforts to reduce pollution by enforcing stricter environmental regulations, improve waste management and promote sustainable urban planning would help elevate living standards and enhance the region's attractiveness for investors and residents alike. Moreover, leveraging Sicily’s dramatic landscapes, historic cities, and diverse ecosystems as a backdrop for film and television productions could stimulate job creation in the creative industries while increasing the region’s global visibility. If tax incentives and grants will be offered to film and media companies, this should go a long way in developing and marketing Sicily as a production location for international projects, with substantial collateral benefits in tourism and related service sectors.

Moreover, fighting against the informal economy and undeclared labor is also a key for improving Sicily's fiscal base, for achieving economic transparency, and for establishing fair competition. High levels of underground employment and tax evasion have consistently distorted official economic data, lowering businesses' financial stability while denying the government much-needed tax revenues over the years. Enforcing labor laws more effectively, simplifying bureaucratic processes, and providing incentives for businesses to transition toward formal employment structures could help formalize a significant portion of the labor market. This transition would not only generate higher tax revenues but also provide workers with essential social protections, improving their long-term financial security.

In essence, the path to Sicily’s economic revival lies in its ability to embrace transformation, leveraging its strengths while addressing long-standing structural weaknesses. This study has shown that although the area still has many long-standing economic problems, from historical inequalities and infrastructure deficiencies to budgetary limitations and labor market inefficiencies, it also offers a great deal of unrealized potential. By strategically investing in infrastructure, fostering innovation, and diversifying its economy, Sicily can shift from a model of dependency to one of self-sustaining growth.

The study's conclusions support the idea that there isn't a single, effective way to address the region's economic stagnation. Instead, to promote long-term prosperity, a multipronged strategy that incorporates sectoral diversification, financial modernization, human capital development, and institutional reform is necessary. The enhancement of industrial competitiveness, the promotion of export-oriented growth, and the creation of a more inclusive and transparent business environment will be pivotal in strengthening the region’s economic foundations. Furthermore, important avenues for future economic resilience include the modernization of agriculture and tourism, the growth of renewable energy projects, and the establishment of sustainable industries.

Notwithstanding the intricacy of the problems that lie ahead, the data in this study emphasizes that change is both required and possible. Using its strategic location, abundant natural resources, and cultural assets, along with policies that encourage productivity, efficiency, and innovation, Sicily has the chance to reshape its economic course. If supported by well-designed interventions and committed governance, the island can not only bridge the gap with the rest of

Italy but also establish itself as a competitive economic hub in the Mediterranean. Although there is a long and difficult path to sustainable development, Sicily can ensure future generations of economic stability, progress, and opportunity with clear action, focused investments, and an optimistic outlook.

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